# Autodesk DirectConnect 2009 R2

# Contents

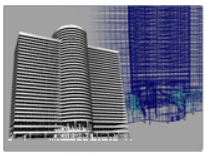
# Autodesk DirectConnect 2009 R2



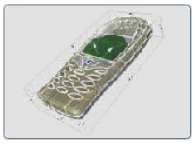






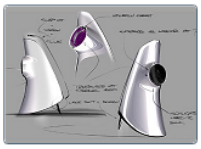






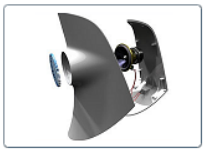


JT (page 48)

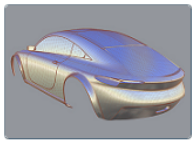


Pro/ENGINEER® (page 51)

SolidWorks® (page 54)



STEP (page 56)



STL (page 58)

UGS NX (page 60)

# What is Autodesk DirectConnect?

# 2

Autodesk® DirectConnect's a family of data translators that lets you import CAD data into:

- Autodesk® AliasStudio™
- Autodesk® Maya®
- Autodesk® Showcase™
- Autodesk® Opticore Realizer
- Autodesk® Opticore Studio

Each Autodesk DirectConnect translator lets you import a specific CAD file format into one or more of the Autodesk software products listed above. In addition, you can export some CAD file formats from some products with Autodesk® DirectConnect.

# Supported products and translators

Click any of the following Autodesk products to find:

- File formats currently supported for import by Autodesk DirectConnect
- The Autodesk products and bit versions that support them at the time of this release
- Which file formats require additional Autodesk DirectConnect licenses on which products

### Autodesk AliasStudio 2009 SP1

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| SolidWorks® (page 54) (1) | ✓ No license required | Not available |
| Pro/ENGINEER® (page 51) | ✓ No license required | ✓ No license required |
| CATIA® V5 (page 30) | ✓ License required | ✓ License required |
| CATIA® V4 (page 33) | ✓ License required | ✓ License required |
| UGS NX (page 60) (Export is supported for AliasStudio.) | ✓ License required | ✓ License required |
| Autodesk Inventor (Requires Inventor or Inventor View. See Autodesk Inventor® (page 36)) | ✓ | ✓ |

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| | No license required | No license required |
| STEP (page 56) | ✓<br>No license required | ✓<br>No license required |
| DWG DXF (page 39) (Export is supported for AliasStudio.) | ✓<br>No license required | ✓<br>No license required |
| IGES (page 41) | ✓<br>No license required | ✓<br>No license required |
| Open Inventor™ | ✓<br>No license required (2) | Not available |
| JT (page 48) (Autodesk DirectConnect for JT can be purchased.) | ✓<br>License required | ✓<br>License required |

**NOTE** (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, or 2008 must be purchased, installed, licensed on the same machine, and running before importing the file.

### Autodesk Showcase 2009 R1

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| SolidWorks® (page 54) (1) | ✓ | Not available |

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| | No license required | |
| Pro/ENGINEER® (page 51) | ✓ No license required | Not available |
| CATIA® V5 (page 30) | ✓ License required | Not available |
| CATIA® V4 (page 33) | Not available | Not available |
| UGS NX (page 60) | ✓ License required | Not available |
| Autodesk Inventor (Requires Inventor or Inventor View. See Autodesk Inventor® (page 36)) | ✓ No license required | Not available |
| Cosmo™ | ✓ No license required | Not available |
| STEP (page 56) | ✓ No license required | Not available |
| STL (page 58) | ✓ | Not available |

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| | No license required | |
| DWG DXF (page 39) | ✓ No license required | Not available |
| IGES (page 41) | ✓ No license required | Not available |
| Open Inventor™ | ✓ No license required | Not available |
| JT (page 48) (Autodesk DirectConnect for JT can be purchased.) | ✓ License required | Not available |

**NOTE** (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, or 2008 must be purchased, installed, licensed on the same machine, and running before importing the file.

### Autodesk Maya 2009

| File Format | Windows 32-bit | Windows 64-bit | MacOS 32-bit |
|---|---|---|---|
| SolidWorks® (page 54) (1) | ✓ SolidWorks license required | ✓ SolidWorks license required | Not available |

| File Format | Windows 32-bit | Windows 64-bit | MacOS 32-bit |
|---|---|---|---|
| Pro/ENGINEER® (page 51) | ✓ No license required | ✓ No license required | Not available |
| UGS NX (page 60) | ✓ License required | ✓ License required | Not available |
| Autodesk Inventor (Requires Inventor or Inventor View. See Autodesk Inventor® (page 36)) | ✓ No license required | ✓ No license required | Not available |
| Cosmo™ | ✓ No license required | Not available | Not available |
| STEP (page 56) | ✓ No license required | ✓ No license required | ✓ No license required |
| STL (page 58) | ✓ No license required | ✓ No license required | ✓ No license required |
| DWG DXF (page 39) | ✓ No license required | ✓ No license required | Not available |

| File Format | Windows 32-bit | Windows 64-bit | MacOS 32-bit |
|---|---|---|---|
| IGES (page 41) | ✓ No license required | ✓ No license required | ✓ No license required |
| Open Inventor™ | ✓ No license required | Not available | Not available |
| JT (page 48) | Not available | Not available | Not available |

**NOTE** (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, or 2008 must be purchased, installed, licensed on the same machine, and running before importing the file.

### Autodesk Opticore Realizer 2009

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| SolidWorks® (page 54) (1) | ✓ No license required | Not available |
| Pro/ENGINEER® (page 51) | ✓ No license required | ✓ No license required |
| CATIA® V5 (page 30) | ✓ License required | ✓ License required |

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| Autodesk Inventor (Requires Inventor or Inventor View. See Autodesk Inventor® (page 36)) | ✓ No license required | ✓ No license required |
| Cosmo™ | ✓ No license required | Not available |
| STEP (page 56) | ✓ No license required | ✓ No license required |
| STL (page 58) | ✓ No license required | ✓ No license required |
| DWG DXF (page 39) | ✓ No license required | ✓ No license required |
| IGES (page 41) | ✓ No license required | ✓ No license required |
| Open Inventor™ | ✓ No license required | Not available |

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| JT (page 48) (Autodesk DirectConnect for JT can be purchased.) | ✓ License required | ✓ License required |

**NOTE** (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, or 2008 must be purchased, installed, licensed on the same machine, and running before importing the file.

### Autodesk Opticore Studio 2009 R1

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| SolidWorks® (page 54) (1) | ✓ No license required | Not available |
| Pro/ENGINEER® (page 51) | ✓ No license required | ✓ No license required |
| CATIA® V5 (page 30) | ✓ License required | ✓ License required |
| CATIA® V4 (page 33) | ✓ License required | ✓ License required |
| UGS NX (page 60) | ✓ License required | ✓ License required |

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| Autodesk Inventor (Requires Inventor or Inventor View. See Autodesk Inventor® (page 36)) | ✓ No license required | ✓ No license required |
| Cosmo™ | ✓ No license required | Not available |
| STEP (page 56) | ✓ No license required | ✓ No license required |
| STL (page 58) | ✓ No license required | ✓ No license required |
| DWG DXF (page 39) | ✓ No license required | ✓ No license required |
| IGES (page 41) | ✓ No license required | ✓ No license required |
| Open Inventor™ | ✓ No license required | Not available |

| File Format | Windows 32-bit | Windows 64-bit |
|---|---|---|
| JT (page 48) (Autodesk DirectConnect for JT can be purchased.) | ✓ License required | ✓ License required |

**NOTE** (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, or 2008 must be purchased, installed, licensed on the same machine, and running before importing the file.

# What's new this release 3

This section outlines enhancements for the DirectConnect 2009 R2 version (released 2008), in addition to various bug fixes.

