NI Vision Builder for Automated Inspection 2014 Readme

October 2014

This file contains important information about National Instruments Vision Builder for Automated Inspection and is organized into the following sections:

- System Requirements
- Installation Instructions
- Automating the Installation of NI Products
- Activation Instructions
- New Features
- Updates and Improvements
- Remote Target Support
- Software Requirements for Migrating an Inspection to LabVIEW
- PC-Based Image Acquisition and I/O Support
- Known Issues
- Additional Resources

Refer to the Machine Vision Web site at ni.com/vision for the latest information about the NI Vision Builder for Automated Inspection.

System Requirements

To configure inspections using Vision Builder AI, the host machine must meet the following requirements:

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Pentium 4/M or equivalent</td>
</tr>
<tr>
<td></td>
<td>Core Duo or equivalent</td>
</tr>
<tr>
<td>Memory</td>
<td>512 MB RAM</td>
</tr>
<tr>
<td></td>
<td>1 GB RAM</td>
</tr>
<tr>
<td>Display</td>
<td>1,024 × 768 resolution video adapter with a 24- or 32-bit display</td>
</tr>
<tr>
<td></td>
<td>1,280 × 1,024 resolution video adapter with a 24- or 32-bit display</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 8.1 (32- and 64-bit)</td>
</tr>
<tr>
<td></td>
<td>Windows 8 (32- and 64-bit)</td>
</tr>
<tr>
<td></td>
<td>Windows 7 (32- and 64-bit)</td>
</tr>
<tr>
<td></td>
<td>Windows Vista (32- and 64-bit)</td>
</tr>
<tr>
<td></td>
<td>Windows XP SP3 (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Windows Server 2012 R2 (64-bit)</td>
</tr>
<tr>
<td></td>
<td>Windows Server 2008 R2 (64-bit)</td>
</tr>
<tr>
<td></td>
<td>Windows Server 2003 R2 (32-bit)</td>
</tr>
<tr>
<td>Browser</td>
<td>Microsoft Internet Explorer 6.0 or later</td>
</tr>
<tr>
<td>Hard Disk Space</td>
<td>1 GB</td>
</tr>
</tbody>
</table>

Installation Instructions

Complete the following steps to install Vision Builder AI:

1. Insert the Vision Builder AI DVD into your DVD-ROM drive. If the DVD does not run automatically, open Windows Explorer, right-click the DVD drive icon, and select AutoPlay.
3. Vision Builder AI prompts you to enter your user information. Select one of the following options:
   - Install this product using the following serial number
   - Install this product for evaluation
   If you choose to enter a serial number, enter the serial number found on your Certificate of Ownership card. Vision Builder AI automatically uses this serial number when you run the NI Activation Wizard.
4. Continue to follow the instructions on the screen.

Automating the Installation of NI Products

You can automate the installation of most NI products using command-line arguments to suppress some or all of the installer user interface and dialog boxes. However, starting with the August 2012 releases (products using NI Installers version 3.1 or later), you may need to perform additional steps before or during a silent installation of NI software.

If the NI product you are installing uses Microsoft .NET 4.0, the .NET installer may run before any NI software installs and may require a reboot before the installation of NI software begins. To avoid a .NET reboot, install .NET 4.0 separately before you install NI software.

For more information, refer to the following KnowledgeBase articles:
- For more information on silent installations of suited NI products, such as NI Developer Suite, refer to KB 4GGGDQH0, Automating the Installation of a Suited Installer.
- To determine what version of NI Installers your product contains, refer to KB 4CJDR18M, How Can I Determine the Type and Version of My National Instruments Installer?

Activation Instructions

If you do not activate a valid license, Vision Builder AI runs in evaluation mode and continues to prompt you to activate a license on each launch. At the end of the evaluation period you must activate a Vision Builder AI license to continue using the product.

Note: While Vision Builder AI is in Evaluation mode, all features are available except Migrate Inspection to LabVIEW.

Complete the following steps to activate the Vision Builder AI license:

1. Launch Vision Builder AI.
2. Click Yes when prompted to activate Vision Builder AI.
3. Ensure that Automatically activate through a secure Internet connection is selected, and click Next.
4. Enter your serial number, and click Next.
5. Enter your registration information, and click Next.
6. You can enter an email address to receive a copy of the activation code for your records.

