

FACE™ 3.0/3.1 MagicDraw (MD) Model Tool Interchange (MTI) Log4j Security Vulnerability Remediation

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Table of Contents

1	Background	2
2	Remediation Plan.....	2
3	Install the Corrected MTI 3.0 and 3.1 Versions when Available	2
4	Correct Previously Installed MTI Versions.....	3
5	Acronyms	6

Revision History

Date	Modifications
1/31/2022	Initial Draft
2/17/2022	For FACE 3.0, updated the current version in Table 2 from FACE30_MTI_V2021_10_0_A to FACE30_MagicDraw_MTI_v2021_08_0_A.
2/27/2024	Added information about FACE(tm)30_31_32_MagicDraw_MTI_v2023_05_0_B.zip. Created separate sections for the versions that Do/Do-Not have the log4j vulnerability.

1 Background

Recently, a critical vulnerability in the popular Java logging package, Log4j ([NVD - CVE-2021-44228 \(nist.gov\)](https://nvd.nist.gov/vuln/detail/CVE-2021-44228)) was disclosed. The FACE 3.0/3.1 MTIs have included this package to facilitate logging. The FACE 2.1 MTI did not include this package.

The MTIs support MD 18.5 and Cameo 19.0. These versions of MD/Cameo do not have a susceptibility to the log4j security vulnerability as detailed at [CATIA Magic and No Magic products affected by Log4Shell log4j vulnerability - CVE-2021-44228](#). Notice that MD v2021 does have this security vulnerability.

Because MD 18.5 and Cameo 19.0 do not have the log4j security vulnerability, we only need to remedy the MTIs that use of log4j. The following sections describe the required actions.

2 Remediation Plan

The plan to address the Log4j vulnerability includes two parts:

1. Install (see Section 3) the corrected MTI 3.0 and 3.1 versions when they are available. It is anticipated that providing updated versions will require more time; therefore, for immediate mitigation, follow the steps in Section 5.
2. Correct (see Section 5) Previously Installed MTI Versions

3 MTI Versions that do NOT have the Log4j Vulnerability

Table 1 list the MTI versions that do Not have the Log4j vulnerability.

FACE™ Version	Includes log4j	Download Site	Version
FACE 2.1	No	https://www.isis.vander	FACEDMv21EAImportExportUtility

		bilt.edu/face	
FACE 2.1	No	""	FACE21RhapsodyPlugins
FACE 3.0, 3.1, 3.2	Yes, but was corrected	""	FACE(tm)30_31_32_MagicDraw_MTI_v2023_05_0_B

Table 1 – MTI Versions that do NOT have the Log4j Vulnerability

4 MTI Versions that DO have the Log4J Vulnerability

Table 2 list the MTI versions that Do have the Log4j vulnerability.

FACE™ Version	Includes log4j	Download Site	Current Version
FACE 3.0	Yes	https://www.isis.vanderbilt.edu/face	FACE30_MagicDraw_MTI_v2021_08_0_A
FACE 3.1	Yes	https://www.isis.vanderbilt.edu/face	FACE31_MTI_V2022_03_1_A

Table 2 – MTI Versions that Do have the Log4j Vulnerability

5 Correct Previously Installed MTI Versions

It is very simple to correct a previous installation of the MTI tools without reinstalling the MTI tools and without reinstalling MD/Cameo. The corrections involve replacing two log4j jar files with newer versions and editing the plugin.xml file with the names of the newer jar files.

The steps for correcting the log4j vulnerability are the same for both FACE 3.0 and 3.1 MTIs; therefore, only the steps will be shown for FACE 3.0 as follows:

1. If you are using MD/Cameo, close MD/Cameo
2. Download apache-log4j-2.17.1-bin.zip from <https://logging.apache.org/log4j/2.x/download.html>
3. Verify the checksum as prescribed at the download site
4. Unzip apache-log4j-2.17.1-bin.zip
5. Locate your installation of MagicDraw (version 18.5) or Cameo (version 19). This installation may be in “C:\Program Files\” or at another location depending on where MD/Cameo was installed. In the following example, the installation was at “C:\Programs\Cameo Systems Modeler_19”, which did not require administrator privileges to install.
6. Navigate to the plugins directory as shown in Figure 1

