

Analyze 9.0 UNIX/Linux Installation Instructions

Welcome to **Analyze 9.0**, a robust, powerful, and practical research software for advanced biomedical imaging visualization, manipulation, and measurement. Analyze features integrated, complementary tools for fully interactive multi-dimensional display, processing, segmentation, registration, and measurement of biomedical imaging modalities including MRI, CT, PET, SPECT, ultrasound, and digital microscopy. It has been designed and carefully programmed to be highly efficient and user-interactive, performing powerful 3-D image processing and display operations in seconds. The applications of Analyze are broad in scope, wide in scale, and penetrating in impact.

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I. Installing Analyze 9.0 on UNIX/Linux Systems

System Requirements

Supported Platforms and System-Specific Disk Space Requirements:

System Manufacturer	Required Disk Space	Operating System
AMD64 Linux (64-bit)	49 MB	CentOS 4+ (or compatible)
Mac Intel (32-bit)	41 MB	OS X 10.5+
Mac Intel (64-bit)	62 MB	OS X 10.5+
Mac PowerPC (32-bit)	41 MB	OS X 10.5+
Sun Microsystems (32-bit)	44 MB	Solaris 10+
Sun Microsystems (64-bit)	53 MB	Solaris 10+
PC (Intel) Linux (32-bit)	45 MB	CentOS 4+ (or compatible)
Intel Itanium 2 Linux (64-bit)	91 MB	SuSE 9+ (or compatible)

+ Later operating systems supported if compatible with the OS listed above.

Additional disk space requirements:

Section	Required Disk Space	Options
Analyze Root	50 MB	Mandatory
Analyze Tutorials	31 MB	Optional
ITK Runtime Extension	22 MB	Optional
AVW Development Environment	36 MB	Optional
ITK Development Environment	1 MB	Optional

Analyze also requires the following minimum system configuration:

- 200 MHz or faster processor
- Network card
- CD-ROM drive
- 512 MB RAM*
- 24/32-Bit graphics capability

*Analyze requires RAM equal to twice the size of the data set being processed.

Disk Space Requirements – The Analyze 9.0 Installation CD contains software for all supported system platforms, so total disk space requirements for combinations of several components listed in the tables above will need to be computed. All installations require the appropriate system-specific files listed in the first table, as well as the Analyze Root component. Be certain that the system on which you will be installing Analyze 9.0 has adequate disk space available.

Operating System Requirements – The supported operating system levels are shown in the first table. The operating version you are using is normally indicated in the system banner when you log into the system. **If you are running an earlier version of the operating system than is indicated for your system type, Analyze 9.0 may not function.**

I. Installing Analyze 9.0 on UNIX/Linux Systems

System Preparation

1. **Login as Root** – In order to install Analyze 9.0, you will need to login as **root**, or use a user account with administrative privileges.
2. **Uninstall Previous Versions of Analyze** – If there is another version of Analyze installed on the system on which Analyze 9.0 will be installed, it is recommended to uninstall the previous version. Otherwise, make sure to choose a new installation directory for Analyze 9.0. To uninstall the previous version, mount the Analyze 9.0 Installation CD and follow the steps under “Running the Analyze 9.0 Install Script”, selecting the ‘u’ option when prompted by the install script.

Mount the Analyze 9.0 Installation CD

The **Analyze 9.0 Installation CD** contains two main components: the complete Analyze distribution for all supported systems, including ancillary files, and an interactive installation script for Analyze 9.0 called ***install***.

To run ***install*** you must first **mount the Analyze 9.0 Installation CD**. The Installation CD contains a mountable file system (HSFS) that is supported by most systems (that support the ISO 9660 format with Rock Ridge extensions). Each of the different system types supported by Analyze 9.0 provide various mechanisms for mounting a CD on a directory. Some systems may automatically mount the CD on a specific directory, invoking a file manager window in association with the inserted CD. Other systems will require you to mount the CD manually, specifying the CD device and a directory on which to do the mount. Consult your systems administrator or system documentation for information on mounting a CD.

