



Universal CMDB

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Introduction to Inventory Tools

Universal Discovery offers standalone tools to help you analyze your scan data:

- Analysis Workbench
- Viewer
- SAI Editor

Analysis Workbench

Analysis Workbench is one of the key components in the inventory process. This is where results are consolidated and quality tested, various analysis tasks are performed and exports of the inventory data are produced.

The basic analysis of data usually consists of viewing and querying three types of information:

- Software files that are recognized as belonging to a particular application.
- Unidentified software and files that may belong to unrecognized applications.
- Hardware and asset data.

Analysis Workbench uses a Software Application Index (SAI) containing application and version descriptions to identify the files found during the inventory. When scan results are loaded, each file is checked against this database and this is how DDM Inventory performs software identification. Any unrecognized files can be tagged for further investigation, and when identified, their details can be added to the SAI file so they will be correctly identified in the future.

Analysis Workbench provides several ways of viewing the data, using a series of different views of results, that is, by machine, applications, file or directories.

All the information required for the analysis and consolidation of data collected for a computer population is contained in the population of scan files created when every computer is scanned.

Viewer

The Viewer is a stand-alone program aimed at technical support and Help Desk staff who need detailed configuration analysis and diagnostics. (There is also the Scan Data Viewer, available through the web user interface.)

Viewer provides a convenient way of displaying all of the software, hardware and asset information collected for an individual computer, and allows a detailed comparison of two scan files to be performed.

The Viewer quickly and conveniently displays:

- Details of all software scanned, presented in an explorer style view.
- User-entered asset information.
- Detailed and summarized hardware and configuration information.
- The contents of key files collected during the inventory, such as system configuration files (Config.sys and Autoexec.bat).
- Details of all logical drives scanned.
- Details of any applications recognized.

Each scan file is loaded into a new window, enabling multiple scan files to be viewed at the same time. This allows for a direct comparison between two scan files to be made.

Application Recognition

Application recognition is the process of determining what software is installed on a machine. The process takes place after scanning, when a scan file is loaded into the Viewer or Analysis Workbench components, or when it is processed by the XML Enricher.

The recognition process is driven by a Recognition Engine built into the components mentioned previously, which makes use of the Application Library supplied with the product. The Application Library stores the information required by the Recognition Engine to determine which applications are installed on a machine. It is updated on a regular basis.

Application Recognition is always done using one or more SAI (Software Application Index) files. DDM Inventory ships with 5 Master SAI files (containing libraries for English/International, French and German applications, UNIX® applications, and a rule-based SAI containing rules for base UNIX/Linux OS packages), as well as an empty User SAI.

To extend the application library, the simplest way is to use Analysis Workbench or SAI Editor to add entries to the User SAI.

SAI Editor

The SAI Editor presents a view of Software Application Index (SAI) files. It enables you to:

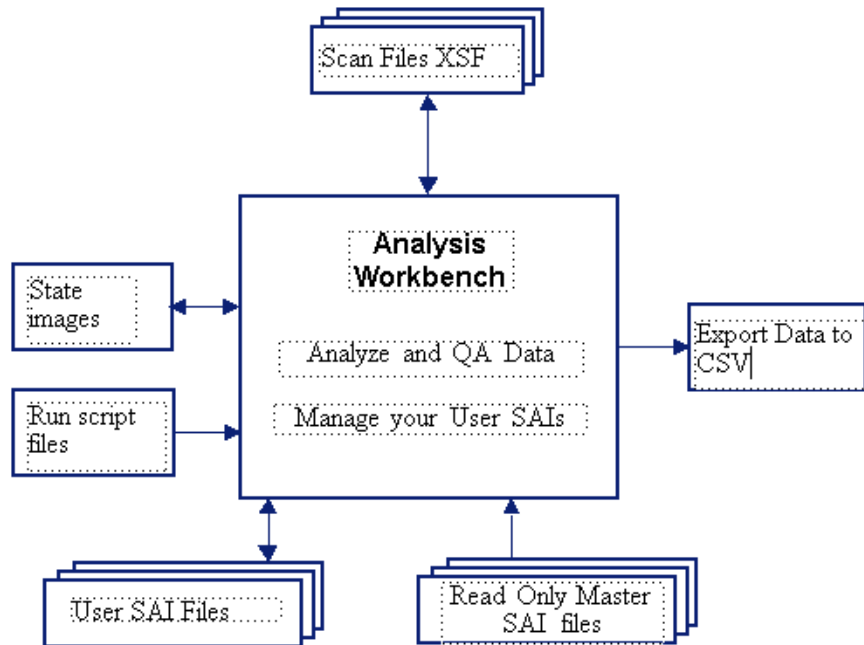
- View and edit a collection of SAI files
- Create new User SAIs
- Move and Copy items between SAIs (you can only edit User SAIs)
- Delete items in SAIs
- Export the contents of an SAI to XML format, either as a summary or the entire contents.
- Display license relationships.
- Add and edit existing license relationships.

The SAI Editor is available as a standalone tool from the Start menu or from Analysis Workbench, where it can be used to review and edit work on SAIs during a teaching session.

If the SAIs change on the Data Flow Probe server, the Administrator must update the SAIs on all systems that have the client tools installed.

Analysis Workbench Overview

The Analysis Workbench enables you to consolidate results, perform analysis and produce exports.



The basic analysis of data usually consists of viewing and querying three types of information:

Software files that are recognized. These are usually designated as applications.

Unidentified software and files that may be unrecognized applications.

Hardware and asset data.

Analysis Workbench uses a database called the Software Application Index (SAI). The SAI contains application and version descriptions that are used to identify files found during the inventory. When scan results are loaded, each one is checked against this database, and this is how Universal Discovery performs software identification. Any files that are unrecognized can be tagged for further investigation; when identified, their details can be added to the database.

Refer to Application Recognition for further information about software management and application recognition.

Analysis Workbench provides a series of different views of results: by machine, by directory, by application, or by file.

All the information required for the analysis and consolidation of data collected for a computer population, is contained in the group of scans created when each computer is inventoried.

System Requirements

The minimum resolution required to run Analysis Workbench is 1024x768.

Starting Analysis Workbench

To start Analysis Workbench:

From the Windows Start menu, select:

Programs > HP UCMDB > Inventory Tools > Analysis Workbench

When Analysis Workbench is started for the first time, the Analysis Workbench Quick Config Dialog Box is displayed automatically.

Analysis Workbench Quick Config Dialog Box

The Analysis Workbench Quick Config dialog box is displayed when you start Analysis Workbench. It provides four Preset Analysis Modes that are optimized for common analysis tasks.

Each of these modes is described in the dialog box (and later in this chapter). Select the mode that you want to use, and click OK. If you do not want to start Analysis Workbench with any of these settings, click Cancel.

An error message is displayed if the age limit on the Master SAI you are using has been exceeded. You can obtain the latest Master SAI (updated monthly) by contacting HP Customer Support.

Starting the Analysis Workbench Quick Config Dialog Box

There are two ways to start the Analysis Workbench Quick Config dialog box:

Automatically on starting Analysis Workbench. To disable this feature, clear the Show at startup check box.

In Analysis Workbench, by selecting **File > Quick Config**.

Preset Analysis Modes

The four preset analysis modes are:

- Executive Summary from Enriched Scan Files
- Summary Reports
- Application Teaching
- Detailed Analysis

Executive Summary from Enriched Scan Files

This setting enables you to use enriched application data and disables loading of file data. This method is extremely fast.

It is assumed that you want to load xsf scan files that have already been processed by the XML Enricher.

Load Option	Settings Used
Load Filter	No files are loaded No directories are excluded
Recognition	Uses Installed applications recognition
Asset Fields	No asset fields loaded
Display Filter	Recognized Main files are shown
Uncertain files are shown as "Treat as unidentified"	The Business view is loaded
Memory	The following file data is loaded: <ul style="list-style-type: none"> • Signatures • Modified time • Type
	The following Machine data is loaded Asset and hardware data

Load Option	Settings Used
	No directory data is loaded
File Version Data	No file version data is loaded

Summary Reports

This setting loads only summary information about each machine. This is useful for quickly obtaining an overview of a large population.

Load Option	Settings Used
Load Filter	Only executable files are loaded
	No directories are excluded
Recognition	SAI recognition is used
Asset Fields	No asset fields loaded
Display Filter	Recognized Main files are shown
	Uncertain files are shown as Treat as unidentified
	The Business view is loaded
Memory	The following file data is loaded: <ul style="list-style-type: none"> • Signatures • Modified time • Accessed time • Type • Attributes
	The following Machine data is loaded:
	Asset and hardware data
	No directory data is loaded
File Version Data	No file version data is loaded

Application Teaching

This setting loads all data necessary for application recognition and adding custom applications to the Software Application Index.

- Executable and command files are loaded
- No analysis asset fields are defined
- No file version data is loaded
- Only those directories that contain loaded files are loaded
- No SMBIOS machine data is loaded

Load Option	Settings Used
Load Filter	Files with the following extension are loaded: <ul style="list-style-type: none"> • exe • com • dll • ocx
	Executable files are loaded
	No directories are excluded
Recognition	SAI recognition is used
Asset Fields	No Asset Fields loaded
Display Filter	The following Recognized files are shown: <ul style="list-style-type: none"> • Main • Associated • 3rd party files
	Uncertain files are shown as CheckVer
	The following Unrecognized file types are shown: <ul style="list-style-type: none"> • Unidentified • Unprocessed

Load Option	Settings Used
	<ul style="list-style-type: none"> • Auto-identified
	The Operational View is loaded
Memory	<p>The following file data is loaded:</p> <ul style="list-style-type: none"> • Signatures • Modified time • Type • Attributes
	<p>The following Machine data is loaded:</p> <p>Asset and Hardware data</p>
	Only those directories that contain loaded files are displayed
File Version Data	<p>The following file version data is shown:</p> <ul style="list-style-type: none"> • Company Name • Product Name • Product Version

Detailed Analysis

This setting is appropriate for populations of fewer than 100 machines. All available data for each machine is loaded. This allows powerful detailed analysis to be performed, but requires significant memory for large numbers of machines.

- All files are loaded
- No file version data is loaded
- All directories are loaded
- All machine data is loaded

Load Option	Settings Used
Load Filter	All files are loaded
	No directories are excluded

Load Option	Settings Used
Recognition	SAI recognition is used
Asset Fields	No Asset Fields are loaded
Display Filter	<p>The following Recognized files are shown:</p> <ul style="list-style-type: none"> ○ Main ○ Associated ○ 3rd party files
	Uncertain files are shown as CheckVer
	<p>The following Unrecognized file types are shown:</p> <ul style="list-style-type: none"> ○ Unidentified ○ Unprocessed ○ Auto-identified
	The Operational View is shown
Memory	<p>The following file data is loaded:</p> <ul style="list-style-type: none"> ○ Signatures ○ Modified time ○ Accessed time ○ Type ○ Attributes
	<p>The following Machine data is loaded:</p> <ul style="list-style-type: none"> ○ Asset and Hardware data ○ SMBIOS Data
	All directories are loaded
File Version Data	<p>The following file version data is shown:</p> <ul style="list-style-type: none"> ○ DOS 8.3 Name ○ Real Name

Load Option	Settings Used
	<ul style="list-style-type: none"> ○ Description ○ Company Name ○ File Description ○ File Version ○ Internal Name ○ Legal Copyright ○ Original Filename ○ Product Name ○ Product Version

Exiting

You can exit Analysis Workbench at any time. This has the following effects:

- Closes all open windows and saves their position.
- Asks you if you want to save any modifications made to asset data in the Machines window.
- Exits the application.

To exit Analysis Workbench:

1. Select the Exit command from the File menu.
2. A confirmation message is displayed.
3. Click **Yes** to exit, or **No** to remain in Analysis Workbench. The purpose of this confirmation message is to prevent you from accidentally exiting from Analysis Workbench and losing work.
4. To disable the confirmation message, so that it is no longer displayed when exiting Analysis Workbench, select the **Don't ask again** check box.

The Analysis Workbench User Interface

Shortcut Menus

To access a selection of commands related to your current activities (a shortcut menu), position the mouse cursor in the appropriate area of the screen and click on the right mouse button. Analysis Workbench displays a list of commands and you can select the one you want.

There are three types of shortcut menu available for the information windows:

Window title bar shortcut menu

Right-clicking on an information window title bar displays a menu with the following options:

Shortcut Menu Item	Function
Maximize Window	Maximizes the window. Also activated by: <ul style="list-style-type: none"> Clicking the Maximize button in the top right corner of the window. Double-clicking the title bar.
Equalize Windows	Makes all windows the same size. Also activated by selecting the Equalize command in the Window menu.
Move up	Moves the window up a position in the workspace.
Move down	Moves the window down a position in the workspace.
Toggle toolbar	Hides the toolbar if it is currently displayed in the window and vice versa. Also activated by clicking the Toggle button in the top right corner of the window.
Close (X)	Closes the window. Also activated by: <ul style="list-style-type: none"> Clicking the Close button in the top right corner of the window. Using the CTRL+F4 keyboard shortcut.

Column header shortcut menus

Right-click on a column header in an information window to display shortcut menus with the following options:

Option	Function
Query	This option is only available for the Machines information window. It displays the Complex Query dialog box which enables multiple tagging query criteria to be specified from a section of categories,. These categories are defined by the information collected across the computer population.
Contains	This option displays a dialog box which allows you to search for a specified string in the column.
Tag all	Applies a tag to all entries in the column.
Untag all	Removes all tags from entries in the column.
Toggle all	Toggles the tag status of all entries in the column. If an entry is tagged then, the tag is removed and vice versa.
Duplicates	Tags any duplicate entries in the column.
Uniques	Tags all entries that are unique.

- **Find**

Allows you to find a particular entry in the active window.

See [Locating Specific Entries in a Window](#) for further information.

- **Sum**

This option is available only if all the contents of a column are numerical. It displays a message showing the sum of the numerical contents of that column.

- **Lock**

When this option is selected, the column clicked and all columns to the left of it are 'locked' and will not scroll left or right.

- **Unlock**

This option is used to remove a lock from a column. To set a different lock, select lock on a different column.

- **Chart**

This option is not available for the Directories information window.

It displays a graphical representation of the selected column statistics.

- **Sort Ascending**

Sorts text alphabetically, numerically, or by date in ascending order (A to Z, a to z or zero to 9).

- **Sort Descending**

Sorts text alphabetically, numerically, or by date in descending order (Z to A, z to a or 9 to zero).

Information window cell shortcut menus

Right-click in a cell in the information windows to display a shortcut menu with the following options.

Menu	Option	Function
Tag	All	Tags all the visible entries in the active window.
	Current row	Tags the currently highlighted row.
	Rows above	Tags rows above the currently highlighted row.
	Rows below	Tags rows below the currently highlighted row.
	<Variable row>	Tags any entries in the window that match the cell specification. This option changes to reflect the cell that the mouse was right-clicked in. For example, if the mouse was right-clicked in a cell in the Main Processor (CPU) column and the cell contains the following information: Main Processor (CPU) of Pentium II Then this option will read Main Processor (CPU) is Pentium II. All entries in the window that have a Pentium II CPU will be tagged. Pressing the SHIFT key at the same time as right-clicking on a cell inverts the option. For example, in the previous case it will read Main Processor (CPU) is not Pentium II.

Menu	Option	Function
Untag	All	Removes tags from any tagged entries in the active window.
	Current row	Removes the tag from the currently highlighted row.
	Rows above	Removes tags from the rows above the currently highlighted row.
	Rows below	Removes tags from the rows below the currently highlighted row.
	<Variable row>	Remove tags from any entries in the window that match the cell specification. This option changes to reflect the cell that the mouse was right-clicked in. For example, if the mouse was right-clicked in a cell in the Computer Manufacturer column and the row highlighted has a computer manufacturer of DELL, then any entries in the window that have a DELL computer make are untagged. Pressing the SHIFT key at the same time as right-clicking in a cell inverts the criteria. For example, in the previous case it will read Computer Manufacturer is not DELL.
Toggle	All	Toggles the tag status of all entries in the active window. If an entry is tagged, the tag is cleared and vice versa.
	Current row	Toggles the tag status of the currently highlighted row. That is, if it is tagged, the tag is removed and vice versa.
	Rows above	Toggles the tag status of the rows above the currently highlighted row. If an Entry is tagged, then the tags are removed and vice versa.
	Rows below	Toggles the tags status of the rows below the currently highlighted row. If an entry is tagged, the tag is removed and vice versa.
	<Variable row>	Toggles the tag status of any entry in the window that matches the cell specification. For example, if the mouse was right-clicked in a cell in the PEC number column and the row highlighted has PEC102, then any entries that have a PEC number of PEC102 are toggled. Pressing the SHIFT key at the same time as right-clicking on a cell inverts the option. For example, in the previous case it will read PEC number is not 102.

Menu	Option	Function
Rows Above	Tag	Tags the rows above the currently highlighted row.
	Untag	Removes the tags from any tagged entries above the currently highlighted row.
	Toggle	Toggles the tag status of any entries above the currently highlighted row. That is, if an entry is tagged, then the tag is removed, and vice versa.
Rows Below	Tag	Tags the rows below the currently highlighted row.
	Untag	Removes the tags from any tagged entries below the currently highlighted row.
	Toggle	Toggles the tag status of any entries below the currently highlighted row. That is, if an entry is tagged, then the tag is removed, and vice versa.
<Variable option>	Tag	Tags any entry in the window that matches the cell specification.
	Untag	Removes the tag from any tagged entry in the window that matches the cell specification.
	Toggle	Toggles the tag status of any entry in the window that matches the cell specification.
View Scan File		This option is available for the Machines window only. It opens the scan file in the Viewer application.

Locating Specific Entries in a Window

Incremental Column Search

The incremental column facility is used to locate an entry in a column in any window.

To Perform an Incremental Column Search:

Click on a column header in the active window and progressively type the word(s) or number(s) that make up the entry that you want to locate.

The window automatically locates the closest existing value in the column. The progress of the incremental search string is displayed on the active window titlebar in italic characters.

Find Facility

To use the find utility:

1. Right-click on the column header and select the Find option. A Find in “<column name>” column dialog box appears.
2. Enter the string to search for. If required, set the options to match on whole word and match case.
3. Click **Find Next**.

The search direction is top to bottom of a column. To reverse the search, click on the column header to reverse the sorting and use the Find option again.

Contains Option

This is used to find and tag multiple entries using a search string. It is of particular use when you are trying to find files with a specific file extension.

To use the Contains option:

1. Right-click on a column header and select the Tag > Contains option. A dialog box appears, which is used to search for a specified string at the beginning, middle or end of entries in the column.
2. In the Search String field enter the text that you want to locate.
3. You can also specify actions to be carried out, after the string has been located. That is:
 - Tag
 - Untag
 - Toggle
4. Click **OK**.

Displaying the Entry Names Contained in a Column

This is very useful for identifying the names of entries that you want to tag or untag.

1. To display the entry names contained in a column:
2. In the window, right-click on the column header and select the Chart option. A column chart is displayed.

3. Click the **Options** button, and set the Other group, % field to 0.
4. Click **OK**.

The chart will show the different entry names contained in the selected column in a list on the left side.

Overview of the Columns in an Information Window

A selection of columns are available for each information window.

To check which columns are available for a particular window, click the Columns toolbar menu in that window. A list of all columns available in that window is displayed. Currently selected columns – that is, columns that are visible in the active window – are shown with a check mark next to them.

Some column names have additional information appended to them as follows:

If the column has the text 'csv' in brackets, this means that the column has been extracted from a CSV file asset field and an option has been set to included this text in brackets. For more information refer to CSV File Extract Asset Field on page 73.

For example, the column name Asset Number (csv) indicates that the information in the Asset Number column was extracted from a CSV file asset field.

If a column name is shown with #n after it, where n is a number, this means that more than one entry is available for this type of the data.

For example, if a computer has been scanned and has three network connections, then these are shown as three separate columns called Network connection #1, Network connection #2 and Network connection #3.

The sequence of the field entries is taken from the order they are found on a particular machine and therefore cannot be relied upon to appear in the same column for all scan files.

Sorting Entries in a Column

There are two ways in which you can sort the contents of a column:

1. Click on a column header to sort the contents of that column. The default sort order is ascending.
2. Right-click on a column header and select the Sort Ascending or Sort Descending command from the shortcut menu.

This command sorts text alphabetically, numerically, or by date in ascending or descending order.

Locking and Unlocking Columns

To lock a column:

1. Select the column which will be the leftmost column to be locked.
2. Right-click on the column header and select the Lock option. The selected column and columns to the left of it are locked.

The locked columns are indicated by a grid around the entries.

To unlock all columns:

Right-click on a column header and select the Unlock option.

All columns are unlocked. The unlocked columns are returned to their normal display state.

Saving and Loading the Workspace Layout

The current workspace layout (for example, windows displayed, linked windows, columns, fonts) can be saved, either as a new default workspace or as a named layout that can be reloaded at any time.

The file can be stored as `awdef.awl` (Analysis Workbench Layout) or as another `.awl` file, which holds layout information about the workspace.

The default location for the `.awl` files is:

C:\HP\UCMDB\DataFlowProbe\Tools\Inventory Tools\Analysis Workbench

To save or load a workspace layout:

Select the Layout command from the Window menu.

From this menu select further commands as required:

- **Load**

Loads a previously saved workspace layout.

- **Save**

Saves a new workspace layout.

- **Save as**

Saves the workspace layout as another `.awl` file

- **Autosave**

Sets autosave preferences to save the workspace layout automatically when you exit Analysis Workbench or whenever the layout changes.

Main Menu Bar

The Main Menu Bar is located at the top of the Analysis Workbench window. Most of the Analysis Workbench commands are accessible from the main menu bar. Commands are grouped by function (for example: File, Edit, or View). Menu commands can be activated with the mouse or the keyboard.

It contains Analysis Workbench commands grouped by function.

Opening a Menu

To open a menu do one of the following:

- Click the menu name with the mouse (for example, File).
- Use the shortcut keys. Shortcut keys are shown to the right of the command in the menus. For example, **Alt-F4** is a shortcut used to exit the Analysis Workbench.
- Use the access key, indicated by an underscore on the active letter. For example, the File menu is accessed by pressing **Alt-F**.
- Use the **Alt** or **F10** key to select the menu, the arrow keys to navigate and the **Enter** key to select an entry.

Most menus invoke commands, however, some menu commands display a dialog box, indicated by ... after the menu command. Other menu commands provide a submenu, containing further commands.

The Menu Items

The following sections show tables of the main menu items and the functions that can be carried out from them. Also shown, are references, indicating where you can find further information about their functions

The File Menu

The File menu is used to:

- Load data files that are used by the Analysis Workbench
- Unload scans
- Load the Quick Config dialog box
- Set loading options
- Load and save state images
- Run script files
- Exit the Analysis Workbench

Menu Item	Function
Load Scan Files...	Loads inventory data from XSF files.
Unload Scan Files	Removes the details for a loaded scan file, from the Analysis Workbench <ul style="list-style-type: none"> • Current (name of the current scan file selected) • Tagged (any tagged machines) • Untagged (any untagged machines) • All (all entries)
Quick Config...	Displays the Analysis Workbench Quick Config dialog box, which is also displayed when Analysis Workbench is started up.
Load Options...	Displays the Analysis Workbench Load Configuration – Advanced dialog box, which allows recognition, load filter, asset fields, display filter, memory and version options to be set.
Load State...	Loads a previously saved state (.aws file). State images are always restored from a subdirectory called State Images. A state can only be loaded if no data has been loaded into the Analysis Workbench.
Save State...	Saves the current state of the Analysis Workbench to an .aws file. This file stores the current state of all four data collections (Machines, Directories, Applications and Files). State images are always saved to a subdirectory called State Images.

Menu Item	Function
Run Script file...	Allows you to run a previously prepared script file (.awcs extension). These scripts facilitate the automation of actions which are manually carried out within the application (for example, loading, processing and outputting of information from Analysis Workbench).
Exit	Exits the Analysis Workbench application.

The Edit Menu

The Edit menu is used to:

- Set options for tagging and untagging entries in all information windows (even if they are not displayed).
- Clear any filters that have been applied to any of the information windows.
- Save and cancel any changes made to asset data in the Machines window.

Menu Item	Function
Tag All	Global – applies a global tag to every item in all information windows. Local – applies a local tag to every item in all information windows Both – applies both local and global tags to every item in all information windows.
Untag All	Global – removes every global tag in all information windows. Local – removes every local tag in all information windows. Both – removes every local and global tag in all information windows.
Clear all Filters	Removes all filters that have been applied, from all windows.

The View Menu

The View menu provides commands for various statistics and charts to be displayed.

Menu Item	Function
Charts	<p>Scan File Age displays a bar chart showing a breakdown of the time elapsed because the data was collected (in months).</p> <p>Scan Method displays a pie chart showing a breakdown of the different Scanners used for collecting data.</p> <p>Recognition displays a pie chart showing a breakdown of the different types of file data that was recognized.</p> <p>Unrecognized/File Frequency displays a graph that can be used to determine the quality of recognition on a population. This displays unrecognized files split by the number of copies.</p> <p>Recognized/ File Frequency displays a graph that can be used to determine the quality of recognition on a population. This displays recognized files split by the number of copies.</p>
Audit Statistics	Displays general data statistics, for example, the number of files scanned, the number loaded, the number recognized.

The Recognition Menu

The Recognition menu provides commands for various application teaching related tasks. The Recognition menu is used to:

- Define Recognition Objectives
- View the Objectives Summary
- Display the SAI Teaching Wizard used to teach applications to a User SAI
- Display SAI Teaching Mode Holding Area
- View and Edit entries in your User SAI
- Recalculate Recognition Objectives
- Set Objective options

Menu Item	Function
Objectives	Set up and review your Recognition Objectives.

Menu Item	Function
Objectives Summary	Displays a summary pie chart of the Recognition Objectives.
SAI teaching Wizard	Having defined a set of objectives, the SAI Teaching Wizard can make use of the objective information to choose which files to teach.
SAI Teaching Mode	Simplifies the process of teaching new applications to the SAI. A non-modal dialog box is displayed (the SAI Teaching Holding Area), which can be used to hold information about the next application to be taught.
View/Edit User SAIs...	Displays a dialog box where the current content of the User SAI can be viewed and edited.
Recalculate Objectives	Recalculate the values for the Recognition Objectives.
Objectives Options	You can set a number of options defining how Recognition Objectives are managed.

The Exports Menu

The Exports menu provides export facilities for exporting data.

Menu Item	Function
Machines	Exports data from a Machines window in CSV or text format.
Applications	Exports data from a Applications window in CSV or text format.
Directories	Exports data from a Directories window in CSV or text format.
Files	Exports data from a Files window in CSV or text format.
Relational	Exports data in a format that is supported by Relational Database Management Systems (RDBMS).
Stored Files	Exports data from the stored files contained in the scan data as a text file or Hex dump.

The Window Menu

The Window menu provides options for controlling the way windows are displayed in the Analysis Workbench workspace and options for the configuration of the display.

Menu Item	Function
Create	Creates additional Files, Directories, Machines or Applications windows.
Equalize	Equally sizes all open information windows.
Configuration...	Displays the Window layout dialog box, which provides options for the configuration of the display font and color, columns and Detail window.
Layout	Load Loads a previously saved window layout from an .awl file.
	Save Saves the current window layout to the current layout file.
	Save As... Saves the current window layout to a user specified .awl file.
	Autosave Automatically saves the window layout:
	None Disables the window autosave facility. Any window layout changes must be saved manually.
	When AW Exits Automatically saves the window layout when the Analysis Workbench is shut down.
	When Layout Changes The window layout is automatically saved when any changes are made to the layout.
Log Window	Displays the Analysis Workbench log.

The Help Menu

The Help menu provides help on all aspects of using the Analysis Workbench.

Menu Item	Function
Contents	Displays the Help file table of contents.
About	Displays information about the Analysis Workbench version, build and system memory.

Toolbars

The Toolbars enable you to access various Analysis Workbench commands without using the menu bar. Toolbars allow you to access various Analysis Workbench commands without using the menu bar. They allow you to work faster and more visually.

When the mouse pointer passes over an icon, a tooltip appears indicating the command corresponding to the icon.

Each of the four information windows in the Analysis Workbench (Files, Applications, Machines and Directories) has a set of toolbar icons.

With the exception of the filter icons, each of the toolbar icons has a menu associated with it

Filters Toolbar Menu

Provides options for applying filters to the information windows, so that a subset of relevant information is displayed.

Activating a Filter

To activate a filter:

Select the particular filter from the Filters toolbar menu.

When a filter is active in a window, visually this is indicated by a check mark (☑) in the Filters toolbar menu and on the associated filter icon. The filter icons are also highlighted in yellow.

Note: The exception to this is the Local Tags filter icon, which does not have a check mark displayed on the icon.

Deactivating a Filter

To deactivate a filter:

Click on the filter icon again or deselect the filter from the Filters toolbar drop-down menu. The appropriate check marks are cleared.

The Filter Icons

Filters can also be applied by clicking the following icons:

- Machines filter 
- Applications filter 
- Directories filter 
- Files filter 
- Local filter 

When these icons are selected they are shown highlighted in yellow and with a check mark on them (except the Local filter icon).

Columns Toolbar Menu

This is used to select the columns that you want displayed in the active window. When selected, a check mark is displayed next to the column item in this menu.

In addition, the Machines window has an option which adds or removes columns in this toolbar menu.

Tag Toolbar Menu

This menu provides various options for tagging entries in the active information window. The following list shows options that are common to all windows.

- **Tag all**

Tags all visible entries in the active window.

- **Untag all**

Clears all visible tags in the active window.

- **Toggle all**

Toggles the tag status of all visible entries in the active window.

- **Use Global Tags**

Uses Global tags only for tagging items in the active window.

- **Use Local Tags**

Uses Local tags only for tagging items in the active window.

- **Use Local Tags Once**

Uses Local tags for the next tag operation, after which Global tags are used again for tagging.

Query Option

The Machines window has a Query option which allows machine queries to be performed.

The Machines window has two extra tagging commands - **Load Tags List** and **Save Tags List**. These will save or load a tag list file (.tag file) and tag matching machines. A .tag file is a text file containing the asset numbers of the tagged machines.

The Files window has an **Add to SAI** option which is used to 'teach' the application to recognize files which it previously did not recognize or recognized incorrectly (that is, as a different version/publisher).

This allows you to optimize the software analysis and consolidation capabilities of Analysis Workbench to recognize unidentified files and applications.

This option is only enabled when a user editable SAI has been loaded (by selecting Load Options in the File menu and clicking the Recognition tab) and the Files window contains at least one selected entry.

Output Toolbar Menu

Export from window - Exports the contents of individual windows. This will display the Export to file dialog box which allows you to export the contents of the window based on the current column selection and filter settings.

Moving a Toolbar

A Docked toolbar is one that is attached to one edge of the program windows. You can dock a toolbar below the window title bars or to the left of the window. When you drag a toolbar to the edge of the window, the toolbar outline snaps into place along the length of the window edge.

A Floating toolbar is one that is not attached to the edge of the window.

Right-clicking on the toolbar menus and icons presents a menu with the following options:

- **Floating**

Floats the toolbar.

- **Dock to top**

Docks the toolbar to the top of the window, under the titlebar.

- **Dock to left**

Docks the toolbar to the left of the window.

To dock the toolbars to the appropriate window and save as default layout:

1. Double-click on the floating toolbars.
2. Select the Layout option from the Windows menu.
3. Select Save to keep this as the default layout whenever Analysis Workbench is started.

To manually move a toolbar:

1. Click the 'move' handle on a docked toolbar, or double-click the title bar on a floating toolbar.
2. Drag the toolbar to a new location. If you drag the toolbar to the edge of the window, it becomes a docked toolbar.

Resizing a Toolbar

To resize a floating toolbar:

Move the pointer over any edge until it changes to a double-headed arrow, and then drag the edge of the toolbar.

Note: You cannot resize a docked toolbar.

Status Bar

The status bar displays information about each of the data collections. It shows a separate pane for each of the four data collections (Files, Directories, Machines, Applications). It also contains information about how many items are available and how many of them are tagged globally.

The format is:

Number of global tags/Number of items loaded into the window

This helps to provide a view of the global state of the data, irrespective of what views are open and gives an up-to-date view of how many items of each kind are available/tagged.

Information Windows

The Information Windows are located on the left side of the Analysis Workbench window. They contain detailed information about the following things: Files, Machines, Applications, and Directories. Each information window contains a toolbar.

The Analysis Workbench workspace can contain four different types of information windows. These windows are used to display and examine the scans containing the information about the computer population.

This information is displayed in columns in the window. You can display multiple windows of each kind, showing different column selections:

Files window

Displays information for all files in the population.

Machines window

Displays asset and hardware information about the computers in the population.

Applications window

Displays information about the software applications contained in the population.

Directories window

Displays information about the directories contained in the population. This window is not shown by default when Analysis Workbench is first started but can be displayed by selecting the Create > Directory command in the Window menu.

Adding a New Window

To add a new information window to the workspace:

- From the Window menu, select the **Create <window type>** command.

Where <window type> is Files, Directory, Machine, or Application.

Note: You can display multiple views of the same window.

Resizing the Windows

All windows can be resized and positioned in the workspace.

To make a window active:

- Click the window title bar or anywhere in the window.

To select options for displaying windows in the workspace:

- Use the commands in the Window menu

The Window Title Bar

The title bar show the following information:

- The name of the window
- The number of the entry in the window that is currently highlighted. This is shown in the left corner of the title bar.
- For example, [5 of 1542] means that the fifth entry in the window is currently highlighted out of a total of 1542 entries displayed in the window.

Moving Within the Windows

You can use the mouse or keyboard to move within an information window as follows:

Control Function	Keyboard Navigation
Next entry	DOWN ARROW
Previous entry	UP ARROW
Up one page	PAGE UP
Down one page	PAGE DOWN
Move to start of row	HOME
Move to end of row	END
Start/End of entries	CTRL+HOME/CTRL+END
Beginning/End of row	CTRL+LEFT/RIGHT
Top/bottom of row currently displayed	CTRL+UP/DOWN

Customizing Window Layouts

Choose one of the following methods to customize the layout of the windows:

- Select options from the Configure toolbar menu (available in every window).

This will display the Window Layout dialog box with the appropriate tab already selected (Fonts and Colors, Columns or Details Window).

- Select the Configuration command from the Window menu. The Window Layout dialog box appears.

The Load Defaults button in this dialog box reverts the window layout back to the default settings.

Customizing the Font and Color

The Font & Color tab of the Window layout dialog box is used to configure the font, style and color for the different types of entries displayed in the workspace. As you specify and select parameters in this dialog box, a sample text list gives you a preview of the applied changes.

Changing the Font Name and Size for All Entries Displayed in the Workspace

To change the font name and size for all entries displayed in the windows in the workspace:

1. Select the font from the Font name drop-down list.
2. Specify the font size by using the arrows in the Base Font Size box.

Changing the Style Settings for Specific Types of Entries

To change the style settings (color, style, background color or relative size) for specific types of entries:

1. In the Sample list, click on the Style entry that you want to work with.
2. Select the color for the text from the Color drop-down list.
3. Select the style for the text from the Style drop-down list.
4. Select the background color of the windows from the Background color drop-down list.
5. Specify the relative size of the text to the window by using the arrows in the Relative size box.
6. Click OK to make the changes to the font and color or click Cancel to exit without making any changes.

Customizing Columns

The Columns tab of the Windows layout dialog box is used to set options for the way columns are displayed in the workspace. The columns in the windows can be automatically resized based on the content, header, or both.

Setting Automatic Resizing Options for Columns

Select one of the following options in the Auto resize group:

- **No.**

Resizing is disabled. Columns must be manually resized by dragging the column boundary.

- **On header text only.**

Automatically changes the column width to fit the column header only.

- **On data only.**

Automatically changes the column width to fit the data in them.

- **On both header and data.**

Automatically changes the column width to fit both the column header and the data in them.

Setting Column Options

Select from the following check boxes in the Options group:

- **Expand to window width**

The columns are resized so that they fit the width of the window.

- **Apply to all windows**

Any changes made to columns, are applied to all windows in the workspace.

This option is only available if the Window layout dialog box is invoked from within a window (that is, from the Configure toolbar menu). If it is called from the Configuration command in the Window menu, it is implicitly checked.

Setting the Number of Columns to Include in a Column Sort

In the Sorting group, use the slider to increase or decrease the number of columns that you want to include in a sort. Move the slider to Sort disabled if you do not want sorting to occur.

Setting Column Grid Line Parameters

Select one of the following options in the Grid lines group:

- **None**

The grid lines for the columns are hidden.

- **Vertical**

The vertical grid lines for the columns are displayed.

- **Horizontal**

The horizontal grid lines for the columns are displayed.

- **Both**

Both horizontal and vertical grid lines for the columns are displayed.

Setting Grid Line Style

To set the grid line style:

Select one of the following options in the Grid line style group:

- **Solid line**

The grid lines are displayed as a solid line.

- **Dotted line**

The grid lines are displayed as a dotted line.

- **Dashed line**

The grid lines are displayed as a dashed line.

Setting Grid Line Color

1. Select a color from the Grid line color drop-down list.
2. Click OK to make the changes to the columns or click Cancel to exit from the dialog box without making any changes.

Detail Window

You can display additional details about the items listed in the Information windows by using the Details Window located on the far right side of the Analysis Workbench window.

The Details windows are secondary windows located on the far right of the Analysis Workbench window that display additional linked data about the selected item in each of the information windows.

Displaying the Details Window

To display the Details window:

From the Configure toolbar menu in any Information window, select the Detail window link command.

If you clear the Detail window link menu item for all the Information windows displayed, the Information windows will span the entire width of the Analysis Workbench window.

Detail Window Customization

The Detail Window tab in the Window layout dialog box is used to set options for the display of the Files, Machine, Directory and Application Details windows.

Setting Links to the Details Windows

Select any number of the following from the Detail Window Links group box:

- File windows
- Machine windows
- Directory windows
- Application windows

Specifying Data to be Displayed in Details Windows:

Select any combination of the options described in the following tables:

File Details

Option	Description
Asset numbers	Shows the asset number of the machines that the file resides on.
Directory names	Shows the directory that the file resides in.
File sizes	Shows the size of each copy of a file within the population.
File signatures	<ul style="list-style-type: none"> • Shows the signatures found for each file within the population. • It shows a line for each file found in the population. • There can be multiple instances of the file on the same machine. <p>In this case there will be two lines for this machine in the Details window.</p>
File modified date	Shows the date the file was last modified files if available.

Option	Description
File accessed date	Shows the last-accessed time stamp for files if available.
File usage	Shows number of days since the file was last executed.
File attributes	<p>Displays system attributes for a file.</p> <p>The Attribute column along with normal file attributes includes the X (executable), I (internal file) and D (device driver) information.</p> <p>Version information (as per Windows Explorer) is available for all files having the information I attribute.</p>
File types	Shows the type of file (for example, DOS executable file, Windows executable, OS/2 DLL file).
Bottom pane	
Unused	The bottom pane of the File Details window will not be used for displaying any data.
Version Data	This is the information that is embedded inside most Windows executables. It describes the publisher, version and is extracted by the Scanners and stored as part of the file data in the scan file.

Machine Details

Option	Description
Hardware summary	<p>Displays basic details of the hardware configuration scanned from the computer as it is inventoried.</p> <p>Provides details of the operating system, processor, type of screen, memory, drives, directories and files as well as the total disk space and free space.</p>
Applications	Displays details of the applications identified on the machine, including publisher and version.
Recognition statistics	<p>Displays the total number of files on the highlighted machine, including a breakdown of the following both as an absolute number and as a percentage of the total files:</p> <ul style="list-style-type: none"> • Main files

Option	Description
	<ul style="list-style-type: none"> • Associated files • Files that need the version checked • Unrecognized files and unprocessed files

Directory Details

Option	Description
File names	Displays a list of file names found within the directory, along with the size of the file.
Machine names	Displays a list of machines where the directory is found within the population, with the drive location for the directory.

Application Details

Option	Description
Installed on machines	The machine(s) that the application is installed on.
Licensed by	The details of the application suite that licenses the highlighted application (if applicable). For example, Word 97 is licensed by Microsoft Office 97 if installed on the same machine.
Licenses	The details of any applications that the highlighted application licenses. For example, Word 97 licenses Microsoft Photo Editor if installed on the same machine.

State Images

A state image is the term describing the current 'state' of all data collections (that is, Files, Applications, Directories and Machines). This includes the scan files that have been loaded into the Analysis Workbench.

A state image is a file representing a 'state'. It can be used to maintain an easy to load image of your computer population.

State images are transitory in nature. If asset data is edited, even when the data has been loaded from a state image, the original data source will be edited and not the state image itself.

The version of the state image changes with new releases of the software, and old state images cannot be read by newer versions of the software.

The state image files are not backward compatible.

State images can be extremely useful in situations where a large amount of analysis work has been carried out. The image can be easily reloaded at a later time. This is significantly quicker than loading from the original data source.

Saving a State Image

The current state image of the Analysis Workbench can be saved to a .aws file. This file stores the current state of all four data collections. State images are always stored to a subdirectory called State Images.

To save a state image:

1. Click the Save State command in the File menu (or use the keyboard shortcut **CTRL+s**). The Save Analysis Workbench State Image dialog box is displayed.
2. The Description box displays the date that the state image was generated. The text in this box can be edited as required.
3. In the File name box specify the name of the file that the state image is to be saved to.
4. Click the Save button.

Loading a State Image

A previously saved state image can be loaded only when there is no data loaded in the Analysis Workbench. State images are always restored from a subdirectory called State Images.

To load a state image:

1. If data is already present in the Analysis Workbench, either restart Analysis Workbench, or select the **Unload Scans > All command** from the File menu. All scans loaded into the Analysis Workbench are now unloaded.
2. Click the **Load State** command in the File menu (or use the keyboard shortcut **CTRL+I**). The Load Analysis Workbench State Image dialog box is displayed.
3. Select a state image to load (.aws file).
4. Click the **OK** button.

Overview of Command Line Parameters

By using command line parameters, you can create shortcuts on your desktop that start Analysis Workbench with specified state images, directories containing scan files or a specific scan file.

The command line parameters can be combined, so that you can for example, load a state image and a directory of scan files or specific scan files.

This can be a very useful tool for cases where you have already loaded a large amount of data into the Analysis Workbench workspace and have performed some analysis on this data. You can save the state image of the session, and at the next session you can use command line parameters to add any new scan files that have been found in your scan file repository directories.

Because Analysis Workbench does not load duplicate scan files (that is, an identical scan file), no current data will be overwritten. Scan files are considered identical when the Asset Number field is the same even if the scan file name is different.

You can also use a command line parameter to specify that all dates in Analysis Workbench use the standard international date format instead of the one set up in Windows.

Creating a Shortcut on the Desktop

To create a shortcut on the desktop including parameters:

1. Create a shortcut without parameters first:
2. Drag the Analysis Workbench icon onto the desktop with the right mouse button.
3. Select the Create shortcuts here option from the menu that is displayed when releasing the mouse.
4. Right-click on the shortcut and open the properties dialog box.
5. Add any command line parameters to the end of the target field separated from the executable name by a space.

Scan File Names Command Line Parameter

This is one or more scan file names. The following conditions apply:

Scan file names specified are loaded after a state image or a directory specified.

If the path to any parameter (specific scan files) contains spaces, it must be enclosed in the double quotes.

Syntax

The syntax for scan file command line parameter is as follows:

[Fully qualified scan file names separated by spaces]

Examples**Case 1:** Path to the Scan File Does Not Contain Spaces

```
C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\State Images
\Samples.AWS
```

Case 2: Name of One Scan File Contains Spaces

```
"C:\Inventory scans\LND1250.xsf" E:\scans\Test.xsf
```

Standard International Date Command Line Parameter

When specified, all dates use the standard international date format instead of the one set up in Windows. This is useful when setting up scripts for exports.

Syntax

The syntax for standard international date command line parameter is as follows:

[/STD_DATES] or [-STD_DATES]

The command line switch only turns on the standard international date format. There is no command line switch to turn it off.

Using Combined Command Line Parameters

You can combine the three command line parameters so that Analysis Workbench can be started with different data in it.

Specify the names of the scan files, or the state image you want to load. If a directory name is specified, all the scan files in that directory are loaded. The command line parameter priority is always:

- State Image
- Directories (only 1 is allowed)
- Scan files (multiple scan files can be specified)

Syntax

The syntax for combined command line parameters is as follows:

[Fully qualified directory name] [State image name] [Fully qualified scan file names separated by spaces]

Examples

For example, you may want to load a saved state image and also include new scan files contained in your repository directory.

- **Case 1:** Path to the State Image and Scan File Directory Do Not Contain Space.

```
C:\states\State1.aws c:\NewScanfiles
```

- **Case 2:** The State Image and the Scan File Contains Spaces

```
"C:\states\State 1.aws" "c:\New Scan Files"
```

Viewing Logs

Logs can be accessed from the Log Window command in the Windows menu.

The log file records information about the current session of Analysis Workbench. It can include amongst other items; how many scan files were loaded and how long they took. It can also log activity when editing SAI entries.

Shortcut Keys

You can quickly accomplish tasks you perform frequently by using shortcut keys.

Task	Keyboard Shortcut
Load State	CTRL+I
Load Scan Files	CTRL+o
Save State	CTRL+s
Exit Analysis Workbench or close an active window	ALT+F4
Tag all entries in an information window (can only be used from within the window itself)	SHIFT+CTRL+a
Untag all entries in an information (can only be used from within the window	SHIFT+CTRL+u

Task	Keyboard Shortcut
itself)	

Setting Load Preferences

The Analysis Workbench Load Configuration Dialog Box

Set Loading preferences before you load data into the Analysis Workbench.

To load the Analysis Workbench Load Configuration Dialog Box:

Select the Load Options command from the File menu. The Analysis Workbench Load Configuration dialog box appears.

This dialog box has six tabs which are used to set various options:

- **Load Filter**

Specifies which files are to be loaded from selected scan files.

- **Recognition**

Specifies which recognition method to use and which files to pass through it.

- **Asset Fields**

Adds additional columns of asset data.

- **Display Filter**

To minimize the amount of data to be viewed, selections can be made after the files have been processed. In addition, selected views can be chosen.

Business view – licensable applications

Operational view – all applications with partial or full identification

Memory

These are memory saving options. Includes options for selecting:

File attribute information to load

- **Directories to load**
- **Machine data to load**

- File Version Data

Configures loading of additional information collected at scan time.

Note: The Recognition, Memory and File Version Data settings are disabled and cannot be changed while data is present in Analysis Workbench. To enable these settings, either unload the data (select the Unload scans command from the File menu) or restart Analysis Workbench with an empty workspace.

It is recommended that you check the load option settings before loading in data to the Analysis Workbench. This will save you having to unload data if a setting needs to be changed.

Loading and Saving Options

Load configurations can be saved to or loaded from a LoadOptions.ini file (the default file name is LoadOptions.ini) by using the **Load** and **Save** buttons available in every tab page of the Analysis Workbench Load Configuration dialog box.

Filtering Levels

There are three levels of filtering in Analysis Workbench - and understanding this is key to understanding how to use the application. Filtering takes place before the recognition phase and this determines which information will be displayed in Analysis Workbench and the status it will be given.

Load Filter

This filter is used to decide which files to extract from the scan file for processing and/or displaying by the recognition engine.

Recognition Filter

This filter determines which of the files that are passed through the load filter are also sent to the recognition engine for processing. Sending too many files will make it slightly slower, however, passing less files through the recognition engine will possibly result in inferior recognition.

This filter is different to the load filter in that a load filter might load .exe, .com and .dll files, but a recognition filter might be limited to .exe and .com. This means that .dlls are loaded but not recognized. This can be useful (depending on the Scanner configuration) since the .dll files will still give version information without being recognized.

Display/Storage Filter

This filter is based on the recognition status. Recognition status can be:

Main

Main files identify the application. An application can have multiple main files, but normally there is only one. If a Main file is found, the application is considered present.

Associated

Associated files are part of an application but not the main file.

3rd party

Files such as some DLL files that are technically used by the application, but are also distributed freely and can be used by other applications.

CheckVer file

CheckVer files are files that are found in the Recognition library, but do not match any of the known versions of an application. This usually indicates that it is a newer version. If this is the case, it might be a good idea to obtain an updated Recognition Library from HP.

Unidentified file

These files cannot be identified.

Unprocessed file

These files have not been processed by the recognition engine. For example, they are passed to the load filter, but not to the recognition filter.

Junk files

These files have been identified as junk files as set up in the Recognition tab page Advanced options.

Auto-identified file

These files are known to be a device driver file and were not recognized by the application library. Files used as Device Drivers represent a large portion of the files that are not identified by the Application Library. Being able to identify these automatically can significantly reduce the effort required to achieve good recognition rates.

When performing analysis or recognition, it can be beneficial to allow everything to pass through the display filter (apart from files you have designated as junk). This effectively causes the Analysis Workbench to store and display information about all files, irrespective of their recognition status. In this state, the file data that is needed to teach more applications is available.

Configuring Load Filter Settings

You can use these settings to determine which types of files will be loaded and optionally be processed by the recognition engine. In addition, whole directories of files can be excluded from the recognition process.

1. In the Analysis Workbench, select the **Load Options** command from the File menu.
2. Click the **Load Filter** tab in the Analysis Workbench Load Configuration–Advanced dialog box.

Selecting the Load Filters

To select the load filters:

1. Click the Files tab.
2. In the Files group box, select one from the following options:
 - o **All files** - Loads all files.
 - o **No files** - No files are loaded. For example, use this for hardware only analysis.
 - o **Some files** - Enables the Some files options:
 - o **By extension** - This allows you to specify the extensions of any files that you want to be included. Select the extensions from the drop-down list (this list maintains a history of previously entered extensions) or type the extension directly in to the box. Multiple extension must be separated by semicolons.
 - o **Executable files** - This will allow all executable files to be processed against the recognition engine. Executable files include *.exe, *.com and *.ddl and other files containing executable code.
 - o **Files within Archives** - This will process any files in archive files (for example, Zip files, CAB, LZH). When this option is checked, any files matching the other criteria (extension and/or executable) are loaded, even if they are inside an archive. If the option is cleared, no files within archives are loaded.
 - o If this is the only option enabled, nothing is loaded - it is not possible to load only files within archives.

Note: For obtaining the best recognition in as short a loading time as possible, enable the **Executable Files** option only.

Specifying the Directories to Exclude

Examples of directories that you may want to exclude are shown in the following table:

Directory	Reason
Temp/Tmp	Temporary directory holding transient files.
Recycler/Recycled	Recycle directory for C:, D: and so on. Stores files moved to the Recycle bin.
DOS	Operating system directory assuming that all these files are recognized.

1. Click the Directories tab.
2. In the Directories group box select the Exclude files in these directories check box.
3. Place the cursor in the list box and type in the path (do not include the drive letter) of the directories to be excluded. An example of the format is as follows:

```
\WinNT\%NTServicePackUninstall%
```

You can save the current list displayed in the list box. To do this, click the **Save list** button and specify the file name and path of the text file to save to. The default file name is **dirlist.txt**.

You can load a previously saved text list file by clicking the **Load list** button to display a dialog box. Enter the file name and path or navigate to the file to be loaded.

Recognition Overview

Analysis Workbench is able to perform application recognition on the software scanned, while the data is being loaded from a scan file.

By default the Analysis Workbench uses Master Software Application Index files (Master SAI) for performing application recognition. The Master SAI files are read-only files that contain a database of software applications.

There are multiple Master SAI files that can be used at the same time for recognition purposes:

- Master.zsai
- French.zsai
- German.zsai

- Unix.zsai
- BaseUnixOS.zsai

All of these files can be found in the following location:

<DataFlowProbeInstallation>\Runtime\ProbeManager\DiscoverySaiResources\SaiRuntime

where <DataFlowProbeInstallation> is the installation location that you specified when you installed the Data Flow Probe. By default, this is

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\State Images

By default, the Analysis Workbench is also configured to use the User SAI file. A User SAI file is one that you, the customer, have customized with applications you have taught using Analysis Workbench.

You can use multiple User SAI files for recognition purposes. Each User SAI created has a unique identifier assigned to it.

Backward Compatibility

Backward compatibility has been maintained in this version of Universal Discovery.

A Summary of the Process

The process can be summarized as follows:

- A rating is obtained for all versions that are possible matches.
- The version(s) with the best rating are found.
- If there is only one version, then the process goes no further, otherwise, it takes the language (locale setting) of the operating system, if it is available in the scan.
- If the operating system locale setting is not available, it takes the setting you specified here in the Preferred Language box.

Configuring Analysis Asset Fields

Analysis Workbench can be configured to construct any number of additional named asset fields. These asset fields are constructed based on data collected at scan time. The analysis asset fields defined here can be displayed as a column in the Machines window.

To customize the columns that are displayed, select the **Edit Column** option from the Columns drop-down toolbar menu in the Machines window.

Adding an Asset Field Extract

The fields are set up in a manner similar to that found in the Scanner Generator. Five different types of fields can be constructed:

- **Text file Extract** - Takes data from a plain text file (similar to File Extract Field of Scanner).
- **Ini Field Extract** - Takes data from an ini file (no equivalent in Scanner).
- **CSV File** - Takes data from CSV files such as peripheral sheets (allows an external CSV file, containing a list of data associated with asset numbers to be parsed and loaded along side the other data).
- **Environment** - Takes data from environment strings (equivalent to same field in Scanner).
- **Sequence** - Takes data from a sequence of asset fields (equivalent to same field in Scanner).

To configure the asset field extract settings:

1. Select the **Load Options** command from the File menu.
2. Click the **Asset Fields** tab. The Asset Fields tab contains a pane with five columns:
 - **Caption** - The caption as specified in the Asset Data page of the Scanner Generator.
 - **Field** - The number of the Analysis field (1 to 28)
 - **Field Type** - The type of field to extract the information
 - **Field Data** - The source of the field information
 - **Default** - Any default value that has been set
3. Right-click anywhere in the pane to display a menu with the following options:
 - **Add** - Adds a new analysis asset field.
 - **Edit** - Edit the details for an existing asset field.
 - **Remove** - Removes an existing asset field from the list.
4. Select the Add option. A New Analysis Asset Field dialog box is displayed.
5. Select the type of field to be extracted.
6. Use the controls on this page to configure the desired fields.

Text File Extract Asset Field

This field type extracts information from a single line in a named text file.

A useful file extract includes the predefined SMS file which extracts the SMS Unique Machine ID.

Note: The file you wish to extract from must be a file that is included in the Stored Files section. If the file is not there it will not work. In other words, the Scanner has to be set up to store the file before you can extract from it in Analysis Workbench.

To set up a new text file extract asset field:

1. Select **Text File Extract** as the field type.
2. Assign a caption for the field if required, by typing it in the Caption field.
3. In the **File Name** box, specify the name of the text file that the information is to be extracted from.
4. In the **Search String** box, specify the text string that is going to be located.
5. Assign the number for the analysis field by selecting it from the **Field** drop-down list.
6. Check the **Remove leading blanks** box, to remove blank spaces (if there are any) before the search string located in the text file.
7. Check the **Remove trailing blanks** box, to remove blank spaces (if there are any) after the search string located in the text file.
8. In the **File Directory group** box specify where to look for the file. This is a prioritized search sequence list. Select one of the following options:

Use first occurrence Analysis Workbench uses the first match of the file that it encounters.

Use prioritized directory list A list box is enabled, which allows you to specify the priority of directories where the file might be located. For example:

```
%BASEOS% (the base operating system directory)
C:\Winnt
```

This location will have the highest priority, that is, if the file is located in this directory, then this file will be used.

```
%BASEOS%\System (the System directory in the base operating system directory)
C:\Winnt\System
```

If the file is not located in the %BASEOS% directory and is encountered in the %BASEOS%\System location, then this location will have priority as the source for the text file, and so on.

9. Specify any extract options as required by clicking the **Options** button. See Specifying Extract Options for Text Files, ini Files, CSV Files and Environment Variables for information about how to do this.

CSV File Extract Asset Field

Allows an external Comma Separated Variable (CSV) file, containing a list of data associated with asset numbers to be parsed and loaded alongside the other data.

1. Select CSV File as the field type.
2. In the CSV File box, navigate to the CSV file that is to be loaded.

Note: The first row of this file must contain column headers.

3. Enter the number of the column that contains the machine asset number (that is, the primary identifier field). As the number changes so does the fields selection. For example, if the primary identifier is column 2 in the CSV file, then specify this as the number '2' by either typing it directly into the field or by using the arrows.

The fields contained in the CSV file are displayed in the **Fields list** box. Select the fields to be included by selecting the check boxes next to the field names.

The primary identifier column (asset number field) check box is disabled and cannot be deselected. This is because it is necessary to load this field.

4. Select the **Append (csv) to column name** option if you want the extracted asset fields to be displayed with the word '(csv)' after the column header name in the Machines window.
5. Specify any extract options as required by clicking the **Options** button. See Specifying Extract Options for Text Files, ini Files, CSV Files and Environment Variables for information about how to do this.

Environment Variable Asset Field

This type of field accepts data from a specified environment variable.

To set up an environment variable extract asset field:

1. Select Environment as the field type.
2. Enter the variable name in the Environment variable name field. An example of an environment variable is:

```
ComSpec=C:\WinNT\System32\cmd.exe
```

You can check for environment variable names by looking in the **Hardware > System** tab in Viewer.

3. Assign the number for the analysis field by selecting it from the **Field** drop-down list.
4. Assign a caption for the field if required, by typing it in the **Caption** field.
5. Specify any extract options as required by clicking the **Options** button. See Specifying Extract Options for Text Files, ini Files, CSV Files and Environment Variables for information about how to do this.

Sequence Asset Field

This field type extracts information from one of up to ten specified fields. The value returned as the results of the sequence field, will be the first of these fields which contains a non-blank value.

