



What's New in IDL 7.0

IDL Version 7.0
November 2007 Edition
Copyright © ITT Visual Information Solutions
All Rights Reserved.

Restricted Rights Notice

The IDL®, IDL Analyst™, ENVI®, and ENVI Zoom™ software programs and the accompanying procedures, functions, and documentation described herein are sold under license agreement. Their use, duplication, and disclosure are subject to the restrictions stated in the license agreement. ITT Visual Information Solutions reserves the right to make changes to this document at any time and without notice.

Limitation of Warranty

ITT Visual Information Solutions makes no warranties, either express or implied, as to any matter not expressly set forth in the license agreement, including without limitation the condition of the software, merchantability, or fitness for any particular purpose.

ITT Visual Information Solutions shall not be liable for any direct, consequential, or other damages suffered by the Licensee or any others resulting from use of the software packages or their documentation.

Permission to Reproduce this Manual

If you are a licensed user of these products, ITT Visual Information Solutions grants you a limited, nontransferable license to reproduce this particular document provided such copies are for your use only and are not sold or distributed to third parties. All such copies must contain the title page and this notice page in their entirety.

Export Control Information

This software and its associated documentation are subject to the controls of the Export Administration Regulations (EAR). It has been determined that this software is classified as EAR99 under U.S. Export Control laws and regulations, and may not be re-transferred to any destination expressly prohibited by U.S. laws and regulations. The recipient is responsible for ensuring compliance to all applicable U.S. Export Control laws and regulations.

Acknowledgments

ENVI® and IDL® are registered trademarks of ITT Corporation, registered in the United States Patent and Trademark Office. ION™, ION Script™, ION Java™, and ENVI Zoom™ are trademarks of ITT Visual Information Solutions.

Numerical Recipes™ is a trademark of Numerical Recipes Software. Numerical Recipes routines are used by permission.

GRG2™ is a trademark of Windward Technologies, Inc. The GRG2 software for nonlinear optimization is used by permission.

NCSA Hierarchical Data Format (HDF) Software Library and Utilities. Copyright © 1988-2001, The Board of Trustees of the University of Illinois. All rights reserved.

NCSA HDF5 (Hierarchical Data Format 5) Software Library and Utilities. Copyright © 1998-2002, by the Board of Trustees of the University of Illinois. All rights reserved.

CDF Library. Copyright © 2002, National Space Science Data Center, NASA/Goddard Space Flight Center.

NetCDF Library. Copyright © 1993-1999, University Corporation for Atmospheric Research/Unidata.

HDF EOS Library. Copyright © 1996, Hughes and Applied Research Corporation.

SMACC. Copyright © 2000-2004, Spectral Sciences, Inc. and ITT Visual Information Solutions. All rights reserved.

This software is based in part on the work of the Independent JPEG Group.

Portions of this software are copyrighted by DataDirect Technologies, © 1991-2003.

BandMax®. Copyright © 2003, The Galileo Group Inc.

Portions of this computer program are copyright © 1995-1999, LizardTech, Inc. All rights reserved. MrSID is protected by U.S. Patent No. 5,710,835. Foreign Patents Pending.

Portions of this software were developed using Unisearch's Kakadu software, for which ITT has a commercial license. Kakadu Software. Copyright © 2001. The University of New South Wales, UNSW, Sydney NSW 2052, Australia, and Unisearch Ltd, Australia.

This product includes software developed by the Apache Software Foundation (www.apache.org/).

MODTRAN is licensed from the United States of America under U.S. Patent No. 5,315,513 and U.S. Patent No. 5,884,226.

FLAASH is licensed from Spectral Sciences, Inc. under a U.S. Patent Pending.

Portions of this software are copyrighted by Merge Technologies Incorporated.

Support Vector Machine (SVM) is based on the LIBSVM library written by Chih-Chung Chang and Chih-Jen Lin (www.csie.ntu.edu.tw/~cjlin/libsvm/), adapted by ITT Visual Information Solutions for remote sensing image supervised classification purposes.

IDL Wavelet Toolkit Copyright © 2002, Christopher Torrence.

