

Autodesk DirectConnect 2011

Autodesk DirectConnect

Autodesk®

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yajl

Author: Lloyd Hilaiel <http://www.lloyd.github.com/yajl/>

Created by Gabriel handford on 3/1/09.

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zlib

<http://www.libpng.org/pub/png/libpng.html>

License: /* zlib.h -- interface of the 'zlib' general purpose compression library version 1.2.3, July 18th, 2005

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libtiff

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Author: Denton Woods

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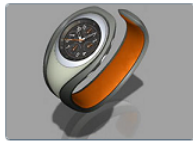
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Welcome to Autodesk DirectConnect 2011



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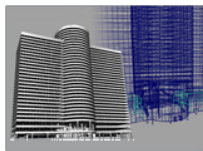
[CATIA® V5](#) on page 26



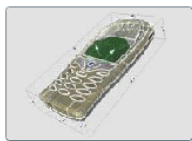
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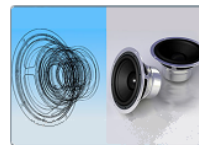
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page 32



[DWG DXF](#) on page 34



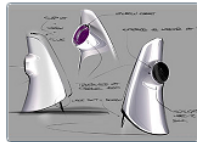
[IGES](#) on page 41



[Open Inventor and
Cosmo](#) on page 46



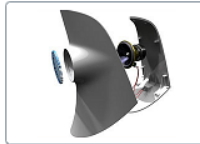
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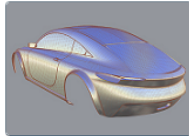
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What is Autodesk DirectConnect?

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

- Autodesk® Alias™
- Autodesk® Maya®
- Autodesk® Showcase™
- 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 Alias Import

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit	Mac OS
SolidWorks® on page 53 (1)	✓ No license required	Not available	✓ No license required	Not available	Not available
Pro/ENGINEER® on page 51	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
CATIA® V5 on page 26	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
CATIA® V4 on page 29	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
UGS NX on page 60	✓	✓	✓	✓	Not available

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit	Mac OS
	License required	License required	License required	License required	
Autodesk Inventor® on page 32	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
STEP on page 56	✓ No license required	✓ No license required	✓ No license required	✓ No license required	✓ No license required
DWG DXF on page 34	✓ No license required	✓ No license required	✓ No license required	✓ No license required	✓ No license required
IGES on page 41	✓ No license required	✓ No license required	✓ No license required	✓ No license required	✓ No license required
Open Inventor™	✓ No license required (2)	Not available	✓ No license required (2)	Not available	Not available
JT on page 48 (Autodesk DirectConnect for JT can be purchased.)	✓ License required	✓ License required	✓ License required	✓ License required	Not available

NOTE (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, 2008, 2009, or 2010 must be purchased, installed, licensed on the same machine, and running before importing the file.

NOTE Cosmo, SolidWorks, and Open Inventor do not run on 64-bit machines.

Autodesk Alias Export













These file formats are currently supported for export by Autodesk DirectConnect and the following bit versions were supported at the time of this release. Some file formats require additional Autodesk DirectConnect licenses on Alias.

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit	Mac OS
IGES on page 41	✓ No license required	✓ No license required	✓ No license required	✓ No license required	✓ No license required
UGS NX on page 60	✓ License required	✓ License required	✓ License required	✓ License required	Not available
DWF on page 37	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
ZPR on page 39 (for Rapid Prototyping)	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
DWG DXF on page 34	✓	✓	✓	✓	✓

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit	Mac OS
	No license required	No license required	No license required	No license required	No license required

Autodesk Showcase

File Format	Windows 32-bit	Windows 64-bit
SolidWorks® on page 53 (1)	✓ No license required	Not available
Pro/ENGINEER® on page 51	✓ No license required	✓ No license required
CATIA® V5 on page 26	✓ No license required	✓ No license required
CATIA® V4 on page 29	✓ No license required	✓ No license required
UGS NX on page 60	✓ License required	✓ License required
Autodesk Inventor® on page 32	✓ No license required	✓ No license required

File Format	Windows 32-bit	Windows 64-bit
Cosmo™	 No license re- quired	Not available
STEP on page 56	 No license re- quired	 No license required
STL on page 58	 No license re- quired	 No license required
DWG DXF on page 34	 No license re- quired	 No license required
IGES on page 41	 No license re- quired	 No license required
Open Inventor™	 No license re- quired	Not available
JT on 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, 2008, 2009, or 2010 must be purchased, installed, licensed on the same machine, and running before importing the file.