To set up a sequence asset field:

1. Select **Sequence** as the field type.
2. In the **Field sequence** box, click in the **Field Name** column and select the desired field.
3. In the **Ignore strings group** box, specify the criteria for a blank field using one or all of the following methods:
 - In the **Matching** box, enter a sequence of strings (case-sensitive) separated by semicolons.
 If the content of the field matches (is equal to) any of the strings specified here, the field is considered to be blank. For example, if the text string Not Found is entered here, then a field that has the value 'Not Found' is considered to be blank.
 Multiple entries must be separated by semicolons (;), for example:
 'Unknown;Not Tested'
 - You can type a strings in the form: *STRING*
 Here the asterisks (*) are ignored and any string that contains the text between the two asterisks will be ignored too.
 - Specify ignore strings that are less than 'n' characters.
 In the **Shorter than** box, use the arrow keys or type in a number to specify the maximum length of text strings that are to be used to define a blank field (between 1 and 255). If the string is shorter than the specified number, then the field will be considered blank.
4. Assign the number for the analysis field by selecting it from the **Field** drop-down list.
5. Assign a caption for the field if required, by typing it in the **Caption** field.
6. Specify any extract options as required by clicking the **Options** button. See Specifying Extract

Options for Text Files, ini Files, CSV Files and Environment Variables information about how to do this.

Specifying Extract Options for Text Files, ini Files, CSV Files and Environment Variables

Text file, ini file and environment variable asset fields can be set up so that only part of the string is extracted instead of the entire string.

They can also be set up, for example, to use the last part rather than the first part of the string. This can be very useful for obtaining the last part of an automatic field that is too long.

In addition, a default value can be specified for situations where no matching data has been found.

To specify extract options for text, ini and environment variables:

1. Click the **Options** button in the New Analysis Asset Field dialog box. The Asset Field Extract Options dialog box appears.
2. In the **Extract characters from group** box, specify whether you want to use the last part or the first part of the string. Select one of the following options:

Start - Uses the first part of the string. Use the arrows in the Skip characters box to specify how many characters you want to skip from the beginning of the string.

End - Uses the last part of the string. Use the arrows in the Skip characters box to specify how many characters you want to skip from the end of the string.

3. In the Options group box, select the options you want:

Convert to upper case - Select this option to convert the alphabetic characters to upper case.

Treat field as File Name - Select this option to treat the string in the asset field as a file name. Some characters are however invalid in file names, so any invalid characters can be replaced with the character specified in the Replace invalid characters with box.

For example, underscore '_' is a valid file name character and can be used to replace invalid characters.

Alternatively, invalid characters can be deleted by checking the Delete invalid characters box.

If the extracted field is empty or is not found (that is, there is no matching data), then a default value for the string can be specified in the Default Value box.

For example, if the text string 'Not Found' is entered in this box, then an empty field or a field that has not been found will be displayed with this text.

Displaying the Additional Asset Fields

After the asset field extracts have been selected, the columns need to be displayed in the Machines window. To do this:

Click the **Columns toolbar** button in the Machines window to display the **Select** columns to display dialog box.

The additional extract fields are included in the Assets category.

Refer to The Machines Window for more detailed information about how to include columns to display in the Machines window.

Note: Although these fields are in the Assets category, they are not editable.

Configuring Display Filter Settings

In the Analysis Workbench, select the **Load Options** command from the File menu. Click the **Display Filter** tab

When files have been processed by the recognition engine, the following options can be used to include only the files that are of interest, based on the recognition level.

These files can be identified in two ways when displayed in the Files information window:

- The color of the entry
- The entry in the Status column

The following table shows the default color and the Status column entry for the five different file recognition levels.

Recognition level	Default color in Files window	Status column entry in Files window
Main file	Red	1 Main
Associated file	Green	2 Assoc
3rd Party files	Green	3 3rd Party file

Recognition level	Default color in Files window	Status column entry in Files window
CheckVer file	Purple	4 CheckVer
Unknown file	Blue	5 Unknown
Unprocessed file	Black	6 Unprocessed
Auto-identified	Olive	7 Auto-id
Junk file	Olive	8 Junk

The colors associated with these file recognition levels can be customized. See [Customizing Window Layouts](#).

Selecting the Files to be Displayed

In the Files group box, select the types of files to be displayed from the following three categories:

Recognized

This category deals with files that have been recognized. Select from the following:

- Main files

The main files for an application, for example, Winword.exe are displayed in red (by default) in the Analysis Workbench Files window.

They are used to determine how many copies of the application are found.

- Associated files

Files that are part of an application but not the Main file, for example, Printer.com are displayed in green (by default) in the Analysis Workbench Files window.

- 3rd Party Files

Files such as some DLL files that are technically used by the application, but are also distributed freely and can be used by other applications as well. Another example of a 3rd Party File is InstallShield, which is packaged with an application from a different vendor. The files are also displayed in green (by default) in the Analysis Workbench Files window.

Uncertain

This category deals with files that have been partially recognized (that is, they have been identified but the version cannot be established with certainty). Select one of the following:

- Treat as unidentified files

The files will be given an unidentified recognition level and will be treated as such.

- Display as CheckVer

No description or versions are given for these files, but the word <Check Ver> is shown in the version column. This indicates that something is known about the file but it does not accurately conform to the version information held for it, and the version should be checked.

- Do not display

The files will not be displayed in the Files window. In other words, they are ignored.

Unrecognized

This category deals with files that have not been recognized or have not been processed against the recognition engine. Select from the following:

- Unidentified file

These files have been processed, but not recognized.

- Unprocessed files

These files have not been processed by the recognition engine. These files have been selected for loading using the load filter, but have not been included in the recognition filter.

- Junk Files

These files have been set up to be treated as junk by the recognition engine (that is, recognition does not occur on these files). Check this option if you want these files to be displayed. The default is to have this option unchecked - that is they are not displayed.

- Auto-identified files

If this option is checked (the default), automatically identified files are loaded. If unchecked, these files are not loaded into memory.

Selecting the Application View

This is the same as globally tagging Main files in the Files window and applying a Files filter in the Applications window. In effect, this reflects the contents of the SAIs that have been recognized in the current load set.

In the Applications group box, select one of the following:

- Load Business View

The business view displays only applications with a Main file (that is, applications that require a license and have been recognized). Partially installed applications are not displayed.

- Load Operational View

The operational view displays all applications whether partially or fully identified. The Application window essentially summarizes what has been recognized – irrespective of whether the applications are recognized with a Main file (that is, licensable) or not.

Configuring File Version Settings

By setting file version options, extra data is made available in the Files window. Specific fields can be selected to limit the amount of information loaded. This information can then be displayed by selecting the column name in the Columns toolbar menu.

In the Analysis Workbench:

1. Select the **Load Options** command from the File menu.
2. Click the **File Version Data** tab.
3. Select an entry (a single-click in the check box) in the File Version Data page to include it.
Alternatively, right-click in the pane and select an option from the menu:
 - **Select All** - Selects all the entries.
 - **Select None** - Clears all of the entries.

Information Collected by Version Data

The following information can be collected using Version Data:

- DOS 8.3 Name
- Real Name
- Description
- Company Name
- File Description
- File Version

- Internal Name
- Legal Copyright
- Original File Name
- Product Name
- Product Version

Configuring Memory Settings

Saving memory not only saves time at loading but also during sorting and selections, therefore it is worth while considering selecting memory saving options. Because of the number of files that will be loaded, removing unnecessary file detail can have significant impact on the time taken to load and the amount of memory needed. This is particularly useful when loading a large quantity of scan files.

When more than the physically available memory is needed, the Operating system uses a page file. Access to this file is of course much slower than to real memory and therefore degrades performance significantly.

In the Analysis Workbench:

1. Select the **Load Options** command from the File menu.
2. Click the **Memory** tab. This option allows you to specify which attributes are loaded for a file. Specify the file details to load by selecting the following options as required:
 - **Size** - The file size. This option is permanently disabled and cannot be unchecked. The Analysis Workbench always loads the file size.
 - **Signature** - The signature (checksum of the first 8 kb).
 - **Modified time** - The time stamp indicating when the file was last modified.
 - **Accessed time** - The time stamp indicating when the file was last accessed.
 - **Type** - The type of file (for example, DOS executable file, Windows executable file, OS/2 DLL file).
 - **Attributes** - The system attributes for a file (for example, hidden, archive, read-only).
 - **Software Utilization Data** - The number of days that the application was used (as a percentage) over a period of time.
3. Loading all directories and cross-referencing them with files, machines and applications can take up a significant amount of memory. If only parts, or none of the information is required, then select one the appropriate options:

- Load all directories
 - Load only directories containing loaded files
 - Do not load directory data
4. Select the machine data to be loaded. This is a memory saving option, which allows you to load only some data for each machine. In the Machine data to load group box select from the following options:
- Asset and Hardware data
 - Include Shortcut data
 - Include Services data
 - Include Environment data
 - Include SMBIOS data

Loading Data from Scan Files

Process for Loading Data into Analysis Workbench

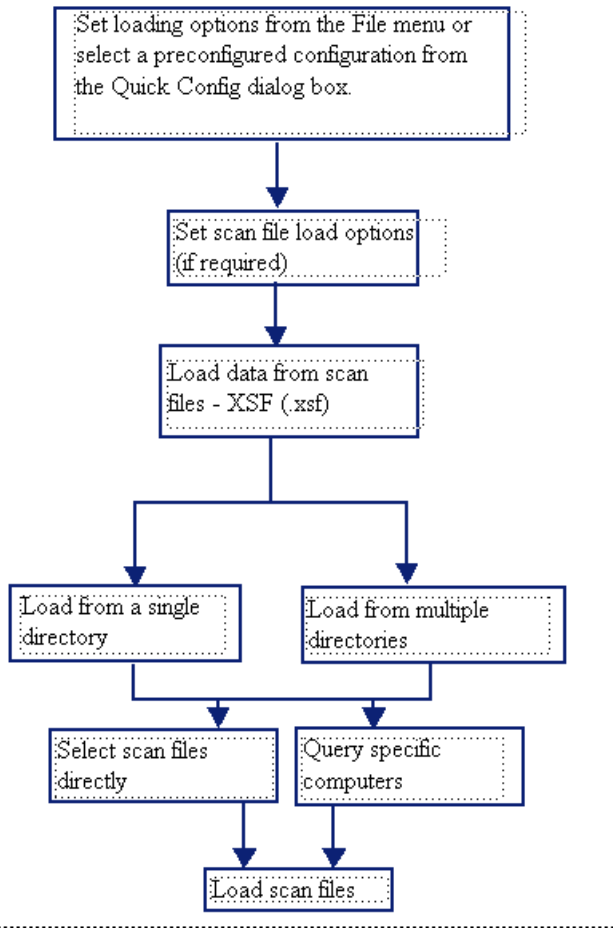
This section explains how you can load data into Analysis Workbench after you set the load options manually or you have loaded a preconfigured option from the Quick Config dialog box.

Analysis Workbench is an analysis tool and requires data to analyze. This data can be loaded from Compressed XML Files (XSF) scan files.

You can load files from the processed directory. Enriched scan files are created here. By default the directory is in the following location:

```
c:\hp\UCMDB\DataFlowProbe\runtime\xmlenricher\Scans\processed
```

The following diagram shows the process for reading in data



Unloading Data from Analysis Workbench

There may be times when you need to unload scan files from the Analysis Workbench workspace. For example:

- The Recognition, Memory and File Version Data load options are disabled and cannot be changed whilst data is present in Analysis Workbench.
- A previously saved state image can be loaded only when there is no data loaded in the Analysis Workbench.

To Unload Scans from the Analysis Workbench Workspace:

1. Select the **Unload Scan Files > Current** (name of scan) command from the File menu. The data for the currently selected scan is unloaded. The name of the selected scan is displayed in brackets next to the command.

2. Select the **Unload Scan Files > Tagged** command from the File menu. Scans that are tagged in the Machines window are unloaded. This command is not available if there are no tagged machines.
3. Select the **Unload Scan Files > Untagged** command from the File menu. All untagged scans in the Machines window are unloaded.

Note: This option is not available if all machines are tagged.

4. Select the **Unload Scan Files > All** command from the File menu. All scans loaded into the Analysis Workbench are now unloaded.

Loading Data from a Scan File

The Analysis Workbench provides various options for reading in scan files to analyze the data collected for a computer population.

Scan files read into the Analysis Workbench are usually selected from a repository directory (or directories) used to store all the scan files for a computer population.

To load data from a scan file perform the following steps:

1. Select the Load scan files command from the File menu.
The Open scan file dialog box is displayed.
2. Click the **Options** button to set the scan file load options. See Setting Scan File Load Options on page 84.
3. Load the scan files in one of the two following ways:
 - From a single directory
 - From multiple directories
4. Load the scan files using one of the two methods:
 - Select scan files directly from the directory where they are stored. This allows you to select individual files, a group of files or all the files in the selected directories.
 - Select scan files for specific computers using the hardware and asset data collected for each computer. A query facility is used for this method, so that the files matching specified criteria for the hardware and asset details recorded during the inventory, are selectively read in.

Whichever method is chosen, the Analysis Workbench reads in the software file information for each scan file, according to specified load options.

Setting Scan File Load Options

After the scan files or data to be loaded into Analysis Workbench have been selected, the software information collected for each computer inventoried is read in according to the options selected for processing information. These are referred to as the File Load Options.

Scan file load options are used to deal with situations that can arise when loading older scan files and specify how to handle scan files with the same name.

Click the **Options** button on the Open scan file dialog box.

The File Load Options dialog box is displayed.

The following load options can be enabled or disabled:

Option	Description
File Age Options	
Load all possible files (ignore age limit)	When selected, all scan files (regardless of the age of the scan file itself) are loaded.
Ask what to do if file older than limit	Selecting this option make the File age limit (months) box available. Use the arrows to set the age limit in months. A prompt is displayed when the file to be loaded is older than the specified file age limit.
Ignore attempts to load files older than limit	Select this option to ignore any attempt to load a file that is older than the age limit specified in the File age limit (months) box.
File Clash Options	
Load newest file	Select this option to allow the file with the newest date to be loaded, if two files with the same name are loaded.
Ask which file to load, if different	Select this option to allow a prompt to be displayed asking which of the files to load, when two identical file names are encountered.
Ignore attempts to load duplicates	Select this option to exclude any duplicate files from being loaded. The first file encountered is loaded.
Load new scan file, unload the current scan file	Select this option to allow the file with the newest date to be loaded. The file with the older date will be unload.
Files	

Option	Description
Show hidden files	Select this option to show hidden files in the Open scan file dialog box.
Scan file description thread	Select this option to display the descriptions of the data files in the Load scan file dialog box.
Directory List	
Show by default	Select this option to allow scan files to be loaded from multiple directories when the File Load scan file command is selected from the File menu.
Load default directory list	This option is only enabled when the Show by default option is selected. Selecting this option will load the default directory list when the Open scan file dialog box is opened.
Other Options	
Set as default (Permanently change the file load preferences to the options above)	Select this option to enable the load options specified on this form to be used as the default settings when scan files are loaded.

Loading Old Scan Files

If the Analysis Workbench encounters a file that is older than the age limit set in the file load options (see Setting Scan File Load Options on page 84), an Old file found dialog box is displayed. The name and path of the scan file is displayed along with some basic information. From within this dialog box, you have the options to do the following:

- Ignore this file, as it is older than the limit set in the file load options.
- Load this file regardless of its age.

The **Set as default** option in this dialog box will permanently change the file load preferences to the previous options.

You can change the default settings later by clicking the **Options** button in the Open scan file dialog box (**File > Load scan files...**).

Selecting Files

In the Open scan files dialog box, clicking on a file entry in the bottom pane of either directory view will

highlight it in blue. However, this does not mean that the scan file will be automatically loaded. For this to happen, the check box next to the scan file must be clicked. You can also use the space bar to check and clear the box.

A scan file in the list can be:

- Selected (highlighted in blue) and/or
- Checked (check mark set) or
- None or both of the above

Checked scan files will be loaded when the **OK** button is clicked.

By selecting files you can group them for operations carried out from the shortcut menu (check/uncheck selected, remove selected, sort by selected).

Multiple files can be selected by clicking on a file and using the the **SHIFT** or **CTRL** key at the same time as clicking on other files. This allows the Open scan file dialog box to be more flexible.

For example, right-click on a scan file and select Check all from the menu, select a range of files and then select Uncheck selected.

If you do not check any files, the Open scan file dialog box will ask to load either of the following:

- All files, if no files or only a single file is selected.
- Selected files, if more than one is selected.

Note: You can use the drag/drop for loading in scan files. Drop any number of directories, scan files, or a combination of both onto the Analysis Workbench window to load the scan files and all files in the directories.

Checking Options

Checking options can be set by using the shortcut menu which is available by right-clicking anywhere in the bottom pane. This menu allows you to:

- **Check all** – Checks all entries in the list.
- **Check none** – Unchecks all entries in the list.
- **Select all** – Selects all entries in the list.
- **Select none** – Deselects all entries in the list.
- **Check selected** – Checks the selected entries in the list.

- **Uncheck selected** – Clears the check mark from selected entries in the list.
- **Remove selected from list** – Removes any selected entries temporarily from the list. The file entries are no longer displayed in the list, but are not deleted from the disk.
- **Sort by checked** – Moves all checked entries to the end of the list.
- **Sort by selected** – Moves all selected entries to the end of the list.
- **Query** Displays a Complex Query dialog box, which allows you to load scan files for specific computers. See *Selecting Scan Files for Specific Computers (Complex Queries)* on page 88 for more information.

Selecting Multiple Files

Multiple files can be selected by clicking on a file and using the **SHIFT** or **CTRL** key at the same time as clicking on other files. This allows the Open scan file dialog box to be more flexible.

For example, right-click on a scan file and select **Check all** from the menu, select a range of files and then select **Uncheck selected**.

Loading Scan Files from a Single Directory

Scan files can be loaded from a single or multiple directories. By default the Open scan file dialog box allows you to load scan files from a single directory.

To open scan files from a single directory:

1. In the top pane in the Open scan file dialog box, navigate to the directory that you want to load the scan files from. Any scan files found in that directory will be displayed in the bottom pane.

As the mouse pointer is placed over a scan file in the bottom pane, details are displayed in the status panel.

2. Check the box next to the scan file to include it for loading (you can also use the space bar to check and clear the box). Checking options can also be set by using the shortcut menu which is available by right-clicking anywhere in this pane. See *Checking Options* on page 86.
3. Set scan file load options if required by clicking the **Options** button in the Open scan files dialog box.
4. Click the **OK** button to load the checked scan files. A progress indicator is shown.

If an error is encountered during loading, each error is logged in the Log window (Select the Log Window command from the Window menu to display the Log window) and an error message is displayed at the end of the load sequence.

Tip: To load only one scan file, double-click on it.

To load scan files from multiple directories, click the **Dir List** button. See Loading Scan Files from Multiple Directories for more details.

Loading Scan Files from Multiple Directories

To load scan files from multiple directories, in the Open scan file dialog box (single directory view), click the **Dir List** button.

An extra pane is displayed in the upper right area of the dialog box. This is the list of directories to load. For each directory, this pane displays the following:

- The total number of files in the directory and their combined size.
- The total number of scan files to load and their combined size.
- The total number of scan files selected and their combined size.

The bottom pane displays all the scan files that are available in any of the included directories.

To load scan files from multiple directories:

1. In the Open scan file dialog box (single directory view), click the **Dir List** button.
2. Navigate to the directory you want to load the scan files from and use the buttons as follows.
 - **Add Dirs** Add this single directory to the list.
 - **Add w/Subdirs** Include this directory/drive plus any subdirectories contained in that directory/drive.
 - **Clear list** Clear the list of directories.
 - **Load list** Load a previously saved default directory list.
 - **Remove Dir** Remove this directory from the list.

Any scan files contained in the selected directory (or directories) will be displayed in the bottom pane. As the mouse pointer is placed over a scan file in the bottom pane, details are displayed on the status panel.

3. Check the box next to the scan file to include it for loading (you can also use the space bar to check and clear the box). Checking options can also be set by using the shortcut menu which is available by right-clicking anywhere in this pane. See Checking Options on page 86.
4. Set scan file load options if required by clicking the **Options** button in the Open scan files dialog box.
5. Click the **OK** button to load the checked scan files. A progress indicator is shown.

If an error is encountered during loading, each error is logged in the Log window (select the Show Log command from the Window menu to display the Log window) and an error message is displayed at the end of the load sequence.

To load scan files from a single directory, click the **No Dir List** button. See Loading Scan Files from a Single Directory for more information.

Selecting Scan Files for Specific Computers (Complex Queries)

Querying provides a way of selecting and reading in only those scan files for computers matching specified search criteria.

This task is carried out using the Complex Query dialog box which allows multiple search criteria to be specified from a selection of categories. These categories are defined by the hardware and asset information collected across the computer population.

When the search criteria are fully specified, the query is invoked and all scan files that match the query criteria are checked/unchecked. The Complex Query dialog box also allows defined queries to be saved so that they can be loaded and used again.

Displaying the Complex Query Dialog Box

To begin creating a query, you need to display the Complex Query dialog box used to specify the search criteria:

To display the Complex Query dialog box:

1. Select the Load scan files command from the File menu to display the Open scan files dialog box.
2. Right-click anywhere in the bottom list. A shortcut menu is displayed.
3. Select the **Query** option. The Complex Query dialog box is displayed. By default the Queries tab is selected.

This dialog box has two tabs:

- **Queries** - Displays the hardware and asset fields and allows you to build up the query.
- **Options** - Sets up the logic, actions and format of the query.

The Queries Tab

The Queries tab in the Complex Query dialog box displays a page that contains the two components:

- The available queries list
- The query grid

The Available Queries List

There are two categories of information that can be used to query data collected from a population of computers:

- The asset data entered manually using the asset questionnaire.
- The hardware configuration details collected automatically for each computer as it is inventoried.

These categories of information are listed in the Available queries list on the left side of the dialog box.

Available Query Categories

These categories are used to group the items into the outline used in query and column selection. The following list shows the hardware fields that are collected during a scan:

Category	Description
Asset Data	Items collected manually or automatically through the entry fields in the Scanner, or items calculated using analysis-time asset fields.
CPU Data	Information about the processor(s) and coprocessor of the machine.
Bus Data	Information pertaining the machine's bus. This category includes the Bus architecture and a list of identified cards that are not Network cards, disk controllers or video cards.
BIOS Data	Data extracted from the machine's BIOS (Which is a read-only memory area, typically located at the top of the first 1MB of memory in the machine).
Memory Data	Memory information: Physical amount of memory, partitioning of memory, swap file (virtual memory) and so on.

Category	Description
Operating System Data	Operating System information. This includes information about the OS running at the time of the scan, name, version, and so on, as well as OS services, such as user profiles, login name.
Video Data	Provides details of the Video Display Adapter, which include the adapter type (EGA, XGA, VGA and so on) and model/manufacturer. In Windows and OS/2, the current desktop resolution and number of colors are also displayed.
Network Data	Information about the machine's network connection. This includes a list of network cards, as well as logical information (machine name, logon name, domain name, addresses, shares and so on).
Keyboard and Mouse Data	Whether a Mouse is connected. Whether a Keyboard is connected.
Disk Data	Information related to physical disk drives, CD-ROM drives, network drives and so on, as well as information about logical partitioning of these. Also includes a list of disk controllers.
System Data	Items specific to the scan file or scan (but, with the exception of the asset number, without real relevance to the machine itself) including asset number, scan time, time since scan, path to scan file, version of scan file and so on
Port Data	Contains a list of parallel and serial ports.
Storage Data	Shows the name, vendor, revision and device host information for the storage devices (such as hard drives, CD-ROMs, tape drives) that have been detected.
Peripheral Data	Information about peripherals, currently modems, sound cards and printer information.
SMBIOS Information	Information extracted from the machine's SMBIOS, if available.
USB Data	This contains information about the USB (Universal Serial Bus) devices, controllers, hubs and ports. USB is an external bus which supports plug and play. It allows peripheral devices to be connected or disconnected from computers without the need to shut down or rebooting. These peripheral devices include CD-ROM drives, joysticks, speakers, cameras.
Machine	Shows information from the Analysis Workbench Machines window.

Category	Description
Window Data	

The Query Grid

The query grid is displayed on the right side of the Queries page. Each query item is built up on a separate row. A maximum of 250 different query items are allowed.

The query grid has four columns:

- **#**

The number of the query items set up on the options page. The maximum that can be configured is 250.

- **Query**

This column is reserved for items from the Available queries list. Double-clicking on an data field in the Available queries list, moves the entry to this column of the query grid. Alternatively, you can drag the data field from the Available queries list and drop it onto a row in the query grid.

- **Operator**

Many hardware fields can be queried against a set range of values. This columns shows pick lists for the types of queries performed against the Asset fields and some hardware field values.

- Begins with
- Contains
- Does not equal
- Ends with
- Equals
- Greater than
- Is not the same as another field
- Is the same as another field
- Less than
- Matches

- **Condition**

This column is reserved for a parameter value that must be matched by the query.

The Shortcut Menu

- **Right-clicking** on an entry in the query grid, displays a shortcut menu:
- **Edit current query** - To edit an existing query entry, right-click on the cell and select this command from the shortcut menu.
- **Clear Current Line** - To delete an entry from the query grid, right-click on the entry and select this command from the shortcut menu.
- **Clear All** - Select this option to delete all entries from the query grid.

The Query Grid Buttons

- **Load** - To use a saved query, click the **Load** button and select the saved query file (with a .awq extension). The query files are loaded from the Queries directory in the Universal Discovery installation path.
- **Save** - To save the query for future use, click the **Save** button. Enter a name for the query file (with a .awq extension) and click **OK**. The query files are saved in the Queries directory in the Universal Discovery installation path. Saved queries can be automatically selected and used without having to define the query again.
- **Add** - Highlight the desired field and click the **Add** button to add the definition to the query grid.

Building a Query

Queries are built within the Query grid by clicking on any + sign in the tree. This expands the relevant category and lists possible data fields.

1. To select a data field in the Available queries list, do one of the following:
 - Double-click on a data field in the Available queries list.
 - Drag the data field and drop it onto the Query grid.
 - Select the data field and click the **Add** button.

After you have done this, a Define properties for hardware query dialog box is displayed.

2. In this dialog box select the operator for the query.
3. Depending on the type of query you set up, enter a parameter value that must be matched by the query.

4. Click **OK**. You are returned to the Complex Query dialog box.
5. If required, you can save the query by clicking the **Save** button.

The Options Tab

In the Complex Query dialog box, click the Options tab.

This tab is used to do the following:

- Retain the last query or clear the existing query.
- Provide a description for the query.
- Set up the actions that are to be carried before the query has been made. That is, whether to clear or set all existing tags, or to leave them untouched.
- Set up the logic that will be used to perform the query.
- Set up the actions that will be carried after the query has been made. That is, which tags will be applied and under what conditions.

Option	Description
Caching	
Remember the last query	If this option is checked, a query will be retained after it has been run. If unchecked, the grid is cleared after the query has been run.
Query Description	
	Allows you to enter a text description of the queries being made.
This is useful for identifying stored queries.	
Before Querying	
Do not change tags	No actions are performed before the query is made.
Clear existing tags	All tags are cleared before the query is made. That is, all scan files are deselected.
Tag all items	All entries in the Open scan file dialog box are tagged before the query is made. That is, all scan files are selected.

Option	Description
Query Type	
Run as an OR query (at least one condition must be met)	When more than one query is specified, the match is made when either one of them are true.
Run as an AND query (all conditions must be met)	When more than one query is specified, the match is made when all queries are fulfilled.
	Note: Only one of these logic rules can be applied to the same query. They cannot be mixed.
Tagging	
Set tag when condition is met	After an entry is found that matches the parameters defined by the query, a tag is set on that entry. That is, the scan file is selected.
Clear tag when condition is met	After an entry is found that matches the parameters defined by the query, if it is tagged then this tag is cleared. That is, the scan file is deselected if it was previously selected.

Example Complex Query

In this example, the query will be set up to select scan files for all machines that have a minimum specification. This may be because you want to locate all those machines that need to have their hardware and software upgraded in to be able to run a particular piece of software.

The machine that has the following minimum specifications:

- Pentium 4 processor AND
- 64 Mbytes or more of memory AND
- More than 200 Mbytes of space on its local hard disks AND
- Host operating system is Windows® XP

Step 1- Setting Query Parameters for Scan File Data

The first step for specifying the criteria for the query is to select the data items that need to be matched by the information in the scan files.

1. In the Available queries list click on the **+** sign next to the CPU Data category. Click on the **CPUs** subcategory.
2. Select **CPU Type** by double-clicking on it with the mouse or by dragging it to the grid. The Define properties for hardware query dialog box is displayed.
3. Select **is** from the Operator or Query drop-down list and select Pentium 4 from the other drop-down list
4. Click the **OK** button. You are returned to the Complex Query dialog box.
5. In the Available queries list, click on the **+** sign next to the Memory Data category.
Click the **OK** button. You are returned to the Complex Query dialog box.
6. Select **by Total Memory (Mb)** double-clicking on it with the mouse or by dragging it to the grid. The Define properties for hardware query dialog box is displayed.
7. Select **>=** from the Operator or Query drop-down list.
8. Type **64** directly into the Numeric Value field, or click the **calculator** icon and use the keypad.
9. Click the **OK** button. You are returned to the Complex Query dialog box.
10. In the Available queries list, click on the **+** sign next to the Disk data category. Click on the **Physical Disk Data** subcategory and select Physical disk size (MB) by double-clicking on it with the mouse or by dragging it to the grid. The Define properties for hardware query dialog box is displayed.
11. Select **>** from the Operator or Query drop-down list.
12. Type **200** directly into the Numeric Value field, or click the **calculator icon** and use the keypad.
13. Click the **OK** button. You are returned to the Complex Query dialog box.
14. In the Available queries list, click on the **+** sign next to the Operating System data category.
15. Select **Host Operating System Name** by double-clicking on it with the mouse or by dragging it to the grid. The Define properties for hardware query dialog box is displayed.
16. Select the contains option from the Operator or Query drop-down lists.
17. Type **XP** directly into the **String Value** field.
18. Click the **OK** button. You are returned to the Complex Query dialog box. The final Query grid should look as follows
19. Click **Save** (in the Queries tab) to save the query for future use. Enter a name for the query file (with a .sqm extension).

Step 2 - Setting the Query Options

1. Click the **Options** tab.
2. Select the **Remember the last query** option. This option allows any previous queries made to be saved in the grid.
3. Enter a text description of the queries being made in the Query description box. For example, you could enter something similar to the following:

'Machines meeting a minimum standard'
4. In the Query type group, select **Run as AND query**. When more than one query is specified, the match is made when all queries are fulfilled.
5. After you have specified the query parameters, return to the Queries tab and click the **OK** button to tag the scan files matching the query.

Viewing Data

The Default Display

The basic analysis of data consists of viewing the hardware, software and asset information in the scan files collected for a computer population, Analysis Workbench provides various windows to display and view data.

- Files
- Machines
- Directories
- Applications

The default display view on starting Analysis Workbench consists of three windows: Files, Applications and Machines. A Directory view can be displayed as well, but is not part of the default screen layout.

Each window can be customized to show different columns and different levels of detail for each line. The window contents can be sorted on any column displayed, by clicking on the column headers.

In addition, each window features a Details window, where more details about the currently selected item can be displayed.

Any number of windows, each displaying a different set of columns and sorted in different ways can be opened at the same time.

The current workspace layout can be saved, either as the new default workspace or as a named layout that can be reloaded at any time. The Layout command in the Window menu is used to save a new or load a previously saved window layout. The default layout is stored in **awdef.ini**.

The user interface can be customized by using the options in the Configure drop-down toolbar menu available in all the windows. For more information, see the section describing Customizing Window Layouts.

The windows can be resized and positioned in the workspace to reflect your requirements. For more information, see the section describing Information Windows.

Locking and Unlocking Columns

It is possible to 'lock' some of the leftmost columns of the main windows.

To do this, right-click on a column header, and select the Lock option. When this is done, the column clicked and all columns to the left of it will be 'locked' and will not scroll left or right. To remove a lock, select the Unlock option from the shortcut menu, and to set a different lock, simply select Lock on a different column.

This feature can be used to make sure important columns, remain visible while scrolling through detailed columns.

The Machines Window

Information Available in the Machines Window

The Machines window displays the Machine ID (Asset Number) and various description fields for computers within the inventoried population.

Included in this information is asset data. Asset data is data that was collected using the asset questionnaire which collects customized asset information as each computer is scanned. The asset questionnaire is configured in the Asset Data page of the Scanner Generator.

The information includes details about users, departments, physical assets, equipment, and any other information that is useful to record.

User-defined and Automatic fields now show the actual caption displayed to the user. However, if more than one scan is loaded into Analysis Workbench and they have different captions, only the caption from the last scan loaded is shown.

The Machines window allows further details of the hardware, software and asset data collected for a computer to be viewed, by providing a link to the Machine Details window. See page 99 for more information about the Machines Details window.

Filtering Data in the Machines Window

Filters can be set (using the Filters drop-down toolbar menu or the filter icons) to provide additional information in relation to the other windows in the workspace as follows:

Filter	Shows
Machine	Any tagged machines in the Machines window.
Application	Any machines that contain tagged applications. It shows any machines that have the application installed. Note: It does not show machines that have a partial installation (in other words, machines where a license is not needed).
Directory	Any machines that contain tagged directories.
File	Any machines that contain tagged files.
Local	Any machines with Local tags.

Customizing the Columns Displayed in the Machines Window

To customize the columns displayed in the Machines window:

- Click on the **Columns** drop-down toolbar menu. The Select Columns to Display dialog box is displayed.
 - The Available columns list shows all the available categories and fields. Clicking on the + sign expands the category and shows the fields that are contained in it. A check box is displayed next to each category and field. A dotted check box next to the category indicates not all the fields in that category have been selected (that is, only some fields have been selected). Clicking on a partially checked category will select all fields in the category. Clicking again will deselect all fields.
 - The Selected columns list shows the fields that have been selected to be displayed as columns in the Machines window.
 - The Show only items in use option will ensure that only hardware items that actually exist in one of the loaded scan files are shown in this tree.
- Either drag a category from the left list to the Selected columns list, or select the check box next to the category and click the >Add button. The functions of the other buttons are as follows:
 - To add all the available columns to the Selected columns list click the >>Add button.
 - To remove an entry from the Selected columns list click the Delete button.

- To delete all entries in the Selected columns list click the Del All button.

Note: You can move the position of entries in the Selected columns list using the Up and Down buttons.

3. Click **OK** after you have selected the columns. You are returned to the main workspace.

Note: Each data item collected is shown only once in the tree, even if multiple values for a particular item are collected. Examples of this are CPU Speed (where one per CPU is collected) and Card Class (which is collected for every card for every bus supported).

When a column such as this is chosen to be shown in the Machines window, Analysis Workbench automatically figures out how many columns are required to show all of the collected data and appends 'Indexes' to each column name.

For example, choosing the CPU Speed column will normally create just one column named 'CPU Speed (0)' (Index start at 0).

Now, if the data loaded includes at least one machine with two CPUs, Analysis Workbench will create two columns instead, 'CPU Speed (0)' and 'CPU Speed (1)'.

The number of columns necessary to show all data for all loaded machines is not recalculated when new data is loaded or data is unloaded. To have Analysis Workbench refresh this, go into the Column selection dialog box and click OK.

To enable or disable the display of a single one of these columns. For example to see just 'CPU Speed (1)', each column is available from the drop-down Column menu.

The Machine Details Window

The Machine Details window provides further information for each computer listed in the Machines window.

To display the Machine Details window in the Machines window do one of the following:

- Select the Detail window link option from the Configure drop-down toolbar menu.
- Select the Configuration option from the Window menu and check the Machine Windows box in the Detail Window Link group.

The information to be displayed in the Machine Details window can be selected by doing one of the following:

- Clicking on the Configure button and checking the Machine Windows box in the Detail Window Link group.
- Selecting the Detail window option from the Configure drop-down toolbar menu and checking the Machine Windows box in the Detail Window Link group.

Depending on what information was selected in the Window Layout dialog box, the Machines Details window can show the following information:

- Hardware overview - The information displayed here depends on which option was selected in the Configuration window.
- The default displays basic details of the hardware configuration scanned from the computer as it is inventoried. Provides details of the operating system, processor, type of screen, memory, drives, directories and files as well as the total disk space and free space.
- The Machine window data displays all columns as selected in the Machines window but vertically rather than horizontally making it easier to read.
- Applications - Displays details of the applications identified on the machine, including the publisher, applications and version.
- Recognition statistics - Displays the total number of files on the highlighted machine, including a breakdown of Main files, Associated files, files that need the version checked, unrecognized files and unprocessed files, both as a figure and as a percentage of the total files.
- The Machines Details – Application information links back to the Applications window, showing details for that selected application entry. That is, if you click on an application in the Machines Details window, the corresponding application will be located (and highlighted) in the Application window.

The Applications Window

The Applications window displays a view of the applications within a population that have been recognized.

The Applications window allows further details of the application license information collected for a computer to be viewed, by providing a link to the Applications Details window.

The data displayed in the Applications window cannot be changed or altered in any way. The Applications window provides the following information:

Column	Description
Publisher	The name of the software publisher (for example, Microsoft, IBM).
Application	The name of the software application.
App Type	The type of application (for example, Word processor, Spreadsheet).
Version	The version of the software.
Release	The release of the software.
OpSys	The operating system the application runs on.
LangCode	The ISO 639 Language – 3166 Country code of the application. This is the ISO standard used to define languages. The format is as follows: <639 3166> for example <EN-US> refers to English – USA.
Language	The name of the language of the application.
Description	Any additional relevant information and notes, (for example, that the application is part of the Microsoft Office97 Suite of programs).
Machines	The number of machines on which the application is found. In the Operational View, this includes machines on which a partial install (that is, one or more non main files) is found. In the Business View, this column is the same as the Installs column.
Installs	The number of installations of that particular application that have been found throughout the population (that is, on how many machines the application is installed). An application is defined as installed when at least one Main file has been identified on a machine.
Licenses	The number of licenses required for the application. This is the same as the Installs column unless a license relation exists, in which case, the Licenses column may contain a number smaller than the Installs number.
Files	The number of files that are contained in that application (that is, how many files have been identified as belonging to the application).
Licenses Apps	The number of other applications that the application is responsible for licensing. For example, if Internet Explorer licenses NetMeeting on five machines and RealPlayer on three machines, this column would contain a value of eight.
Licensed By	The number of owning applications (licensees) taking responsibility for licensing this application. In the previous case, RealPlayer would have a count of three in this

Column	Description
	column. If RealPlayer was licensed by some other application on another machine, the count would be higher.
Version Id	This column contains the ID uniquely identifying a given version.
Utilization	<p>This shows the number of days that the application was used (as a percentage) over a period of time. The period is calculated automatically depending on long the application was used for. As a rough guideline the time periods are as follows:</p> <ul style="list-style-type: none"> • Application used for more than 3 months - utilization is calculated over the year. • Application used for less than 3 months - utilization is calculated over a quarterly period. • Application used for less than one month - utilization is calculated monthly <p>You can drill down to the detail level to see the individual results in the Details window.</p>
Used on	The machine the application was used on.

Filters can be set (using the Filters drop-down toolbar menu) to provide additional information in relation to the other windows in the workspace as follows:

Filter	Shows
Machine	Any applications that are contained on tagged machines.
Application	Any tagged applications in the Application window.
Directory	Any applications whose main file is contained in tagged directories.
File	Any applications that contain tagged main files.
Local	Any applications with Local tags.

You can use the locking feature to make sure important columns, such as Tag, Publisher and so on remain visible while scrolling through detailed columns. For more information, see the section describing Locking and Unlocking Columns.

Applications Details Window

To display the Applications Details window do one of the following:

- In the Applications window, select the Detail window link option from the Configure drop-down toolbar menu.
- Select the Configuration option from the Window menu and check the Application Windows box in the Detail Window Link group.

The information that is displayed in the Applications Details window can be selected by doing one of the following:

- Clicking the Configure button in the Details window.
- Selecting the Detail window option from the Configure drop-down toolbar menu. This will display a Window Layout dialog box.

Depending on what information was selected in the Window Layout dialog box, the Applications Details window can show the following information:

- Installed on machines - The machine(s) that the application is installed on.
- Licensed by - The details of the Application Suite that licenses the highlighted application (if applicable). For example, Word 97 is licensed by Microsoft Office 97.
- Licenses - The details of any applications that the highlighted application licenses, for example, Word 97 licenses Microsoft Photo Editor.
- The Applications Details – Installed on machines information links back to the Machines window, showing details for that selected machine entry. That is, if you click on a machine in the Applications Details window, the corresponding machine will be located (and highlighted) in the Machines window.
- The Applications Details – Licensed by or Licenses information links back to the Applications window and the Machines window, showing details for that selected application and the machine it is located on.

The Directories Window

The Directories window provides a view of the directory names within a population containing inventoried files. It displays a list of every unique directory of software files within the population, and enables you to assess the conformance to standards for software installed across the computer population. It does not take the drive into account, for example, e:\temp and c:\temp is one line in this window.

The Directory window is particularly helpful for identifying configuration anomalies prior to, or after installing new applications or upgrades. Any directory which resides in a different path will be shown as a separate line item.

The Directories window allows further details of the Directories (including files contained in the directory and machine name) to be viewed, by providing a link to the Directories Details window.

The Directories window provides the following information:

Column	Description
Tag	Global tag column
Ltag	Local tag column
Name	Name of the directory
Count	Number of drives and machines a specific directory occurs on within the population. The details of the Machines and drives the directory occurs on can be seen in the Directory Detail window.
Main	A check mark is shown in this column if the directory contains a Main file of an application.
Tagged Files	This column shows the number of tagged files contained in the highlighted directory. The list of tagged files is displayed in the Directories Details window.
Tagged Applications	This column shows the number of tagged applications whose main link is contained in the highlighted directory.

Filters can be set (using the Filters drop-down toolbar menu) to provide additional information in relation to the other windows in the workspace as follows:

Filter	Shows
Machine	Any directories that occur on tagged machines.
Application	Any directories that contain tagged applications.
Directory	Any tagged directories in the Directories window.
File	Any directories that contain tagged files.
Local	Any directories with Local tags.

You can use the locking feature to make sure important columns, such as Tag, Name, Main remain visible while scrolling through detailed columns. For more information, see the section describing Locking and Unlocking Columns.

The Directories Details Window

The Directories Details window displays further information for each directory listed in the Directories window.

To display the Directories Details window do one of the following:

- In the Directories window, select the Detail window link option from the Configure drop-down toolbar menu.
- Select the Configuration option from the Window menu and check the Directory Windows box in the Detail Window Link group.

The information that is displayed in the Directory Details window can be configured by doing one of the following:

- Clicking the Configure button in the Details window.
- Selecting the Detail window option from the Configure drop-down toolbar menu. This will display a Window Layout dialog box.

Depending on what information was selected in the Window Layout dialog box, the Applications Details window can show the following information:

- **Files** - Displays a list of file names found within the directory, along with the size of the file.
- **Machines** - Displays a list of machines where the directory is found within the population, with the drive location for the directory.
- **The Directories Details** – Files information links back to the Files window, showing details of a particular files that resides in the highlighted directory.
- **The Directories Details** – Machines information links back to the Machines window, showing details of the machine that the directory is on.

The Files Window

The Files window displays information for all the inventoried files in the population. It allows further details of the file information collected on a PC to be viewed, by providing a link to the File Details window.

The Files window displays the following:

Column	Description
Tag	Global tag column
LTag	Local tag column
Name	<p>A full list of all the files selected for analysis within the population of scan files read into the Analysis Workbench (known as the inventory files).</p> <p>The files displayed in red are the Main executable files for an application.</p> <p>The files displayed in green are the files associated with an application. They belong to it but are not main files.</p> <p>The files displayed in blue are unidentified or partially identified files. The files displayed in purple are partially identified Main or Associated files.</p> <p>Note: The colors referred to are the default and can be customized. For more information, see the section describing Customizing the Font and Color.</p>
Size	Size of the file.
Publisher	Name of the software publisher.
Application	Type of application (for example, Games, Disk creation Utility).
Version	File version number where a file is fully identified.
Release	The release of the software.
OpSys	Operating system under which the application the file belongs to operates.
LangCode	The ISO 639 Language – 3166 Country code of the application. This is the ISO standard used to define languages. The format is as follows: <639 3166> for example <EN-US> refers to English – USA.
Language	Name of the language of the application.
Copies	Shows the number of copies of each file within the population.
# Sizes	Number of sizes of a file with the same name that exist in a population of machines.
# Signatures	Shows the number of signatures found for each file within the population.

Column	Description
# Dates	Number of different dates for copies of the file within the population.
# Attributes	Number of different attributes for the file copies.
# Types	Number of different types found for this file name (for example, a file called Setup.exe can be a DOS executable file or a Windows executable).
Status	Whether the file is a: <ul style="list-style-type: none"> • Main file = 1 • Associated file = 2 • 3rd Party files = 3 • CheckVer file = 4 • Unknown file = 5 • Unprocessed file = 6 • Auto-identified = 7 • Junk = 8
Description	Version description as entered in the SAI. It is a separate field that can contain any user description or comment.
Signature	The file Signature column (a number produced for each file by checking the first 8192 bytes) is usually sufficient to identify a file. If there is more than one signature, an asterisk '*' is also shown in the column to indicate this.
Modified	The date the files were last modified.
Accessed	The date the files were last accessed.
Utilization	<p>This shows the number of days that the application was used (as a percentage) over a period of time. The period is calculated automatically depending on long the application was used for. As a rough guideline the time periods are as follows:</p> <p>Application used for more than 3 months - utilization is calculated over the year.</p> <p>Application used for less than 3 months - utilization is calculated over a quarterly period.</p> <p>Application used for less than one month - utilization is calculated monthly.</p> <p>You can drill down to the detail level to see the individual results in the Details window.</p>

Column	Description
Attribute	<p>The Attribute column along with normal file attributes includes the following:</p> <ul style="list-style-type: none"> • r - Read-only files. Files marked read-only are protected from modification or deletion. • h - Hidden files. Windows Explorer does not show hidden files by default unless you tell it to do so. • s - System files. • u - Utilized file. This flag shows that this file was executed and the application was used. • v - Volume Label. This contains no data and no more than one may exist on a disk volume (and only in the root directory). • a - If it has the archive attribute of DOS or windows. The Archive attribute is used to provide an automatic record of what files have been modified since the last backup. • c - Compressed files. These are compressed files and folders. For example, if it is a file on a compressed NTFS volume. • x - In a UNIX system this represents a file with the executable attribute set. • l - Internal file. That is, if it has version data available for it. Version data (as per Windows Explorer) is displayed for all files having this attribute. • L - Symbolic link in UNIX. Files (and directories) may be located on several different file systems. To link files that are in different file systems a symbolic link is made. • s - This is special case for UNIX for SetUid files. In UNIX scans, certain files have special attributes that mean that they run with root privilege. Such files are potentially a security risk and the Scanner assigns them the system attribute - s • A - This file has been identified as an archive. • C - This file has been identified inside an archive. • X - This file has been identified as an executable file. • D - This file has been identified as a device driver. <p>If there are more than one set of attributes, an asterisk '*' is also shown in the column to indicate this.</p>
File Type	Shows the type of file (for example, DOS executable file, Windows executable, OS/2

Column	Description
	DLL file). If there is more than one file type, an asterisk '**' is also shown in the column to indicate this.

Filters can be set (using the Filters drop-down toolbar menu) to provide additional information in relation to the other windows in the workspace as follows:

Filter	Shows
Machine	Any directories that occur on tagged machines.
Application	Any directories that contain tagged applications.
Directory	Any tagged directories in the Directories window.
File	Any directories that contain tagged files.
Local	Any directories with Local tags.

You can use the locking feature to make sure important columns, such as Tag, Name, Main remain visible while scrolling through detailed columns. For more information, see the section describing Locking and Unlocking Columns.

Adding Entries to the SAI

The Add to SAI option in the Tags drop-down menu allows you to 'teach' Universal Discovery to recognize files which it previously did not recognize. This enables you to optimize the software analysis and consolidation capabilities of the Analysis Workbench to recognize unidentified files and applications. The same data can be used by the Viewer.

For more information, see the section describing Teaching Applications to the User SAI.

The File Details Window

The File Details window provides further information for each file listed in the window.

To display the File Details window do one of the following:

- In the Files window, select the Detail window link option from the Configure drop-down toolbar menu.
- Select the Configuration option from the Window menu and check the File Windows box in the Detail Window Link group.

The information that is displayed in the File Details window can be configured by:

- Clicking the Configure button in the Details window.
- Selecting the Detail window option from the Configure drop-down toolbar menu. This will display a Window Layout dialog box.

Depending on what information was selected in the Window Layout dialog box, the Files Details window can show the following information:

- **Asset numbers (Machine)** - Shows the Asset number of the Machines that the file resides on.
- **Directory names (Directory)** - Show the directory that the file resides in.
- **File sizes (Size)** - Shows the size of each copy of a file within the population.
- **File signatures (Signature)** - Shows the signatures for each file within the population.
- **File modified date**- Shows the date the file was last modified files if available.
- **File Utilization** - This shows the number of days that the application was used (as a percentage) over a period of time.
- **File accessed date**- Shows the date that the file was last accessed.
- **File attributes (Attributes)** - Displays system attributes for a file. The Attribute column along with normal file attributes includes the X (executable), I (internal file) and D (device driver) information. For all files having the Information I attribute, version information (as per Windows Explorer) is displayed.
- **File type (Type)** - Shows the type of file (for example, DOS executable file, Windows executable, OS/2 DLL file).
- **Version data** - Version information (as per Windows Explorer Properties for a file) is available for all files having the information I attribute.
- **File Version data** - Shows any version data that was collected for the file.
- **The File Details** – Machine information window links back to the Machines window by selecting the machine that a selected file exists on. It also links back to the Directory window by selecting the directory that the selected file resides in.

Viewing Charts and Statistics

Viewing Charts

Charts provide a graphical representation of selected data. There are a number of standard charts provided by Analysis Workbench to help visualize various data splits. The standard charts include the variation in scan age, the Scanner used and the split of recognition levels.

In addition, there are two bar charts which plot the number of recognized and unrecognized files against the frequency of their occurrences. The frequency is expressed as a percentage to allow for different numbers of machines loaded.

Charts are available from two sources:

- By selecting an option from the View menu.
- By right-clicking on a column header and clicking the Chart option. These displays a summary count of the column contents with a graphical representation of the results. This option is only available if there is text in that particular column.

Chart Buttons

The following buttons are available in all charts:

Button	Function
Save As	The chart can be saved to three different file formats: <ul style="list-style-type: none"> • Enhanced metafile: .emf • Windows Metafile: .wmf • Windows Bitmap: .bmp
Copy	This button has a drop-down list menu. The chart can be copied to the clipboard in following formats: <ul style="list-style-type: none"> • Enhanced metafile: .emf • Windows Metafile: .wmf • Windows Bitmap: .bmp
Print	Displays a print preview of the chart and allows you to set various print settings.
Options	Displays the Chart Options dialog box, where various options and filters can be set for the chart.
Refresh	Refreshes the chart to show any updated information. The chart can be viewed while data is being loaded.
OK	Click this button to return to the Analysis Workbench workspace.

Chart Options

The following options are available in all charts:

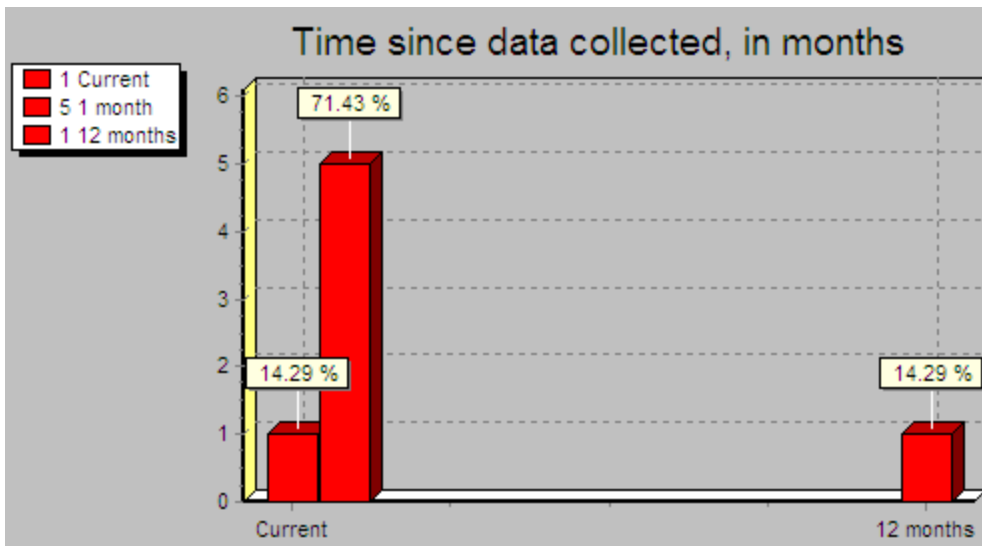
Option	Function
Options	
3D chart	Displays the chart in three dimensional graphical form.
Show Marks	Displays percentage labels for each segment in the chart.
Show Legend	Displays a key to the chart. This allows you to identify what each of the segments or bars represent.
Show User-defined Title	Allows you to enter a title of your choice for the chart. Enter the text in the User-defined Chart Title box.
Pie Chart	
Circular	Displays the statistics as a circular pie chart, otherwise the chart is displayed as an ellipse.
Use patterns	Uses a patterned fill for the segments of the pie chart.
Explode largest	The largest segment is offset from the main body of the pie chart for emphasis.
Other group,%	Combines the segments less than the defined percentage into one group called Other. Use the arrows to increase or decrease the Other group sections.
Legend Position	
Left	Positions the legend to the left of the chart
Right	Positions the legend to the right of the chart
Top	Positions the legend to the top of the chart
Bottom	Positions the legend to the bottom of the chart
Data Filter (Filters can be applied to reduce the amount of data reported)	
Machines	Applies a machines filter to the chart data.
Applications	Applies an applications filter to the chart data.

Option	Function
Files	Applies a files filter to the chart data.
Directories	Applies a directories filter to the chart data.
Local	Applies a local tag filter to the chart data.
Background Color	Allows you to select a background color from the drop-down list.
User-defined Chart Title	Allows you to configure the chart titles as required. This option is only available if the Shown User-defined Title option is checked.
Auto Apply	If checked, all changes are applied to the chart as soon as you make them. Otherwise, they are applied when the OK or Apply button is click.

Scan File Age Chart

This chart is displayed by selecting the **Charts > Scan file Age** option from the View main menu.

The Time since data collected, in months chart is displayed which shows the date of the loaded scan files.



The X axis shows the age of the scan files (in months). The Y axis shows the number of scan files.

The legend (shown in the left corner) allows you to identify the number of scans that belong in an age category.

This example shows:

- One scan (14.29% of the scan files loaded) is 12 months old.
- Five scans (71.43% of the scan files loaded) are 1 month old.
- One scans (14.29% of the scan files loaded) is current (less than 1 month old).

Filters can also be used in the scan file age chart to narrow down and highlight items of particular interest. These filters are set from the Chart options page (click the Options button to access the filters).

Example:

To view the age of the scan for selected machines:

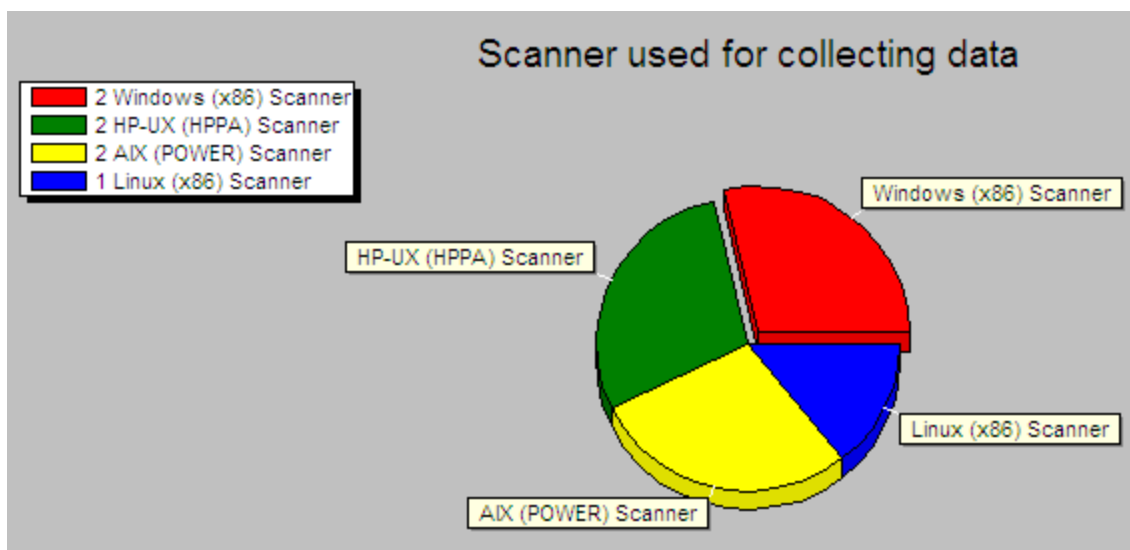
1. Tag the machines in the Machines page.
2. Apply a Machines filter to the chart data. The chart will display the age of the selected scans only.

The legend shows the number of scans that belong in an age category and the color of the bar that represents it.

Scan Method Chart

This chart is displayed by selecting the Charts > Scan Method option from the View main menu.

This displays a chart of the Scanners used for collecting data chart. For example:



This example shows four segments of a pie chart. It indicates that four types of Scanner have been used to create the scans loaded in Analysis Workbench.

The legend (shown in the left corner) enables you to identify the type of Scanner, the number of scans created using that Scanner and the color of the segment that represents it.

This example shows:

- Two scans have been created using a Windows (x86) Scanner.
- Two scans have been created using an HP-UX (HPPA) Scanner.
- Two scans have been created using a AIX (POWER) Scanner.
- One scan has been created using a Linux (x86) Scanner

Filters can also be used in the Scan method chart to narrow down and highlight items of particular interest. These filters are set from the Chart options page (click the Options button).

