GGA Validate and Transform

 Utility User Guide

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**Prepared by:**



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Revision History

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| - | TBD | Initial Release |
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# Purpose

The Validate and Transform Utility is a standalone program used to validate the signatures within GPS product files and IEPD archive files as well as transform GPS product data from the NIEM format to the legacy format.

# Launching the Tool

## Prerequisites

The Validate and Transform Utility requires Java (minimum version needed is Java 8) to be installed on the target machine. The tool has been tested and verified to work as of Java 8 update 333 (8u333). Additionally, the JAVA\_HOME environment variable must be set to the location where you have Java installed.

The provided jar file and respective wrapper script (.sh for Linux and .cmd for Windows) must be in the same directory to run correctly.

Please consult your local system administrator if you are unable to install the proper version of java or set the required system variables.

## Windows Instructions

To launch the utility, double-click on the provided *ValidateTransformUtility.cmd* script file.

If the tool is not displaying, ensure that JAVA\_HOME is set. This can be achieved by opening a command prompt (Win + R 🡪 type “cmd”🡪 hit Enter) and entering the command:

*echo %JAVA\_HOME%*

This should output the path to your Java installation. If it does not, then JAVA\_HOME has not been properly set and must be updated to point to where Java is installed on your machine. You may need your local system administrator as setting system environment variables requires elevated permissions.

## Linux Instructions

To launch the utility, navigate to the directory where the tool is located and run the provided shell script *ValidateTransformUtility.sh*.

$ ./ValidateTransformUtility.sh

If the tool is not displaying, ensure that JAVA\_HOME is set by entering the following command:

*echo $JAVA\_HOME*

Note: If you are running the utility in a terminal, you must have X11 forwarding set up to display the GUI as the Validate and Transform Utility does not provide a CLI interface. You may need your local system administrator to assist with setting up X11 forwarding.

# Configuration

## Loading public certificate

To validate signed GPS XML products and IEPD archives, you must load in the public certificate files associated with the signatures you wish to validate. This is done through the Certificates tab, which can be found at the top of the window *(Figure 1)*.

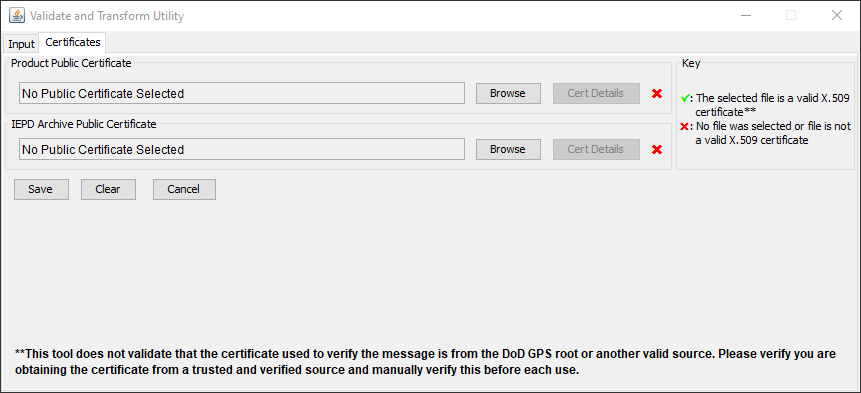


Figure 1. Certificates tab.

To load the public certificates:

1. For each input box, click the Browse button and choose the public certificate file you wish to use. The X.509 certificate file typically has a file extension “.cer”, “.crt”, or “.pem” and can be in either PEM (base 64 encoded) format or DER (binary encoded) format.
2. Click the Save button.

If the file selected is in a valid X.509 format, the red x icon will turn into a green checkmark *(Figure 2)*. This means that your configuration was saved successfully.

**Note**: A green checkmark does **not** indicate that the loaded certificate is from a trusted or valid source or that it is associated with the key used to sign any XML products or IEPDs. This tool only verifies that the loaded certificate conforms to the X.509 file format.

**Please verify that you have obtained the certificate from a trusted and verified source and manually verify this before each use.**



Figure 2. After a successful configuration save, a green checkmark is displayed.

If a public certificate needs to be changed out in the future, return to the Certificates tab and follow the same steps.

By default, the tool saves configurations and reloads them when the tool is next run. To clear saved selections, click the ‘Clear’ button. To revert changes made since the last save, click the ‘Cancel’ button.