## What's new

The following improvements and enhancements have been made to Autodesk DirectConnect:

- CATIA V4 import for AliasStudio 2009 SP1, Showcase 2009 R1, and Opticore Studio 2009 R1.
- Autodesk Inventor and Pro/Engineer import for Maya 2009 R1.
- Group policy installation alignment.
- UGNX import for Opticore Studio 2009 R1.

**NOTE** For licensing information, please see Supported products and translators (page 4).

# Improvements

### CATIA V4

- CATIA V4 data can now be imported into AliasStudio and converted to an Alias wire file.

### CATIA V5

- CATIA V5 Volume data can be imported into AliasStudio, even with Import by Layers on.
- CATIA V5 data can now be imported into AliasStudio and converted to Alias wire files without causing tessellation problems.
- The processing time for importing large CATIA V5 files in Showcase has been greatly reduced.

### UG and UGNX

- UG assembly files containing trimmed curves with a hyperbola as its basis curve can be imported.
- Surfaces from imported data from UG are now interpreted correctly.
- UG files with trim surfaces import correctly.
- Trimming issues with UGNX have been fixed.
- Parasolid trimmed filleted and planar data in UGNX are now trimmed correctly.
- Parasolid data for UGNX is now interpreted correctly.
- UGNX3 and UGNX4 files are imported properly into AliasStudio 2009.
- The installation process has changed to make it faster and easier to get up and running.
- Translation of CATIA V5 entities, such as fillet, chamfer, offsets, swept surface, and other procedurally-defined surfaces, has been improved.

- For DWG files, you can now export different versions of the file , such as 2007, 2004, 2000, or R14. For DXF, you can export 2007, 2004, 2000, or R12 versions of the file. The default exported version will be 2007.
- Imported CATIA V5 surface quality has greatly improved.
- If working on Vista and wanting to use the DirectConnect Inventor translator, you must run the Inventor View as "Administrator", before the data can be translated.

**NOTE** Running the Inventor View as "Administrator" is different from running it from an Administrator Account.

# Find the latest information on the Web

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For the most up-to-date information on Autodesk DirectConnect (including which CAD formats are currently supported, system requirements, and how to purchase translator licenses), go to one of the following URLs:

For Autodesk AliasStudio:

- *http://www.autodesk.com/aliasstudio-directconnect*

For Autodesk Maya:

- *http://www.autodesk.com/maya-directconnect*

For Autodesk Showcase:

- *http://www.autodesk.com/showcase-directconnect*


Japanese documentation is also provided at these URLs.

# Installing and Licensing 5

## Installing Autodesk DirectConnect

### Installing with host software

Autodesk DirectConnect software installs automatically when the following Autodesk software is installed:

- Autodesk AliasStudio
- Autodesk Maya
- Autodesk Showcase

For information on installing these software products, refer to their respective installation guides.

Autodesk DirectConnect software is provided on the media with the following Autodesk software, in the Autodesk DirectConnect 2009 folder, and must be installed manually:

- Autodesk Opticore Realizer
- Autodesk Opticore Studio

**NOTE** When installing DirectConnect, ensure you install the same version, such as 32-bit or 64-bit, as your Autodesk Opticore Realizer or Studio.

**NOTE** DirectConnect Help is only supported on Microsoft Internet Explorer. Performance on other browsers may not provide consistent results.

### Support platforms

Autodesk DirectConnect runs on the same platform as the Autodesk product it installs with:

| Autodesk Software | Microsoft® Windows® XP Professional | Microsoft Windows XP Professional x64 Edition | Apple® Mac OS® X 10.5.2 or higher | Microsoft Vista 32-bit and 64-bit Editions |
|---|---|---|---|---|
| Autodesk AliasStudio | ✓ | ✓ | | ✓ |
| Autodesk Maya 2009 | ✓ | ✓ | ✓ | |
| Autodesk Showcase | ✓ | ✓ | | |
| Autodesk Opticore Realizer | ✓ | ✓ | | ✓ |
| Autodesk Opticore Studio | ✓ | ✓ | | ✓ |

### Recommended system requirements

Autodesk DirectConnect requires the following amount of disk space:

- On Windows® XP, Windows 2000 Professional, or Vista, 260 megabytes of disk space available on a system drive or destination drive.
- On Mac OS® X 10.5 or greater, 30 megabytes of disk space, on an Apple Mac computer with Intel processors. PowerPC (PPC) computers are no longer supported.

Autodesk DirectConnect 2009 R2 installs with other products, so your system must also accommodate the host product requirements. (For the system requirements of the host product, consult its installation guide.)

**NOTE** For the most up-to-date information on hardware qualifications, go to *http://www.alias.com/eng/support/qualified_hardware/*.

#### Setting up additional software (Autodesk Maya 2009)

**NOTE** Maya 2008 does not support the DirectConnect 2009 translator; however, it does support DirectConnect 2008. See *http://www.autodesk.com/maya-directconnect*.

After you install your Maya 2009 software, load a plug-in to use Autodesk DirectConnect translators:

1. In Maya 2009, select **Window** > **Settings/Preferences** > **Plug-in Manager**.
2. Click the DirectConnect plug-in to enable all of the Autodesk DirectConnect translators:
   - Windows: `DirectConnect.mll`
   - Mac OS X: `DirectConnect.lib`

   A check mark appears in the box.

#### Installing upgrades

You can download and install newer versions of Autodesk DirectConnect as they become available on the Web.

1. Find the newest version on the Web and download its exe file. (See Find the latest information on the Web (page 19).)
2. Remove the older version of Autodesk DirectConnect from your system. (In Windows, select **Start** > **Settings** > **Control Panel** and click the **Add or Remove Programs** choice.
3. Double-click the exe file you downloaded.

# Software deployment using group policies for Windows

#### Disclaimer

The description of methods presented here is provided to aid those looking for a straight forward, Microsoft supported means for deployment of software

over a Local Area Network. If the Microsoft Group Policy based mechanism does not provide sufficient control or features for the size or complexity of your network environment, we recommend that you consider more advanced Microsoft solutions, or other third party solutions.

### Introduction

Microsoft's Active Directory technology provides the capability for software to be remotely installed from a server distribution point to client computers. The client computers must be members of an Organizational Unit (OU) in the Active Directory. Software deployment is controlled by configuring the Software Installation policy of the Group Policy Object (GPO) associated with that OU. The software installation occurs automatically at boot time; no user intervention is required.

### Prerequisites

- Active Directory must be installed and properly configured.
- Client computers must have Microsoft Installer (MSI) version 3.0 or newer installed.

### Configuration process

There are three main steps to deploying software using group policies:

1. Create a Distribution Point.
2. Assign the application to client computers.
3. Verify the installation.

**NOTE** Consult Microsoft Knowledge Base Article #816102 for more details, including information on how to redeploy or remove a package.

### Create a distribution point

A distribution point is a shared network location containing the package(s) to install.

#### To create a distribution list

1. Log on to the appointed server as Administrator.

2 Create a shared network folder.

3 Grant permissions as appropriate, Permission to modify the contents of this folder should typically be granted to an administrator or select group of users; all other users should be restricted to read access.

4 Copy the .msi files for the package(s) to be deployed into this folder.

### Assign a package to client computers

The Software Installation section of the Group Policy object specifies the software packages to be deployed.

#### To assign a package for deployment

1 From the Windows Start menu on the server, click All Programs (or Programs) > Administrative Tools > Active Directory Users and Computers.

2 Browse to the desired Organizational Unit (OU) in the Active Directory tree, right-click, and click Properties. The Properties dialog box for the OU selected displays.

**NOTE** For the Group Policy Object to take effect, the desired client computer objects must be members of the OU selected.

3 Select the Group Policy tab and click New. Enter a name for the GPO. For example, "AliasStudio Computer Assigned Installation". The GPO is created and added to the Group Policy Object Links list.