Running the Analyze 9.0 Install Script

1. Once the Analyze 9.0 Installation CD has been mounted, open a terminal window (such as ‘xterm’) and change to the CD’s mounted directory.
2. Invoke the installation script (‘install’) by executing the following command in the terminal window:

```
./install
```

3. The interactive installation script provides all information necessary to install the Analyze 9.0 components. The initial option list is displayed once the script is executed:

```
Welcome to the Analyze 9.0 install script.
```

```
What would you like to do ?
```

```
a - Install Analyze  
u - Uninstall Analyze  
i - Information  
q - quit
```

```
Choice (a, u, i, q) [i] ?
```

4. For additional information on the installation procedure, select the ‘i’ option. To remove a previously installed version of Analyze, select the ‘u’ option. To install Analyze 9.0, select the ‘a’ option and proceed to the next page.

I. Installing Analyze 9.0 on UNIX/Linux Systems

Analyze 9.0 Installation

1. To **install Analyze 9.0** select 'a' from the install script options. This installation process will install all of the files necessary to run Analyze 9.0 in a new directory named 'BIR'.
2. For each of the **Analyze 9.0** optional components, including the system-specific files for supported system types, the install script will ask you to choose to install (y), or to not install (n), that component on your system's disk:

For each of the following questions, select the installation type:

y = Yes, install this option to disk

n = No, do not install this option to disk

3. The **Analyze root** component is automatically installed during installation. To install the system-specific files required for Analyze 9.0, the install script will ask you to select a system target. Select the target that best describes your system architecture. Note, the install script will automatically detect the appropriate option and label it with '[y]'.

NOTE: Normally only one of the following system targets will be specified.

The choices will be: AMD64 Linux 64-bit, Mac 32-bit Intel, Mac 64-bit Intel, Mac 32-bit PPC, Sun 32-bit, Sun 64-bit, PC Linux 32-bit and Itanium Linux 64-bit. The system type upon which you are running this installation will default to [y].

Install:

AMD64 Linux 64-bit Version (y n) [n] ?

Mac Intel 32-bit Version (y n) [n] ?

Mac Intel 64-bit Version (y n) [n] ?

Mac PPC Version (y n) [n] ?

Sun 32-bit Version (y n) [n] ?

Sun 64-bit Version (y n) [n] ?

PC Linux 32-bit Version (y n) [y] ?

Itanium 64-bit Version (y n) [n] ?



Note – Any combination of full installation and no action can be selected beyond this point.

4. Following the system types, you can select to install the **ITK Runtime** files. These files extend Analyze 9.0 with modules based on functions from the ITK library:

NOTE: Analyze can be extended with functions from the ITK library. Functionality includes Filtering, Segmentation and Registration. (22 Mb).

Install ITK Runtime (y n) [y]?

5. Next, the **Analyze Tutorials** can be selected for installation. The Analyze Tutorials are provided in PDF format.

NOTE: Online tutorials, with step by step instructions, are available for many of the Analyze modules. (31 Mb).


Install Tutorials (y n) [y]?

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6. If you plan to use the Analyze Developers Add-On, select to install the **AVW Development Files**:

NOTE: The following option allows development with the AVW programming environment. It has no effect on the ability to run Analyze. (36 Mb).

AVW Development Files (man pages, include, examples) (y n) [n] ?

 *Note - The Analyze Developers Add-On requires a special license file. To learn more about this Add-On, and to find out if your license file provides access, please refer to the "Analyze Developers Add-On" section.*

7. The **ITK Development Kit** can also be installed if desired:

NOTE: AVW Developers might also be interested in the AVW_ITK library. This library allows access to ITK functionality from a AVW C program. This is not necessary to use the ITK functions within Analyze. (1 Mb)


Install ITK Developers Kit (y n) [y]?

8. You will now need to specify the **directory** where you would like to install Analyze 9.0 (e.g. /home).

Please enter the directory where you wish Analyze to be installed. The directory specified should already exist and have write access. (Note: The / or root directory is not legal and will result in an install script error.) The install script will automatically append /BIR to the directory path provided [/home] ?