Autodesk Maya

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit	Mac OS
SolidWorks® on page 53 (1)	✓ No license required	Not available	✓ No license required	Not available	Not available
Pro/ENGINEER® on page 51	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
Autodesk Inventor® on page 32	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
Cosmo™	✓ No license required	Not available	✓ No license required	Not available	Not available
STEP on page 56 (2)	✓ No license required	✓ No license required	✓ No license required	✓ No license required	✓ No license required
STL on page 58	✓	✓	✓	✓	✓

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit	Mac OS
	No license required	No license required	No license required	No license required	No license required
DWG DXF on page 34	✓ No license required	✓ No license required	✓ No license required	✓ No license required	Not available
IGES on page 41	✓ No license required	✓ No license required	✓ No license required	✓ No license required	✓ No license required
Open Inventor™	✓ No license required	Not available	✓ No license required	Not available	Not available

NOTE (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, 2008, 2009, or 2010 must be purchased, installed, licensed on the same machine, and running before importing the file.

NOTE (2) Maya can export data into STEP format on Windows and Mac.

Autodesk Opticore Studio

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit
SolidWorks® on page 53 (1)	✓ No license required	Not available	✓ No license required	Not available

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit
Pro/ENGINEER® on page 51	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired
CATIA® V5 on page 26	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired
CATIA® V4 on page 29	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired
UGS NX on page 60	✓ License re- quired	✓ License re- quired	✓ License re- quired	✓ License re- quired
Autodesk Invent- or® on page 32	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired
Cosmo™	✓ No license re- quired	Not available	✓ No license re- quired	Not available
STEP on page 56	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired	✓ No license re- quired

File Format	Windows 32-bit	Windows 64-bit	Vista 32-bit	Vista 64-bit
STL on page 58	✓ No license required	✓ No license required	✓ No license required	✓ No license required
DWG DXF on page 34	✓ No license required	✓ No license required	✓ No license required	✓ No license required
IGES on page 41	✓ No license required	✓ No license required	✓ No license required	✓ No license required
Open Inventor™	✓ No license required	Not available	✓ No license required	Not available
JT on page 48 (Autodesk DirectConnect for JT can be purchased.)	✓ License required	✓ License required	✓ License required	✓ License required

NOTE (1) For importing SolidWorks® files, you do not need an Autodesk DirectConnect license. However, SolidWorks® 2005, 2006, 2007, 2008, 2009, or 2010 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 made and new features added to the 2011 version (released 2010) of DirectConnect, along with various bug fixes.

What's new

- Inventor Thread Map support to Showcase
- Inventor Decals transfer support to Showcase
- Mac OS support for DWG and DXF file formats
- ADLM licencing
- De-licensing of CATIA V4 and V5 translators
- CATIA V5 assembly (.CATProduct) files can reference external .stl and .cgr component files
- Support for CATIA V5 .cgr import

- Support for importing CATIA V5 weld data
- Support for importing CATIA V5 cloud mesh data
- Support for importing CATIA V5 Non Linear Transform Surfaces (NLTS)
- Support for importing IGES BRep solid entities (type 186)
- Support for importing IGES colors (314 Entity)
- New IGES exporter for Alias

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 Alias:

- <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

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Installing Autodesk DirectConnect

Installing with host software

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

- Autodesk Alias
- Autodesk Maya (Windows version)
- Autodesk Showcase

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

Autodesk DirectConnect software is provided on the media with Autodesk Opticore Studio software, in the Autodesk DirectConnect 2011 folder, and must be installed manually:

NOTE When installing DirectConnect, ensure you install the same version, such as 32-bit or 64-bit, as your Autodesk Opticore 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, 2000 Professional, 7, Vista 32-bit and 64-bit	Apple® Mac OS® X 10.5.2 or higher, Snow Leopard 64-bit
Autodesk Alias	✓	✓
Autodesk Maya	✓	✓
Autodesk Showcase	✓	
Autodesk Opticore Studio	✓	

