
Tecplot
Enjoy the View™

TECPLOT 360
2009

Release Notes

Release 2

COPYRIGHT NOTICE

Teclplot 360™ Release Notes is for use with Teclplot 360™ 2009 R2.

Copyright © 1988-2009 Teclplot, Inc. All rights reserved worldwide. Except for personal use, this manual may not be reproduced, transmitted, transcribed, stored in a retrieval system, or translated in any form, in whole or in part, without the express written permission of Teclplot, Inc., 3535 Factoria Blvd., Ste 550, Bellevue, Washington, 98006, U.S.A.

The software discussed in this documentation and the documentation itself are furnished under license for utilization and duplication only according to the license terms. The copyright for the software is held by Teclplot, Inc. Documentation is provided for information only. It is subject to change without notice. It should not be interpreted as a commitment by Teclplot, Inc. Teclplot, Inc. assumes no liability or responsibility for documentation errors or inaccuracies.

Teclplot, Inc.

Post Office Box 52708

Bellevue, WA 98015-2708 U.S.A.

Tel: 1.800.763.7005 (within the U.S. or Canada), 00 1 (425) 653-1200 (internationally)

email: sales@teclplot.com, support@teclplot.com

Questions, comments or concerns regarding this document: documentation@teclplot.com

For more information, visit <http://www.teclplot.com>

THIRD PARTY SOFTWARE COPYRIGHT NOTICES

SciPy 2001-2009 Enthought, Inc. All Rights Reserved. NumPy 2005 NumPy Developers. All Rights Reserved. VisTools and VdmTools 1992-2009 Visual Kinematics, Inc. All Rights Reserved. NCSA HDF & HDF5 (Hierarchical Data Format) Software Library and Utilities Contributors: National Center for Supercomputing Applications (NCSA) at the University of Illinois, Fortran Software, Unidata Program Center (metCDF), The Independent JPEG Group (JPEG), Jean-loup Gailly and Mark Adler (gzip), and Digital Equipment Corporation (DEC). Conditions of Redistribution: 1. Redistributions of source code must retain the above copyright notice, this list of conditions, and the following disclaimer. 2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or materials provided with the distribution. 3. In addition, redistributions of modified forms of the source or binary code must carry prominent notices stating that the original code was changed and the date of the change. 4. All publications or advertising materials mentioning features or use of this software are asked, but not required, to acknowledge that it was developed by the HDF Group and by the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign and credit the contributors. 5. Neither the name of the HDF Group, the name of the University, nor the name of any Contributor may be used to endorse or promote products derived from this software without specific prior written permission from the University, THG, or the Contributor, respectively. DISCLAIMER: THIS SOFTWARE IS PROVIDED BY THE HDF GROUP (THG) AND THE CONTRIBUTORS "AS IS" WITH NO WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED. In no event shall THG or the Contributors be liable for any damages suffered by the users arising out of the use of this software, even if advised of the possibility of such damage. Copyright © 1998-2006 The Board of Trustees of the University of Illinois, Copyright © 2006-2008 The HDF Group (THG). All Rights Reserved. PNG Reference Library Copyright © 1995, 1996 Guy Eric Schalnat, Group 42, Inc., Copyright © 1996, 1997 Andreas Dilger, Copyright © 1998, 1999 Glenn Randers-Pehrson. All Rights Reserved. Tcl 1989-1994 The Regents of the University of California. Copyright © 1994 The Australian National University. Copyright © 1994-1998 Sun Microsystems, Inc. Copyright © 1998-1999 Scripps Corporation. All Rights Reserved. btmptom9 1992 David W. Sanderson. All Rights Reserved. Netpbm 1988 Jef Poskanzer. All Rights Reserved. Mesa 1999-2003 Brian Paul. All Rights Reserved. W3C IPR 1995-1998 World Wide Web Consortium, (Massachusetts Institute of Technology, Institut National de Recherche en Informatique et en Automatique, Keio University). All Rights Reserved. Pmpoint 1990 Ken Yap. All Rights Reserved. JPEG 1991-1998 Thomas G. Lane. All Rights Reserved. Direct API for Microsoft Visual Studio (drent.h) Copyright © 2006 Toni Ronkko. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so. Toni Ronkko. All Rights Reserved.