4 In the Group Policy Object Links list, click the GPO you just created, then Edit.

5 In the left pane of the Group Policy Object Editor, under computer Configuration, click the plus sign (+) next to the Software Settings folder to expand it.

6 Under Software Settings, right-click Software Installation, then click New > Package.

7 enter the UNC path to the desired package located in the distribution point created in the previous section, then click Open. For example, `\server\share\AliasStudio.msi`

**NOTE** Do not browse to the network location. You must type the UNC path into the "File name" text box.

8. Select Assigned and click OK. Wait until an entry for the package is displayed in the right pane of the Group Policy window.
9. Repeat steps 7 and 8 for all packages to be deployed.
10. Close the Group Policy window and any other open Active Directory windows.

    The package is now assigned to all computers that are members of the OU for which the GPO has been created. The next time a computer in the OU is restarted, the program will be installed and available for all users of the computer.

**NOTE** Windows XP is shipped with Fast Logon Optimization enabled. Due to this feature, two reboots are required before the software will be installed. Microsoft Knowledge Base Article #305293 describes the Fast Logon Optimization feature, along with instructions on how to disable it.

### Test and verify the deployment

When a computer is restarted, the operating system displays messages about group policy, generally just before or after the Windows Login dialog box is displayed. These messages include the following:

- Windows starting up
- Applying computer settings
- Installing managed software
- Applying software installation settings
- Loading your personal settings
- Applying your personal settings

To verify that the package has been correctly assigned to a computer, restart a computer that is in the OU for which the GPO was created. The program is installed during the boot sequence, before the login prompt is displayed. After logging in, the user should find the application under the Programs menu in the same location as if it had been locally installed.

**NOTE** If problems arise, an entry is logged in the system's Event Viewer under Applications.

### References

- Microsoft Knowledge Base Article #816102: How to use Group Policy to Remotely Install Software in Windows Server 2003
- Microsoft Knowledge Base Article #305293: Description of Windows XP Professional Fast Logon Optimization Feature

# Licensing Autodesk DirectConnect

### Purchasing and installing a license

1. To see if you need a license, go to Supported products and translators (page 4).
2. Purchase the Autodesk DirectConnect license, if necessary. For information on how to purchase a license, go to the DirectConnect Web sites. (See Find the latest information on the Web (page 19).)

   **NOTE** For details on licensing (including how to use hardware locks and install floating licenses), refer to the installation and licensing documentation for the Autodesk product you purchased.

3. From the Windows **Start** menu, select **Programs** > **Autodesk** > **DirectConnect** > **Licensing** and follow the instructions.

   **NOTE** For details on licensing (including how to use hardware locks and install floating licenses), refer to the installation and licensing documentation for the Autodesk product you purchased.

4. To verify the license installation, try to import a file (see the next topic).

# Importing Files

**NOTE** When importing data into Showcase, you can filter the data, selecting only the portions you want.

When importing CAD files, the process is not always the same from one software package to another. This section provides instructions on how to do this in your Autodesk software.

### Importing files

1. In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import** > **Files...** |
| Autodesk Opticore Studio | **File** > **Import** |

2. Select the file from the file browser. If you cannot see the file, it is not supported or its translator is not licensed.
3. Click **OK**.

   The translator automatically launches and the file imports into the scene.

# Translator details

# 6

# CATIA® V5

CATIA® is computer-aided design software from Dassault Systèmes.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** For information on the Autodesk products that support this format and whether you require a license, see Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files, using this format. (The Autodesk DirectConnect software installs at the same time.)
- The software typically requires a license to import CATIA V5 files. For more information on how to purchase a license, go to the DirectConnect Web sites. (See Find the latest information on the Web (page 19).)
  To install a license, refer to the *Install_DirectConnect.pdf* document found on the installation CD.

### Importing CATIA V5 files

1 In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2 Select a CATIA V5 (`*.CATProduct` or `*.CATPart`) file from the file browser.

3 Click **OK**.
The translator launches automatically and the file imports into the scene.

## Types of data imported

We support CATIA V5 releases R18 and earlier. We support importing the following types of data:

- Point
- Line
- Arc
- Ellipse
- Parabola
- Hyperbola
- BSpline curve
- Polynomial curve
- Plane
- Cylindrical surface
- Conical surface

- Spherical surface
- Toroidal surface
- BSpline surface
- Revolve surface
- Ruled surface
- Open body
- Solid body
- Layer
- Geometric set
- Part (from CATIA V5 release 6 and higher)
- Product (from CATIA V5 release 6 and higher)
- Attributes (RGB color, layer, name, and visibility)

**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

**NOTE** In Autodesk AliasStudio, look for options for specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

**NOTE** For definitions on these data types, consult your CATIA documentation.

# CATIA® V4

CATIA® is computer-aided design software from Dassault Systèmes. DirectConnect supports the importing of CATIA V4 geometric sets, attributes, such as names, layers, RGB colors, and visibility, as well as the following CATIA V4 file types:

- `.model`
- `.mdl`
- `.session`
- `.exp`
- `.dlv`
- `.dlv3`
- `.dlv4`

**NOTE** DirectConnect supports CATIA model and export files produced with CATIA V4.xx and earlier V3RX Levels.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** For information on the Autodesk products that support this format and whether you require a license, see Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files, using this format. (The Autodesk DirectConnect software installs at the same time.)
- The software typically requires a license to import CATIA V4 files. For more information on how to purchase a license, go to the DirectConnect Web sites. (See Find the latest information on the Web (page 19).)
  To install a license, refer to the *Install_DirectConnect.pdf* document found on the installation CD.

### Importing CATIA V4 files

1. In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio 2009 R1 | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Showcase 2009 R1 | **File** > **Import Models** |
| Autodesk Opticore Studio 2009 R1 | **File** > **Import** |

2. Select a CATIA V4 (`*.model, *.mdl, *.session, *.exp, *.dlv`or `*.dlv3`) file from the file browser.
3. Click **OK**.
   The translator launches automatically and the file imports into the scene.

### Types of entities imported

We support importing the following SPACE (SP) entities:

- Point (Type 1)
- Line (Type 2)
- Parametric curve (Type 3)
- Plane (Type 4)
- Parametric surface (Type 5)
- Face (Type 6)

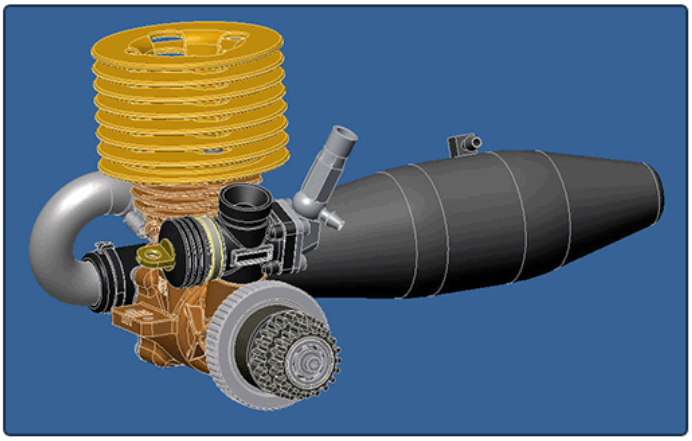
- Volume (Type 7)
- Transformation (Type 9)
- Edge (Type 12)
- Circle (Type 20)
- Ellipse (Type 21)
- Parabola (Type 22)
- Hyperbola (Type 23)
- Compisite curve (Type 24)
- Exact solid (Type 17, secondary type 2)
- Parametric Skin (Type 35)
- NURB Curve (Type 46)
- NURB Surface (Type 47)

**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

**NOTE** In Autodesk AliasStudio, look for options for specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

**NOTE** For definitions on these data types, consult your CATIA documentation.

# Autodesk Inventor®



Autodesk DirectConnect lets you import Autodesk Inventor® part (`*.ipt`) and assembly (`*.iam`) files into supported Autodesk software, provided you have Inventor 2009 or the free Inventor View installed and licensed on your machine. We do not require an Autodesk Direct Connect license.