Recommended system requirements

Autodesk DirectConnect requires the following amount of disk space:

- On Windows® XP, Windows 2000 Professional, Vista, or Windows® 7, the disk space available on a system drive or destination drive should be 320 MB for 32-bit and 350 MB for 64-bit.
- On Mac OS® X 10.5 or greater and Snow Leopard, 65 MB of disk space, on an Apple Mac computer with 64-bit Intel processors. PowerPC (PPC) computers are no longer supported.

DirectConnect 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 2011)

After you install your Maya 2011 software, load a plug-in to use Autodesk DirectConnect translators:

- 1 In Maya 2011, 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](#) on page 15.)
- 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, "Alias 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\Alias.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

Importing Files

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.

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

To import a CAD file into...	Choose...
Autodesk Alias	File > Open or File > Import > File
Autodesk Maya (Windows version)	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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](#) on 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.)

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 Alias

File > Open or File > Import > File

To import a CAD file into...	Choose...
Autodesk Showcase	File > Import Models
Autodesk Opticore Studio	File > Import

- 2 Select a CATIA V5 (*.CATProduct, *.CATPart, or *.cgr) 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 R19 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, visibility, and materials)
- Per face material assignments
- Cloud mesh data
- Weld data

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

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

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

File formats referenced

The following are just some of the file formats that can be referenced by CATIA V5 assembly files:

- .CATProduct
- .CATPart
- .model
- .cgr
- .stl

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, see [Supported products and translators](#) on 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.)

Importing CATIA V4 files

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

To import a CAD file into...	Choose...
Autodesk Alias	File > Open or File > Import > File
Autodesk Showcase	File > Import Models
Autodesk Opticore Studio	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)

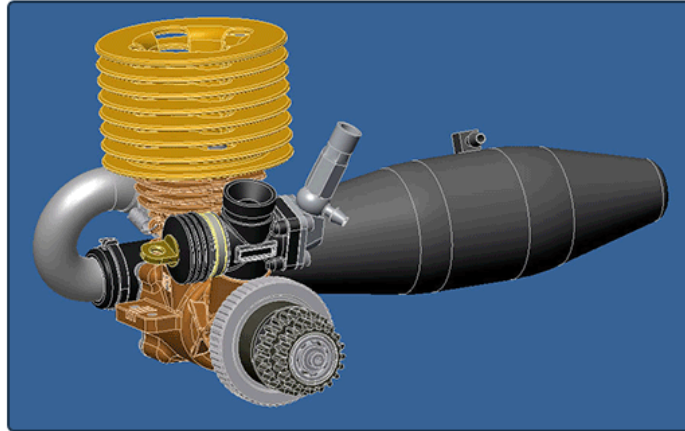
- Ellipse (Type 21)
- Parabola (Type 22)
- Hyperbola (Type 23)
- Polyhedral Surface (Type 16)
- Composite curve (Type 24)
- Solids - Mockup (Type 17, secondary type 1)
- Exact solid (Type 17, secondary type 2)
- Space Ditto (Type 28)
- Parametric Skin (Type 35)
- NURB Curve (Type 46)
- NURB Surface (Type 47)

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

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

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

Autodesk Inventor®



Autodesk Inventor® is a 3D mechanical design, product simulation, tooling creation, and design communication software. DirectConnect supports the importing of Autodesk Inventor® part (*.ipt) and assembly (*.iam) files into supported Autodesk software.

The software supports this format for Windows operating systems.

Software Prerequisite

Install the Autodesk product where you plan to import files, using this format. (The Autodesk DirectConnect software installs at the same time.)

Importing Autodesk Inventor® files

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

To import a CAD file into...

Choose...