New Features

The following list describes the changes and enhancements in Vision Builder AI 2014:

- Added support for the NI CVS-1458RT and NI CVS-1459RT
  The NI CVS-1458RT GigE Vision and NI CVS-1459RT USB3 compact vision systems are now supported.
- Updated Find Circular Edge Step
  The Find Circular Edge step has been updated to allow logging of all edges found by each search line.
- Updated Caliper Step
**Updated Acquire Image (1394, GigE, or USB) Step**
The Acquire Image (1394, GigE, or USB) step outputs an image acquisition timestamp string result for cameras that are synchronized with an IEEE 1588 timebase.

**Remote Target Support**
You can use Vision Builder AI to remotely configure and control a supported remote target. Vision Builder AI supports the following remote targets:
- **NI 1732, 1752, and 1754 Smart Cameras**
- **NI 177x Smart Cameras**
- **NI CVS-1457RT, 1458RT, and 1459RT Compact Vision Systems**
- **NI EVS-1463RT and 1464RT Embedded Vision Systems**

**Notes:**
- Vision Builder AI no longer provides support for the NI 1712, 1722, 1742, 1744, 1762, and 1764 Smart Cameras, and NI CVS-1454, 1455, and 1456 Compact Vision Systems.
- To use Vision Builder AI with a remote target, you must use Vision Builder AI to configure the remote target. For more information about using Vision Builder AI to configure the remote target, refer to the documentation included with the remote target.
- National Instruments recommends using WebDAV to transfer files to and from a real-time target. For more information on using WebDAV to transfer files to and from a remote target, go to ni.com/info and enter the info code WebDAVTransfer.

The following table illustrates when a remote target requires you to install driver software on the development computer.

<table>
<thead>
<tr>
<th>Remote Target or Camera Connected to a Remote Target</th>
<th>Requires Driver Software Installed on Development Computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI Smart Camera</td>
<td>No</td>
</tr>
<tr>
<td>IEEE 1394</td>
<td>No</td>
</tr>
<tr>
<td>GigE Vision</td>
<td>No</td>
</tr>
<tr>
<td>Camera Link</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Software Requirements for Migrating an Inspection to LabVIEW**
To migrate an inspection to LabVIEW, Vision Builder AI 2014 requires LabVIEW 2014 or later and NI Vision Development Module 2014 or later.

Some Vision Builder AI steps require additional software to successfully migrate an inspection to LabVIEW.
- **OPC UA** requires the Datalogging and Supervisory Control Module for LabVIEW.
- **Ethernet/IP or Ethernet/IP adapter** require NI-Industrial Communications for Ethernet/IP.

Refer to the following table for software requirements to migrate specific steps.

<table>
<thead>
<tr>
<th>Step Name</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquire Image</td>
<td>NI-IMAQ 4.6.4 or later</td>
</tr>
<tr>
<td>Acquire Image (IEEE 1394)</td>
<td>Legacy NI-IMAQ for IEEE 1394 Cameras 2.4 or later</td>
</tr>
<tr>
<td>Acquire Image (Smart Camera)</td>
<td>NI-IMAQdx 3.8.1 or later</td>
</tr>
<tr>
<td>Acquire Image (IEEE 1394, GigE, or USB)</td>
<td>NI-IMAQdx 3.8.1 or later (excluding NI 177x Smart Cameras) or NI-IMAQdx 3.8.1 or later (NI 177x Smart Cameras only)</td>
</tr>
<tr>
<td>Generate Pulse (Vision RIO)</td>
<td>NI-IMAQ 1/O 2.6 or later</td>
</tr>
<tr>
<td>Read/Write I/O (NI-DAQmx)</td>
<td>NI-DAQmx 9.3.5 or later</td>
</tr>
<tr>
<td>Read/Write I/O (Vision RIO)</td>
<td>NI-IMAQ 1/O 2.6 or later</td>
</tr>
</tbody>
</table>

**Software Requirements for the Run LabVIEW VI Step**
The Run LabVIEW VI step in Vision Builder AI 2014 supports VI’s saved in LabVIEW 2014 or later.