## Viewing Loaded Certificates

To view the properties of a valid loaded certificate (i.e. issuer, valid dates, etc.), select the ‘Cert Details’ button located next to the ‘Browse’ button. This will display a pop-up containing details about the loaded public certificate (*Figure 3*).

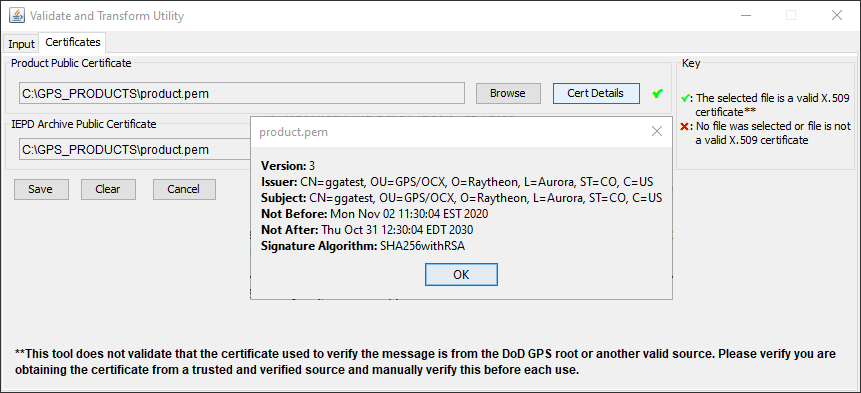


Figure 3. Certificate properties displayed using the ‘Cert Details’ button.

# Loading and Validation

To load and validate files, begin by selecting the Input tab *(Figure 4)*.

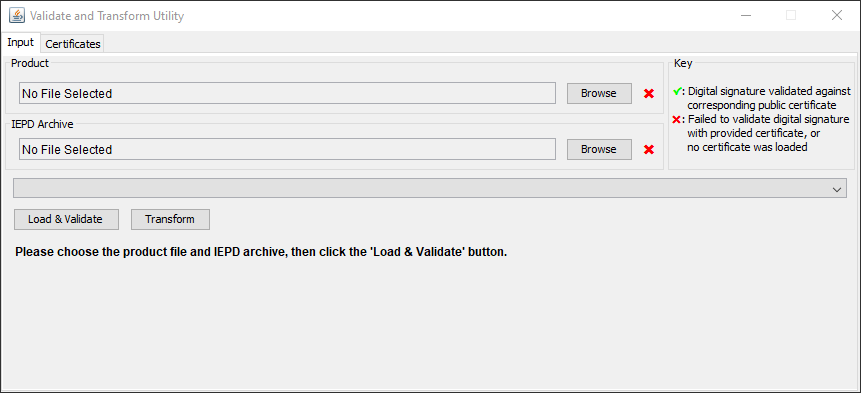


Figure 4. Initial view of Input tab.

## Loading Files

To load the product file and IEPD archive into the tool:

1. Click the first Browse button under the ‘Product’ section to select the product file (.xml).
2. Click the second Browse button under the ‘IEPD archive’ section to choose the IEPD archive file (.zip).
3. Press the ‘Load & Validate’ button to load the chosen files and begin the validation.

## Validation

The optional validation portion of the Validate and Transform Utility validates the product file and the IEPD archive file. The utility validates that the signatures inside the files were generated using the private keys associated with the public certificates loaded into the Validate and Transform Utility through the Certificates tab. This ensures that these files are coming from an authentic source. It also validates that the files have been properly signed and that they have not been modified since their signing.

For further information on the signing standards used to sign the GPS product files and IEPD archive files please reference the link below:

https://docs.oracle.com/en/java/javase/13/docs/specs/man/jarsigner.html

After pressing the ‘Load & Validate’ button, the red x’s beside the Browse buttons will update, showing whether that particular file was able to validate successfully.

A file will fail to validate (the red x remains after pressing the Validate button) if one or both of the following occurs:

1. The file has been modified after its signing
2. The wrong public certificate has been used to validate the file. If the public certificate needs to be changed, do so through the Configuration tab (*2.1*)

The figure below shows a case where the product file was not able to validate, but the IEPD archive did validate successfully *(Figure 5)*:

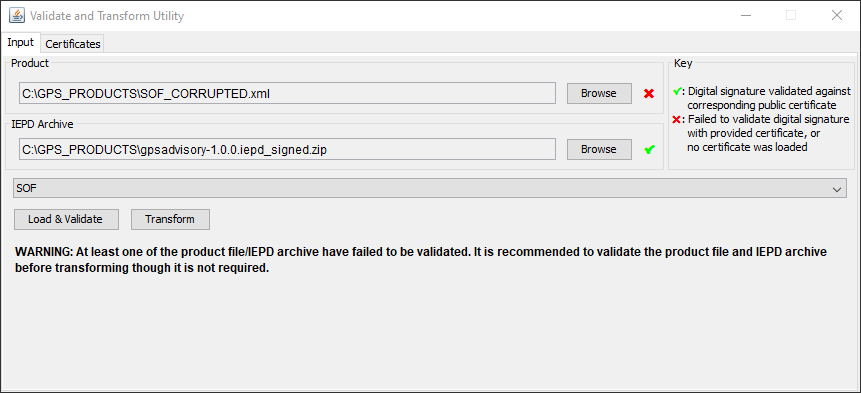


Figure 5. Invalid product, valid IEPD archive.

If either file fails to validate, a warning will be displayed at the bottom of the window. While it is not required to successfully validate the product file and IEPD, it is recommended to do so prior to attempting a transformation to the legacy format.

Additionally, the chosen product and IEPD file must match to be able to transform. If an invalid combination is chosen, an error message will be shown, and no transformations will be available.

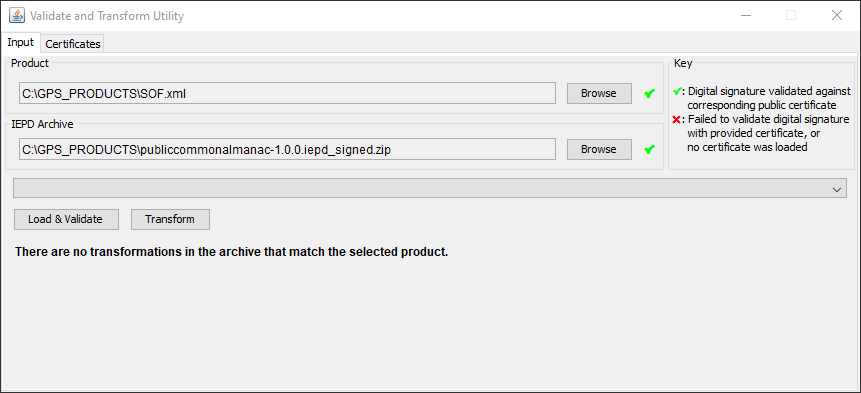


Figure 6. Product does not match IEPD archive, so a transform cannot be performed.

## Multiple Transformation Options

If only one transformation is available, it will automatically be selected in the dropdown box. Otherwise, you must select one from the dropdown before transforming. Below is an example of a product having more than one transformation option.

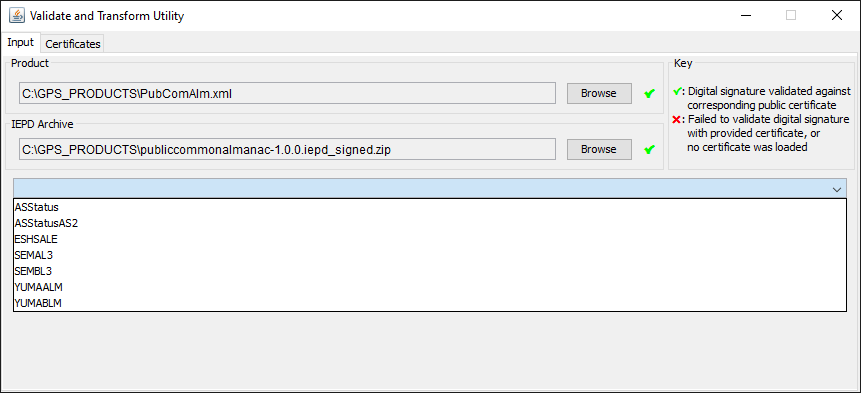


Figure 7. Displaying options within the Transformation Options dropdown.