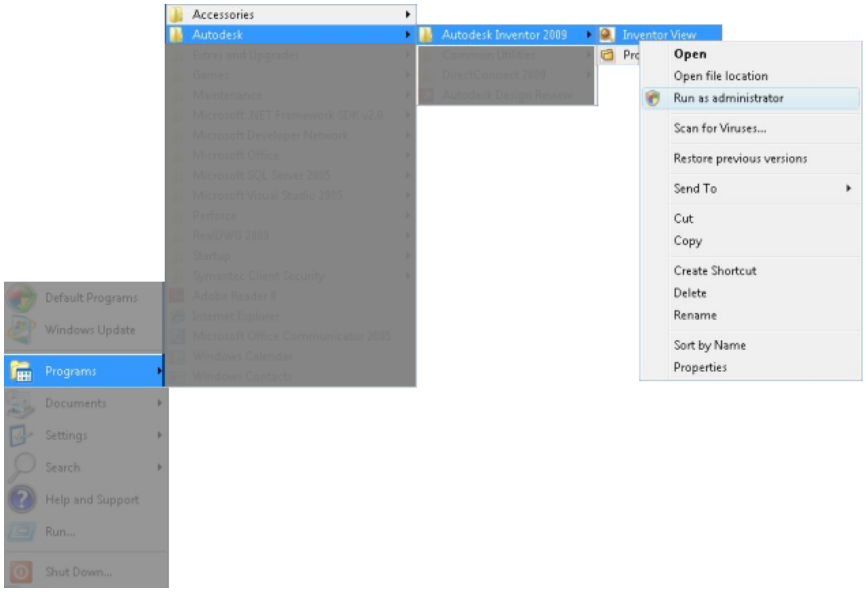
The software supports this format for Windows 32-bit operating systems.

### Notes

- Though Inventor data cannot be imported into a 64-bit version of DirectConnect on a 64-bit OS, you can use the 32-bit version of DirectConnect on a 64-bit OS to import Inventor files via DirectConnect.
- To enable this translator on systems where no licensed Autodesk Inventor 2009 product is available, download and install the free Inventor View 2009 product from *http://usa.autodesk.com/adsk/servlet/index?id=10535296&siteID=123112*.
- Once the DirectConnect Inventor translator is installed, run it and select **File** > **Open**, before using DirectConnect to translate your data. However, if working on Vista and using the DirectConnect Inventor translator, you must run the Inventor View as “administrator”, before the data can be translated.

### Setting Inventor View as administrator

From the **Start** menu, select **Autodesk** > **Autodesk Inventor 2009** > **Inventor View**, then right-click to open a list and select **Run as administrator**.




## Software Prerequisites

- Install the Autodesk product where you plan to import files, using this format. (The Autodesk DirectConnect software installs at the same time.)
- The software does not require an Autodesk DirectConnect license to import this file format. But, ensure that you have Inventor 2009 or Inventor View 2009 installed and licensed on the same machine.

### Importing Autodesk Inventor® files

1 In your Autodesk software, choose the appropriate menu item. For example,

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2 Browse to and select an Autodesk Inventor part or assembly file (`*.ipt` or `*.iam`).

3 Click **OK**.

The translator automatically launches and imports the file.

**NOTE** To maintain the original positioning and orientation of part files in your scene, import the assembly file. Importing part files before the assembly file positions all of them at the origin (0,0,0) and removes the original positioning.

### Types of data imported

We import NURBS for this file format. The software maintains following additional information on import:

- BREP Bodies
- Data organization
- Tolerances and units
- Material Colors and simple transparency

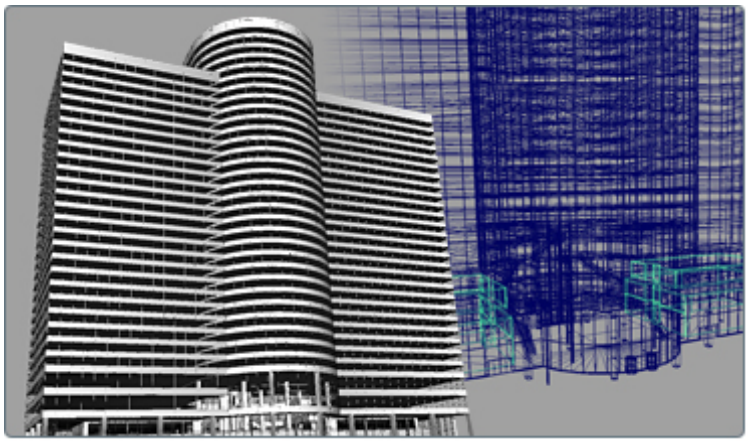
**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

### Limitations

- WorkSources, Display Meshes, and 2D/3D Sketches get automatically excluded when importing an Autodesk Inventor® file.

- Some cylindrical surfaces (pipes) do not trim properly.

# DWG DXF



Autodesk DirectConnect lets you import Autodesk AutoCAD drawing files (DWG) and Drawing eXchange File (DXF) files into supporting Autodesk products.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** For information on Audodesk products that support these formats, see Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you to import files using this format. (The Autodesk DirectConnect software installs at the same time.)
- The software does not require a license to import this file format.
- For Maya 2009, load a plug-in to use Autodesk DirectConnect 2009 R2 translators. See Recommended system requirements (page 22).

  **NOTE** Maya 2008 does not support the DirectConnect 2009 translator; however, it does support DirectConnect 2008. See *http://www.autodesk.com/maya-directconnect*.

### Importing DWG/DXF files

1 In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2 Browse and select a DWG (`.dwg`) or DXF (`.dxf`) file.

3 Click **OK**.
The translator automatically launches and imports the file.

### Types of data imported

We support the following types of DWG and DXF data:

- Lines, arcs, and splines
- Extruded curves
- Extrusions
- Layers
- Meshes
- Surfaces
- Text
- 3D solids
- Materials

**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

**NOTE** In Autodesk AliasStudio, look for options for specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

**NOTE** DWG and DXF both support curves and round trip data export when want curves is set to ON. If they are not coming in, please check to ensure that want curves is enabled.

### Exporting DWG/DXF files (Autodesk AliasStudio)

1 In your Autodesk software, choose the appropriate menu:

| To export a CAD file from ... | Choose ... |
|---|---|
| Autodesk AliasStudio | **File** > **Save As** |

2 For details on the available options, use the Autodesk AliasStudio help.

# IGES

Initial Graphics Exchange Specification (IGES) is a file format for transferring graphics data between CAD/CAM systems. Autodesk DirectConnect 2009 R2 lets you import the neutral IGES format files (`*.iges` or `*.igs`) from any number of CAD or modeling packages.

The software supports this format for Windows 32-bit and 64-bit operating systems.

For information on the Autodesk products that support this format, go to Supported products and translators (page 4).

**NOTE** Maya 2009 supports this translator on the Mac OS X operating system.

### Software prerequisites

- Install one of Autodesk AliasStudio, Autodesk Maya 2009, or Autodesk Showcase. (The Autodesk DirectConnect software installs at the same time.)
- The software does not require a license to import this file format.
- For Maya 2009, load a plug-in to use Autodesk DirectConnect 2009 R2 translators. See Recommended system requirements (page 22).

  **NOTE** Maya 2008 does not support the DirectConnect 2009 translator; however, it does support DirectConnect 2008. See *http://www.autodesk.com/maya-directconnect*.

  **NOTE** For information on additional software setup for Autodesk AliasStudio, please see the Autodesk AliasStudio Data Transfer reference book and the Autodesk AliasStudio online help.