Autodesk Alias

File > Open or File > Import > File

Autodesk Showcase

File > Import Models

To import a CAD file into...	Choose...
Autodesk Opticore Studio	File > Import
To import a CAD file into...	Choose...
Autodesk Alias	File > Open or File > Import > File
Autodesk Maya (Windows version)	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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

NURBS are imported. The following additional information is maintained on import:

- BREP Bodies
- Data organization
- Tolerances and units
- Material Colors and simple transparency
- Weld maps (beads only)
- Thread maps

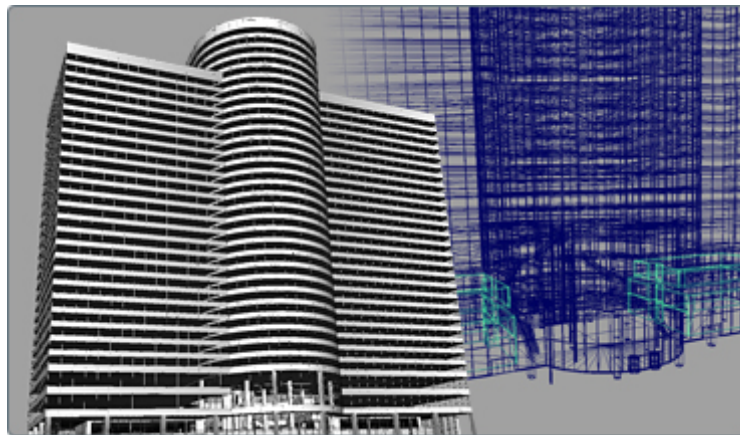
- Decals

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

Limitations

- WorkSources, Display Meshes, and some 2D/3D Sketches are 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 Mac and Windows operating systems.

NOTE For information on Autodesk products that support these formats, see [Supported products and translators](#) on 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, load a plug-in to use DirectConnect translators. See [Recommended system requirements](#) on page 18.

NOTE Maya on the Mac OS X operating system do not support DirectConnect 2010; however, it does support DirectConnect 2009. 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 Alias	File > Open or File > Import > File
Autodesk Maya (Windows version)	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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:

- Colors
- Materials
- Lines, arcs, and splines
- Extruded curves
- Extrusions
- Layers

- Meshes
- Surfaces
- Text
- 3D solids

IMPORTANT Showcase do not support the AutoCAD material attribute **Illumination**. Alias supports the AutoCAD material attribute **Illumination**; however, it is called **Incandescence**.

IMPORTANT Only 3D hierarchical data is supported by Showcase. Curves and 2D drawings are not.

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

NOTE In Autodesk Alias, look for options for specifying data importation. See the *Autodesk Alias Data Transfer* reference book and the Autodesk Alias 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 Alias)

- 1 In your Autodesk software, choose the appropriate menu:

To export a CAD file from ...	Choose ...
Autodesk Alias	File > Save As

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

DWF



Design Web Format (DWF) is a file format developed by Autodesk for web viewing and printing. DirectConnect lets you export Alias tessellated model data to DWF format files (*.dwt) to view in Autodesk Design Review and Project Freewheel.

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](#) on page 4.

Software prerequisites

- Install Alias. (The Autodesk DirectConnect software installs at the same time.)
- The software does not require a license to export this file format.

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

Exporting DWF files

- 1 In Alias, select a file to be exported as a DWF and choose **File > Export > Active As** or **File > Save As**.
- 2 From the **File Format** menu, select **DWF (.dwf)**.
- 3 Set export options:

Option	Function
Export Curves	When ON, curves are exported.
Export Symmetry	If an Alias layer has symmetry ON , this information and the geometric objects resulting from symmetry can be merged and converted or left intact (unmerged) and converted. When OFF , layer symmetry is not exported.
Tessellator	When the tessellator is set to Fast, models are triangulated quickly and less accurately. When the tessellation is set to Accurate, models are triangulated slowly and more accurately. <ul style="list-style-type: none">■ Tolerance – The amount a polygonal surface can deviate from the original NURBS surface. The default value is 0.01.■ Limit Edge Length – If checked, a Max edge length slider appears to control how large the triangles can get. If unchecked, there is no limit on the size of the triangles.■ Max Edge Length – The maximum length of any triangle edge (in current linear units).

- 4 Click **Save**.
The translator automatically launches and exports the file as a DWF.

Types of data exported

The DirectConnect for DWF translator exports only meshes. The Alias scene dag hierarchy is preserved. Associated color information is also exported.