9. All of the Analyze 9.0 files will be copied to a subdirectory named **BIR**. If the **BIR** directory does not exist, you will be asked to confirm that you wish to create it:

The directory /home/BIR does not exist.
Create it (y n) [y] ?

 *If the directory specified is write protected an error will be reported when the install script tries to create the BIR directory and you will be prompted to enter a directory again.*

10. If the **BIR** directory already exists, you will be asked if you wish to use the same directory:

The directory /home/BIR already exists.
Use /home/BIR (y n) [n] ?

11. Once the BIR directory has been established, the install script will report all components to be installed and their required disk space:

```
Installation Information
=====
CD = /CDROM
Install Directory = /home/BIR

Install Analyze root
Install PC Linux 32-bit Version
Install ITK Runtime
Install Tutorials

Required Space = 136 Mb

Install (y n) [n] ?
```

I. Installing Analyze 9.0 on UNIX/Linux Systems

12. Select 'y' to proceed with installation (entering 'n' will cause the script to exit). As the installation progresses, messages will be displayed to show the status of the installation:

```
Installing Analyze root... done.
Installing PC Linux 32-bit... done.
Installing ITK Runtime... done.
Installing Tutorials... done.

Editing the default path in the Analyze script.

<Hit return to continue>
```

13. Note that at the end of the installation, the default path in the Analyze startup script (now located in \$BIR/bin) is altered to reflect the location of Analyze on your system. This path is used to establish the correct \$BIR environment variables when the startup script is used to invoke Analyze. (See the Analyze script in \$BIR/bin for an example of all environment variable defaults).

14. In order to run Analyze 9.0 a system-specific **AnalyzeDirect.lic** license file must be installed. For instructions on how to obtain and install your license file, please refer to the proceeding "**Analyze License Files**" section.

```
To complete installation, a valid license file for Analyze must be
established on this system. Detailed instructions on installing a
valid Analyze license file are included in the installation documentation
in the section: Analyze License Installation (page 11). Follow these
instructions to install the Analyze license on this system.
```

```
<Hit return to continue>
```

15. After installing your system-specific **AnalyzeDirect.lic** license file, the **BIRlic license server process** must be started. The section "**Starting the BIRlic License Server**" describes this process. It is very important to read this entire section and follow the instructions to start the BIRlic license server process.

```
Following installation of the license file, the license server process must
be started on the license server system. Detailed instructions on invoking
this license server process are included in the installation documentation
in the section: Analyze License Installation (page 11). Follow these
instructions to start the license server process prior to running Analyze.
```

```
<Hit return to continue>
```

16. Once the BIRlic license server process has been started, **Analyze 9.0** can be invoked using the Analyze script in the **\$BIR/bin** directory:

```
To run Analyze:

    cd /home/BIR/bin
    ./Analyze

Analyze Installation Complete.
```

II. Analyze License Files

Obtaining a License File


A system-specific license file must be installed before Analyze 9.0 will run. You can obtain this license file from AnalyzeDirect.

In order to generate your license file, AnalyzeDirect must receive two pieces of information specific to your system: 1) the **HOSTNAME** and 2) the **SYSTEM ID**. The instructions below will explain how to find this information, and how to send it to AnalyzeDirect.

1. To find your system **HOSTNAME**, please enter the following command in a terminal window: **uname -n**
2. To find the **SYSTEM ID**, please enter the command listed for your system type:
 - **Sun systems:** Type the command “**hostid**” and report the returned hexadecimal number.
 - **Linux systems:** Type the command “**/sbin/ifconfig eth0**” and report the hexadecimal number in the HWaddr field.
 - **Mac OS X systems:** Type the command “**/usr/sbin/netstat -i**” and report the address for the Ethernet card.
3. Please your **HOSTNAME** and **SYSTEM ID** as returned by the above commands, along with your **name, company/institution**, and **telephone number** to validate@analyzedirect.com.
4. Once AnalyzeDirect receives your system information, an **AnalyzeDirect.lic** license file will be generated and sent to you via e-mail.
5. To install this **AnalyzeDirect.lic** license file, please refer to the instructions under the section entitled “**License File Installation**”.

