

CIS Assessor: ESXI Extraction Guide Tip Sheet

CIS-CAT Pro Assessor
VMware ESXI

December 2023





Revision history

Revision #	Date	Changes made	Performed by	Authorized by
1.0	Dec 2023	Update the template and process	Noam Hazon	Adi Kogan
1.1	Jan 2024	Review after creation	Luisa Serna	Luisa Serna



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1. Tool Description

CIS-CAT Pro Assessor is a Java-based tool that scans a target system's configuration settings and reports the system's compliance to the corresponding CIS Benchmark. The results generated are only presented in machine-readable format.

2. Licensing Requirements

The CIS-CAT Pro Assessor is available for download through Mastercard's resources. For the complete download and installation guide please refer to the "CIS-CAT Pro Assessor: Extraction Guide Tip Sheet".

The CIS-CAT Pro Assessor tool must be deleted once the configuration files export is completed.

3. Who Should Use the Document

This document is for "Cyber Quant CyMA" users participating in an organizational cyber risk and security assessment using Mastercard's "Cyber Quant Cyber Risk Quantification" platform.

The document is also targeted at experienced IT and cyber professionals who will extract VMware ESXi technologies configuration files for the "Cyber Quant CyMA" cyber risk and security assessment.

4. Requirements & permissions

- CIS Tool Requirements:
 - Machine Requirements -
 - Windows server or client OS (it cannot be executed on a Linux machine).
 - CIS-CAT Pro Assessor requires a Java Runtime Environment (JRE) at or above version 1.8.
- Technical prerequisites:
 - HTTP\HTTPS Access from the Cyma workstation towards the ESXi server.



- Powershell VMware.PowerCLI module installed. For installation instructions, refer to appendix A "VMware.PowerCLI Module Installation".

5. High level process flow

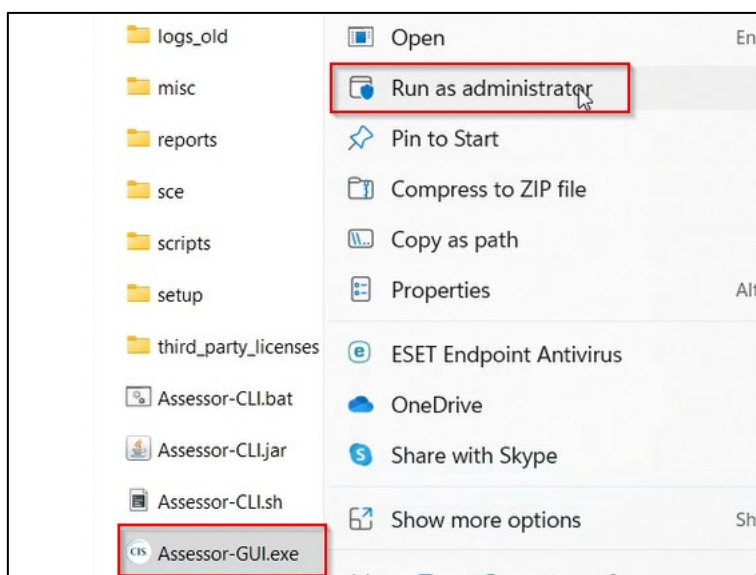
VMware.PowerCLI is installed in PowerShell to allow the CIS-CAT Pro Assessor tool to connect to VMware ESXi and analyze its configurations.

The CIS-CAT Pro Assessor tool is used with information required to connect to the ESXi server to analyze it.

The report is uploaded to Cyber Quant CyMA for analysis and integration with current assessments.

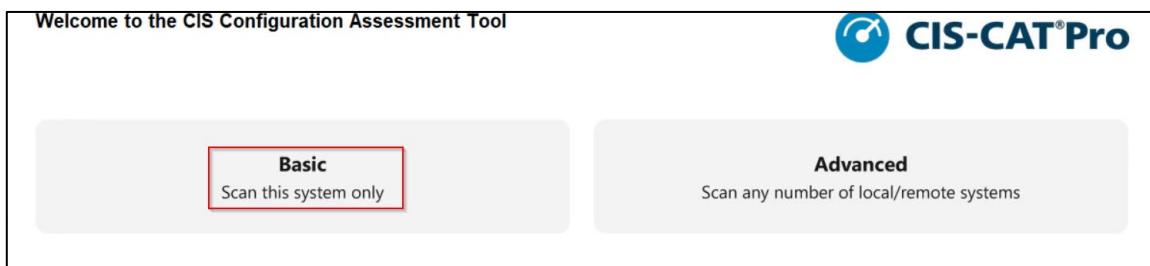
6. Starting the extraction process

1. Start the "CIS-CAT Pro Assessor" tool as administrator and accept the user account control dialog box (proceed normally if it does not appear), it may require administrative credentials.

