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PERPOS Version 3.1: Installation Guide

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Introduction

This document describes the installation instructions for PERPOS: An Electronic Records Repository and Archival Processing System, Version 3.1 [Underwood et al 2006]. First the hardware and operating system and disk partitioning requirements are discussed. This is followed by a discussion of the commercial software applications that need to be installed. Finally the contents of the PERPOS installation CD and the instructions for installing the PERPOS system are described.

Hardware Configuration

The PERPOS System require at least a Pentium computer with 2 gigabytes of main memory and two hard disks. Four hard disks are preferable. One of the hard disks is for the operating system, Windows 2000, and other applications. The other hard disk (or three hard disks) is for the Oracle Database Management System. The computer should also have a CD reader/writer, a 3.5" Floppy drive and a backup tape drive or DVD reader/writer.

Windows 2000

The Windows 2000 operating system is installed on the C drive. Then Service Pack 4 is installed. The Dell Optiplex GX620 drivers are copied to C:\USER\[system installation]\[software] \Optiplex GX620 Drivers. Four drivers are installed.

Desktop Systems Software.exe	[enables Windows 2000 to see disk space beyond 128 Gb]
Chipset.exe	
R97582.exe	
Graphics Controller.exe	[enables display size > 640x480]

The second is partitioned into a NTFS file system and a 32 Gigabyte partition formatted as FAT32. The FAT32 disk partition supports maintaining the original order of e-records (files) created using the DOS or Windows 3.1 operating system.

In Explorer or My Computer, in **Tools > Folder Options** and under the Tab View, be sure that

"Hide File extensions for known file types" is not checked.

"Display the Full Path in Address Bar" is checked.

Disk Management

The initial installation of Windows 2000 only creates one partition on a drive C:

To view and set disk partitions select Start > Programs > Administrative Tools > Computer Management > Storage > Disk Management.

You right click any available unpartitioned space, choose a File System and create a partition. On the first disk a second partition with logical drive letter D: is created. On the second drive a 200 GB NTFS partition (E:) and a 32 GB FAT partition (F:) is created.

Installing Other Required Software

Microsoft Office

Microsoft Office must be installed for the APT to operate properly. The APT uses the Microsoft Word included in Microsoft Office. It also uses Microsoft Office File format converters.

Antivirus Software

NARA uses the McAfee Virus scanner. It should be installed on the Archival Repository and Archival Processing Workstation and configured for on-demand scanning, that is, the scanner checks for viruses in files that you open, copy, save or otherwise modify and files that you read from or write to floppy disks, CD-ROMS, DVDs or network drives. It can render many of them harmless, or remove and quarantine the virus-infected file.

Quick View Plus

The APT uses the Quick View Plus (version 7.0 or greater) set of Viewers. Follow the instructions in the manual for installing Quick View Plus. The program should be installed on the path C:\Program Files\Quick View Plus\Program\qvp32.exe

Click on the Quick View Plus icon on the Desktop. Select Options from the View drop-down menu. On the General Tab, uncheck the checkbox for "Display QuickView Logo on startup." Select Apply, then OK.

Informatik Image Driver

The Archival Processing Tool uses the Informatik Image Drive (version 3.20 or greater) along with Quick View Plus to create a tiff image used in Image Redaction. Follow the installation instructions that come with the driver. The driver does not have to be set as the default printer. The Archival Processing Tool set this driver as the default printer when necessary then resets the default printer to whatever it was previously set as. The Archival Processing Tool is no longer compatible with any version of this driver earlier than version 3.20.

Imager

The redactor that the Archival Processing Tool uses for document images is created using Kodak Imaging for Windows. The software is provided with Windows 98 and 2000 and need not be installed. However, if the APT software is installed on XP or later Microsoft Operating Systems, one must purchase a license for "Imaging for Windows" from eiStream www.eistream.com, and install it.

Adobe Acrobat and Redax

We are in the process of incorporating Adobe Acrobat and Redax into the Archival Processing Tool. They will be used to support redaction of PDF copies of electronic records. Adobe Acrobat version 5 or greater and Redax 3.5 will be required.

AMBER ABC Text Converter

Conversion of document formats is accomplished with AMBER ABC document converter. Follow the installation instruction that come with the converter. After it is installed, the ABC Amber Text Converter icon will be on the desktop. Open the converter. Select Options from the Tools drop-down menu. On the General Tab, uncheck the checkbox for "open document after conversion." If this is not done, file format conversion will hang. Exit the Converter.

Microsoft Word File Conversion

The AMBER ABC Text Converter uses Microsoft Word file converters. One needs as described above to have Microsoft Office installed to legitimately use these converters. Even though Microsoft Office is installed, the Microsoft text and image file format converters may not be installed.

1. Select Start > Settings > Control Panel.
2. Then select Add/Remove Programs.
3. Select Microsoft Office 2000.
4. Select Change.
5. Install any Text Converter or Graphics Filter that is not installed. This is accomplished by selecting an icon for *Converters and Filters*, selecting *Run on my Computer*, loading the Microsoft Office Professional CD, and selecting the *Update Now* button.

The file ConvPack.exe on the PERPOS Installation CD contains some converters for files in older word processing applications that are not included in the current Microsoft Office distribution. It also includes some Image Filters (converters). To install the converters, double click the left mouse button on the file ConvPack.exe.