TRADEMARKS

Teclplot™, Teclplot 360™, the Teclplot 360 logo™, Preplot™, Enjoy the View™, and Framers™ are registered trademarks or trademarks of Teclplot, Inc. in the United States and other countries.

3D Systems is a registered trademark or trademark of 3D Systems Corporation in the U.S. and/or other countries. Macintosh OS is a registered trademark or trademark of Apple, Incorporated in the U.S. and/or other countries. Reflection-X is a registered trademark or trademark of Attachmate Corporation in the U.S. and/or other countries. EnSight is a registered trademark or trademark of Computation Engineering International (CEI), Incorporated in the U.S. and/or other countries. EDEM is a registered trademark or trademark of DEM Solutions Ltd in the U.S. and/or other countries. Exceed 3D, Hummingbird, and Exceed are registered trademarks or trademarks of Hummingbird Limited in the U.S. and/or other countries. Konqueror is a registered trademark or trademark of KDE e.v. in the U.S. and/or other countries. VIP and VDB are registered trademarks or trademarks of Halliburton in the U.S. and/or other countries. ECLIPSE FrontSim is a registered trademark or trademark of Schlumberger Information Solutions (SIS) in the U.S. and/or other countries. Debian is a registered trademark or trademark of Software in the Public Interest, Incorporated in the U.S. and/or other countries. X3D is a registered trademark or trademark of Web3D Consortium in the U.S. and/or other countries. X Window System is a registered trademark or trademark of X Consortium, Incorporated in the U.S. and/or other countries. ANSYS, Fluent and any and all ANSYS, Inc. brand, product, service and feature names, logos and slogans are registered trademarks or trademarks of ANSYS Incorporated or its subsidiaries in the U.S. and/or other countries. PAM-CRASH is a registered trademark or trademark of ESI Group in the U.S. and/or other countries. LS-DYNA is a registered trademark or trademark of Livermore Software Technology Corporation in the U.S. and/or other countries. MSC/NASTRAN is a registered trademark or trademark of MSC Software Corporation in the U.S. and/or other countries. NASTRAN is a registered trademark or trademark of National Aeronautics Space Administration in the U.S. and/or other countries. 3DSL is a registered trademark or trademark of StreamSim Technologies, Incorporated in the U.S. and/or other countries. SDR/IDEAS Universal is a registered trademark or trademark of UGS PLM Solutions Incorporated or its subsidiaries in the U.S. and/or other countries. Star-CCM+ is a registered trademark or trademark of CD-adapco in the U.S. and/or other countries. Reprise License Manager is a registered trademark or trademark of Reprise Software, Inc. in the U.S. and/or other countries. Python is a registered trademark or trademark of Python Software Foundation in the U.S. and/or other countries. Abaqus, the 3DS logo, SIMULIA and CATIA are registered trademarks or trademarks of Dassault Systèmes, or its subsidiaries in the U.S. and/or other countries. The Abaqus runtime libraries are a product of Dassault Systèmes Simulia Corp., Providence, RI, USA. © Dassault Systèmes. 2007 FLOW-3D is a registered trademark or trademark of Flow Science, Incorporated in the U.S. and/or other countries. Adobe, Flash, Flash Player, Premier and PostScript are registered trademarks or trademarks of Adobe Systems, Incorporated in the U.S. and/or other countries. AutoCAD and DXF are registered trademarks or trademarks of Autodesk, Incorporated in the U.S. and/or other countries. Ubuntu is a registered trademark or trademark of Canonical Limited in the U.S. and/or other countries. HP, LaserJet and PaintJet are registered trademarks or trademarks of Hewlett-Packard Development Company, Limited Partnership in the U.S. and/or other countries. IBM, RS/6000 and AIX are registered trademarks or trademarks of International Business Machines Corporation in the U.S. and/or other countries. Helvetica Font Family and Times Font Family are registered trademarks or trademarks of Linotype GmbH in the U.S. and/or other countries. Linux is a registered trademark or trademark of Linus Torvalds in the U.S. and/or other countries. ActiveX, Excel, Microsoft, Visual C++, Visual Studio, Windows, Windows Metafile, Windows XP, Windows Vista, Windows 2000 and PowerPoint are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries. Firefox is a registered trademark or trademark of The Mozilla Foundation in the U.S. and/or other countries. Netscape is a registered trademark or trademark of Netscape Communications Corporation in the U.S. and/or other countries. SUSE is a registered trademark or trademark of Novell, Incorporated in the U.S. and/or other countries. Red Hat is a registered trademark or trademark of Red Hat, Incorporated in the U.S. and/or other countries. SPARC is a registered trademark or trademark of SPARC International, Incorporated in the U.S. and/or other countries. Products bearing SPARC trademarks are based on an architecture developed by Sun Microsystems, Inc. Solaris, Sun and SunRaster are registered trademarks or trademarks of Sun Microsystems, Incorporated in the U.S. and/or other countries. Courier is a registered trademark or trademark of Monotype Imaging Incorporated in the U.S. and/or other countries. UNIX and Motif are registered trademarks or trademarks of The Open Group in the U.S. and/or other countries. Qt is a registered trademark or trademark of Trolltech in the U.S. and/or other countries. Zlib is a registered trademark or trademark of Jean-loup Gailly and Mark Adler in the U.S. and/or other countries. OpenGL is a registered trademark or trademark of Silicon Graphics, Incorporated in the U.S. and/or other countries. JPEG is a registered trademark or trademark of Thomas G. Lane in the U.S. and/or other countries. SENSOR is a registered trademark or trademark of Coats Engineering in the U.S. and/or other countries. SENSOR is licensed and distributed by Coats Engineering and by JOA Oil and Gas, a world-wide authorized reseller. All other product names mentioned herein are trademarks or registered trademarks of their respective owners.