Example:

To view the method used for scanning a machine that contains a particular application:

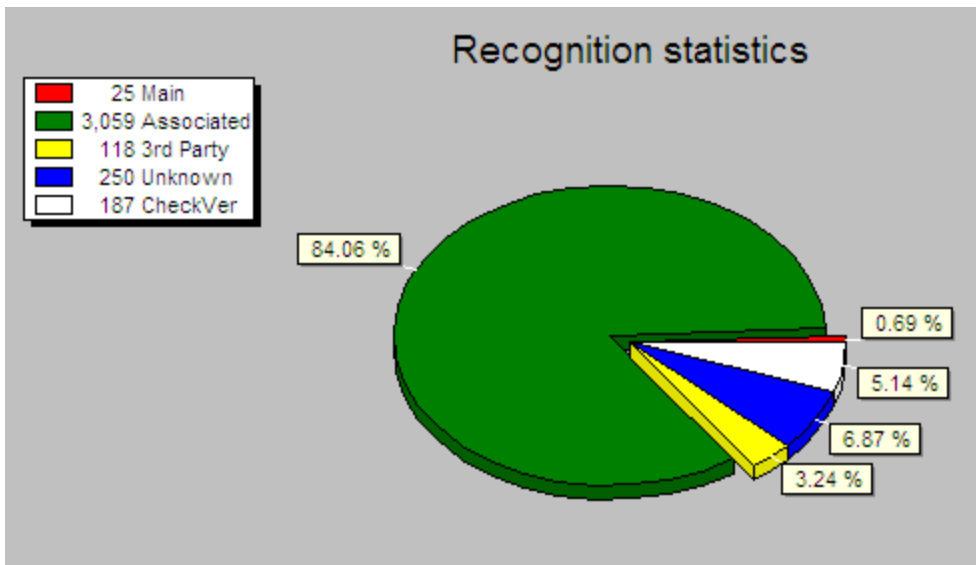
1. Tag the application in the Applications page.
2. Apply an Applications filter to the chart data. The chart will display the Scanner that was used to scan the machine containing that application.

The legend shows the type of Scanner used, the number of scans created using that Scanner and the color of the segment that represents it.

Recognition Chart

This chart is displayed by selecting the **Charts > Recognition** option from the View main menu.

This displays the Recognition statistics chart which shows Main, Associated, 3rd Party and Unknown files.



This example shows a pie chart with five segments.

The legend (shown in the left corner) enables you to identify the type of files recognized, the number of files in that category and the segments that represents them.

This example shows:

- 25 files (0.69%) have been recognized as Main files.
- 3,059 files (84.06%) are Associated files.
- 118 files (3.24%) are 3rd Party files.
- 250 files (6.87%) have been recognized as Unknown files.
- 187 files (5.14%) are CheckVer files.

For more information, see the section describing Display/Storage Filter for descriptions of these file recognition categories.

Filters can also be used in the Recognition chart to narrow down and highlight items of particular interest. These filters are set from the Chart options page (click the Options button).

Example:

To view the recognition statistics for all Main files recognized:

1. In the Files window, locate an entry that has Status of 1 Main. This is the status setting for Main files.
2. Right-click on this entry in the Status column and select the Tag > Status is 1 Main option. A Global tag is applied to all files in this window that are Main files.

3. Apply a Files filter to the chart data. The chart will display the Scanner that was used to scan the machine containing that application.

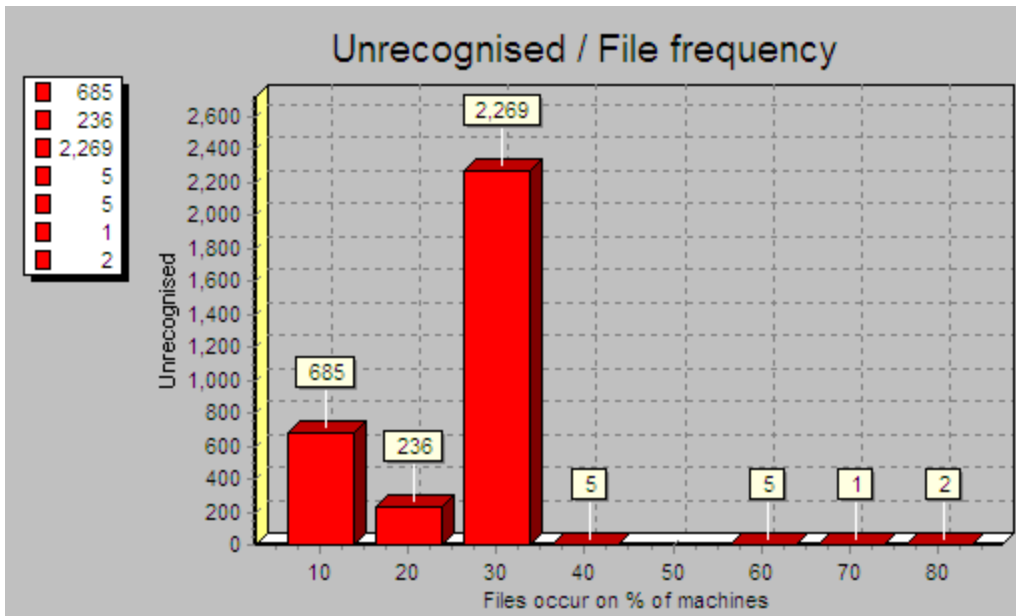
The legend (shown in the left corner) allows you to identify the type of files recognized, the number of files in that category and the color of the segments that represents them.

Unrecognized/File Frequency

This chart is displayed by selecting the Charts > Unrecognized/File frequency option from the View main menu.

This displays a bar chart that can be used to determine the quality of recognition on a population.

Unrecognized files are shown split by the number of copies.



The X axis shows number of files that occur on a given percentage of machines loaded.

The Y axis shows the number of unrecognized files. It is an absolute count of different, unrecognized file entries.

The legend (shown in the left corner) enables you to identify the number of unrecognized files.

Filters can also be used in the Unrecognized/File Frequency chart to narrow down and highlight items of particular interest. These filters are set from the Chart options page (click the Options button).

Viewing Charts From Individual Windows

Other charts are available by right-clicking on a column header and clicking the Chart option.

These charts display a summary count of the column contents with a graphical representation of the results. This option is only available if there is text in that particular column.

To display a chart for a particular column:

1. Right-click on a column header
2. Select the Chart option

Example

To view the version of the Universal Discovery software that was used to create the scans:

1. In the Machines window. Click on the Columns button to display the Select columns to display dialog box.
2. Click on the + sign next to the Scan file category.
3. Select Scan file version. The Scan file version column will now be displayed in the Machines window.
4. Right-click on the Scan file Version column header and select the Chart option.

A chart is displayed, which shows the versions of the software that was used to create the scans.

The legend shows the number of scans created by a particular version and the color of the segment that represents the version.

Viewing Inventory Statistics

The Audit statistics option in the View menu displays the Audit Statistics dialog box.

Audit statistics present summary information about the loading and recognition data as well as memory consumption. The statistics are:

- Files scanned
- Files loaded
- Files recognized
- Different files loaded

- Different directories loaded
- Machines loaded
- Dynamic memory in use
- Operating System memory committed

Note: If one or more scan files have been unloaded, the audit statistics are no longer available until Analysis Workbench has been closed down and restarted.

Tagging

An important part of the analysis process is the ability to intelligently select subsets of the population and perform further analysis on this subset only.

Tagging is a process which allows the volume of data being viewed to be narrowed down and allows items of particular interest (files, directories, applications and machines) to be highlighted.

Analysis Workbench implements several methods for tagging and filtering, all of which are based on the tagging mechanism.

Every file, machine, application and directory can be 'tagged', that is, selected. Visually, this is indicated by a check box next to each item in the window.

The simplest mechanism is to tag one or more items manually by selecting the tag check box next to the item (or by hitting the Space bar).

Tag Types

Two different types of tags are available:

- **Local tags:** Impact only the window they are applied in (the local window).
- **Global tags:** Can impact other windows. Only global tags can be used to teach entries to the SAI.

Filters are used in conjunction with these tags to limit the amount of data displayed in a window.

Tagging Data in the Information Windows

Tagging a File

Globally tagging a file has the following effect:

- It causes a file tag to be set for the file itself.
- It causes a file tag to be set for all machines on which it occurs.
- It causes a file tag to be set for all applications that contain an instance of this file.
- It causes a file tag to be set for all directories in which an instance of this file can be found.

Tagging a Directory

Globally tagging a directory has the following effect:

- It causes a directory tag to be set for the directory itself.
- It causes a directory tag to be set for all files in any instance of the directory.
- It causes a directory tag to be set for all applications in any instance of the directory.
- It causes a directory tag to be set for all machines on which the directory occurs.

Tagging a Machine

Globally Tagging a machine has the following effect:

- It causes a machine tag to be set for the machine itself.
- It causes a machine tag to be set for all the files on the machine.
- It causes a machine tag to be set for all the applications on the machine.
- It causes a machine tag to be set for all the directories on the machine.

Tagging an Application

Tagging an application has the following effect:

- It causes an application tag to be set for the application itself.
- It causes an application tag to be set for all directories in which an instance of this application can be found.
- It causes an application tag to be set for all machines on which the application occurs.
- It causes an application tag to be set for all the files that are contained in that application.

Methods for Applying Tags

Edit Menu

Global and Local tag options are available in the Edit main menu.

Setting a tag from this level will impact all the tag settings, both Local and Global. In addition, any filters that have been set, can be closed. This is a good start point.

Information Window Toolbar

The information window toolbars are used for setting the tag type (Local or Global) as well as window specific options.

Column Header

Options in the column header shortcut menu can be used to tag unique (only one) or duplicate (more than one) entries. They also have a Contains function used to select items that match a substring search.

Column Contents

Options in the column shortcut menu tag entries above, below a particular row or matching a specific row-column combination.

Using **SHIFT** + right-click in the window area has the effect of inverting the tag selection for the current row. For example, instead of a right-click in the Version column giving Version is 95, **SHIFT** + right-click gives Version is not 95.

Clearing and Setting Tags for All Items in All Windows

The Edit menu has options for globally tagging and untagging entries in all information windows. This

can be very useful when you have large volumes of data and you want to ensure that none of the items in any of the information windows are tagged (even if the windows are not displayed).

To do this:

1. Select **Tag All > Both** from the Edit menu. This sets both Global and Local tags in all the information windows (even if they are not displayed).

The status bar now indicates that all files in all windows are tagged. Information similar to the following will be shown:

Machines 6/6 Applications 31/31 Directories 121/121 Files 1211/1211

2. Select **Untag All > Both** from the Edit menu. This clears all the Global and Local tags in all the windows (even if they are not displayed).

The status bar now indicates that all files in all windows are untagged. Information similar to the following will be shown:

Machines 0/6 Applications 0/31 Directories 0/121 Files 0/1211

All information windows (Files/Directories/Applications/Machines) contain no tagged items.

Tag Lists in the Machines Window

In the Machines window, you can load and store lists of tagged machines.

A .tag file is a text file containing the asset numbers of the tagged machines. It is saved with a .tag extension.

This can be very useful for saving time in situations where you have carried out complicated tagging procedures and have reached a subset of machines that are of particular interest.

Rather than having to redo the complicated tagging procedures when you reload the data or you re-inventory your population, you can load a machines tag list and those particular machines will automatically be tagged.

Any machines that no longer exists will be ignored in the tag list file.

To save a current machine tagging list

1. In a Machines window tag the required machines.
2. Select the Save Tags List from the Tag drop-down toolbar menu.

The asset numbers of the currently tagged Machines are saved in a .tag file.

To load a tag file:

1. Select the Load Tags List from the Tag drop-down toolbar menu.
2. Navigate to the .tag file, select it and click Open.

The file will be loaded and matching machines will be tagged.

Filtering

You can use filters to narrow down and highlight items of particular interest.

Each of the main windows in the Analysis Workbench can have one or more filters applied to them. Each window can have one or more filters applied to them. Filters are used for the following purposes:

To limit the number of items that are displayed in a window.

To view the impact of a selection in another window. This is done in conjunction with Global tags. For example, if a file has been tagged with a Global tag in the Files window, then to see which directory it is located in, you can apply a File filter to the Directory window.

To narrow down and highlight items of particular interest in charts and exports.

Setting a Filter for a Window

Select the filter to be applied to the window from the Filters toolbar drop-down menu, or select one of the icons on the window toolbar to apply the following:

- Files filter
- Directories filter
- Application filter
- Machines filter
- Local Tags filter

When a filter is active in a window, visually this is indicated as by a check mark in the Filters toolbar menu and on the icon. The exception to this is the Local Tags filter icon, which is highlighted in yellow.

To deactivate a filter either click on the icon again or deselect the filter from the Filters toolbar drop-down menu. The appropriate check marks are cleared.

Machines Window Filter

The following filters can be applied from within the Machines window:

Machine Select - Displays any tagged machines in the Machines window.

- **Application Select** - Displays any machines that contain tagged applications. It shows any machines that have the application installed.

It does not show machines that have a partial installation (in other words, machines where a license is not needed).

- **Directory Select** - Displays any machines that contain tagged directories.
- **File Select** - Displays any machines that contain tagged files.
- **Local Select** - Displays only those entries in the Machines window that have Local tags enabled.

Applications Window Filter

The following filters can be applied from within the Applications window:

- **Machine Select** - Displays any applications that are contained on tagged machines.
- **Application Select** - Displays any tagged applications in the Applications window.
- **Directory Select** - Displays any applications that occur in tagged directories.
- **Main File Select** - Displays any applications that contain tagged main files.
- **Local Select** - Displays only those entries that have Local tags enabled in the Applications window.

Files Window Filter

The following filters can be applied from within the Files window:

- **Machine Select** - Displays any files that are contained on tagged machines.
- **Application Select** - Displays any files that are contained in tagged applications.
- **Directory Select** - Displays any files contained in tagged directories.
- **File Select** - Displays any tagged files in the Files window.
- **Local Select** - Displays only those entries that have Local tags enabled in the Files window.

Directories Window Filter

The following filters can be applied from within the Directories window:

Machine Select - Displays any directories that occur on tagged machines.

Application Select - Displays any directories that contain tagged applications.

Directory Select - Displays any tagged directories in the active window.

File Select - Displays any directories that contain tagged files.

Local Select - Displays only those entries that have Local tags enabled in the active window.

Clearing Every Filter in All Windows

The Edit menu has a Clear all filters option for globally clearing the filters for all information windows. This can be very useful when you do not have all the windows displayed in the workspace, and you want to ensure that none of the items in any of the information windows are filtered (even if the windows are not displayed).

Tagging and Filtering Examples

The Effects of Global Tags, Local Tags and Filters

Preliminary Settings

1. Equalize all the windows (files, Directories, Machines and Applications, by selecting the Equalize command from the Window menu.
2. In each of the windows, select the LTag column from the Columns toolbar menu. This ensures that the local tag column is displayed in each window.
3. From the Edit menu select the Untag All|Both option. This will clear any existing tags (both global and Local) in each window.
4. Select the Clear all filters option from the Edit menu. This ensures that no filters have been applied to any of the windows.

Tag Selection

- Part 1

This part of the example shows the effect of applying a filter to reduce the display information.

- a. In the Files window, select the Use Local Tags from the Tag toolbar menu.
- b. Apply a Local tag to a file which has a Status of 1 Main.

Note the number of files in the top left corner of the Files window in square brackets [].

- c. Apply a local filter in the Files window, either by clicking the icon or by selecting the Local select option from the Filters toolbar menu.

The result is that the number of files displayed is reduced to a single entry (that is, the one file that you tagged).

- Part 2

This part of the example shows that Local tags do not affect the other windows.

Apply a File filter to the other windows, either by clicking the icon or by selecting the File Select option from the Filters toolbar menu in each window. All windows now become empty.

In the Applications window, this option is actually Main File Select.

- Part 3

This part of the example shows that removing a filter will restore the window to it's previous state.

Remove the File filter in the Files window only.

The selected file reappears in the Files window.

- Part 4

This part of the example demonstrates how a Global tag affects the other windows.

- a. In the Files window, set the Use Global Tags option in the Tags toolbar menu.
- b. Now set a Global tag on the file. The Directories, Machines and Applications windows all now display entries:
 - Directories window displays the directories containing the file.
 - Machines window displays the machines containing the file.
 - Applications window displays the applications which contain the Main file.
 - If the Local tag is removed from the Files window, while the Local filter is still active, the file disappears. The Local filter has to be removed for the file to be redisplayed. The other windows remain unaffected.

Common Tasks using Filtering and Tagging

How Do I Get a List of All Files Not Known by the Application Library?

Make sure that a Files window is visible (use **Window > Create > Files** if not).

1. Using the Columns drop-down menu of the Files window, show the Status column.
2. Sort on the Status column by left clicking on it, or by right-clicking on the column header and selecting one of the sort options available.
3. Scroll down until an entry showing 5 Unknown is visible. Alternatively, type 5 on the keyboard to select the first entry of this type.

If you cannot locate a 5 Unknown file, it could be that your display filter options have been set up to not display unknown files. See Configuring Display Filter Settings on page 77 for more information about how to include Unknown files.

1. Right-click on a 5 Unknown entry, and select the menu item **Status is 5 Unknown > Tag**.
2. Apply a File filter on the Files window.

Alternatively:

1. Using the Columns drop-down menu of the Files window, show the Status column.
2. Right-click on the column header of the Status column, and select the **Tag|Contains** menu item.
3. Enter **5** in the Search string box, select **Anywhere** in the String Position group box and select **Tag** in the Action group box.
4. Click **OK**.
5. Apply a File filter on the Files window.

How Do I Get a List of Machines Containing Unknown Files?

Assuming that the tags from the previous question are still in place, apply a File filter to a Machine window.

All machines now shown contain one or more tagged files, all of which are unknown.

How Do I Get a List of All Machines That Do Not Conform to the Company Standard Desktop?

This answer assumes a scan of a standard desktop is available.

1. In the Machines window, tag the standard machine.
2. Apply a Machine filter to an Application window.
3. Tag all the applications shown. Now, all standard applications are tagged.
4. Remove the Machine filter from the Applications window.
5. Toggle all tags in the Applications window. Now all non-standard applications are tagged.
6. Apply an Application filter in the Machines window. All machines containing any non-standard applications are shown.

How Can I See Which Machines Contain the Most Non Standard Applications?

Assuming no tags have been changed from the previous question

1. Using the Columns drop-down menu of the Machines window, show the Tagged Apps column.
2. Sort descending on this column, either by left clicking on the Tagged Apps column header or by right-clicking and selecting Sort Descending.

The machines at the top of the list now are the ones containing the most non-standard applications.

How Can I See What Files Appear in a Certain Directory?

Make sure that a Directory window is visible (use **Window > Create > Directory** if not)

1. Tag the directory or directories of interest.
2. Apply a Directory filter to a Files window.

If you cannot see any directories, it could be that your memory options have been set up to not display directory data. See [Configuring Memory Settings](#) for more information about how to include directory data.

How Can I See in How Many Different Directories a File Occurs?

When no filters are applied to the Files window, the Copies column displays the total number of

occurrences of each file entry. This includes multiple copies on the same machine in different directories.

When a Directory filter or Machine filter is applied to a Files window, the Copies value will always be 1. If two directories are tagged, the count will be 1 for those files that occur in only one of the directories, and 2 for those files that occur in both.

The same logic applies for tagged machines when a Machine filter is applied to a Files window.

How Can I Verify That The Data in an Asset Field is Unique Across the Population?

This question is important for asset or hardware fields that contain information unique to a single computer, such as MAC addresses, and Asset numbers.

1. Show the column of interest in a Machines window.
2. Use the Tag menu item of the shortcut menu of the column header, and select Duplicates.
3. Apply a Machine filter to the Machines window. Any items shown are not unique across the population.

How Can I See Which Machines Contain Microsoft Applications?

Make sure an Applications and a Machine window are visible.

1. In the Applications window, right-click on Microsoft in the Publishers column, and select the Publisher is **Microsoft** > **Tag** menu item.
2. Alternatively, use the **Tags** > **Contains** menu item from the Publishers column header shortcut menu and use **Microsoft** as the search string.
3. In the Machines window, apply an Application filter.

How Can I See Which Machines Have Less Than 32MB of Memory?

Make sure a Machine window is visible.

1. In the Machines window, click the **Columns** button. In the Select columns to display dialog box, expand the Memory category in the Available columns list, and check the **Total Memory (Mb)** item.
2. Sort by the Total Memory (Mb) column in ascending order.
3. Type **32** which moves focus to the first item with 32Mb or memory or more. Press the **Up** arrow to select the previous item in the list.

4. Right-click the highlighted item, and select **Tag -> Rows Above**.
5. Apply a Machine filter to the window. All machines visible have less than 32 Mb of memory

OR

Make sure a Machine window is visible.

1. From the Tag menu, select **Query**
2. From the Query form shown, expand the Memory item and double-click the **Total memory (Mb)** item.
3. From the drop-down list of choices, select **is less than**. Type **32** in the entry field.
4. Click **OK** to execute the query.

How Can I See Which of the Machines with Less Than 32MB of Memory Contain Microsoft Applications?

1. Follow the steps in the previous question to tag machines and applications and applying filters.
2. Show the LTags column in the Machines window by it from the Columns toolbar menu.
3. From the Tag toolbar menu of the Machines window, select Use Local Tags Once.
This instructs Analysis Workbench to use Local Tags for the next tag operation.
4. Again using the Tag toolbar menu of the Machines window, select Tag All.
This will give all items currently visible, a Local tag.
5. Remove all filters from the Machines window. All machines are now shown.
6. Using the Tag toolbar menu, select Untag All.
This will remove all of the Global machine tags set previously – but the information needed is stored in the Local tags so this is fine.
7. Apply a Local filter to the Machines window (or available from the Filters drop-down menu). The same machine selection as before step 1 is now visible.
8. Tag all visible machines (Use the Tag menu, for example).
9. Apply a Machine filter to the Applications window.
The applications now visible occur on machines with less than 32Mb of memory that contain at least one Microsoft application.

Is There Any Way of Just Navigating the Data, Without Setting Any Tags?

1. In all windows, enable the **Link to Details** options in the Configure drop-down menu.
2. In the Details window now shown in the right side of the screen, click the little **c** (Configure).
Make sure all four check boxes in the Detail window Links group are selected. Optionally, set the other controls to specify which details are shown for each window.
3. Click **OK**.

Now, whenever an item is clicked in one of the main windows, details for that item are displayed in the Details window. Because the Detail window Links are selected, clicking on items in the Details window moves the focused line in the main windows when items are clicked here.

For example, click on a file. A list of machines and directories where the files occur, along with various details of each occurrence of the file, is shown in the Details window. Click on one of these occurrences, and focus in all Machines windows is moved to the machine for this occurrence; the same happens for the directory in which it occurs. This logic extends to Machines, Directories and Applications as well.

How Can I Get a List of Files Occurring in the Same Directory as One or More Files I Have Tagged?

This is typically the first step of application recognition – an unknown file is tagged, and all files in the same directory should be added to the library at the same time.

1. Apply a File filter to a Directories window. Now, all directories with tagged files in them are shown.
2. Tag the directory or directories that are of interest.
3. Apply a Directory filter to a File window. This now shows all files occurring in the tagged directories.

How Do I Get a Complete List of Machines with Full or Partial Installations of a Set of Applications?

1. Clear all file tags in all windows.
2. In the Applications window, tag the applications in question.
3. Apply an Application filter to the Files window.

4. Tag all the visible files.
5. Apply a File filter to the Machine window.

Machine Queries

Machine queries target and tag machines based on criteria such as asset data, hardware or configuration information.

You can perform a query to focus on any combination of hardware, and asset information collected for a computer population during an inventory.

As a result of any query, a number of machines, applications, files or directories can receive a number of tags.

Queries to identify particular machines using specified criteria are defined using a special query grid. This allows multiple query criteria to be specified from a section of categories, which are defined by the information collected across the computer population.

When the query criteria are fully specified, the query is invoked and all machines within the population that match the query criteria are tagged. The query grid also allows defined queries to be saved so that they can be loaded and used again.

How to Perform a Machine Query

Machine queries are available from the Machines information window.

To begin creating a query, you need to display the query grid used to specify the search criteria.

In the Machines window select the Query option from the Tag drop-down toolbar menu.

The Complex Query dialog box is displayed.

Complex Query Dialog Box

This dialog box has two tabs:

- **Queries** - Displays the hardware and asset fields and allows you to build up the query.
- **Options** - Sets up the logic, actions and format of the query.

Differences Between Scan File Queries and Machine Queries

The method of performing a machine query is almost identical to that for selecting scan files for specific machines (complex query). There is however, one difference to note:

An extra option is made available for Machine queries. This is on the Options tab page and is the Tagging group box.

- **Affect local tags** - Only Local tags are set or cleared.

Teaching an Unidentified Application

While teaching files to your User SAI it is convenient to use SAI Teaching Mode. This provides you with the possibility of setting Publisher/Application/Version information and file status for the files that are about to be added to the User SAI before opening the User SAI window. See Using SAI Teaching Mode for further information about how to use it.

Step 1: Tag Files Belonging to the Unidentified Application

1. Open Analysis Workbench and select the Application Teaching mode from the Quick Config dialog box.
2. Load the scan file with the application in question.
3. If you already know the main directory where the unidentified application resides, tag a directory and skip the next three steps.
4. Sort files by the Status column, so that <Unknowns> and <Checkvers> are near the beginning of the list.
5. Looking through the list of Unknown files try to find files that belong to the unidentified application that needs to be taught.

Sometimes you can search for clues in the Version Data columns in the Details windows on the left side and in the Directory Window. In many cases the directory name can be very descriptive.

6. If you have now identified the directory, set a Global tag for the directory.
7. Set a directory filter in the Files window. You will now see only the files belonging to that specific directory.

8. Check whether all the files in the Files Windows belong to the application. Set Global tags for these files.

Step 2: Specify the Application Details

1. In the Tag menu of the File window select Add to SAI. The New Publisher/Application/Version Setup dialog box is displayed.
2. Now choose the appropriate Publisher, Application, Release, Version, Operating system and language details.
3. Select a publisher from the Publisher drop-down list, or specify a new one by clicking the New button next to the field. This will display a New Publisher dialog box.
4. Fill in the Publisher Name (the Description field is optional) and click the OK button.

The new application publisher will now appear in the Publisher drop-down list.

5. After a publisher has been selected or a new one created, the Application field becomes enabled. Select an application from the Application drop-down list box or specify a new one by clicking the New button next to the field. This will display the New Application dialog box.
6. Fill in the Application name (the Description field is optional) and click the OK button.

The new application now appears in the Application drop-down list.

7. If you have created a new publisher or application, the Application Type field becomes enabled (otherwise the field automatically preselects a type for the application). From the Application Type drop-down list box, select a predefined type for the application.
8. Select a Release from the Release Label drop-down list, or specify a new one by clicking the New button next to the field. This will display a New Release dialog box.
9. Fill in the Release Name and click the OK button.

When a publisher releases updates for an existing version of one of their products, they typically don't change the name of that version. Any particular version of a product could have several updates to it. In this scenario, the umbrella version is referred to as the Release Label, or simply as Release. It is not necessary that every version of software has a release label. In fact, most of them do not. Every version without a release label is associated to a virtual Stand-alone Releases label.

10. Select a software version identifier from the Version Identifier drop-down list box, or specify a new one by clicking the New button next to the field. The New Version dialog box is displayed.

11. Fill in the Version Name field.
12. In the Description field, type in a brief description of the application selected for the existing Version. This field is optional.
13. Select the checkbox next to the install strings that apply. Install strings are added to the list in **Control Panel > Add/Remove programs (prior to Windows Vista) or Control Panel > Programs and Features (Windows Vista and above) when a program gets installed**. The list of install strings is taken from the scan data loaded into Analysis Workbench. The install string match will be done during software application recognition if all of the selected install strings are available in the scan file.
14. Click the **OK** button. The new version data now appears in the Version Identifier, Version Install Strings, and Version Description fields.

A version is defined by its name, application, language and operating system. So, for one application, it is possible to have many different versions with the same name, provided that they have different combinations of Operating System and Language.

15. Select the operating system that the application works under, from the Version OS drop-down list.
16. Select the language of the application, from the Version Language drop-down list.

Step 3: Specify Files to be Included

1. Click on the Files tab.
2. Select (check) the files that are to be included. When a file is selected, the bottom pane displays the Machines and Directories that the file is located on.
3. If you want to disregard the file size when the file is taught click Ignore file size. The Size and Signature fields become disabled. Otherwise:
4. Specify the size of the selected file if needed. Enter the value in the Size field.
5. Specify file Signature by typing directly into the Signature field.
6. Specify the type of executable file by selecting a predefined type from the Exe Type drop-down list box.
7. Go through the list of files and check file characteristics. Make sure that the correct files are labelled as 'Main'.
8. Double check files that are given status 'Main' by default; they might be carrying this status from previously taught applications.

9. You can change the status of the files (if required) by selecting the file and then selecting one of the option buttons in the Relation to Application group:
 - **Main** - This is a key application file, that is, it is a file without which the application could not be running. It should always be present whenever the application is installed regardless of whether it is a minimum or complete installation.
 - **Associated** - This is a non-key file that is part of the application and is written by the publisher that developed the product.
 - **3rd party** - This is a file written by another Publisher (3rd Party) and is used in the current application. An example of a 3rd party files is some DLL files that are technically used by the application, but are also distributed freely and can be used by other applications.

The VerDLL field shows a concatenation of a set group of version data fields. Do not change the entry in this field unless absolutely necessary.

The drop-down lists are produced from a combination of data in both Master.zsai and User.zsai. Before an entry is committed to the User.zsai a number of options are available. These can either be set up under options and selected as default, or the default setting can be left off and you will be prompted each time to select the information. See Step 5: Set Teaching Options.

Step 4: Select the User SAI File and Commit the Changes

1. Click on the **SAI Selection** tab.

This tab page shows a list of User SAI files available for teaching applications to. A file can be either or both of the following:

- **Selected** - Any changes made to the SAI are saved to the Selected file only - not the Default file.
 - **Default** - The Default file is automatically selected when the dialog box is next opened. You can set a file to be Default and specify another one to be Selected.
2. To change the automatically selected SAI file, select another one from the list and click the **Select** button. The status in the Selected column is shown as Yes.
 3. To change the default SAI to use, select the SAI file and click the Set Default button. The status is shown as Yes in the Default column.
 4. Confirm your choices by clicking **OK**. You are prompted to set SAI teaching options. See Step 5: Set Teaching Options.

When you have done this, the information in the Software Application Index file is updated. You can view the newly added application by using the SAI Editor. See the SAI Editor Chapter for more information on how to do this.

Step 5: Set Teaching Options

1. Select the Options button in the New Publisher/Application/Version Setup dialog box. The SAI Teaching Options dialog box is displayed.
2. Set the options as follows:
 - **Recognition**
 - **Directory Level:** teaching a single file will cause all files in all directory/ machine combinations where the file occurs to be re-recognized
 - **Use Level 3 heuristics:** teaching a single file will reprocess all files on all machines on which the file occurs
 - **No recognition:** No re-recognition will be performed. The recognition status of the added files will not be changed.

In most cases, the Directory Level setting is appropriate as it is the best compromise between the accuracy of recognition results and the speed of re-recognition.

The No Recognition setting should only be used in special cases when working with a very large number of scan files at the same time. In these cases the re-recognition time may be very high even if the Directory Level setting is used.

To initiate up to date recognition of all files and applications when using the No Recognition setting (and to see the effect of the application teaching) is to reload all scan files.

This setting should be set to the same as when the scans were loaded. If the scans are loaded with Level 3 heuristics enabled and re-recognition after teaching is done without it, recognition results can change significantly.

- Save changes to SAI
 - **When AW exits:** Any changes to the SAI are saved when you exit from the Analysis Workbench application.
 - **Immediately:** Any changes to the SAI are saved immediately.
- Tag changed items

Selecting this option enables the following further options:

- **Files** - Any files that are affected by the SAI teaching are tagged.
- **Applications** - Any applications that are affected by the SAI teaching are tagged.
- **Directories** - Any directories that are affected by the SAI teaching are tagged.
- **Machines** - Any machines that are affected by the SAI teaching are tagged.
- **Set Local Tags** - If this option button is selected, then Local Tags are used for the operations.
- **Set Global Tags** - If this option button is selected, then Global Tags are used for the operations.
- Set options as default

Select this check box to retain these settings as the default.

Using the SAI Editor Overview

The SAI Editor presents a view of the SAI files (Master and User) that have been used for recognition in Analysis Workbench.

This tool is available either as a standalone tool or from the Analysis Workbench User Interface.

- To start the SAI Editor from the Analysis Workbench User Interface:
Select the View/Edit SAIs option from the Recognition menu.
- To Start the SAI Editor as a standalone tool:

From the Windows Start menu select **Programs > HP UCMDB > Inventory Tools > SAI Editor**

Further Information

For more information, see the section describing the SAI Editor.

Using SAI Teaching Mode

AI Teaching Mode provides a scratch pad for information to be fed into the User.zsai. Entries are taken from existing values and stored temporarily. These values can then be inserted automatically when teaching entries to the SAI. This greatly simplifies the procedure outlined in the previous section Teaching an Unidentified Application.

To use SAI teaching mode

1. Tag the files to be taught to the SAI with Global Tags.
2. Select SAI Teaching mode from the Recognition menu. A non-modal window is displayed – this is the SAI Teaching Holding Area.
3. Now, in the main area of the Files window, right-click on a file that has been identified.
4. The shortcut menu now contains an enabled Publisher menu item, with likely choices listed as submenu items.
5. Select the correct publisher. The SAI Teaching Holding Area is updated to display the selected publisher.
6. Again, right-click on a file; the Application menu item is now enabled, and can be used to select the application name.
7. Select the correct application. The SAI Teaching Holding Area is updated to display the selected application.
8. Right-click on a file; the Release menu item is now enabled and can be used to select an application release.

The SAI Teaching Holding Area is updated to display the selected release.

Finally, the Version menu item becomes available and can be used to select the version identifier.

9. Select the correct version. The SAI Teaching Holding Area is updated to display the selected version.

There is no requirement to select Publisher, Application, Release or Version if the data presented is incorrect or not applicable.

As each of the Publisher/Application/Release/Version fields of the Holding Area are populated in this manner, the data becomes editable to facilitate major or minor changes to the data displayed.

10. In the Files window, locate the file(s) to be added as identifying, licensable files of the application.
11. For each of these files, right-click and select the Main menu item. Each of the file names selected appear in the Main files column of the holding area.
12. Locate those files, if any, that are shipped with the application but are 3rd party files (such as vbrun*.dll).

Vbrun200.dll and Vbrun300.dll will have 3rd party status only for non-Microsoft applications. For all Microsoft applications they will be considered associated files. Mark these as 3rd party files using the 3rd Party Files shortcut menu item. The holding area is updated accordingly.

13. Select the Add to SAI option from the Tag menu of a Files window. The New Publisher/Application/Version Setup window is displayed.

The Publisher, Application and Version fields are now pre-filled with data from the holding area. If an item does not already exist in the SAI, it is added automatically by this process. The File Type for each file is automatically updated based on the file names in the Main Files and 3rd Party Files lists of the Holding Area.

Teaching a Directory with Main, Associated and 3rd Party Files

1. Select the Main file and any 3rd party files and store in the Holding area.
2. Tag the multiple Associated files using tagging from a Directory window for example.
3. Open the New Publisher/Application/Version Setup dialog box from the Tag menu of a Files window.

The tagged files and the files in the Holding area are displayed with the Publisher, Application and Version from the Holding Area already entered.

Populating the SAI Teaching Mode Automatically

In a Files window, right-click on a file that has been identified.

The shortcut menu now contains an enabled Automatic menu item.

Selecting this item is equivalent to:

- Right-clicking, selecting Publisher and choosing the first menu item.
- Right-clicking, selecting Application and choosing the first menu item.
- Right-clicking, selecting Version and choosing the first menu item.
- Right-clicking and selecting the Main file.

Teaching Applications to the User SAI

A **User.zsai** file is an editable Software Application Index (SAI) that can be updated using Analysis Workbench. You can use the Analysis Workbench to 'teach' the library how to recognize files which it

previously did not recognize.

The teaching of applications to your User.zsai file is usually done with scan files that have many installed applications included in them.

Note: If the information from many machines has been loaded, it can take a significant time to re-recognize all of the affected files after new entries have been taught to the SAI. It is therefore recommended that no more than 50 scans be loaded when teaching the SAI.

Creating a New User SAI

1. Start Analysis Workbench. Do not load any data.
2. Select **Load Options** from the File menu. The Analysis Workbench Load Configuration dialog box is displayed.
3. Click on the **Recognition** tab.
4. Select the **Software Application Index (SAI)** option and click the **Advanced** button. The Advanced configuration - Software Application Index dialog box is displayed.
5. Select the **SAIs** tab.
6. Click the **Create** button. The Create a User SAI dialog box is displayed.
7. Enter or navigate to the directory where the SAI file is to be created.
8. Enter a description for the file.
9. Click the **OK** button.

The file is automatically assigned a unique ID. However, you may already have an SAI with the same filename. If so, a confirmation message is displayed.

Click **Yes** if you want to overwrite the existing SAI file or click **No** to return to the dialog box and assign a new ID to the SAI file.

If you have made modifications to the `cfgNextSAIID` setting in the Analysis Workbench ini file, you may see the following message.

The next User SAI ID cannot be found in the settings file.

This happens when the value for the ID in the ini file is missing or lower than the highest ID in the user SAIs currently loaded. This message is for information only - the Universal Discovery components will correct this situation automatically by inserting the correct ID value into the ini file.

This probably means that you are using User SAIs created with a different version of the software, or created on a different machine.

Tip: Please take care to set the new ID to a value that is unique across your organization.

The New Publisher/Application/Version Setup Dialog Box

This dialog box allows you to teach entries to the User SAI file.

To display the New Publisher/Application/Version Setup dialog box:

1. In an Analysis Workbench Files window select the Add to SAI option from the Tag drop-down toolbar menu.

This option is only enabled if the following conditions have been fulfilled:

- A User editable SAI file is being used
 - SAI recognition is enabled
 - Files have been tagged (with Global tags).
2. The New Publisher/Application/Version Setup dialog box is displayed.

Tip: The best way to introduce all the various fields and functions in this dialog box is to go through the steps for teaching files.

License Relations and Application Suites

Each identified file is categorized as either Main, Associated, or 3rd Party. The recognition library can contain any number of files in a particular version as belonging to either category.

When at least one Main file is identified on a machine, a license is required for the application, unless another application on the machine assumes license responsibility for the application.

License relations are part of the Application Library. When two interdependent applications are identified on a machine, one application can assume license ownership on that particular machine. The chain of license relations can be any number of levels deep.

License relations solve the problem of Suite licensing simply and effectively, and are applicable to license relationships outside what would normally be considered a software suite.

For example, MS Office 2000 licenses MS Access, Word, Excel, PowerPoint, Outlook and is a well known software suite. In addition Outlook 2000 licenses MS Data Access Components (ADO) 2.1 sp1 - if Outlook or another licensing application is not present on the machine, a license is required for the software, but if Outlook is installed on the machine, Outlook assumes license ownership. Different versions of Outlook license different versions of MS Data Access Components.

License relations are also useful when an application has a complex component structure. If application components can be installed on their own, they should be treated as independent applications, but the connection with the application should be reflected in license relations for that application.

The SAI Editor allows license relationships to be established and immediately be applied to the application data loaded. This application is available via the Analysis Workbench User Interface or as a stand-alone utility from the Start menu.

Adding License Relations

License relations allow a particular version of an application to contain licenses for one or more versions of other applications.

A single version of an application can assume responsibility for any number of other application versions, and this can be extended to any number of levels of nesting.

The new relations are stored in a user editable SAI and are used the next time the data is loaded.

Each version entry has two lists that can be filled separately:

- **Owning Release** - The application that contains versions of other applications.
- **Licensed Release** - The applications that are contained in the Owning Application.

License relations are set up using the SAI Editor. This tool is available either as a standalone tool or from the Analysis Workbench User Interface.

For further information, see the section describing the SAI Editor.

Displaying Licensed by and Licenses Entries in Analysis Workbench

In an Applications window, it is possible to have the Detail window selected with Licensed By and Licenses windows displayed. When an application is selected, the Licenses Apps and Licensed by columns display the count of files and the details window will report the machines on which the files occur

To display the Application window Details pane:

1. In an Applications window, select the Detail window link option from the Configure drop-down toolbar menu, or
2. Select the Configuration option from the Window menu and check the Application Windows box in the Detail Window Link group.
3. The information that is displayed in the Applications Details window can be selected by:

- a. Clicking the configure icon in the Details window
 - b. Selecting the Detail window option from the Configure drop-down toolbar menu. This will display a Window Layout dialog box.
4. Select the following options:
- **Licensed by.** The details of the Application Suite that licenses the highlighted application (if applicable). For example, Word 2007 is licensed by Microsoft Office 2007.
 - **Licenses.** The details of any applications that the highlighted application licenses, for example, Office 2007 licenses Microsoft Photo Editor.

The Applications Details – Licensed by or Licenses information links back to the Applications window and the Machines window, showing details for that selected application and the machine it is located on.

Recognition Objectives

Recognition Objectives are designed to ensure that the following can be achieved with the least amount of effort:

- No machine has a large percentage of unrecognized files on it.
- Files that occur often in the population are recognized.
- Files that occur only on a few machines may not be recognized.

Based on this principle, Recognition Objectives help you set achievable goals for the recognition process, measure how far you are from those goals, and provide assistance in achieving them.

The objectives engine allows you to define as many objectives as you need. By default, only a single objective for the entire Enterprise is defined, although this can be extended by setting up objectives that apply to subsets of the population as well.

To set Recognition Objectives options:

Click the Objectives Options item in the Recognition menu.

A dialog box is displayed with the Startup tab page showing.

The Startup Tab

You can specify the following:

- File containing default Objectives

To load a default set of objectives when Analysis Workbench starts, type in the name of the file containing the objectives here.

By default, Analysis Workbench uses the file objectives.xml.

- Startup Options

To automatically show the Objective Summary dialog box when new scan data has been loaded, check the option to do so.

You can set up when automatic recalculation of objective compliance should take place. When many scan files are loaded, this may take significant time to do and you may wish to disable some of the automatic calculation options on this page. Objectives can be manually recalculated from the Recognition Objectives dialog box.

The Logging Tab

You can specify which log files to use to log teaching activity, if any.

The two log files that can be created are both CSV (Comma-separated variable) files that can be imported into other tools for further analysis.

The Ignored Files Tab

This page can contain a list of file names that are to be ignored when calculating objective compliance.

This may be useful if a set of files are known to be of no interest.

Type the file names into the list pane and they will not count when the Applied objectives are evaluated.

Adding Tagged Files

You can also add files that have been tagged in a Files window in the Analysis Workbench workspace.

Note: You will have to close this dialog box first if you forgot to tag the files.

1. In a Files window, tag the files you want to add to the Ignored Files list.
2. Click the Add tagged files button. The files are added to the list.
3. To clear the contents of the list, click the Clear button.

The Excluded Directories Tab

This page can contain a list of directories that are to be ignored when calculating objective compliance.

Directories with names in this list are ignored when using the SAI Teaching Wizard. The list will include directories that commonly contain files from multiple applications.

The SAI Teaching Wizard can only help teach applications installed in their own directories.

Example of directories you may want to include in this list are:

- C:\tmp
- C:\Windows
- C:\WINNT\system32
- /usr/bin

Type the directory name and path into the list pane and files that occur only in the listed directories will not be chosen for teaching in the SAI Teaching Wizard. Files in these directories are not excluded when evaluating objectives.

Adding Tagged Directories

You can also add directories that have been tagged in a Directories window in the Analysis Workbench workspace.

Note: You will have to close this dialog box first if you forgot to tag the directories.

1. In a Directories window, tag the directories you want to add to the Ignored Excluded Directories list.
2. Click the **Add tagged dirs** button. The directories are added to the list.
3. To clear the contents of the list, click the **Clear** button.

Define and Review Objectives

Starting the Define and Review Objectives Dialog Box

Select Objectives from the Recognition menu. The Define and review Objectives dialog box is displayed with the Summary tab showing.

This dialog box is non-modal. This means you can have it displayed while working in the Analysis Workbench workspace. Position the two dialog boxes on your screen so that you can work with both dialog boxes at the same time.

If the dialog box becomes hidden behind the main Analysis Workbench windows, it can be accessed through the Windows menu.

The Define and Review Objectives Dialog Box Properties Tab Page

Click on the **Properties** tab.

- The top left pane shows the Applied Objectives. These are used to measure progress and assist in the teaching progress. In the previous screen image, four such objectives are defined.
- The top Applied Objective, Entire Enterprise, always applies to all machines loaded and is the only Objective that is defined by default. The next objective groups the loaded machines by Host OS Category. This allows you to specify different objectives for your Windows machines, UNIX machines and all other operating systems.
- The Default Objective (Entire Enterprise) specifies a Machine criteria of 80% and the File criteria uses the Standard graph. These can be changed as required.
- The bottom left pane shows the Unused Objective. These fields are available for selection. Click on an entry in this list and a list of Objective group fields for the Objective is shown on the right.

Adding an Applied Objective

1. In the Define and review Objectives dialog box select the Unused Objective you want to add fields from. In our example, we are using the Host OS Category.
2. In the Objective group fields pane, check the box next to the fields to which the objectives will apply. In this example, the following fields will be applied
 - All other values
 - Microsoft Windows
 - UNIX
3. Click the **Apply** button. The entries are moved to the Applied Objectives pane.

The Objective group fields for the Asset fields (For example, Cost Center, Division) are based on data available from the currently loaded scan files. If no scan files are loaded, or if no scan files define a particular field, the Objective group fields for that field will be empty perhaps except for the Any other values entry.

Removing an Applied Objective

1. To remove an Applied Objective:
2. Select the Objective in the top left pane.
3. Uncheck the relevant Objective group fields in the right pane.
4. Click **Apply**.

The Applied Objective will be removed.

Loading and Saving Recognition Objectives

Recognition Objectives are stored in XML format.

Recognition Objectives are automatically saved when the Define and review objectives dialog box is closed. They are saved to the location you specified in the Startup tab of the Recognition Objective Options dialog box. See page 143 for further information.

The Applied objectives have a pop-up menu associated with it that can be activated by right-clicking on the item.

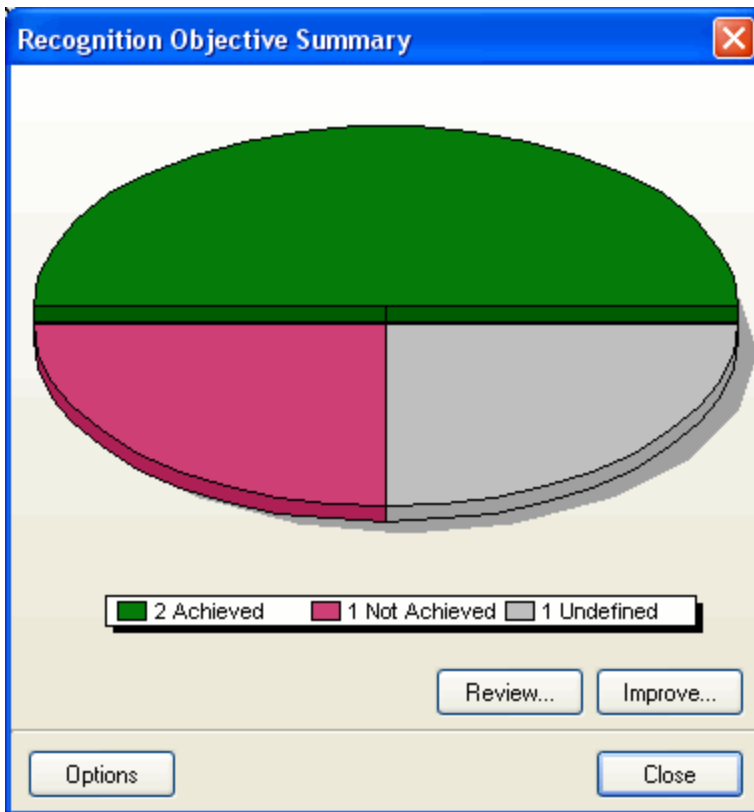
- Load Objectives
Use this to replace the currently defined Objectives with a previously saved set of Objectives.
- Save Objectives
Use this to save the currently defined Objectives.
- Save Objectives As
Use this to save the currently defined Objectives to a file other than the one specified in the Startup tab of the Recognition Objectives Options dialog box.

Displaying a Summary of the Recognition Objectives

To display a summary of the Recognition Objectives:

In Analysis Workbench, select Objectives Summary from the Recognition menu.

A Summary chart is displayed.



This example shows that four Applied Objectives have been defined. Two of those have been achieved, one has not been achieved and one is undefined.

The undefined section of the chart (usually displayed in grey) implies that the objective compliance has not been calculated.

To rectify this:

Return to the Define and Review Objectives dialog box (select Objectives from the Recognition menu) and click the **Calculate** button or click the **Recalculate Objectives** menu item in the Recognition menu.

Buttons in the Chart Page

There are three buttons in the Chart page:

- Click the **Review** button to get a more detailed view of the state of the objectives. See Reviewing Recognition Objectives for further details.

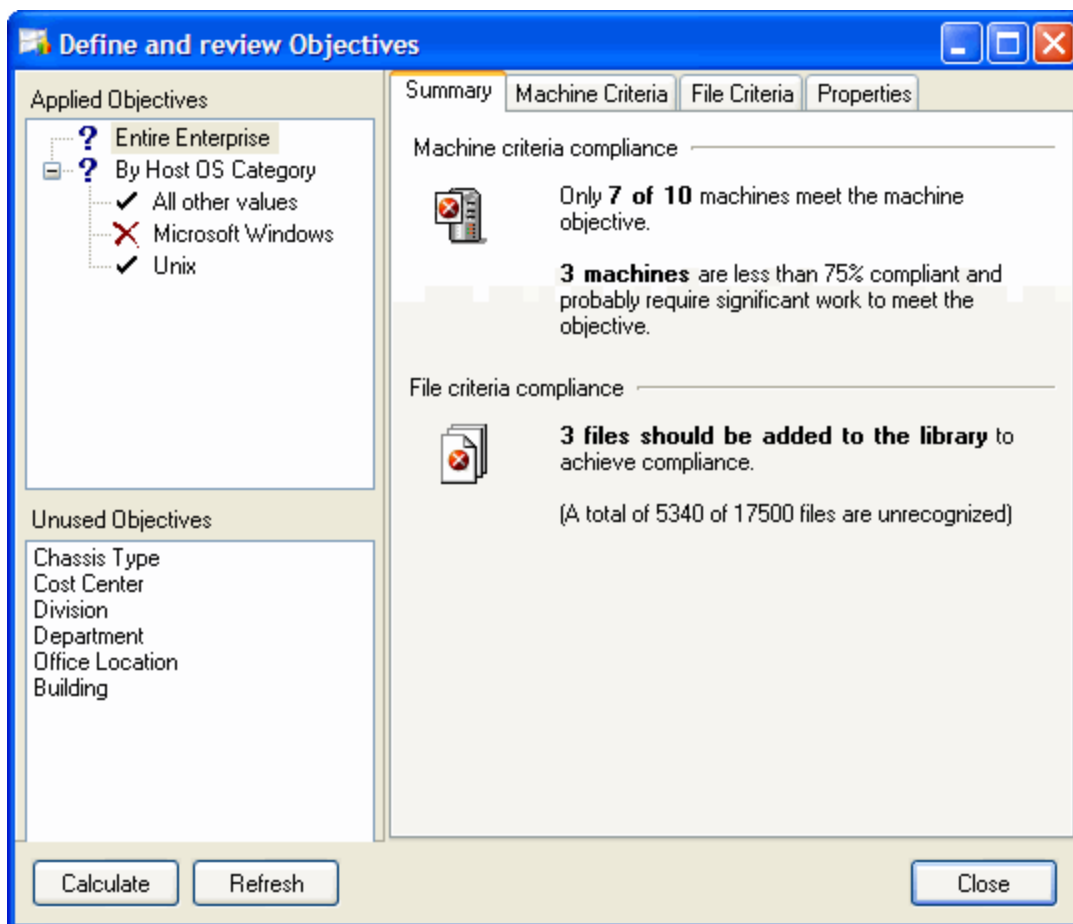
- Click the **Improve** button to start the SAI Teaching Wizard that can help achieve those objectives that still need some work. See Using Objectives to Improve Recognition - The SAI Teaching Wizard or further details.
- Click the **Options** button to launch the Recognition Objectives Options dialog box. See Setting Recognition Objectives Options for further details.

Reviewing Recognition Objectives

In Analysis Workbench, select Objectives from the Recognition menu, or click the Review button when the Objective Summary screen is shown.

Click the **Summary** tab.

The Define and review Objectives window is displayed.



You can see from the tree view on the left that one of the Applied objectives has not been achieved (indicated by the icon) and two have been achieved (indicated by the icon).

The red X on the Machine criteria compliance icon shows that the machine criteria was not met, and the text explains that 3 of the 4 machines loaded meet the criteria. In order for the objective to be achieved, all of the machines must meet this criteria.

The green tick on the files icon shows that the file criteria was met (and this is in spite of the fact that more than 19000 files are unrecognized).

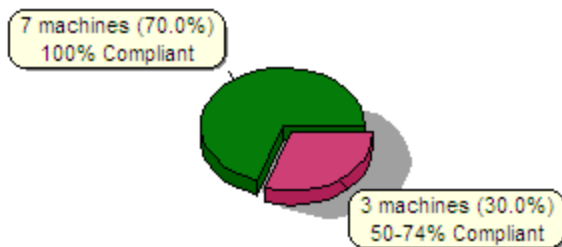
To manually recalculate objective compliance (which may be necessary if some of the automatic options are disabled and circumstances have changed):

Click the **Calculate** button in the Objective Review dialog box.

Reviewing Machine Criteria

To get more detail about the Machine criteria:

Click on the **Machine Criteria** tab, which shows a pie chart of the machines.



In this example:

- Seven of the machines are compliant (Green). In this example, 80% of the files on a machine must be recognized for that machine to be considered compliant.
- Three machines are not compliant (Magenta).

The percentages show how close the machines are to achieving the criteria. The machines (Magenta) that are 50-74% compliant have a recognition rate of 50-74% of the target 80%. That is, the recognition rate is between 60% and 79%.

If you move the mouse over the pie chart, the individual slices of the chart are highlighted.

Right-click to get a pop-up menu that applies to a slice of the pie chart. From the pop-up menu, you can do the following:

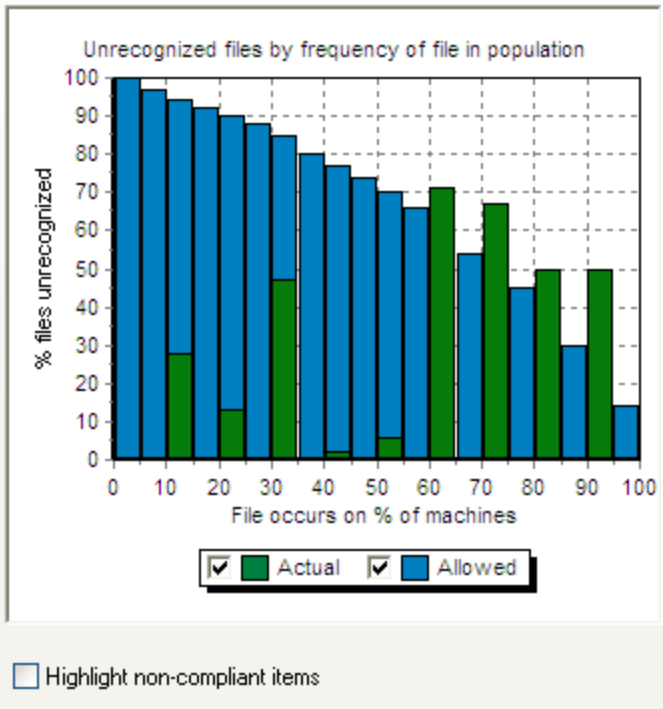
- Tag the machine(s) related to the pie slice to investigate it further in the normal Analysis Workbench windows.

- Untag those machine(s) related to the pie slice.
- Copy the Chart to the clipboard.

Reviewing File Criteria

Click on the File Criteria tab.

This shows a bar chart containing both the desired (allowed) shape of the unrecognized/frequency chart as well as the actual shape of it.



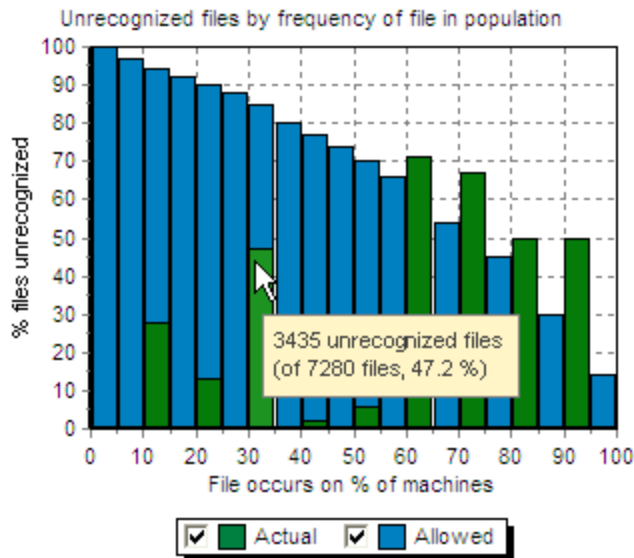
- Actual values are shown in green.
- Allowed values are shown in blue.

For this objective, the File criteria is not met – all of the green Actual values are not lower than the blue Allowed values.

When only a few machines are loaded, not all of the categories are used, but the File criteria graph always shows 20 bars evenly distributed between 0 and 100%, irrespective of the number of machines loaded.

Moving the mouse over the Actual values shows a pop-up label with details of the data point in question.

For example, the bar spanning 30-35% on the Y-axis shows the following text in the pop-up:



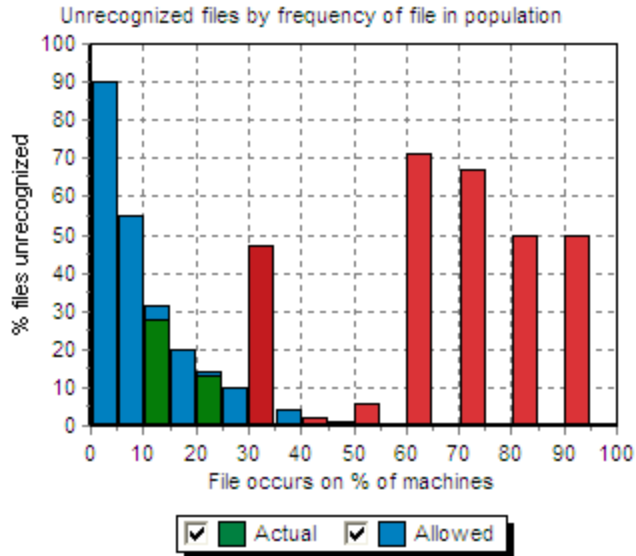
This means that 7280 files occur on 30-35% of the loaded machines, and that 3435 of these (47.2%) have not been recognized.