IMSL is a trademark of Visual Numerics, Inc. Copyright © 1970-2006 by Visual Numerics, Inc. All Rights Reserved.

Other trademarks and registered trademarks are the property of the respective trademark holders.



Contents

Chapter 1	
Overview of New Features in IDL 7.0	5
IDL Workbench	6
Platform Support Changes	7
Language Enhancements	8
GET_LOGIN_INFO	8
MAKE_RT	8
ROUTINE_FILEPATH	8
IDL_START_DIR Preference	8
Documentation Enhancements	10
New IDL Routines	11
IDL Routine Enhancements	12
IDL Object Method Enhancements	13
Backward Compatibility	14
Changes to the ONLINE_HELP Procedure	14

Chapter 2	
Features Obsoleted in IDL 7.0	15
Obsolete Features	16
IDLDE Macros	16
GUI Builder	16
Projects	16
Runtime Distribution Export	16
Preferences and Preference Migration	16
X Window System Resources	17
Obsolete IDE Preferences	18
Chapter 3	
Requirements for This Release	23
IDL	24
Feature Support by Operating System	26



Chapter 1

Overview of New Features in IDL 7.0

This chapter contains the following topics:

IDL Workbench	6	IDL Routine Enhancements	12
Platform Support Changes	7	IDL Object Method Enhancements	13
Language Enhancements	8	Backward Compatibility	14
Documentation Enhancements	10		
New IDL Routines	11		

IDL Workbench

The *IDL Workbench* is a new graphical interface to IDL that replaces the IDL Development Environment included with IDL versions prior to 7.0. The IDL Workbench provides powerful code development and debugging tools in a cross-platform interface that looks and behaves the same way on all platforms supported by IDL.

See *Welcome to the IDL Workbench* in the IDL help system for an introduction.

Platform Support Changes

IDL 7.0 is available for Windows, Macintosh OS X, Solaris, and Linux platforms. See [“Requirements for This Release”](#) on page 23 for complete details.

The following enhancements have been made to IDL’s platform support for the 7.0 release:

Java Import Bridge: 64-Bit Linux and Windows Support

The Java Import Bridge is now supported on all IDL platforms.

Java Import and Export Bridges: JDK/JRE Version Update

When using the Java Import and Export bridges, ensure that your application uses version 1.5 or later of the Java Runtime Environment (JRE). When creating Java objects for use by IDL, use the Java Software Development Kit (JDK) version 1.5 or later.

Note

On Macintosh machines, the version of Java installed along with the operating system should be sufficient, whatever its version number.

Language Enhancements

The following enhancements have been made to the core language for the 7.0 release:

- [GET_LOGIN_INFO](#)
- [MAKE_RT](#)
- [ROUTINE_FILEPATH](#)
- [IDL_START_DIR Preference](#)

GET_LOGIN_INFO

The `GET_LOGIN_INFO` function returns the name of the computer running the IDL process, as well as the user's login name. See [GET_LOGIN_INFO](#) for details.

MAKE_RT

The `MAKE_RT` procedure creates a stand-alone IDL runtime distribution for one or more platforms. In addition to the IDL binary and resource files required to execute an IDL program in runtime mode, `MAKE_RT` creates platform-specific launching scripts that allow an end-user to easily launch a runtime application. See [MAKE_RT](#) for details.

ROUTINE_FILEPATH

The `ROUTINE_FILEPATH` function returns the full path to a currently-compiled procedure or function (or a list of procedures and functions). See [ROUTINE_FILEPATH](#) for details.

IDL_START_DIR Preference

The `IDL_START_DIR` system preference replaces two obsolete system preferences: `IDL_MDE_START_DIR` and `IDL_WDE_START_DIR`. The value of this preference determines IDL's initial current working directory when you are using the IDL Workbench.

Note

The `IDL_START_DIR` preference is ignored when running IDL in command-line mode; in this situation, IDL's initial current working directory is the directory from which IDL was started.

See [IDL_START_DIR](#) for details. See “[Obsolete IDE Preferences](#)” on page 18 for information system preferences that have been removed.

