

## RELEASE NOTES

# NI Vision 8.2 Development Module

This document outlines new functionality, system requirements, installation procedures, and descriptions of the documentation included with the NI Vision Development Module.

The NI Vision Development Module is for engineers and scientists who are developing machine vision and scientific imaging applications. The NI Vision Development Module includes NI Vision and NI Vision Assistant. NI Vision is a library of powerful functions for image processing, and is available for LabVIEW, LabWindows™/CVI™, and Microsoft Visual Basic. NI Vision Assistant is an interactive environment for developers who need to quickly prototype vision applications without programming. In addition, the NI Vision Development Module ships with the NI Vision Acquisition Software CD, which includes National Instruments driver software for controlling image acquisition products.

Refer to the `readme.rtf` file, included with the software, for the most up-to-date information about the NI Vision Development Module.

## What's New in the NI Vision Development Module

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This section describes the new features available in the NI Vision Development Module.

- Golden Template Comparison—Functions for comparing the pixel intensities of an image under inspection to a golden template. A golden template is an image containing an ideal representation of an object under inspection.
- Data Matrix—Enhancements in speed and accuracy and functions that output the ISO 16022 (AIM) grade for a given Data Matrix barcode.
- Geometric Matching Enhancements:
  - Calibrated Images—Uses calibration information attached to the inspection image to return the location, orientation, and angle of a match in pixels and real-world units.
  - Multiple Template Matching—Simultaneously locate multiple grayscale templates within a single grayscale image.

- Shape Detection—Functions for detecting circles, ellipses, lines, and rectangles within images.
- Curve Extraction—Functions for finding curves in a grayscale image.
- Watershed Transform—Partitions an image based on the topographic surface of the image. The image is separated into non-overlapping segments with each segment containing a unique particle.
- Locally Adaptive Threshold (Local Thresholding)—Creates a binary image by segmenting a grayscale image into a particle region and a background region, based on the specified local thresholding method.
- Optical Character Verification—An application for verifying the accuracy of characters within an image.
- JPEG2000 File I/O—Support for reading and writing JPEG2000 files.
- Support for LabVIEW 8.2.



**Note** The NI Vision Development Module supports interoperability between the NI Vision ActiveX controls and Microsoft Visual Studio .NET 2003. Refer to the `readme.rtf` file for more information.

## What's New in NI Vision Assistant

NI Vision Assistant includes the following additions:

- Run LabVIEW VI step—Allows users to call custom LabVIEW VIs from within Vision Assistant scripts.
- Image Overlay step—Overlay figures, text, and bitmaps onto an image without destroying the image data.
- Image Annotation—Save data with an image file.
- Support for 64-bit RGB images.
- Japanese language support—NI Vision Assistant software and documentation are available in Japanese.

## Minimum System Requirements

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The development computer must meet the following minimum system requirements to run the NI Vision Development Module:

- 233 MHz Pentium-class processor. Using a Pentium III or Celeron 600 MHz or equivalent is recommended
  - Microsoft Windows 2000/XP
  - 1024 × 768 resolution video adapter; 65,536 colors, 16-bit or higher
- NI Vision Assistant is best displayed using the Windows default font size with the system DPI set to 96 DPI.

- 128 MB RAM; 256 MB recommended
- 300 MB of free hard disk space



**Note** If you are acquiring images with NI Vision Assistant, the system must have National Instruments image acquisition hardware and either NI-IMAQ 3.0 or later or NI-IMAQ for IEEE 1394 Cameras 1.5 or later installed.



**Note** If you want to take advantage of the LabVIEW Real-Time support, the remote system must meet additional system requirements. Refer to the *NI Vision Hardware Help* for information about LabVIEW Real-Time and remote system requirements.

## Installing the Vision Development Module

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Complete the following steps to install the NI Vision Development Module.

1. Insert the NI Vision Development Module CD in the CD-ROM drive.
2. If you do not have autorun enabled, double-click `autorun.exe`. If you have autorun enabled, `autorun.exe` runs automatically.
3. Follow the onscreen instructions.