**PC-Based Image Acquisition and I/O Support**
Vision Builder AI supports the following types of image acquisition and I/O devices:
- **National Instruments image acquisition devices**
- **IEEE 1394 industrial digital cameras**
- **GigE Vision cameras**
If you are using the Windows Firewall, you may notice the following behavior:

1. Launch MAX.
2. In the MAX configuration tree, expand Devices and Interfaces to obtain a list of installed devices.
3. Expand NI-IMAQdx Devices to obtain a list of available cameras.
4. Right-click the camera and select Driver»NI-IMAQdx IIDC Digital Camera.

NI Analog and Digital I/O Devices

This version of Vision Builder AI supports digital and analog I/O from any National Instruments data acquisition (DAQ) device using NI-DAQmx Global Virtual Channels. To support NI DAQ devices, Vision Builder AI requires NI-DAQmx 8.0 or later.

Serial Communication

To support serial communication, Vision Builder AI requires NI-Visa 2.6.0 or later, which is included with Vision Builder AI. You can use the serial ports built into the PC or one of the following NI serial interfaces: NI PCI-232, NI PXI-8420, or NI PXI-8422. You do not need to install NI-Visa to use the serial port on a remote target.

Deployment Policy for Vision Builder AI

Pursuant to the National Instruments Software License Agreement, Vision Builder AI software is licensed to run on only one machine. Deployed applications that use Vision Builder AI require that Vision Builder AI be installed and licensed on each host machine. Therefore, you must purchase a separate Vision Builder AI license for each host machine. For more information, refer to the enclosed National Instruments Software License Agreement or visit ni.com/legal/license.

Licensing Options

Vision Builder AI offers the following licensing options:

- **Vision Builder AI Full-Featured** (778649-01)—Allows full access to all Vision Builder AI features, which can be used to configure, benchmark, and deploy inspections. This license does not include the Vision Builder AI Development Toolkit.
- **Vision Builder AI Run-Time** (779799-03)—Allows you to deploy existing inspections to a host machine and modify the control values for steps in an inspection. This license does not allow you to add steps to or remove steps from an inspection.
- **Vision Builder AI Development Toolkit** (779343-03)—Licenses only the Vision Builder AI Development Toolkit, which allows you to create custom steps for use in any Vision Builder AI application.

Known Issues

You can access the software and documentation known issues list online. Refer to the National Instruments Web site for an up-to-date list of known issues in the NI Vision Builder for Automated Inspection.

- Using a TCP slave device with the Vision Builder AI API and the main Vision Builder AI application simultaneously can cause the device to stop communicating.
- Vision Builder AI behaves unexpectedly or may not display an inspection image if the image is large and your computer is low on available memory.
- If you configure a step to pass or fail based on pixel distances and subsequently calibrate the image, the step compares calibrated values against pixel-based limits.
- After connecting to a remote target and starting an inspection in the Vision Builder AI Configuration interface, if you lose communication and reconnect to the target, the inspection opens in the Vision Builder AI Inspection interface.
- Vision Builder AI cannot disable Ethernet Port 1 on the NI CVS-1458RT.
- NI-DAQmx steps are not available on the NI CVS-1458RT and 1459RT.

Windows Firewall

If you are using Windows, you may notice the following behaviors:

- **Microsoft Windows 7, Windows Vista, Windows Server 2008, Windows Server 2003, or Windows XP with Service Pack 2 (SP2) or later installed**—When you launch Vision Builder AI, a dialog box may prompt you to allow Vision Builder AI to receive information over the network. Depending on your operating system, select Allow access or Unblock this program so that Vision Builder AI can communicate with your remote target.

Additional Resources

How do I get started?

Read the NI Vision Builder for Automated Inspection Tutorial, which provides exercises for learning how to perform basic machine vision techniques using Vision Builder AI.

Where can I find reference information?

Reference information for Vision Builder AI is available from within Vision Builder AI by clicking the Show Context Help button, or selecting Start»All Programs»National Instruments»Vision Builder AI»Documentation.

The following documents are provided with Vision Builder AI as online help:

- **NI Vision Concepts Help**—Contains basic concepts of image analysis, image processing, and machine vision. This document also contains in-depth discussions about imaging functions for advanced users.
- **NI Vision Builder for Automated Inspection: Configuration Help**—Contains information about the Vision Builder AI Configuration interface, managing inspections and images, and creating steps for an inspection.
- **NI Vision Builder for Automated Inspection: Inspection Help**—Contains information about using the Vision Builder AI Inspection interface to run inspections.
- **NI Vision Builder for Automated Inspection: ActiveX Component Reference Help**—Contains information about the ActiveX objects available to embed Vision Builder AI inspections into ActiveX applications.