NOTICE TO U.S. GOVERNMENT END-USERS

Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraphs (a) through (d) of the Commercial Computer-Restricted Rights clause at FAR 52.227-19 when applicable, or in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013, and/or in similar or successor clauses in the DOD or NASA FAR Supplement. Contractor/manufacturer is Teclplot, Inc., 3535 Factoria Blvd., Ste. 550, Bellevue, WA 98006 U.S.A..

09-360-04-2

Rev 10/2009

Table of Contents

| | |
|--|----|
| Tecplot 360 2009 R2: Faster Than Ever Before | 5 |
| Improvements Introduced in Tecplot 360 2009 | 7 |
| Bug Updates | 9 |
| Platform-specific Issues | 9 |
| <i>Windows Users</i> | 10 |
| <i>Linux Users</i> | 11 |
| <i>UNIX Users</i> | 13 |
| <i>Macintosh Users</i> | 13 |
| Notes | 15 |

Additional Resources

In addition to these Release Notes and HTML Help, Tecplot 360 includes access to the following online forum and eight manuals to help you explore all of Tecplot 360's functionalities.

- [Getting Started Manual](#) Your introduction to Tecplot 360, including tutorials that will help you learn your way around.
- [User's Manual](#) This manual provides a complete description of working with Tecplot 360 features.
- [Scripting Guide](#) This guide provides Macro and Python command syntax and information on working with Macro and Python files and commands.
- [Quick Reference Guide](#) This guide provides syntax for zone header files, macro variables, keyboard shortcuts, and more.
- [Data Format Guide](#) This guide provides information on outputting simulator data to Tecplot 360 file format.
- [Add-on Developer's Kit - User's Manual](#) This manual provides instructions and examples for creating add-ons for Tecplot 360.
- [Add-on Developer's Kit - Reference Manual](#) This manual provides the syntax for functions included in the add-on kit.
- [Installation Guide](#) These instructions give a detailed description of how to install Tecplot 360 on your machine.
- [Tecplot Talk](#) A user-supported forum discussing Tecplot 360, Tecplot Focus, Python scripting, Add-on development, TecIO and more. Visit www.tecplottalk.com for details.

Welcome to Tecplot 360 2009 R2!