Documentation Enhancements

In addition to documentation for new and enhanced IDL features, the IDL online help system has been redesigned to use the IDL Workbench's native Eclipse-based help system. The new system replaces the IDL Assistant-based help system used in IDL versions 6.2-6.4, and provides better integration between the help content and IDL itself. As a result, the IDL help content can now contain “active” hyperlinks that execute IDL code or make changes in the IDL Workbench interface.

See *Using IDL Help* in the IDL help system for a complete description of the new help interface.

New IDL Routines

The following new functions and procedures were added to IDL in this release. See the following topics in the *IDL Reference Guide* for complete reference information unless otherwise noted.

GET_LOGIN_INFO — Returns the name of the computer running the IDL process, as well as the user's login name.

MAKE_RT — Creates a stand-alone IDL runtime distribution for one or more platforms.

ROUTINE_FILEPATH — Returns the full path to a currently-compiled procedure or function (or a list of procedures and functions).

IDL Routine Enhancements

The following IDL routines have updated keywords, arguments, or return values in this release. See the following topics in the *IDL Reference Guide* for complete reference information unless otherwise noted.

PROFILER — The PROFILER procedure has the following new keyword:

- **FILENAME** specifies the path to a text file that will contain the profiler results.

IDL Object Method Enhancements

The following IDL object classes have enhanced methods in this release. See the following topics in the *IDL Reference Guide* for complete reference information.

[IDLgrBuffer::QueryRequiredTiles](#)

[IDLgrClipboard::QueryRequiredTiles](#)

[IDLgrPrinter::QueryRequiredTiles](#)

[IDLgrWindow::QueryRequiredTiles](#) — These methods have the following new keyword:

- **PATH** specifies the path in the graphics hierarchy used to compute the visible tiles. Each path object reference specified with this keyword must contain an alias. Tile visibility is computed for the version of the image object falling within that path. If this keyword is not set, the **PARENT** properties determine the path from the current object to the top of the graphics hierarchy and no alias paths are pursued.

Backward Compatibility

In the transition from the pre-version 7.0 development environments to the IDL Workbench, we have tried to replicate or enhance the features you've come to expect from IDL. In some cases, however, we have altered or deprecated existing functionality. See "[Obsolete Features](#)" on page 16 for details.

This section describes features whose behavior has been altered since IDL 6.4. If your IDL code relies on any of the features whose behavior has changed, you may need to modify your existing code to run it under IDL 7.0.

Changes to the `ONLINE_HELP` Procedure

Beginning in IDL 7.0, IDL's online help system uses the cross-platform help viewer support provided by the Eclipse-based IDL Workbench. As a result, the behavior of the `ONLINE_HELP` procedure has changed in the following ways:

- No support is provided for displaying user-created topics in IDL's default help viewer. Existing calls to `ONLINE_HELP` to display topics in the IDL Assistant help viewer (IDL's default help viewer for versions 6.2 - 6.4), a web browser, PDF viewer, or Windows help viewer will all work as they did in previous releases.

Note

We hope to incorporate support for user-created content in the default IDL help viewer in a future release.

- The behavior of `ONLINE_HELP` when the `BOOK` keyword is not specified has been modified. Previously, IDL would search the directories specified by the `!HELP_PATH` system variable for files that matched the argument to `ONLINE_HELP`. Beginning in IDL 7.0, IDL will only search in IDL's own help system for matching topics.
- The behavior of `ONLINE_HELP` when the `BOOK` keyword is specified has changed in the following way: if no file extension is provided to the value of the `BOOK` keyword, `ONLINE_HELP` will no longer find topics from IDL's own help system. The behavior with respect to user-created content is unchanged.



Chapter 2

Features Obsoleted in IDL 7.0

The following features were present in IDL Version 6.4 but became obsolete in Version 7.0. Obsoleted features should not be used in new IDL code.

Obsolete Features	16	Obsolete IDE Preferences	18
---	----	--	----

Obsolete Features

In the transition from the pre-version 7.0 development environments to the IDL Workbench, we have tried to replicate or enhance the features you've come to expect from IDL. In some cases, however, we have altered or deprecated existing functionality. Specifically:

IDLDE Macros

The IDL Development Environment macro capability is no longer available. In some limited cases, code templates may provide a substitute.

