

Verifying files for integrity and authenticity



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Introduction

In our present-day world, concerns are often raised about the integrity and authenticity of software and firmware files, when downloaded from a vendor site and also during their life cycle. The NERC Critical Infrastructure Protection (CIP) Cyber Security Standards provides requirements and measures for compliancy on this subject.

Our document first introduces you to the NERC CIP-013-1 standard, it then explains Eaton's Substation Automation process in insuring software and firmware files integrity and authenticity.

Finally, we provide a simple way for our customers to verify that the downloaded software and firmware files from Eaton's Substation automation customer site are intact.

NERC CIP-013-1 standard

CIP-013-1: Cyber Security - Supply Chain Risk Management

The objective of verifying software files integrity and authenticity (Part 1.2.5) is to help ensure that software installed on BES Cyber Systems is not modified prior to installation without the awareness of the software supplier and is not counterfeit. Part 1.2.5 is not an operational requirement for entities to perform such verification; instead, it requires entities to address the software integrity and authenticity issue in its contracting process to provide the entity the means by which to perform such verification under CIP-010-3.

The NERC CIP-013-1 standard will be enforceable starting on July 1, 2020.

Note: BES stands for Bulk Electric System

How we do things in Eaton's Substation Automation

Marketing documents for Eaton's Substation Automation product line can be downloaded from the Eaton.com web site and are accessible to all. However, it is not yet possible to download software/firmware and technical manuals from this public site.

To download software/firmware files and technical documentation related to the Substation Automation product line, customers must use a dedicated private site, provided they have the credentials to access it.

All Eaton's Substation Automation software/firmware components are digitally signed in order to ensure their authenticity and integrity.

Continuously checking for file integrity

When sending the software/firmware files on an SMP device, the integrity of executable files is verified; the files will be refused if not compliant.

When running on the SMP Device, software components present in the file system are also continuously monitored to prevent execution of unauthorized code.

Verifying files for integrity and authenticity

The proposed file integrity verification method

After downloading firmware/software files from the customer site for Eaton's Substation Automation, <https://www.cybertec.com/customers/>, users can verify that the file's digital signature is intact.

This can be done in several ways, we selected a simple method, using Windows Explorer.

To verify that the digital signature is intact:

Connect to the customer site for Eaton's Substation Automation: <https://www.cybertec.com/customers/> and provide your credentials. If you don't have credentials, contact Technical Support to get them.

1. Once on the customer site, select the product for which you want to download a software/firmware version (Installers only as ZIP files).
2. Download the **.zip** file (not the ISO file)
3. Extract the file in the target directory of your choice, you should then have access to an executable file (.exe)
4. Start **Windows Explorer** and navigate to the folder containing the downloaded file (executable file).
5. Right-click on the file and select **Properties** (refer to Figure 1)

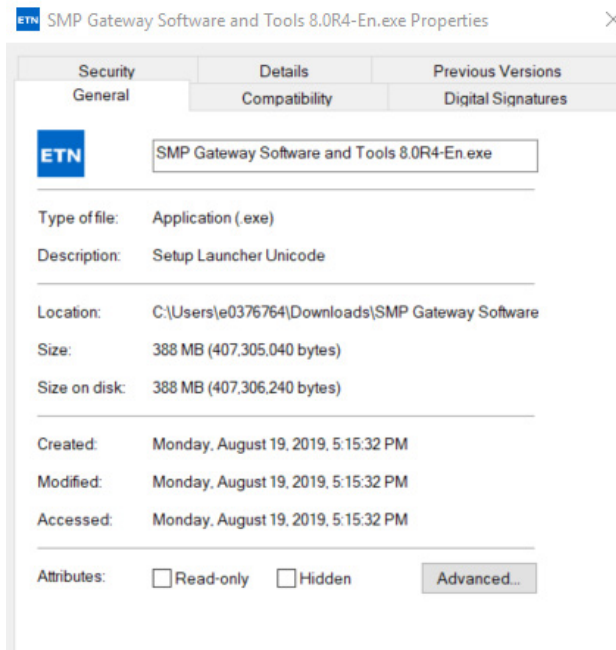


Figure 1: The Properties windows

6. Select the **Digital Signatures** tab. Note that when files are not digitally signed, the **Digital Signatures** tab is not available. As we mentioned earlier, Eaton's Substation Automation software is always digitally signed. (Refer to Figure 2)