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

ZPR



ZPrint CAD format (ZPR) is a proprietary file format developed by Z Corporation and used with ZPrint and ZEdit for printing on high definition color 3D printers. DirectConnect lets you export ZPR format files (*.zpr) to use in the Autodesk Rapid Prototyping solution.

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](#) on page 4.

Software prerequisites

- Install any of the following Autodesk products:
 - Alias
 - Showcase
 - Maya
 - Opticore Studio

(The Autodesk DirectConnect software installs at the same time.)

- The software does not require a license to export this file format.

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

Exporting ZPR files

Use the output command

- 1 In Alias, select a file to be exported as a ZPR file and choose **File > Export > Rapid Prototype ...**.
- 2 From the **File Format** menu, select **ZPR (.zpr)**.
- 3 Depending on the entity selected for export, such as a shell, additional setup may be needed. See the *Autodesk Alias Data Transfer* reference book and the Autodesk Alias online help for information on additional setup options.
- 4 Click **Save**.

Types of data exported

The DirectConnect for ZPR translator exports triangle meshes with simple colors and textures for use with ZEdit and Zprint software for rapid prototyping.

IGES



Initial Graphics Exchange Specification (IGES) is a file format for transferring graphics data between CAD/CAM systems. DirectConnect lets you import and export 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](#) on page 4.

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

Software prerequisites

- Install one of Autodesk Alias, Autodesk Maya (Windows version), 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 Autodesk Maya (Windows version), load a plug-in to use DirectConnect translators. See [Recommended system requirements](#) on page 18.

NOTE Maya on the Mac OS X operating system does not support DirectConnect 2010; however, it does support DirectConnect 2009. See <http://www.autodesk.com/maya-directconnect>.

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

Importing IGES files

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

To import a CAD file into...	Choose...
Autodesk Alias	File > Open or File > Import > File
Autodesk Maya	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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.

Exporting IGES files

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

To import a CAD file into...	Choose...
Autodesk Alias	File > Export >
Autodesk Maya	File > Export All or File > Export Selected
Autodesk Showcase	File > Export Models
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 Alias)

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

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, Alias 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 Alias surfaces by shrinking the untrimmed surface to the trim boundaries.

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

Types of data imported

The DirectConnect 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](#) on page 69.

NOTE Check the options in Alias to specify data importation. See the *Alias Data Transfer* reference book and the Alias online help.

Identifying IGES supported entities in log files

The following table shows IGES entities supported on import by DirectConnect 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
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

Type	Form	IGES Entity
122	0	tabulated cylinder
123	0	direction
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
141	0	boundary entity
142	0	curve on surface
143	0	boundary surface
144	0	trimmed surface
186	-1,0,1	Manifold Solid BRep Object (MSBO)
190	0,1	plane surface
192	0,1	right circular cylindrical surface
194	0,1	right circular conical surface
196	0,1	spherical surface
198	0,1	toroidal surface
308	0	subfigure definition

Type	Form	IGES Entity
402	7, 9	associativity instance
408	0	singular subfigure instance
502	1	vertex list
504	1	edge list
508	0,1	loop
510	1	face
514	1,2	shell

IGES levels

The system adds all supported geometric IGES entities that are associated with IGES level <n> to an Alias 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



DirectConnect 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.)

IMPORTANT Open Inventor and Cosmo do not run on 64-bit systems.

NOTE For information on the Autodesk products that support these formats, see the [Supported products and translators](#) on 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 Alias	File > Open or File > Import > File
Autodesk Maya (Windows version)	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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
- Transformation nodes

NOTE For information on locating this data in your Autodesk software, see [Where to find imported data](#) on 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](#) on 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](#) on page 15.) 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 Alias	File > Open or File > Import > File
Autodesk Showcase	File > Import Models
Autodesk Opticore Studio	File > Import

- 2 Select a (*.jtt) 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 tessellation)
- Materials (brightness (shininess), ambient color, specular color, diffuse color, and emission color)
- Textures (embedded image files)
- XT BRep and JT BRep topology