GUI Builder

The IDL GUI Builder is no longer included. The GUI Builder was a Windows-only feature that did not interoperate with the IDL Workbench.

Projects

The pre-version 7.0 *IDL Projects* mechanism has been replaced by a new IDL Workbench project mechanism based on Eclipse features. See the *Working with Projects* tutorial in the IDL online help for additional information.

Runtime Distribution Export

The ability to export an IDL runtime distribution using the project mechanism is no longer available. While we hope to add the ability to create an IDL runtime distribution to the IDL Workbench in a future release, we have added a utility routine, [MAKE_RT](#), to allow you to create runtime distributions from the IDL command line.

Preferences and Preference Migration

IDL system preferences that affected the Windows and Motif IDL Development Environment are obsolete. See [“Obsolete IDE Preferences”](#) on page 18 for details.

Beginning with IDL 7.0, PREF_MIGRATE is no longer called automatically the first time IDL is run. You can still use PREF_MIGRATE to manually migrate IDL system preferences. IDL Workbench preferences are managed separately, by the workbench itself. For more on the difference between system and workbench preferences, see [“About IDL System Preferences”](#) on page 5530.

X Window System Resources

Previous versions of IDL used the values of numerous X Window System resources to modify the appearance and behavior of the Motif IDL Development Environment. The relevant resources were prefaced with the identifier `Idl*idlde`; they were defined in a system-wide resource file

```
<IDL_DIR>/resource/X11/lib/app-defaults/Idl
```

and in individual users' `~/ .idlde` files.

With the switch to the Eclipse-based IDL Workbench, all of the Motif IDLDE X resources are obsolete, and have been removed from the `Idl` resource file. Individual users' `~/ .idlde` files will no longer be read when IDL starts up. Flags specifying the values of X resources are no longer accepted at the UNIX command line when launching IDL.

X resources that apply to IDL widgets and graphics windows are still used. These resources are prefaced with the identifier `Idl*` (no `idlde`). The system-wide `Idl` resource file is still present, and individual users can modify the `~/ .xdefaults` file to contain resource definitions for the `Idl*` resources.

Obsolete IDE Preferences

The following IDL system preferences are no longer supported. Most of the obsolete preferences are replaced by IDL Workbench preferences. As a result, these values can be set within the IDL Workbench interface via the **Preferences** dialog, but not from within IDL using the IDL system preferences mechanism.

All of the obsolete IDE preferences have the prefix `IDL_MDE` (Motif Development Environment) or `IDL_WDE` (Windows Development Environment). The table below lists all of the obsolete IDE preferences along with the IDL Workbench equivalents, if any. Note that although an IDE preference may have only been available for one of the two Development Environments, the IDL Workbench equivalents are valid on all IDL platforms.

Obsolete IDE Preference	IDL Workbench Equivalent
IDL_MDE_EDIT_BACKUP IDL_WDE_EDIT_BACKUP	The local history of a file is maintained when you create or modify a file. Each time you edit and save a file, a copy of it is saved. This allows you to replace the file with a previous state.
IDL_WDE_EDIT_[B F]COLOR_*	The background and foreground colors for various categories of text are set in the Preferences dialog, in the IDL > Syntax Coloring section.
IDL_WDE_EDIT_CHROMACODE	None.
IDL_MDE_EDIT_COMPILE_OPTION IDL_WDE_EDIT_COMPILE_OPTION	<ol style="list-style-type: none"> 1. In the Preferences dialog, select IDL > Editor. 2. Select Enable Compile on Save to automatically compile files when you save them.