#### Additional software setup (Autodesk AliasStudio)

For Autodesk AliasStudio Version 13.0.2, set the IGES system environment variable to use the latest IGES translator:

1. From your Windows toolbar, select Start > Settings > Control Panel.
2. Double click System. The Systems Properties window opens.
3. Click the Advanced tab.
4. Click theEnvironment Variables button.
5. Click New and enter the following information:
   - For Variable name, IGES
   - For Variable value, 1

### Importing IGES files

1. In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2. Select a native IGES (`*.iges` or `.igs`) file from the file browser.
3. Click **OK**.
   The translator automatically launches and imports the file into the scene.

## Troubleshooting (Autodesk AliasStudio)

If the files you import contain unsatisfactory data, try changing the following import options in Autodesk AliasStudio:

**Default Trim Curves** Specifies the trim curves that the processor uses. You can select parameter space curves, model space curves, or use the flag that is present in the `.IGES` file. By default, the preference flag in the IGES files is used.

**Shrink Surface** When ON, AliasStudio detects trimmed surfaces whose trim boundaries are the same as, or iso-parametric to, the natural boundaries of the untrimmed surface. It then converts these surfaces into AliasStudio surfaces by shrinking the untrimmed surface to the trim boundaries.

When OFF, AliasStudio converts all trimmed surfaces of this type to AliasStudio trimmed surfaces.

### Types of data imported

The Autodesk DirectConnect 2009 R2 for IGES translator imports ASCII format IGES files with or without linefeed characters at the end of each record. The software does not support Binary IGES files.

The software imports NURBS for this file format and maintains the following information on import:

- Surfaces and curves
- Data organization (groups, layers, visibility, and instances)
- Units
- Colors

**NOTE** For information on this data in your Autodesk software, see Where to find imported data (page 69).

**NOTE** Check the options in AliasStudio to specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

### Identifying IGES supported entities in log files

The following table shows IGES entities supported on import by Autodesk DirectConnect 2009 R2 for IGES.

**NOTE** The input translator ignores any entities with an entity use flag value 02 (Definition) except for entity use flag value with IGES Subfigure Definition entity (Type 308).

| Type | Form | IGES Entity |
|---|---|---|
| 100 | 0 | circular arc |
| 102 | 0 | composite curve |
| 104 | 0-3 | conic arc, ellipse, parabola, hyperbola |
| 106 | 1 | copious data |

| Type | Form | IGES Entity |
|---|---|---|
| 106 | 2 | copious data |
| 106 | 11 | copious data |
| 106 | 12 | copious data |
| 106 | 63 | closed area |
| 108 | 0 | plane |
| 108 | +/- 1 | bounded plane |
| 110 | 0 | line |
| 112 | 0 | parametric curve |
| 114 | 0 | parametric surface |
| 116 | 0 | point |
| 118 | 0 - 1 | ruled surface |
| 120 | 0 | surface of revolution |
| 122 | 0 | tabulated cylinder |
| 124 | 0 | transformation matrix |
| 126 | 0-5 | rational B-spline curve |
| 128 | 0-9 | rational B-spline surface |
| 130 | 0 | offset curve |
| 140 | 0 | offset surface |

| Type | Form | IGES Entity |
|---|---|---|
| 141 | 0 | boundary entity |
| 142 | 0 | curve on surface |
| 143 | 0 | boundary surface |
| 144 | 0 | trimmed surface |
| 308 | 0 | subfigure definition |
| 402 | 7, 9 | associativity instance |
| 408 | 0 | singular subfigure instance |

### IGES levels

The system adds all supported geometric IGES entities that are associated with IGES level <n> to an Autodesk AliasStudio layer called LEVEL<n>.

For example, if a 126 B-spline entity directory entry indicates that it is on level 42, then it is added as Layer LEVEL42.

# Open Inventor and Cosmo

Autodesk DirectConnect 2009 R2 lets you import Open Inventor™ ASCII or binary files (`*.iv`) or Cosmo™ scene binary files (`*.csb`) into supported Autodesk software.

(Open Inventor is a 3D file format from Silicon Graphics Inc. with no relation to Autodesk Inventor® software.)

**NOTE** For information on the Autodesk products that support these formats, see the Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files using these formats. (The Autodesk DirectConnect software installs at the same time.)
- The software does not require a license to import these file formats.

#### Importing Open Inventor or Cosmo files

1. Choose the appropriate menu choice.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2. Browse to and select an Open Inventor (`*.iv`) or Cosmo (`.csb`) file.
3. Click **OK**.
   The translator automatically launches and imports the file.

### Type of data imported

The software imports polygons and NURBS for these file formats and maintains the following information on import:

- Data organization (parent, child, and groups)
- Units
- Materials
- Textures
- Polygonal Shapes
- Tranformation nodes

**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

### Limitations

- When importing Open Inventor files, the system automatically excludes lines, cameras, lights, manipulators, tolerances, and animation.
- The software only supports this format for Windows 32-bit operating systems.

## JT

The JT Open Program develops and supports the DirectModel format JT. It is a format for the visualization of 3D models.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** For information on the Autodesk products that support this format and if you need a license, go to Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files using these formats. (The Autodesk DirectConnect software installs at the same time.)
- The software requires a license.
  For more information on how to purchase a license, go to the DirectConnect Web site. (See Find the latest information on the Web (page 19).) To install a license, refer to the *Install_DirectConnect.pdf* document found on the installation CD.

### Importing JT files

1. In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2. Select a (`*.jt`) file from the file browser.
3. Click **OK**.
   The translator automatically launches and imports the file into the scene.

### Type of data imported

The software maintains the following information when importing JT files:

- Precise geometric data conversion
- Data organization (parent and child hierarchal data, visibility, and instances)
- Units
- Levels of detail (degrees of tesselation)
- Materials (brightness (shininess), ambient color, specular color, diffuse color, and emission color)
- Textures (embedded image files)
- XTBREP and BREP topology

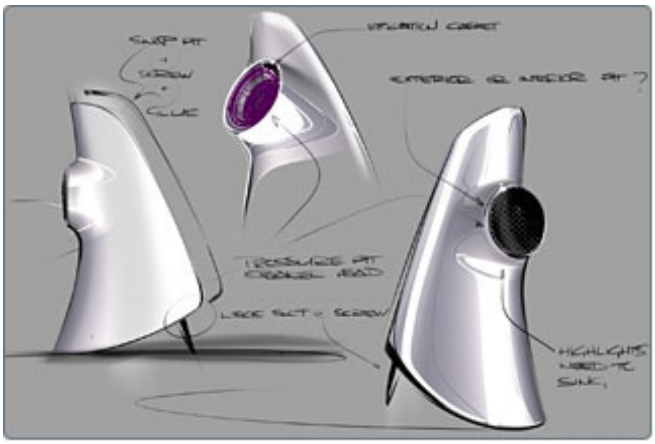
**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

**NOTE** In Autodesk AliasStudio, look for options for specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

### Limitations

- Import options are not available.
- The software automatically excludes curve geometry and animation when importing a JT file.

# Pro/ENGINEER®



Autodesk DirectConnect lets you import Pro/ENGINEER®part, assembly, or PTC® Granite® files (`*.prt, *.asm, or *.g`) into supported Autodesk software.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** For information on the Autodesk products that support this format and if you need a license, go to Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files using these formats. (The Autodesk DirectConnect software installs at the same time.)
- The software may require a license.
  For more information on how to purchase a license, go to the DirectConnect Web site. (See Find the latest information on the Web (page 19).) To install a license, refer to the *Install_DirectConnect.pdf* document found on the installation CD.
- Export Pro/ENGINEER® files from your CAD software using Wildfire™ Release 4 (or lower) or PTC Granite Release 5 (or lower) specifications.
- For Maya 2009, load a plug-in to use Autodesk DirectConnect 2009 R2 translators. See Recommended system requirements (page 22).

**NOTE** Maya 2008 does not support the DirectConnect 2009 translator; however, it does support DirectConnect 2008. See *http://www.autodesk.com/maya-directconnect*.