This also demonstrates how it is possible for the file criteria to be met, even though thousands of files are unrecognized. The majority of unrecognized files probably occur on just a few machines and are therefore not as important as the common ones.

When teaching, you will want to start with the unrecognized files that occur on the largest percentage of machines rather those that occur on just a few machines.

An Example of File Criteria Not Met

Here is an example where the File criteria is not met.



In this example:

- The File criteria has been set to Strict in the Properties tab page and is not met by the scan files loaded.
- The Highlight noncompliant items option is checked, which is why some of the Actual values are red instead of green. This is to indicate that the Actual value is higher than the Allowed one.

This chart has a pop-up menu that is shown when right-clicking on one of the Actual bars.

From the pop-up menu, you can perform the following:

- Tag or Untag the files in question, and Tag the machines to which the objective applies.
For the Entire Enterprise objective, this means that all machines are tagged when a set of files are tagged from this pop-up menu.
- Copy the chart to the clipboard.

Using Objectives to Improve Recognition - The SAI Teaching Wizard

Having defined a set of objectives, the SAI Teaching Wizard can make use of the objective information to choose which files to teach.

When the teaching wizard is run, all global tags are cleared.

To start the SAI Teaching Wizard:

1. Select the SAI teaching Wizard option from the Recognition menu.

The Teaching Assistant is displayed.

2. Click **Next** to continue.

Choosing an Objective to Improve

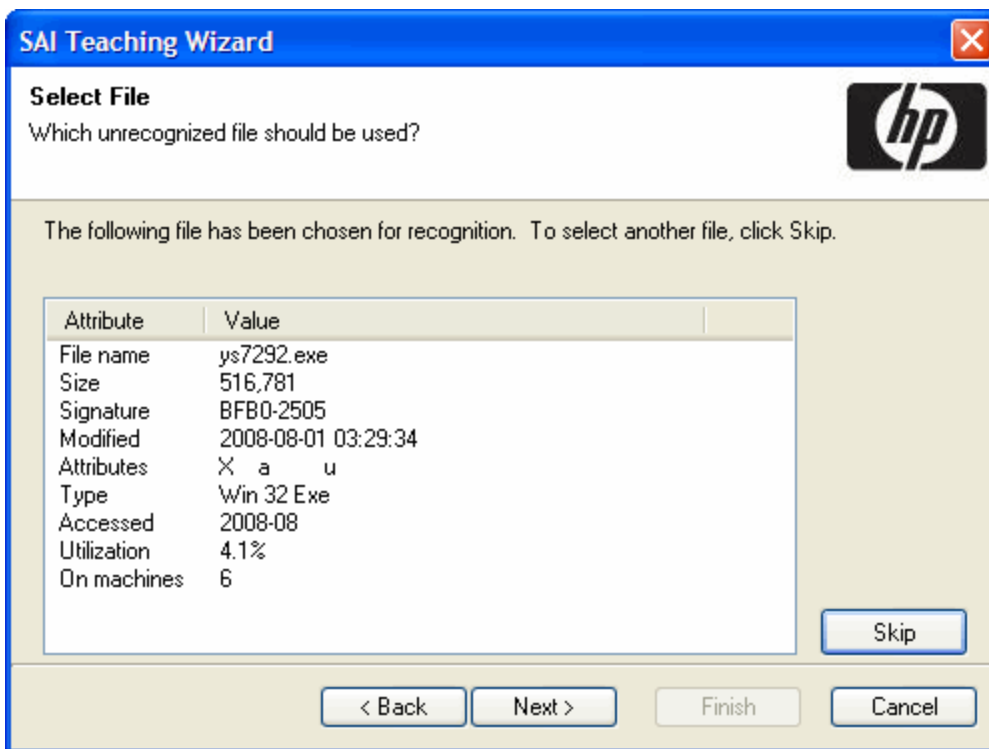
The next page of the wizard allows you to choose which of the Applied objectives should be improved.

The objectives are shown in a tree view and when an objective is selected, a summary of the objective is shown on the right.

1. Select the objective.
2. Click **Next** to continue.

Selecting an Unrecognized File

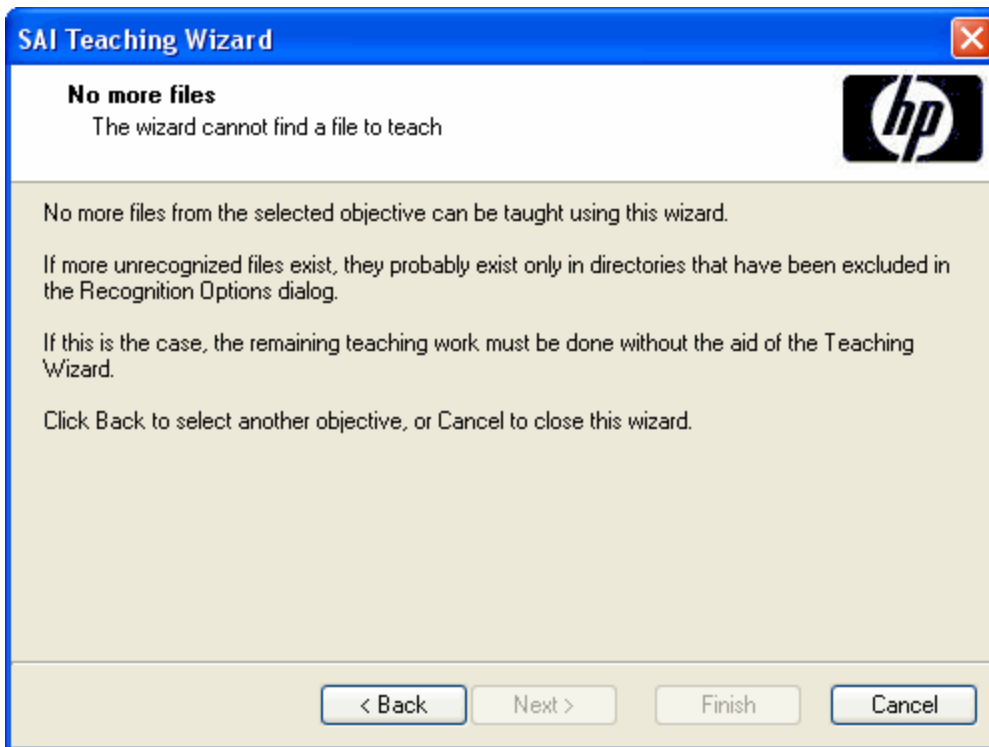
On this page, the wizard constructs a list of unrecognized files that occur on machines related to the selected objective. It suggests the file that occurs on most machines.



This page shows details of the selected file. The details are similar to those found in the Files window, as well as the number of machines on which it is found.

If the selected file is not one that you wish to teach at this time, click the Skip button or click the Next button to select the file shown for teaching. The wizard will choose the next candidate for teaching until there are no more unrecognized files to teach.

The following page is displayed if there are no more files from the selected objectives that can be taught.



You may need to manually teach the remaining unrecognized files. For more information about manually teaching a file to the User SAI, see [Teaching an Unidentified Application](#).

Automatic Selection of a Set of Files

Because most files do not exist alone, but are installed along with a group of other files making up an application, it rarely makes sense to teach files individually.

For this reason, the teaching wizard automatically performs the following steps at this point:

- Tags the file selected for teaching.
- Tags all machines (in the objective) on which it occurs.
- Applies a machine and file filter to the Directories window.
- Tags the first directory in the Directories window (that is, the first directory that has not been excluded).
- Applies a machine and directory filter to the Files window.
- Tags all files in the Files window.

In other words, this set of steps tags all files that occur in the same directory as the selected file, because these are all files that are likely to belong to the same application.

The wizard shows a confirmation dialog box.

At this stage, you can switch back to the Analysis Workbench Files, Machines and Directories windows view to review the automatic selection.

Review each of the tagged files to ensure the selection is valid. You can untag some files, tag some more and so on, before proceeding.

- When you are satisfied with the selection of files, click the **Finish** button.

The New Publisher/Application/Version Setup dialog box is displayed. Here you can enter details about the application to which the tagged files belong. See The SAI Editor for more information about how to fill in these details.

Exporting Inventory Data

Various combinations of hardware, software and asset data can be exported. The facilities used to define the level of detail for exported data provide a means of refining the selection of data exported.

When a suitable data file containing the exported data has been created, it can be imported to populate a variety of third party systems including spreadsheets, databases, asset management and help desk systems, which support the configurable data formats automatically created by the Analysis Workbench.

Data can be exported directly from the Analysis Workbench either in standard ASCII text form and CSV format (Comma Separated Variable).

Exporting Data Directly From the Analysis Workbench

From the Exports drop-down menu select one of the following options:

- **Machines** - Generates a machines export.
- **Applications** - Generates an applications export.
- **Directories** - Generates a directories export.
- **Files** - Generates a files export.
- **Relational** - Relational exports combine hardware, application and file exports in a manner that allows the data to be imported into an external database application with little effort. If the relational

export option is chosen, then this provides the opportunity to combine columns from a particular window with link columns from other windows.

- **Stored Files Export** - This type of export allows one or more named files to be extracted from all scan files and stored in a number of different ways.

Exporting the Contents of Individual Windows

Select the Export from window option from the Output button drop-down menu.

This will display the Export to file dialog box which allows you to export the contents of the window based on the current column selection and filter settings.

Layout of the Export

An item group is what is represented as a line in one of the main windows. It is known as a group because one of these line items may represent several occurrences of similar or identical items.

For Applications, Directories and Files exports the results can be presented in one of two formats:

- **One line per item group**

This presents the results in a format that is same as the active Window.

- **One line per item**

One line in the export shows details for each item. Each occurrence is shown. That is, every line in the window is exported and shown as a row in the results.

Export Layout - Example

The Details window can be helpful in demonstrating the concept of item and item groups.

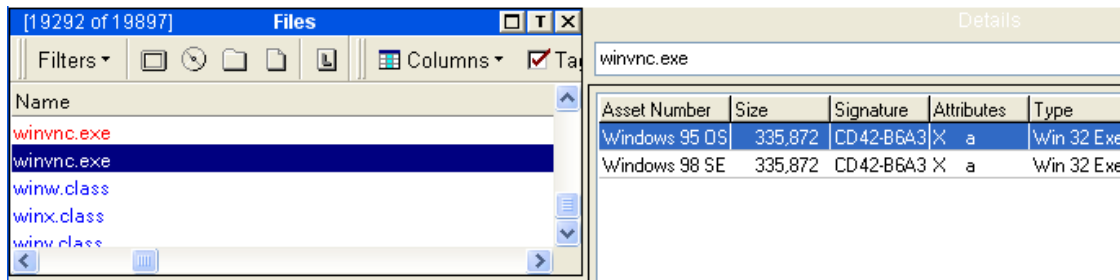
1. Ensure that the Details window link is enabled for a Files window (selected from the Configure toolbar menu in a Files window).
2. Configure the Details window so that it displays the Asset Number and Directory columns. To do this use the Detail window command in the Configure toolbar menu.
3. Now click on an entry in a Files window.

Files with the same name are grouped together, if they are recognized as belonging to the same application/version, are of the same recognition type (for example, Main/Associated) and so on.

If two files with the same name are both unrecognized, they are only grouped together if they have the same size. If they are recognized (and otherwise grouped), the size is ignored and can be different.

If the exact file has been located in multiple places (either on the same machine or on different machines), each occurrence will be displayed in the Asset Number column as a separate row and the location will be displayed in the Directories column, hence it is part of a 'group'.

If the file has only been located on one machine, then only one row will be displayed in the Asset Number column (in this case select another file to use for the example).



The file winvnc.exe occurs in two places. In this case on two different machines.

In the export results, one line in the export will represent the information for this group of entries. For instance, the number in the Copies column of an export represents the number of occurrences of the file. This number is equal to the number of rows that are displayed in the Asset Number column for a particular file.

One Line Per Item Group

This presents a detailed view which has the same contents as the active Window.

One line in the export shows details for a group of items.

	A	B	C	D	E	F	G
1	Name	Publisher	Application	Version	Release	Copies	# Sizes
2	winver.exe	Microsoft	Windows Server	2003 ent	2003	1	1
3	WINVER.exe	Microsoft	Windows	95osr2	95 OSR2	1	1
4	WINVER.exe	Microsoft	Windows NT	4.0 srv sp6a	4.0 Srv	1	1
5	WINVER.exe	Microsoft	Windows	98	98	1	1
6	winver.exe	Microsoft	Windows NT Terminal Server	4.0 sp6	4	1	1
7	winvnc.exe	AT&T Labs Cambridge	VNC Server	3.3.6	3	2	1
8	winvnc.exe	AT&T Labs Cambridge	VNC Server	3.3.7	3	1	1
9							

In this example, rows 7 and 8 represent the data for the winvnc.exe file group. In row 7, the number in the Copies column is 2, which corresponds to the number of occurrences of this file displayed in the Details window.

One Line Per Item

One line in the export shows details for each item. Each occurrence is shown. That is, every line in the Window is exported and shown as a row in the results.

Setting Default Options for Exports

The default settings allow you to specify the directory the export results will be saved to, the format of the export file (CSV or TXT) and actions to be taken if an export file of the same name already exists in that location.

To select default options for exports:

1. Select the export option from the Exports main menu (depending on the type of export that you want to make), or
2. Select the Export from window option in the Output button drop-down menu in the window (Machines, Applications, Directories, Files exports only).

The Export to file dialog box is displayed.

3. Click the Default Settings tab in the Export to file dialog box.
4. In the Default export directory field, specify the name and path of the directory (or use standard Windows navigation methods) to where the export file will be saved by default.
5. In the Export format group, select one of the following default export format options:
 - o Comma separated (.CSV)
 - o TAB delimited (.TXT)

This option is not available for Stored Files exports.

6. Choose an option to specify how the data will be exported if the specified target data file already exists. The following options are provided:
 - o **Overwrite.** Overwrites the existing file with the new data.
 - o **Append.** Appends the new data to the existing data.
 - o **Prompt.** A prompt is displayed if the target data field already exists. Prompts to create a new data file.
7. Click **OK** to set the default options or **Cancel** to exit without making any changes.

Exporting Machine Data

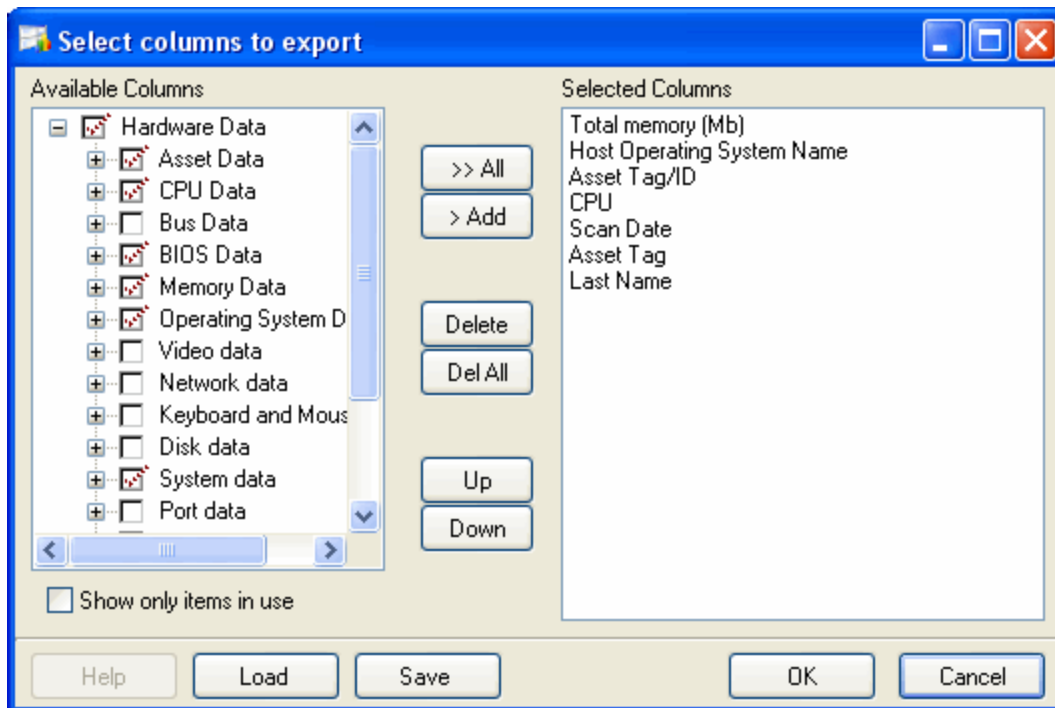
There are two ways in which you can export the contents of the Machines window.

- Select the Machines option from the Exports main menu.
- Select the Export from window option in the Output button drop-down menu in the Machines window. This allows you to export the contents of the Machines window based on the current column selection and filter settings.

The Export to file dialog box is displayed.

Configuring the Machine Export

1. Click the Export Machines tab in the Export to file dialog box.
2. Select the columns to export by checking the boxes as required in the list box.
 - To select all items in the Column list, click the All items button.
 - To select the default column selection. Click the Default button.
 - To add more columns to the list, click the Select button. This displays the Select columns to display dialog box.



The left list shows all column categories. Click on the + sign to expand the relevant category and list all possible columns. If the check box next to the category is displayed as a dotted line, then this means that the not all fields in that category have been selected.

The Show only items in use option will ensure that only hardware items that actually exist in one of the loaded scan files are shown in this tree.

Either drag a category from the left list to the Currently selected columns list, or select the check box next to the category and click the >Add button. The functions of the other buttons are as follows:

- To add all the available columns to the Currently selected columns list click the >>Add button.
 - To remove an entry from the Currently selected columns list click the Delete button.
 - To delete all entries in the Currently selected columns list click the Del All button.
 - You can move the position of entries in the Currently selected columns list using the Up and Down buttons.
 - Click OK after you have selected the columns. You are returned to the Export to file dialog box.
3. Select the Export option in the Column Headers group if you want the column heading (title) to be included in the export.
 4. Specify the filters that you want to apply to the data, by selecting the check boxes as follows in the Data Source Filter group:
 - **Machines** - Applies a Machines filter to the data source.
 - **Directories** - Applies a Directories filter to the data source.
 - **Local** - Applies a Local tag filter to the data source.
 - **Application** - Applies a Application filter to the data source.
 - **Files** - Applies a Files filter to the data source.
 5. In the Export to File box, specify the name of the file that the export is going to be saved to. The path displayed here is the one that you defined in the Default Settings tab.

To modify the location used to store the data exported from the scan files, use the Default Settings tab.
 6. Click **OK** to export or **Cancel** to exit without making the export.
 7. If an earlier export file created with the same name and in the same path is open in another application (such as Excel) a file sharing violation error message is displayed. Close the file and attempt the export again.

Exporting Application, Directory or File Data

There are two ways in which you can export the contents of these windows.

- Select the Applications, Directories or Files option from the Exports main menu.
- Select the Export from window option in the Output button drop-down menu in the window itself. This allows you to export the contents of the window based on the current column selection and filter settings.
- Select the Applications, Directories or Files option from the Exports main menu.
- Select the Export from window option in the Output button drop-down menu in the window itself. This allows you to export the contents of the window based on the current column selection and filter settings.

The Export to file dialog box is displayed for the Applications or Directories or Files option.

Configuring the Export

1. Click the Export Applications/Directories/Files tab in the Export to file dialog box.
2. Select the columns to export by checking the boxes as required in the list box.
 - To select all items in the Column list, click the All items button.
 - To select the default column selection, click the Default button.
3. Select the Export option in the Column Headers group if you want the column heading (title) to be included in the export.
4. Specify the filters that you want to apply to the data, by selecting the check boxes as follows in the Data Source Filter group:
 - **Machines** - Applies a Machines filter to the data source.
 - **Directories** - Applies a Directories filter to the data source.
 - **Local** - Applies a Local tag filter to the data source.
 - **Application** - Applies a Application filter to the data source.
 - **Files** - Applies a Files filter to the data source.
5. Select the type of export
 - One line per item group
 - One line per item

6. In the Export to File box, specify the name of the file that the export is going to be saved to. The path displayed here is the one that you defined in the Default Settings tab.

To modify the location used to store the data exported from the scan files, use the Default Settings tab.

7. Click **OK** to export or **Cancel** to exit without making the export.

If an earlier export file created with the same name and in the same path is open in another application (such as Excel) a file sharing violation error message is displayed. Close the file and attempt the export again.

Exporting Stored File Data

Stored files are embedded in the scan file during scanning. Typically these are system configuration files, for example, Autoexec.bat, Config.sys.

This type of export allows one or more named files to be extracted from all scan files and stored in a number of different ways.

The naming conventions for the extracted files allow for multiple instances of the files.

If only one stored file is required from one scan file, then it is more efficient to save the stored file from Viewer.

To export stored file data, perform this following:

Step 1: Configure the Stored File Export

1. Select the Stored Files command from the Exports menu.
2. Click the Export Stored Files tab in the Export to file dialog box.

This page is used to set up various options for the stored files export.

Step 2: Select Data Filters

1. Select the data source filters that you want to apply to the data. In the Data Source Filter group, select one of the following:

- **Machines** - Applies a Machines filter to the data source.
- **Directories** - Applies a Directories filter to the data source.
- **Local** - Applies a Local tag filter to the data source.
- **Application** - Applies a Application filter to the data source.
- **Files** - Applies a Files filter to the data source.

See Filtering for more information about using filters.

Step 3: Specify the Stored Files to Export

Specify whether you want to export all stored files or specific stored files.

1. To export all stored files select the Export All Stored Files check box (located on the left side of the dialog box above the list box).

When this check box is selected, the Add and Remove buttons are disabled in the Export Files group.

2. To specify stored files for export, use the grid in the Export Files group to configure which files are to be exported. This grid contains two columns: File Name (the name of the file to be exported) and Found Where (the location of the file).
3. Click the Add button to add a stored file to the list. The Specify Stored File dialog box is displayed.
4. Specify the file name in the File Name box. Select the file name from the drop-down list (this list maintains a history of previously entered file names) or type the file name directly in to the box.
5. Specify where this file can be located. The options are:
 - **In Any Root Dir** - The file is located in a root directory, for example in the E:\DOS directory.
 - **In Root Dir of Boot Drive** - The file is located in a root directory on the boot drive, for example in the C:\Windows directory.
 - **Anywhere** - The file can be located anywhere in the directory structure.
 - **As specified** - This option is only enabled if the path to the file is entered in the File Name field. The path must start with a backslash (\).
6. Click **OK**.

Step 4: Specify the Name of the Extract Export

To specify the format the extract export file name, select an option from the Extract drop-down list:

- All files to <AssetNumber>.txt - The export is made to a text file that has the name of the AssetNumber. For example, if the AssetNumber is 23567 then the export file will be called

23567.txt. The files are saved to the location specified in the Default Settings tab.

- To directory named as file - The export is made to a directory that has the name of the stored file and has subdirectories for the drive that the file was located in.

For example:

- A stored file System.ini was extracted from a scan file called XSF014.xsf.
- The location of the file was b:\Win95.
- The location for the results has been specified in the Default Setting tab as H:\Stored Files
- The export result will therefore be located in the following directory structure:

H:\Stored Files\ Autoexec.bat\b\Win95\XSF014.txt

- To directory <AssetNumber> - The export is made to a directory that has the name of the scan file and has subdirectories for the drive that the file was located in. This location will contain the stored files.

For example

- A stored file Boot.ini was extracted from a scan file called XSF02.xsf.
- The location of the file was c:\I386.
- The location for the results has been specified in the Default Setting tab as H:\Stored Files
- The export result will be located in the following directory structure:

H:\stored Files\ XSF02\C\I386\Boot.ini

- There is a separate option to create a CSV file of name mapping. This creates a CSV file (ExportFileNames.csv) with path information for extracted files.

The ExportFileNames.csv file produces a CSV list with the following fields:

Field	Purpose
Exported to File	Path of the export file created
Asset number	Asset number of the source scan file
Original File Name	Name and path of stored file

Step 5: Specify the Types of Files to Extract

To specify the type of files to export, select the following options as required:

- **Export text files only** - This extracts ASCII text files only. This option is available for all extract formats.

- **Hex dump binary files** - This extracts any binary files in hexadecimal. This option is available for the To directory named as file or To directory <AssetNumber> extract formats.

Step 6: Specify the Options for the Extract Format Directories

You can specify the options for the directories that are to be used in the location of the results.

Select the options in the Directories group.

This group is only enabled if the To directory named as file or To directory <AssetNumber> have been selected as the extract format:

- Ignore directory names - The drive letter and subdirectories will not be included. The following two additional options are made available.
- Ignore duplicate files - If duplicate files are encountered, then the latest file will be extracted.
- Add number to filenames - When directories of the asset names are created, multiple instances of the file are numbered starting at 000. For example:
 - FP0214.000.txt
 - FP0214.001.txt
 - FP0214.002.txt
- Use directory names - The directory name will be used in the extract file name. The following additional option is made available.

Substitute '\' with '.'

The directory path is indicated in the file name by '.' For example, the result:

H:\stored Files\ XSF02\E\I386\Boot.ini

Will be represented as a file called

E.I386.Boot.ini

Located in the XSF02 directory. That is, the results can be found in:

H:\stored Files\E.I386.Boot.ini

Loading and Saving Exports

You can save your export layout to a .awrcf file in the Analysis Workbench/Column Layout directory by clicking the **Save** button in the export wizard.

You can load a previously saved export configuration by clicking the Load button in the export wizard and selecting an export file (with an .awrc1 extension) from the load dialog box. Exports are saved to the Analysis Workbench/Column Layout directory.

Older .rcl files will not work in this version of Universal Discovery.

Exporting Relational Data

The Relational Export facility enables data to be exported in a format that is supported by Relational Database Management Systems (RDMS).

Data exported from the Analysis Workbench using these facilities is divided into three main areas:

- Software information, including file data and information.
- Machine/scan file information, including asset and hardware data and information about each scan file.
- Linking information to relate each software file to specific scan files.

The exported data is organized into tables, which include specific items of data that are repeated for each scan file read into Analysis Workbench. The relational export facility includes options to export data to three different tables which are related or linked by common fields known as key fields. The three tables are:

- Hardware and Configuration Table
- Applications Data Table
- Files Data Table

Performing the Relational Export

Select the Relational option from the Exports menu to display the relational Export to file dialog box.

Step 1 Configure the Default Settings

The procedure for setting the default options is identical to that of the other types of exports. See Setting Default Options for Exports for more information about how to do this.

Step 2 Include the Data Tables to Be Exported

In the Relational Export tab page, select the data tables to be exported.

- Hardware and Configuration table

The information for this table is configured on the Export Machines tab page.

- Applications table

The information for this table is configured on the Export Applications tab page.

- Files table

The information for this table is configured on the Export Files tab page.

Step 3 Select the Information to Be Included in the Data Tables

The Export Applications/Export Files/Export Machines tab pages in the Export to file dialog box provide options that are used to select the contents of the data tables to be exported.

For each data table you choose to export, a file name (with a .csv extension and including the full path) must be entered.

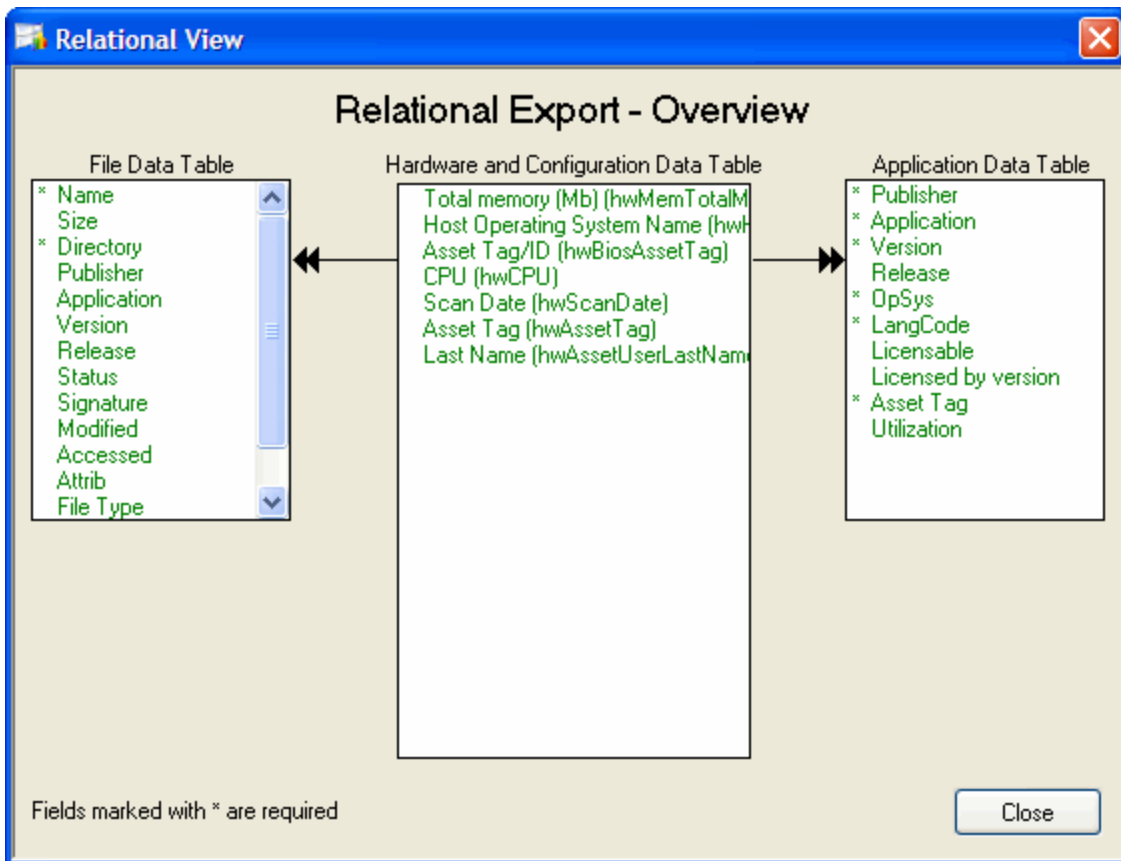
To select the information to be included in the data tables:

1. Click the appropriate tab:
 - Export Files
 - Export Machine
 - Export Application
2. Select the pages to export using the check boxes.
3. Enter the page and set the column preferences
4. Choose to include or exclude column headers with the exported data. If the Column Headers option is selected, column header fields are included in the exported data file to identify the data items exported.
5. Choose OK to export data to the selected data tables.

Applications and Files under Relational Exports do not have choice of Export type – only one line per item.

Step 4 Preview the Relational Export Setup

The data tables and the columns exported for each one can be previewed by clicking the Preview button in the Relational Export tab page. The Relational View window is displayed:



This window shows the tables of relational data which are related by key fields. Key fields are shown with an asterisk (*) next to them.

Data tables that have not been selected for the export are disabled.

Each table includes at least one key field. The key fields are used to relate data so that when data is exported, the information you want to view from the tables can be combined using a relational database system.

Other items of data are indicated as optional fields, which means that these items of data are only exported if you choose to export them.

- The contents of the File, Application and Hardware and Configuration tables are specified on the other tab pages as follows:
 - The contents of the File Data table are specified on the Export Files tab page.
 - The contents of the Application Data table are specified on the Export Applications tab page.
 - The contents of the Hardware and Configuration table are specified on the Export Machines tab

page.

- Click the **Close** button to return to the Export to file dialog box.

The Export Results

The results of a relational export are saved to a file name (.csv). To specify the file names for applications, machines and files, select the specific tab in the Export to File dialog box and specify the file name.

Analysis Workbench Scripting

The Analysis Workbench provides command script options that facilitate the automation of various settings which are manually set within the application (for example, loading, processing and outputting of information from Analysis Workbench).

The scripts are standard ASCII text files, similar in layout to Windows ini files, except that they do not use equals '=' in the key lines in each section within the script. The scripts make use of the various configuration lists (load options, stored queries and so on) which can be stored as part of Analysis Workbench.

By using scripts which can call these stored configuration lists, different options and sequences can be predefined and run as required for regular exporting activities. Sample files have been provided with the Analysis Workbench. The scripts have an AWCS extension to the file name.

There are four script sections (if they exist) and are processed in the following order:

- Startup section
- Variables section
- Process section
- End section

Any number of other sections can be added to the script. Other sections are not processed unless they are called for specifically by the script.

These sections do not have to be in this order in the script file and do not have to exist.

A sample script is supplied with Universal Discovery in the following location:

c:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\Scripts

Executing the Script

- Scripts are executed by one of three methods:
 - Including the script name on the command line in Analysis Workbench (for example `Analysis Workbench.exe script.awcs`).
 - Opening Analysis Workbench and then dragging the script file name to the Analysis Workbench workspace.
 - Using the Run script file... option File menu.
- Having these three options allows:
 - The script to run on a scheduled basis if using a Windows utility such as AT.
 - Different scripts to be run when the Analysis Workbench is opened under user control.
- Do not use any commands in the [Variables] section. This section is used for declaring variables only.
- Do not call any of the standard sections with the RUN_PROCESS command. (Startup, Variables, Process, End).
- Do not name any variables with the same name as a reserved word (either a command name or a string used internally by the scripting engine).
- Do not call a section that is a list of files or directories.

Writing Scripts

- Create scripts in a text editor or in a Word processor without formatting.
- Do not use any equal '=' characters in the command line.
- Save the script file with the extension AWCS.

All commands must have spaces between the command and its parameters. If there are multiple parameters, then these are separated by just a comma (for example, `SAVE_STATE filename, description`).

Group Commands into Sections

- Sections have a section header written between square brackets, for example, [sectionname].
- Section names must not begin or end with space characters and must not be preceded by a space before the name.
- There are four reserved section names, STARTUP, VARIABLES, PROCESS and END.
- Sections can be stored in any order, but the four reserved sections, if they exist, are processed in the order STARTUP- VARIABLES - PROCESS – END.

Add Comments to Scripts

Comments can be added to the scripts to improve readability, either by using a section headed [Comments] to describe the overall function of the script or by using a semicolon (‘;’) at the start of the line to indicate a comment line, to describe specific activity.

Analysis Workbench Script Contents

Five script sections if they exist are processed in the order:

- Comments Section
- Startup Section
- Variables Section
- Process Section
- End Section

They do not have to be in this order in the script file and do not have to exist.

You do not need to call any of these sections. The script engine calls these sections automatically. The script engine does not call any other section that has been created unless it has been specified in a RUN_PROCESS command.

Any other sections in the script can be created and the lines do not have to be commented out if the section is not called by the script.

Comments Section

This section is usually placed at the beginning of the script file. The comments section does not have to exist and is normally used for comments such as the author, date written. It is recommended that a comments section is used. It may be useful to include the name of the author, the purpose of the script,

and the date it was written. A version number should also be included so that it can be incremented every time changes are made to the script.

Any other comments made in other sections of the script are made using a semicolon (;) at the start of the line.

The description in the Run script form is taken from the first valid line in the Comments section.

Startup Section

This section is used to set up initial load conditions for the script. Variables are not available in this section or any sections called by this section.

Commands that do not require variables can be used in this section. Typically, this section would be used to make sure that the Analysis Workbench was in the 'condition' expected before the main [Process] section was called by the script engine.

An Example of Typical [Startup] Code

```
[Startup]
BREAK_ON_ERROR ON
LOG_CLEAR
LOG_SCRIPT ON
DISPLAY_PROGRESS ON
UNLOAD ALL
SET_BUSINESS
```

Variables Section

This section is available to any section of the script apart from the [Startup] section and any sections called from the [Startup] section.

Variables are also available in a command script if declared in a subscript called by that script. They are 'Global' variables. Do not try to use a variable before it is declared.

This can occur if variables are declared in a sub script but are used in a different script. (It is recommended that you declare all variables in a main script file).

An Example of Typical [Variable] Section Code:

[Variables]

TestInt1 : integer

GatewayDirectory : string

StateImage : string

Note: No assignments can be made to the variables in this section. This section is only for instructing the script engine to make these variables available to the script. The restrictions on variables are as follows:

Strings are limited to 64 characters in length.

Integer variables are valid from zero to over 2,000,000,000.

Process Section

This section is used for the main script loop or program. Any variables declared, are available in this section or any processes called from this section. All commands are available in this section.

Any sections created in the script have the same functionality as this section, except that they must be called in the script.

The different sections of the script should be named logically, so that the script makes sense when read as a text file.

A typical [Process] section does not have to be very long, because normally other sections would be called from the script in this section.

An Example of Typical [Process] Section Code:

[Process]

RUN_PROCESS SetupVariables

IF EXIST \$StateImage THEN RUN_PROCESS LoadState

RUN_PROCESS LoadScanFiles

; load the machine export setup file - this sets up the files and columns to export

EXPORT_LOAD Gateway

; do the export

EXPORT_RUN

End Section

This section is used to tidy up after the script has finished, unload scan files from the program, save the script log file and so on. Variables are still available in this section.

When the main command script has finished, all variables are wiped from the memory, so if any results need to be saved, this should be done before the main script finishes.

Variables and Commands

To set variable commands:

To set the variables use := (colon + equals sign)

Example

```
TestInt1 := 5
```

```
GatewayDirectory := c:\gateway\
```

```
StatelImage := $GatewayDirectory + GatewayState.AWS
```

The dollar sign in front of the string variable indicates that one variable can use another variable. In this case the StatelImage variable will have the value c:\gateway\GatewayState.AWS

You can space the assignment operator where you want as long as there is at least one space between each part of the statement.

(VariableName),(at least one space),(:=),(at least one space), (variable value)

A variable can be assigned as a mixture of strings and variables. Integer variables can be used in the assignment statement and these will be translated to strings.

Example

```
FOR TestInt1 := 1000 to 1999 do
```

```
LoadFile := $GatewayDirectory + TEST + $TestInt1 + .XSF
```

GET_INI_VARIABLE

`$VariableName,INIFileName,SectionName,KeyName,DefaultValue`

This command can be used to set a variable that has been declared, to a value retrieved from an INI file.

The five parameters needed for GET_INI_VARIABLE are:

Variable name with or without a '\$' in front of it.

INI file to get variable from.

Section name to get variable from.

Key name to get variable from.

A default value to use if key is not found - defaults to empty string if not specified.

Example

```
GET_INI_VARIABLE $GatewayDir, Gateway.INI, AWScript, GatewayDirectory, c:\Gateway\
```

GET_ENV_VARIABLE \$VariableName,EnvironmentVariable,DefaultValue

This command can be used to set a variable that has been declared, to a value retrieved from an environment variable.

The three parameters needed for GET_ENV_VARIABLE are:

- Variable name with '\$' in front of it.
- Environment variable to read from.
- A default value to use if variable is not found - defaults to empty string if not specified.

Commands for Calling Other Processes

RUN_PROCESS Section Name

Calls another section of the command script. It takes a section name as a parameter. Do not call any of the standard sections Startup, Variables, Process and End.

Example

```
RUN_PROCESS ClearAW
```

RUN_SCRIPT ScriptFileName

Run another Analysis Workbench command script. It takes a script file name as a parameter.

Example

```
RUN_SCRIPT TestScript.AWCS
```

Commands for Loading Data into Analysis Workbench

LOAD_STATE Filename

Loads an Analysis workbench state image file into Analysis Workbench.

Example

```
LOAD_STATE TestState.AWS
```

LOAD_SCAN SCANName

Loads one scan file into Analysis Workbench. It has a single scan file name as a parameter.

Example

```
LOAD_SCAN c:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples
```

```
LOAD_SCAN $XSFDirectory + aix52.xsf
```

LOAD_SCAN_LIST SectionName

Has a single section name as a parameter to load a list of scan file names from. This procedure calls the LOAD_SCAN procedure for each file in the list.

Example

```
LOAD_SCAN_LIST FileList
```

LOAD_DIRECTORY DirectoryName

Loads a single directory specified, as a parameter to this command. Optionally, specify the /SUB parameter to load all scan files in the specified directory and all subdirectories of that directory.

Example

; Load all files from the Samples directory

```
LOAD_DIRECTORY C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples
```

; Load all files from all the sample directories in Analysis Workbench.

```
LOAD_DIRECTORY c:\ /SUB
```

LOAD_DIRECTORY_LIST SectionName

Loads a list of directories from a section of the script file. This procedure calls the LOAD_DIRECTORY procedure for each directory in the list. (The /SUB parameter can also be used in the directory list).

Example

```
LOAD_DIRECTORY_LIST TestDirList
```

Commands for Unloading Data from the Analysis Workbench

UNLOAD

Unloads scan file data from Analysis Workbench. Uses a parameter ALL, TAGGED, or UNTAGGED. Assumes ALL if no parameter is specified.

Example

```
UNLOAD UNTAGGED
```

; Unloads from Analysis Workbench all scan files that are not tagged.

Commands for Setting the Load Options

SET_BUSINESS

Sets business mode if no scan files have been loaded.

SET_OPERATIONAL

Sets operational mode if no scan files have been loaded.

LOAD_DUP_OPTION

Instructs Analysis Workbench how to treat duplicate scan files. This overrides and changes the current setting of Analysis Workbench. The settings are available in the File Load Options dialog box called from the scan file load form Options button.

Valid combinations are:

- LOAD_DUP_OPTION NEWEST (load the newest of the duplicate files)
- LOAD_DUP_OPTION ASK (Ask what to do if duplicate files detected)
- LOAD_DUP_OPTION LOAD (load the duplicate file, remove the previously loaded one)
- LOAD_DUP_OPTION IGNORE (Leave the file already loaded, ignore the attempt to load another file with the same name)

LOAD_OLD_OPTION

Instructs Analysis Workbench how to treat old scan files. This overrides and changes the current setting of Analysis Workbench.

Valid combinations are:

- LOAD_OLD_OPTION LOAD (Load old files even if they are older than the limit).
- LOAD_OLD_OPTION Ask (Ask what to do if old scan files are detected).
- LOAD_OLD_OPTION IGNORE (Ignore files older than the limit).

LOAD_CONFIG FileName

Require a load configuration file as a parameter, to load an INI file saved by the Analysis Workbench

Load Configuration dialog box. This sets up recognition, display filter, asset fields, duplicate and old scan file options and so on.

Example

```
LOAD_CONFIG ScriptLoadOptions.ini
```

LOAD_EXCLUDE_DIR DirList.txt

Allows a list of directories to ignore to be specified, when loading scan files. The list can be set and saved using the Load Filter tab of the Analysis Workbench Load Configuration dialog box.

Example

```
LOAD_EXCLUDE_DIR c:\hp\UCMDB\DataFlowProbe  
\tools\InventoryTools\AnalysisWorkbench\ExcludedDirs.txt
```

Commands for Running Tag Queries

QUERY_CLEAR

Clear the current Analysis Workbench query from memory, this is not necessary if you are loading a query from a file.

QUERY_LOAD Filename

Load a tag query into Analysis Workbench. Takes a query file as a parameter.

Example

```
QUERY_LOAD NT4WS  
QUERY_RUN
```

Run the tag query currently loaded into Analysis Workbench. Ensure that you load the correct query file before running the query. Typically you would call the QUERY_RUN procedure immediately after a QUERY_LOAD.

QUERY_SET_OPTION TAG Switch

Overrides the tagging option set by the loaded query in Analysis Workbench.

Uses the parameters SET, CLEAR, TOGGLE.

Valid combinations are:

- QUERY_SET_OPTION TAG SET
- QUERY_SET_OPTION TAG CLEAR
- QUERY_SET_OPTION TAG TOGGLE

QUERY_SET_OPTION PREQUERY

Overrides the pre-query option set by the loaded query in Analysis Workbench.

Uses the parameters NONE, CLEARALL, SETALL.

Valid combinations are:

- QUERY_SET_OPTION PREQUERY NONE
- QUERY_SET_OPTION PREQUERY CLEARALL
- QUERY_SET_OPTION PREQUERY SETALL

Commands for Tagging

LOAD_TAGS

Loads a list of tagged machines from a .tag text file. This file contains the asset numbers of the tagged machines. It takes one argument, the fully qualified name of the tags file to load.

Example

```
LOAD_TAGS  
C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\Machines15March2012  
.tag
```

SAVE_TAGS

Saves the asset numbers of the machines tagged in a Machines window to a .tag text file. It takes one argument, the fully qualified name of the tags file to save.

Example


```
SAVE_TAGS
C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\Machines15March2012
.tag TAG_ALL
```

Used to tag or untag all items of a particular type.

The syntax of the command is

TAG_ALL (Tag|Untag) (Local|Global) (File|Dir|App|Mach)

TAG_CONTAINS

Tags files, directories and applications from a script. The syntax is:

TAG_CONTAINS (Tag|Untag)(File|Dir|App) ColumnName Value

Where (x|y) means x or y.

Example 1

This will tag all of the unrecognized (Checkver and Unknown) files:

```
TAG_CONTAINS Tag File Status Check TAG_CONTAINS Tag File Status Unknown
```

Example 2

This will tag all MS apps except Outlook

```
TAG_CONTAINS Tag App Publisher Microsoft
```

```
TAG_CONTAINS Untag App Application Outlook
```

Commands for Exporting Data from Analysis Workbench

EXPORT_LOAD ExportLayoutFileName

Loads a saved export layout file. This can be configured using any of the exports available from the main Analysis Workbench menu. Simply set up the export as required for exporting the data and save it to the file name used in your script.

Example

```
EXPORT_LOAD TestScript.awrcl
```

EXPORT_RUN

Runs the currently loaded export layout file. This will export the data to the files specified in the AWRCL file.

EXPORT_SETDIR

Allows you to change the directory that the files are exported.

Example

```
EXPORT_SETDIR C:\Gateway
```

Note: Older .rcl files will not work in this version of Universal Discovery.

Commands for Script Debugging

Pressing the Pause|Break key will stop the script at the next command and display a dialog box – it will not interrupt a running command apart from the WAIT command.

It only needs to be pressed once, however, it may appear that nothing is happening if a whole directory of scan files is being loaded.

BREAK_ON_ERROR ON | OFF | TOGGLE

Setting BREAK_ON_ERROR ON will stop the script if any errors occur.

SINGLE_STEP ON | OFF | TOGGLE

Puts up a dialog box for every command when switched on, allowing the script to quit, skip the current command or turn off the single stepping.

DISPLAY_PROGRESS ON | OFF | TOGGLE

Shows a window with currently processing script line added to a list

Commands for Script Logging

LOG_CLEAR

Clears the Analysis Workbench error log. (this is not recommended unless you are saving the error log to a file each time a script is run).

LOG_SCRIPT ON | OFF | TOGGLE

Writes command lines to the log as they are processed

LOG_WRITE StringToWrite

Writes the specified string to the log file and log window if turned on.

LOG_DISPLAY

Displays the Analysis Workbench main log window to show errors and messages as the commands in the script are processed.

LOG_SAVE SaveToFile

Saves the log to a file specified as a parameter.

Example

```
LOG_SAVE $ScriptFile
```

```
LOG_SAVE c:\ScriptFile.txt
```

Miscellaneous Commands

IF Expression THEN Command

This statement performs the command only if the preceding expression is true.

Example

```
IF $LOOP = 10 THEN TERMINATE_PROGRAM
```

EXIST Filename

Used in conjunction with the IF...THEN command.

IF EXIST FileName THEN Command

Allows a command to be repeated a number of times. The command can be a normal one line command or a whole process section.

The syntax is FOR (variable) := Start TO end DO (command)

Start and end can be numbers or variables, end must be greater than start.

```
FOR TestInt1 := 1 to 10 DO LOG_WRITE HELLO WORLD
```

```
FOR $loop := $start TO $end DO RUN_PROCESS HelloWorld
```

SAVE_STATE FileName, Description

Saves the current Analysis Workbench data to a state image file. Takes two parameters – Filename and Description. The state image description is optional and a default description will be used if one is not specified.

The state image files are compressed and decompressed on the fly.

Example

```
SAVE_STATE TestState.AWS, Test state image saved by command script
```

TERMINATE_PROGRAM

Shuts down the Analysis Workbench program.

Will not prompt for shutdown

PAUSE Message

Will display a dialog box prompting for action - optionally you can include a message that will be displayed in the dialog box.

Example 1

```
PAUSE load has finished
```

WAIT n

Wait n seconds

Example 2

WAIT 100

Will wait 100 seconds - only checks for times greater than 1 hour – Do not use large numbers for the wait time. This will lock the program until the time limit is reached or the Pause|Break key is pressed.

STD_DATES ON | OFF | TOGGLE

Displays and outputs all date fields in a standard format to aid in exporting data to other applications.

Example

STD_DATES ON

Sample Script

A sample script is supplied with Universal Discovery in the following location:

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\Scripts

Section names must not begin or end with space characters. Sections can be in any order.

[Comments]

*** SAMPLE SCRIPT ***

This section is ignored – There is no need to comment out lines.

[Startup]

; This section contains information which will be used to configure

; Analysis Workbench on starting the script and does not have to exist

LOG_CLEAR

DISPLAY_PROGRESS ON

RUN_PROCESS ClearAW

[Process]

LOAD_DIRECTORY_LIST TestDirList

RUN_PROCESS Business5

RUN_PROCESS BusinessAll

RUN_PROCESS Operational5

RUN_PROCESS OperationalAll

QUERY_LOAD

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\Queries\nt4ws

QUERY_RUN

[ClearAW]

UNLOAD ALL

[Business5]

RUN_PROCESS ClearAW

SET_BUSINESS

LOAD_SCAN_LIST 5XSFListLondon

SAVE_STATE C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\State
Images\Business5.aws

Business5.AWS,Demo state containing 5 scans from the London office in Business mode

[BusinessAll]

RUN_PROCESS ClearAW

SET_BUSINESS

LOAD_DIRECTORY C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples\s

SAVE_STATE C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\State
Images,Demo state containing all scans from the London and Frankfurt offices in Business mode

[Operational5]

RUN_PROCESS ClearAW

SET_OPERATIONAL

LOAD_SCAN_LIST 5XSFListLondon

SAVE_STATE C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\State Images\Operational5.AWS,Demo state containing 5 scans from the London office in Operational mode

[OperationalAll]

RUN_PROCESS ClearAW

SET_OPERATIONAL

LOAD_DIRECTORY C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples

SAVE_STATE C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\AnalysisWorkbench\State Images\OperationalAll.AWS,Demo state containing all scans from the London and Frankfurt offices in Operational mode

[5XSFListLondon]

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples\London\LND1000.xsf

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples\London\LND1002.xsf

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples\London\LND1006.xsf

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples\London\LND1028.xsf

C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Samples\London\LND1038.xsf

[TestDirList]

; This section contains a test list of directories to load

; note c:\ /sub will attempt to load ALL Scan Files on drive C

; d:\scan files will load only scan files in that directory - subdirectories would be ignored

c:\sub

d:\scan files

e:\sub

f:/sub

[End]

; This section contains commands to be run before script finishes and does not have to exist

;LOG_SAVE c:\AWScriptLogFile.txt

;TERMINATE_PROGRAM

Viewing Software Utilization Data in Analysis Workbench

Before you can view and analyze the data in Analysis Workbench you will need to set memory load options.

Setting Load Options for Software Utilization

Ensure that the Software Utilization Data option is enabled in this dialog box.

1. Select the Load Options command from the File menu.
2. Enable the Software Utilization Data option.
3. Click the Memory tab.
4. Click **OK**.

Viewing Software Utilization Data in the Windows

Software Utilization Data can be viewed in the Files and Applications Windows. In addition a link is provided to the Details Window.

Applications Window

Two columns are available:

Column	Description
Utilization	This shows the number of days that the application was used (as a percentage) over a period of time.
Used on	The machine the application was used on.

You can drill down to the detail level to see the individual results in the Details window.

Files Window

Two columns are available:

Column	Description
Utilization	This shows the number of days that the application was used (as a percentage) over a period of time. This shows the first instance of the value. If an asterisk is shown next to the value then it means that more than one instance of the file was found and you can

Column	Description
	see further details in the Files Details window.
Attribute	A u (Utilized file) attributes indicates that this file was executed and the application was used.

SAI Editor Overview

This guide describes the features of the SAI Editor and explains how to explore and modify the contents of a User SAI. For more detailed information about using the SAI Editor to “teach” new applications, see Application Teaching.

The SAI editor is a standalone tool. If the SAIs change on the Data Flow Probe, the Administrator must update the SAIs on all systems where the client tools installed.

Starting the SAI Editor

The SAI Editor can be started in the following ways:

- From the **Recognition > View/Edit SAIs** menu item in the Analysis Workbench
- As a standalone utility from the Windows Start menu

SAI Editor User Interface

The Overview tab

Shows the SAIs loaded and details of the data items contained in them.

Note: The Overview tab is only visible when you start the SAI Editor from within the Analysis Workbench application.

The following details are shown for each of the SAI files loaded:

- **SAI File**—Name of the SAI file.
- **SAI ID**—Unique ID for the SAI file. This is relevant to User SAI files only. Master SAIs do not have an ID.
- **File Names**—Number of file names contained in the SAI.
- **Versions**—Number of software versions in the SAI.
- **Applications**—Number of applications in the SAI.
- **Publishers**—Number of publishers in the SAI.
- **Relations**—Number of license relations in the SAI.

Right-Click Menus

If you right-click an entry on the Overview tab, the Export summary to XML option is available.

The XML summary is saved to the following file:

<DataFlowProbeInstallation>\runtime\probeManager\discoverySaiResources\saiRuntime

where **<dataflowprobeinstallation>** is the location where the Data Flow Probe is installed.

Buttons on the Overview Tab

There are three buttons on this tab:

- **Save**—Saves any modifications made to the User SAIs.
- **Reload**—Discards any unsaved changes to the User SAIs, reloads the existing ones from disk, and re-organizes all affected file entries.
- **Close**—Closes the application and causes re-recognition to occur.



Editor Tab

The Editor tab is where you can see the contents of the SAI files in detail. In addition, you can perform many tasks here.

Note: The main menu bar is not available in the built-in SAI Editor of the Analysis Workbench. However, this bar is available in the standalone version.

The Left Navigation Pane

The left navigation pane for this tab shows an icon list of the SAI files that can be viewed. The following icons are used to represent User and Master SAI files.

Icon	Description
	This icon represents a User SAI file.
	This icon represents a Master SAI file.

Click the icon to view the contents of that particular SAI file.






Right-click Options for the Left Navigation Pane

The following menu items are available when you right-click an SAI file icon in the left navigation pane.

Menu Item	Description
New User SAI	Enables you to create a new empty User SAI file.
Export SAI to XML	Opens the SAI XML Export dialog box, which enables you to export the contents of the selected User SAI file to XML format.
Unload SAI	Unloads the selected SAI from the SAI Editor.
Edit Description	This option is only available for User SAI files. It enables you to change the label associated with this file.

The Editor Tab Toolbar

The following toolbar icons enable you to access various SAI Editor commands. When the mouse pointer passes over an icon, a tool tip indicates the command that corresponds to that icon.

Icon	Description
	Create a new empty User SAI
	Save changes made to User SAI files
	Export the contents of a User SAI in XML format
	Search for entries in an SAI file
	Set SAI Editor options

Sub-Tabs on the Editor Tab

The Editor tab consists of the following eight sub-tabs:





- All Contents
- Files
- Application Types
- Operating Systems
- Languages
- License Relations
- Package Rules
- Version Data Rules











- All Contents
- Files
- Application Types
- Operating Systems
- Languages
- License Relations
- Package Rules
- Version Data Rules




The Application Types, Operating Systems and Languages sub-tabs are static pages and are pre-populated by Hewlett Packard. You can, however, add new items to the Application Types and Operating Systems sub tabs for your User SAI.








Icons Used on the Editor Tab











The SAI Editor displays a hierarchical structure of software publishers, application names, releases, application versions, and files contained in the SAI files. The following icons are used to represent these items.

Icon	Description
All Contents Tab	
	<p>Software Publisher</p> <p>This is the name of the company or corporation that released the software application. For example, Hewlett-Packard is a software publisher.</p>
	<p>Application Name</p> <p>This is the name of the software program.</p>
	<p>Release</p> <p>When a publisher releases updates for an existing version of one of their products, they typically don't change the name of that version. Any particular version of a product could have several updates to it. In this scenario, the SAI Editor refers to the umbrella version as the Release, and to each of the updates as an application Version.</p>
	<p>Application Version</p> <p>See description above</p>

Icon	Description
	File Each file is categorized as Main, Associated, or 3rd Party.
Files Tab	
	File Each file is categorized as Main, Associated, or 3rd Party.
	Main File This is a key application file—that is, a file without which the application could not be running. It should always be present whenever the application is installed regardless of whether it is a minimum or complete installation.
	Associated File This is a non-key file that is part of the application and is written by the publisher that developed the product.
	3rd Party File This is a file written by another Publisher (3rd Party) and is used in the current application. An example of 3rd party files is some DLL files that are technically used by the application but are also distributed freely and can be used by other applications.
Application Types Tab	
	This icon represents the different applications software categories (for example, word processor and spreadsheet).
Operating Systems Tab	
	This icon represents Operating Systems.
Languages Tab	
	This icon represents languages.
License Relations Tab	
	Indicates that this application also licenses another application.
	Indicates that this application is licensed by another application.

Icon	Description
	Indicates that this application both licenses and is licensed by another application.
Package Rules Tab	
	This icon represents installed package rules.
Version Data Rules Tab	
	This icon represents version data rules.