Welcome to Tecplot 360 2009 Release 2! This release revolves around letting you work with larger data faster.

Tecplot 360 2009 R2: Faster Than Ever Before

We've improved the performance of the operations you use most frequently. For example, time-to-first-image of a moderate-sized (180-million finite element) data set is 2.6 times faster. Time to generate a keyframe animation is improved by 35%. Memory use has also improved, allowing you to work with larger data than in previous versions. Your results will vary depending upon the data (size, number of zones, type) and your system configuration.

Additionally, the size of the data you can work with is now limited only by memory. Note that 32-bit operating systems constrain application memory to 2-3 GB (depending on the operating system). To work with larger data, you must use a 64-bit operating system and the 64-bit version of Tecplot 360.

For best results, please make sure that you are using the latest graphics drivers compatible with your hardware and operating system. These can be obtained from your graphics adapter vendor's Web site. Old versions may have issues with Tecplot 360, especially with larger data sets.

- **NVIDIA:** <http://www.nvidia.com/Download/index.aspx>

The NVIDIA driver versions we recommend are 185.18.x (Linux) and 6.14.x (Windows).

- **ATI:** <http://support.amd.com/us/gpudownload/Pages/index.aspx>

Download the latest available for your system and adapter.

- **Intel:** <http://downloadcenter.intel.com/Default.aspx>

Download the latest available for your system and adapter.

Other improvements or changes in Tecplot 360 2009 R2 include:

- **Windows 7 Compatibility**

We recently tested Tecplot 360 2009 on Windows 7 and determined that both R1 and R2 are fully compatible. Please let us know if you encounter any difficulties.

- **HP/UX Itanium Support Returns**

Tecplot 360 2009 R2 (including the Reprise License Manager) is supported under HP/UX running on Itanium hardware.

- **Virtual Server Support for RLM**

The Reprise License Manager (RLM) used for network licensing of Tecplot 360 now supports running on virtualized servers.

- **Solution Time More Flexible and Accessible**

The **SOLUTIONTIME** variable can now be formatted as a date and/or time (rather than just as a number) in dynamic text, and it has been made available in XY plots as well as in 2D and 3D plots. The **SOLUTIONTIME** variable is also supported in equations, allowing you to create differential plots using the various time steps of your data.

- **Ensign Transient Data Support**

The Ensign loader now supports transient data.

- **Face Neighbor Data Now Saved By Default**

When writing a Tecplot-format data file, face neighbor data calculated by Tecplot 360 is now included in the file by default. Our testing has found that the improved performance in loading the data is generally worth the 20% increase in disk use. You can still turn the feature off when disk space is tight.

• Plot Approximations Off By Default

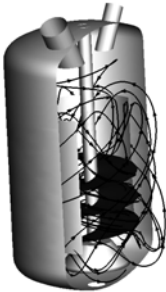
We have determined that this feature no longer provides benefit for most users due to ongoing improvements in graphics hardware performance, and it now defaults to off. If you wish to retain the previous behavior, add the following line to your *tecplot.cfg* file.

```
§!INTERFACE USEAPPROXIMATEPLOTS = YES
```

Improvements Introduced in Tecplot 360 2009

In case you missed them, the following new features were introduced in the initial release of Tecplot 360 2009.

• 3D Surface Clipping



With Tecplot 360 2009, you can use slices to clip your 3D plots in up to six planes, along the X, Y, and Z axes. You can also choose whether to include zones, iso-surfaces, slices or streamtraces in the clipping.

Figure 1: 3D surface clipping enables an inside look at the cylinder included in the Internal Flow tutorial, without changing view preferences.

• Improved Frame Management

The active frame no longer automatically displays on top of inactive frames. You can select and make edits in any frame in your workspace without popping that frame to the top.

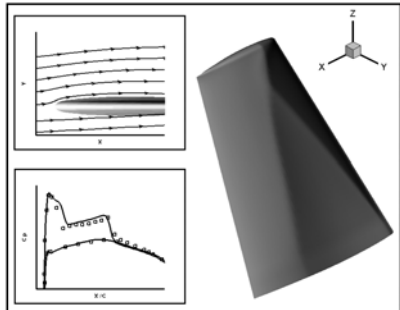


Figure 2: Multiple frames provide additional analysis of the ONERA wing included in the External Flow tutorial.