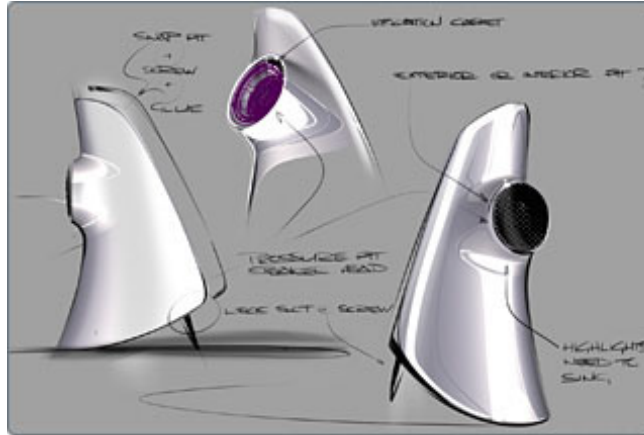
NOTE For information on locating this data in your Autodesk software, see [Where to find imported data](#) on page 69.

NOTE In Autodesk Alias, look for options for specifying data importation. See the *Autodesk Alias Data Transfer* reference book and the Autodesk Alias 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](#) on 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](#) on page 15.) 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.

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

- For Maya (Windows version), load a plug-in to use DirectConnect translators. See [Recommended system requirements](#) on page 18.

NOTE Maya on the Mac OS X operating system does not support DirectConnect 2010; however, it does support DirectConnect 2009. See <http://www.autodesk.com/maya-directconnect>.

Importing Pro/ENGINEER® files

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

To import a CAD file into...	Choose...
Autodesk Alias	File > Open or File > Import > File
Autodesk Maya (Windows version)	File > Open Scene or File > Import
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 DirectConnect for Pro/ENGINEER®. For licensing information, refer to Licensing Autodesk DirectConnect.

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.

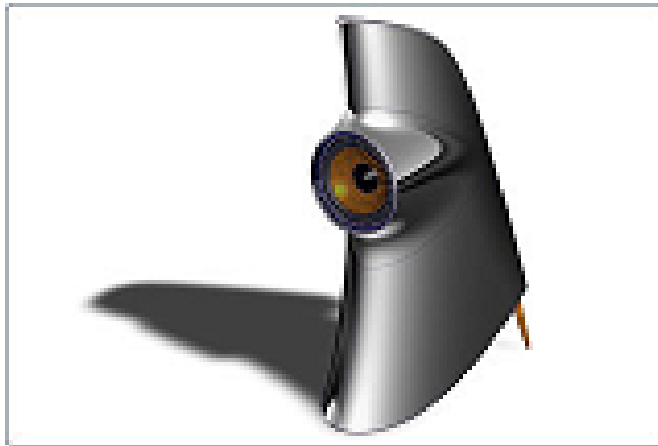
NOTE For information on locating this data in your Autodesk software, see [Where to find imported data](#) on page 69.

NOTE In Autodesk Alias, look for options for specifying data importation. See the *Autodesk Alias Data Transfer* reference book and the Autodesk Alias 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®



DirectConnect 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](#) on 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, 2008, 2009, or 2010 on the same machine.

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

- For Maya 2011 (Windows version), load a plug-in to use DirectConnect translators. See [Recommended system requirements](#) on page 18.

NOTE Maya on the Mac OS X operating system does not support DirectConnect 2010; however, it does support DirectConnect 2009. See <http://www.autodesk.com/maya-directconnect>.

Importing SolidWorks® files

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

To import a CAD file into...	Choose...
Autodesk Alias	File > Open or File > Import > File
Autodesk Maya (Windows version)	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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

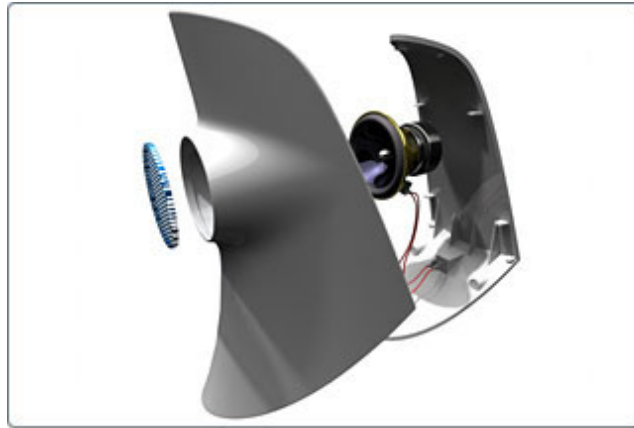
NOTE For information on locating this data in your Autodesk software, see [Where to find imported data](#) on page 69.