By default, the NI Vision Development Module installation program creates a new folder, `C:\Program Files\National Instruments\Vision`, that contains the following items:

- `Run-Time Engine` folder—Run-time support for deploying NI Vision applications
- `Documentation` folder—NI Vision user manuals, VI and function reference help, and other documents in the *NI Vision Development Module Bookshelf*
- `dotNET` folder—ActiveX interoperability libraries
- `Examples` folder—Example programs for C, Visual Basic, and Visual Basic .NET
- `Images` folder—Images used by example programs
- `Include` folder—Header files for C/C++
- `Lib` folder—Import libraries for C/C++
- `OCR` folder—Common OCR character sets
- `Source` folder—Source code for the NI Vision library
- `Utility` folder—Training interface program files
- `readme.rtf`—Late-breaking information about NI Vision

By default, the NI Vision Assistant installation program creates a new folder, `C:\Program Files\National Instruments\Vision Assistant 8.0`, that contains the following items:

- `Vision Assistant.exe`, function libraries, and other related program files
- `CG` folder—LabVIEW VI and C code creation support files
- `Examples` folder—Images and scripts that you must have to complete the example tutorials
- `Help` folder—Online help files
- `manuals` folder—PDF versions of the NI Vision Assistant documentation
- `Plugins` folder—Image processing functions
- `resources` folder—Resource files
- `solutions` folder—Example images and scripts
- `readme.rtf`—Late-breaking information about NI Vision Assistant

## Licensing Your Vision Software

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When you run the NI Vision Development Module for the first time, it will prompt you to activate a license for the product. If you do not activate a valid license, the Vision Development Module will run in Evaluation Mode and continue to prompt you to activate a license on each subsequent launch.

The following licensing option is available:

- NI Vision 8.2 Development Module (777859-03)—Licenses NI Vision, NI Vision Assistant, and NI Vision Acquisition Software.

Complete the following steps to activate the NI Vision license through an Internet connection.

1. Run the product you want to license.
2. Click **Yes** when prompted to interactively activate your product.
3. Ensure that **Automatically activate through a secure Internet connection** is selected, and click **Next**.
4. Enter the serial number for the product, and click **Next**.
5. Enter your registration information, and click **Next**.
6. You can enter your email address to receive a copy of your activation code for your records.

The NI Vision Development Module is now activated.

# Deploying Vision Applications

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Deployment refers to developing an application so that it can be distributed, or deployed, on a different computer than the one on which the application was developed. The NI Vision Development Module provides everything you need to deploy custom NI Vision applications to target computers. The NI Vision Development Module provides the following options:

- The ability to create NI Vision Run-Time Engine installers, which integrate with the LabVIEW Application Builder, applications built in LabWindows/CVI, or a custom installer.
- The ability to install the NI Vision Run-Time Engine directly from the NI Vision Development Module CD.
- One NI Vision Deployment License, which allows you to install a custom application on a single machine.

You can install a number of different versions of the NI Vision Run-Time Engine. The NI Vision Development Module CD contains run-time engine installers for NI Vision 5.0, 6.0, 6.1, 7.0, 7.1, 8.0, and 8.2. Visit the **Drivers and Updates** section of [ni.com](http://ni.com) to download free software upgrades for NI Vision and the NI Vision Run-Time installers.

## Purchasing NI Vision Deployment Licenses

You must purchase an NI Vision Deployment License (part number 778044-00) for each target machine onto which you want to install your custom NI Vision application, even if you install the NI Vision Run-Time Engine directly from the NI Vision Development Module CD. The NI Vision Development Module CD ships with one deployment license. Contact a National Instruments sales representative or visit [ni.com](http://ni.com) to purchase additional deployment licenses.



**Note** Additional NI Vision Deployment Licenses do not include a CD. To install additional licenses, use the original NI Vision Development Module CD and the license key that National Instruments provides.

## Using the NI Vision Run-Time Engine

You can call the NI Vision Run-Time Engine installer from the application installer. If you create the application installer with the LabVIEW Application Builder or with LabWindows/CVI, you can direct the installer to call the NI Vision Run-Time Engine installer.

Refer to the *LabVIEW Help* for more information about the LabVIEW Application Builder. Refer to the *NI LabWindows/CVI Help* for more information about building and distributing LabWindows/CVI applications.

You can also direct a custom application installer to call the NI Vision Run-Time Engine installer. Refer to the documentation that came with the installer software to learn how to call executables from the custom installer. If you are using a custom installer, call the NI Vision Run-Time Engine installer at the end of the installation procedure because the installer may require the system to be restarted.

To use the NI Vision Run-Time Engine installer, you must add `/qn` as a command line argument to the following run-time engine installers:

- `vision50rte.exe /qn` installs NI Vision 5.0.4 Run-Time Engine
- `vision60rte.exe /qn` installs NI Vision 6.0.6 Run-Time Engine
- `vision61rte.exe /qn` installs NI Vision 6.1.2 Run-Time Engine
- `vision70rte.exe /qn` installs NI Vision 7.0.2 Run-Time Engine
- `vision71rte.exe /qn` installs NI Vision 7.1.1 Run-Time Engine
- `vision80rte.exe /qn` installs NI Vision 8.0.0 Run-Time Engine
- `vision82rte.exe /qn` installs NI Vision 8.2.0 Run-Time Engine

## Distributing LabVIEW Applications

The NI Vision Run-Time Engine installer does not install LabVIEW VIs. If you use the LabVIEW Application Builder to create an application (EXE) or dynamic link library (DLL), the Application Builder automatically includes the VIs used by the application. If you distribute a VI, you must include all subVIs that comprise the top-level VI. You must include the appropriate LabVIEW Run-Time Engine as part of the installation.