**NOTE** For information on additional software setup for Autodesk AliasStudio, please see the Autodesk AliasStudio Data Transfer reference book and the Autodesk AliasStudio online help.

### Importing Pro/ENGINEER® files

1 In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2 Select a Pro/ENGINEER® part, assembly, or Granite® file (`*.prt`, `.asm`, or`*.g`).

3 Click **OK**.

The translator automatically launches and imports the file.

**NOTE** If you cannot import the files, try setting up the license for Autodesk DirectConnect 2009 R2 for Pro/ENGINEER®. For licensing information, refer to Licensing Autodesk DirectConnect (page 27).

**NOTE** To maintain the original positioning and orientation of part files in your scene, import the assembly file. Importing part files before the assembly file positions all of them at the origin (0,0,0) and removes the original positioning.

### Type of data imported

The software imports NURBS for this file format and maintains the following data on import:

- Precise geometric surface and topology information
- Data organization
- Tolerances and units.

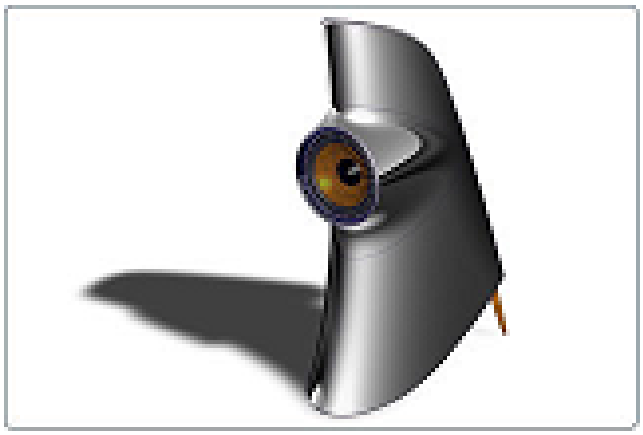
**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

**NOTE** In Autodesk AliasStudio, look for options for specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

### Limitations

- The software changes node names based on geometry, assembly, or part names.
- When importing a Pro/ENGINEER® file, the software automatically excludes construction history, lines, and animation.
- Granite does not support layers or curves.

# SolidWorks®



Autodesk DirectConnect 2009 R2 lets you import SolidWorks® part and assembly files (`*.sldprt` and `*.sldasm`) into supported Autodesk software, provided you have SolidWorks® installed, licensed on your machine, and running. The software does not require an Autodesk DirectConnect license.

**NOTE** For information on the Autodesk products that support this format and if you need a license, go to Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files using these formats. (The Autodesk DirectConnect software installs at the same time.)
- The software does not require an Autodesk DirectConnect license to import this file format. Install and license SolidWorks® Versions 2005, 2006, 2007, or 2008 on the same machine.
- For Maya 2009, load a plug-in to use Autodesk DirectConnect 2009 R2 translators. See Recommended system requirements (page 22).

  **NOTE** Maya 2008 does not support the DirectConnect 2009 translator; however, it does support DirectConnect 2008. See *http://www.autodesk.com/maya-directconnect*.

**NOTE** For information on additional software setup for Autodesk AliasStudio, please see the Autodesk AliasStudio Data Transfer reference book and the Autodesk AliasStudio online help.

### Importing SolidWorks® files

1 In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2 Select a SolidWorks® part or assembly file(`*.sldprt` or `*.sldasm`). (If you cannot see the files, start the SolidWorks® software, minimize its window, and then try again to open the files.)

3 Click **OK**.

The translator automatically launches and imports the file into the scene.

**NOTE** To maintain the original positioning and orientation of part files in your scene, import the assembly file. Importing part files before the assembly file positions all of them at the origin (0,0,0) and removes the original positioning.

## Type of data imported

The software imports NURBS for this file format and maintains the following information on import:

- Precise geometric surface and topology information
- Data organization

- Tolerances and unit
- Colors

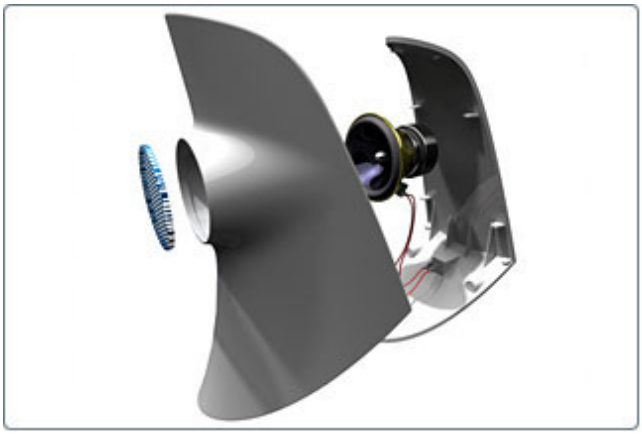
**NOTE** For information on locating this data in your Autodesk software, see Where to find imported data (page 69).

**NOTE** In Autodesk AliasStudio, look for options for specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

### Limitations

- The software automatically excludes construction history, lines, and animation when importing a SolidWorks® file.
- The software only supports this format for Windows 32-bit operating systems.

## STEP



Autodesk DirectConnect 2009 R2 lets you import STEP files (`*.stp`or `*.step`). The software does not require a Autodesk DirectConnect 2009 R2 license.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** Maya 2009 supports this translator on the Mac OS X operating system.

**NOTE** For information on the Autodesk products that support this format, go to Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files using these formats. (The Autodesk DirectConnect software installs at the same time.)
- Export STEP files from the CAD software using AP203 or AP214 specifications.
- The software does not require a license to import this file format. For more information on how to purchase a license, go to the DirectConnect Web site. (See Find the latest information on the Web (page 19).) To install a license, refer to the *Install_DirectConnect.pdf* document found on the installation CD.

### Importing STEP files

1. In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2. Select a native STEP (`*.stp` or `*.step`) file from the file browser.
3. Click **OK**.
   The translator automatically launches and imports the file into the scene.

### Type of data imported

The software imports NURBS for this file format and maintains the following information on import:

- Precise geometric surface and topology information (ISO 10303:42)
- Data organization (layers)
- Tolerances and units
- Colors

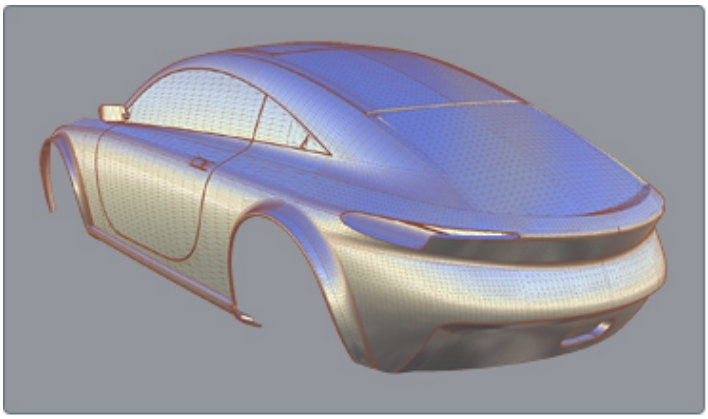
**NOTE** For information on locating this data in your Autodesk software, see *Where to find imported data*.

**NOTE** In Autodesk AliasStudio, look for options for specifying data importation. See the *Autodesk AliasStudio Data Transfer* reference book and the Autodesk AliasStudio online help.

### Limitations

- When importing a STEP file, the software automatically excludes construction lines, modeling curves, and animation.

## STL



Autodesk DirectConnect 2009 R2 lets you import STL files. The software does not require a Autodesk DirectConnect 2009 R2 license.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** For information on the Autodesk products that support this format and if you need a license, go to Supported products and translators (page 4)section of *What is Autodesk DirectConnect?*

### Software prerequisites

- Install the Autodesk product where you plan to import files using these formats. (The Autodesk DirectConnect software installs at the same time.)
- The software does not require a license.
  For Maya 2009, load a plug-in to used Autodesk DirectConnect translator.
  See Recommended system requirements (page 22).