# Transformation

The transformation step will transform the product file defined in the first box using one of the available options provided within the IEPD archive file. After selecting an identifiable XML product, matching IEPD and an available transformation, you will see a screen similar to the following *(Figure 8)*:

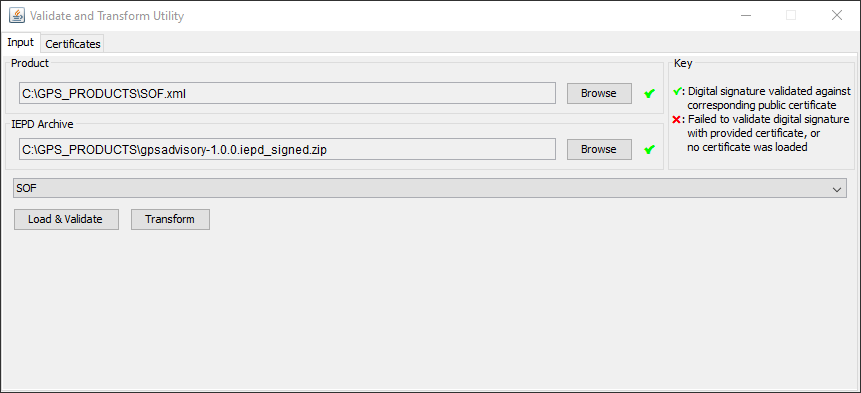


Figure 8. Ready to perform transformation step post-validation.

## Transformation Steps

To perform a transformation:

1. Click on the Transformation Options dropdown and select one of the available options *(Figure 7)*. If there is a single transformation type available, the option will already be chosen for you.
2. Press the Transform button.
3. Choose the save location for the transformed file and which file type you wish to save the transformed product as. File type can be chosen from the Save as type dropdown at the bottom of the Save window *(Figure 9)*. By default, the file will be saved using a filename with the name of the transformation and the timestamp.
4. Press the Save button.

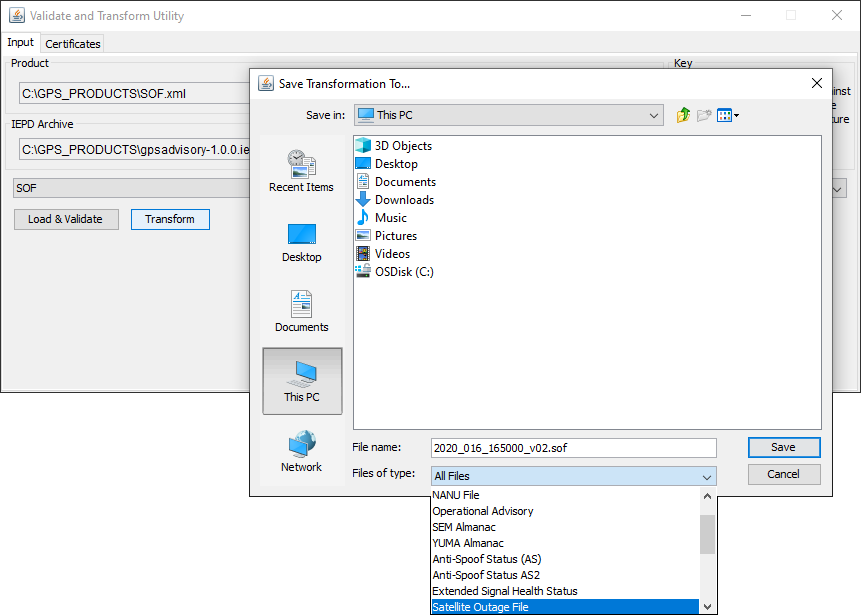


Figure 9. The Save dialog for the transformation, including the available file types that can be used.

If the transformation occurred successfully, a new file with your transformation should have been created in the location you selected, and the utility will display the message “Transformation successful.” *(Figure 10)* Additional transformations with different files can still be performed.

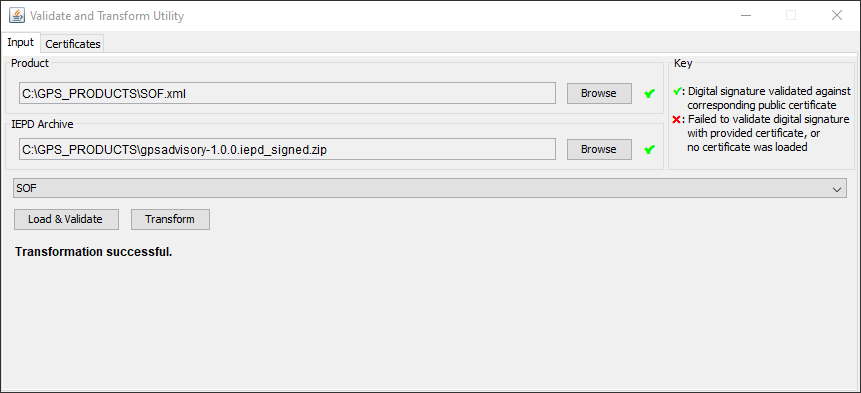


Figure 10. "Transformation successful." message.