BIRlic License Management and Analyze Licenses

Analyze 9.0 uses the **BIRlic license management system** for Analyze validation and runtime license administration. The BIRlic license management software can be found in the **\$BIR/BIRlic-9.0** directory (where \$BIR is the path to the directory where Analyze is installed). BIRlic administers two types of Analyze licenses – node-locked and counted floating licenses.

 **Note** – On Linux/UNIX/Mac systems, node-locked and floating licenses both require the BIRlic license server to be started as described in the section “Starting the BIRlic License Server”.

A **node-locked license** will allow Analyze 9.0 to be run on one system only. With a node-locked license, all license file administration is handled local to the specific system. **All 30-day evaluation licenses are node-locked licenses.**

A **floating license** allows one system to act as a license server, “floating” the license across a network to a client system. Any client system that has Analyze 9.0 installed, and can communicate with the license server, can check out a license if one is available. Note – if only one floating license is purchased, two or more client system cannot run Analyze simultaneously.

For information on license pricing and options, please contact sales@analyzedirect.com.

II. Analyze License Files

License File Installation

You will store your **AnalyzeDirect.lic** license file in the **\$BIR/BIRlic-9.0/Licenses** directory. Note – during Analyze 9.0 installation, a default AnalyzeDirect.lic license file is placed in this Licenses directory.

The default AnalyzeDirect.lic license file MUST BE REPLACED by a system-specific license file, otherwise Analyze 9.0 will not run!

To install your system-specific AnalyzeDirect.lic license file:

1. Locate the **AnalyzeDirect.lic** license file sent to you via e-mail.
2. Save the **AnalyzeDirect.lic** file in the **\$BIR/BIRlic-9.0/Licenses** directory.
3. If prompted, confirm that you wish to replace the existing AnalyzeDirect.lic.

For floating licenses, repeat the steps above to install the AnalyzeDirect.lic on client systems that will access the license.

Once the license file has been installed, the **BIRlic license server must be started before Analyze 9.0** will run. Please proceed to the following section, “**Starting the BIRlic License Server**”, for further instructions.

Starting the BIRlic License Server

Once the system-specific AnalyzeDirect.lic has been installed, the **BIRlic license server** must be started in order to run Analyze 9.0 (regardless of node-locked or floating license type). The license server can be started manually, or using an automated tool called the BIRlic Tool. The instructions on the following pages demonstrate how to start the license server using both methods.

Please note, the instructions for starting the BIRlic license server reference the following directory path:

```
$BIR/BIRlic-9.0/$TARGET/bin
```

\$BIR is equal to the path to the directory where Analyze is installed (e.g. /home/BIR). **\$TARGET** should be changed to the directory name that corresponds to the system type selected during Analyze 9.0 installation. The **\$TARGET** directory for each of the system type options available in the install script are as follows:

System Type	Directory Name
AMD64 Linux 64-bit	AMD_LINUX64
Mac Intel 32-bit	MAC_I32
Mac Intel 64-bit	MAC_I64
Mac PPC	MAC_X
Sun 32-bit	SUN
Sun 64-bit	SUN64
PC Linux 32-bit	PC_LINUX
Itanium 64-bit	PC_LINUX64

II. Analyze License Files

Starting the BIRlic License Server using BIRlic Tool

1. To invoke the **BIRlic Tool**, open a terminal window (such as 'xterm') and enter the command*:

```
$BIR/BIRlic-9.0/$TARGET/bin/BIRlic Tool
```

** \$BIR and \$TARGET must be replaced with the appropriate directory path for your system. Please refer to the beginning of the "Starting the BIRlic License Server" section for information on the appropriate directory names.*