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



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

The software supports this format for Windows 32 and 64-bit, as well as Mac OSX operating systems.

NOTE Maya 2011 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](#) on 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](#) on page 15.) 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 Alias	File > Open or File > Import > File
Autodesk Maya (Windows version)	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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

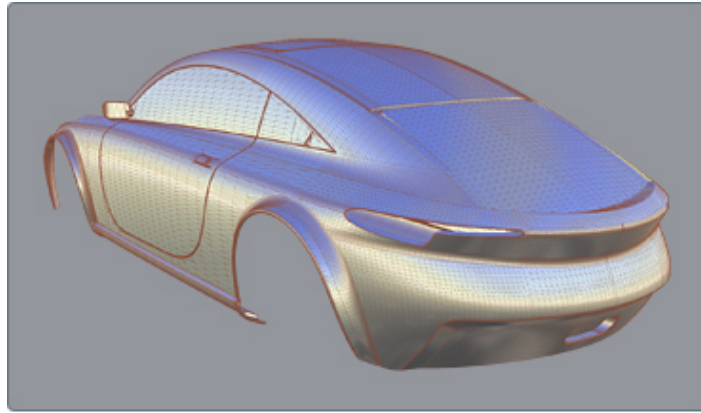
NOTE For information on locating this data in your Autodesk software, see [Where to find imported data](#) on page 69.

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

Limitations

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

STL



DirectConnect lets you import and export STL files. The software does not require a DirectConnect license.

The software supports this format for Mac and Windows operating systems.

NOTE For information on the Autodesk products that support this format and if you need a license, go to [Installing and Licensing](#) on page 1.

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 2011 (Windows version), load a plug-in to used Autodesk DirectConnect translator. See the *Setting up additional software* section of [Recommended system requirements](#) on page 18.

NOTE Maya on the Mac OS X operating system does not support DirectConnect 2010; however, it does support DirectConnect 2009. See <http://www.autodesk.com/maya-directconnect>.

NOTE Maya 2011 supports this translator on the Mac 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 (Windows version)	File > Open Scene or File > Import
Autodesk Showcase	File > Import Models
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.

Exporting STL files

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

To export an STL file into...	Choose...
Autodesk Maya (Windows version)	File > Export All or File > Export Selection
Autodesk Alias	File > Export and click the option box

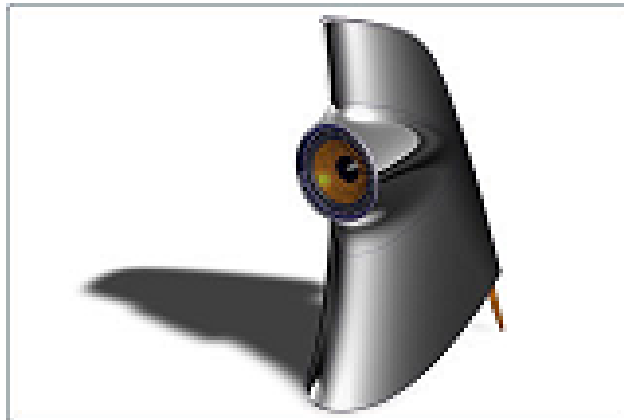
- 2 ■ For Maya users, you can specify:
 - the file format, (f bool) either ASCII or binary
 - the scaling factor (s float), which is set to 1 by default
 - if you want to process the colors for the STL file (w bool)Click **OK**.
- For Alias users, you can specify:
 - the file format
 - the tolerance levels used in the export of the filePick the meshes or shell to export, then click **Accept**.

Type of files imported

ASCII and binary STL (color STL) files are supported.

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

UGS NX



DirectConnect lets you import UGS NX files (Version 6.0 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](#) on 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](#) on page 1.) 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 Alias	File > Open or File > Import > File
Autodesk Showcase	File > Import Models
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 Alias for you to specify data importation. For details, see the *Alias Data Transfer* reference book and the Alias online help.