Obsolete IDE Preference	IDL Workbench Equivalent
IDL_MDE_EDIT_CWD IDL_WDE_EDIT_CWD	<p>To change the IDL process' current working directory to the directory containing the file just opened:</p> <ol style="list-style-type: none"> 1. In the Preferences dialog, select IDL > Editor. 2. Select Change directory on file open. 3. Click OK.
IDL_WDE_EDIT_FONT	<p>The general editor font is set in the Colors and Fonts section of the Preferences dialog.</p> <p>To set the general editor font:</p> <ol style="list-style-type: none"> 1. In the Preferences dialog, select General > Appearance > Colors and Fonts. 2. Open the Basic folder and select Text Font. 3. Click Change. 4. On the Font dialog, choose the font options. 5. Click OK on both dialogs.
IDL_WDE_EDIT_OPEN_ON_DEBUG	<p>None.</p> <p>Note - When execution halts due to an error, the file and line number at which the error occurred are shown in the Console view as a hyperlink. Clicking the link opens the file automatically.</p>
IDL_MDE_EDIT_READONLY IDL_WDE_EDIT_READONLY	<ol style="list-style-type: none"> 1. In the Project Explorer view, right-click a file and select Properties. 2. On the Properties dialog, select Read only. 3. Click OK.

Obsolete IDE Preference	IDL Workbench Equivalent
IDL_WDE_EDIT_TAB_ENABLE	<p>To determine whether a tab character or spaces are inserted when pressing the Tab key in the IDL editor:</p> <ol style="list-style-type: none"> 1. In the Preferences dialog, select IDL > Editor. 2. If you don't want to use tab characters, select Use spaces instead of tabs. 3. Click OK.
IDL_WDE_EDIT_TAB_SP_ON_SAVE	None.
IDL_WDE_EDIT_TAB_WIDTH	<p>To set the number of spaces used to display a tab character:</p> <ol style="list-style-type: none"> 1. In the Preferences dialog, select IDL > Editor. 2. Change the Displayed tab width value. 3. Click OK.
IDL_MDE_EXIT_CONFIRM IDL_WDE_EXIT_CONFIRM	<p>To exit the Workbench, select File > Exit from the menu bar or close the workbench with the window close button (x). When the latter option is used a prompt will ask if you really wish to exit the Workbench.</p> <p>To enable or disable the exit prompt:</p> <ol style="list-style-type: none"> 1. Select Window > Preferences. 2. On the Preferences dialog, select General > Startup and Shutdown. 3. Select Confirm exit when closing last window. 4. Click OK.

Obsolete IDE Preference	IDL Workbench Equivalent
IDL_WDE_INPUT_FONT	<p>To set the command line font:</p> <ol style="list-style-type: none"> 1. Select Window > Preferences. 2. On the Preferences dialog, select General > Appearance > Colors and Fonts. 3. Open the IDL folder and select Command Line font. 4. Click Change. 5. On the Font dialog, choose the font options. 6. Click OK on both dialogs.
IDL_WDE_LOG_FONT	<p>To set the Console view font:</p> <ol style="list-style-type: none"> 1. Select Window > Preferences. 2. On the Preferences dialog, select General > Appearance > Colors and Fonts. 3. Open the Debug folder and select Console font. 4. Click Change. 5. On the Font dialog, choose the font options. 6. Click OK on both dialogs.
IDL_MDE_LOG_LINES IDL_WDE_LOG_LINES	<p>You cannot control the number of lines written to the Console view, but you can set the maximum number of characters written:</p> <ol style="list-style-type: none"> 1. Select Window > Preferences. 2. On the Preferences dialog, select Run/Debug > Console. 3. Select Limit console output. 4. Enter a Console buffer size (in characters). 5. Click OK.

Obsolete IDE Preference	IDL Workbench Equivalent
IDL_MDE_LOG_TRIM IDL_WDE_LOG_TRIM	None.
IDL_MDE_SPLASHSCREEN IDL_WDE_SPLASHSCREEN	None.
IDL_MDE_START_DIR IDL_WDE_START_DIR	<p>These preferences are replaced by the IDL_START_DIR preference.</p> <p>To set the IDL_START_DIR preference, either use the PREF_SET routine or the IDL Workbench Preferences dialog:</p> <ol style="list-style-type: none"> 1. In the Preferences dialog, select IDL. 2. Type a directory in the Initial working directory box, or browse for a directory. 3. Click OK.



Chapter 3

Requirements for This Release

This section describes supported platforms and software requirements.

IDL	24	Feature Support by Operating System	26
-----------	----	---	----

IDL

A network interface card (NIC or Ethernet) is required for software-based node-locked and floating licenses.

The following table describes the supported platforms and operating systems for IDL.