Icon	Description
All Contents Tab	
	<p>Software Publisher</p> <p>This is the name of the company or corporation that released the software application. For example, Hewlett-Packard is a software publisher.</p>
	<p>Application Name</p> <p>This is the name of the software program.</p>
	<p>Release</p> <p>When a publisher releases updates for an existing version of one of their products, they typically don't change the name of that version. Any particular version of a product could have several updates to it. In this scenario, the SAI Editor refers to the umbrella version as the Release, and to each of the updates as an application Version.</p>
	<p>Application Version</p> <p>See description above</p>
	<p>File</p> <p>Each file is categorized as Main, Associated, or 3rd Party.</p>
Files Tab	
	<p>File</p> <p>Each file is categorized as Main, Associated, or 3rd Party.</p>
	<p>Main File</p> <p>This is a key application file—that is, a file without which the application could not be</p>

Icon	Description
	running. It should always be present whenever the application is installed regardless of whether it is a minimum or complete installation.
	<p>Associated File</p> <p>This is a non-key file that is part of the application and is written by the publisher that developed the product.</p>
	<p>3rd Party File</p> <p>This is a file written by another Publisher (3rd Party) and is used in the current application. An example of 3rd party files is some DLL files that are technically used by the application but are also distributed freely and can be used by other applications.</p>
Application Types Tab	
	This icon represents the different applications software categories (for example, word processor and spreadsheet).
Operating Systems Tab	
	This icon represents Operating Systems.
Languages Tab	
	This icon represents languages.
License Relations Tab	
	Indicates that this application also licenses another application.
	Indicates that this application is licensed by another application.
	Indicates that this application both licenses and is licensed by another application.
Package Rules Tab	
	This icon represents installed package rules.
Version Data Rules Tab	
	This icon represents version data rules.

Buttons on the Editor Tab

The following buttons are available only when you start the SAI Editor from the Analysis Workbench.

Button	Function
Save	Saves any modifications made to the User SAI.
Reload	Discards any unsaved changes to the User SAI, reloads the existing one from disk, and re-organizes all affected file entries.
Close	Closes the SAI Editor. If you have made any changes, the SAI Teaching Options dialog box is displayed. Set the teaching options as follows:
	<ul style="list-style-type: none"> • Recognition <ul style="list-style-type: none"> ◦ Use level 3 heuristics—SAI teaching uses the same recognition method that is used during the loading process. <ul style="list-style-type: none"> • If Level 3 heuristics are enabled, teaching a single file will reprocess all files on all machines on which that file occurs. • If Level 3 heuristics are disabled, teaching a single file will cause all files in all directory/machine combinations where the file occurs to be re-recognized. • Save changes to SAI <ul style="list-style-type: none"> ◦ When AW exits—Any changes to the SAI are saved when you exit the Analysis Workbench application. ◦ Immediately—Any changes to the SAI are saved immediately. • Tag changed items <p>Selecting this option makes the following further options available:</p> <ul style="list-style-type: none"> ◦ Files—Any files that are affected by the SAI teaching are tagged. ◦ Applications—Any applications that are affected by the SAI teaching are tagged. ◦ Directories—Any directories that are affected by the SAI teaching are tagged. ◦ Machines—Any machines that are affected by the SAI teaching are tagged. ◦ Set Local Tags—If this option is selected, Local Tags are used for the operations. ◦ Set Global Tags—If this option is selected, Global Tags are used for the operations. • Set options as default <p>Select this box to retain these settings as the default for future Close operations.</p>

Incremental Searching, Sorting, and Moving Columns

Incremental Search

You can use the incremental search feature to locate an entry in the tree. To perform an incremental search, click the tab that you want to search, and type the word(s) or number(s) that make up the entry that you want to locate. The window automatically locates the closest existing value in the currently visible nodes in the tree.

For example, highlight the Master SAI file in the left navigation pane. Click the All Contents tab, and type Microsoft. The Microsoft publisher node is located and highlighted.

The entry that you want to locate must be visible in the tree—it cannot be in a branch that is currently collapsed. For example, if only Publisher nodes are visible in the tree on the All Contents tab, you can only search for publishers. If you expand a Publisher node, you can also search for applications associated with that publisher.

It is necessary to type quickly to perform an incremental search. If you type too slowly, the search may not produce the result you expect. For example, if you type M and then wait a second or two, the first publisher beginning with “M” will be highlighted. If you then type I, the first publisher starting with “I” will be highlighted.

Sorting Entries in a Column

Click the column heading to sort the contents of that column. The default sort order is ascending. This command sorts text alphabetically, numerically, or by date in ascending or descending order. Click the column heading to toggle the sort order.

Moving Columns to a New Position

Columns on the Editor tab can be moved to any position on the page. To do this, drag the column heading to the location you want.

The Operating Systems Tab

Note: You can only edit User SAI files.

Viewing Data in the Operating System Tab

The Operating Systems tab shows a view of the different operating systems you can allocate to entries in the SAI files. Examples of these categories are:

- Windows Vista
- Solaris 10
- Linux 2.6

These entries are pre-populated by Hewlett-Packard. However, you can add new items to this tab for your User SAI.

The following information is shown for each entry in this tab:

- **Operating System**—the name of the Operating System.
- **Short Name**—the abbreviated name for the Operating System. For example, Windows Vista is represented as Vista.
- **ID**—the unique identifier for this operating system type entry. This column is only shown if the Show ID Column option was enabled in the SAI Editor Options dialog. See Setting Properties for the SAI Editor for more information.

Adding a New Operating System

This procedure is used to add a new operating system to a User SAI.

To add a new operating system to a User SAI:

1. Right-click the root User SAI entry in the tree. It is the first entry (the root) of the tree.
2. Select the New Item option.

The Operating System Properties box is displayed.

Enter the following details for the new operating system.

- **Name.** Name of the new operating system (must be entered)
 - **Shortname.** The abbreviated name for the Operating System. For example, Windows Vista is represented as Vista.
3. Click **OK** to add the new operating system to the SAI file.

Note: Before adding an operating system to the file, check to see whether the entry already exists.

Deleting an Existing Operating System

This procedure is used to delete an existing operating system from a User SAI.

To delete an existing operating system:

1. In the tree, right-click the operating system to be deleted.
2. Select the **Delete** option or hit the Delete key on your keyboard.

A confirmation message is displayed.

3. Click **Yes** to delete the operating system.

Editing the Properties for an Existing Operating System

This procedure is used to edit the properties for an operating system.

To edit the properties for an existing operating system:

1. In the tree, right-click the operating system to be edited.
2. Select the **Properties** option.

The Operating System Properties box appears.

Edit the details as required.

- Name. Name of the new operating system (must be entered)
 - Short Name. The abbreviated name for the Operating System. For example, Windows Vista is represented as Vista.
3. Click the **OK** button to complete the edit.

After the operating system details have been edited, the amended details are displayed in the tree.

The Application Types Tab

Note: You can only edit User SAI files.

Viewing Data in the Application Type Tab

The Application Type tab shows a view of the different types of software application categories you allocate to entries in the SAI files. Examples of these categories are:

- Database
- Developer Tools
- Word Processing
- Web Servers

These entries are pre-populated by Hewlett-Packard. However, you can add new items to this tab for your User SAI.

The following information is shown for each entry in this tab:

- **Application Type**—the category of software
- **ID**—the unique identifier for this application type entry. The application type IDs supplied in the master SAI correspond to UNSPSC standard codes for these application types.

This column is only visible if the Show ID Column option was enabled in the SAI Editor Options dialog. See Setting Properties for the SAI Editor for more information.

Adding a New Application Type

This procedure is used to add a new application type to a User SAI.

To add a new application type to a User SAI:

1. Right-click the root User SAI entry in the tree. It is the first entry (the root) of the tree.
2. Select the **New Item** option.

The Application Type Properties box is displayed.

3. Enter the name of the new application type (must be entered).
4. Click **OK** to add the new application type to the SAI file.

Note: Before adding an application type to the file, check to see whether the entry already exists.

Deleting an Existing Application Type

This procedure is used to delete an existing application type from a User SAI.

To delete an existing application type:

1. In the tree, right-click the application type to be deleted.
2. Select the **Delete** option or hit the Delete key on your keyboard.

A confirmation message is displayed.

3. Click **Yes** to delete the application type.

Editing the Properties for an Existing Application Type

This procedure is used to edit the properties for an application type.

To edit the properties for an existing application type:

1. In the tree, right-click the application type to be edited.
2. Select the **Properties** option.

The Application Type Properties box appears.

3. Edit the details as required.
4. Click the **OK** button to complete the edit.

After the details have been edited they are displayed in the tree.

The Files Tab


Note: You can only edit User SAI files.

Viewing Information on the Files Tab

Click the + (plus) sign next to a File to expand the tree.

All the instances of that file in the SAI are shown:

The following information is shown in the columns:

- The relation of the file to the application. This is indicated by the following icons:
 - Main File 

This is a key application file, that is, it is a file without which the application could not be running. It should always be present whenever the application is installed regardless of whether it is a minimum or complete installation.

- Associated File 

This is a non-key file that is part of the application and is written by the publisher that developed the product.

- Third Party File 

This is a file written by another Publisher (3rd Party) and is used in the current application. An example of a 3rd party files is some DLL files that are technically used by the application, but are also distributed freely and can be used by other applications.

- **Filename**—the name of the file.
- **Size**—the size of the file.
- **Signature**—the signature is a checksum of the first 8 Kilobytes of a file.
- **Exe Type**—the type of executable file (for example, Win32 exe, Linux x86 ELF, or SPARC ELF).
- **ID**—the unique identifier for the file entry. This column is only shown if the Show ID Column option was enabled in the SAI Editor Options dialog. See Setting Properties for the SAI Editor for more information.
- **Publisher**—the publisher of this file.
- **Application**—the application that this file belongs to.
- **App Type**—the type of the application (for example, Word Processor or Spreadsheet).
- **Release**—the software release that this file belongs to.
- **Version**—the software version that this file belongs to.
- **Language**—the language of the application version that this file belongs to.
- **OS** —the operating system on which the application version that this file belongs to runs.
- **Version Data**—The combination of key version data fields of the file. It is automatically populated.

Editing the Properties for Files in the Files Tab

Only one option is available for the Files tab. This is the Properties option.

To edit the properties for a file:

1. Expand the tree to select the instance of the file.
2. Right-click the file to be edited, and select the Properties option.

The File Properties box appears.

Edit the details as required.

- Size
- The size of the file

- Care about Size

When this option is enabled, the size of the file is used as a recognition criteria. When disabled, file size will not be used in recognition and N/A will be displayed in the size column.

Note: Be careful when disabling this setting, especially for main files. If the setting is disabled, only the match on the file name is needed to produce a good file match – and if the file is main, simply the presence of the file in the scan file will cause the application to be recognized.

- Relation to App

The Relation to App shows whether the file is a Main, Associated or 3rd Party file. See Viewing Information on the Files Tab for definitions of these terms.

- Number of Occurrences

Sets the number of occurrences of the file in the installation of the application. This option is only applicable to main files. It is useful in those cases where the same file that is chosen as main appears multiple times in the application's installation. This is usually rare, so the default value of 1 is appropriate in most cases. For example, if the main file occurs twice in the same installation, set this value to two. If **Report Multiple Installations of the Same Version** setting of the SAI recognition options is enabled, it will cause only one installation of the application to be reported for every two occurrences of the main file.

Note: The value range for Number of Occurrences in SAI Editor is 1-9.

- Signature

The signature is a checksum of the first 8 Kilobytes of a file.

- Exe File Type

The type of executable file (for example, Win32 exe, Linux x86 ELF, or SPARC ELF).

- Version Data

The combination of key version data fields of the file. It is automatically populated and you are not recommended to modify it manually.

3. Click the **OK** button to complete the edit.

Once the details have been edited, the amended details are displayed in the tree.

The All Contents Tab

The All Contents tab displays a hierarchical structure of software publishers, application names, releases, application versions, and files contained in the SAI file.

Viewing Information in the All Contents Tab

1. Click the + (plus) sign next to a Publisher to expand the tree.
All the Applications by that software publisher are shown.
2. Expand an Application to display the Releases for it.
3. Expand a Release to display the Versions of that particular software application release that are in the database.
4. Expand a Version of the software to display the Files for that version.

The following information is shown in the columns:

- **Size** - The size of the file
- **Signature** - The signature is a checksum of the first 8 Kilobytes of a file.
- **Exe Type** - This indicates the type of the executable (for example, Win32 exe).
- **Relation** - Whether the file is a Main, Associated, or 3rd Party file. See Viewing Information on the Files Tab for definitions of these terms.
- **ID** - The unique identifier for that particular entry. This column is only shown if you selected the Show ID Column option in the SAI Editor Options dialog box. See page Setting Properties for the SAI Editor for further information.

Note: If none of the files identified for a particular version has the relation of Main file for that version, the version will be displayed in red in the SAI Editor to highlight this fact. The reason to flag this condition is that if a version does not have one or more Main files, the application will not be recognized. So you must identify one or more files with the relation of Main if you want application recognition to occur. There are only a few cases when it makes sense to teach an application without a Main file. These would include, for example, a set of drivers or internal utilities for which it is convenient to have corresponding files recognized, but it is not important to report them as individual applications.

Right-Click Menus

Different right-click menus are available for different nodes of the Publisher tree.

Node	Menus Available
Root - the User SAI	New Item
Publisher	<ul style="list-style-type: none"> • Delete • New Item • Properties
Application	<ul style="list-style-type: none"> • Edit Application • Rules • Delete • New Item • Properties
Release	<ul style="list-style-type: none"> • Explore License Relations • Delete • New Item • Properties
Version	<ul style="list-style-type: none"> • Delete • New Item • Properties
File	<ul style="list-style-type: none"> • Delete • Properties • Relationship to Application

Node	Menus Available
Root - the User SAI	New Item
Publisher	<ul style="list-style-type: none"> • Delete • New Item • Properties
Application	<ul style="list-style-type: none"> • Edit Application

Node	Menus Available
	<ul style="list-style-type: none"> • Rules • Delete • New Item • Properties
Release	<ul style="list-style-type: none"> • Explore License Relations • Delete • New Item • Properties
Version	<ul style="list-style-type: none"> • Delete • New Item • Properties
File	<ul style="list-style-type: none"> • Delete • Properties • Relationship to Application

Note: Master SAIs are read-only, so menu items relating to editing the SAI content are disabled for Master SAIs.

Adding a New Publisher

This procedure is used to add a new software publisher to a User SAI.

To add a new software publisher to a User SAI:

1. Right-click the root User SAI File entry in the tree. It is the first entry (the root) of the tree
2. Select the New Item option.

The Publisher Properties box is displayed.

3. Enter the Name and Description for the new software publisher.

Note: Ensure that the Publisher Name is spelled correctly. Before adding a publisher name to

the file, check whether the entry for the publisher already exists in the Master SAI file.

4. If the publisher already exists in the Master SAI, copy it from the Master SAI to your User SAI.

Deleting an Existing Publisher

This procedure is used to delete an existing software publisher from a User SAI.

To delete an existing publisher:

1. In the tree, right-click the software publisher to be deleted.
2. Select the **Delete** option or hit the Delete key on your keyboard.
A confirmation message is displayed.
3. Click **Yes** to delete the software publisher and all its associated sub-items.

Editing the Properties for an Existing Publisher

This procedure is used to edit the properties for a software publisher.

1. In the tree, right-click the software publisher to be edited.
2. Select the Properties option.
The Publisher Properties box appears.
3. Edit the details as required.
4. Click the **OK** button to complete the edit.

Once the publisher details have been edited, the amended details are displayed in the tree.

Merging the Contents of Publishers

You can merge the contents of a software publisher with another publisher within the same SAI so that they are contained under the same entry. You would do this, for example, if a software publisher has been acquired by another company.

To merge the contents of publishers:

1. Drag and drop the publisher to another publisher entry in the tree.
A confirmation dialog box is displayed.

2. Click the **OK** button to accept the merge.

Copying Publisher Contents to Another User SAI

You can merge the contents of a software publisher to a different User SAI.

To copy a publisher to another SAI:

Drag and drop the publisher into the appropriate User SAI entry in the left hand pane of the Editor.

The publisher entry is copied to the other SAI. This will only copy the publisher information. If you want to copy the file-level data to the other User SAI, you should select the files that you want to copy and then drag and drop the data into the appropriate User SAI.

Alternatively, you can hold down the **CTRL** key and drag the publisher to another SAI. This will result in a “deep” copy that will copy the publisher and all of its child items (applications, releases, versions, and files).

Moving the Contents of a Publisher to Another Publisher Within the Same SAI

You can move the contents of a publisher to another publisher within the same SAI.

To move the contents of a publisher to another publisher within the same SAI:

1. Select the applications under the publisher and drag them to the publisher to which you want to move them.

A confirmation dialog box is displayed.

2. Click the **OK** button to accept the move.

Adding a New Application

This procedure is used to add a new software application to a User SAI.

To add a new software application to a User SAI:

1. Right-click the appropriate software publisher entry in the tree.
2. Select the New Item option.

The Application Properties box is displayed.

3. Enter the Name and Description for the new software publisher.

4. From the Application Type drop-down list, select the software category that the application falls under (for example, word processor software or spreadsheet software).

Ensure that the Application Name is spelled correctly. Before adding an application name to the file, check whether the entry for the application already exists in the SAI file.

Deleting an Existing Application

This procedure is used to delete an existing software application from a User SAI.

To delete an existing application:

1. In the tree, right-click the software application to be deleted.
2. Select the **Delete** option or press the DELETE key on your keyboard.
A confirmation message is displayed.
3. Click **Yes** to delete the software application and all its associated sub-items.

Editing the Properties for an Existing Application

This procedure is used to edit the properties for a software application.

To edit the properties for an existing application:

1. In the tree, right-click the software application to be edited.
2. Select the **Properties** option.
The Application Properties box appears.
3. Edit the details as required.
4. Click the **OK** button to complete the edit.

After the application details have been edited, the amended details are displayed in the tree.

Editing the Application Rules

Application rules are used for software recognition. You can teach Universal Discovery how to recognize a new application – or a new version of an existing application – by creating recognition rules.

To edit an application's rules:

1. In the tree, right-click the software application that you want to work with.
2. Select **Edit Application Rules**. The Application Rules Editor opens.
3. Choose one of the following actions:
 - To modify an existing rule, select the rule, and click **Edit**.
 - To create a new rule, click **Add**.
 - To delete an existing rule, select the rule, and click **Remove**.

See the Rule-Based Application Teaching on page 348 for information about creating and modifying recognition rules.

Merging Applications Within the Same SAI

You can merge the contents of an application with another application within the same SAI so that they are contained under the same entry.

To merge the contents of applications:

1. Drag and drop the application onto another application entry in the tree.
A confirmation dialog box is displayed.
2. Click the **OK** button to accept the merge.

Copying an Application to Another User SAI

You can copy a software application to a different User SAI.

To copy a software application to another SAI:

Drag and drop the application into the appropriate User SAI entry in the left hand pane of the Editor.

The application and the publisher entries are copied to the other SAI. If the publisher for this application does not already exist in new User SAI, it will be copied into it automatically.

Alternatively, you can hold down the **CTRL** key and drag the application to another SAI. This will result in a “deep” copy that will copy the application and all of its child items (releases, versions, and files).

Moving an Application to Another Publisher Within the Same SAI

You can move an application to another application publisher within the same SAI.

To move an application to another publisher within the same SAI:

1. Select the application and drag it to the publisher you want it moved to.
A confirmation dialog box is displayed.
2. Click the **OK** button to accept the move.

Adding a New Release

This procedure is used to add a new software release to a User SAI.

To add a new software release to a User SAI:

1. Right-click the appropriate software application entry in the tree.
2. Select the New Item option.

The Release Properties box is displayed.

3. Enter the Name for the new software release.

Note: Ensure that the Release is spelled correctly. Before adding a release to the file, check whether the entry for the release already exists in the SAI file.

Deleting an Existing Release

This procedure is used to delete an existing software release from a User SAI.

To delete an existing release:

1. In the tree, right-click the software release to be deleted.
2. Select the Delete option or hit the Delete key on your keyboard.
A confirmation message is displayed.
3. Click **Yes** to delete the software release and all its associated sub-items.

Editing the Properties for an Existing Release

This procedure is used to edit the properties for a software application.

To edit the properties for an existing release:

1. In the tree, right-click the software release to be edited.
2. Select the Properties option.

The Release Properties box appears.

3. Edit the details as required.
4. Click the **OK** button to complete the edit.

After the release details have been edited, the amended details are displayed in the tree.

Merging Releases

You can merge the contents of a release with another release within the same SAI so that they are contained under the same entry.

To merge the contents of releases:

1. Drag and drop the release onto another release entry in the tree.
A confirmation dialog box is displayed.
2. Click the **OK** button to accept the merge.

Copying a Release to Another User SAI

You can copy a software release to a different User SAI.

To copy a software release to another SAI:

Drag and drop the release into the appropriate User SAI entry in the left hand pane of the Editor.

The release, application name and publisher are copied to the other SAI. If the publisher and application for this release do not already exist in new User SAI, they will be copied into it automatically.

Alternatively, you can hold down the **CTRL** key and drag the release to another SAI. This will result in a “deep” copy that will copy the release and all of its child items (versions and files).

Moving a Release to Another Application Within the Same SAI

You can move a software release to another application within the same SAI.

To move a software release to another application within the same SAI:

1. Select the release, and drag it to the application to which you want it moved.
A confirmation dialog box is displayed.
2. Click the **OK** button to accept the move.

Adding a New Version

This procedure is used to add a new software version to a User SAI.

To add a new software version to a User SAI:

1. Right-click the appropriate software release entry in the tree.
2. Select the **New Item** option.

The Version Properties box is displayed.

Enter the following details for the new software version.

- **Name.** Name of the new version (must be entered)
- **Description.** This is a user defined field that can contain any text.
- **Install Strings**
 - This is the text that the installer of the program uses to describe the software in the Control Panel > Add/Remove programs (Windows prior to Windows Vista), Control Panel > Programs and Features (Windows Vista and above), or the operating system package manager (UNIX/Mac OS X).
 - Normally there is only one install string, which is entered on the first line of the entry field. Occasionally, it may be necessary to make a match based on multiple install strings. For example, if you add a service pack for a product, there may be an install string for the service pack, in addition to the install string for the product itself. In this case, the install string match should be based on both install strings. You can enter additional install strings on the subsequent lines of this entry field.
 - The install strings can also be found from the Hardware and Configuration tab and the Operating System Data and Operating System Installed Application Description columns for the Windows applications.

- **Operating System**

The Base Operating System of the application version (for example, Windows Vista). Select the Base OS from the drop-down list.

- **Language**

Select the language of the application version from the drop-down list.

3. Click **OK** to add the new software version to the SAI file.

Note: Before adding a software version, check whether the entry already exists in the SAI file.

1. Right-click the appropriate software release entry in the tree.
2. Select the **New Item** option.

The Version Properties box is displayed.

Enter the following details for the new software version.

- **Name.** Name of the new version (must be entered)
 - **Description.** This is a user defined field that can contain any text.
 - **Install Strings**
 - This is the text that the installer of the program uses to describe the software in the Control Panel > Add/Remove programs (Windows prior to Windows Vista), Control Panel > Programs and Features (Windows Vista and above), or the operating system package manager (UNIX/Mac OS X).
 - Normally there is only one install string, which is entered on the first line of the entry field. Occasionally, it may be necessary to make a match based on multiple install strings. For example, if you add a service pack for a product, there may be an install string for the service pack, in addition to the install string for the product itself. In this case, the install string match should be based on both install strings. You can enter additional install strings on the subsequent lines of this entry field.
 - The install strings can also be found from the Hardware and Configuration tab and the Operating System Data and Operating System Installed Application Description columns for the Windows applications.
 - **Operating System**

The Base Operating System of the application version (for example, Windows Vista). Select the Base OS from the drop-down list.
 - **Language**

Select the language of the application version from the drop-down list.
3. Click **OK** to add the new software version to the SAI file.

Note: Before adding a software version, check whether the entry already exists in the SAI file.

Deleting an Existing Version

This procedure is used to delete an existing software version from a User SAI.

To delete an existing version:

1. In the tree, right-click the software version to be deleted.
2. Select the **Delete** option or hit the Delete key on your keyboard.
A confirmation message is displayed.
3. Click **Yes** to delete the software version and all its associated sub-items.

Editing the Properties for an Existing Version

This procedure is used to edit the properties for a software version.

To edit the properties for an existing version:

1. In the tree, right-click the software version to be edited.
2. Select the **Properties** option.
The Version Properties box appears.
3. Edit the details as required.
4. Click the **OK** button to complete the edit.

After the version details have been edited, the amended details are displayed in the tree.

Merging Versions

You can merge the contents of a version with another version within the same SAI so that they are contained under the same entry.

To merge the contents of versions:

1. Drag and drop the version onto another version entry in the tree.
A confirmation dialog box is displayed.
2. Click the **OK** button to accept the merge.

Copying a Version to Another User SAI

You can copy a software version to a different User SAI.

To copy a software version to another SAI:

Drag and drop the version into the appropriate User SAI entry in the left hand pane of the Editor.

The version, release, application name and publisher are copied to the other SAI. If the publisher, application and release for this version do not already exist in new User SAI, they will be copied into it automatically.

Alternatively, you can hold down the **CTRL** key and drag the version to another SAI. This will result in a “deep” copy that will copy the version and all of its child items (files).

Moving a Version to Another Release Within the Same SAI

You can move a software version to another release within the same SAI.

To move a software version to another release within the same SAI:

1. Select the version entry and drag it to the release you want it moved to.
A confirmation dialog box is displayed.
2. Click the **OK** button to accept the move.

Adding a File

There are two methods of adding a new file to a User SAI.

Method 1—Add a new file to a User SAI using the Editor:

1. Right-click the appropriate software version entry in the tree.
2. Select the New Item option.
The Filename box is displayed.
3. Enter the name of the file and click the **OK** button. The File Properties dialog box is displayed.
4. Enter the following details for the file:
 - o Size
 - o The size of the file
 - o Care about Size

When this option is enabled, the size of the file is used as a recognition criterion. When disabled, file size will not be used in recognition, and N/A will be displayed in the size column.

Note: Be careful when disabling this setting, especially for main files. If the setting is disabled, only the match on the file name is needed to produce a good file match – and if the

file is main, simply the presence of the file in the scan file will cause the application to be recognized.

- Relation to App

Whether the file is a Main, Associated or 3rd Party file. See Viewing Information on the Files Tab for definitions of these terms.

- Signature

The signature is a checksum of the first 8 Kilobytes of a file.

Note: If the signature is unknown, use FFFF-FFFF.

- Exe File Type

The type of executable file (for example, Win 32 exe or Archive).

5. Click **OK** to add the new file to the SAI.

Note: Ensure that the file name is spelled correctly. Before adding the file, check whether it already exists for this version.

Method 2—Add a new file to a User SAI using Windows Explorer:

Using Windows Explorer you can automatically add the file to the software version.

In Windows Explorer, navigate to the file you want to add.

Drag the file onto the version in the SAI Editor. The file will be added to the version automatically with the properties details filled in. These properties can be amended as necessary - see Editing the Properties for Files in the Files Tab on page 279 for information on how to do this.

Deleting an Existing File

This procedure is used to delete an existing file from a User SAI.

To delete an existing file:

1. In the tree, right-click the file to be deleted.
2. Select the Delete option or hit the Delete key on your keyboard.

A confirmation message is displayed.

3. Click **Yes** to delete the file.

Editing the Properties for an Existing File

This procedure is used to edit the properties for a file. For more information, see [Editing the Properties for Files in the Files Tab](#).

Copying a File to Another User SAI

You can copy a file to a different User SAI.

To copy a file to another SAI:

Drag and drop the file into the appropriate User SAI entry in the left hand pane of the Editor.

The file is copied to the other SAI. If the publisher, application, release and version for this file do not already exist in new User SAI, they will be copied into it automatically.

Note: You can select multiple files by pressing the **SHIFT** key and clicking on the files.

Moving a File to Another Version Within the Same SAI

You can move a file to another version within the same SAI.

To move a file to another version within the same SAI:

1. Select the file entry and drag it to the version you want it moved to.
A confirmation dialog box is displayed.
2. Click the **OK** button to accept the move.

Setting Relationship to Application

This procedure enables you to change the relationship of multiple files to the application. To change the relationship of one file to the application, see the [Editing the Properties for Files in the Files Tab](#).

To set relationship to application:

1. In the tree, right-click the file(s) to be edited. To select multiple files, hold the **SHIFT** key while clicking on the files.
2. Select the **Relationship to Application** option.
3. Select one relationship from the Main, Associated, and 3rd Party options.

Note: See Viewing Information on the Files Tab for definitions of these terms.

After you edit the file details, the amended details are displayed in the tree.

The Language Tab

Note: You can only edit User SAI files.

Viewing Data in the Languages Tab

The Languages tab shows a view of the different languages you can allocate to entries in the SAI files. Examples of these categories are:

- Dutch
- English
- French

These entries are pre-populated by Hewlett-Packard. You cannot add new items to this tab.

The following information is shown for each entry in this tab

- **Language** - The name of the language.
- **Code** - The ISO standard code for the language.
- **ID** - The unique identifier for this language type entry. This column is only shown if the Show ID Column option was enabled in the SAI Editor Options dialog. See Setting Properties for the SAI Editor for more information.

Viewing Properties for a Language

This procedure is used to view the properties for a language.

To view the properties for a language:

1. In the tree, right-click the language.
2. Select the Properties option.

The Language Properties box is displayed.

The License Relations Tab




Note: You can only edit User SAI files.

Viewing Data in the License Relations Tab

This tab provides a view of the license relationships that exist in the SAI.

Click the + (plus) sign next to a License Relation to expand the tree. All applications contained in the suite are shown along with their license relationship to the suite.

Icons represent the relationship of the various applications to the application suite as follows:

-  Indicates that this application also licenses another application.
-  Indicates that this application is licensed by another application.
-  Indicates that this application both licenses and is licensed by another application.

The following information is shown about each application in the license relationship.

- **Item**—the name of the publisher, application, and release.
- **ID**—the unique identifier for this entry. This column is only shown if the Show ID Column option was enabled in the SAI Editor Options dialog. See Setting Properties for the SAI Editor for more information.

Viewing Details for a License Relation

To view more details for a license relationship:

1. Right-click an application in the License Relation tab, and select the Go To option.

The application release will be automatically selected and displayed on the All Contents tab.

2. On the All Contents tab, right-click the entry, and select Explore license relations.

This will display the license relationship editor. Here you can view the relationship in greater detail or you can make changes to the relationship as required.

See The License Relations Tab for further information about setting up and editing a license relationship.

Editing the Properties for an Existing License Relation

This procedure is used to edit the properties for a release.

To edit the properties for an existing release:

1. In the tree, right-click the release to be edited.
2. Select the **Properties** option.

The Release Properties box appears.

3. Edit the Name of the release (must be entered)
4. Click the OK button to complete the edit.

Once the details have been edited they are displayed in the tree.

Setting Properties for the SAI Editor

Opening the SAI Editor Options Dialog Box

To open the SAI Editor Options dialog box, click the **SAI Editor Options** button on the toolbar on the Editor tab.

The General Tab

The General tab enables you to set the following options:

- Show ID Column

Checking this option will display an ID column in all the tabs. IDs are assigned to each entry in the User SAI. When you copy or create an entry, a new ID is assigned to that entry.

- Hide items without files (in read-only SAIs)

This option provides you with a cleaner view. It hides any entries that are empty—that is, entries that do not have files in them. This option is for the Master SAI only.

- Automatically save modified SAIs on exit

All modifications made to the User SAIs will be automatically saved when you exit the SAI Editor application.

- Re-enable all error messages

Checking this option will re-enable all error messages that you have previously disabled.

The SAI List Tab

The options on the SAI List tab enable you to:

- Add a new SAI file to be viewed or edited.
- Remove an existing SAI file.
- Create a new empty User SAI file.

The list box on this tab displays the following information for all currently loaded SAIs:

Column Name	Contents
SAI file	The path to source files for the SAI—both read-only Master SAIs and User SAI files.
SAI ID	The SAI ID number for User SAI files. Master SAI files do not have an ID.
Description	A description of the SAI files.
Size/kB	The size of each SAI file (in kilobytes).
Versions	The number of application versions in each SAI.
Type	The type of SAI file: <ul style="list-style-type: none"> • Master SAI - Read-only SAI • User SAI - Editable SAI
Date	The creation date for a Master SAI file or for a User SAI, the date the file was last saved.

Column Name	Contents
SAI file	The path to source files for the SAI—both read-only Master SAIs and User SAI files.

Column Name	Contents
SAI ID	The SAI ID number for User SAI files. Master SAI files do not have an ID.
Description	A description of the SAI files.
Size/kB	The size of each SAI file (in kilobytes).
Versions	The number of application versions in each SAI.
Type	The type of SAI file: <ul style="list-style-type: none"> • Master SAI - Read-only SAI • User SAI - Editable SAI
Date	The creation date for a Master SAI file or for a User SAI, the date the file was last saved.

Storing Rule-Created Items

Any items encountered by the SAI Editor that were created by rules will be added to the SAI file specified in the SAIs used to store rule-created items box. These rules are present within the SAI files themselves. You can add more rules by using the SAI Editor.

To specify the SAI file used to store rules that you create:

Select the SAI file from the drop-down list. The drop-down list contains a list of the SAIs currently loaded.

If this field is left blank, the SAI Editor will create a file called Auto.zsai and put this in the same location as the first Master SAI.

For information about application teaching using rules, see Rule-Based Application Teaching.

Adding a New SAI File for Application Recognition

In addition to any SAI files already listed on the SAI List tab in the SAI Options dialog box, you can specify one or more other SAI files to use for application recognition.

To add a new SAI file for application recognition:

1. In the SAI Editor Options dialog box, select the SAI List tab.
2. Click the **Add** button on this tab.
3. Navigate to and select the SAI file (Master or User) that you want to load.

The SAI file is added to the list box which means the file will be included in the SAI Editor ready for you to view or edit.

Note: To import new SAI files, uncompress the SAI.zip archive file that is contained in the content pack and copy it on the client machine that is running Inventory Tools. Alternatively, you can export the SAI.zip archive file by using the package manager.

Removing an Existing SAI File

You can remove any of the SAI files listed on the SAI List tab in the SAI Options dialog box. When you remove an SAI file, it is no longer available in the SAI Editor.

To remove an existing SAI file:

1. In the SAI Editor Options dialog box, select the SAI List tab.
2. In the list box, select the SAI file that you want to remove.
3. Click the **Remove** button.

1. In the SAI Editor Options dialog box, select the SAI List tab.
2. In the list box, select the SAI file that you want to remove.
3. Click the **Remove** button.

Creating a New Empty User SAI

By using the SAI Options dialog box, you can create a new and empty User SAI file. This file will then be available for editing in the SAI Editor.

To create a new empty User.zsai file:

1. In the SAI Editor Options dialog box, select the SAI List tab.
2. Click the **Create** button. The Create a User SAI dialog box opens.
3. Enter or navigate to the directory where the SAI file is to be created.
4. Enter a description for the file.
5. Click the **OK** button.

The file is automatically assigned a unique ID. However, you may already have an SAI with the same filename. If so, a confirmation message will be displayed. If this happens, choose one of the following options:

- a. Click **Yes** if you want to overwrite the existing SAI file.
- b. Click **No** to return to the dialog box and assign a new ID to the SAI file.

6. If you have made modifications to the `cfgNextSAIID` setting in the `Analysis Workbench.ini` file, you may see the following message:

The next User SAI ID cannot be found in the settings file.

This probably means that you are using User SAIs created with a different version of the software, or created on a different machine.

Please take care to set the new ID to a value that is unique across your organization.




This may happen when the value for the ID in the `Analysis Workbench.ini` file is missing or lower than the highest ID in the user SAIs currently loaded. This message is for information only—the Universal Discovery components will correct this situation automatically by inserting the correct ID value into the `Analysis Workbench.ini` file.

License Relationships

License relations solve the problem of suite licensing simply and effectively. They are applicable to license relationships outside of what would normally be considered a software suite.

For example, Microsoft Office 2003 licenses Access, Word, Excel, PowerPoint and Outlook and is a well-known software suite. In addition, Outlook licenses MS Data Access Components (ADO) 2.1 SP1. If Outlook or another licensing application is not present on the machine, a license is required for the software; if Outlook is installed on the machine, however, Outlook assumes license ownership.

License relationships for a application release are represented by icons in the SAI Editor All Contents tab.

Icon	Description
	Indicates that the application also licenses another application.
	Indicates that the application is licensed by another application.
	Indicates that the application both licenses and is licensed by another application.

Viewing License Relationships

The License Relationship Editor is a non modal dialog box. This means you can have it displayed while working in the SAI Editor. Position the two dialog boxes on your screen so that you can work with both at the same time.

To explore license relationships:

1. In the All Contents tab, right-click a Release and select Explore License Relations. The License Relationship Editor is displayed.

There are three panes in this dialog box.

- Licensing Releases

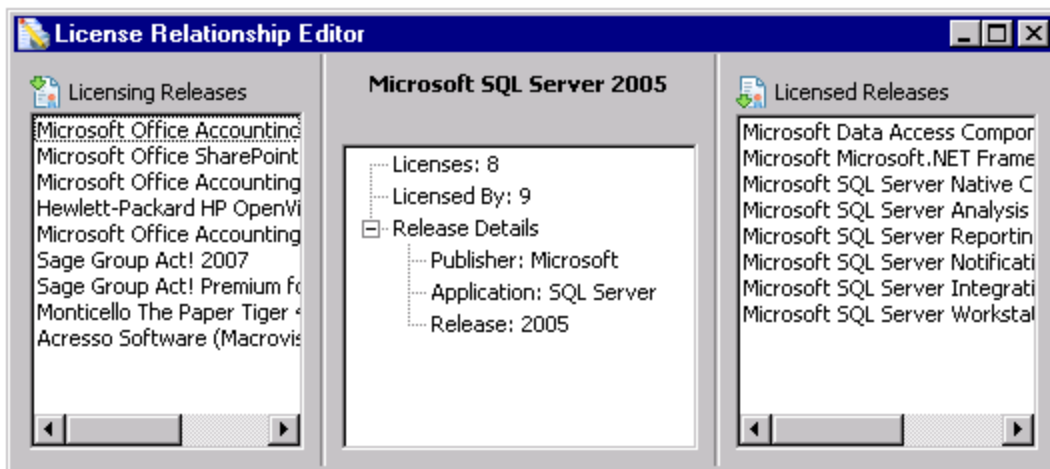
The applications listed in this pane are those that license the selected application.

- <Selected Application>

This is the application that was selected in the SAI Editor All Contents tab.

- Licensed Releases

The applications listed in this pane are those that are licensed by the selected application.



In this example, Microsoft SQL Server 2005 was selected in the SAI Editor All Contents tab. The center pane contains details for this particular application release.

- The left hand pane shows any applications that license Microsoft SQL Server 2005.
 - The right hand pane shows any applications that Microsoft SQL Server 2005 licenses.
2. Double click an entry in the left hand pane. This application becomes the focus in the center pane. For this example, Microsoft Office SharePoint Portal Server 2007 has been used.
 - The left hand pane does not contain any data because Microsoft Office SharePoint Portal Server 2007 is not licensed by any other application.
 - The right hand pane now shows the applications that Microsoft Office SharePoint Portal Server 2007 licenses (including the original Microsoft SQL Server 2005)



3. To return focus to the original application (Microsoft SQL Server 2005), double click the Microsoft SQL Server 2005 entry in the right hand pane. The center pane focus is now returned to this application.

By double clicking through various entries in the License Relationship Editor you can explore how these applications relate to each other regarding licensing.

1. In the All Contents tab, right-click a Release and select Explore License Relations. The License Relationship Editor is displayed.

There are three panes in this dialog box.

- Licensing Releases

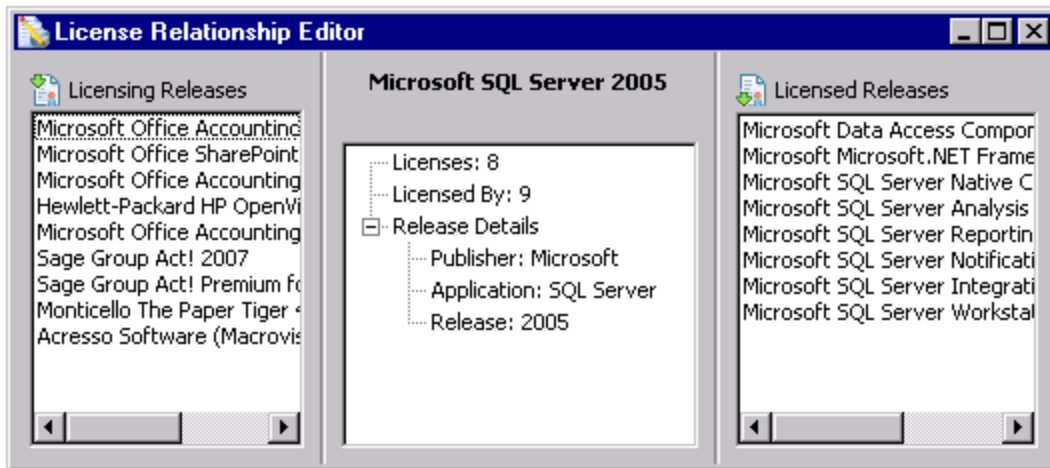
The applications listed in this pane are those that license the selected application.

- <Selected Application>

This is the application that was selected in the SAI Editor All Contents tab.

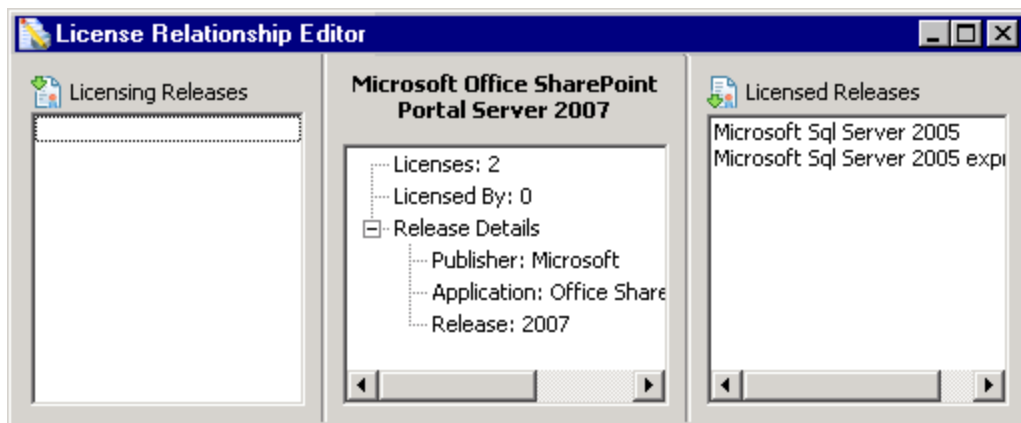
- Licensed Releases

The applications listed in this pane are those that are licensed by the selected application.



In this example, Microsoft SQL Server 2005 was selected in the SAI Editor All Contents tab. The center pane contains details for this particular application release.

- The left hand pane shows any applications that license Microsoft SQL Server 2005.
 - The right hand pane shows any applications that Microsoft SQL Server 2005 licenses.
2. Double click an entry in the left hand pane. This application becomes the focus in the center pane. For this example, Microsoft Office SharePoint Portal Server 2007 has been used.
 - The left hand pane does not contain any data because Microsoft Office SharePoint Portal Server 2007 is not licensed by any other application.
 - The right hand pane now shows the applications that Microsoft Office SharePoint Portal Server 2007 licenses (including the original Microsoft SQL Server 2005)



3. To return focus to the original application (Microsoft SQL Server 2005), double click the Microsoft SQL Server 2005 entry in the right hand pane. The center pane focus is now returned to this application.

By double clicking through various entries in the License Relationship Editor you can explore how these applications relate to each other regarding licensing.

- You can also right-click an entry and select the Explore Relations option instead of double-clicking.
- Right-clicking an entry and selecting the Go To option will show the License Relations page in the SAI Editor with the application selected.
- You can also right-click an entry and select the Explore Relations option instead of double-clicking.
- Right-clicking an entry and selecting the Go To option will show the License Relations page in the SAI Editor with the application selected.

Setting up a New License Relationship

This procedure shows you how to set up a new license relationship.

To set up a new license relationship between two or more applications:

1. Position the License Relationship Editor and the SAI Editor on your screen so that you can work with both at the same time.
2. Right-click the release of the application you want to set up the relationship for, and select the Explore License Relations option.

The License Relationship Editor is displayed with the center pane showing details for the selected application.

3. Return the focus to the main SAI Editor All Contents tab and navigate to the release for the application that you want to add.
4. Drag and drop the release entry from the SAI Editor explorer tree view to the left or right pane either of these panes as follows:
 - **Left hand pane**—This will be a licensing release. The application that you drag and drop will license the application in the center pane.
 - **Right hand pane**—This will be a licensed release. The application that you drag and drop will be licensed by the application in the center pane.

If you make a mistake, you can remove the entry by right-clicking on it and selecting the Delete

option.

5. Continue these steps as required.

Creating a License Relationship Using the Master SAI

You can use entries in a Master SAI file to create a new license relationship. Once created it will automatically be copied to a specified User SAI file.

The Master SAI will not be edited in any way.

The procedure for doing this is similar to that shown in [Setting up a New License Relationship](#).

1. Position the License Relationship Editor and the SAI Editor on your screen so that you can work with both at the same time.
2. In the Master SAI file, right-click the release of the application you want to set up the relationship for and select the Explore License Relations option.

The License Relationship Editor is displayed with the center pane showing details for the selected application.

3. Return the focus to the main SAI Editor All Contents tab and navigate to the release in the Master SAI for the application that you want to add.
4. Drag and drop the release entry from the SAI Editor explorer tree view to the left or right pane either of these panes as follows:

Left hand pane—This will be a licensing release. The application will license the application in the center pane.

Right hand pane—This will be a licensed release. The application will be licensed by the application in the center pane.

A Select User SAI dialog is displayed if you have multiple User SAIs:

5. Select the User SAI you want to create the license relationship in and click the OK button.
6. Continue these steps as required.

The Package Rules Tab

Viewing Package Rules

The Package rules tab shows a view of the package rules for an SAI.

For Master SAIs, the rules are pre-populated by HP and are not editable.

For User SAIs, you create the rules manually. For more information, see [Example of a Recognition Rule Using Installed Package Information](#).

The following information is shown for each entry in this tab.

- **Package Name** - The name of the package.
- **Package Type** - The types of the installed packages (such as MSI, RPM, etc.) to which the rule applies.
- **OS** - The operating system on which the application runs.
- **Language** - The language for the application.
- **Publisher** - The publisher of the application to which the package rule belongs
- **Application** - The application to which the package rule belongs
- **Description** - The brief description of the package rule.
- **Release Match** - The regular expression for the release name.
- **Release Format** - The format of the release name.
- **Version Match** - The regular expression for the version name.
- **Version Format** - The format of the version name.
- **Extra** - The extra regular expressions used in the rule.

Note: You can view the total number of the package rules in the current SAI in the status bar.

Editing the Properties of a Package Rule

This procedure is used to edit the properties for a package rule.

Note: You can only edit the package rule properties for User SAI files.

To edit the properties of an existing package rule:

1. Right-click the package rule to be edited and select the Properties option.

The Application Rule Wizard box appears.

Alternatively, you can also access the Application Rule Wizard by double-clicking the package rule to be edited.

2. Edit the details as required.

See Editing the Application Rules for more information.

3. Click the Finish button to complete the edit.

After you edit the package rule details, the amended details are displayed in the tree.

Navigating to the Application

This procedure is used to navigate to the application to which the package rule belongs.

To navigate to the application:

1. Right-click a package rule.
2. Select the Go to Application option.

You are led to the application to which the package rule belongs in the Application tab.

The Version Data Rules Tab

Viewing Version Data Rules

The Version Data rules tab shows a view of the version data rules for an SAI.

For Master SAIs, the rules are pre-populated by Hewlett-Packard and are not editable.

For User SAIs, you create the rules manually. For more information, see Example of a Recognition Rule Using Version Data.

The following information is shown for each entry in this tab.

- **File Name** - The name of the version data rule.
- **OS** - The operating system on which the application runs.
- **Language** - The language for the application.
- **Publisher** - The publisher of the application to which the version data rule belongs.
- **Application** - The application to which the version data rule belongs.
- **Description** - A brief description of the version data rule.
- **Release Match** - The regular expression for the release name.
- **Release Format** - The format of the release name.

- **Version Match** - The regular expression for the version name.
- **Version Format** - The format of the version name.
- **Extra** - The extra regular expressions used in the rule.

Note: You can view the total number of the version data rules in the current SAI in the status bar.

Editing the Properties of a Version Data Rule

This procedure is used to edit the properties for a version data rule.

Note: You can only edit the properties of version dates rules for User SAI files

To edit the properties of an existing version data rule:

1. In the tree, right-click the version data rule to be edited and select the **Properties** option.

The Application Rule Wizard box appears.

Alternatively, you can access the Application Rule Wizard by double-clicking the version data rule to be edited.

2. Edit the details as required.

See Editing the Application Rules for more information.

3. Click the **Finish** button to complete the edit.

After you edit the version data rule details, the amended details are displayed in the tree.

Navigating to the Application

This procedure is used to navigate to the application to which the version data rule belongs.

To navigate to the application:

1. Right-click a version data rule.
2. Select the **Go to Application** option.


You are led to the application to which the version data rule belongs in the Application tab.

Searching for Items in the SAI

How to Search for Items in the SAI

You can search for any item contained in the SAI using the Search in SAI dialog.

To search for a file in an SAI:

1. Click the  icon in the toolbar. The Search in SAI window opens.
2. In the **Search for items with a name containing** field, type all or part of the item you want to find. A history of search items is maintained and can be accessed from the drop down list.
3. Check the **Use Regular Expression** option if you have specified a regular expression in the name field above.
4. Check the **Limit to items also available in other SAIs** option if you want to limit the search to only those items that are also available in other SAIs. If an item exists in only one SAI, it will be ignored. This is useful for finding all items that appear in more than one SAI. This option is especially of interest with regard to application versions.
5. In the Search in pane, check the box next to those areas you want to include in your search. You can narrow your search by specifying the areas in which the search will be carried out. The default settings is that all criteria are selected - the entire SAI is searched.
6. Click **Search**. The results are shown in the bottom pane and are presented in a tree view.
7. Double click an entry to go directly to that item in the All Contents window.

In addition, you can use the local menu command, Copy to Clipboard, in the search dialogue. It allows you to copy the content of the search results into the Windows clipboard. The content is copied in a tab separated format, so that it can be pasted into another external application, such as Microsoft Excel, Windows Notepad, and others.

How to Use the “Limit to items also available in other SAIs” Option

There are some very good reasons why you would want to use this option when searching the SAIs that you create.

Consider the case of the user SAIs that you create for the applications that are not currently included in the master SAI. When a new monthly SAI update for master SAI files is available, you will want to search the user SAIs to show all versions in the user SAI that are also available in the new master set. This would highlight any possible clashes with the new master data. It is useful to know about these

clashes because in such cases an application that previously was recognized from a user SAI might change its recognition to be recognized as a master SAI version instead.

Another case to consider is the rule-based recognition applications that are created when you define rules in the user SAI. When these rules are triggered, they create applications in the auto.zsai (or whatever SAI file that you have designated to receive automatically generated versions). When you receive a new master SAI, you will want to search the content of the auto.zsai to find out if any of the new master SAI data include versions that were created by the rule-based recognition. Again, you want to track the cases when the recognition might change from a version in the auto.zsai file to a version in a master SAI. It is important to track these recognition changes only if the recognition data is linked to some external systems, such HP Asset Manager using the version IDs.

In both cases, the search procedure to identify these items is the following:


1. From the SAI list on the left, select the user SAI that you want to search.
2. In the Search for items with a name containing field, enter .*
3. Check the **Use Regular Expression** option indicating that all items will be found since the .* regular expression matches all items.
4. Check the **Limit to items also available in other SAIs** option.
5. In the Search in pane, check only the **Version Names** check box.

The result of this search shows all versions in the user SAI that are also available in the new master set.

Exporting the Contents of a User SAI to XML Format

- Only User SAI files can be exported.
- The XML file format is an easy way to share the SAI information with an external system. Since XML is a standard, open text-based markup language, there are many tools available that can parse it. For example, one can create a simple XSLT transform and convert this XML to an HTML web page, an XML document of a different format, or even a simple text file.

Exporting the Contents of a User SAI File

1. In the left hand pane of the SAI Editor, select the User SAI file you want to export.
2. Click the Export SAI  icon on the toolbar.

The SAI XML Export dialog opens.

3. You can select either **Export SAI Summary only** or **Export Complete SAI**. Samples of both types of export are shown in the following sections.

If you select Export SAI Summary only, you have the following options:

- **Include IDs:** If checked, the summary SAI includes item IDs in the exported XML. If unchecked, the IDs are not included.
 - **Include release relationships:** If checked, the summary SAI includes the release relationships in the exported XML. If unchecked, the release relationship information is omitted.
4. You can select the **Include items with no file data** option.

If checked, the export will also include items in the User SAI that are empty - that is, they do not have any files in them.

5. In the Export to file field, you can browse to or type in the location where you want the file saved. By default, the XML export is saved to the following file:

<DataFlowProbeInstallation>\runtime\probeManager\discoverySaiResources\saiRuntime

where **<dataflowprobeinstallation>** is the location where the Data Flow Probe is installed.

6. Select the Open file in default XML viewer option if you have an XML viewer already installed on your machine and it has been associated to XML file types. This option automatically opens the file with that application once the export has been completed.
7. Click **Export** to complete the procedure.

Examples of XML Export

Example of a Summary XML Export

The Summary export shows details of the application only:

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```
<sai description="User SAI File" type="User" id="0" version="281" revision="0" timeStamp="2004-05-20 10:28:55" exportType="Data for items without files is included">
```

```
<publisher name="3Com">
```

```
<application name="3+open/Ian Manager" applicationType="Utilities">
```

```
<release name="Standalone Releases">
```

```

<version name="x.x" operatingSystem="<generic>" language="English" />
</release>
</application>
</publisher>
</sai>

```

Example of a Complete XML Export

This type of export is a complete dump of the User SAI contents. All items are displayed showing their IDs. The Application Types, Operating Systems and Languages contained in the SAI are also shown with IDs.