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

Exporting UGS NX files (Autodesk Alias)

To export UGS NX files from Autodesk Alias:

- 1 In your Autodesk software, choose the appropriate menu:

To export a CAD file from...	Choose...
Autodesk Alias	File > Save As

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

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 Alias and Unigraphics call in common elements.

UG	Autodesk Alias
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

UG	Autodesk Alias
Silhouette curve	Horizon curve
Blank	Invisible
Reference set	Set
Category	Category
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 Alias and Unigraphics.

Supported Alias geometry types

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

Alias Entity	Unigraphics Entity
Construction Plane	WCS
Polyset	Not supported at this time.
Conic	Rational Curve
Arc	Rational Curve
Circle	Rational Curves

Alias Entity	Unigraphics Entity
Line	Line
Curve	BCurve
Surface	BSurface (1), (2)
Trimmed Surface	Face (1), (2)
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 (Alias)

Alias imports the following Unigraphics geometry types. The letters and numbers in parentheses refer to *Notes for Unigraphics entities* below.

Unigraphics Entity Objects	Alias Entity
WCS	Construction Plane
BSurface	Surface
Bounded Plane	Surface
Cylindrical Surface	Surface
Conical Surface	Surface
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)

Unigraphics Entity Objects	Alias Entity
Sheet Body	Shell (Open) (2)
Assembly	Groups/Instance (3)
Group	Group
Layer	Layer
Category	Category
Reference Set	Set
Part Attribute	Blind Data ()
Solid Body	Shell (Closed)

Notes for Alias Unigraphics (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 Alias 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 Alias

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 Alias Data Transfer* reference book and the Autodesk Alias online help.

For Autodesk Maya (Windows version)

NOTE Maya 2010 for Mac does not support DirectConnect 2010; however, it does support DirectConnect 2009. 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. 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 . 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). 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 can be changed in the Import Status window (File > Show Status). See the Showcase documentation for more information. Tessellation quality can be changed in the Import Status window. See the Showcase documentation for more information.	Colors are imported as materials and are visible from Material > Material Properties .

Data Organization	Tolerances and Units	Colors (Shaders)
	<p>To adjust the Level of Detail (LOD) for models imported into Showcase, select Options > Performance and Quality. Next, click the Lock display quality to button and move the slider back and forth to see the different LODs.</p>	

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

For Autodesk Opticore Studio

Data Organization	Tolerances and Units	Colors (Shaders)
<p>The node structure is visible in the Scene Graph Editor, located in the Window > Scene Graph Editor menu. It opens by default.</p>	<p>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.</p> <hr/> <p>NOTE GeomX is not available until the GeomX module is loaded in the Modules tab (in the same dialog) and Studio is restarted.</p> <hr/> <p>To set tessellation tolerances, use the Import tessellation section of the GeomX tab. It is also possible to re-tessellate, using the Window > GeomX ></p>	<p>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.</p>

Data Organization	Tolerances and Units	Colors (Shaders)
--------------------------	-----------------------------	-------------------------

Tessellate dialog and entering new settings.

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`), product (`.CATProduct`), and (`.cgr`) files.

CGR® (.cgr) CATIA Graphical Representation (`.cgr`) is the triangulated format used by CATIA V5.

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 Silicon Graphics Inc. With no relation to Autodesk Inventor® software. Open Inventor 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.

ZPR ZPrint CAD format (ZPR) is a proprietary file format developed by Z Corporation and used with ZPrint and ZEdit for printing on high definition color 3D printers. Autodesk Direct lets you export ZPR format files (*.zpr) to use in the Autodesk Rapid Prototyping solution.

PCRE and BSD Licenses

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PCRE License

PCRE (Perl-compatible regular expressions) is a library of functions to support regular expressions whose syntax and semantics are as close as possible to those of the Perl 5 language.

Release 7 of PCRE is distributed under the terms of the "BSD" license, as specified below. The documentation for PCRE, supplied in the "doc" directory, is distributed under the same terms as the software itself.

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

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The C++ wrapper functions

Contributed by: Google Inc.

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