# **Chapter 9**

# Installation Validation Tool for Installation Qualification (IQ)

## Introduction

The Installation Validation Tool for Installation Qualification (IQ) may be used to validate that the software is installed completely and correctly. The tool can also be used to verify that no files have been changed since the software was installed.

The Installation Validation Tool compares all **PASS** installation files against factory requirements and reports if any required files or folders are missing or invalid. Summary and detailed validation reports are created and displayed in the Output Window. If all files and folders pass installation qualification, then you can be certain that the software is installed correctly.

If at any time you begin to experience any type of issues with the software, we suggest that you run the Installation Validation Tool to verify that all of the required files are present and that none have changed or become corrupted.

# **The Tool Window**

# **Loading the Tool Window**

You can load the Installation Validation Tool for Installation Qualification (IQ) window from within **PASS** using the menu by selecting **Tools**, then **Validation and Qualification** (**IQ/OQ**), and then clicking **Installation Validation Tool for Installation Qualification** (**IQ**).

The tool window can also be loaded from the PASS Home window procedure tree by selecting **Tools**.

# **Tool Window Options**

The following components are included on the Installation Validation Tool for Installation Qualification (IQ) window.

# **Select Installation Validation Reports to Display**

Various checkboxes are available that allow you to limit the output in the report. These choices do not affect the validation performed—only the output. If you choose to include the files and folders that passed validation in the report, the output may be quite long.

#### Installation Validation Tool for Installation Qualification (IQ)

#### **Run Validation**

Click the Validate Installation button to run the validation. The tool runs through each file in the installation, so this step may take some time depending on the speed of your computer.

#### **Installation Validation Progress**

This box displays the progress and information about the validation as it proceeds. You can copy the information from this box after selecting contents by right-clicking and selecting "Copy" or by typing Ctrl-C on the keyboard.

## **File Validation**

**PASS** installation files are first validated for existence and then for integrity using unique **checksum** values. A checksum (sometimes known as a hash sum) is a short cryptographic value derived from a block of digital data. Each file has a unique checksum signature that is recorded when the files are packaged during creation of the setup file. If the installation is successful and all files are as they were when they were packaged, the checksum value will match the checksum value that was originally recorded. The installation validation tool first determines whether each required file is present and then compares the actual and expected official checksum values to determine the integrity of the file.

#### **Validation Results**

The three possible validation results for each file are

#### Missing

A file is reported as "Missing" if it does not exist. If any files are reported as missing, you should repair the installation using the setup file.

#### Failed

A file is reported as "Failed" if it exists but it's actual checksum does not match the official checksum. If any files are reported as failed, you should first delete the file(s) and then repair the installation using the setup file.

#### Passed

A file is reported as "Passed" if it exists and it's actual and official checksum values match exactly.

#### **Folder Validation**

**PASS** installation folders are validated for existence. Folders do not have checksum values.

#### **Validation Results**

The two possible validation results for each folder are

#### Missing

A folder is reported as "Missing" if it does not exist. If any folders are reported as missing, you should repair the installation using the setup file.

#### Passed

A folder is reported as "Passed" if it exists.

# **Reports**

The results of the installation qualification are presented in various reports created in the Output Window. The reports are always formatted in the landscape page orientation and the lists are output in small font because of the length of file names (the page orientation and small font size cannot be changed—they override the system orientation and font size).

# **Report for Complete Installation with No Errors**

The following report is representative of a valid, complete, and functioning **PASS** software installation.

Product Version stallation Path called in Source File (2486) NCSSVPASS ####\ (24) Program Files (x86) NCSSVPASS ####\ (	PASS #### Installation	n Qualificatio	n (IQ) Results Summa	nry —————		
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Drganization XYZ Inc. License Kye XXXXX-XXXXX-XXXXX-XXXXX-1A2B License Type Professional License Files Checked 1973 Passed 1973/1973 (00%) Alissing 0/1973 (0%) Alissing 0/5 (0%) Alissing 10/5 (0%) Alissing 10/5 (0%) Alissing Files  No Required Files Failed Checksum Validation]  Alissing Files  No Required Folders were Missing]  Alissing Folders  No Required Folders were Missing]  Passed Files  File  Circogram Files (x86) NICSSIPASS #### Passed xit ### Fassed xit xell of the passed xit ### Fassed xit xell of the passed xell of the p	Product Version Installation Path Validation Source File Computer Name OS Name	C:\Program C:\Program JOHN-DES	Files (x86)\NCSS\PAS			
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#### Installation Validation Tool for Installation Qualification (IQ)