```

<sai description="User SAI File" type="User" id="0" version="281" revision="0" timeStamp="2004-05-20
20
<application id="2334" name="3+open/lan Manager" apptypeld="8">
<release id="4330" name="Standalone Releases">
<version id="6799" name="x.x" osId="0" languageld="2304">
<file name="3comemm.com" type="Associated" size="4289" />
</version>
</release>
</application>
</publisher>
</sai>

```

Importing Data

Importing Data from Recognition Result




The SAI Editor has a feature that allows you to load in a scan file and check what the recognition results will be. You can also use this feature to add files from the scan file directly to User SAI.

To check scan file recognition:

1. Select the Import Data from Recognition Result option from the Tools menu. The Recognition Verification window is displayed.
2. Navigate to the scan file to perform recognition on. You can also apply filters on files to be passed to the recognition engine.
 - By extension
 - Executable files
 - Files within archives
3. Click the **OK** button.

The Recognition Result Import dialog is displayed with the Files tab showing.

This tab shows how files were recognized in the scan file. Icons are used to indicate the following:

Icon	Description
	Has been recognized with a high degree of confidence.
	Has been recognized, but the recognition cannot be guaranteed 100%.
	Does not exist in the Master SAI and has not been recognized.

The right hand pane shows the SAIs to which you can add files.

Note: You cannot add files to the Master SAI.

4. In the right hand pane, select the SAI file to which you want to add the file(s), and navigate to the applicable Application version.
5. In the left hand pane, select the file(s) to be added to that Application version. Multiple files can be selected by holding down the SHIFT/CTRL key while clicking on the files.

Before you select the files to be added, you can sort the files displayed by clicking on a column heading. For example, you can click on the Package column on the Files tab to sort files by package. All files belonging to a particular package will then be grouped together, even though they may be located in different directories scattered throughout the file system. The ability to sort files based on their package allows you to easily teach all files belonging to a particular package. Simply select all of the grouped files belonging to that package.

6. Drag and drop the file(s) directly onto the application version in the right hand pane
 Alternatively, select both the files in the left hand pane and the Application version in the right hand pane. Then click the Add button.

An Importing Files dialog box is displayed.

7. Right-click the file(s) to be set the relationship to the application. Multiple files can be selected by holding down the SHIFT/CTRL key while clicking on the files.
8. Select the relationships from the Main, Associated, and 3rd Party options.
9. Click the OK button.

The files are now added to the selected application version in the SAI.

Importing Data from a Scan File Comparison

Before you start this procedure, ensure that you have done the following:

- Started with a scan of the machine before the application is installed.
- Installed the application.
- Taken a scan of the machine after the application has been installed.

To import data from a scan file comparison:

1. Create a new version for the application in your SAI file, unless you want to add files to an existing version.
2. Click the version in the tree view, and select the Import data from Scanfile comparison option from the Tools menu. The Scanfile Comparison Teaching Configuration dialog appears.

The wizard requires two scan files. The first scan file (pre-installation scan file) is the result of a scan performed on a machine prior to the installation of the program and the second (Post-installation scan file) is the result of the scan of the same machine after the new version was installed.

- Enter the path to the pre-installation scan file.
 - Enter the post-installation scan files. Click the Add button and navigate to the file. You can specify more than one file for cases where patches need to be installed too.
3. Click the **Load Filter** tab.
Set options in this dialog to specify which files should be loaded and optionally passed to the recognition engine.
 4. In the Files tab, select the Load filter, and choose one of the following options:
 - **All files**—Loads all files.
 - **No files**—No files are loaded. For example, for hardware only analysis.

- **Some files**—Enables the Some files options:
 - **By extension...** This allows you to specify the extensions of any files that you want to be included. Select the extensions from the drop-down list (this list maintains a history of previously entered extensions) or type the extension directly in to the box. Multiple extension must be separated by semi colons.
 - **Executable files**—This will allow all executable files to be processed against the recognition engine. Executable files include *.exe, *.dll, and other files containing executable code.
 - **Files within Archives**—This will process any files in archive files (for example, Zip files, CAB, LZH). When this option is checked, any files matching the other criteria (extension and/or executable) are loaded, even if they are inside an archive. If the option is cleared, no files within archives are loaded.

If this is the only option enabled, nothing is loaded - it is not possible to load only files within archives.

5. In the Directories tab, specify the directories to exclude.
6. Select the **Exclude files in these directories** check box.
7. Place the cursor in the list box and type in the path (do not include the drive letter) of the directories to be excluded. An example of the format is as follows:

WInNT\NServicePackUninstall\$

8. You can save the current list displayed in the list box. To do this, click the **Save list** button and specify the filename and path of the text file to save to. The default filename is dirlist.txt.
9. You can load a previously saved text list file by clicking the **Load list** button to display a dialog box. Enter the filename and path or navigate to the file to be loaded.
10. Click the **OK** button.

The Scanfile Comparison Import dialog is displayed.

The right hand pane shows an explorer-like tree view of the SAI files loaded. Expand the tree down to the version you want to add the files to.

Three tabs are available in the left hand pane:

- New Files

This page shows new files added by the installation.

- Changed Files

This page shows files that have been picked up that differ between the two scan files.

- Unchanged Files

This list shows those files that were unchanged by the upgrade of the named version but are nonetheless part of the new version. You can change the version named by clicking the 'Click here to change'. An SAI Browser dialog is displayed. Navigate to the new version and click OK.

11. Drag and drop any files to be taught onto the correct version in the right hand pane.
12. Click the **Close** button when you have finished.

Importing Data from an MSI File

This section describes how to use the MSI Importer to import applications from an MSI file into a User SAI without having to install them or perform and scans of machines.

Overview of the MSI Importer

The MSI Importer can be used to teach any application that was packaged using the MSI Installer. This module allows software teaching based on an MSI file, which removes the need to install and scan software in order to add it to a User SAI.

MSI is short for Microsoft Installer and was introduced with Windows 2000, although Microsoft provides MSI as a separately deployable piece of software that can be added to older Windows operating systems.

To distribute an installer for a piece of software, a publisher no longer has to rely on proprietary installer packages for managing creation of directories, registry entries, copying of files, or uninstallation. If instead the installer is distributed as one or more MSI files, the MSI process in Windows takes care of the details.

The MSI Importer is an SAI Editor module that uses this standard to add applications packaged in MSI-based installers directly to User SAI files without having to install them first.

To teach the contents of an MSI files in the SAI Editor

Use the MSI Importer to view the structure and contents of the file. See Components of a Software Installation.

Once you have become familiar with the structure of the MSI file, teach the contents of the MSI file to a User SAI. See An Example of Teaching an MSI Based Installer to the User SAI.

The MSI Importer supports standalone msi files, Microsoft's self-extracting installers, and installers that were generated using some versions of the Wise for Windows Installer. For handling InstallShield generated MSI installers, see How to Open an InstallShield MSI Installer in the MSI Browser.

Further Information

You can find comprehensive information about the MSI standard at:

<http://msdn.microsoft.com>

The Advantages of Using the MSI Importer

- Speed

The overhead of having to install the software and scan the machine is removed.

- Convenience

The teaching is accomplished using only one computer, as the need for a separate 'clean' computer to install the software is removed.

- Completeness

An installer often contains files that are only installed under certain conditions. For example, an application might require certain extra libraries under older operating systems to make up for missing functionality available under newer versions of Windows. Using the traditional method of installing software before teaching it, these extra files would only be found if the correct combination of software and operating system was used during installation. The MSI Importer, on the other hand, retrieves all of the files available in the installer.

The Challenges of Using the MSI Importer

- Understanding MSI structure

With MSI, every installation is different. It is necessary to browse the MSI Installer (and its associated directories) to understand how the installer has been structured before teaching the application.

It is also necessary to understand what components the application has. For example, the same installer might contain application Server and Client components. While browsing, special attention should be paid to shared components included in the MSI installer. Some of them may already exist in the Microsoft library applications, such as MSDE (Microsoft SQL Server Desktop Engine) or DAO components.

- Lack of MSI installations

More and more software companies are adopting MSI as their installer platform. However, it will be some time before all software companies ship their products in MSI Installers. For these products, the traditional method of scan-install-scan-teach will still have to be used.

- Hybrid MSI Installers

Some MSI installers invoke legacy proprietary installers to install some components of the product. The files in the invoked legacy installers will not be available for teaching from the MSI Importer.

Components of a Software Installation

A software publisher must provide three components when publishing an application:

- The MSI System installer
- The .msi file
- The Setup.exe file

MSI was introduced with Windows 2000. Consequently, some computers will not be able to install MSI-based installers if they are provided only as .msi files.

It is for this reason that most MSI based installers are still invoked by running an executable file usually named Setup.exe.

The Setup.exe file:

1. Checks to see if the MSI system is installed
2. Installs it, if necessary
3. Once it has done the previous two steps, invokes the installation of the .msi file.

The MSI system is available as a downloadable module from Microsoft. This module can be installed for the purpose of MSI installation.

Locating the MSI and Setup Files for Different Application Installations

There are two ways in which a software application can be made available:

- Applications Shipped on a CD
- Applications Downloaded from the Internet
- Applications Shipped on a CD

Note: When loading such an installer into the MSI Importer, load the .msi file.

If the application is shipped on a CD, all three of the components will normally be placed separately on the CD. An installer packaged in this way may be identified by the following:

- A .msi file will be found in the same directory as the Setup.exe file.
- The Setup.exe file will normally be no larger than 1 MB
- An installer for the MSI system will be located either in the same directory or in a subdirectory.

Applications Downloaded from the Internet

When importing a self-extracting installer to the MSI Importer, load the Setup.exe. The MSI Importer will display an error message if you attempt to load an unsupported installer package.

If the application is downloaded from the Internet, a publisher will typically provide a single-file download. The Setup.exe file will be a sophisticated self-extracting archive containing the other two components.

You can identify this type of installer by the following:

- There is no associated MSI file
- The Setup.exe file will be several MB in size.

Other MSI Files on the Install Media

Often a search of the install media (the CD) will reveal a number of additional .msi files in subdirectories. These .msi files are usually installers for additional components the publisher provides with the application. Examples of these are required system updates and third-party database engines.

You will need to examine these .msi files to determine whether their contents should be added to the application in the User SAI file.

- If the MSI appears in the nested installers tab, it should be taught - but only once.
- If the .msi file was provided by another publisher then its contents should either be added to the application as third party files or, in case when a component exists as a separate application, the MSI file data should be taught to the respective application. The connection between the two applications should be established through License Relations (see License Relationships on page 286).
- If the software publisher has provided one of the additional .msi files themselves, then its contents should either be added to the application as associated files or, in the case when the supplied component exists as a separate application, the data should be taught to the respective application. The connection between the two applications should be established through License Relations (see License Relationships on page 286).

MSI Installers and External Files

Some of the files referenced by an MSI file might be outside the MSI Installer package itself. This may take the form of a relative path directory structure or an Cab file outside of the MSI.

If an MSI file is moved, for example, it might cause a problem if external files are referenced. Always check the MSI Reading Log page to see if a CAB Missing Error has been displayed. If this is the case, ensure that all the files are in the correct locations. If you have copied a file from a CD, ensure that all the external files have been copied too.

Identifying Main Files

The Main file will probably be pointed to by a Windows shortcut installed in the Start menu. Use the list of shortcuts to identify and add the Main files. Bear in mind that an application may have more than one shortcut, and that not all of those shortcuts will point to Main files. You will need to examine the file and its internal version information to determine whether it is a Main file.

You can view more information about the list of shortcuts on the Summary page of the MSI Importer. See Summary Tab on page 307 for further information.

Identifying Third Party Files

Third Party files can be identified by checking the name of the publisher in the version information contained in most executable files. If the publisher name specified differs from the publisher of the product, the file is a third party file.

You can view the version information in the MSI Database page of the MSI Importer. See MSI Database Tab for further information.

The Structure of an Application Packaged in an MSI Installer

An application packaged in an MSI-based installer is divided up by the software publisher into:

- Features
- Components

A Feature can contain any number of Components. Essentially, when you decide to install a feature, you are deciding to install all of the Components that comprise that Feature.

Features

A Feature is a part of an application's overall functionality that is user recognizable and can be installed independently.

For example, a Feature could be a spell-checker, a thesaurus, or a group of clip art. Hierarchical relationships of parent and child Features commonly exist such that if a child Feature is installed, the parent Feature is automatically included as well.

Every, MSI-based installer contains a tree-like structure of Features. Each Feature could potentially contain children. If you decide to install a Feature then you could further decide whether or not to install its children.

Components

A Component is a piece of the application or product to be installed. Example of Components included single files, a group of related files, COM objects, registration, registry keys, shortcuts, resources, libraries grouped into a directory, or shared pieces of code such as MFC or DAO.

Components can appear in more than one Feature.

How to Open an InstallShield MSI Installer in the MSI Browser

InstallShield is a popular installer authoring tool, used by many people worldwide. While the SAI Editor is unable to extract MSI files directly from InstallShield installers, it is possible to use the installer itself to extract the required files.

How Can You Tell if an Installer is Built Using Installshield?

When installing the application, the words “preparing the InstallShield wizard” appear somewhere in the text of the opening page.

How Can You Tell if an Installer is MSI Based?

Very shortly after starting the installer, the Windows Installer screen will be shown. The graphic on the left hand side is characteristic of MSI based installers.

Importing the InstallShield MSI Based Installer

The process to import an InstallShield based MSI installer takes advantage of the fact that InstallShield extracts the MSI in its entirety to the TEMP directory when it runs.

Start the installer and leave it open while you import the MSI and cancel it afterwards. When the installer closes it will delete the MSI and associated files that it extracted to the TEMP directory.

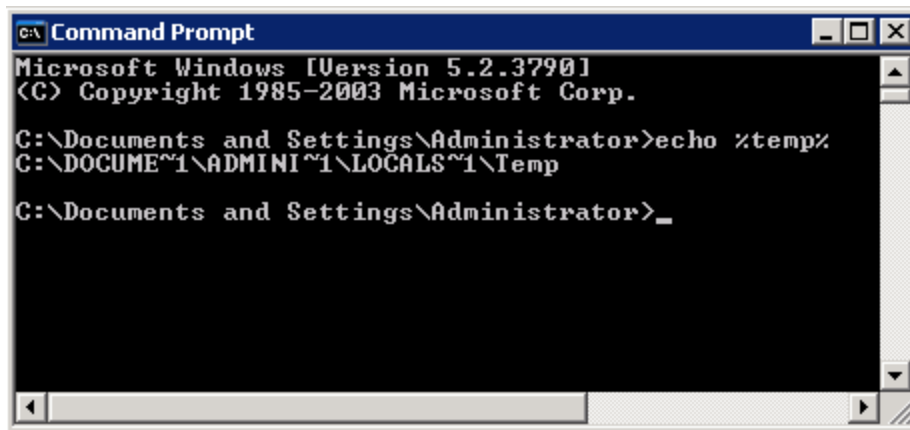
1. Start the installer.
2. Wait until the installer stops and waits for user interaction. This could be the Welcome page of the installer, or even an error message indicating that the installer cannot continue, like the following:

Another version of this product is already installed. Installation of this version cannot continue. To configure or remove the existing version of this product, use Add/Remove Programs on the Control Panel.

3. Leave the installer open and waiting for interaction until you have finished this process. If you close the installer it will delete the MSI file that you are attempting to import.
4. Determine where your temp directory is on the system. You can do this by opening a command prompt, and typing the following:

```
echo %temp%
```

For example:



```

C:\ Command Prompt
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\Administrator>echo %temp%
C:\DOCUMENTS~1\ADMINI~1\LOCALS~1\Temp

C:\Documents and Settings\Administrator>_

```

5. Select **Import Data from MSI from the Tools** menu
6. Enter (copy and paste or type in) the TEMP location revealed above.
7. Look for a directory named `_is*` where `*` is any combination of alphanumerical characters.
8. You will find the extracted MSI file in this directory. Select it.
9. When you have finished importing the appropriate files, the installer can be closed. You can also cancel the installation (you do not need to install the application).

The MSI Importer Workspace

Note: To emphasize the MSI file detail, the screen images shown in this section do not include the Destination SAI pane on the far right of the MSI Import window.

Launching the MSI Importer

To launch the MSI Importer:

1. In the SAI Editor, select the Import Data from MSI from the Tools menu.
A File Open dialog is displayed.
2. Navigate to and select the installer file (this is either the `setup.exe` or the `.msi` file depending on how the publisher published the application).

For further information on which file to choose, see [Locating the MSI and Setup Files for Different Application Installations](#).

The Import MSI Installer workspace is displayed.

The Import MSI Installer window is non-modal. This means you can have it displayed while working in the SAI Editor. Position the two windows on your screen so that you can work with both at the same time.

The MSI Importer window consists of four tabs.

1. Summary
2. MSI Database
3. Actions
4. MSI Reading Log

Note: The Actions and MSI Reading Log tabs are optional and will be visible only if there is something to show in them. Whether they appear or not depends on a particular MSI used.

Summary Tab

The Summary page shows information extracted from the MSI file.

Product Details

- Product Code

The product code is an ID that is the main identifier for an application or product.

- Upgrade Code

This is an identifier used by the MSI system to determine which installed products are affected by a given upgrade.

- Manufacturer

The software application publisher

- Name

The name of the application. This is the application's install string.

- Version

The version of the application

- Package Code

The package code is an ID identifying a particular Windows Installer package. It associates an .msi file with an application or product.

- Product Code

The product code is an ID that is the main identifier for an application or product.

- Upgrade Code

This is an identifier used by the MSI system to determine which installed products are affected by a given upgrade.

- Manufacturer

The software application publisher

- Name

The name of the application. This is the application's install string.

- Version

The version of the application

- Package Code

The package code is an ID identifying a particular Windows Installer package. It associates an .msi file with an application or product.

Shortcut information

Lists the shortcuts this installer created and shows the targets under each shortcut.

The following information about the shortcut is given:

- Name of the shortcut
- The Directory the shortcut points to
- The file pointed to
- The Component to which the file belongs
- A description of the shortcut command
- Any arguments applied if relevant
- The Working directory

The **Go to** button is only enabled when you select a Feature or if a shortcut's target exists in only one feature and you select the shortcut. If you select a shortcut in this pane and click the Go to button you will be automatically redirected to the MSI Database tab and the file will be highlighted.

Warnings

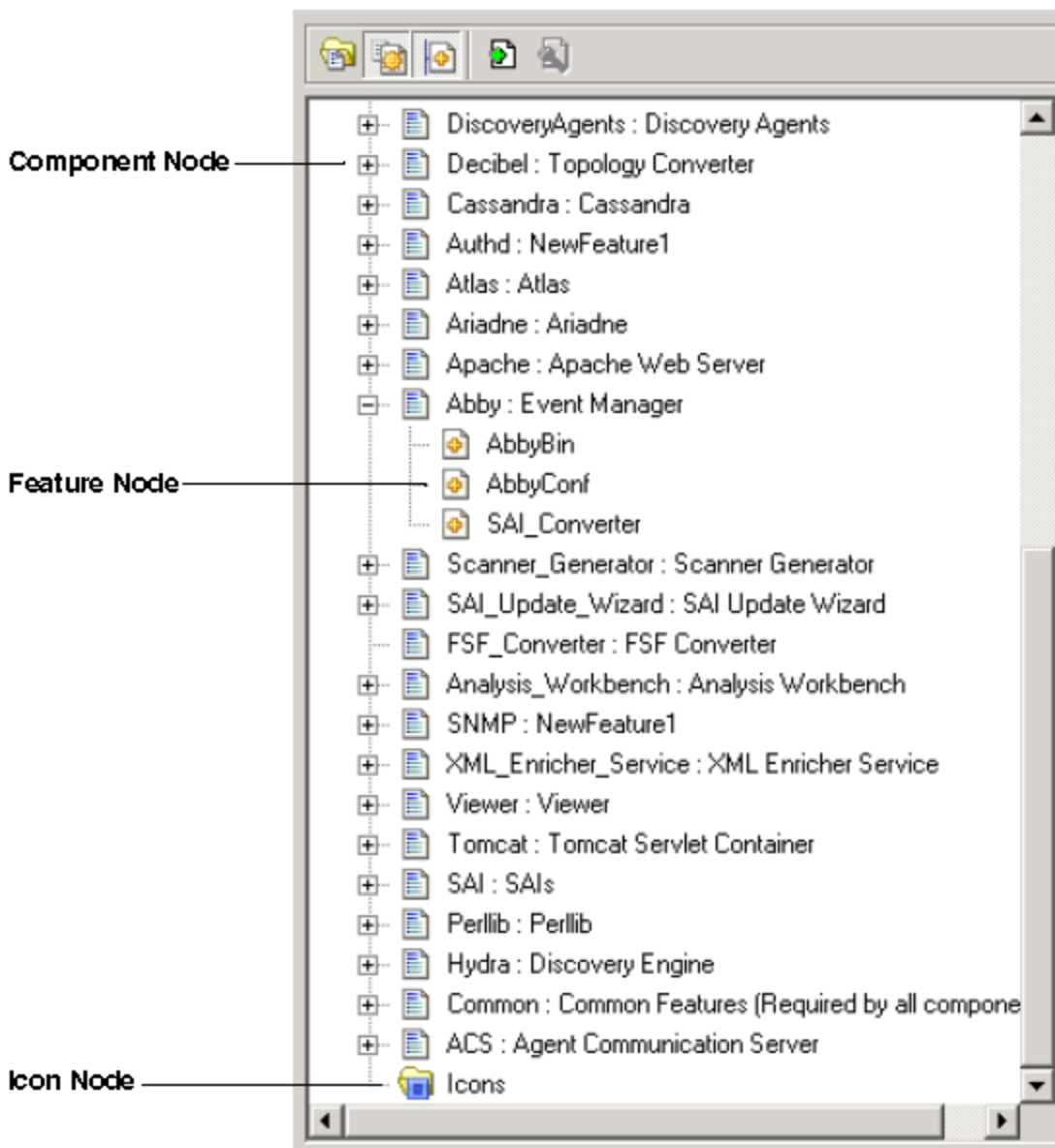
Warnings are provided whenever actions are found that require further examination. You will need to examine the entries associated with the action warnings and decide whether they are files that need to be taught to the application and what relationship they have with the application. Examine the warnings by clicking on the links in the bottom pane. You will be automatically directed to the appropriate place in the Actions tab.

MSI Database Tab




The MSI Database tab has several components:

- The Features and Components tree
- The Files pane
- The Version Information pane
- Toolbar
- The Features and Components Tree

The Features and Components tree displays a tree view of the features and (optionally) their child components.



This displays a tree structure of the features and (optionally) components contained in the installer. The following icons are used to differentiate between the three types of node:

- Feature Node 
- Component Node 
- Icon Node 

Icons are stored in different locations. They are extracted and placed into the Icon node.

A pop-up menu item (Import Files) is displayed when you right-click the selected Feature Node. This option allows you to import the files contained in the Feature Node into the version selected in the SAI Editor.

The Files Pane

The Files pane lists the files contained in the Feature or Component currently selected in the Features and Components tree.

The Files pane displays a list of the files belonging to the currently selected node.

If the node is a Feature and the Show Component Node toolbar option is not selected, the Feature will contain the files that belong to all of its (now invisible) Component nodes. You can find further information about the toolbar options on page 310.

Due to the legacy of MS DOS, the file name is stored in the MSI in two versions.

- The old-style MSDOS 8.3 format (with eight characters, a full stop, and then a three character extension)
- The more recent mixed-case long version

Both of these names are displayed in the Files pane separated by a '|'. For example:

IMAGES~1.EXE|ImageSlicer.exe

If the MSI Importer was unable to extract a file from the installer in order to scan it then that file's icon will have a red 'No Entry' Symbol superimposed on it to indicate this.

You can find more information about why the file could not be extracted in the Messages tab.

Pop-Up Menu

Two pop-up menu items (Find Files and Import Files) are displayed when you right-click a file.

- Find File

The SAI Editor will search its database for other occurrences of the selected file. The SAI Editor's Search in SAI dialog is displayed.

- Import Files

This option allows you to import selected files into the version selected in the SAI Editor.

The Version Information Pane

The Version Information pane displays the version information from the currently selected file.

The Version Information pane displays data that the MSI Importer has extracted from the file currently selected in the Files pane. If no information was extracted from the file, this pane will be blank.

The information in this pane is exactly the same as the version information that the Scanners extract from a file during a normal scan of a computer. It is commonly used to determine the original publisher of the file so that the file relationship to the application (main, associated or third party) can be determined.

Toolbar


There are two types of buttons available from the toolbar:

- Functional Buttons
- Option Buttons

Functional Buttons

There are two functional buttons in the MSI Importer toolbar:

Find File

Clicking the Find File button  while a file is highlighted will cause the SAI Editor to search for other occurrences of the selected file. The Search for Files window is displayed.

Add Selected Files to a Version

Clicking the  button imports the selected files into the version selected in the SAI Editor.

It has the same effect as dragging the currently selected item from the Features and Components tree or the Files pane (whichever was last clicked) to the currently selected version node. If no version node is selected, this button will appear greyed out.

When the mouse pointer passes over an icon, a tooltip appears indicating the command corresponding to the icon.

Option Buttons

Three option buttons are also available from the toolbar. All three of the option buttons are sticky buttons.

- If the option is selected the button appears depressed
- To de-select the option, click the button again and the button returns to its normal state

Hide Features With No Files

Enabling this option causes the SAI Editor to only show those Features that contain files. Features without files in an installer are typically containers for registry entries, shortcuts and services, and as such are not used to teach to the application library. They therefore appear empty in the tree and can safely be ignored. This option makes them invisible.

When enabled, the MSI importer queries the information on all Features and Components before it displays the tree. This could take some time on larger installers.

The option to remove empty Features is carried out before the option to Show only executable files. This means that if a node has only non-executable files, it will still appear in the tree even though the Show Only Executable Files option has caused it to be empty.

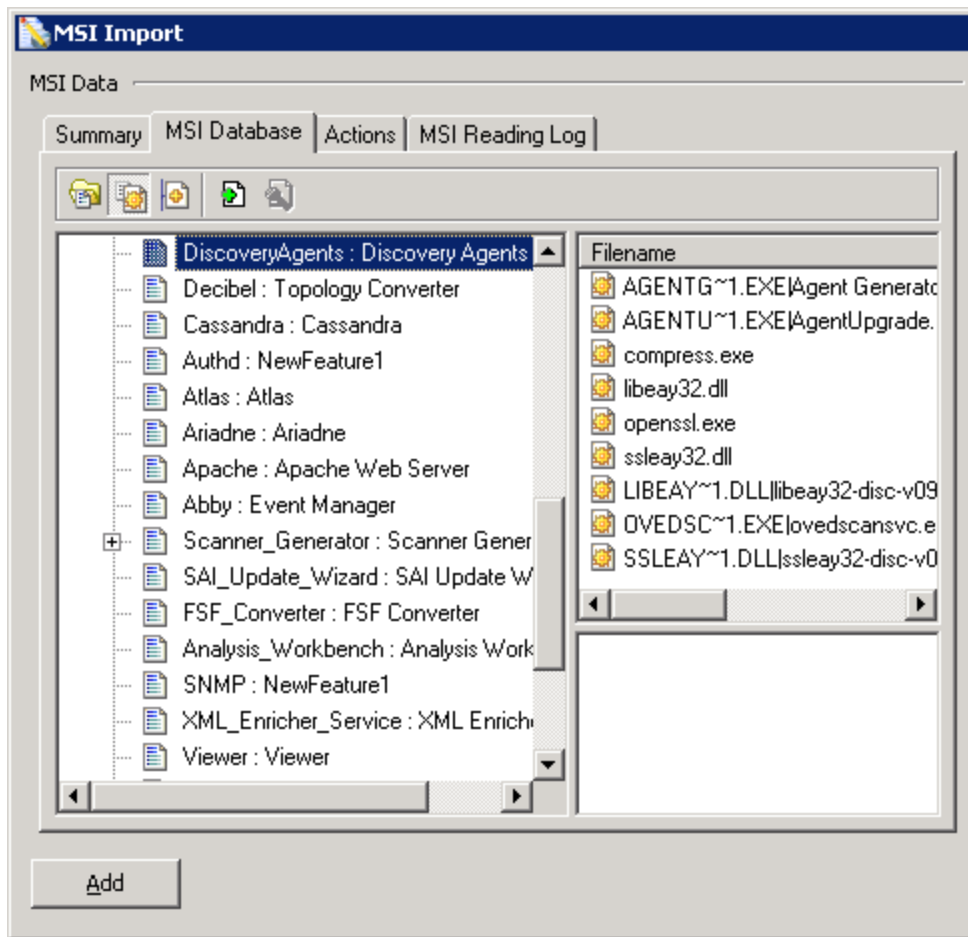
Show Only Executable Files

When this option is enabled only those files that were identified as executable are visible. Further, only the files displayed will be added during imports. This is the default setting, as non-executable files should not be added.

Show Component Nodes

When this option is enabled, the Features and Components tree will contain a node for every Component. This is a true reflection of how the MSI-based Installer is structured internally. That is, a Feature does not contain files directly when this option is applied. All of the Features contain Components, and those Components in turn contain the files. This is useful for determining the origin of a particular file.

When the **Show Component Nodes** option is disabled, the Component nodes are not shown. All of the files contained in the Component nodes are placed directly under the Feature node. While this is a less accurate view of the installer, it is more user-readable. You do not have to click the hundreds of Component nodes to view the files a Feature would install.



In the example above, note how the files that were shown for each individual component now appear with the parent feature of those components.

Actions Tab

This page lists the actions that the MSI Installer invokes during the installation process. It is necessary to examine these actions in order to determine whether any of them will install files not contained in the MSI.

- Nested Installers

A nested installation action installs another Windows Installer package during a currently running installation. A nested installation action can only reinstall or remove an application that has been installed by the current application's installation package.

- Called Executables

This page shows any actions that may install some other executable files.

- DLL Calls

This page shows any dll calls that may have been made.

- Invoked Scripts

This page shows any scripts that may have been invoked

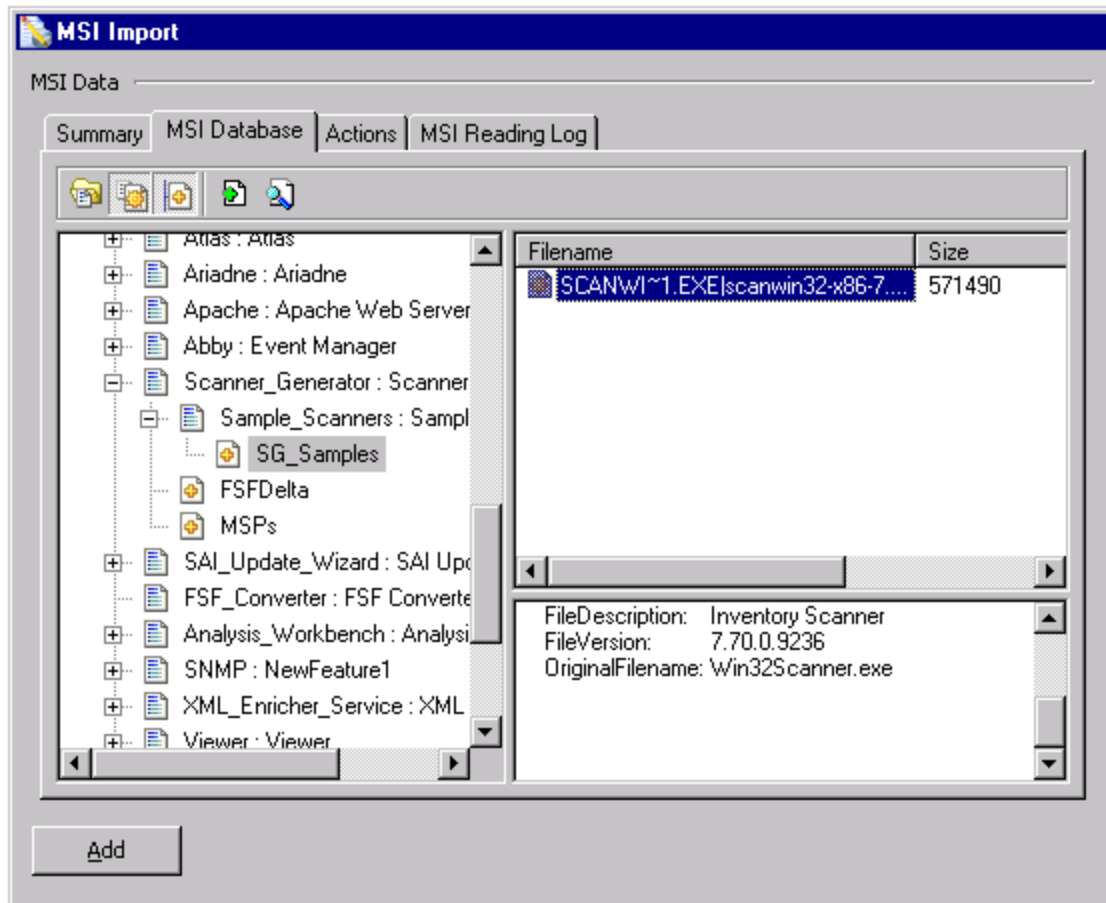
MSI Reading Log Tab

The MSI Reading Log tab is used to view the log. It displays messages generated by the MSI Importer when reading the MSI-based Installer.

An Example of Teaching an MSI Based Installer to the User SAI

Step 1 Importing the MSI Installer Package

1. Select **Tools > Import data from MSI**.
2. From the Open dialog, navigate to and select the MSI file to use. The file will have an extension of .msi or .exe.
3. Click the MSI Database tab to examine the contents of the MSI file.

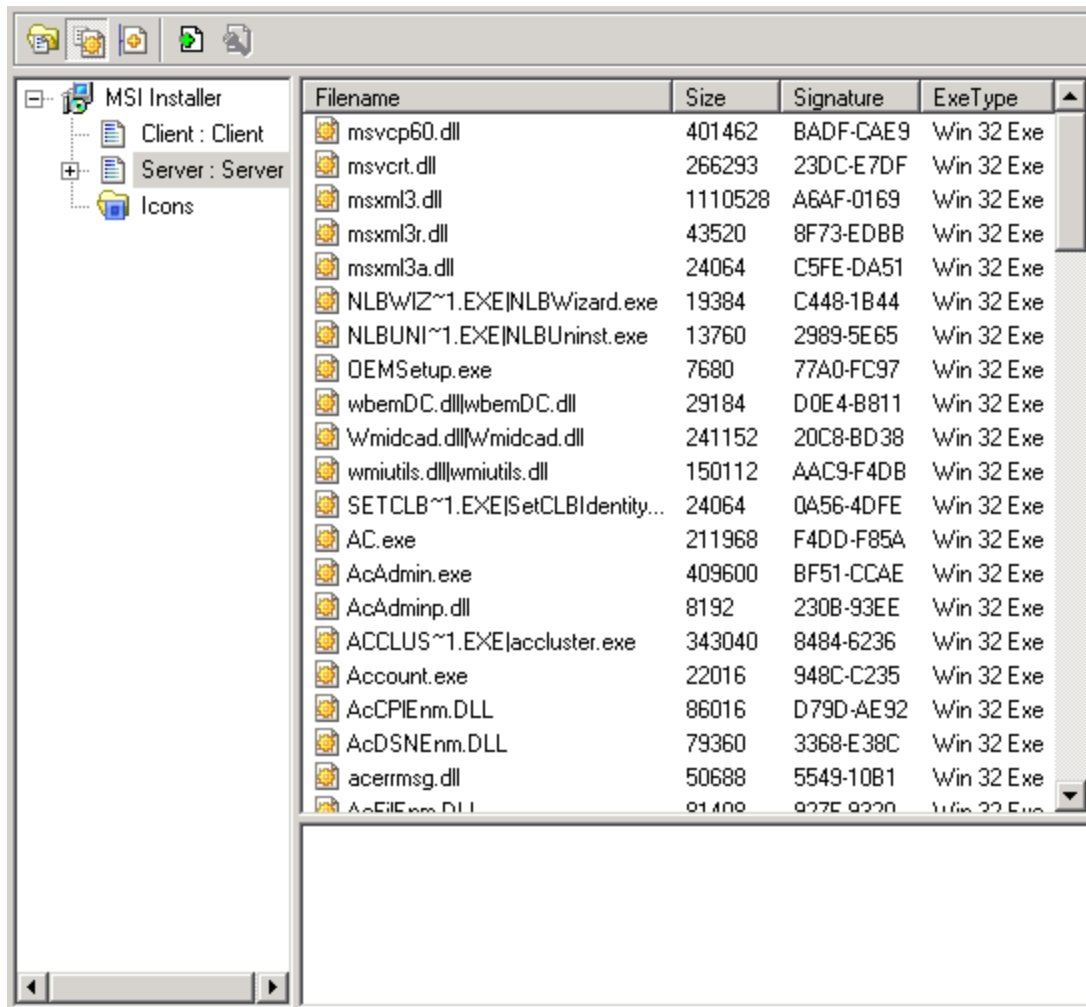


In this example, there are several features. Features are displayed in the following way and are indicated by the  icon.

Unique Name Key: Display name

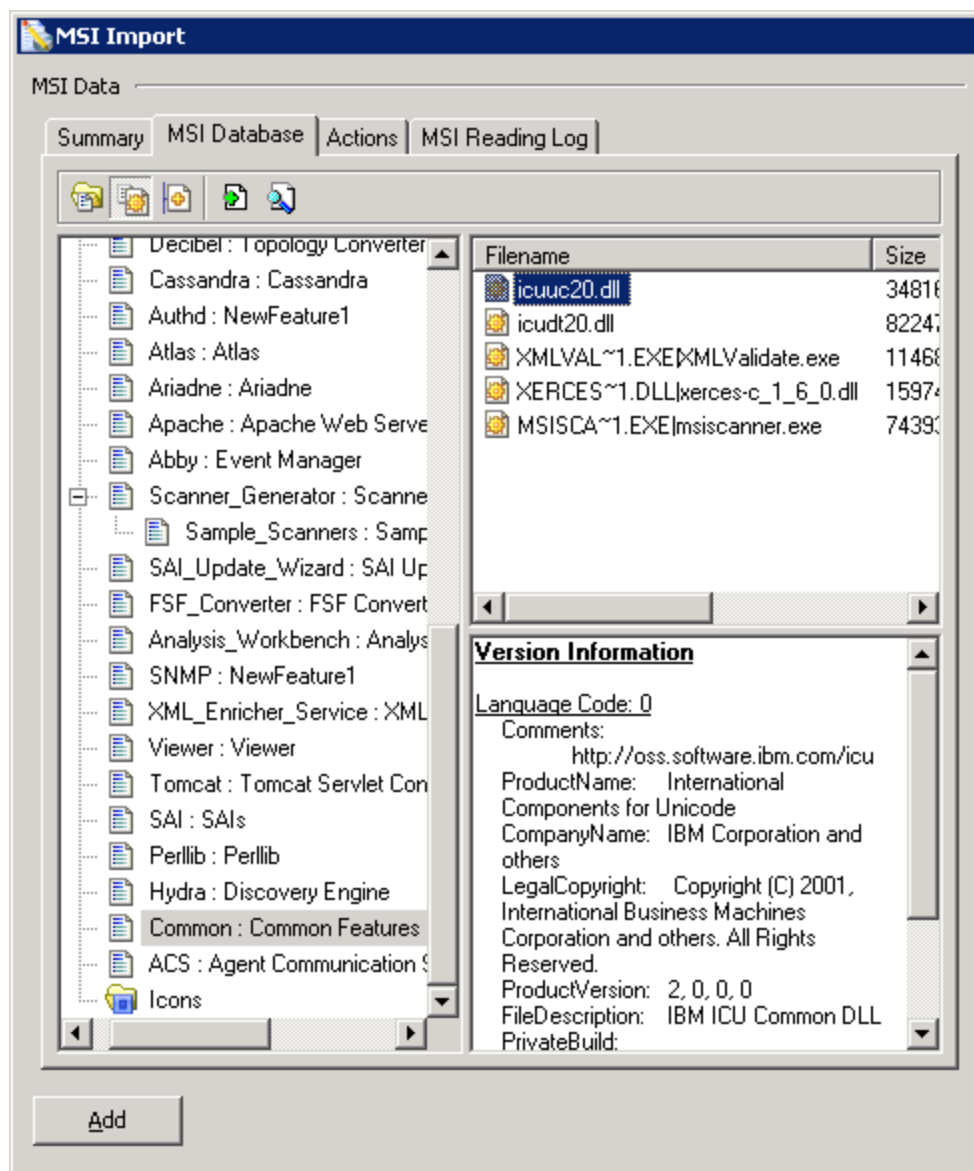
If we look at the Scanner Generator Feature entry we can see that the Unique Name Key is Scanner_Generator, while the display name has no underscore.

Looking through the MSI structure, look for the components of the application that can be installed separately and therefore should be taught as individual applications. For example Client/Server parts (see the example below) or some shared applications that are also packaged in the installer, for example MSDE or DAO components.



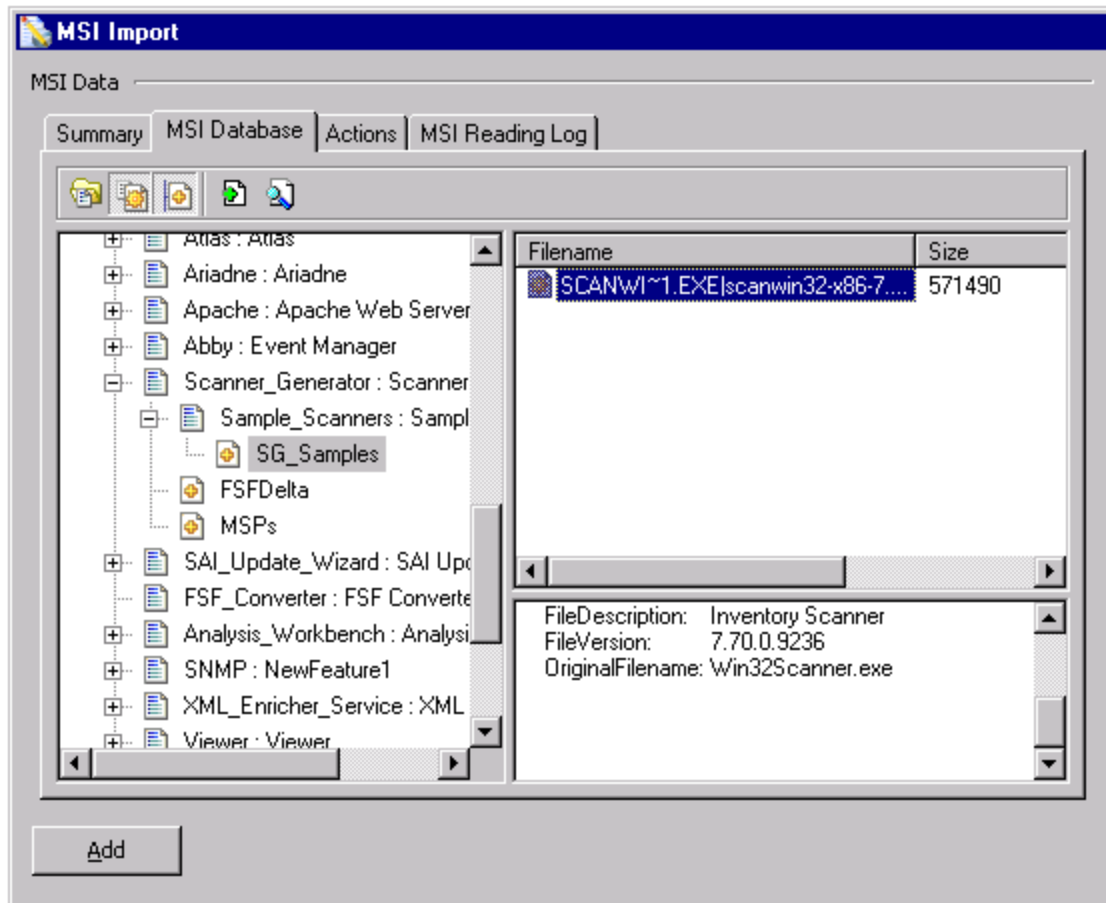
This example displays the contents of the Microsoft Applications Center 2000 SP2 installer. The same installer contains both Server and Client components of the application.

4. Click the Show Only Executable Files button on the toolbar and make sure that all other toolbar buttons have been deselected. Now you will see only executable files.
5. Check the Company Name and see if it is the same as the Manufacturer entry in the Summary tab.
6. You can do this by clicking on the executable file name in the Files pane and looking at the Version Information displayed in the pane below. In this case the Company Name is the same as the Manufacturer entry in the Summary tab.
7. However, had it not been the same, you would then add the file as a third party file. An example is shown below.



Here we can see that the Company Name is IBM Corporation.

1. Select **Tools > Import data from MSI**.
2. From the Open dialog, navigate to and select the MSI file to use. The file will have an extension of .msi or .exe.
3. Click the MSI Database tab to examine the contents of the MSI file.

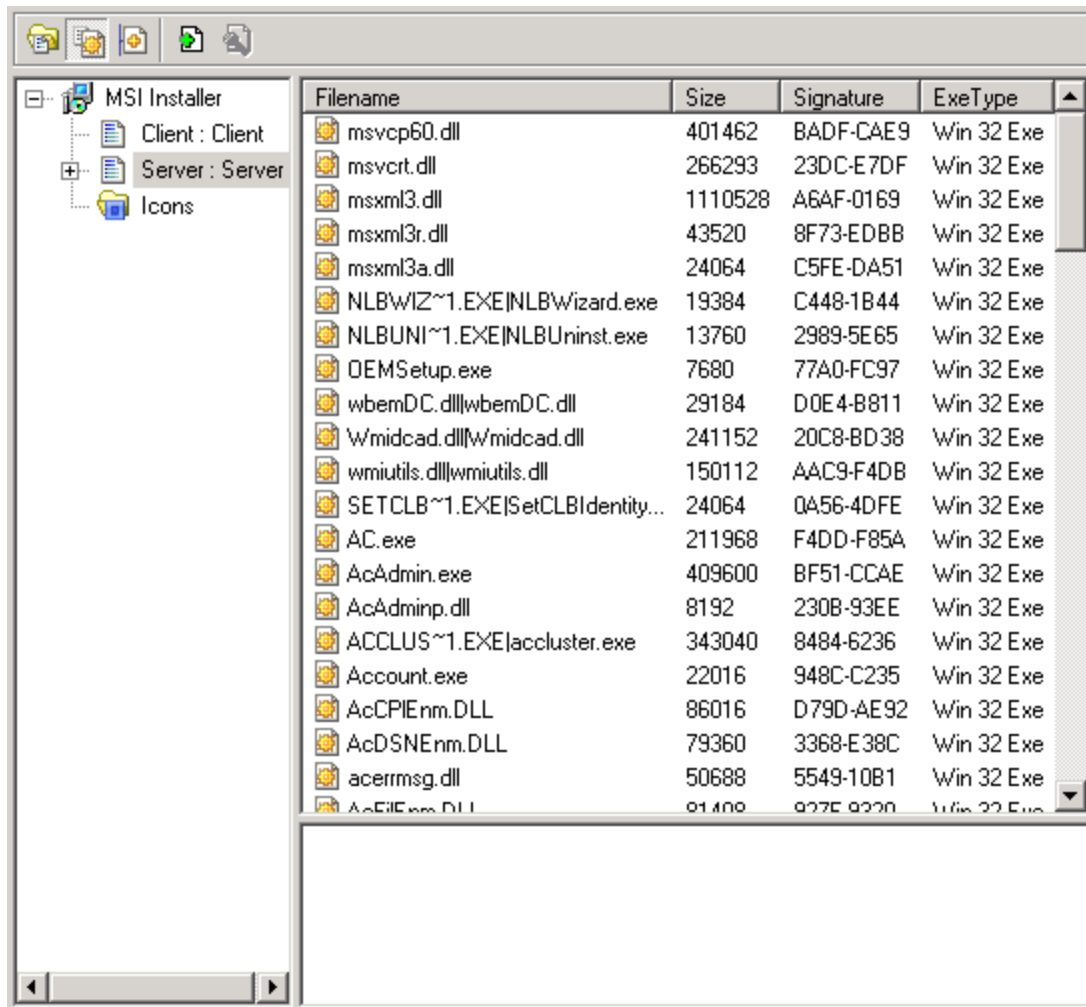


In this example, there are several features. Features are displayed in the following way and are indicated by the  icon.

Unique Name Key: Display name

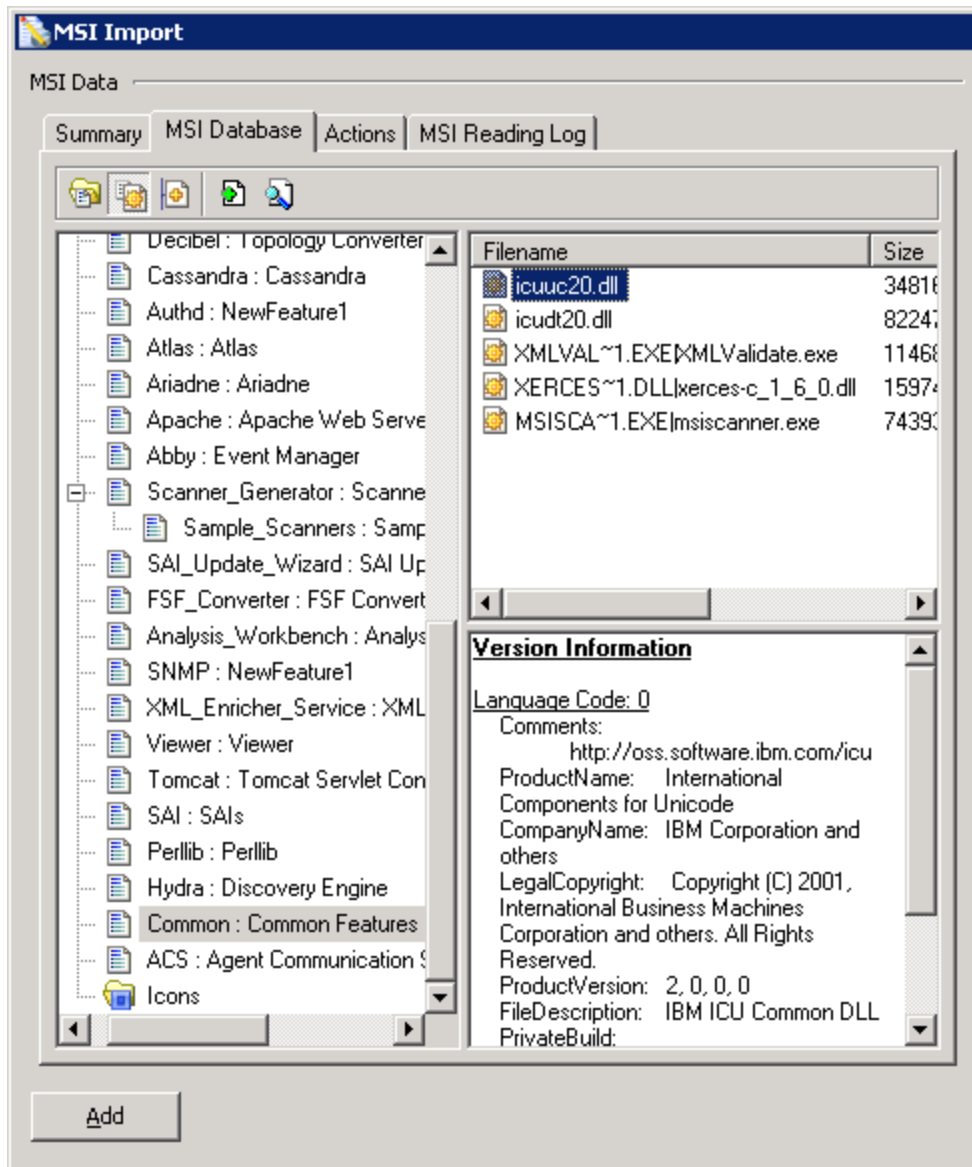
If we look at the Scanner Generator Feature entry we can see that the Unique Name Key is Scanner_Generator, while the display name has no underscore.

Looking through the MSI structure, look for the components of the application that can be installed separately and therefore should be taught as individual applications. For example Client/Server parts (see the example below) or some shared applications that are also packaged in the installer, for example MSDE or DAO components.



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7. However, had it not been the same, you would then add the file as a third party file. An example is shown below.



Here we can see that the Company Name is IBM Corporation.

Step 2 Teaching Files to a Version of the Software

To teach files to a version of the software:

1. In the SAI Editor main window, select a User SAI, and navigate to the pertinent release.


For this example, we will create a new Version under the following release:



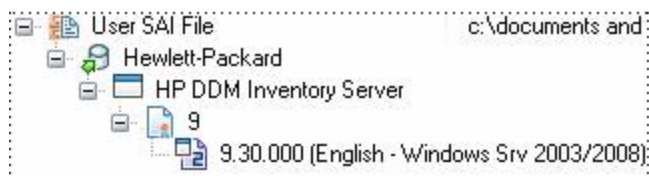
2. In the MSI Importer, examine the Version entry on the Summary tab.

For example:

Property	Value
ProductCode	{365E428A-A179-4A2E-ACBE-7561BC93CB1E}
UpgradeCode	{82FBCB5F-4A84-4278-A75C-FA70FE080FE7}
Manufacturer	Hewlett-Packard Development Company, L.P.
Name	HP Discovery and Dependency Mapping Inventory 9.30.000
Version	9.30.000.2216
PackageCode	{E974396D-D6B7-426E-BB61-16C5182381AA}

3. In the SAI Editor main window, create a new Version (if necessary) to match the MSI version:
 - a. Select the release to which the new Version belongs.
 - b. Click the  icon. The Version Properties dialog is displayed.
 - c. Fill in the details, and leave the Install string blank (it gets imported later).
 - d. Click OK.

For this example, we will create version 9.30.000 under release 9:



4. Go back to the Summary tab of the MSI Importer.
 - a. In the Destination SAI box, select the version that you just created. You will need to expand the tree to do this.
 - b. In the Product Details box, select the Version listed.

The version that you selected in the Destination SAI box will now be highlighted in gray.

5. Switch to the MSI Database tab of the MSI Importer.
6. Select a Feature or Component node in the tree.

7. Choose one of the following methods to import its files into the User SAI:

- **Method 1:** Click the **Add** button.
- **Method 2:** Drag the whole Feature (or individual files) onto the Version node in the Destination SAI box. You can select multiple files by using the **SHIFT/CTRL** key while clicking the files.

If you drag a Component node on to a Version, the files in that node will be imported. If you drag a Feature node onto a version, the files in that Feature and all of that feature's descendants will be imported.

- **Method 3:** Right-click the feature or component, and choose Import Files from the shortcut menu.
- **Method 4:** Right-click files in the Files pane, and choose Import Files from the shortcut menu.

The Importing Files dialog opens

8. Right-click the file(s) and select the relationship of the file(s) to the application from the Main, Associated, and 3rd Party options

Tip: You can select multiple files holding down the SHIFT/CTRL key while clicking on the files.

Main files are generally pointed to by a shortcut. Any files pointed to by shortcuts will be marked as Main. Double-check that these files should really be given the Main rating.

After you have specified the correct relationship for each file, click OK.

The new file is now included in the User SAI and will be recognized as scan files are processed in the future.

Step 3 Examining Warnings and Messages

Examine the warnings and messages by clicking on the links in the bottom pane of the Summary tab.

You will be automatically directed to the appropriate place in the Actions tab. You will need to examine the entries associated with the action warnings and decide whether they are files that need to be taught to the application and what relationship they have with the application.

Nested Installer Tab

A nested installation is where another MSI resides inside the MSI. You will need to choose one of the following ways to handle this situation:

- Is the nested installation a standalone application that can also be released—either as part of another application or standalone? If so, it needs to be taught as a separate application and linked

with the current application using a release relationship.

- If not, the files need to be added to the same application as associated files.

Called Executables tab

You will have to examine whether the called executable is going to install some other executable files. For example, look at the command-line column—if it says `install.exe` or `setup.exe` this would indicate that an executable file is being installed. You could get clues from the Name of the Action. A Called Executable Actions could be for example,

Install <name of the executable>

In the following example, the Called Executables are not installing other files, they are merely sending commands to run SQL scripts.

DLL Calls tab

This tab lists all DLL calls made.

Invoked scripts tab

This tab shows any scripts that would be invoked. Once you have examined the files, return to the MSI Database tab.

The MSI Scanner Command Line Utility

Overview of the MSI Scanner

For situations where the installation media is not accessible, the MSI Scanner can be used. This is a command line utility that takes as input an MSI file. This is then analyzed. The result of the analysis is an XML file containing a summary of the MSI.

In a large enterprise it may not be feasible to have remote offices send their software install media to central locations to be added to the corporation's central application library. In this case, the MSI Scanner may be of some use.

The MSI Scanner is a command line utility used to scan an MSI based installer, extract all required file information and write an XML file describing the installer and its contents. This XML file can then be sent to the central office where the person maintaining the application library can load it into the SAI Editor exactly as if it was the original MSI based Installer.

Starting the MSI Scanner

To start the MSI Scanner:

From the command prompt, type the following