Tecplot 360 supports up to 2048 frames, and new controls offer ways to change active frames with or without changing frame order.

- **Key Frame Animation**

After a user inputs a series of different views, Tecplot 360 can interpolate views in between to give a panning and zooming animation of your 3D plot. This animation includes transient streamtrace animation, and individual animation steps can be edited and saved.

- **Additional Export Formats**

Export Formats Compatible with Tecplot 360 2006-2008

Export options now include formats compatible with Tecplot 360 2006 R1 and Tecplot 360 2008 R1. Files exported in 2006 format can be read into Tecplot 360 versions 2006 R1 and later; files exported in 2008 format can be read into Tecplot 360 versions 2008 R1 and later.

Tecplot Viewer Export

This release includes a Tecplot Viewer export format for sharing 3D plots. The resulting view-only file does not include data that is not visible in the current view, allowing the file to be significantly smaller in many cases. The plot can be viewed with the free Tecplot Viewer. You will want to retain the original file for data manipulation.

- **Auxiliary Data Editor**

For meta-data annotation of plots, you can now add and edit auxiliary data directly in Tecplot 360 and journal the results into a saved layout file.

- **Fluent Compressed File Loading**

Tecplot 360 2009 reads compressed Fluent data files (extensions *.cas.gz* or *.dat.gz*).

• Tensor Eigensystem Analysis

The Tensor Eigensystem add-on has been incorporated into Tecplot 360, enabling easy access to calculation of eigenvalues and eigenvectors of a symmetric 3-by-3 tensor whose components are stored in a dataset. The calculation acts on each node in the dataset and stores the results as new dataset variables. The Tecplot 360 documentation includes a sample equation file to calculate a symmetric tensor, to help visualize a vortex core in a flow solution.

• Reprise Licensing

All platforms now use the Reprise License Manager for network and site license management.

Bug Updates

For a list of bugs fixed in this release, visit:

http://download.tecplot.com/360/bugs_fixed.html

For a list of current known bugs in this release, visit:

<http://download.tecplot.com/360/bugs.html>

Platform-specific Issues

The following table outlines the support for various platform-specific features new in Tecplot 360 2009 R2.

| | Linux | | Mac | Windows | | UNIX |
|---------------|-------|--------|-----|---------|--------|------|
| | x86 | x86_64 | | 32-bit | 64-bit | |
| FLOW3D loader | Y | Y | N | Y | Y | N |
| ABAQUS loader | N | N | N | Y | Y | N |
| SciPy/NumPy | Y | Y | Y | Y | N | N/A |

Refer to the remainder of this section for issues specific to your operating system.

Windows Users

• All Windows Platforms

Please help us make Tecplot products better by submitting an electronic report to Microsoft in the event that Tecplot 360 terminates unexpectedly. All you need to do is click the Send Error Report button when it appears.

Remote Display Issues

- You can run a network license of Tecplot 360 on one Windows computer and display it on a second computer. However, if the network connection between the two computers has any latency, dynamic text and geometries may become unusably slow.
- If you use Cygwin/X11 on a network, the server must run Tecplot 360 with the **-mesa** option to communicate with this client.

Large, Transient Datasets

- If you post-process large, transient datasets, you may run into an OS limit on the number of temporary files allowed in a directory. To fix this, exit Tecplot 360 and restart the program. The temporary directory is purged upon exit.



The 32-bit version of Tecplot 360 is not supported on 64-bit Windows platforms. If you have a 64-bit version of Windows, install the 64-bit version of Tecplot 360.

• Windows Vista™ and Windows 7 Users

Installation

- You must have administrator rights on your computer to install Tecplot 360.

- **Windows 32-bit users**

The application address space allowed by 32-bit Windows is 2 GB. You must use the 64-bit version of Tecplot 360 on a 64-bit version of Windows to visualize solutions larger than 2 GB.