2. Once the BIRlic Tool opens, select the **Server** tab.
3. If you have used another version of Analyze on this system, please verify that the previous license server has been shutdown by selecting the **Server Status** button. If no license server process is running, this will generate a "Connect Error" (note - this may take up to 30 seconds while the check makes multiple attempts to connect to the server). If a previous version license server is running, please select the 'Shutdown Server' button to stop that license server process before proceeding.
4. The BIRlic license server can be started by selecting the **Start Server** button. Click **Yes** when asked to confirm that would like to start a 'local License Server' on this system. Once the server is started, a notification window will appear – click **OK** to dismiss this window. After this, the license server process should be running and listening for license requests.
5. Alternatively, the BIRlic Tool also provides the ability to add the license server process to your system startup files so that the license server is **automatically** started at system boot. To add the license server process to your system startup files:
 - a. Ensure that the license server is not currently running. If you selected 'Start Server' in step 4, please shutdown the license server by clicking the 'Shutdown Server' button.
 - b. To add the license server process to your system startup files, select the **Install Bootscript** button. Click **Yes** when prompted to confirm that you would like to install the bootscript. (Note: you may need to be running with root access to install these system files).
 - c. To execute the startup files and start the license server without rebooting your system, you can select the **Run Bootscript** button. Click **Yes** when prompted to confirm that you would like to run the bootscript.
 - d. Once the bootscript starts the BIRlic license server, a notification window will appear – click **OK** to dismiss this window. The license server process should now be running and listening for license requests. Each time your system is booted, the license server process will be automatically started.
6. Select the **Server Status** button to check the license server status at any time. If the status check fails, make sure all of the system information in the AnalyzeDirect.lic license file is correct (floating licenses check that the system information for the server system is correct). You can examine the license file using the **View** button on the **License** tab of the BIRlic Tool. The **Log** tab may also provide additional information if errors occur during license server startup.
7. Note – For **floating licenses**, any client system that wishes to checkout the license must also be running the BIRlic license server process. The same steps listed above can be used to start the license server process on a **client system**.

II. Analyze License Files

Starting the BIRlic License Server manually

1. To start the BIRlic license server manually, open a terminal window and enter the command*:

```
$BIR/BIRlic-9.0/$TARGET/bin/BIRlic Server
```

** \$BIR and \$TARGET must be replaced with the appropriate directory path for your system. Please refer to the beginning of the "Starting the BIRlic License Server" section for information on the appropriate directory names.*

2. After issuing the command the license server process should be started and listening for license requests will start running and will output information on the status of the license server to the **\$BIR/BIRlic-9.0/BIRlic.log** file.
3. An ampersand (&) can be appended to the **BIRlic Server** command to run the process in the background. However, during initial installation it is recommended that the process be run in the foreground (without the ampersand).
4. The BIRlic command also has other options to manually control the license server process:
 - **Hostid** – returns the unique system id.
 - **Status** – displays the status of checked out licenses.
 - **Update** – causes the server to re-read the license file.
 - **Shutdown** – causes the license server to shutdown.
 - **Recover** – recover a license lost because of a program error (automatic recovery will occur with 30 minutes).
5. Note – For **floating licenses**, any client system that wishes to checkout the license must also be running the BIRlic license server process. The same steps listed above can be used to start the license server process on a **client system**.

 *If you encounter problems starting or running the BIRlic license server process, please contact the AnalyzeDirect Support Team at support@analyzedirect.com.*

III. Running Analyze 9.0

Running the Analyze Program

Once you have installed Analyze 9.0 and your AnalyzeDirect.lic license file, and started the BIRlic license server, you are ready to run the program.