```
C:\hp\UCMDB\DataFlowProbe\tools\InventoryTools\Common\bin\msiscanner.cmd <setup_
package> <output_file>
```

Where:

<setup_package> is the path and filename of the MSI-based installer.

<output_file> is the path and filename of the output XML file.

Note: Note that if the specified filename does not end in .xml, the MSI Scanner will append a .xml extension to it.

Opening the MSI Scanner Output File in the MSI Importer

The output from the MSI Scanner is usable in the MSI Importer so that you can browse the MSI and teach from the XML file in the same way as directly from the MSI file.

To open the MSI Scanner output file:

1. Select the **Import data from MSI** option from the Tools menu.
The File Open dialog box is displayed.
2. In the **Files of Type dropdown** box, select the **MSI Scanner output file**.
3. Navigate to the file to be opened.
4. Click **OK**.

The file is opened in the same way as any MSI-based installer.

MSI Scanner Error Level Codes

The MSI Scanner produces error level codes which can be used to handle situations if the Scanner terminates without producing an XML output file.

These error codes can, for example, be used in a batch file so that specified actions can be carried out in the event that particular error codes are returned.

These can be used to control re-scan activities when a scan has not completed successfully.

Error Level	Description
6	Unexpected error
5	Unable to open the output file
4	Insufficient space available in the Temp directory.
3	Unable to open input MSI
2	Unrecognized package
1	Incorrect parameters
0	Success

Application Teaching Overview

Application Teaching is a process that you can use to increase the number of applications (or versions of existing applications) that Universal Discovery recognizes on your scanned devices.

There are four methods that you can use to “teach” new applications to Universal Discovery:

- Teaching Using Scan Files
- Rule-Based Application Teaching
- Teaching Using Recognition Objectives

The first method is currently supported for Windows platforms only. The last three methods are supported for both Windows and UNIX platforms.

Caveats When Creating and Modifying User SAI Files

It is extremely important to follow sound and consistent practices when you are creating or modifying User SAI files in your environment.

You can create and modify User SAI files with the analysis tools. When you create or modify User SAI files, consider issues that may arise regarding potential ID and content clashes.

Problems are likely to occur in the following situations:

- There is more than one librarian teaching applications.
- The SAI files are maintained in more than one location.
- The SAI files need to be deployed to more than one Data Flow Probe.

The following guidelines should help you avoid these problems:

- Provide unique SAI IDs and file names across the entire organization. You cannot deploy different SAIs that have the same ID.
- Configure the same set of SAI files for all Data Flow Probes to provide consistent recognition.
- Modify SAI files in one place regardless of the teaching method. You can modify the SAI file on an administrator's computer or on a Data Flow Probe that is using the client analysis tools.
- After an SAI file is modified in one place, do not modify it on another machine. Instead, replicate the file regularly so that new changes are available on all machines.

The use cases presented in the following sections reinforce the problems that can occur and the best practices to use to avoid these problems.

Teaching on Different Client Machines

You can create more than one User SAI file for a Data Flow Probe. Each User SAI file must have a unique name and ID across the entire organization. When you create a new User SAI file, a new and unique ID is automatically generated. This mechanism can be compromised, however, if you are teaching applications on more than one machine—a practice you should avoid.

Analysis Workbench and the SAI Editor are client analysis tools that are usually installed on a machine that is distinct from the Data Flow Probe because of performance issues. If you create User SAI files on multiple client machines, while the ID will be unique for the machine on which it is created, it will not be unique with regard to the ID of a User SAI file created on another machine where the client tools are also installed. This can lead to a potential clash of User SAI IDs for the User SAI files that you want to deploy to a single Data Flow Probe.

To prevent this situation from occurring, you should only create User SAIs on a single computer to make sure that all user SAI files have unique IDs.

Teaching Using Scan Files (Windows)

You can use scan files to teach applications for Windows.

Overview of an Application Recognition and Teaching Project

Application teaching is the process of showing Data Flow Probe how to recognize new applications – or new versions of applications that are already included in an active SAI. An application consists of one or more files. Information about these file can exist either in the Master SAI provided by HP or it can be added to the User SAI.

In a Windows environment, files belonging to an application typically contain embedded Publisher, Application, and Version information. In both Windows and UNIX environments, certain installed package properties contain this type of information.

Questions to Ask Yourself

There are two key questions you must ask yourself when starting software recognition projects:

What is an acceptable level of recognition?

How long will it take to achieve the required recognition level?

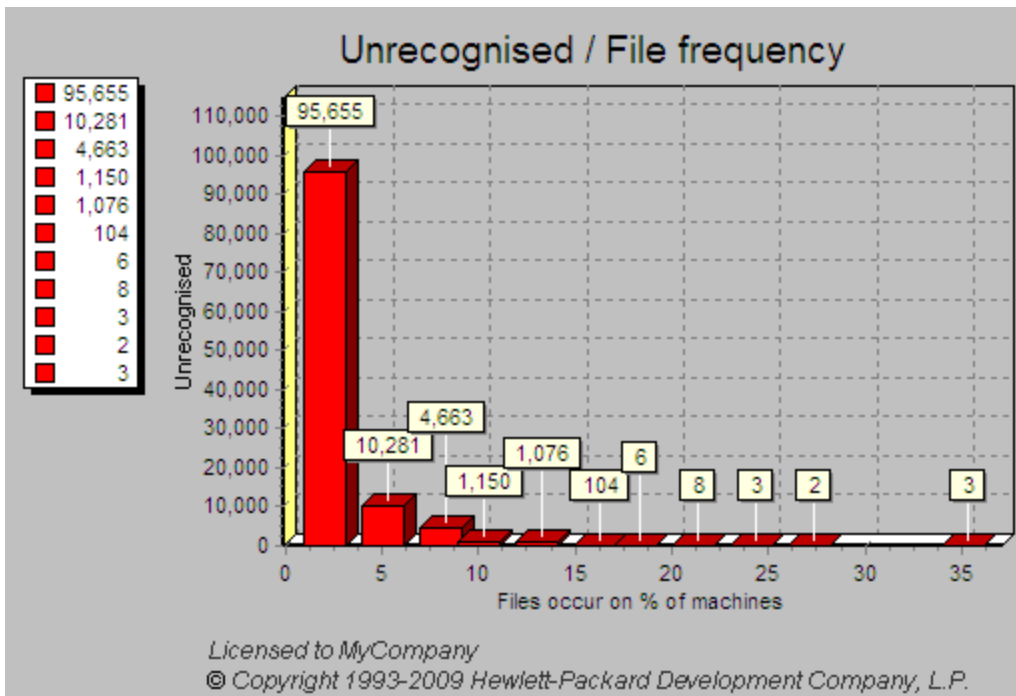
Determining an Acceptable Level of Recognition

The Unrecognized/File frequency chart available from the Analysis Workbench can be used to help you determine an acceptable level of recognition.

Displaying the Unrecognized/File Frequency Chart

In Analysis Workbench, after you have loaded your data, select the Charts > Unrecognized/File frequency option from the View main menu.

The Unrecognized/File frequency chart is a simplistic representation of the distribution of the number of files with a particular name compared with the number of times this file occurs across a sample of computers.



Interpreting the Chart

What is shown in the example chart is that the bulk of the files requiring recognition will exist on several machines within a sample, whereas the largest number of files to be recognized may only occur once or twice across the whole sample of computers.

If the computers on which these files were found can be identified, you can check them to see if they fit into the business critical category of machines needing attention.

This graph holds true for most situations where the number of copies and number of files vary with a particular sample of machines and the amount of recognition work carried on these same machines.

Using the graph, you can realistically assess the file recognition level required to achieve the goals for a particular project.

With these restrictions, 100% recognition is usually unrealistic.

Defining the Cut-Off

By looking at the typical profile of unknown files versus the number of times they occur, it can be seen that typically there are a large number of files that only occur once or twice across the sample of scan files.

This file count drops rapidly as files that occur multiple times are encountered. Therefore it is sensible to define a cut-off level in the file count to keep the number of files manageable. The cut-off may start at

the 10% off level and progressively be reduced to 5% off or lower, depending on the number of known files that need to be handled and the target recognition level.

The exception to this is when there are business critical or special applications that only occur once or twice across the scan file sample. In this case, these applications are targeted and added to the SAI.

In many instances a cut-off of 95% of installed files is seen as a realistic target.

Estimating How Long the Recognition Project Will Take

Estimating the time required for software recognition is based largely on experience. Factors that can play a big part are:

- Familiarity with Analysis Workbench.
- The number of scan files available.
- The quality of the scan file data – does it include valid header information in the files?
- The cut-off point required.
- The availability of local contacts – accessibility and responsiveness.
- Availability of personnel to visit machines or to investigate particular software.
- The file types to be included in the recognition. It is usual to restrict the types to COM, EXE and DLL files when teaching from scan files.

As a rule-of-thumb, over the project period an average of 100 files per day can be taught to your User.zsai file. This equates to 10-12 files per hour or roughly one every 5 minutes.

In the early stages of the project, you will need time to become familiar with the data set and to select a subset of scan files for teaching.

The most productive stage is when you have lots of files that can be quickly analyzed and taught. In particular, if it is possible to cluster a number of files together, it may be possible to achieve a better result than 100 files a day.

However as the project progresses, the amount of useful data available from Analysis Workbench can diminish. It becomes necessary to spend time contacting people who have specialist knowledge of the products or physically visit the machines and check the applications manually.

This can have a significant impact on recognition productivity.

Example Recognition Information from a Small Project

The following are recognition statistics from a software recognition project.

The project used 900 scan files that contained 19,680 file names with 448,991 occurrences. The percentage of unrecognized files and occurrences is shown in the following table:

	Start	Finish
Recognized file names	45%	54%
Unrecognized file names	55%	46%
Recognized occurrences	82%	95%
Unrecognized occurrences	18%	5%

Around 1,820 files were taught over the duration of the project. The result was a 9% increase in recognition and 13% changes in occurrences.

Specifying the Scope of Teaching from Scan Files

It is important that you make all parties involved in the project aware of the scope of the teaching process before the project commences so that expectations are correctly set and met.

This is due to the difference in methods between using scan files for information and using installations of applications.

With application installations, it is possible to perform typical installations and see where all files are being deployed.

In the case of using the information available from scan files, the information relating to an application may be incomplete or different from other databases. This may be because:

- Available scan files may have incomplete installations.
- License relationships may be incomplete again due to incomplete installations.

Getting the Best Results

As discussed, scan files of users' machines are not an ideal source of data for teaching, although it often is the only source of data.

For applications where it is imperative that they be recognized as accurately as possible, it is recommended that you follow these steps where possible:

1. Use an "empty" machine with just the operating system installed. The best way is to install the machine once and generate an image of it that can be restored to this state for every application.

2. Scan the machine and store the result as the “reference” scan.
3. Install the application to be recognized.
4. Scan the machine again, storing the result as the “application” scan.
5. Use both scan files in an import in the SAI Editor.

When used in this fashion, the SAI Editor can “subtract” the reference scan from the application scan. This allows a very accurate degree of teaching as all files affected by the installation can be automatically added to the library.

However, this method is more time consuming than when using scan files of users’ machines and requires a dedicated machine for the teaching work as well as access to the installation media for the applications.

The HP Application Librarians use this methodology for almost all applications that are added to the Master Library. MSI files are added to the Library using the MSI Importer in the SAI Editor.

Selecting Scan Files for the Project

Although a large number of scan files may be available, the only time that they all need to be loaded is when you need to produce progress statistics.

For teaching purposes, the smaller the subset of scan files loaded the better. This is because the recognition algorithm has fewer files and directories to scan, hence producing recognition results faster.

When choosing scan files for the project, consider the following:

- Particular location or department

Certain departments such as Finance or Personnel may be the only users of a certain type of application (for example, invoicing software).

- Machines types – server or laptop

These may contain special software (for example, communications software). Servers may contain server components of an application.

- Specific scan files by name

These may contain specific applications – such as a bank payment transfer – that only occur on a particular machine. Alternatively, the scan file may be an example of a much larger set of scan files that contain particular files.

Using Analysis Workbench to Pick Scan Files to Load

Choosing a few scan files from a list of several thousand can be time consuming. The following steps show two different methods of different complexity that can be used to single out the scans that would be best for a teaching session.

Simple method: Use an Analysis Workbench Load Query

1. Use the query option when loading scan files and generate a query that includes the desired assets.
2. The selected Query will check all entries, which in a large list of scan files can be time consuming. If you need to load the same list of assets repeatedly, the more complicated method may be more appropriate.

Complex method: Load all scan files to locate the best ones to use

1. Load your scan files into Analysis Workbench
2. In the Files window, tag all CheckVer and Unknown files.
3. Select the Files option from the Export menu. The Export to Files dialog box is displayed.
4. In the Export to Files dialog box, click the Export Files tab.
5. Select the One line per item option.
6. Make sure you have selected the Asset Number and Name options in the list.
7. Click the OK button.
8. Import the exported data into a database program such as Microsoft Access 2000.
9. Run a query that groups on the first instance of a file name. This provides a list of scan files that contain files of interest. The following is a sample SQL query:

```
SELECT DISTINCTROW Files.Name, First(Files.[Asset Number]) AS [FirstOfAsset Number],
Count(Files.[Asset Number]) AS [CountOfAssetNumber], Files.Directory, Files.Publisher,
Files.Application, Files.Version, Files.Size
```

```
FROM Files
```

```
Group BY Files.Name, Files.Directory, Files.Publisher, Files.Application, Files.Version, Files.Size
```

```
HAVING (((Files.Name) In (SELECT [Name] FROM [Files] As Tmp GROUP BY [Name] HAVING
Count(*)>1)))
```

```
ORDER BY Files.Name, Count(Files.[Asset Number]);
```

10. Take the output from this query and edit it into a script file under a section heading. Ensure that the full path is loaded. This can be defined with a variable for the path. Then use the Analysis Workbench LOAD_SCANFILE_LIST script to select the section.
11. Run the script and this will load the defined scan files without having to wait for the user interface.

Grouping Files

Having selected the scan files to work with for a particular session, the next thing you need to consider is the grouping of files based on specific criteria of interest.

This method is preferable to just examining files individually as it may lead to multiple files being selected for teaching at one time. The following sections discuss the benefits of particular selections.

Group Files by Date Without Selecting by Type

This method allows files (recognized and unrecognized) to be grouped together. This can help pick up stray files that may have been stored in directories away from the main application directory.

Date and Time Stamp in Windows

The file date and time stamp in Windows 200x/XP/Vista/7 usually depends on daylight savings time. This means that if a file was originally installed under GMT with a time stamp of 4:50, if the time is changed to BST (GMT+1), then the files's time stamp becomes 5:50.

Vice versa, if an application was installed under BST and then the clocks were put back, the time stamp would change to 3:50.

This also means that using the date to cluster files when the machine is running Windows 200x/XP/Vista/7 could give different results if machines have been scanned with installations either side of a time change.

This effect does not occur with UNIX.

Group Files by Name

Products such as HP printer drivers often start with the same letters (that is, HP). Also files starting DC or DD may in fact be deleted files in the RECYCLE directories.

Group Files by Header Information

There are a number of files which are in archives or Cabinet files. It may be necessary to create a special Scanner which stores archives as directories.

Examine Directory Names

This can include Publisher, Application and even Version in some cases. Look for more than one directory with subdirectories off it. Look particularly under Program Files as often this is the default base directory for an application.

Look at Entries in Installed Applications

In Analysis Workbench you can select a machine and right-click it to display the scan file in Viewer. By looking in the Hardware and Configuration Data > Operating System > Installed Applications folder, the applications that have been registered in the System Registry will be displayed.

This information is also available in Analysis Workbench in the Machine Window under Windows Installed Apps. The column entries are not necessarily in alphabetical order.

Use Applications Window in Operational View

The Operational View displays all applications with partial or full identification.

In this view, Checkvers are displayed for an item. This reflects the fact that the file(s) is Checkver. Use this to recheck files and directory information. Often the grouping yields some information about a version.

To set Operational view:

1. In Analysis Workbench select the Load Options command from the File menu.
The Analysis Workbench Load Configuration–Advanced dialog box appears.
2. Click the Display Filter tab
3. Select the Load Operational View option.

Activities During Recognition Project

Teaching Recognition

After files have been selected, the teaching can be performed. This is the process of converting Checkver and Unknown files into recognized files in the Main or Associated categories.

Logging Your Progress

There are several ways that you can log your process:

- Checking the number of files that have been added to the User.zsai file.

This must be done manually from the beginning each time, because files added later to an existing application are absorbed into the existing application.

- Checking the number of applications in the User.zsai file.

This is useful but does not reflect the number of files contained in each application.

- Loading a set of scan files against the User.zsai file.

This is the most reliable way of tracking progress.

This is one of the few times that all the scan files need to be loaded. To keep the memory requirement down, only load *.exe and *.com files, and ignore Directories and Hardware data. This cuts down the amount of data to store in memory. This is a valid file selection, as it is unusual to teach *.dll files, for example, when just using scan files.

If the number of scan files gets too large for the available memory, then it will be necessary to split the load sets into more manageable chunks. Produce an export of all files using Name, Copy Count, and Status. These exports can be appended to produce one file. Then import the file into a database, and perform the necessary query on the data having first produced a query to eliminate duplicate file names.

Although the bulk of Main files are *.exe files, some applications are only identified by specific *.dll files or some other executable. In this case, all executable files will need to be loaded with the consequent impact on memory.

Finishing the Teaching Project

The project objective is to produce a clean User SAI that has recognized files to the defined cut-off level. The quality of the data will only be assessed as the information is being used. Issues that may compromise the data quality can occur for a number of reasons. Remember that when teaching from scan file based information only, the data available may be incomplete. The following section shows some examples of possible errors that may occur.

Recognition Errors

Here are some common recognition error scenarios:

- Header information is at a variance with the actual product. This can happen with OEM or 3rd party support products. The product version is often different from the file version (in this case, use the product version).
- Versions have not been applied correctly. Scan files may not include version information if the Scanner has not been set up to collect internal file identification data. Another reason might be that the application version reported in internal file data does not match the marketing version of the product. For example, Windows NT5 is packaged as Windows 2000. Microsoft Publisher 2000 has an internal version number of 6.0.

- Orphan files may be assigned incorrectly. These may be files that are not part of the main directory list for an application. They often reside in the \Windows or \Winnt directories.
- User recognition of application is incorrect. An application may be given a working name that is different from its official title.
- A version is installed that is different from the current license. Newer versions may have to be purchased for license purposes, but copies of the older version are deployed for compatibility reasons.

Input Errors

Here are some common input error scenarios:

- Vendor or application name is not consistent. This needs to be edited to ensure consistency for reports and exports.
- Product name does not match invoices or packaging. This would not be identified purely from the scan file content.
- The wrong version has been applied to a particular file. This could be caused by multiple versions being installed in the same directory.
- A space has been left in front of the text entry. This can happen if the entry is taken from teaching mode straight from the header.

Situations Where the Recognition Information Does Not Match the Client's Software Invoice Details

If a client already has a database of software purchases, there can be a number of situations where the information taught to the SAI does not match software invoice details.

- The information in the SAI is incorrect. This may be due to incorrect descriptions obtained from file headers or the effect of misallocation of files in a mixed directory.
- The information in the SAI is out of date. Often for marketing reasons a product is rebranded. Edit the SAI to reflect the change. For example, Dr Solomon's Antivirus becomes Total Virus Defence.
- The application is a device driver that needs hardware to be present. Therefore, the hardware effectively is the license and so there may not be a Main file.
- If after a Service Pack, Service release, or Hotfix is applied, only some associated files of the original application – but not the main file – are changed, the application itself will be reported as it was before the update. In this case, there might not be a Main file associated with a particular Service Pack, Service release, or Hotfix.

Dealing with Specific Groups of Software

The following items should not be regarded as a definitive list of recognition methods, but rather they show the types of decisions that need to be taken when interpreting the available data. It is up to the individual to define a scheme that meets the needs of a particular situation.

Install/Uninstall Programs

Unless they can be tied to specific applications, use a generic setting of:

- Publisher = Various
- Application = Installation Program
- Version = Generic

Compressed Files

Often these come as part of the application, but they can sometimes be located in directories away from the application.

For a zip or Microsoft Cabinet file, use the archive option in the Scanner to capture the directory list of compressed files, and then compare with the other files on the machine.

Run-Time Files from Applications

Products such as Macromedia Director, Flash, etc., can produce run-time executables. It is not always possible to identify the content of the file, as the header will usually relate only to the generating application.

- Publisher = Name of the Publisher of the generating application
- Application = Name of the generating application
- Version = Version of the generating application (if known) otherwise use date of run-time file.

Files in Recycle Bins

Files in Recycle Bins will have file names such as DC1, DC9, DD1, etc. To remove them from the Unknown count, either:

- In Analysis Workbench, set load options to exclude recycle directories so that the contents do not appear in file counts.
- Teach the files in the directories with a generic description. For example

- Publisher = Various
- Application = Recycle Bin
- Version = Generic

It is important to check that the file name is not being used by a valid application. This means that any file not in a recycle directory still needs to be taught separately. This also means that it is dangerous to set a wide range of file sizes, as this range might encompass valid files.

The best approach would be to first load with the Recycle Bin directories included to produce a list of files in these directories. Then, reload the data with the load options set to exclude the recycle directories from normal teaching.

Zero Length Files

Files of zero length do occur as a result of uninstalling applications. Because these will never be executable files, then there is no recognition to be done. Therefore, just produce a report of zero length files for record purposes. Typically in a batch of 3000 files, there may be 10 to 20 such files.

Windows Hotfix

These are the intermediary fixes that are available between service releases. Identify:

- Publisher = name of publisher issuing the fix
- Application = name of application + HOTFIX
- Version = Date of file unless version details supplied

Applications That Are Available on Different Platforms

Some applications have the same name irrespective of which platform they appear on. Two approaches can be used, either:

- Consolidate all the files from all the different platforms into one application. This could lead to a range of file sizes for a particular file name.
- Teach each platform separately, and add the platform detail in the OS field of the application version.

Creating a List of Files Not Requiring Detailed Recognition

This may be a list of files not requiring detailed analysis for some reason. It may be that you wish to highlight internal use of applications (such as games) or that an application is internal and does not need detail version information.

- Publisher = Dummy or some other generic name
- Application = Dummy or some other generic name
- Version = Dummy or some other generic name to save having to use separate dates.

This activity should only be used as a last resort, otherwise everything will be added to this list without proper analysis. You may be tempted to do this thinking that if you move files from unrecognized to some form of recognition, then the recognition job is done. The problem will become apparent when you start to produce reports.

Why Applications May Be Taught Without a Main File

One situation where an application can be taught without a Main file is when the application is a device driver that requires hardware to be present. Therefore the hardware effectively is the license.

Using States

Rather than loading large numbers of scan files each time for a session, using States can considerably reduce the time to access data, provided that States and SAIs are kept synchronized. If the User SAI is updated, then a new state needs to be stored before exiting Analysis Workbench.

Components of Applications

Some examples of groups of applications are given in this section:

- Microsoft Office 95 has Word 6
- Office 2000 is packaged as Office 2000 but has an internal version numbers of 9.x.
- Microsoft Publisher 2000 has internal version of 6.0

Components of the Different Editions

Office 2003

Office 2003 Professional Enterprise 2003:	Office 2003 Standard:
Office Word 2003	Office Word 2003
Office PowerPoint 2003	Office PowerPoint 2003
Office Excel 2003	Office Excel 2003
Office Publisher 2003	Office Outlook 2003

Office 2003 Professional Enterprise 2003:	Office 2003 Standard:
Office Outlook 2003	
Office Outlook 2003 with Business Contact Manager (US)	
Office Access 2003	
Office InfoPath 2003	

Lotus SmartSuite Release 9 (or ver.9.8)

Name	Application type
WordPro	Wordprocessing software
1-2-3	Spreadsheet software
Approach	Database management system software
Freelance Graphics	Graphics or photo imaging software
Organizer	Calendar and scheduling software
FastSite	Web page creation and editing software
ScreenCam	Video creation and editing software

How to Handle Special Groups of Files

- WinZip Self Extractor

Use the Scanner with ZIP extension

Abbreviations

- ZAK - Zero administration Kit from Microsoft
- ZEN - Novell
- TVD - Total Virus Defence - Network Associates
- SMS - Systems Management Server - Microsoft

Tracking Your Progress

When using a large number of scan files for recognition, the bulk of the time is spent with a subset of the total scan files available. Usually, the total number of scan files only need to be loaded to produce

figures relating to the split of Recognized and Unrecognized files.

The easiest way to track your progress is to:

1. Load the scan files into Analysis Workbench.
2. Locate the Status column in a Files window.
3. Right-click the column header, and select the Chart option.

This produces a chart showing the necessary split of the status of files—that is, Main, Associated, 3rd Party, checkVer, Unknown, Unprocessed and Auto-identified.

You can also:

1. Select the Copies column.
2. Left click the column header.

This ranks the files in copy order.

3. Use a Global tag to tag all.
4. Untag selections to deselect unwanted types and/or chop count cut-off.

If a tag selection is made of Unknown and Checkver above a certain number of copies, then a file filter can be applied to the machines window to select the scan files where these occur.

5. To prioritize the work, just select the scan files with the most tagged files. This is done by ensuring that the Tagged Field column (from the scan file section) is displayed.
6. Sort on the number of tagged files and select a small group of scan files from this selection.
7. These can be added to an OR query when loading scan files. Or, for a faster response without the user interface, use scripts to load a list of scan files.

Teaching Using Scan Files (UNIX)

Special Considerations for UNIX Teaching

This section is for users who are not familiar with the UNIX OS environment and some of the issues associated with dealing with UNIX files.

These are guidelines for best practice rather than hard and fast rules. As you gain familiarity with the various data analysis tools supplied with Universal Discovery, you can develop new ways of clustering files to meet specific needs.

The mechanics of teaching UNIX applications to a User SAI are exactly the same as for Windows applications. For example, Publisher, Application, Application Type, Release, Version, etc. need to be identified and applied to one or more files.

However, the information gathering exercise required for UNIX teaching can be challenging, since the files themselves do not provide the same richness of information as in Windows.

Teaching software under the UNIX operating system relying only on scan files requires a slightly different approach than that used with Windows. Here are some of the points to consider:

- No version data is available from the files. This means there is no direct confirmation as to the source of the file.
- There is a limited amount of information available from the OS installed application list. This is assuming built-in UNIX software install tools (such as, SWTOOLS) have been used for installation. Many applications like Oracle can use their own installer and, hence, do not appear in the OS installed applications list.
- More communication with local knowledge specialists (site administrators or staff who are familiar with the on-site applications) may be needed than with Windows. Ideally, these people should have solid UNIX systems-level knowledge.
- Analysis Workbench is used in a different way from Windows data analysis. The main difference is that rather than concentrate on files and their properties, the emphasis is on clustering files from the directories into an application.
- There is no single version of UNIX. See *Flavors of UNIX* for the different UNIX platforms that are supported by Universal Discovery.

Recommendations

Here are some recommendations you can consider incorporating into your teaching project:

Use Separate User SAI Files for UNIX Entries

It is preferable to use a separate User SAI for UNIX entries. The reasons for this are:

- Clearly identifies UNIX specific applications.
- It is quite likely that UNIX machines will be processed separately from Windows based machines so this allows a separate set of load options to be set.

Use Separate User SAI Files for Different UNIX Flavors

If there are numerous UNIX flavors on site, then it may be preferable to have separate SAIs for each of them (for example, Solaris, HP-UX, AIX).

Scan a Base Machine that has Only UNIX On It

Since UNIX installations can be highly configurable, the ideal situation would be to scan a base machine that only has the operating system installed on it. This provides a base line from which to work. This should be considered even when the Operating System is included in the UNIX Master, since site specific patches may have been applied.

However, it may not always be possible to scan a machine that has only been installed with the Operating System and no other applications. If one is available then this should be used to teach as many Operating System related files (for example, patches) as possible. This should be dealt with first.

- Tag the target machine and the selected files, and teach these files as the base operating system build. This then removes the files from the unknown list.
- If a clean build is not available, then files normally found within the Operating System directories should be selected for teaching first.

From a file recognition perspective, the binary executable types for each UNIX platform are distinct and easily recognizable (e.g., HP/PA Coff for HP-UX, SPARC ELF for Solaris, AIX Coff for AIX, x86 ELF for Linux). Directory structures and file names are typically the same across different UNIX platforms for a given application.

UNIX Teaching Process Overview

An overview of the process of UNIX Teaching using Analysis Workbench follows:

1. From discussions with local specialists, identify a range of applications that are known to be on the scanned machines.
2. Since the number of applications is likely to be much smaller than for Windows, it is useful to track the clustering of files by machine selected and base directories included in the cluster.

This can be used in further discussions with local specialists to determine and confirm the application details.

3. Determine the number of unknown files to discover from the scanned files. To do this:
 - Load a full set of scan files into Analysis Workbench with the Master UNIX SAI.
 - Select the Status column, right-click the header, and choose the Chart option.

This will give an indication of the level of unknown files.

4. Select machines with the largest number of unknowns. To do this:
 - a. In a Machines Window, create a column from System Data > Application Recognition > Unrecognized Files
 - b. Sort on this column, and then Tag machines with the largest unrecognized files counts. Save these machines as a Tag list for further use.
5. Unload the scans.
6. Take a selection of sample machines from each flavor of UNIX in turn.
7. Create a user SAI for each flavor of UNIX
8. Select and load a target scan file – use entries in the previously saved Tag list

OS Files

1. Identify the OS version on the target machine:
Hardware > Operating System Data > UNIX type and Host OS
2. Tag the OS directories
3. Teach the unknown files found in these directories using the OS details

Installed Applications

View the OS installed applications list in the Hardware tab of the Viewer.

If there are any that can be identified then teach these.

Recognized Applications

When a UNIX Master SAI is available, use this to identify as many of the files as possible.

If there are some recognized applications do the following:

1. In Analysis Workbench, select an application, tag it, and then check the Files Window and Directories Window to see if there are any sub directories that contain Unknown or Checkver files.
2. If they do contain such files, then a reasonable assumption is that the Unknown and Checkver files are from the same application—possibly patches, for example.
3. Cluster the files and add them to the SAI using same details as the existing files.

Directories

Having worked on these applications, turn your attention to the directories.

1. Check environment paths for execution paths (for example, PATH). These are likely to be the directories where the main applications are located.
2. Select directories for file clustering.
3. Cluster files and add them to the SAI.

Selection Techniques

Identify OS Version on the Target Machine

Use one of the following methods to identify the OS version on the target machine:

1. In Viewer, use the selection Hardware > Operating System Data > Host OS Name and Host OS Version
2. In an Analysis Workbench Machine window, select the appropriate column to display. This is used to establish the version for the files in the main operating system directories.

Tag OS Directories – See OS Directories List

Select main OS directories and cluster files to an application.

Select known applications and select their directories and check for unknown or Checkver files mixed in the same directory as known files.

View the OS Installed Applications List

Some UNIX flavors contain directory paths of the OS Installed applications.

In the Viewer Hardware tab, go to Operating System Data/OS Installed Applications to see which applications are logged under the Operating System.

Check Environment Paths for Execution Paths

On the Hardware and Configuration tab in the Viewer, use the Operating System Data > Environment information to check specific paths.

These will point to directories containing executable applications.

Choosing Directories to Target for File Clustering

In Analysis Workbench, select directories for file clustering using the following criteria:

- Directories with recognizable descriptions in the path name
- Directories with the largest number of unknown files

How to Find Directories with a Specific Name

1. In an Analysis Workbench Directories Window, right-click the Name column heading, and select Tag > Contains.
2. Enter the name or partial name in the Search String box.
3. Select Anywhere for the String Position.

How to Determine Which Directories Have the Most Unknown Files

1. In Analysis Workbench, ensure that the Directories Window has the Tagged Files column displayed.
2. Go to a Files Window, and tag files with Status = Unknown or Checkver.
3. Go to a Directories Window, and sort on the Tagged Files Column.

The result may appear confusing, because the file counts do not always display in file count order. This is because the directory displays the total count of files but is placed in the order of the tagged files. To obtain a total count of the files, right-click the Tagged Files column heading, and choose Sum.

The screen does not refresh the tagged files count correctly if the file tags are removed.

File Details

If there are multiple versions of an application that have shared files in the same directory, choose the oldest version first and then progressively teach the newer versions in order. This is on the basis that the older files have carried forward into the newer versions.

Check that the main file selection is consistent in order to count licenses. This may require more than one Main file to be selected.

Look for consistency under the same date for the same version of the application

Group the files under the known application. There may be more than one version of the application sitting in the same directory. In this case it will be necessary to try and allocate the files to each version based on date.

Recommendations

- Never use a script file type as a Main file because these can appear in different operating environments or not used on a particular machine. This could lead to incorrect license counts.
- Load one UNIX operating system flavor at a time. This is to ensure that if an application exists for different environments, that they are taught for the specific operating system. This is because the same file name can have widely differing file sizes depending on the operating system. The binary executable file types will also vary from one UNIX platform to another. For example, HP/PA Coff files should only exist in HP-UX applications, not in Solaris versions.

- Version numbers may need to be approximated e.g. 4.3.3.79, 4.3.3.12 and 4.3.3.26 etc. may need to be consolidated as 4.3.3.x

File Clustering Notes

1. Identify a machine with the sample applications on it.
2. Select the base directory.

To tag all sub directories off a base directory:

- a. Select base directory in Directory Window.
 - b. Go to Details pane display path.
 - c. Click on path and use Ctrl C to copy all or part of the path string.
 - d. Go to Directories Window and right-click the "Name" column header.
 - e. Select Tag > Contains > search string and Ctrl V to copy path string.
 - f. Click OK. This will tag all the directories with the base path string.
3. Tag the directory and sub-directories.
 4. Apply directory filter to Files window.
 5. Tag All files displayed in filtered display.
 6. Add to SAI.

File Identification

Use web search facilities to identify applications and publishers. It may be sufficient to enter the name of a file and it can be found in an on-line document that relates to an application.

It may be necessary to become familiar with the various acronyms associated with a product in order to identify it.

Information Stored in Installed Applications Lists on UNIX

You can find the installed applications for different operating systems in the Hardware tab of the Viewer.

The installed applications are listed under:

Operating System Data>OS Installed Applications

The amount of detail provided varies between UNIX flavors. These mainly refer to OS drivers etc. but can be useful in determining version numbers when teaching OS support files and libraries.

Standard UNIX Directories in System V Release 4 (SVR4)

The following table lists all standard UNIX directories in System V Release 4 (SVR4).

Directory	Description
/	The Root directory, which is always present and is the parent of all the files in the file system.
/dev	Contains device files including terminals, printers and hard disks
/etc	Contains system administration and configuration files, the most important of which is /etc/passwd
/home	Directory containing the home directories for all the users
/opt	Root directory for file systems used by add-on applications
/sbin	Programs used when booting the system
/spool	Contains the directories for spooling files
/spool/lp	Spooling files for the printer
/spool/uucp	Files queued for UUCP
/spool/uucppublic	Files placed by UUCP
/stand	Standard programs and configuration files used when booting
/tmp	Contains temporary files created by UNIX
/usr	User accessible programs
/usr/bin	Executable programs and utilities
/usr/ucb	Contains the BSD compatibility package
/usr/games	UNIX games
/usr/lib	Libraries for programs and programming languages
/var	Contains files whose content vary as the system runs

Directory	Description
/var/admin	
/var/mail	
/var/news	
/var/opt	
/var/tmp	
/var/uucp	

Directory	Description
/	The Root directory, which is always present and is the parent of all the files in the file system.
/dev	Contains device files including terminals, printers and hard disks
/etc	Contains system administration and configuration files, the most important of which is /etc/passwd
/home	Directory containing the home directories for all the users
/opt	Root directory for file systems used by add-on applications
/sbin	Programs used when booting the system
/spool	Contains the directories for spooling files
/spool/lp	Spooling files for the printer
/spool/uucp	Files queued for UUCP
/spool/uucppublic	Files placed by UUCP
/stand	Standard programs and configuration files used when booting
/tmp	Contains temporary files created by UNIX
/usr	User accessible programs
/usr/bin	Executable programs and utilities
/usr/ucb	Contains the BSD compatibility package

Directory	Description
/usr/games	UNIX games
/usr/lib	Libraries for programs and programming languages
/var	Contains files whose content vary as the system runs
/var/admin	
/var/mail	
/var/news	
/var/opt	
/var/tmp	
/var/uucp	

Other UNIX systems may contain other key directories

Directory	Description
/kernel	Contains OS kernel and related files for Solaris.
/X11	Contains files for the X Window windowing system.

Directories such as /opt or /var may be used for customer installations in the same way that Program Files directory is used in Windows. However, some applications choose their own directory structure and local configurations of applications may override the default directory paths. Again, local knowledge is useful here.

Configuring Data Flow Probe for UNIX Application Recognition and Teaching

Scanner Configuration for UNIX Scanning

For scanning, include signature to assist with uniquely identifying the first 8K of a file.

The file details are to save UNIX executables (binary and script). File extensions can be included but this may lead to spurious recognition.

Selected directories can be ignored provided they are known to be data directories only. This can be included in the scanner generator, otherwise create an .override.ini file that contains the directory exclusions.

Setting up XML Enricher to Include the UNIX User SAI for Recognition

Follow these steps:

1. Go to Server > Administration > System Configuration > Scan processing > SAIs
2. Make sure that unix.zsai as well as the User SAI used for UNIX teaching are in the SAI list and that they are enabled.

Load Options in Analysis Workbench

The key load options are set as follows:

Option	Description
Load	<p>Either Load ALL files. This includes non executables.</p> <p>Or Load Executable and Archived only. This will reduce the number of files to load and needing recognition may not include script files.</p>
Recognition	<p>Recognition method - SAI</p> <p>Recognition Settings – Use level 3 heuristics.</p> <p>Either Apply recognition to ALL files.</p> <p>Or Executable and Archived only. This will reduce the load time.</p> <p>In either case the SAI libraries to use are as follows:</p> <p>master.zsai contains key information for Operating System etc.</p> <p>unix.zsai this contains a mixture of Solaris, AIX, HP-UX, and Linux applications.</p>
Display	<p>Applications</p> <p>Either Operational View.</p> <p>Or Business View.</p> <p>Business view only displays applications in the Applications window that have a Main file in the Files window, while the Operational view displays ALL application entries found in the SAI. These may be just be Associated files or Check ver.</p> <p>Recommendation</p>

Option	Description
	Use Operational View for teaching to see all the entries. Use Business view when reporting to concentrate on Applications that are licensable.

Option	Description
Load	Either Load ALL files. This includes non executables. Or Load Executable and Archived only. This will reduce the number of files to load and needing recognition may not include script files.
Recognition	Recognition method - SAI Recognition Settings – Use level 3 heuristics. Either Apply recognition to ALL files. Or Executable and Archived only. This will reduce the load time. In either case the SAI libraries to use are as follows: master.zsai contains key information for Operating System etc. unix.zsai this contains a mixture of Solaris, AIX, HP-UX, and Linux applications.
Display	Applications Either Operational View. Or Business View. Business view only displays applications in the Applications window that have a Main file in the Files window, while the Operational view displays ALL application entries found in the SAI. These may be just be Associated files or Check ver. Recommendation Use Operational View for teaching to see all the entries. Use Business view when reporting to concentrate on Applications that are licensable.

Flavors of UNIX

AIX

Acronym for Advanced Interactive Executive. A version of UNIX from IBM that runs on its Power Systems, including System p and System i.

Although AIX is derived from System V Release 4, it is POSIX-compliant and meets the Trusted Computer Base (TCB) Level C2 security.

One of the major enhancements AIX offers is Visual System Management (VSM), a graphical interface into the older System Management Interface Tool (SMIT). VSM contains four main elements: Print Manager, Device Manager, Storage Manager and Users and Groups Manager.

HP-UX

A version of UNIX for HP computers. HP-UX includes BSD extensions, including the networking commands, the Korn shell, and a version of emacs. VUE (Visual User Environment) is HP's GUI with individual workspaces for different tasks, drag-and-drop functions, a text editor, color icon editor, as well as other productivity tools.

HP-UX also includes SAM (System Administration Manager) for common administration tasks, such as adding new users, installing and configuring peripherals, managing processes and scheduling jobs. Diskless computers, either clients or servers, can boot from the server and can support locally mounted file systems, so that each client has access to its own data files as well as being able to share files with others.

Solaris

A version of UNIX from Sun Microsystems that runs on Intel/AMD based computers and Sun SPARC workstations and servers.

Solaris is based on UNIX System V Release 4, and includes networking support. The latest version features Java Desktop System based on GNOME that comes with a large set of applications, including StarOffice.

Linux

A UNIX-compatible operating system originally developed for Intel-based PCs. It now exists for many other platforms as well, including PowerPC, and Sun SPARC.

Strictly speaking, Linux is the name of the operating system kernel. Other parts of the operating system are part of the GNU Project. Linux is a complete UNIX clone and supports the X Window system.

Mac OS X

Mac OS X is a UNIX based operating system from Apple. The core of the system is a POSIX compliant operating system named Darwin that provides the standard UNIX command line interface. On top of it, higher levels of the Mac OS X system are built, including the Aqua user interface. Mac OS X is the most popular general-purpose UNIX-like operating system currently in use.

UNIX File Types

Operating System	File Type	Description
All	Script	List of commands in a text file to be executed by an interpreter. The term script and shell program are often used interchangeably.
Solaris (SPARC/x86)	ELF	Executable and Linking format is the binary output produced by gcc compilers. It replaced an earlier format to take advantage of shared libraries.
AIX	Coff	Common Object File Format. A revision to the format of executable and object files to provide support for dynamically linked libraries. The COFF definition was replaced by the Executable and Link Format(ELF) in SVR4
HP-UX (HPPA, ia64)	ELF	Executable and Linking format is the binary output produced by gcc compilers. It replaced an earlier format to take advantage of shared libraries.
HP-UX (HPPA)	Coff	Common Object File Format. A revision to the format of executable and object files to provide support for dynamically linked libraries. The COFF definition was replaced by the Executable and Link Format(ELF) in SVR4
Linux	x86 ELF,	
x86-64 ELF	Executable and Linking format is the binary output produced by gcc compilers. It replaced an earlier format to take advantage of shared libraries.	
Mac OS X	Mach-O	Mach-O is short for Mach Object file format, the executable file format used on Mac OS X for executables and shared libraries. It is a derivation of the a.out format that offers more extensibility and faster access to information.

Using Rules to Teach Applications

Overview

Rules are used to teach applications in order to improve application recognition.

After a discovery job, the XML Enricher attempts to match data that is contained in a scan file to rules. Rules are contained in SAI files and are created by Hewlett-Packard and by users.

Universal Discovery offers two main ways to teach applications:

- Application Rules. Choose the Package Rules or Version Data Rules option.
- File Rules. Specify files to use to recognize applications.

Ensure that the application or the release or version of the application is not already taught by Hewlett-Packard. All rules taught by Hewlett-Packard are contained in the Master SAI files in the Software Library. To see if your app or version is contained in the SAI library, see the release notes for the latest Content Pack.

Tip:

- As an alternative to teaching applications yourself, you can contact HPE Support and submit a request for Hewlett-Packard to add rules for your application to the next release of the Content Pack. For more information, contact HPE Support.
- For the fastest and most convenient method, especially when teaching applications that are packaged in a standard format, choose **Application Rules > Package Rules** option.

For both ways, you identify files that Universal Discovery uses to recognize applications or release or versions of applications. While each are similar, there are differences in the number of supported platforms, and the effort levels required to configure the rules.

The SAI Editor and Viewer is used when configuring rules for both methods. To install these tools, see Inventory Tools in the *HPE Universal CMDB Data Flow Management Guide*.

Note: Hewlett-Packard provides some package rules and version data rules out-of-box, and actively maintains them in the Content Pack updates.

In general terms for each way, teach an application as follows:

1. Install the application
2. Run the scanner (additional configuration options required for Package Rules) and analyze the scan file using Inventory Tools
3. Configure the rule by entering the package name (Package Rule) or by specifying individual files (File Rule)
4. Teach different releases and versions for the same application by typing a regular expression (Package Rule), or by specifying additional individual files for that release or version (File Rule)
5. (Optional) Use Viewer to view the rule to ensure the rule information was saved.

Application Rules

Package Rules

(Most platforms/Operating Systems)

This method leverages package information, specifically the name of the package, to recognize applications.

Not all applications are packaged using standard formats. If the application is not using standard or support packages, for example, an .exe file, consider using File based rules.

Using this method is best for simple scenarios. The effort required to configure a rule is comparatively low because you create one simple rule for all releases and versions of an application and then UD automatically recognizes all releases and versions.

For more information on supported package types, see Supported Package Types in the *HPE Universal CMDB Inventory Tools User Guide*.

Version Data

(Windows only)

Essentially, this option operates the same as Package Rules, but the regular expressions that are used to recognize releases and version information use the information contained in the executable files of the file system. This option is recommended when consistent publisher and version information is reported in the version data inside its executable files.

File

(Most platforms/Operating Systems)

To use this method effectively, you must be knowledgeable about the file contents of each package that you want to teach.

If there are many versions of an application, you must install each version of the application. Additionally, you must identify files that help UD recognize each version of the application. Alternatively, consider using the Package Rules method.

You teach individual files for different releases and versions of the same application. Then, you assign categories to each of those files that helps Universal Discovery identify the relationship of the file to the application.

Rules Matrix

The following table summarizes basic attributes of the ways to teach applications:

Type/Attribute	Platform	Effort Level	Target Use
Package	Many	Low	Standard Packaged Apps
Version	Windows	Low	Windows Executables
File	All	High	Executables

How to Use Rules to Teach Applications

Application Rules

Package Rules

For an example, see Example of a Recognition Rule Using Installed Package Information in the *HPE Universal CMDB Inventory Tools User Guide*.

Version Data Rules

See Version Data Based Recognition Rules in the *HPE Universal CMDB Inventory Tools User Guide*.

For an example, see Example of a Recognition Rule Using Version Data in the *HPE Universal CMDB Inventory Tools User Guide*.

File

See Teaching Applications to the User SAI in the *HPE Universal CMDB Inventory Tools User Guide*.

Note: The *HPE Universal CMDB Inventory Tools User Guide* is installed together with the

installation of the Inventory Tools.

Supported Package Types

The following are supported package types.

BFF (AIX)
Depot (HP-UX)
MSI (Windows)
Pkg (Mac OS X)
Pkg (Solaris)
RPM (Linux, AIX)
DEB (Linux)
Oracle
Patch
SW ID Tag
APP (Windows)
APP-V (Windows)

Rule-Based Application Teaching

In addition to traditional scan file based recognition – where file details of executable files that make up a particular application version are added to the software application library – Universal Discovery offers an easier and more flexible way of teaching some applications to the SAI by means of rule-based recognition.

By creating a flexible recognition rule, many versions of the same application can be recognized without the need to keep file details for all executable files that make up the application. There are two kinds of rules currently supported.

- Version data based rules: These rules can be used to recognize simpler Windows applications that have consistent publisher and version information reported in the version data inside its executable

files.

- Installed packages based rules: These rules can be used to recognize applications that are packaged in the standard operating system package format.

Creating a rule is usually much simpler and faster than teaching scan file data for different versions of the corresponding application to the SAI.

You can create recognition rules by using the SAI Editor. In order to use this feature successfully, you must have a good understanding of regular expressions. This chapter provides several examples of regular expressions, but it is not a comprehensive reference. You also need a good understanding of Universal Discovery's recognition and teaching processes.

The Version Data Rules Tab and The Package Rules Tab of the SAI Editor show the available installed package rules and version data rules in the selected SAI.

Teaching a New Application to the User SAI

Each of the steps in the following procedure are documented in SAI Editor documentation located in this guide.

- Add a new Publisher if it doesn't already exist in the SAI
- Add a new Application
- Add the new Release
- Add a new Version
- Add files to the version – either from scratch or by dragging them from Windows Explorer
- Set the main file for the application
- Set up any license relationships for the application

Version Data Based Recognition Rules

Overview

A version data based recognition rule provides a rule-based extension to the software recognition in the User SAI by using the embedded version data information in Windows executable files. Recognition rules, if triggered, create entries in a separate rule-based SAI (by default, auto.zsai) that sits alongside the standard User SAIs.

This rule-based recognition feature helps Universal Discovery anticipate new versions of the applications already installed on your scanned devices and already saved in your User SAI. By looking at the current data for an application, you can create a rule (based on a series of regular expressions) that will provide automatic recognition of any new versions of that application.

This means that you will not have to teach each new version of an application. The rule should automatically recognize an application upgrade.

Prerequisites:

Rule-based recognition using version data works on a unique file found in only one directory on each machine. If this directory contains files that can also belong to other applications (libraries, for example), then the rule may not trigger the recognition. This is because the recognition level from the other applications may swamp the recognition level of this one target file.

For Windows devices, the Scanners must be configured to collect file signatures, identify Windows executable files, and collect internal file identification from them. See:

Scanner Generator Wizard > Software Details > File Scanning > File Identification

Examples Where a Rule-Based Entry Could Augment the Standard Recognition Algorithm

Example 1: For the prediction of the format of a future version of a product

If an entry in the Product Version field of the version data had the format 1.2.345, for example, a rule could be created based on a release and version having the format 1 and 1.2 respectively. The release rule would take the portion of the string before the decimal point and classify it as the release, the version would take the string up to the second decimal point and ignore the remaining digits.

Example 2: For translation of the Version information associated with a file

This could be mapped to a marketing version name. For example, the file version is 9.0 but the marketing name is 2009.

What Happens When You Have Created a Rule Entry

After the rule entry has been created, it must go through the recognition process to produce an entry in the rule-based SAI.

Universal Discovery locates the rule-based SAI as follows:

If a file name appears in the SAI used to store rule-created items box at the bottom of the SAI List tab in the SAI Editor Options dialog, this file is used.

To open this dialog, click Edit > Options in the SAI Editor, and go to the SAI List tab.

If no file name appears in the SAI used to store rule-created items box, the auto.zsai file located in the same directory as the first Master SAI file is used.

Note: The XML Enricher is also impacted and updated when a rule is created.

Creating a Recognition Rule

The rule needs to have enough information to create the release and version for the selected application.

When you create a rule by using the embedded version information in a Windows executable file, the names for the release and the version are extracted from one of the version fields collected by the scanner from that file.

The version fields include:

- CompanyName
- FileDescription
- FileVersion
- InternalName
- LegalCopyright
- OriginalFilename
- ProductName
- ProductVersion

When you create a rule by using installed package information, the names for the release and version are extracted from various package properties, including hardware fields.

In either case, a regular expression is defined that can match against the version data of a target file. The rules relating to these entries are stored in the current SAI selected by the SAI Editor. If there is a match between the regular expression and the information in the target file, an entry is triggered and written to the rule-based SAI file.

This file is defined on the SAI List tab in the SAI Editor Options dialog or created as auto.zsai in the same directory as the first Master SAI.

If mapping is invoked, the result of the trigger may be mapped to a different output value. For example, if a mapping has been defined as 9 = 2003, then when there is a successful match, it produces a result of 9. However, instead of reporting the value as 9, it is reported as 2003. This is used in situations

where a publisher uses version descriptions for marketing purposes that are different from those used by the software development team.

It is possible to perform the match using the full field value or to match on just part of the field, known as Regular Expressions (Regex) Group. To create a Regex Group, it is necessary to insert parentheses () around the chosen expression. These groups allow part of the string to be extracted and used for naming the release and version.

Example of a Recognition Rule Using Version Data

The following procedure shows you how to set up a recognition rule that matches a regular expression against embedded version data in a Windows executable file.

To set up a Recognition Rule using version data:

1. Open the Viewer and the SAI Editor.

To create a rule for a specific application, you want to see the current data in the Viewer. This enables you to build an appropriate rule so that Universal Discovery can immediately recognize future versions of that application.

2. In the Viewer, open the scan file that contains the application for which you want to create a recognition rule. You can add rules only to a User SAI.
3. Also in the Viewer, locate the file that you want to teach using the Directories and Files tab. In this example, we will use the WinRAR.exe file.
4. Open the SAI Editor.
5. In the User SAI file, locate the application for which you want to create a rule.

If the application is not yet present in the file, you will need to add it.

6. In the SAI Editor, create a placeholder Release (for example, "X") and placeholder Version (for example, "XX") for the application. If the application has not previously been taught, it is also necessary to add the main file to the application. You can do this by dragging the main file from Windows Explorer to the SAI Editor.
7. Find the application to teach (in this example, WinRAR Archiver), and right-click it.
8. Select Edit Application Rules. The Application Rules Editor opens.
9. If the rule that you want to work with already exists, select it and click Edit. Otherwise, click Add.

The Application Rule Wizard window opens

10. Select File version data rule (Windows), and click Next.

11. Follow these steps to specify the file name, operating system, and language:
 - a. Specify a Filename for a new rule or change the Filename as desired for an existing rule. In this example, we use WinRAR.exe.
 - b. Specify the Operating System on which the application runs.
 - c. Specify the Language for the application.
 - d. Specify the Commercial license type for the application.
12. Click Next to proceed to the next page
13. To specify how the release name will be obtained, follow these steps:
 - a. In the Field box, specify the Version Data Field from which the release name will be extracted.
 - b. In the Regular expression box, specify the regular expression to use. If the same field will be used to extract both the Release and the Version, the regular expression needs to be generic enough to provide groups that can match both names. For example, if the value is 3.80 in the File Version field, the Release is 3, and the Version is 3.80

The regular expression we will use for this example is as follows:

```
(([0-9]+)\.[0-9]+)
```

This expression represents two groups of digits separated by a period (dot). For additional information about and examples of regular expressions, see the section about Regular Expressions in the Analysis Workbench section of this guide.

Examples of Regular Expression Constructions

RegEx	Description
<code>(([0-9]+)\.[0-9]+)</code>	This will recognize a variety of version numbers with two digits divided by a dot. For example, 2.4, 5.6, etc.
<code>(([0-9]+)\.[0-9]+)\.[0-9]+)</code>	Similar to the one above, this will recognize a version number with four digits, such as 1.2.2.3, 3.4.4.4, etc.
<code>^[A-Za-z]*)([A-Za-z]*)</code>	This will recognize any text that may appear, in upper or lower-case letters.

- c. In the Format field, specify how the extracted field will be formatted. You can enter a combination of text and any of the following macros.

Examples of Macros

Macro	Description
<code>\${fieldvalue}</code>	Covers whatever text appears in the field. Cannot be used for Application Name, Publisher Name, or Release.
<code>\${appname}</code>	Application Name (returns the complete value of the Application Name, including all formatting).
<code>\${pubname}</code>	Publisher Name (returns the complete value of the Publisher Name, including all formatting).
<code>\${rlsname}</code>	Release (returns the complete value of the Release, including all formatting).
<code>\${group<n>}</code>	Returns the regex group referred to by its index <n>, where <n> is an integer number. For example, <code>\${group1}</code> refers to the regex group 1.

- d. For the Regex Group Index, select the group from which the release will be taken—or the entire field if the entire version field value is required.

When the Regex Group Index is N, it points to the group (sub-expression) delimited by the Nth left parenthesis in the regular expression.

In this regular expression, for example, there are five choices: 1, 2, 3, 4 or Entire field:

```
(( [0-9]+ ) \ . ( [0-9]+ ) \ . ( [0-9]+ ) \ . [0-9]+ )
```

Here, both 1 and Entire field specify the whole regular expression. An index of 2 matches the leading digits to the left of the first period. An index of 3 matches the digits between the first and second periods.

In our WinRAR.exe example, the Regex Group Index for the release will be 2 (the leading digits before the period).

```
(( [0-9]+ ) \ . [0-9]+ )
```

The Regex Group Index for the Version will be 1 (leading digits, then period, then digits).

- e. For Mapping, you can enter some extra rules that will help identify applications. For example, you can enter the following to recognize different marketing names for the applications:

5.1=Windows XP

5.2=Windows Server 2003

6.0=Windows Vista

In our example, we do not use this capability, as the Release is a numeric value that does not require a mapping.

- f. Click Next to go to the next page

- 14. To specify how the main file is defined, follow these steps:

- a. Select The first file belonging to the package is the Main if you want the first file selected as the main file. The list is sorted alphabetically. Then, click Next to move to the next screen.

Select Specify the Rule for the Main File if you want to create custom rules to define which file and which file type is defined as the main file.

- b. On the Include Rule tab, type the file name and file directory for the file that you want to include in the rule.

In the File Name field, type the name of the file that you want to include in the rule. You can also type a wildcard to include all files.

In the File Directory field, type the directory path where the file is located.

- c. To select the file types to use to define the main file, select one of the following options:

Any (including non-executables)- Includes all file types that are contained in the package.

Any executable- Includes all file types that are contained in the package.

Any executable selected- Includes the file types that you select.

Any executable not selected- Includes the file types that are not selected.

- d. Select the **number of occurrences** to set the number of occurrences of the main file in a single installation of the application. This setting is useful when multiple instances of the same application version are installed.

Note: If the main file occurs twice in the same installation, set this value to two. If **Report Multiple Installations of the Same Version** setting of the SAI recognition options is enabled, it will cause only one installation of the application to be reported for every two occurrences of the main file.

- e. On the Exclude Rule tab, type the name of the file that you want to exclude from the rule. You can also type a wildcard to exclude all files.

In the File Name field, type the name of the file that you want to exclude from the rule. You can also type a wildcard to include all files.

In the File Directory field, type the directory path where the file is located.

- f. Click Next to move to the next screen, or click Back to return to a previous screen.

15. Follow the same procedure to specify how the version will be obtained.

The Regular expression box is only enabled if the version data field specified in the Field box is different from the one used to determine the release. If it is the same and you need to amend the regular expression, click Back and edit it on the previous screen.

When you are finished, click Next to proceed to the next page.

16. On this page the Finish button becomes enabled. When no further matches are required, leave the radio button in the No further matches state, and click Finish to complete the wizard. Normally, however, it is necessary to specify extra conditions to ensure that the file comes from the expected publisher.

In our example, we want to make sure that the CompanyName field refers to Alexander Roshal, which is the company we expect. If WinRAR.exe happens to be used in another unconnected application for which the CompanyName is different, the rule will not be triggered. Another useful option is to match is the ProductName field.

Note that the Field drop-down list only includes fields that have not previously been used either for Release, Version, or extra matches.

17. Click Finish to complete the rule configuration or Next to add another extra match.

Your new rule is now ready to be used for recognition. See View Your New Rule on page 366 to determine whether it successfully detected the application. The Version Data Rules tab shows all of the available version data rules in the current SAI.

Example of a Recognition Rule Using Installed Package Information

When the Scanner is configured to collect Installed Applications file data, the Scanner can collect information as to which files belong to which installed packages. Using installed package recognition rules, files belonging to a particular package can be automatically recognized as belonging to a particular version of an application.

For more information, see the section describing the Hardware Data page in the Scanner Generator Wizard in the Data Flow Management Guide.

The following procedure shows you how to set up a recognition rule that matches a regular expression against installed package information.

To set up a Recognition Rule using installed package information:

1. Open the SAI Editor.
2. In the User SAI file, locate the application for which you want to create a rule— in this example, we will create a rule for tcl from ActiveState Software.

If the application is not yet present in the file, you will need to add it.

3. Right-click the application that you want to teach, and select **Edit Application Rules**.

The Application Rules Editor opens.

4. If the rule that you want to work with already exists, select it and click **Edit**. Otherwise, click **Add**.

The Application Rule Wizard window opens

5. Select **Installed Package** and click **Next**. The Application Rule Wizard opens.

6. Follow these steps to specify the package name, type, and properties:

- a. Specify a Package name for a new rule or change the Installed Package Name as desired for an existing rule. The string you enter must match the package name exactly and is case sensitive. In this example, we use tcl.

- b. Select the **Installed Package Type** for this application. This is determined by the operating system on which the application runs.

Oracle. If you want Universal Discovery to recognize Oracle components installed by the Oracle Universal Installer, click to select the **Oracle** check box, regardless of what operating system the Oracle components are installed on.

Patch. If you want Universal Discovery to recognize patches, click to select the **Patch** check box. If you want Universal Discovery to recognize Windows APP package types, click to select the **APP (Windows)** check box.

Note: If you select the **APP (Windows)** option, you cannot edit the **Recognize the application even if the package has no files** option.

App-V. If you want Universal Discovery to recognize virtual applications that are running under Microsoft Application Virtualization ("App-V"), select the **App-V** check box.

- c. Specify the Operating System for the application.

- d. Specify the Language for the application.
- e. Specify the Commercial license type for the application.
- f. Select **Recognize the application even if the package has no files** to recognize a package that does not contain files.
- g. Select the **number of package occurrences** to set the number of packages for a particular application version that reports one instance or version for that application. This setting is useful when multiple instances of the same application version are installed.

Note: In rare circumstances the same installed application (package) may be reported twice for a single installation of the application. In such a case set this value to two. The default value of 1 is appropriate in most cases.

- 7. Click **Next**. The Package Rule page opens.
- 8. Follow these steps to specify the regular expression for the release name:
 - a. In the Field box, select the hardware field from which the release name will be obtained.
 - b. In the Regular expression box, specify the regular expression to use. If the same field will be used to extract both the release and the version, the regular expression needs to be generic enough to provide groups that can match both names.

The regular expression we will use for this example is as follows:

```
([0-9]+)\..*
```

This expression represents a group of digits, followed by a period (dot), followed by any string. For additional information about and examples of regular expressions, see the section describing regular expressions in the Analysis Workbench part of this guide.

- c. In the Format field, specify how the release name will be formatted. You can enter a combination of text. For more macros, see the section on Macros in this guide.
- d. For the Regex Group Index, select the group from which the release name will be taken—or the entire field if the entire version field value is required. See Example of a Recognition Rule Using Version Data, step d in this guide for information about how to choose this value.
- e. For Mapping, you can enter some extra rules that will help identify applications. For example, you can enter the following to recognize different marketing names for the applications:

```
5.1=Windows XP
```

```
5.2=Windows Server 2003
```

```
6.0=Windows Vista
```

In our example, we do not use this capability, as the release is a numeric value that does not require a mapping.

9. Click **Next** to proceed.

10. Follow the same procedure to specify the regular expression for the version name.

The Regular expression box is only enabled if the version data field specified in the Field box is different from the one used to determine the release name. If it is the same and you need to amend the regular expression, click Back and edit it on the previous screen.

11. Click **Next**. The following page will open if you have selected the Recognize the application even if the package has no files check box in step 6:

12. Follow these steps to specify how the main file will be selected:

You can specify the rule for the main file. Otherwise, the first file that is contained in the package is marked as the main file.

In the Include Rule tab, you can specify file name, directory, and type to be included being selected as main file.

Similarly, you can specify file name and directory to be excluded from being selected as main file in the Exclude Rule tab.

Click **Next** to proceed

13. On this page the **Finish** button becomes enabled. When no further matches are required, leave the radio button in the No further matches state, and click Finish to complete the wizard. Normally, however, it is necessary to specify extra conditions to ensure that the file comes from the expected publisher.

In our example, we want to make sure that the publisher field refers to Red Hat Inc., which is the company we expect. If the tcl package happens to be used in another unconnected application for which the publisher is different, the rule will not be triggered.

Note that the Field drop-down list only includes fields that have not previously been used for the release name, version name, or other extra matches.

14. Click **Finish** to complete the rule configuration or Next to add another extra match.

Your new rule is now ready to be used for recognition. See the section entitled View Your New Rule to determine whether it successfully detected the installed package. The Package Rules tab shows all of the available installed package rules in the currently selected SAI.

Viewing Your New Rule

After you create a new rule for application recognition, you can use the SAI Editor to view the results of adding that rule.

1. In the SAI Editor, click Tools > Import Data from Recognition Result
2. Select your scan file, and click OK.
 The Recognition Result Import window appears, and it will process the scan data for a few seconds.
3. Right-click the file or package that you were teaching, and select View File Properties. You can see the latest version data or installed package information as seen in the scan file.
4. In the SAI Editor, click Edit > Options.
5. Click the SAI List tab.
6. From the SAI used to store rule-created items list, select the file that you specified for rule-based recognition (by default, auto.zsai) and click OK.
7. In this file, expand the entry for the application to which your rule applies, and you will see the latest data available for this application, based on the rules that you created.

Rules Section in the XML Import

The rules section is added to end of the SAI.