# Folder C:\Users\John\AppData\Roaming\NCSS\PASS ####\Settings\ C:\Users\John\AppData\Roaming\NCSS\PASS ####Temp\ C:\Users\John\AppData\Roaming\NCSS\PASS ####Temp\ C:\Users\John\Documents\PASS ###\*\Procedure Templates\Autosave\ C:\Users\John\Documents\PASS ###\*\Procedure Templates\Autosave\ C:\Users\John\Documents\PASS ####\Macros\

The first report provides information about your computer, your **PASS** installation and license information, and a summary of the file and folder validation results. The reports that follow list any files that failed checksum validation, any files or folders that were missing, a list of all files that passed checksum validation, and a list of required folders that are present. In this case, no files were missing or invalid and no folders were missing.

# **Report for Corrupted Installation with Various Errors**

The following report is representative of a corrupted **PASS** installation with several errors.

PASS #### Installatio	n Qualificati	on (IQ) Results Summ	ary ————	<del></del>				
Date & Time	1/01/####	8:38:03 AM						
Product Version Installation Path Validation Source File Computer Name OS Name	C:\Progran	##.0.1 C:\Program Files (x86)\NCSS\PASS ####\ C:\Program Files (x86)\NCSS\PASS ####\PASS #### File List.txt JANE-DESKTOP Microsoft Windows 10 Pro						
Licensed User Organization License Key License Type								
Files Checked Passed Failed Missing	1973 1940/1973 1/1973 32/1973	(98.33%) (0.05%) (1.62%)						
Folders Checked Passed Missing	5 4/5 1/5	(80%) (20%)						
Failed Files  File C:\Program Files (x86)\NCSS\F	PASS ####\PASS	####.exe	Official Checksum Zccbx7QsqGr9YypZlAnglb1pBMw=	Actual Checksum CZIIfQMD16zK1devkijBUdl6DYA=				
Missing Files ———								
File C\Program Files (x86)\NCSS\PASS ####\NCSS1.dll C\Program Files (x86)\NCSS\PASS ####\PASS #### Help System.exe C\Program Files (x86)\NCSS\PASS ####\Extreme.Numerics.Net35.dll C\Program Files (x86)\NCSS\PASS ####\Extreme.Numerics.Net35.dll C\Program Files (x86)\NCSS\PASS ####\FarPoint.CalcEngine.dll			Official Checksum  9kVKNwml/h9TsqAfawhbswQxitA= MP1qIRxiUWg0xM610Ey074Znvql= 5yMUBXL+OTX8RUOT2Xye5kWUIBY= iIAQdvxJnjvBbcf0sA+VV6m8Aeds= rR8Zq2HnNOFkuwNS5dD4RbsVx8w= .	Actual Checksum				
:			:					
[Report Continues]								
Missing Folders ——								
Folder C:\Users\Jane\Documents\PAS								

#### Installation Validation Tool for Installation Qualification (IQ)

File C:\Program Files (x86)\NCSS\PASS ####\HelpIndex\PASS####_ChapterIndex.txt C:\Program Files (x86)\NCSS\PASS ####\HelpIndex\PASS####_GroupIndex.txt C:\Program Files (x86)\NCSS\PASS ####\HelpIndex\PASS####_Index.txt	Official Checksum PexQ02XfkfMXRRqxxYkwXHC7gVE= ccdLOoP5YJJWdCWMXegYH0/O1fE= fO9joEO8AUfSbrqtzizQ0IGaLnM=	Actual Checksum  PexQ02XfkfMXRRqxxYkwXHC7gVE= ccdLOoP5YJJWdCWMXegYH0/01fE= f09joE08AUfSbrqtzizQ0IGaLnM=
	•	•
[Report Continues for Several Pages]		
Passed Folders ————————————————————————————————————		
Folder C:\Users\Jane\AppData\Roaming\NCSS\PASS ####\Settings\ C:\Users\Jane\AppData\Roaming\NCSS\PASS ####\Temp\ C:\Users\Jane\AppData\Roaming\NCSS\PASS ####\Temp\ C:\Users\Jane\AppData\Roaming\NCSS\PASS ####\Temp\txjunk_Images\ C:\Users\Jane\Documents\PASS ####\Procedure Templates\Autosave\		

In the case of this **PASS** installation, there is one file with an invalid checksum, 32 missing files, and 1 missing folder. The user should repair the installation and run the validation tool again.