Platform	Vendor	Hardware	Operating System	Supported Versions
Windows	Microsoft	Intel/AMD x86 32-bit	Windows	XP, Vista
		Intel/AMD x86_64 64-bit	Windows	XP, Vista
Macintosh ^a	Apple	PowerMac G4, G5 32-bit	OS X	10.4, 10.5
	Apple	Intel Core Duo 32-bit	OS X	10.4 ^b , 10.5
UNIX ^{a,d}	SUN	SPARC 32-bit	Solaris	10
	SUN	SPARC 64-bit	Solaris	10
	various	Intel/AMD x86 32-bit	Linux ^c	Kernel version 2.6.9 glibc version 2.3.4 gtk2 version 2.4.13
	various	Intel/AMD x86_64 64-bit	Linux ^{c, e}	Kernel version 2.6.9 glibc version 2.3.4 gtk2 version 2.4.13

Table 3-1: Hardware Requirements for IDL

^a For UNIX and Mac OS X, the supported versions indicate that IDL was either built on (the lowest version listed) or tested on that version. You can install and run IDL on other versions that are binary compatible with those listed.

^b For Mac OS X on Intel-based computers, version 10.4.8 or later and the X11 Update version 1.1.2 (November 2006) are required.

^c If your version of Linux is compatible with the listed kernel and glibc versions, you should be able to install and run IDL.

^d The IDL Workbench requires the GTK+ library version 2.4 or later. Printing functionality in the Workbench requires GTK+ library version 2.10 or later. If GTK+ version 2.4 or later is not available, IDL will only run in console mode.

^e IDL may not install correctly on a pure 64-bit Linux system. If installation fails, install your platform's 32-bit compatibility libraries.

32-bit and 64-bit Versions

On UNIX platforms that provide 64-bit support, you can run IDL as either a 32-bit or a 64-bit application. When both versions are installed, the 64-bit version is the default. You can run the 32-bit version by specifying the `-32` switch at the command line, as follows:

```
% idl -32 or %idl64
```

Under Microsoft Windows, the 32-bit and 64-bit versions are started via separate Start menu entries.

Graphics Hardware

Some IDL features take advantage of graphics hardware that supports the OpenGL 2.0 interface to improve rendering performance, if such hardware is present. Your video card should support OpenGL 2.0 or higher to take advantage of the graphics features in IDL.

Platform Support Questions and Answers

The ITT Visual Information Solutions Technical Support department maintains a list of common platform and operating system support questions and answers. Please see [Tech Tip 3635](#) on the ITT Visual Information Solutions Web site for additional information.

Software Requirements

The following table describes the software requirements for IDL:

Platform	Software Requirements
Windows	Internet Explorer 5.0 or higher
Macintosh	Apple X11 X-Windows manager

Table 3-2: Software Requirements for IDL

Feature Support by Operating System

IDL technologies not listed in this table are assumed to work on all supported platforms.

Feature	Windows		OS X		Linux		Solaris	
	32-bit	64-bit	32-bit	32-bit	32-bit	64-bit	32-bit	64-bit
ActiveX: WIDGET_ACTIVEX (IDLcomActiveX object)	•							
COM Object –Export (via Export Bridge Assistant)	•							
COM Object –Import (IDLcomIDispatch object)	•							
DataMiner	•			• ^a			•	
DICOM Network Services	•			• ^b			•	
DICOM Read/Write (IDLffDicomEx object)	•			• ^b			•	
DICOM Read/Write (IDLffDicom object)	•			•		•	•	•
DXF file format (IDLffDXF object)	•			•			•	
IDL Analyst (IMSL Numerical Library)	•			•		•	•	•
MrSID (IDLffMrSID)	•							
Flexible single-user license, student license	•	•		•		•	•	•
Remote Procedure Calls (RPCs)				•		•	•	•
tty-based interface				•		•	•	•

Table 3-3: Feature Support: IDL 7.0

^a DataMiner is not supported on Red Hat Enterprise 4 or Fedora Core 3.

^b DICOM Network Services and DICOM Read/Write functionality are supported with the PowerPC Macintosh IDL binary version, but not with the Intel-based Macintosh binary version.