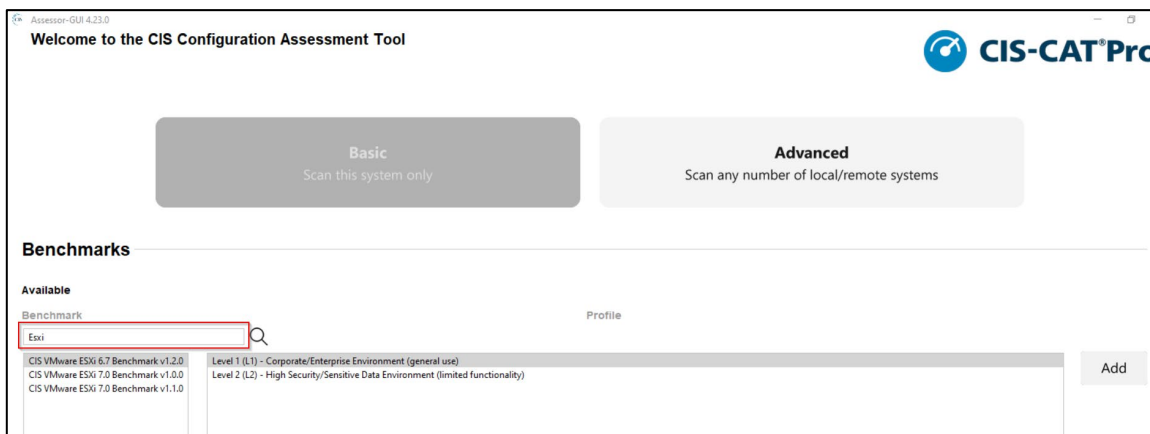




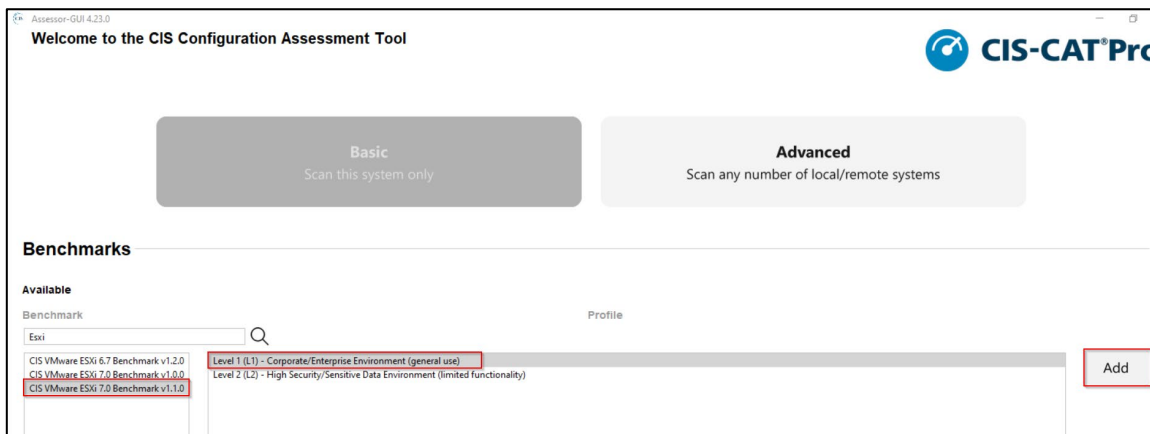
2. Choose the "Basic Scan".



3. Go to "Benchmarks" and search for ESXI to find the related benchmarks.



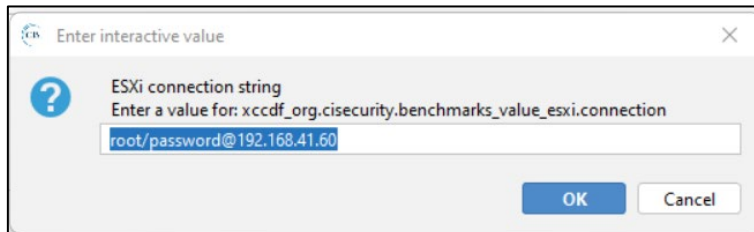
4. Select the desired CIS VMware benchmark and the desired profile and then click "Add".