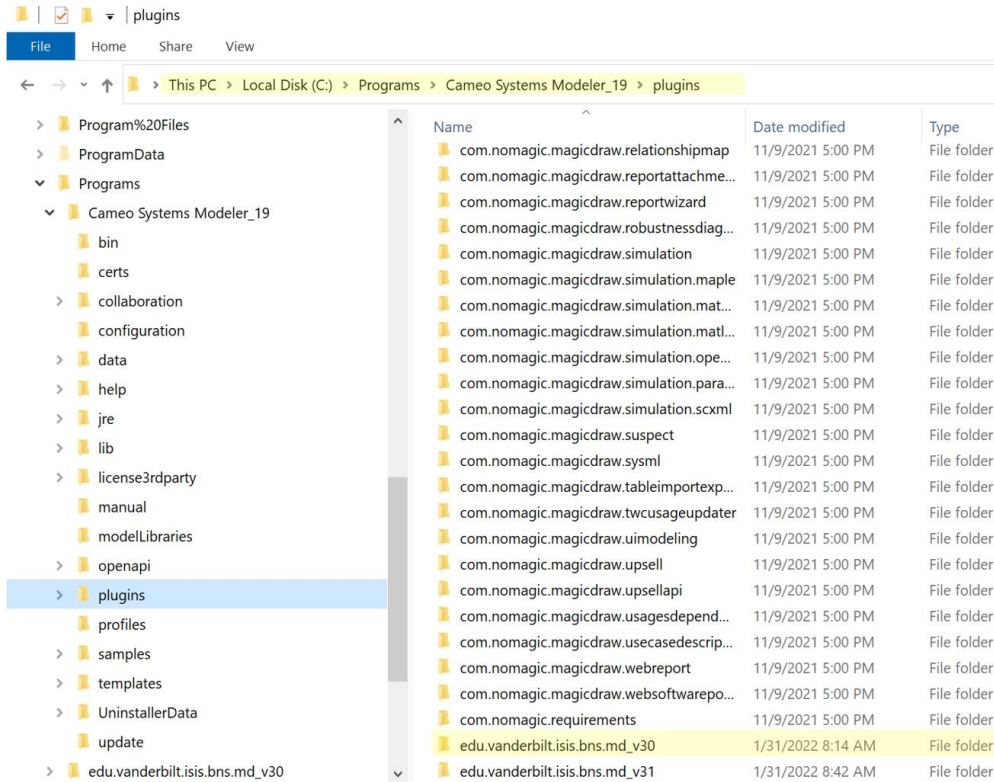


Figure 1 – Plugins Directory

7. Navigate to the edu.vanderbilt.isis.bns.md_v30 directory as shown in Figure 2

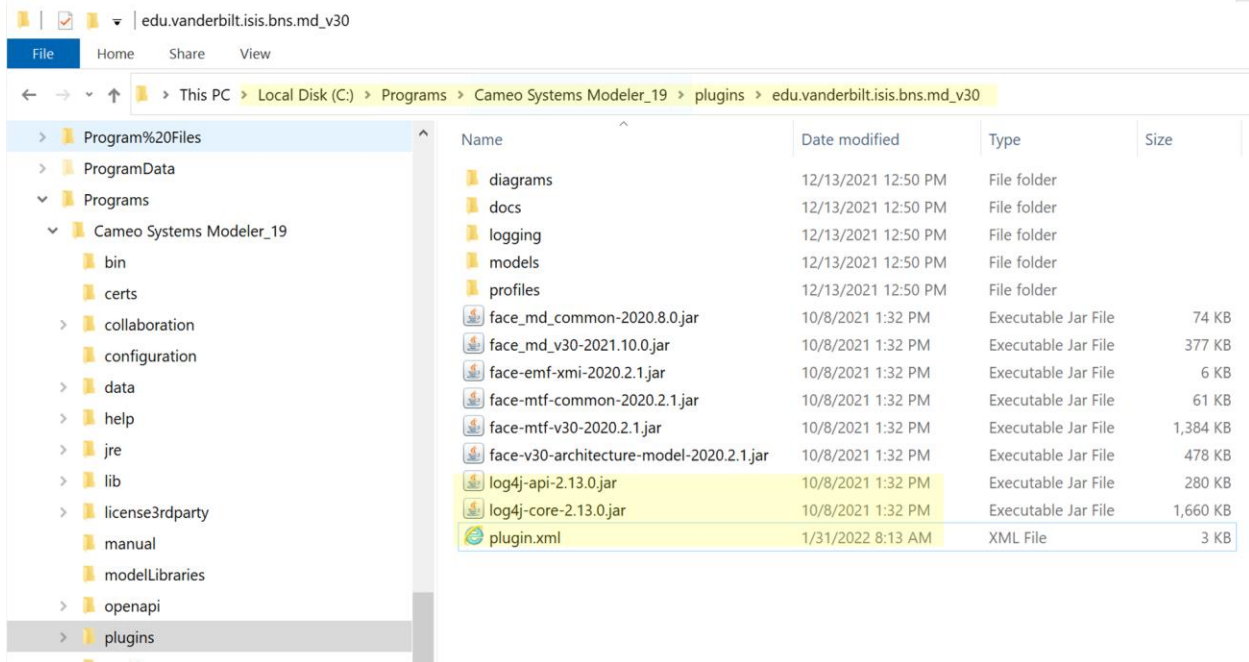


Figure 2 - edu.vanderbilt.isis.bns.md_v30 Directory

- From the zip file (apache-log4j-2.17.1-bin.zip) downloaded in Step 2, copy the files
log4j-api-2.17.1.jar
log4j-core-2.17.1.jar
to the edu.vanderbilt.isis.bns.md_v30 directory

Delete the files:

- log4j-api-2.13.0.jar
- log4j-core-2.13.0.jar

Now, the edu.vanderbilt.isis.bns.md_v30 directory should appear as shown in Figure 3.