Refer to the *LabVIEW Help* for more information about viewing the hierarchy of VIs and for more information about using the LabVIEW Run-Time Engine.

## Distributing LabWindows/CVI Applications

In addition to including the NI Vision Run-Time Engine with the installer, you must include the appropriate LabWindows/CVI Run-Time Engine. Refer to the *NI LabWindows/CVI Help* for more information about creating an executable, creating a dynamic link library, and distributing applications.

# Related Documentation

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In addition to these release notes, the NI Vision Development Module documentation set consists of the following manuals and help files.

- *NI Vision Development Module Bookshelf*—Contains links to all NI Vision documentation. Use this PDF to access and search NI Vision Development Module documents installed on your computer. Select **Start»All Programs»National Instruments»Vision»Documentation»Search the NI Vision Bookshelf** to launch the bookshelf.
- *NI Vision Concepts Manual*—Describes the basic concepts of image analysis, image processing, and machine vision. This document also contains in-depth discussions about imaging functions for advanced users.
- `readme.rtf` file—This file contains last-minute information concerning this release of the NI Vision Development Module.

The following sections describe the documents available for each application development environment.

## NI Vision for LabVIEW Documentation

- *NI Vision for LabVIEW User Manual*—Describes how to create machine vision and image processing applications in LabVIEW using the NI Vision Development Module. This document guides you through tasks beginning with setting up your imaging system to taking measurements. It also describes how to create a real-time vision application using NI Vision and the LabVIEW Real-Time Module.
- *NI Vision for LabVIEW VI Reference Help*—Contains reference information about NI Vision VIs and details about how to use NI Vision with LabVIEW. In LabVIEW, select **Help»NI Vision for LabVIEW Help**.
- NI Example Finder—Illustrates common applications you can create with NI Vision. In LabVIEW, select **Help»Find Examples**. Click the Help button in the NI Example Finder to display the *NI Example Finder Help*.

## NI Vision for LabWindows/CVI Documentation

- *NI Vision for LabWindows/CVI User Manual*—Describes how to create machine vision and image processing applications in LabWindows/CVI using the NI Vision Development Module. This document guides you through tasks beginning with setting up your image system to taking measurements.

- *NI Vision for LabWindows/CVI Function Reference Help*—Contains reference information about NI Vision for LabWindows/CVI functions.
- Function panel help within LabWindows/CVI—Allows you to right-click within each Vision function to access help for that function, control, function class, and function library. Function panels are installed at <CVI>\bin\NIVision.lfp, where <CVI> is the location to which LabWindows/CVI is installed.
- Example programs for specific applications are installed at <CVI>\Samples\Vision.

## NI Vision for Visual Basic Documentation

- *NI Vision for Visual Basic User Manual*—Describes how to create machine vision and image processing applications in Visual Basic using the NI Vision Development Module. This document guides you through tasks beginning with setting up your image system to taking measurements.
- *NI Vision for Visual Basic Reference Help*—Contains reference information about NI Vision for Visual Basic objects and their associated properties, methods, and events. The help is available from within Visual Basic by pressing <F1>.
- Example programs for specific applications are installed at <Vision>\examples\MSVB and <Vision>\examples\MSVB.NET, where <Vision> is the location to which NI Vision is installed.

## NI Vision Assistant Documentation

- *NI Vision Assistant Tutorial*—Describes the NI Vision Assistant software interface and guides you through creating example image processing and machine vision applications.
- *NI Vision Assistant Help*—Contains descriptions of the NI Vision Assistant features and functions and provides instructions for using them. In Vision Assistant, select **Help»Online Help**.
- *NI Classification Training Interface Help*—Contains information about how to use the NI Classification Training Interface to train and classify binary samples. In the NI Classification Training Interface, select **Help»Online Help**.
- *NI OCR Training Interface Help*—Contains information about how to use the NI OCR Training Interface to train characters, save character sets, and verify characters by comparing them to a reference character. In the NI OCR Training Interface, select **Help»Online Help**.

- *NI Vision Template Editor Help*—Contains information about how to use the NI Vision Template Editor to learn and edit template images that you can use with pattern matching, geometric matching, and golden template comparison functions. In the NI Vision Template Editor, select **Help»Online Help**.

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