- Next an interactive value screen will pop up and ask for the credentials and IP address of the ESXi machine and click on "OK". The expected syntax is:

`<username>/<password>@<IP of the ESXi Server>`



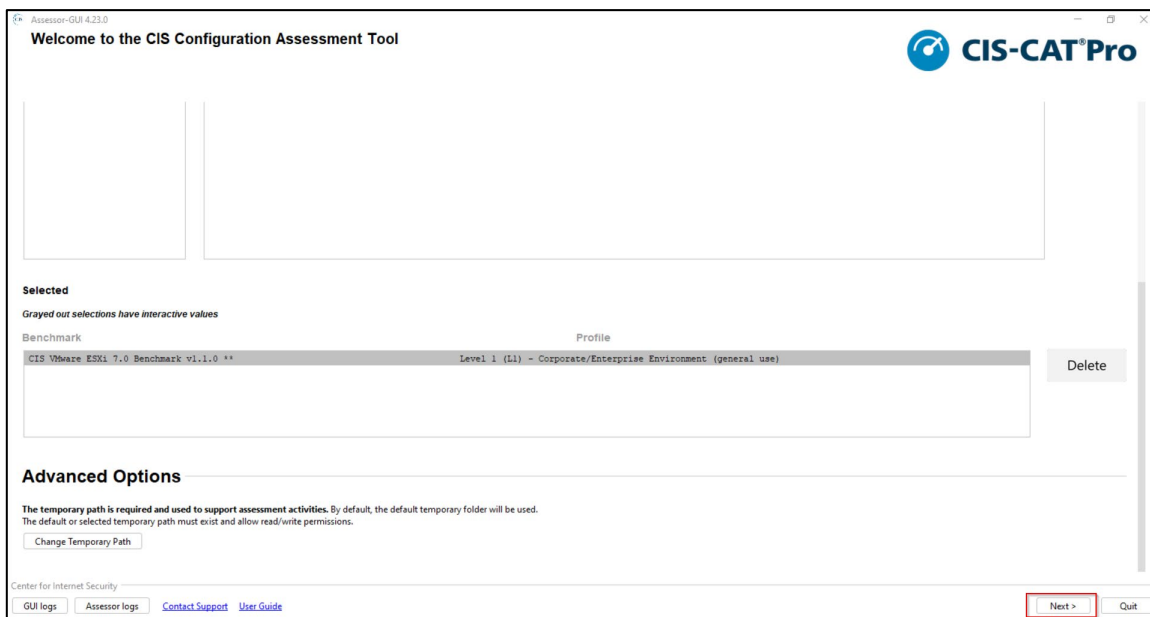
- On the Selected section, delete other benchmarks if exist and keep only the CIS VMware ESXi benchmark.



The screen display should be as follows:

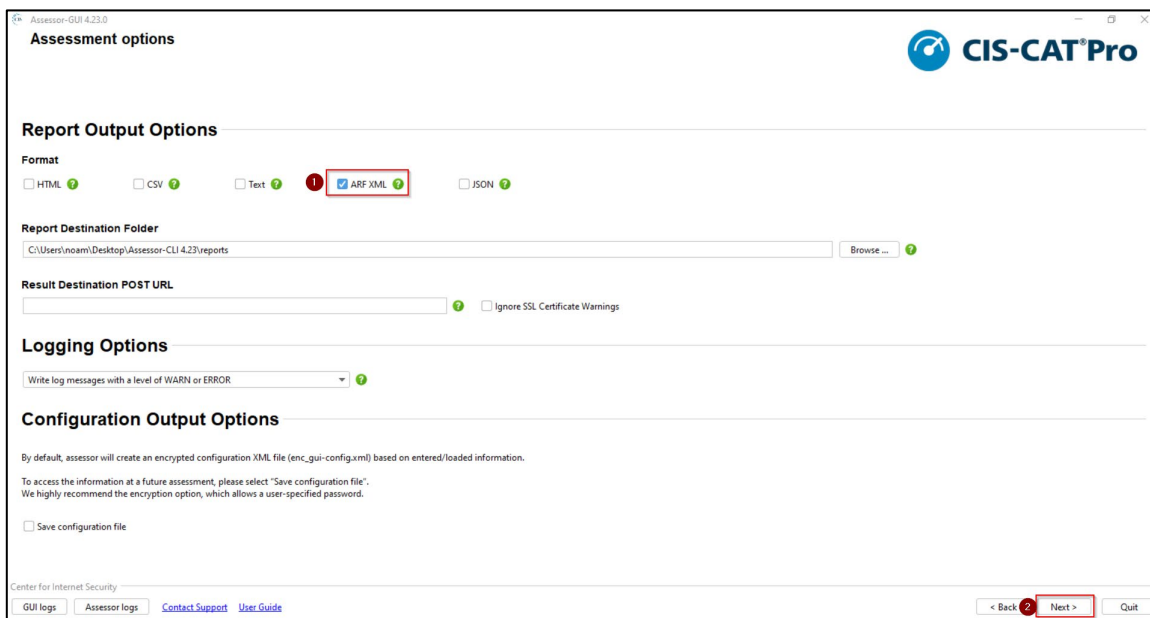


- Click "Next".





8. Select the "ARF XML" format (this is the only format supported by "CyMA") and the destination to save the report into and click "Next." In addition, an "HTML" format can also be selected to generate a human-friendly report. **It is recommended to store it in the default "C:\Assessor-CLI\reports" to avoid long paths that may cause errors.**





9. Once the assessment finishes, it displays information such as a score, the location of the generated reports, and whether it was successful or not. An exit code of 0 indicates successful execution, while 1 indicates an error.

Configuration Assessment

- ✓ CIS-CAT Pro Assessor loaded
- ✓ Platform Applicability assessed
- ✓ Checklist Rules evaluated
- ✓ Connected to assessment target
- ✓ System Characteristics collected
- ✓ Checklist Results generated
- ✓ Assessment started
- ✓ Definitions evaluated
- ✓ Assessment Results written

Assessment complete
Assessment 1 out of 1

**** Assessment Scoring ****

Score Earned: 4.0
Maximum Available: 26.0
Total: 15.38%

- Generating Checklist Results...

Ending Assessment - Date & Time: 12-03-2023 11:32:11
Total Assessment Time: 3 seconds

- Generating Asset Reporting Format.
- Generating Report Request.
- Generating Data-Stream Collection.
- Data-Stream Collection Generated.
- Collecting Checklist Results.
- Combining Results.
- Saving Results.
- Asset Reporting Format Generated.

**** Writing Assessment Results ****

- Reports saving to C:\Users\ [redacted] \Downloads\Assessor-CLI-4.31\Assessor-CLI-4.31\reports

-- PA-VM-CIS [redacted] Benchmark-202312031113211Z-ARF.xml

-- PA-VM-CIS [redacted] Benchmark-20231203T113211Z.html

Assessment Complete for Checklist: CIS [redacted] Benchmark

Finished Assessment 1/1
Disconnecting Session...
Exiting: Exit Code: 0

Center for Internet Security

GUI logs Assessor logs [Contact Support](#) [User Guide](#)

10. Click on "Quit" after a successful assessment to close the tool.



7. Open and Review Integration Results

1. For instructions on how to download CyMA, please refer to the "CyMA Installation" tip sheet.
2. Execute the "Cyber Quant CyMA" client and log in.

mastercard

Username:

Password:

[Forgot Password?](#)

Login

3. Enter the verification code sent to the account's email address.

mastercard

Verification code:

[Resend code](#)

Submit

4. Select the desired company, environment, and assessment to import the report.

Open Assessment

Company:

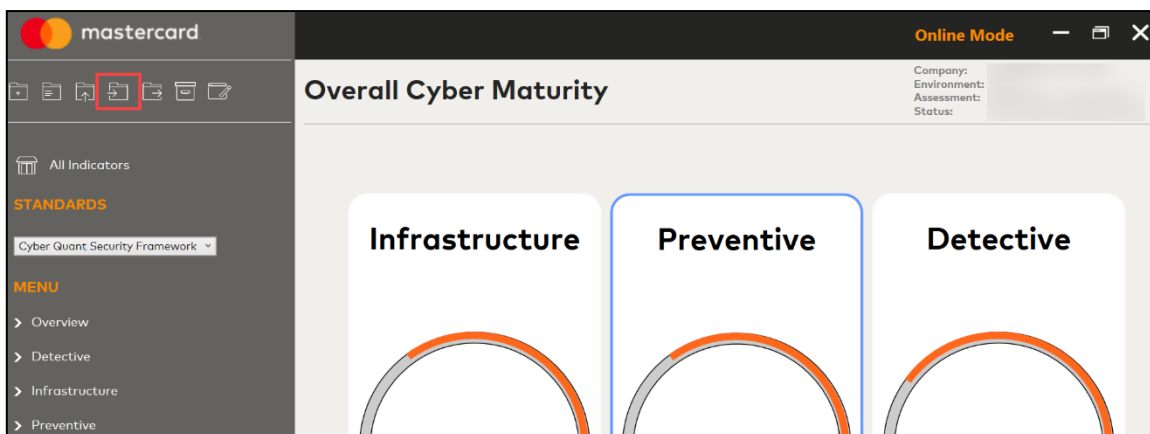
Environment:

Assessment:

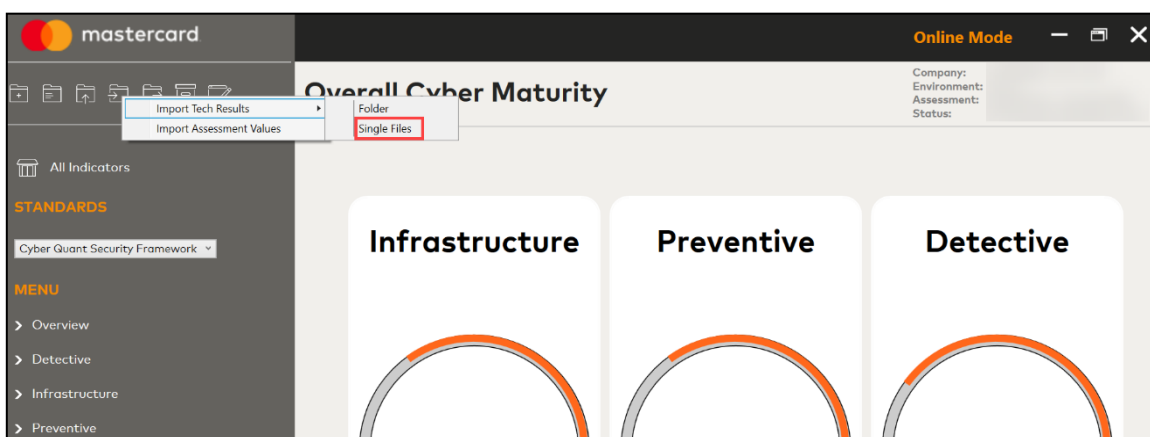
Open



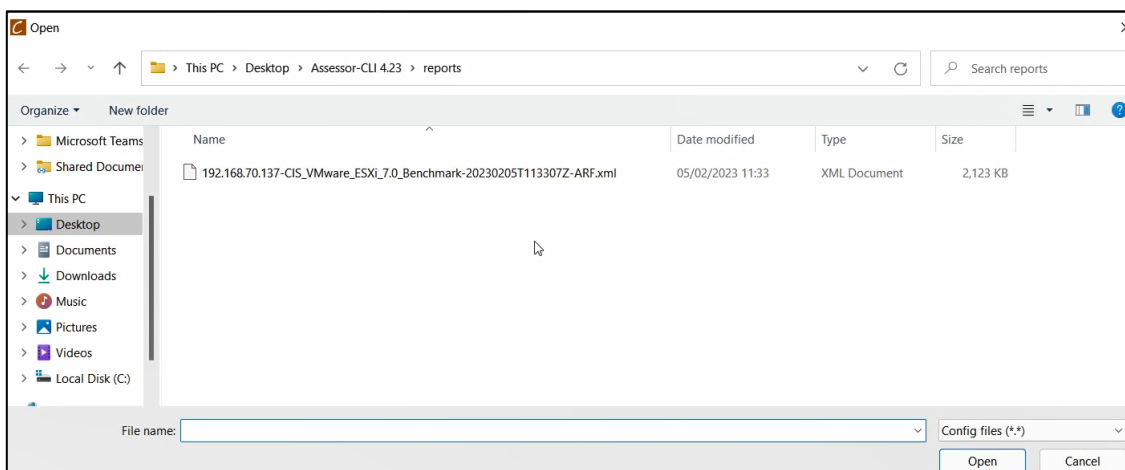
5. Click on the "Import Files" icon on the top left of the screen.