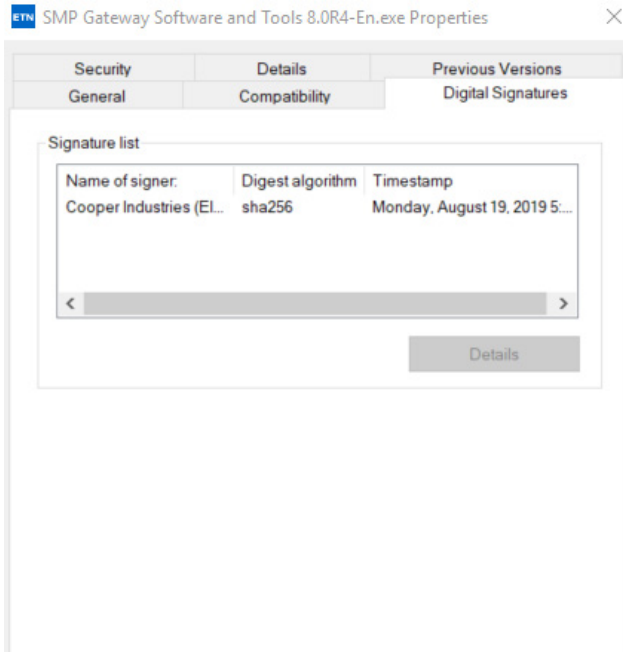


Figure 2: The Properties windows, Digital Signatures tab

7. In the **Signature List** pane, double click on the **Name of signer** (The name should be Cooper Industries Electrical Inc)
8. In the **Digital Signature Details** window, in the **General** tab, the **Name** in the Signer information pane should be *Cooper Industries Electrical Inc*. Also, the **Digital Signature Information**, at the top of the General tab should display the message: *This digital signature is OK*. (Refer to Figure 3)

Note: Eaton's Substation Automation product line still has Cooper Industries Electrical Inc as legal entity.

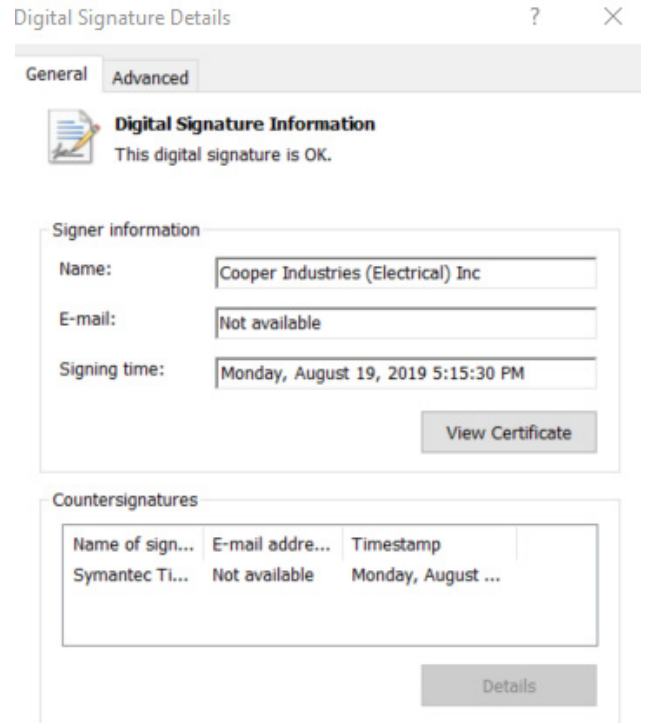


Figure 3: The Digital Signature Details windows, General tab

If you doubt the integrity or authenticity of our files, contact Technical support and we will send the required firmware, on an electronic media, directly to you.

Technical support

Eaton's Energy Automation Solutions

Email: eas-support@eaton.com

Phone: 1-800-815-2258

Business hours are from 8 a.m. and 5 p.m. CST, Monday to Friday.

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