- **Windows 64-bit users**

- The Tecplot 360 installation for Windows 64-bit platforms does not include SciPy and NumPy Python modules.
- The 64-bit version of Tecplot 360 requires the 64-bit version of Python. If you have the 32-bit version of Python installed, you will receive an error message in your Tecplot 360 installation. Uninstall the 32-bit version of Python first, then run the Tecplot 360 installation to install the 64-bit version of Python.

Linux Users

- **Temporary Directory**

Tecplot 360 relies on being able to create temporary files in the system temporary directory. On Linux, this directory is `/usr/tmp` or `/var/tmp` by default. If this directory is not writable, you can override the default either by setting the `TMPDIR` environment variable in your profile or by setting the `TEMPFILEPATH` in the `tecplot.cfg` file.

- **Menu Shortcuts**

Menu shortcut keys will not work if the NUM LOCK is on. You may be able to set the NUM LOCK to turn off automatically at boot in your computer's BIOS.

- **SELinux**

SELinux (provided with some Linux distributions) adds an extra layer of security. If you see this error message:

```
./bin/tecplot.shared: error while loading shared
libraries: ./lib/libtec.so: cannot restore
segment prot after reloc: Permission Denied
```

Enter this (as root):

```
chcon -c -v -R -u system_u -r object_r -t lib_t
$TEC_360_2009/lib/
chcon -t texrel_shlib_t $TEC_360_2009/lib/*
```

You can run Tecplot 360 without disabling SELinux.

- **Ubuntu[®]**

Tecplot 360 2009 is supported only on LTS (Long Term Support) releases of Ubuntu.

- **Remote Display Issues**

If you have a **Network** or **Site** license, you can run Tecplot 360 on one computer and display it on a second computer (via an X server). However, if you are running the OpenGL version of Tecplot 360, the X server must have the GLX extensions. If you are working with a large grid file remotely, try using the **-mesa** option to minimize the number of OpenGL commands sent across the network.

When displayed remotely, Tecplot 360 may exhibit substantially lower drawing speeds than when it is displayed locally, especially for text and geometries.

- **Mesa Versions**

Mesa, an OpenGL-equivalent graphics library, performs 3D rendering in software. It is typically used when hardware acceleration is unavailable or when working with remote display of large data.

The Mesa version of Tecplot 360 functions slower, especially for 3D plotting. If you must run the Mesa version and display remotely, you can speed up the rendering for XY Line and 2D plots by setting the environment variable below. (On some machines, this may improve the speed of 3D plotting.)

```
export MESA_BACK_BUFFER=Pixmap
```

UNIX Users

- **IBM AIX**

Tecplot 360 2009 requires AIX Technology Level 7 or later. You must install OpenGL yourself, as this is not part of a standard AIX install.

Macintosh Users

- **NumPy and SciPy**

The Tecplot 360 installation for Mac 64-bit platforms (OS X 10.5) does not include the SciPy and NumPy Python modules.

- **Intel Support**

If you have a Mac with an Intel Core processor (rather than a Core 2 or later processor), you cannot run the 64-bit Mac version of Tecplot 360, even if `setuptec` recommends that you do so. Install the 32-bit version of Tecplot 360 instead. To determine the type of processor in your Mac, choose “About This Mac” from the Apple menu. If the processor field displays “Intel Core” or “Intel Core Duo”, you have a Core processor. If it displays “Intel Xeon” or “Intel Core 2 Duo”, you can run the 64-bit version of Tecplot 360.

- **Off-Screen Rendering**

Due to a problem with the Macintosh X Server, using off-screen rendering with OpenGL on a Macintosh machine may cause exported images to be all black. This is a known bug, #4889883, in Apple's X11 server. For this reason, we have disabled off-screen rendering as the default for Macintosh installations. Image exporting and copying to the clipboard are performed using on-screen rendering instead.

Should you want to enable it (for example, for anti-aliasing and variable resolution image buffering), please add the following line to your *tecplot.cfg* file:

```
#!INTERFACE USEOFFSCREENBITMAP = YES
```

Alternatively, you can use the "-mesa" option when launching Tecplot 360 to use the software-only 3D renderer. However, you will lose the benefits of hardware acceleration.

Enjoy the view!