  **NOTE** Maya 2008 does not support the DirectConnect 2009 translator; however, it does support DirectConnect 2008. See *http://www.autodesk.com/maya-directconnect*.

**NOTE** Maya 2009 supports this translator on the Macintoesh OS X operating system.

#### Importing STL files

1. In your Autodesk software, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2. Select a native STL (Stereolithography) file from the file browser.

3 Click **OK**.

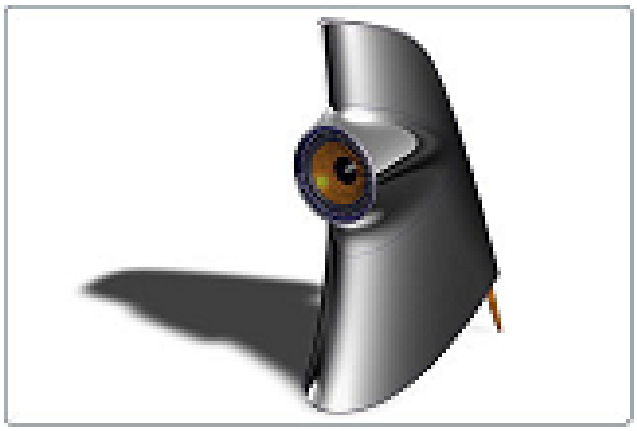
The translator automatically launches and imports the file into the scene.

### Type of data imported

ASCII and binary STL files are supported.

**NOTE** For information on locating this data in your Autodesk software, see *Where to find imported data*.

# UGS NX



Autodesk DirectConnect 2009 R2 lets you import UGS NX files (Version 5.0 and earlier) into supported Autodesk software.

The software supports this format for Windows 32-bit and 64-bit operating systems.

**NOTE** For information on the Autodesk products that support this format and if you need a license, go to Supported products and translators (page 4).

### Software prerequisites

- Install the Autodesk product where you plan to import files using these formats. (The Autodesk DirectConnect software installs at the same time.)
- The software requires a DirectConnect license.

For more information on how to purchase a license, go to the DirectConnect Web site. (See Installing and Licensing (page 3).) To install a license, refer to the *Install_DirectConnect.pdf* document found on the installation CD.

### Importing UGS NX files

1 In your Autodesk import files, choose the appropriate menu item.

| To import a CAD file into... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Open** or **File** > **Import** > **File** |
| Autodesk Maya 2009 | **File** > **Open Scene** or **File** > **Import** |
| Autodesk Showcase | **File** > **Import Models** |
| Autodesk Opticore Realizer | **File** > **Import Files ...** |
| Autodesk Opticore Studio | **File** > **Import** |

2 Select a (`*.prt`) file from the file browser. (The software supports UGS NX part and assembly (`.prt`) files version V13.0 to NX 5.0.)

**NOTE** There are options in Autodesk AliasStudio for you to specify data importation. For details, see the Autodesk AliasStudio Data Transfer reference book and the Autodesk AliasStudio online help.

3 Click **OK**.

The translator automatically launches and imports the file into the scene.

### Exporting UGS NX files (Autodesk AliasStudio)

To export UGS NX files from Autodesk AliasStudio:

1 In your Autodesk software, choose the appropriate menu:

| To export a CAD file from... | Choose... |
|---|---|
| Autodesk AliasStudio | **File** > **Save As** |

2 Go to the Autodesk AliasStudio documentation for more details on how to build a model in for maximum compatibility between UGS NX and Autodesk AliasStudio.

### Unigraphics proprietary format

Unigraphics is a solid modeling package based on the Parasolid kernel. The package contains many (mostly optional) modules, for example CAD, CAM, CAE, sheet metal applications, knowledge bases, quality control, and rapid prototyping. The file structure is binary.

The following table explains how both Autodesk AliasStudio and Unigraphics call in common elements

| UG | Autodesk AliasStudio |
|---|---|
| Segment | Span (curve) |
| Point | Point |
| Patch | Span (surface) |
| Pole | CV (control vertices) |
| Sew | Stitch |
| U/V grid | Patch precision |
| Parameters | History |
| Control polygon (display only) | Hull |
| Silhouette curve | Horizon curve |
| Blank | Invisible |
| Reference set | Set |
| Category | Category |

| UG | Autodesk AliasStudio |
|---|---|
| Custom view | Bookmark |
| Knot point | Edit point |

### Supported Unigraphics geometry and data mapping

The following sections describe the mapping process used for geometry types and non-geometric data transfers between AliasStudio and Unigraphics.

### Supported AliasStudio geometry types

The following AliasStudio geometry types can be exported to Unigraphics, non-geometry entities such as lights, cameras, textures, windows, animation are not supported by the translator. The numbers in the table entries refer to Notes for Unigraphics entities below.

| AliasStudio Entity | Unigraphics Entity |
|---|---|
| Construction Plane | WCS |
| Polyset | Not supported at this time. |
| Conic | Rational Curve |
| Arc | Rational Curve |
| Circle | Rational Curves |
| Line | Line |
| Curve | BCurve |
| Surface | BSurface (1), (2) |
| Trimmed Surface | Face (1), (2) |

| AliasStudio Entity | Unigraphics Entity |
|---|---|
| Plane | Bounded Plane (1) |
| Shader | Colour Attribute (3) |
| Shell (Open) | Sheet Body |
| Set | Reference Set |
| Group | Group |
| Layer | Layer (4) |
| Category | Category |
| Shell (Closed) | Solid Body |

**Notes for Unigraphics entities**

1. Unigraphics cannot have free-standing surfaces, so it maps all surfaces to faces which must be attached to a sheet body.
2. Splits appear in surfaces having internal discontinuities at the discontinuities.
3. Mapped as a Display Attribute of the mapped surface or shell.
4. Layer name is not mapped.

### Supported Unigraphics entity objects geometry types (AliasStudio)

AliasStudio imports the following Unigraphics geometry types. The letters and numbers in parentheses refer to Notes for AliasStudio Unigraphics entity object entities below.

| Unigraphics Entity Objects | AliasStudio Entity |
|---|---|
| WCS | Construction Plane |

| Unigraphics Entity Objects | AliasStudio Entity |
|---|---|
| BSurface | Surface |
| Bounded Plane | Curve |
| Cylindrical Surface | Curve |
| Conical Surface | Curve |
| Tabulated Cylinder | Surface |
| Rules Surface | Surface |
| Blended Face Surface | Surface |
| Surface of Revolution | Surface |
| Offset Surface | Surface |
| Sculptured Surface | Surface |
| BCurve | Curve |
| Line | Line (Curve) |
| Arc | Curve |
| Conic | Curve |
| Point | Point (Curve) (1) |
| Sheet Body | Shell (Open) (2) |
| Assembly | Groups/Instance (3) |
| Group | Group |

| Unigraphics Entity Objects | AliasStudio Entity |
|---|---|
| Layer | Layer |
| Category | Category |
| Reference Set | Set |
| Part Attribute | Blind Data () |
| Solid Body | Shell (Closed) |

**Notes for AliasStudio Unigraphics entity object entities**

- (1) A Unigraphics point converts to a degree 1 curve composed of two coincident points. On export to Unigraphics, this construction converts back to a Unigraphics point.

  (2) If the sheet body only points to one face, then Studio converts the face to a trimmed surface.

  (3) This is a one-way mapping. Assemblies cannot be exported.

  ( ) Added as blind data. Can be re-exported.

### Types of data imported

Autodesk DirectConnect supports the following UGS NX geometry types. (It supports attributes such as name, color, layer, and visibility.)