6. Hover over "Import Tech Results", click "Choose Single File".

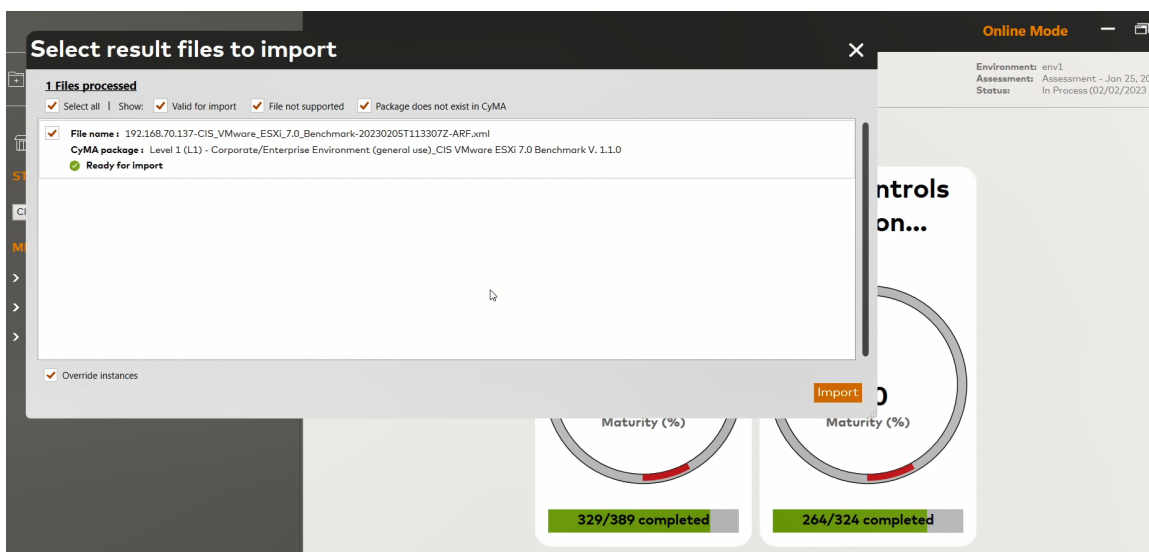


7. Browse to the dedicated folder where the configuration files are stored:

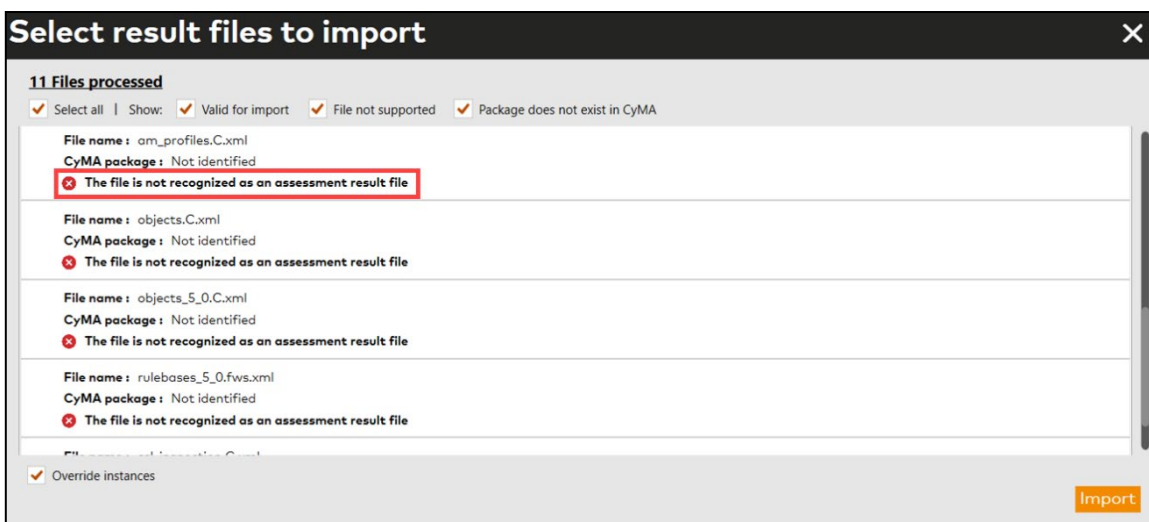




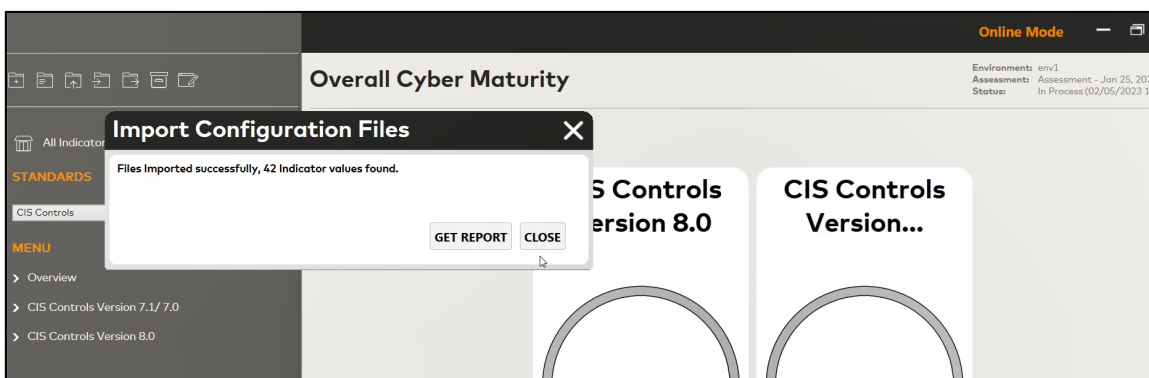
- Once the report is open, select the file and click "Import". The following screen displays information regarding import errors and packages associated with the imported files.



A red mark is displayed below the package in case of an error.



- Import configuration files confirmation.



- Review the assessment results.



8. Appendices

Appendix A: VMware.PowerCLI Module Installation

1. Open PowerShell with administrative permissions and execute the command: `Install-Module VMware.PowerCLI`

```
PS C:\WINDOWS\system32> Install-Module VMware.PowerCLI

Untrusted repository
You are installing the modules from an untrusted repository. If you trust this repository, change its
InstallationPolicy value by running the Set-PSRepository cmdlet. Are you sure you want to install the modules from
'PSGallery'?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"): y
PS C:\WINDOWS\system32> _
```

2. Install PowerShell VMware.VimAutomation.Core module using the following command:

`Install-Module -Name VMware.VimAutomation.Core`

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\WINDOWS\system32> java -version
java version "1.8.0_361"
Java(TM) SE Runtime Environment (build 1.8.0_361-b09)
Java HotSpot(TM) 64-Bit Server VM (build 25.361-b09, mixed mode)
PS C:\WINDOWS\system32> Install-Module VMware.PowerCLI