1. To run **Analyze 9.0**, first open a terminal window. Change to the **\$BIR/bin** directory (where \$BIR is the path to the directory where Analyze is installed - e.g. /home/BIR) and then execute the Analyze startup script:

```
cd /home/BIR/bin
./Analyze
```

2. The first part of this Analyze startup script establishes several environment variables that are needed to specify the location of the Analyze software and other ancillary files:

```
if ($?BIR == 0) setenv BIR /home/BIR
```

3. The BIR environment variable needs to be set to the proper location of Analyze 9.0. This should have been changed to reflect the proper path during Analyze 9.0 installation. This environment variable can also be set to the proper path in other scripts, like .cshrc, with the path to \$BIR/bin added as part of the PATH variable. If BIR has been set to the proper path, then Analyze 9.0 can be invoked by simply typing **\$BIR/bin/Analyze** or **Analyze**.
4. The first time Analyze 9.0 opens, the **End-User License Agreement for AnalyzeDirect Software** will appear. Please read the agreement carefully and then click **I Accept** or **Exit**. Note, if you click 'Exit' Analyze 9.0 will not open.
5. Once you have accepted the End-User License Agreement, **Analyze 9.0** will open.

 If Analyze 9.0 fails to open, please contact support@analyzedirect.com.

Analyze Patch Updates

As with most software products, the process of bug fixing and minor maintenance between versions is an ongoing process. Analyze has all such fixes available in the form of a patch. Patches can be automatically downloaded and installed by selecting the **Help > Analyze Update** option from the main Analyze window. If it is detected that a new patch is available, a window will appear, asking if you wish to download the update. Click **Yes** to download and install the patch update.

It is recommended that you install new patch updates the first time you run Analyze 9.0 and then check for new patches once each month.

Drag-and-Drop in Analyze

Drag-and-drop for volume images in Analyze requires secure X-windows authorization in the X-windows server. This is the case for most systems, but on some systems (for example, SGI systems), configuration files for the X-windows system need to be changed in order to enable secure authorization.

III. Running Analyze 9.0

Analyze Image Memory Management

Analyze uses a method of memory management that directly memory maps a volume image to a new file when it is loaded. These memory mapped copies of the original volume image have a .mmap extension and are located in a specific directory that can be controlled by the user. By default, this directory is set to the system tmp directory, as it always exists, usually has sufficient space for a few loaded images, is often integrated with the system swap space, and is cleaned of existing files during a reboot. However, depending on the system configuration, it may be desirable to change the location of this directory for the memory mapped files. The ANA_DIR environment variable permits specification of this directory. For example, to change the location from the default to a directory on a disk with more available space:

```
setenv ANA_DIR /usr/home/images
```

*The location of this directory should be on a disk local to the system running Analyze.

The memory mapped files directory (also referred to as the 'workspace' directory), can also be changed while running Analyze. Right-click on the main Analyze workspace and select the 'Workspace Directory' option. This option permits the entry of a new directory for the memory mapped files. This directory should be local to the system and should be on a disk partition with sufficient free disk space to handle the volume of loaded image data expected for all users.

License File Renewal and Expiration

All **AnalyzeDirect.lic** license files are encoded with an expiration date. **For Analyze evaluators**, this date is 30 days after the license file was first sent. If you are an evaluator and you still wish to use Analyze following the expiration of your license file, please contact sales@analyzedirect.com.

For Analyze customers, long-term AnalyzeDirect.lic license files are provided in **12-month increments**. This provides the opportunity for you to change the system on which Analyze is run. AnalyzeDirect contacts all customers one month prior to the expiration of the license file to determine if the license file system information is still current. Once AnalyzeDirect receives your confirmation of the system information, a renewal 12-month license file will be sent via e-mail. If your license file expires, and you have not yet received a new license file, please contact validate@analyzedirect.com to obtain your renewal license file.

Note – You must stop the BIRlic license server before installing a renewal AnalyzeDirect.lic license. To stop the BIRlic license server issue the following command in a terminal window (such as 'xterm'):

```
$BIR/BIRlic-9.0/$TARGET/BIRlic Shutdown
```

** \$BIR and \$TARGET must be replaced with the appropriate directory path for your system. Please refer to the beginning of the "Starting the BIRlic License Server" section for information on the appropriate directory names.*

Once the BIRlic license server is stopped, follow the instructions under "**Analyze License Files**" to install your renewal AnalyzeDirect.lic license file and restart the BIRlic license server.

IV. Analyze 9.0 Basics

Analyze 9.0 Resources

There are several excellent resources available to help you get started with Analyze 9.0.