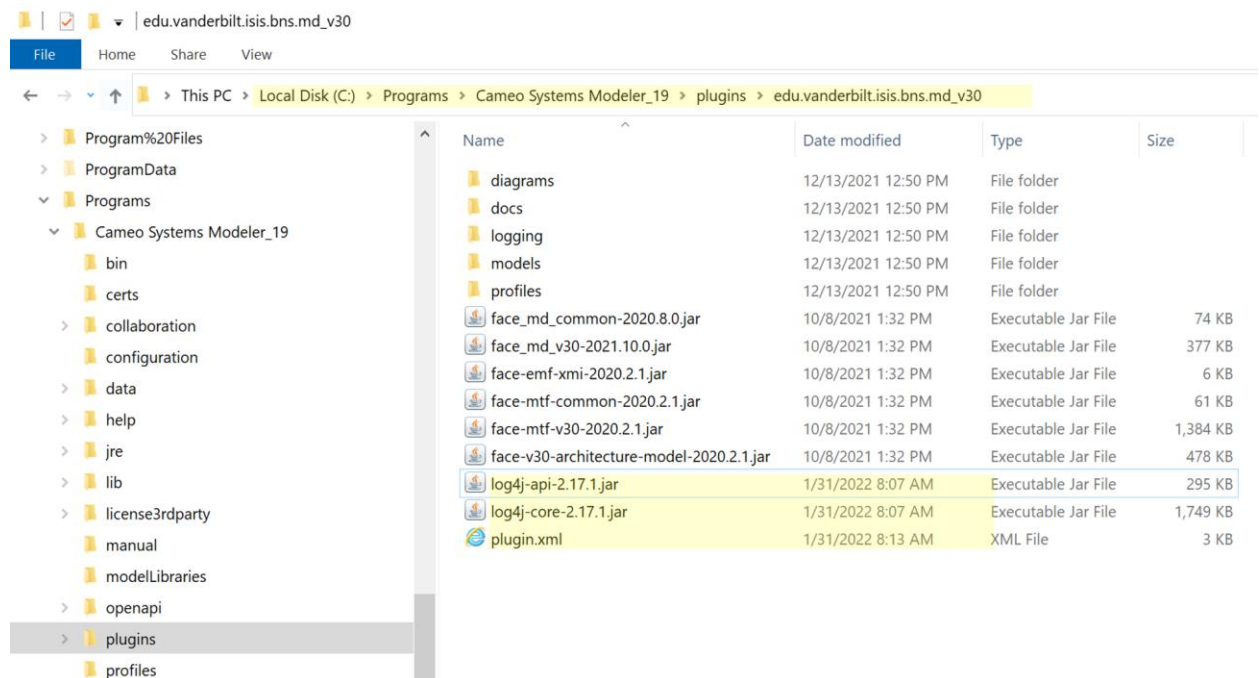


Figure 3 - edu.vanderbilt.isis.bns.md_v30 Directory after Replacing the log4j Jar Files

- The final step is to edit plugin.xml (see Figure 3). Replace the old log4j references with the new references as shown in Figure 4

```

<plugin
  id="edu.vanderbilt.isis.bns.import_export_model"
  name="FACE 3.0 MagicDraw Import/Export Model"
  version="3.0"
  provider-name="Vanderbilt University"
  class="edu.vanderbilt.isis.face.v30.architecturemodel.md.importexport.SmtImportExportPlugin"
  ownClassLoader="true" class-lookup="LocalFirst">
  <requires>
    <api version="1.0"/>
  </requires>
  <runtime>
    <library name="logging"/>
    <library name="face_md_v30-2021.10.0.jar" />
    <library name="face_md_common-2020.8.0.jar" />
    <library name="log4j-core-2.17.1.jar" />
    <library name="log4j-api-2.17.1.jar" />
    <library name="face-emf-xmi-2020.2.1.jar" />
    <library name="face-v30-architecture-model-2020.2.1.jar" />
    <library name="face-mtf-common-2020.2.1.jar" />
    <library name="face-mtf-v30-2020.2.1.jar" />
  </runtime>
</plugin>

```

Figure 4 – plugin.xml File After Edits to Reference the New log4j Jar Files

This completes the necessary steps.

6 Acronyms

Acronym	Description
API	Application Programming Interface
CSCI	Computer Software Configuration Item
DID	Data Item Description
FACE™	Future Airborne Capability Environment
Java EE	Java Enterprise Edition
Java SE	Java Standard Edition
MIL-STD	Military Standard
MD	MagicDraw
MTI	Model Tool Interchange
SDM	Shared Data Model
SDP	Software Development Plan
SMT	System Modeling Tool
SRS	Software Requirements Specification
STD	Software Test Description
STP	Software Test Plan
STR	Software Test Report
SUM	Software User Manual
UDDL	Universal Domain Description Language
UI	User Interface