Untrusted repository
You are installing the modules from an untrusted repository. If you trust this repository, change its
InstallationPolicy value by running the Set-PSRepository cmdlet. Are you sure you want to install the modules from
'PSGallery'?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"): y
PS C:\WINDOWS\system32> Install-Module -Name VMware.VimAutomation.Core
PS C:\WINDOWS\system32>
```

3. To complete an assessment, CIS-CAT Pro utilizes PowerCLI. It is required that `LanguageMode` is not configured to `ConstrainedLanguage`. When configured with `ConstrainedLanguage`, assessor functions will be blocked as CIS-CAT PowerShell scripts will be unable to be dot-sourced. Verify `LanguageMode` using this command: `$ExecutionContext.SessionState.LanguageMode`



The desired output should be:

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\WINDOWS\system32> java -version
java version "1.8.0_361"
Java(TM) SE Runtime Environment (build 1.8.0_361-b09)
Java HotSpot(TM) 64-Bit Server VM (build 25.361-b09, mixed mode)
PS C:\WINDOWS\system32> Install-Module VMware.PowerCLI

Untrusted repository
You are installing the modules from an untrusted repository. If you trust this repository, change its
InstallationPolicy value by running the Set-PSRepository cmdlet. Are you sure you want to install the modules from
'PSGallery'?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"): y
PS C:\WINDOWS\system32> Install-Module -Name VMware.VimAutomation.Core
PS C:\WINDOWS\system32> $ExecutionContext.SessionState.LanguageMode
FullLanguage
PS C:\WINDOWS\system32>
```