To quickly learn the basics of Analyze, we recommend that you work through the Analyze 9.0 Quick Start Guide—found on the silver Resources CD included with your software package. The Quick Start Guide contains a series of short exercises covering the most commonly used Analyze features and functions.

The Analyze Tutorials (optional component during installation) and the Analyze User's Guide, both available from the Help menu in the main Analyze window, are another excellent resource, providing detailed information about the Analyze modules.

Analyze Viewlets (short tutorial movies) are also now available and can be accessed by selecting the Analyze Viewlets option from the Help menu. The viewlets show many of the key features and functionality of the Analyze modules and can help you become familiar with the program interface.

Analyze 9.0 Tutorial Data

The tutorial data used in the Analyze 9.0 Quick Start Guide exercises and the Analyze Tutorials can be found on the silver Resources CD. To install the tutorial data from the Resources CD, do the following:

1. Insert the silver **Resources CD** into your computer.
2. Open **Analyze 9.0**. From the main Analyze window select **Help > Analyze Tutorials**.
3. In the Tutorials window, click the **Install Tutorial Data** button.
4. In the window returned, specify the file path to the **TutorialData** folder on the Resources CD (e.g. /Volumes/Resources/TutorialData).
5. Click **Install**. The tutorial data will be copied into the **\$BIR/images/TutorialData** directory.

Analyze 9.0 Image File Format Support

Please note - Analyze does not automatically configure all supported file formats. This keeps module startup time to a minimum, loading only those image formats that you need to use with Analyze for your purposes. To configure and load all supported file formats in Analyze, use the the Import/Export module's External Libraries tool. Instructions on how to use the External Libraries tool can be found in the Quick Start Guide, Exercise 3: Switching on Support for Additional Formats.

AnalyzeDirect Technical Support

For Analyze technical support issues, please contact the AnalyzeDirect Support Team at support@analyzedirect.com. For information about purchasing a **Maintenance Agreement**, which provides unlimited priority technical support, live online training and free version upgrades, please contact sales@analyzedirect.com.

V. Analyze Developers Add-On

The **Analyze Developers Add-On** allows software developers to extend the capabilities of Analyze by developing their own macros and modules, using the **AVW** (A Visualization Workshop) image function library upon which Analyze is built. The library is robust and includes over 600 imaging functions that can be called at a C-language level.

Note – the Analyze Developers Add-On assumes you are familiar with programming.

To get access to AVW development capabilities, you must select the **AVW Development Files** component during Analyze 9.0 installation. The Developers Add-On also requires a special **AnalyzeDirect.lic** license file that will allow access to the AVW development capabilities. All 30-day evaluation license files provide access to the Developers Add-On.

If you already own an Analyze license and would like to evaluate the Developers Add-On, please contact sales@analyzedirect.com.

When the AVW Development Files are selected for installation, an AVW Programmers Guide, AVW Reference Manual, and AVW Quick Reference Guide are also installed in the **\$BIR/AVW-9.0/Manuals** directory.

The best place to start practicing with the AVW functions is with the examples provided in the **\$BIR/AVW-9.0/Extras** directory. This directory contains a number of example source files, both in C and in Tcl/Tk, for common Analyze imaging tasks (like rendering, segmentation, etc.). Note that while Analyze uses Tcl/Tk, the AVW library is interface-independent, allowing developers to work in almost any development environment. If you do want to know more about Tcl programming, we recommend starting with the 'Bible' of Tcl/Tk - "Practical Programming in Tcl and Tk" by Brent Welch. This comes with a CD that you can load on to your computer, which includes a full Tcl/Tk implementation and many examples.

The .tcl scripts contained in the **\$BIR/AVW-9.0/Extras** subdirectories are full source code scripts that can be run, however, you will need to setup the Tcl/Tk environment such that these scripts can find the Tcl/Tk files needed to execute. The `develop_env` script included in the **\$BIR/AVW-9.0** directory provides an example of a script that can be used to set these development environment variables.