Use the Search tab in the help files to quickly locate specific information. For information about how to use the search functionality, refer to the Using Help=Searching Help topic in the help file.

The following documents are provided with Vision Builder AI as Adobe PDF documents:

- **Vision Builder for Automated Inspection Tutorial**—Describes Vision Builder for Automated Inspection and provides step-by-step instructions for solving common visual inspection tasks, such as inspection, gauging, part presence, guidance, and counting.
- **NI Vision Builder for Automated Inspection Development Toolkit Tutorial**—Contains instructions for using LabVIEW.
Where can I find examples?

Examples of common Vision Builder AI inspections are installed to the <Vision Builder AI>\Examples directory, where <Vision Builder AI> is the location to which you installed Vision Builder AI.

Where else can I go for Vision Builder AI information?

Visit ni.com/vision and the NI Developer Zone at ni.com/zone for the most up-to-date information about Vision Builder AI.

How to Use NI Software with Microsoft Windows 8

When you install National Instruments software on Microsoft Windows 8, you will notice a few additional tiles on the Start screen, including shortcuts to NI application software products such as NI LabVIEW, Measurement & Automation Explorer (MAX), and the new NI Launcher.

Using NI Launcher

NI Launcher helps you find and launch installed NI products. It provides you with a method of finding NI products similar to the Start menu in previous versions of Microsoft Windows. To use NI Launcher, click the NI Launcher tile on the Start screen. NI Launcher launches the desktop and opens a menu containing a list of NI products. Click any NI product to launch it.

Note MAX does not appear as a desktop shortcut when installed on Microsoft Windows 8. You can launch MAX either from the Start screen or from within NI Launcher.

Pinning Frequently Used Applications

For convenience, you can pin your most-used NI applications, such as MAX, to either the Start screen or the Taskbar on the desktop, as necessary:

<table>
<thead>
<tr>
<th>Current Application</th>
<th>Icon Location</th>
<th>Pin to Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 8 Desktop</td>
<td>Desktop</td>
<td>Right-click application and select Pin to Taskbar</td>
</tr>
<tr>
<td>Windows 8 Desktop</td>
<td>Start screen</td>
<td>Right-click application and select Pin to Start</td>
</tr>
<tr>
<td>Windows 8 Start screen</td>
<td>Desktop</td>
<td>Right-click application and select Pin to taskbar from the menu bar on the bottom of the screen</td>
</tr>
</tbody>
</table>

Finding All Programs

If you want to find a particular application or related files, such as documentation files, from the Start screen, you can access all installed files by right-clicking anywhere on the Start screen and selecting All apps. A list of all installed software and related files appears, in alphabetical order by creator or type.

For more information about NI support for Windows 8, visit ni.com/windows8.


National Instruments Vision Builder for Automated Inspection will drop support for Microsoft Windows Vista, Windows XP, and Windows Server 2003 as of July 1, 2016. Versions of Vision Builder for Automated Inspection that ship after July 1, 2016 will not install or run on Windows Vista, Windows XP, or Windows Server 2003. For detailed information about NI application software product life cycles, visit ni.com/info and enter one of the following Info Codes:

<table>
<thead>
<tr>
<th>Product</th>
<th>Info Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI LabVIEW</td>
<td>lifecycle</td>
</tr>
<tr>
<td>NI LabWindows™/CVI™</td>
<td>cvi_lifecycle</td>
</tr>
<tr>
<td>NI Measurement Studio</td>
<td>mstudiolifecycle</td>
</tr>
<tr>
<td>NI TestStand</td>
<td>tscp</td>
</tr>
<tr>
<td>NI DIAdem</td>
<td>dtcp</td>
</tr>
<tr>
<td>NI SignalExpress</td>
<td>selkp</td>
</tr>
<tr>
<td>NI VeriStand</td>
<td>revsiflifecycle</td>
</tr>
</tbody>
</table>

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- Review <National Instruments>\Legal Information.txt for information on including legal information in installers built with NI products.

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