- Point
- Line
- BCurve
- Ellipse
- Parabola
- Hyperbola
- Surface Parameter Curve
- Trimmed Curve

- Intersection Curve
- BSurface
- Planar Surface
- Spherical Surface
- Cylindrical Surface
- Conical Surface
- Surface of Revolution
- Spun Surface
- Offset Surface
- Ruled Surface
- Swept Surface
- Toroidal Surface
- Blended Edge Surface
- Blended Bound Surface
- Facet
- Sheet Body
- Solid Body
- Part
- Instance
- Assembly
- Category

# Where to find imported data

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## For Autodesk AliasStudio

| Data Organization | Tolerances and Units | Colors (Shaders) |
|---|---|---|
| Parts and assembly information is displayed in the **Windows** > **Information** > **Layer Categories** window. | Unit settings are visible from **Preferences** > **Construction Options**. | Colors are visible from the **Render** > **Multi-lister** > **Shaders** window. |

For information on these settings, menu items, and options, see the Autodesk AliasStudio Data Transfer reference book and the Autodesk AliasStudio online help.

# For Autodesk Maya 2009

**NOTE** Maya 2008 does not support the DirectConnect 2009 translator; however, it does support DirectConnect 2008. See *http://www.autodesk.com/maya-directconnect*.

| Data Organization | Tolerances and Units | Colors (Shaders) |
|---|---|---|
| Layer information is visible from either the **Display** > **UI Elements** > **Channel Box/Layer Editor** menu or the **Window** > **Relationship Editors** > **Display Layers** menu.<br>Part and assembly information is visible for either the **Window** > **Outliner** menu or the **Window** > **Hypergraph** menu. | Unit settings are visible from **Window** > **Settings/Preferences** > **Preferences**.<br>Open the **Categories** tab and choose **Settings** to change the **Working Units** and **Tolerances**. | Colors are imported as shaders and are visible for either the **Window** > **Rendering Editors** > **Hypershade** or **Window** > **Rendering Editors** > **Multilister** window. |

For more information on these setting and menu items, see the Autodesk Maya online help.

# For Autodesk Showcase

| Data Organization | Tolerances and Units | Colors (Shaders) |
|---|---|---|
| Layers, parts, and assembly hierarchies appear in the Organizer window (**Scene** > **Organizer**).<br>This window shows the original file hierarchy and lets you create your own arrangements of objects. You can view and change the state of objects from visible to hidden to deleted. | Unit settings are visible from **Edit** > **Model settings**. Try setting the tessellation or number of levels of detail (LODs) on file import.<br>To see the number of LODs for a loaded file, select **Options** > **Performance and Quality**. Next, click the **Lock display quality to** button and move the slider | Colors are imported as materials and are visible from **Material** > **Material Properties**. |

| Data Organization | Tolerances and Units | Colors (Shaders) |
|---|---|---|
| | back and forth to see the different LODs. | |

For more information on these settings and menu items, see the Autodesk Showcase online help.

# For Autodesk Opticore Realizer

| Data Organization | Tolerances and Units | Colors (Shaders) |
|---|---|---|
| The node structure is visible in the Scene Dock Widget. It opens by default and can be reopened using **View** > **Windows** > **Scene menu**. | Unit settings for rescaling different file types are set in the **File** > **Preferences**dialog, in the **Scale** tab.<br>These session settings can be changed at import time in the **File** > **Import** > **Files** dialog, using the **Edit Scaling** button.<br>After import, all units are meters. Tesselation tolerance is set in the **File** > **Preferences** dialog, in the **Tesselation** tab.<br>These session settings can be changed at import time in the File > Import > Files dialog, using the Edit Topology button.<br>It is also possible to retesselate, using the Edit > Visual Quality dialog. | Colors are visible from the S**hader Dock Widget**. It opens by default and can be reopened using **View** > **Windows** > **Shader menu**. |

For information on these settings, menu items, and options, see the Autodesk Opticore Realizer online help.

# For Autodesk Opticore Studio

| Data Organization | Tolerances and Units | Colors (Shaders) |
|---|---|---|
| The node structure is visible in the **Scene Graph Editor**, located in the **Window** > **Scene Graph Editor** menu. It opens by default. | There are no units to deal with in Studio. All imported data is considered the same unit. Tolerances for tessellation are set in the **File** > **Preferences**dialog, in the **GeomX** tab.<br>**NOTE** GeomX is not available until the GeomX module is loaded in the **Modules** tab (in the same dialog) and Studio is restarted.<br>To set tessellation tolerances, use the **Import tessellation** section of the **GeomX** tab. It is also possible to re-tessellate, using the Window > GeomX > Tessellate dialog and entering new settings. | Colors can be shaders or appearances. All colors are visible in the **appearance** field of a **shape node** in the **scenegraph** of the **Scene Graph Editor**. Appearances are only visible in the Scene Graph Editor. Shaders are visible both in the Scene Graph Editor and through the **Windows** > **Shader List** dialog. |

For information on these settings, menu items, and options, see the Autodesk Opticore Studio online help.

# Glossary

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**assembly** An organizational file that fits together a collection of manufactured parts into a complete model.

**CATIA® V4** CATIA V4 is computer-aided design software from Dassault Systèmes. Autodesk DirectConnect allows the exchange of 3D model data from CATIA V4, using `.model`, `.session`, `.exp`, `.dlv`, and `.dlv3` files.

**CATIA® V5** CATIA V5 is computer-aided design software from Dassault Systèmes. Autodesk DirectConnect allows the exchange of 3D model data from CATIA V5, using the native CATIA part (`.CATPart`) and product (`.CATProduct`) files.

**Cosmo™** A legacy 3D file format from Silicon Graphics Inc. using efficient binary compression and *****`.csb` (Cosmo Scene Binary) files.

**DRAW (DR)** A two-dimensional entity defined in the drafting and detailing world.

**DWG** AutoCAD drawing file) A file format used by Autodesk® AutoCAD® software that contains lines, curves, and 3D data.

**DXF** (Drawing eXchange File) A file exchange format containing ASCII code and binary representations of the objects in a DWG file.

**Granite® One** A CAD technology platform for design collaboration using solid models.

**IGES** (Initial Graphics Exchange Specification) A file format for transferring graphics data between CAD/CAM systems. A neutral file format that can be imported into any number of CAD or modeling packages.

**Inventor (Open Inventor™)** Open Inventor™ is a legacy 3D file format from SiliconGraphics Inc. With no relation to Autodesk Inventor® software. OpenInventor is an object-oriented 3D toolkit that describes complete 3D scenes which can be made interactive and that are optimized for OpenGL. It is an ASCII or binary file format.

**JT file** The DirectModel format JT is developed and supported by the JT Open Program. It is a format for the visualization of 3D models.

**parts** Parts are organized into a collection of groups, which then forms a project hierarchy.

**Pro/ENGINEER®** A product from Parametric Technology Corporation. A solid modeling CAD/CAM/CAE software that requires positional construction tolerances.

**SolidWorks®** A product from SolidWorks Corporation. A solid modeling CAD/CAM/CAE software that requires positional construction tolerances.

**SPACE (SP)** A three-dimensional entity defined in the 3D modeling world.

**STEP** An international standard for the exchange of geometric product definitions. STEP formats that are relevant to Autodesk products are AP203 (general mechanical CAD) and AP214 (automotive CAD).

**STL** An STL ("StereoLithography") file is a triangular representation of 3D surface geometry. The surface is tessellated or broken down logically into a series of small triangles (facets). Each facet is described by a perpendicular direction and three points representing the vertices (corners) of the triangle.

**V3Rx** A file format generated by an older versions of CATIA, before CATIA V4.

# PCRE and BSD Licenses 9

## PCRE License

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The basic library functions are written in C and are freestanding. Also included in the distribution is a set of C++ wrapper functions.

### The Basic library functions

Written by: Philip Hazel

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University of Cambridge Computing Service, Cambridge, England.



### The C++ wrapper functions

Contributed by: Google Inc.

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