```

</publisher>

- <rules>

- <rule appid="1500000000" filename="default.exe">
<fieldmatch field="ProductName" regex="" />
<fieldmatch field="ProductVersion" regex="[1-9].[0-9]" />
<fieldmatch field="CompanyName" regex="" />
<releasefield field="CompanyName" format="{fieldvalue}" groupindex="0" />
<versionfield field="ProductVersion" format="{fieldvalue}" groupindex="0" />
</rule>

- <rule appid="1500000001" filename="SshClient.exe">

```

```

<fieldmatch field="ProductVersion" regex="[1-9]\." />
<fieldmatch field="FileVersion" regex="\.[1-9]*" />
<fieldmatch field="CompanyName" regex="(^Ssh)(\$h)" />
<fieldmatch field="LegalCopyright" regex="(Comm)" />
<releasefield field="CompanyName" format="{fieldvalue}" groupindex="1" />
<versionfield field="CompanyName" format="{fieldvalue}" groupindex="2" />
</rule>
- <rule appid="1500000001" filename="ssh2.exe">
<fieldmatch field="ProductName" regex="([ssh])" />
<fieldmatch field="ProductVersion" regex="[1-9]" />
<releasefield field="ProductName" format="{fieldvalue}" groupindex="1" />
<versionfield field="ProductVersion" format="{fieldvalue}" groupindex="0" />
</rule>
- <rule appid="3904" filename="iftlsnr.exe">
<fieldmatch field="ProductVersion" regex="([0-9]\.[0-9])" />
<fieldmatch field="FileVersion" regex="([0-9]\.[0-9]\.[0-9])" />
<fieldmatch field="ProductName" regex="{appname}" />
<releasefield field="ProductName" format="{fieldvalue}" groupindex="0" />
<versionfield field="FileVersion" format="{fieldvalue}" groupindex="1" />
</rule>
</rules>
</sai>

```

Teaching Using Files

Using this method of teaching, file details of executable files that make up an application version are added to the software application library. Moreover, you must teach different versions of the same application.

Tip: Use the installation path of the application for best results.

To teach using scan files, see ["How to Teach Using File Based Information"](#) below.

How to Teach Using File Based Information

The following describes how to teach applications to the software application library using scan files.

1. Open the SAI Editor.
2. Using the SAI Editor Options menu option and then load the User SAI file.
3. In the right-hand display area, right-click **User SAI File** and click **New Item** in the drop-down menu.
4. Assign the Publisher Name of the application.
5. Right-click **User SAI File** again and then assign the Application Name in the Application Properties window.
6. Right-click the application you just created and click **New Item** from the drop-down menu.
7. Right-click the release number that was automatically created and click **New Item** in the drop-down menu.
8. Enter the release version number, the operating system on which the application is installed, and any other information you want to include.
9. Click the version number you just created and click the **Tools** drop-down menu.
10. Expand User SAI File and any child nodes and click on the version of the application that you created.
11. Click **Tools** and then click **Import Data from Recognition Result**. The **Recognition Verification** dialog box is displayed.
12. Browse to the scan file that contains the information you want to use to teach the application and then click **OK**. The **Recognition Result Import** dialog box is displayed.
13. In the **Recognition Results** pane, select the files that you want to use to teach the application.
Note: Use the CTRL button to select multiple files.
14. In the **Destination SAI** pane, click the version of the application that you want to teach with the selected files and then click **ADD**. The **Importing Files** dialog box is displayed.
15. In the Importing Files dialog box, select the executable file (.exe) and ensure that it is the Main file in the **Relationship to Application** column. Click **OK**.
16. On the **Recognition Result Report** dialog box, click the **Install String** tab. In the left pane, select the application that you want to teach and then in the right pane select the version of the application. Click **Import**. The **Information** dialog box appears that verifies the operation was

completed successfully.

Note: To verify that the install strings were imported successfully, see the version properties for the version of the application and verify that the install string was populated in the **Install String** field.

Viewer Overview

Viewer allows you to view the detailed information contained within a scan file (.xsf). This provides a convenient way of displaying software, hardware and asset information collected for an individual computer. The Viewer is aimed at technical support and help desk staff who need detailed configuration analysis and diagnostics.

You can also view other information, such as the characteristics of software files stored during the inventory, applications and the environment variables.

In summary, the Viewer displays:

- Detailed and summarized hardware configuration information.
- Asset information.
- Details of all software scanned.
- Contents of key files collected during the inventory, such as system configuration files (Config.sys and Autoexec.bat etc.).
- Environment variables.
- Details of all logical drives scanned.
- Details of any applications recognized.
- A list of installed applications as reported by the operating system.
- A list of running software processes.

Starting Viewer

To start Viewer on your Windows workstation:

From the Windows Start menu select **Programs > HP UCMDB > > Inventory Tools > Viewer**.

Exiting Viewer

To exit Viewer on your Windows workstation use one of the following methods:

- Select the Exit command from the File menu.
- Use the close icon in the top right of the workspace.

Viewer User Interface

The Menu Bar

Viewer commands are accessible from the menu bar. Commands are grouped by function ('File', 'Edit', 'View', 'Window', 'Help'). Each function has its own entry (command) in the menus. Menu commands may be activated with the mouse or the keyboard.

- To open a menu, perform one of the following:
 - Use the mouse. Click the menu name (for example, File) and then click the command you want (for example, Open Scan File).
 - Use the shortcut keys. Shortcut keys are shown to the right of the command in the menus. For example, **CTRL+o** is a shortcut used to open a scan file.
 - Use the access key. Access keys are indicated by an underscore on the active letter. For example, the Open Scan File command in the File menu is accessed by pressing Alt-F and then O.

Note: Most menus invoke commands, however, some menu commands display a dialog box. This is indicated by an ellipses (...) after the menu command.

Shortcut Menus



You can access a shortcut menu related to your current activity by positioning the mouse cursor on the appropriate area of the workspace and clicking on the right mouse button.










Toolbars

Toolbars allow you to access various commands without using the menu.

Click the toolbar icon to activate the function associated with it.

Buttons in the toolbar offer the following functionality:

Icon	Name	Function
	Open Scan File	Loads inventory data from an XSF file.
	Options	Displays the Viewer Options dialog box.

Icon	Name	Function
	Copy	Copies the information in the currently selected tab to the clipboard.
	Copy to File	Copies the information in the currently selected tab to a file.
	Compare	Compares two scans.
	Find File	Finds a file within a scan.
	Tile Horizontally	Tiles windows horizontally.
	Tile Vertically	Tiles windows vertically.
	Cascade	Cascades windows.
	Arrange Icons	Aligns all icons of minimized windows.
	Help	Displays the help text for Viewer.

Tip: When the mouse pointer passes over an icon, a tooltip appears indicating the command corresponding to the icon.

Moving a Toolbar

The toolbar can be dragged and positioned to be aligned to the top of the window, the left of the window or into a floating state.

To move a toolbar:

Click the “move” handle on a docked toolbar (one that is attached to one edge of the program window), and drag it to a new location.

When you drag a toolbar to the edge of a window, the toolbar outline snaps into place along the length of the window edge.

You can dock a floating toolbar by double-clicking on the title bar.

Resizing a Toolbar

To resize a floating toolbar:

Move the pointer over any edge until it changes to a double-headed arrow, and then drag the edge of the toolbar.

Note: You cannot resize a docked toolbar.

Tab Pages

Tab pages in Viewer allow you to examine the data from a loaded scan file. You can select the following tab pages:

- Summary
- Hardware and Configuration
- Directories and Files
- Stored Files
- Software Applications (only displayed if Application Recognition was set as an option). See [Configuring Recognition Settings](#) for further information.

Status Bar

A status bar at the bottom of the Viewer workspace displays information about the current loaded scan file.

The status bar has three panels:

- The first panel displays the current system date and time.
- The second panel displays the number of scans currently loaded.
- The third panel displays the name of the scan file currently displayed along with a brief description.

Shortcut Keys

You can quickly accomplish tasks you perform frequently by using shortcut keys.

Task	Keyboard Shortcut
Open Scan File	CTRL+o
Close	CTRL+F4
Options	CTRL+t
Exit Viewer	ALT+x

Task	Keyboard Shortcut
Copy	CTRL+c
Compare	CTRL+m
Find File	CTRL+f
Show Advanced Hardware View	CTRL+v

Sorting Lists

Click on a column list header to sort and reverse sort the order of the information, alphabetically or numerically in ascending order (A to Z, a to z or zero to 9) or descending order (Z to A, z to a or 9 to zero).

Double-clicking on the **splitter** icon between columns will expand the column width to the maximum cell width.

Copying the Contents of a Tab Page

You can save or copy the contents of all tab pages.

To copy the contents of a tab page to the clipboard:

1. Select the **Copy** command from the Edit menu, or click the icon in the Viewer.
2. Paste the contents to an editor of your choice.

To save the contents of a tab page to a file:

1. Select the **Copy to file...** command from the Edit menu (text files only), or click the icon in the Viewer.
2. Use standard Windows navigation methods to select or enter a file and the location where the file is to be saved.

Searching for Files

You can locate a file from any point within Viewer. This can facilitate the location of files for a machine across multiple drives.

To locate a file from any point:

1. Select the **Find File** command in the Edit menu, or click the icon. The Find File dialog box appears.
2. In the Name box, type the name of the file you want to find. You can use DOS wildcard characters, (using * and ?) as well as normal alphanumeric characters.
3. Click the **Find Now** button.

If files matching the file name or mask are located, they are displayed in the Search Results list box.

If the search is lengthy, you can abort the search (with partial results being displayed) by clicking the Stop button.

4. Highlight a file entry in the Search Results list.
5. Click the **Goto** button or double-click on a file entry.

The Directories and Files tab of Viewer is displayed in the background showing the located file.

6. To clear the entries and carry out a new search, click the **New Search** button.

Configuring Recognition Setting

The Viewer is able to perform application recognition on the software scanned, while the data is being loaded from a scan file.

When the application recognition is enabled, a Software Applications tab is available in the Viewer workspace. This tab shows a summary of identified applications on the selected machine. When recognition is disabled, loading is slightly faster but no application information is available.

There are three recognition methods: No recognition, Installed applications, and Software application index (SAI). By default, the Viewer uses the SAI recognition configured with the Master SAI files (Master.zsai) to perform application recognition. The Master SAI files are read-only files that contain a library of software applications.

There are multiple Master SAI files that can be used at the same time for recognition purposes:

- Master.zsai
- French.zsai
- German.zsai
- Unix.zsai
- BaseUnixOS.zsai

All of these files can be found by default in the following location:

C:\Hp\UCMDB\DataFlowProbe\Runtime\ProbeManager\DiscoverySaiResources\SaiRuntime

By default, the Viewer is also configured to use the **User.zsai** file. A User.zsai file is one that you, the customer, have customized with applications you have taught using Analysis Workbench or SAI Editor.

You can use multiple User SAI files for recognition purposes. Each User SAI created has a unique identifier assigned to it.

Note: Backward compatibility has been maintained in this version of Universal Discovery.

To display the Viewer recognition options tab:

1. Select the Options command from the Files menu. The Viewer Options dialog box appears.
2. Click the **Recognition** tab.

Note: Utilization data shows you how much a particular software application is being used. Of the three available options, only the SAI option will produce utilization data.

Disabling Application Recognition

This option is used to disable any application recognition. When recognition is disabled, loading is slightly faster but no application information is available.

To disable application recognition:

In the Recognition Method group box, select the **No recognition** option.

Selecting the Installed Applications List as the Recognition Method

This method of recognition is based on the operating system's internal list of applications. As such, it is not recommended as the preferred recognition method, except for data from UNIX Scanners.

To select installed applications for the recognition method:

In the Recognition Method group box, select the **Installed Applications** option.

The **Use Enriched application data if available** option is then activated. If you select this option, Viewer uses the application data from the enriched scan file instead of running "real" recognition.

Selecting the SAI as the Recognition Method

1. In the Recognition Method group box, select the Software Application Index (SAI) option.
2. Click the Advanced button to set further options if required. The Advanced Configuration - Software Application Index dialog box is displayed.

Setting Level of Recognition Used

To set the level of recognition used:

1. Select the General tab in the Advanced Configuration - Software Application Index dialog box.
2. In the Miscellaneous group, select options for the level of recognition used.

- Level 3 recognition heuristics

If this option is enabled, the recognition engine defers its final recognition decision until all the files in all the directories on the machine have been read. If disabled, machine-based recognition does not take place and recognition data is returned after each directory is loaded. A time overhead of about 10% is normal when Level 3 Recognition is enabled.

- Auto-identify unrecognized device driver files

When enabled (by default), files that cannot be identified by standard SAI recognition and have the Device Driver attribute will be marked as recognized. Files used as Device Drivers represent a large portion of the files that are not identified by the Application Library. Being able to identify these automatically can significantly reduce the effort required to achieve good recognition rates.

- Report multiple installations of the same version

Specifies whether to report multiple instances of the same application version that are installed.

Note: If a user wants to report multiple installations of the same version software, set the correct scan configurations for **Inventory Discovery by Scanner** job so that scanner can collect enough information into a scan file.

Setting the Preferred Language

If you are using a national SAI file, for example, **German.zsai** or **French.zsai** together with the **Master.zsai**, you will want to set this option.

Preferred language is used for cases when the recognition engine encounters two or more versions within a directory that are identically matched. It will give preference to the one in the selected language.

Note: This will only work if exactly one of the versions matches the language.

To set the language options:

1. Select a language from the drop-down list.
2. Check the Override OS Language box if you want the recognition engine to overlook the operating system locale setting and take the setting you specified in the Preferred Language box.

Summary of the Recognition Process

The process can be summarized as follows:

- A rating is obtained for all versions that are possible matches.
- The version(s) with the best rating are found.
- If there is only one version, then the process goes no further. Otherwise, the version whose language matches the OS locale is selected. If no version matches this language, then the version matching the setting in the Preferred Language box is selected.
- If the operating system locale setting is not available, it takes the setting you specified here in the Preferred Language box.

Adding, Creating or Removing SAIs

The options on the SAIs tab page allow you to:

Add a new SAI file to be used for application recognition.

1. Remove an existing SAI file.
2. Create a new empty User.zsai file.

The list box on this tab page displays the following information:

- The path to source files for the SAI – both read-only Master SAIs and editable User SAIs.
- The SAI ID number for User SAI files. Master SAI files do not have an ID.
- A description of the SAI files.
- The size of each SAI file (in kilobytes).
- The number of application versions in each SAI.

- The type of SAI file:
- Master SAI – Read-only SAI
- User SAI - Editable
- The creation date for a Master SAI file or for a User SAI, the date the file was last saved.

SAIs Used to Store Rule-Created Items

Any items encountered by Viewer that were created by rules will be added to the SAI file specified here. These rules are present within the SAI files themselves and additional rules can be added using SAI Editor.

Select the SAI file from the drop down list. The drop down list contains a list of the SAIs currently loaded.

If this field is left blank, Viewer will create a file called Auto.zsai and put this in the same location as the first SAI in the list.

Adding, Removing, or Creating a New SAI File for Application Recognition

To add a new SAI file for application recognition:

1. Select the SAIs tab in the Advanced Configuration - Software Application Index dialog box.
2. Click the Add button on this tab page.
3. Navigate to and select the SAI file (Master or User) you want to use for recognition.

The SAI file is added to the list box which means the file will be included in for application recognition.

Removing an Existing SAI File

To remove an existing SAI file:

Select the file in the list box and click the **Remove** button.

Creating a New Empty User SAI

To create a new empty User SAI:

1. Click the **Create...** button. The Create a User SAI dialog box is displayed.
2. Enter or navigate to the directory where the SAI file is to be created.
3. Enter a description for the file.

4. Click the **OK** button.

The file is automatically assigned a unique ID. However, you may already have an SAI with the same filename. If so, a confirmation message will be displayed.

5. Click **Yes** if you want to overwrite the existing SAI file or click **No** to return to the dialog box and assign a new ID to the SAI file.
6. If you have made modifications to the `cfgNextSAIID` setting in the **SAI.ini** file, you may see the following message. This happens when the value for the ID in the ini file is missing or lower than the highest ID in the user SAIs currently loaded. This message is for information only – the Data Flow Probe components will correct this situation automatically by inserting the correct ID value into the ini file.

The next User SAI ID cannot be found in the settings file.

This probably means that you are using User SAIs created with a different version of the software, or created on a different machine.

Please take care to set the new ID to a value that is unique across your organization.

Setting Filtering Options for the SAI

1. Select the Filtering tab in the Advanced Configuration - Software Application Index dialog box.
2. Select the options as required:

Apply recognition to selected files only

This is a recognition filter that determines which of the files are sent to the recognition engine for processing. Sending too many files can make it slightly slower.

- By extensions

Allows you to type in the extensions of any files that you want processed against the recognition engine. Select the extension from the drop-down list (this list maintains a history of previously entered extensions) or type the extension directly in to the box. Multiple file extensions must be separated by a semicolon.

- Executable files

All executable files will be processed against the recognition engine. Executable files include *.exe, *.com, *.dll and other files containing executable code.

- Files within Archives

Processes any files in archive files. The following archive file types are supported:

ARJ, ZIP v1, ZIP v2, LHA, LZH, ARC, CAB, TAR, GZIP, TAR/GZIP and PAK

Note: For the best application recognition, select the **Executable Files** option.

Junk Files

Some files may be executable but are of no interest for licensing or other purposes. These files are often identifiable via the file name for example, `TMP[0-9]*\.\$\$\$`.

The **Treat Files matching the following regular expressions as junk** option is a way for the recognition engine to ignore such files, by allowing one or more file name masks to be specified as junk.

These files are not passed to the recognition engine and will be marked as junk. This is available in the Display Filters tab page so junk files can be discarded and not shown.

Note: When matching the junk file name against the junk filter regular expression, the file name is first converted to lower-case. For this reason, all letters entered as part of the regular expression must be in lower-case for a match to successfully occur. To enter multiple regular expressions, enter each regular express on its own line.

To set junk filters:

1. Select the Treat Files matching the following regular expressions as junk option.
2. Type the file name masks you want to treat as junk.


For more information about regular expressions refer to the Analysis Workbench section.

Configuring Asset Field Settings

Asset Field Settings Overview

The Viewer can be configured to construct any number of additional read-only named asset fields. These asset fields are constructed based on data collected at scan time. The analysis asset fields defined here are automatically displayed as entries in the Asset Data folder in the Hardware and Configuration tab page.

To configure the asset field extract settings:

1. From the File menu, select **Options**, or click the  icon. The Viewer Options dialog box is displayed.
2. Click the **Asset Fields** tab. This tab contains a pane with five columns:
 - **Caption** - The caption as specified in the Asset Data page of the Scanner Generator.
 - **Field** - The number of the Analysis field (1 to 28).
 - **Field Type** - The type of field to extract the information.
 - **Field Data** - The source of the field information.
 - **Default** - Any default value that has been set.
3. Right-click anywhere in the pane to display a menu with the following options:
 - **Add** - Adds a new analysis asset field.
 - **Edit** - Enables you to modify an existing asset field.
 - **Remove** - Removes an existing asset field from the list.

Adding an Asset Extract Field

The fields are set up in a manner similar to that found in the Scanner Generator. Five different types of fields can be constructed:

- Text file Extract

Takes data from a plain text file (similar to File Extract Field of Scanner).

- Ini Field Extract

Takes data from an ini file (no equivalent in Scanner).

- CSV File

Takes data from CSV files such as peripheral sheets (allows an external CSV file, containing a list of data associated with asset numbers to be parsed and loaded along side the other data).

- Environment Field

Takes data from environment strings (equivalent to same field in Scanner).

- Sequence Field

Takes data from a sequence of asset fields (equivalent to same field in Scanner).

To add a new asset field extract:

1. Click the **Add** button. A New Analysis Asset Field dialog box appears.
2. In the Field Type group, select the type of field to be extracted.
3. Use the controls on this page to configure the desired fields.

Extract Field Types

Text File Extract Asset Field

This field type extracts information from a single line in a named text file.

A useful file extracts include the predefined SMS file which extracts the SMS Unique Machine ID.

The file you wish to extract from must be a file that is included in the Stored Files section. If the file is not there it will not work. In other words, the Scanner has to be set up to store the file before you can extract from it in Viewer.

To set up a new text file extract asset field:

1. Select Text File Extract as the field type
2. In the File Name box, specify the name of the text file that the information is to be extracted from.
3. In the Search String box, specify the text string that is going to be located.
4. Assign the number for the analysis field by selecting it from the Field drop-down list.
5. Assign a caption for the field if required, by typing it in the Caption field.
6. Check the **Remove leading blanks** box, to remove blank spaces (if there are any) before the search string located in the text file.
7. Check the **Remove trailing blanks** box, to remove blank spaces (if there are any) after the search string located in the text file.
8. In the File Directory group box specify where to look for the file. This is a prioritized search sequence list. Select one of the following options:
 - o **Use first occurrence** – Viewer uses the first match of the file that it encounters.
 - o **Use prioritized directory list** – A list box is enabled, which allows you to specify the priority of directories where the file might be located.

%BASEOS% (the base operating system directory). For example:

C:\Winnt

This location will have the highest priority, that is, if the file is located in this directory, then this file will be used.

%BASEOS%\System (the System directory in the base operating system directory). For example:

C:\Winnt\System

If the file is not located in the %BASEOS% directory and is encountered in the %BASEOS%\System location, then this location will have priority as the source for the text file, and so on.

- Specify any extract options as required by clicking the **Options...** button. See Specifying Extract Options for Text Files, INI Files, CSV Files and Environment Variables for information about how to do this.

Ini File Extract Asset Field

Initialization files (.ini files) contain a number of different sections. Each section contains lines of settings (Key Names) applicable to that section. The format of the ini file is as follows:

[Section Name1] - (The name of the first section)

Key Name1 = Value (The first setting)

Key Name2 = Value (The second setting)

[Section Name2] - (The name of the next section)

Key Name1 = Value (The first setting)

Key Name2 = Value (The second setting)

The advantage of using this type of asset field instead of using a text file extract asset field, is that it is possible to pinpoint precisely the Key Name you require and in the section in which it resides.

Note: The ini file you wish to extract from must be a file that is included in the Stored Files section. If the file is not there it will not work. In other words, the Scanner has to be set up to store the file before you can extract from it in Viewer.

To set up an ini file extract asset field:

- Select **Ini File Extract** as the field type.
- In the File Name box, specify the name of the ini file that the information is to be extracted from.

3. Assign the number for the analysis field by selecting it from the Field drop-down list.
4. Assign a caption for the field if required, by typing it in the Caption field.
5. In the File Directory group box, specify where to look for the file. This is a prioritized search sequence list. Select one of the following options:
 - Use first occurrence – Viewer will use the first match of the file that is encountered.
 - Use prioritized directory list – Selecting this option enables a list box, which is used to specify the priority of directories where the file might be located. For example:

%BASEOS% (the base operating system directory). For example:

C:\Winnt

This location will have the highest priority, that is, if the file is located in this directory, then this file will be used.

%BASEOS%\System (the System directory in the base operating system directory) for example, C:\Winnt\System

If the file is not located in the **%BASEOS%** directory and is encountered in the **%BASEOS%\System** location, then this location will have priority as the source for the text file, and so on.

6. In the Ini file section box, specify the section of the ini file that the asset field extract is located in. This is the section identifier in the ini file (surrounded by square brackets []). Do not include the brackets [].
7. In the Key Name box, specify the Key Name contained in the specified section of the ini file. This is the start of the string before the equals (=) sign. Do not include the = sign.
8. Check the Remove leading blanks box to remove blank spaces (if there are any) before the Key Name located in the ini file.
9. Check the Remove trailing blanks box to remove blank spaces (if there are any) after the Key Name located in the ini file.
10. Specify any extract options as required by clicking the **Options...** button. See Specifying Extract Options for Text Files, INI Files, CSV Files and Environment Variables for information about how to do this.

CSV File Asset Field

This type of field allows an external Comma Separated Variable (CSV) file, containing a list of data associated with asset numbers to be parsed and loaded along side the other data.

To set up a CSV file extract asset field:

1. Select **CSV File** as the field type.
2. In the CSV File box, navigate to the CSV file.

The first row of this file must contain column headers.

3. Enter the number of the column that contains the machine asset number (that is, the primary identifier field). As the number changes so does the fields selection. For example, if the primary identifier is column 2 in the CSV file, then specify this as the number '2' by either typing it directly into the field or by using the arrows.

The fields contained in the CSV file are displayed in the Fields list box. Select the fields to be included by selecting the check boxes next to the field names.

The primary identifier column (asset number field) check box is disabled and cannot be selected. This is because it is necessary to load this field.

4. Specify any extract options as required by clicking the **Options...** button. See Specifying Extract Options for Text Files, INI Files, CSV Files and Environment Variables for information about how to do this.

Environment Variable Asset Field

This type of field accepts data from a specified environment variable. This can be checked by looking in the Operating System data > Environment folder in the Hardware and Configuration tab page.

To set up an environment variable extract asset field:

1. Select Environment as the field type.
2. Enter the variable name in the Environment variable name field. An example of an environment variable is:

ComSpec

Where ComSpec could be C:\WinNT\System32\cmd.exe

3. Assign the number for the analysis field by selecting it from the Field drop-down list.
4. Assign a caption for the field if required, by typing it in the Caption field.
5. Specify any extract options as required by clicking the **Options...** button. See Specifying Extract Options for Text Files, INI Files, CSV Files and Environment Variables for information about how to do this.

Sequence Asset Field

This field type extracts information from one of up to ten specified fields. The value returned as the results of the sequence field, will be the first of these fields which contains a non-blank value.

To set up a sequence asset field:

1. Select Sequence as the field type.
2. In the Field Sequence box, click in the Field Name column, and from the drop-down list, select the desired field.
3. In the Ignore strings group box, specify the criteria for a blank field using one or all of the following methods:
4. In the Matching box, enter a sequence of strings (case-sensitive) separated by semicolons.

If the content of the field matches (is equal to) any of the strings specified here, the field is considered to be blank. For example, if the text string "Not Found" is entered here, then a field that has the value "Not Found" is considered to be blank.

Multiple entries must be separated by semicolons (;), for example:

'Unknown;Not Tested'

5. You can type a string in the form: *STRING*

Here the asterisks (*) are ignored and any string that contains the text between the two asterisks will be ignored too.

Specify ignore strings that are less than 'n' characters.

In the **Shorter than** box, use the arrow keys or type in a number to specify the maximum length of text strings that are to be used to define a blank field (between 1 and 255). If the string is shorter than the specified number, then the field will be considered blank.

6. Assign the number for the analysis field by selecting it from the Field drop-down list.
7. Assign a caption for the field if required, by typing it in the Caption field.
8. Specify any extract options as required by clicking the **Options...** button. See Specifying Extract Options for Text Files, INI Files, CSV Files and Environment Variables for information about how to do this.

Specifying Extract Options for Text Files, INI Files, CSV Files and Environment Variables

Text file, ini file and environment variable asset fields can be set up so that only part of the string is extracted instead of the entire string.

They can also be set up, for example, to use the last part rather than the first part of the string. This can be very useful for obtaining the last part of an automatic field that is too long.

In addition, a default value can be specified for situations where no matching data has been found.

To specify extract options for text, ini and environment variables:

1. Click the **Options** button in the New Analysis Asset Field dialog box. The Asset Field Extract Options dialog box appears.
2. In the Extract characters from group box, specify whether you want to use the last part or the first part of the string. Select one of the following options:

- Start

Uses the first part of the string. Use the arrows in the Skip characters box to specify how many characters you want to skip from the beginning of the string.

- End

Uses the last part of the string. Use the arrows in the Skip characters box to specify how many characters you want to skip from the end of the string.

3. In the Options group box, select the options you want:

- Convert to upper case

Select this option to convert the alphabetic characters to upper case.

- Treat field as File Name

Select this option to treat the string in the asset field as a file name. Some characters are however invalid in file names, so any invalid characters can be replaced with the character specified in the Replace invalid characters with box.

For example, underscore ‘_’ is a valid file name character and can be used to replace invalid characters.

Alternatively, invalid characters can be deleted by checking the **Delete invalid characters** box.

If the extracted field is empty or is not found (that is, there is no matching data), then a default value for the string can be specified in the Default Value box.

For example, if the text string 'Not Found' is entered in this box, then an empty field or a field that has not been found will be displayed with this text.

Loading Data from a Scan File

Each scan file is loaded into a new window. This allows you to view multiple files at the same time.

You can load files from the processed directory. Enriched scan files are created here. By default the directory is in the following location on the Data Flow Probe:

C:\Hp\UCMDB\DataFlowProbe\Runtime\Xmlenricher\Scans\Processed

To load scan files in the Viewer:

1. Select the Open Scan File command from the File menu, or click the  button in the toolbar.

The Open Scan file dialog box appears.

This dialog box is split into two viewing areas (panes):

- The top pane is an explorer type directory tree that allows you to navigate to the directory containing the scan files.
 - The bottom pane displays all scan files that are available in the selected directory.
2. In the top pane, navigate to the directory that you want to load the scan files from. Any scan files found in that directory are displayed in the bottom pane.

Details are displayed in the status panel when you place the mouse pointer over the scan file.

3. Check the box next to the scan file to include it for loading (you can also use the space bar to check and clear the box). Checking options can also be set by using the shortcut menu which is available by right-clicking anywhere in this pane.
4. Click the **OK** button to load the scan files.

You can also use drag-and-drop to load scan files. Drop any number of scan files onto the Viewer window to load them directly.

Viewing Summary Data

The Summary tab displays a small summary of key hardware, software, user and asset information derived from the other tab pages in Viewer.

Navigation in the Summary Tab

To go directly to the tab page from which the summary information was derived:

- Right-click and select the option from the menu or double-click on an item.

The following table shows the items on the Summary page, a short description and the tab page displayed when you double-click or right-click on the item:

Item	Description	Page Displayed
Machine	Description field	Hardware and Configuration
Scan date	Date the scan file was produced	Hardware and Configuration
Scanner version	Scanner used to create the scan file	Hardware and Configuration
CPU	CPU description	Hardware and Configuration
Memory	Memory size	Hardware and Configuration
HD Capacity	Disk size	Hardware and Configuration
OS	Operating system	Hardware and Configuration
MachineID	Network name of the scanned machine	Hardware and Configuration
Scanned volumes	Drive letters scanned	Hardware and Configuration
Scanned files	Number of scanned files	Directories and Files
Stored files	Number of stored files	Stored Files
Fully Recognized Applications	Number of fully recognized applications	Software Applications
Partially Recognized Applications	Number of partially recognized applications	Software Applications

Viewing Hardware and Configuration Data

Hardware and Configuration Data Page Overview

The Hardware and Configuration tab displays:

- User and asset information collected using the asset questionnaire during the inventory.
- High level hardware information scanned during the inventory.
- Running software processes.

Further Information

- For information about the SMBIOS details, refer to the “System Management BIOS (SMBIOS) Version 2.4 Reference Specification,” which can be found at the [DMTF website](http://www.dmtf.org) (<http://www.dmtf.org>).

The Hardware and Configuration Tab Page Layout

The Hardware and Configuration tab page consists of four panes. By default when you first start Viewer, only the first three are shown (Simple mode):

- Category tree
- Category description
- 1st level data
- 2nd level data

The following screen shot shows the Hardware and Configuration tab page in Advanced mode.

Category tree
Shows all the categories of data contained in the scan file§

Index	Bus	Class	Vendor
2.2	PCI	Unknown	Intel
2.20	PCI	Disk	LSI Logic Inc.
2.21	PCI	Serial Bus Controller	Texas Instrum
2.22	PCI	Network	Intel
2.3	PCI	System	Intel
2.4	PCI	System	Intel
2.5	PCI	Serial Bus Controller	Intel
2.6	PCI	Serial Bus Controller	Intel
2.7	PCI	Serial Bus Controller	Intel
2.8	PCI	Serial Bus Controller	Intel
2.9	PCI	System	Intel

1st level data
Any items that have more detail have a hyperlink§

2nd level data
This is displayed if a hyperlink has been clicked in the 1st level data pane§

Category description
Provides a description of the currently selected category. §

Bus Data\Buses Supported\Cards (hwCards)
Displays information about the cards that are used in the computer.

Tuesday, May 12, 2009 10:57:05 AM | 1 Scan(s) | USV3510BQ7..._xsf - Administrator - Xei...

Advanced and Simple Display Mode

By default, when you first start the Viewer, the Hardware and Configuration data page is displayed in Simple mode.


You can display this information in a Advanced mode (hyperlinks shown and all four panes are displayed):

To switch between Advanced and Simple mode in the Hardware and Configuration data page:

Select or clear the Advanced Hardware View option in the View menu.

Category Tree

The left side of this tab page shows a tree. This tree contains folders for each of the Asset and Hardware data items. You can click on a folder to expand it and reveal further items in the category.

The  icon indicates that multiple instances of that particular item may exist. In the following example, the multiple folder icon indicates that multiple Buses are supported (these being ISA and PCI).

Category Description

This pane provides a description about the data category you have selected from the tree.

A detailed list of all the hardware items scanned and descriptions for all of these can be found in the document entitled 'Hardware and configuration data'.

1st Level Data

When you have selected a category in the tree, information is shown for it in this pane. In the previous example, the Buses supported were shown.

2nd Level Data

You will note that some entries in the 1st level pane may have hyperlinks. When clicked, further information for that instance of the item is shown in the 2nd level data pane. In our example, the Cards (2) hyperlink was clicked and further information about the PCI card is displayed in 2nd level pane.

In...	Bus N...	Cards
1	ISA	Cards (1)
2	PCI	Cards (2)

Index	Bus	Class	Vendor	Name
2.1	PCI	System	Intel	Intel(R) E7505 Chipset Host Controller - 2550
2.10	PCI	System	Intel	Intel(R) 82801DB LPC Interface Controller - 24C0
2.11	PCI	Disk	Intel	Intel(R) 82801DB Ultra ATA Storage Controller-24CB
2.12	PCI	Serial Bus Controller	Intel	Intel(R) 82801DB/DBM SMBus Controller - 24C3
2.13	PCI	Multimedia	Intel Corporation	Multimedia Audio Controller
2.14	PCI	Display	NVIDIA	NVIDIA Quadro4 380 XGL
2.15	PCI	Base System Perip...	Intel	Intel(R) P64H2 I/O Advanced Programmable Interrupt Cont
2.16	PCI	System	Intel	Intel(R) P64H2 PCI to PCI Bridge - 1460
2.17	PCI	Base System Perip...	Intel	Intel(R) P64H2 I/O Advanced Programmable Interrupt Cont
2.18	PCI	System	Intel	Intel(R) P64H2 PCI to PCI Bridge - 1460
2.19	PCI	Disk	LSI Logic Inc.	LSI Logic PCI-X Ultra320 SCSI Host Adapter
2.2	PCI	Unknown	Intel	Intel(R) E7000 Series RAS Controller - 2551
2.20	PCI	Disk	LSI Logic Inc.	LSI Logic PCI-X Ultra320 SCSI Host Adapter
2.21	PCI	Serial Bus Controller	Texas Instrum...	Texas Instruments OHCI Compliant IEEE 1394 Host Contro
2.22	PCI	Network	Intel	Intel(R) PRO/1000 MT Network Connection
2.3	PCI	System	Intel	Intel(R) E7000 Series Processor to AGP Controller - 2552
2.4	PCI	System	Intel	Intel(R) E7000 Series Hub Interface B PCI-to-PCI Bridge - 2
2.5	PCI	Serial Bus Controller	Intel	Intel(R) 82801DB/DBM USB Universal Host Controller - 24
2.6	PCI	Serial Bus Controller	Intel	Intel(R) 82801DB/DBM USB Universal Host Controller - 24
2.7	PCI	Serial Bus Controller	Intel	Intel(R) 82801DB/DBM USB Universal Host Controller - 24
2.8	PCI	Serial Bus Controller	Intel	Intel(R) 82801DB/DBM USB 2.0 Enhanced Host Controller
2.9	PCI	System	Intel	Intel(R) 82801 PCI Bridge - 244E

Viewing Directories and Files Data

Directories and Files Page Overview

This page is displayed by clicking the Directories and Files tab after you have loaded the inventory data into Viewer.

The Directories and Files tab page is split into four viewing areas (panes):

- Directory tree
- File list
- Directory information
- File information

The Directory Tree

The directory tree is located on the left of the page. It shows the structure of the current drives displayed as a directory tree.






To obtain information about the drive or directory:


Right-click on the directory and select the Properties option. The Properties dialog box appears.

If the drive is a shared drive, then a Sharing tab is also made available.

Icons Used in the Viewer to Denote Directory Status

Different icons are used to denote directory status as follows:

Icon	Directory status
	Indicates a drive
	Indicates a shared drive
	Indicates a normal directory
	Indicates a shared directory.
	Indicates filtered or ignored directories (as specified in the Scanner Generator). Data in the filtered directories is not stored in the scan file.

Icon	Directory status
	This icon also represents mount points in Windows 2000 or UNIX scans. Mount points are automatically filtered.
	<p>In UNIX scans, files (and directories) may be located on several different file systems. To link files that are in different file systems a symbolic link is made.</p> <p>This icon is displayed for directories that are symbolic links. You can follow the link by right-clicking on the directory and selecting the Follow Link to <link> option.</p>

The File List

The file list is located in the top right of the page. It shows a list of files in the selected directory.

The file list has incremental column search.

To use incremental column search to locate an entry in a column directly:

Click on any row, and type the word(s) or number(s) that you want to find.

The name is displayed on the status bar.

You can obtain information about a file by right-clicking the file and selecting the **Properties** option. You can also do this by double-clicking on the file.

For files that belong to packages, you can use the Go to installed package menu item on the right-click shortcut menu to view information about the package. This is displayed on the Hardware and Configuration tab.

Archive Files

The contents of archive files are displayed, but no signatures are shown. However, if a checksum is shown, this refers to the archive checksum.

UNIX Scans

For files in UNIX scans, you can obtain link information about the file by right-clicking on the file and selecting the Follow link option.

This option is only available for files with the L attribute (indicates a symbolic link file). You can also do this by double-clicking on the file. The link information is displayed in the file information pane.

Parameters Displayed for Each File

The parameters displayed for each file are:

- **File Name** – the name of the scanned file.
- **Size** – the size of the scanned file.
- **Modified** – the last modified date and time that is stored for the file in the file system.
- **Attribute** – file attributes (see Table 44).
- **Exe/Arc** – the type of the executable or archive file.
- **Signature** – a number that is calculated from the first 8 Kbytes of a file (usually sufficient to uniquely identify a file).
- **Created** – date and time when this file was created.
- **Last Accessed** – date and time when this file was last accessed on this system.
- **Package** – name and version of the package to which this file belongs.

Attribute	Meaning
r	Read-only files Files that are marked read-only are protected from modification or deletion.
h	Hidden files Windows Explorer does not show hidden files by default unless you tell it to do so.
s	System files
u	Used/Executed files This flag shows that this file was executed and the application was used.
v	Volume Label This contains no data and no more than one may exist on a disk volume (and only in the root directory).
a	If it has the archive attribute of DOS or Windows The Archive attribute is used to provide an automatic record of what files have been modified since the last backup.
c	Compressed files These are compressed files and folders. For example, if it is a file on a compressed NTFS volume.

Attribute	Meaning
x	In a UNIX system this represents a file with the executable attribute set.
l	<p>Internal data available</p> <p>That is, if it has version data available for it. Version data (as per Windows Explorer) is displayed for all files having this attribute.</p>
L	<p>Symbolic link in UNIX</p> <p>Files (and directories) may be located on several different file systems. To link files that are in different file systems a symbolic link is made.</p> <p>Symbolic links to files are not scanned but are stored with this attribute and are displayed in the directory tree of the Directories and Files page with a shortcut icon.</p>
s	<p>This is special case for UNIX for SetUId files.</p> <p>In UNIX scans, certain files have special attributes that mean that they run with root privilege. Such files are potentially a security risk and the Scanner assigns them the system attribute - s</p>
A	This file has been identified as an archive.
C	This file has been identified inside an archive.
X	This file has been identified as an executable file.
D	This file has been identified as a device driver

Directory Information

The directory information pane beneath the directory tree displays information about the selected directory. It shows the number of files in the directory and the total size of the files.

File Information

Beneath the file list is the file information pane, which displays additional information for the executable files, where internal version information is included in the file header.

Viewing Stored Files Data

Stored Files Page Overview

This page is displayed by clicking the Stored Files tab after you have loaded the inventory data into the Viewer.

This page displays the contents of key files collected during the inventory, that is, files stored in the scan file during scan time. Typically these are system configuration files, for example **Autoexec.bat** and **Win.ini**.

The Stored File tab page is split into two viewing areas:

- Stored file list – The top pane displays a list of stored files. You can sort (in ascending and descending order) the contents of a column by clicking on a column header.
- Stored file contents – The bottom pane displays the contents of a selected stored file. Text files are displayed as text, other files are displayed in a combined HEX- and ACSII-views.

Toggling the Display Mode

By default, the Viewer tries to determine the type of the file and select the appropriate mode of display. However, some text files that have unusually long lines (longer than 255 characters) are displayed in hex view as binary files.

Using the Toggle Display mode option it is possible to change the view from hex to text (and vice versa).

To use the Toggle Display mode option in the Viewer:

1. In the stored file list (top pane), click on the file that you want to view.
2. In the bottom pane, select the Toggle Display Mode command from the right-click menu. The display mode switches between hex and text display.

Saving or Copying the Contents of a Stored File

The contents of a stored file can be saved to a file for future reference or for restoring the original files if they have been lost.

To save the contents of a stored file in the Viewer:

1. Right-click on the file name, or in the stored file contents (bottom pane) right-click anywhere in the pane.
2. Select the Save To command (text and hex files) from the shortcut menu. Use the standard Windows navigation methods to select or enter a file and the location where the file is to be saved.

To copy the contents of a stored file to the clipboard:

1. Right-click on the file name, or in the stored file contents (bottom pane) right-click anywhere in the pane.
2. Select the Copy to Clipboard command or click the icon and paste the content of the file to an editor of your choice.

Locating the Directory of a Stored File

To locate the directory of a displayed file (this will be displayed on the Software page):

Right-click anywhere in the top pane and select the Go to Directory command from the shortcut menu, or double-click on the file.

The software page is displayed, with the file highlighted.

- This will only work if the directory/file is available.
- The stored file will only appear in the directory if the Scanner has been configured to store the file type.

Viewing Software Application Data

The Software Applications tab displays applications that have been recognized by the SAI recognition or the Installed applications recognition. It is not displayed when the application list is empty even if a recognition method was specified.

See [Configuring Recognition Settings](#) for information about how to set up the recognition method.

Navigation

Double-clicking on an application in the list or right-clicking on an entry and selecting the Goto command will display the Directories and Files tab with the application highlighted. The Directories and Files tab shows the file/directory identifying the application.

The following additional commands are also available by right-clicking on an application entry.

- Copy

Copies the contents of the Applications tab page to a text format and places it on the clipboard. You can paste the contents to an editor of your choice.

- Copy to File

Copies the contents of the Application tab page to a text file.

- Show applications (Only for SAI recognition)

For the SAI recognition, it shows fully recognized applications, partially recognized applications, or fully and partially recognized applications by selecting the options: Fully recognized, Partially recognized, or Both.

Drop-down lists

In addition, there are two drop down lists that allow you to apply filters to the data that is displayed.

The first drop-down list allows you to see data relating to a particular user. Application utilization data is attributed to the following special users:

- All Users

For all users.

- System

For other system processes running on the computer. For example, services running that have no particular user associated with them.

The second drop-down list allows you to see data relating to whether the application is just running or actually being used. As a result, you can see software utilization time based on one of the following:

- Running Time

Running time is the total amount of time that an application is open and running.

- Focus Time

Focus time is the total amount of time that an application is running in the foreground, that is, the application is in focus.

Information shown in the Application data window

The following information is shown about each software application:

Application data

- Application

The name of the software application.

- Recognition

For the SAI recognition, this column displays Full for the fully recognized applications or Partial for the partially recognized applications.

For the Installed applications recognition, this column displays Installed Applications.

- Release

The application release

- Version

The application version

- OS

The operating system the application was running on.

- Language

The name of the language of the application.

- Commercial

The license type of the application. The possible values are:

- Unknown (undefined)
- Commercial
- Free

- Publisher

The name of the software publisher (for example, Microsoft, IBM).

- Last Used

The last time the file was accessed - (dd/mm/yyyy) (hrs:mins)

- File Name

The path to the file designated as the Main file.

Utilization Data

The Viewer shows two types of utilization data:

- Per-computer application utilization (select All Users)
- Per-user application utilization (select a particular user)

This information is only available if the software utilization agent plug-in was running on the computer which was scanned.

See the Software Utilization Data chapter in this book for instructions on how to check whether you have utilization enabled.

To view application utilization data:

1. Select the user you want to see data for from the drop-down list. Alternatively, select All Users to get the per-computer view).
2. Select which software utilization time you want to see from the drop-down list, namely total running time or total focus time for the application.
3. Click on the application you want to see data for and the details will be shown in the bottom pane. This pane shows the utilization statistics for how users utilized a particular application.

Application Utilization Data

- Days used (last month)

The number of days the application was used in the last month.

- Hours used (last month)

The number of hours the application was used in the last month.

- Days used (last quarter)

The number of days the application was used in the last quarter.

- Hours used (last quarter)

The number of hours the application was used in the last quarter.

- Days used (last year)

The number of days the application was used in the last year.

- Hours used (last year)

The number of hours the application was used in the last year.

- Hours used (average daily)

The daily average in hours over the period configured.

- Hours used (peak daily)

The highest daily number in hours over the period configured.

- Utilization

The number of days that the application was used (as a percentage) over a period of time. The period is calculated automatically depending on how long the application was used for. As a rough guideline the time periods are as follows:

- Application used for more than 3 months - utilization is calculated over the year.

If the earliest application usage recorded is more than 3 months old, but less than 1 year (i.e. there was a record that the application was used more than 3 months ago, but less than a year ago), an annual figure will be used (number of days used in the last year / 365)

- Application used for less than 3 months but more than 1 month - utilization is calculated over a quarterly period.

If the earliest usage recorded is less than 3 months, but greater than 1 month, a quarterly figure is used (number of days used in the last quarter / 90).

- Application used for less than one month - utilization is calculated monthly

A monthly figure is used here (number of days used in the last month / 31)

Viewing Software Utilization Data

The Viewer calculates Utilization data based on the current system date.

The Stored Files Tab

You can view the contents of the discusg.cxu.Software Utilization Data file in the Stored Files tab.

In the stored file list (top pane), click on the Software Utilization Data file.

In the bottom pane, select the Toggle Display Mode command from the right-click menu. The display mode switches between hex and text display.

The Software Application Tab

Utilization information can also be seen in the Viewer Software Application tab page. There are two drop-down lists that allow you to filter utilization data.

One drop-down list allows you to apply a filter to see data relating to a particular user. Application utilization data is attributed to the following special users:

- All Users
- For all users
- System

For other system processes running on the computer. For example, services running that have no particular user associated with them.

The other drop-down list allows you to see data relating to whether the application is just running or actually being used. As a result, you can see software utilization time based on one of the following:

- **Running Time.** Running time is the total amount of time that an application is open and running.
- **Focus Time.** Focus time is the total amount of time that an application is running in the foreground, that is, the application is in focus.

This information is only available if the software utilization agent plug-in was running on the computer which was scanned.

To view application utilization data:

1. Select the user you want to see data for from the drop-down list.
2. Click on the application you want to see data for and the details will be shown in the bottom pane. This pane shows the utilization statistics for how users utilized a particular application.

Per Computer Application Utilization

- **Days used (last month).** The number of days the application was used in the last month of the configured period.
- **Hours used (last month).** The number of hours the application was used in the last month of the configured period.
- **Days used (last quarter).** The number of days the application was used in the last quarter of the configured period.
- **Hours used (last quarter).** The number of hours the application was used in the last quarter of the configured period.
- **Days used (last year).** The number of days the application was used in the last year.
- **Hours used (last year).** The number of hours the application was used in the last year.
- **Hours used (average daily).** The daily average in hours over the period configured.
- **Hours used (peak daily).** The highest daily number in hours over the period configured.

- **Utilization.** The number of days that the application was used (as a percentage) over a period of time. The period is calculated automatically depending on how long the application was used for. As a rough guideline the time periods are as follows:
- **Application used for more than 3 months - utilization is calculated over the year.** If the earliest application usage recorded is more than 3 months old, but less than 1 year (i.e. there was a record that the application was used more than 3 months ago, but less than a year ago), an annual figure will be used (number of days used in the last year / 365)
- **Application used for less than 3 months - utilization is calculated over a quarterly period.** If the earliest usage recorded is less than 3 months, but greater than 1 month, a quarterly figure is used (number of days used in the last quarter / 90).
- **Application used for less than one month - utilization is calculated monthly.** A monthly figure is used here (number of days used in the last month / 31)

Comparing Scans

Why You Might Want to Compare Scans

The scan compare feature in Viewer can be an ideal tool for support personnel. It provides you with a direct comparison between two scans. It can be used to:

- Track which files have been accidentally deleted.
- Compare scan files from recently upgraded computers against their original configuration.
- Check for adherence to a standard desktop.
- Check which files have been added, changed or removed after a software installation had taken place.
- Change management.

Setting up the Comparison of Two Scan Files

The compare function is only available if more than one scan has been loaded into Viewer. You can perform multiple comparisons at any one time.

To set up the comparison of two scan files:

1. Select the Compare option from the Edit menu, or click the Compare icon .

The first page of the Compare Scan Files wizard appears.

2. Select the two different scans to be compared from the corresponding drop-down lists.
3. Click Finish to compare the two scans with default options, or customize the options by clicking the Next button. The Set Options page of the wizard is displayed
4. Customize the options as required:

- Hardware and Configuration data

Compares the information contained in the Hardware and Configuration page for both scans.

- Software Applications

Compares the information contained in the Software Applications page for both scans.

- Directories and Files

Compares the information contained in the Directories and Files page for both scans. Further options are made available:

- **Ignore empty directories** – Any empty directories encountered will not be included in the comparison.
- **Show equal Key Hardware Fields** – Some of the fields have key fields associated with them. If any data for the fields in the list has changed, it will be displayed along with the key field for it. The key fields are displayed in grey to indicate they do not represent a change.
- **Ignore Last Accessed Time** – The last accessed time stamp is ignored when carrying out the compare.
- **Use Short Dir/File Names** – The file names and directories will be displayed in the 8.3 format used by DOS.

For an example of how key fields are used see Key Fields on page 230.

- Scanner Configuration data

Compares the Scanner Configuration (as set up in Scanner Generator) for both scans.

5. Click the **Finish** button.

The two data sets are compared and a Scan File Comparison window appears showing the results of the compare operation.

1. Select the Compare option from the Edit menu, or click the Compare icon .

The first page of the Compare Scan Files wizard appears.

2. Select the two different scans to be compared from the corresponding drop-down lists.

3. Click **Finish** to compare the two scans with default options, or customize the options by clicking the **Next** button. The **Set Options** page of the wizard is displayed

4. Customize the options as required:

- **Hardware and Configuration data**

Compares the information contained in the **Hardware and Configuration** page for both scans.

- **Software Applications**

Compares the information contained in the **Software Applications** page for both scans.

- **Directories and Files**

Compares the information contained in the **Directories and Files** page for both scans. Further options are made available:

- **Ignore empty directories** – Any empty directories encountered will not be included in the comparison.
- **Show equal Key Hardware Fields** – Some of the fields have key fields associated with them. If any data for the fields in the list has changed, it will be displayed along with the key field for it. The key fields are displayed in grey to indicate they do not represent a change.
- **Ignore Last Accessed Time** – The last accessed time stamp is ignored when carrying out the compare.
- **Use Short Dir/File Names** – The file names and directories will be displayed in the 8.3 format used by DOS.

For an example of how key fields are used see **Key Fields** on page 230.

- **Scanner Configuration data**

Compares the **Scanner Configuration** (as set up in **Scanner Generator**) for both scans.

5. Click the **Finish** button.

The two data sets are compared and a **Scan File Comparison** window appears showing the results of the compare operation.

Viewing the Comparison Results

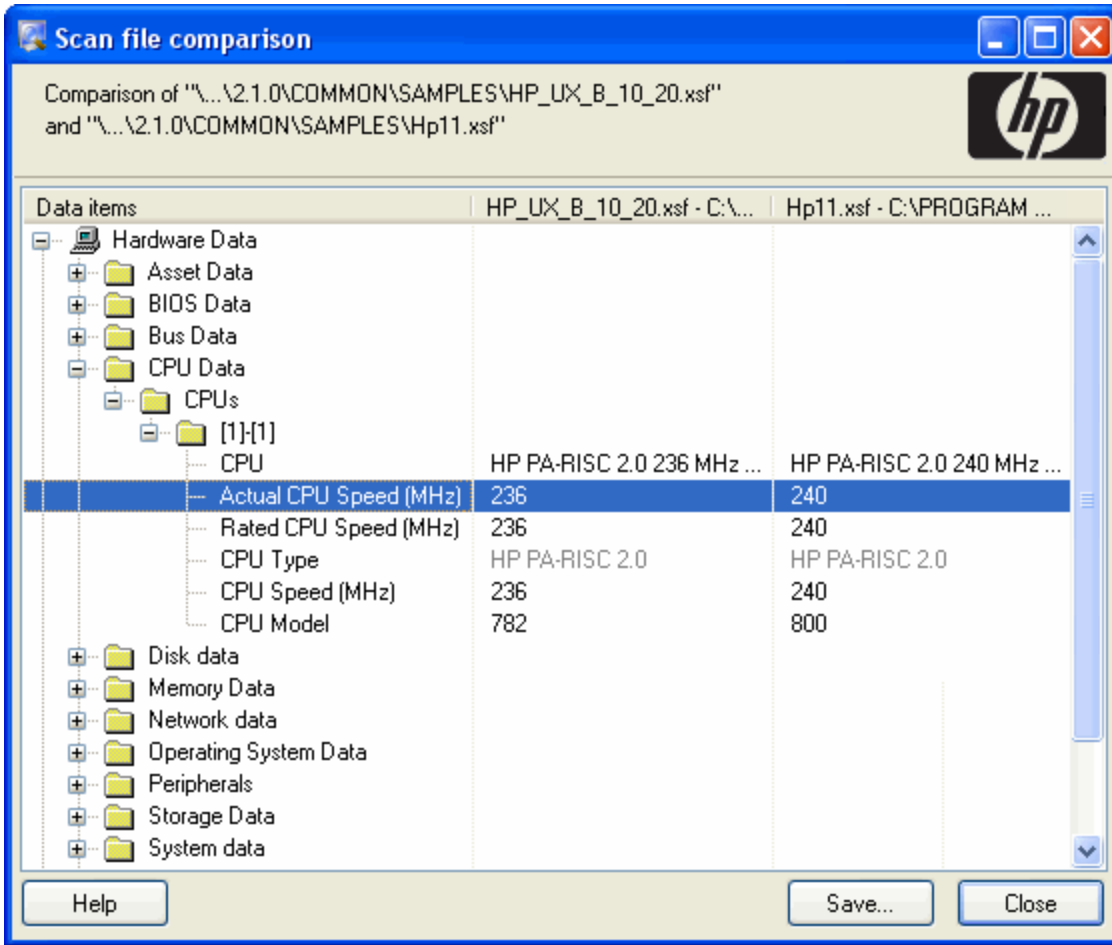
The **Scan File Comparison** window has three columns. The first column shows the compared data items.

The results of the comparison depend on the criteria you defined in the wizard. The following information can be shown in the first column:

- Hardware Data
- Software Applications
- Directories and Files
- Scanner Configuration

To expand a category, click the + sign next to the icon.

The next two columns show the results for the compared scan files. An example is shown in the following screen shot:



In this example, the Actual CPU Speed for the first scan file is 236 MHz and 240 MHz for the second scan file.

Key Fields

If you enabled the Show equal Key Hardware Fields option on the Set Options page of the compare

wizard, some of the lists of fields will be displayed with key fields associated with them. These key fields are shown in grey. If the data for the fields in the list has changed, it is displayed along with the key field. An example is shown in the following screen shot:

Comparison of "...\2.1.0\COMMON\SAMPLES\HP_UX_B_10_20.xsf" and "...\2.1.0\COMMON\SAMPLES\Hp11.xsf"

Data items	HP_UX_B_10_20.xsf - C:\...	Hp11.xsf - C:\PF
BIOS Data		
Bus Data		
CPU Data		
Disk data		
Mount Points		
[1]-[1]		
[2]-[2]		
Mount Point Volume Total Si...	46	81
Mount Point Volume Free Sp...	32	57
Mount Point Volume Name	/dev/vg00/vol1	/dev/vg00/vol1
Mount Point Volume Device	/dev/vg00/vol1	/dev/vg00/vol1
[3]-[3]		
[4]-[4]		
[5]-[5]		
[6]-[6]		
Mount Point Volume Total Si...	1036	12604
Mount Point Volume Free Sp...	210	5494
Mount Point Volume Type	hfs	vxfv
Mount Point Volume Name	/dev/vg00/vol6	/dev/vg00/vol6
Mount Point Volume Device	/dev/vg00/vol6	/dev/vg00/vol6

Key field indicates the changes occurred on this drive

The Mount Point Volume Name field is a key field (shown in grey) and this is shown even though it hasn't changed itself. This indicates that the information changed relates to this particular drive; without the key field it would not be possible to see on which drive the change had taken place, merely that it had changed on some drive.

The Go To Option

A Go To option is available for all categories except for Scanner Configuration data.

1. Right-click on a field and select the Go To option.

The appropriate tab page in the Viewer main workspace will be displayed with the entry highlighted. This will be done for both of the scan files.

2. Select the **Tile** option from the Window menu to see both scan files with the appropriate entries highlighted.

Saving the Comparison Results

To save the results to a Comma Separated Variable (.csv) file:

1. Click the **Save** button, or right-click anywhere in the results window and select the **Save to .CSV** file option.

In the Save Comparison dialog box, specify a file name and path where you want the results to be saved.

2. Click the **Save** button.

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Feedback on Inventory Tools User Guide (Universal CMDB 10.31)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to cms-doc@hpe.com.

We appreciate your feedback!