The text converters are stored in C:\ Program Files\Common Files\Microsoft Shared\TextConv\. The image converters are stored in C:\ Program Files\Common Files\Microsoft Shared\Grphflt\

WinZip

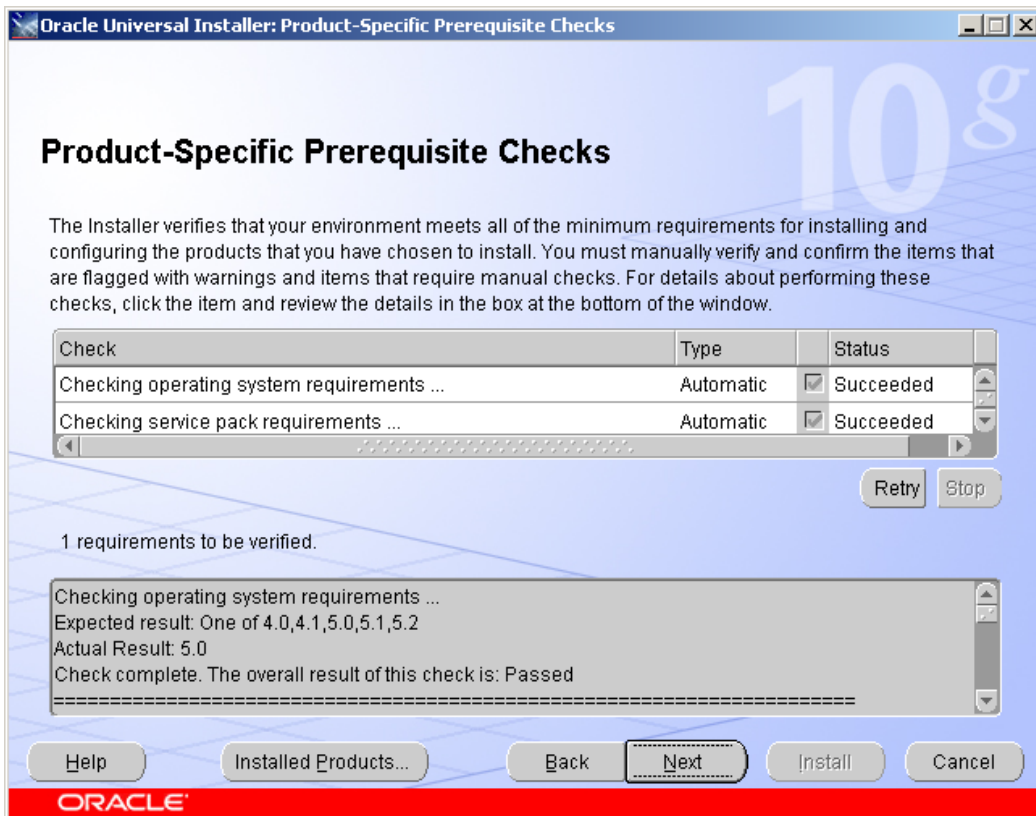
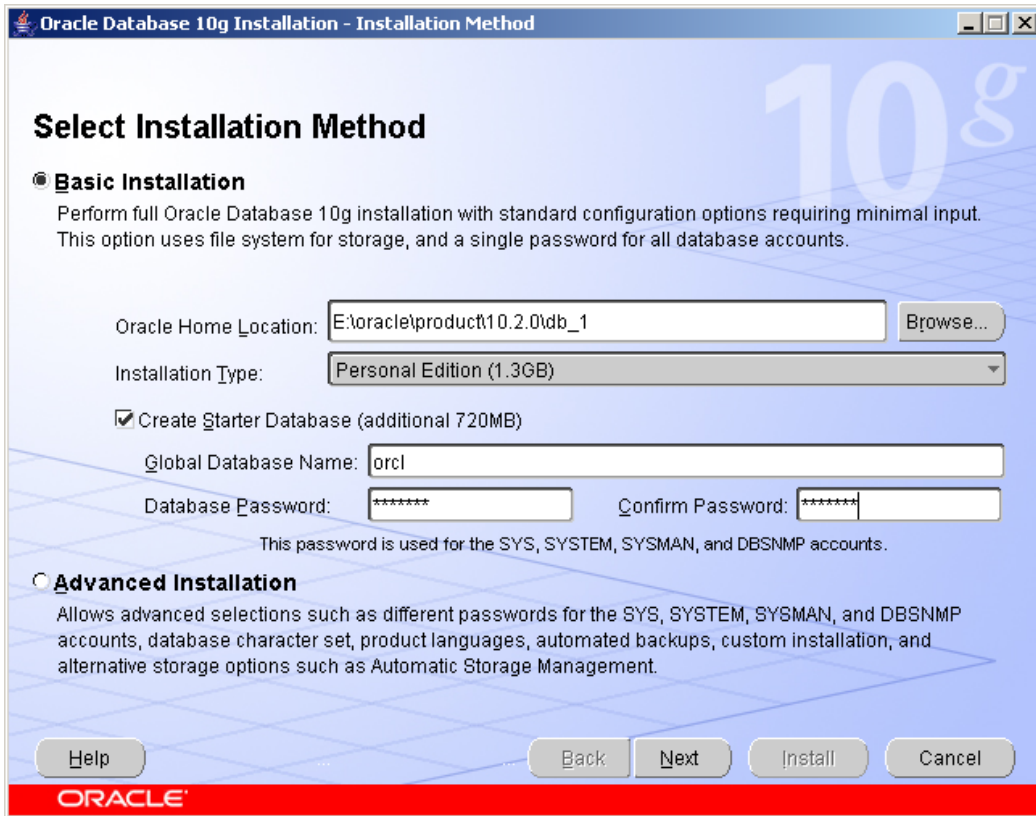
The APT uses WinZip and the WinZip Command Line Support Add-on. The WinZip command Line Support Add-on is free for licensed version WinZip 9.0 or greater. Follow the installation instruction that comes with the WinZip and the WinZip Command Line Support Add-on. The following options should be set in WinZip.

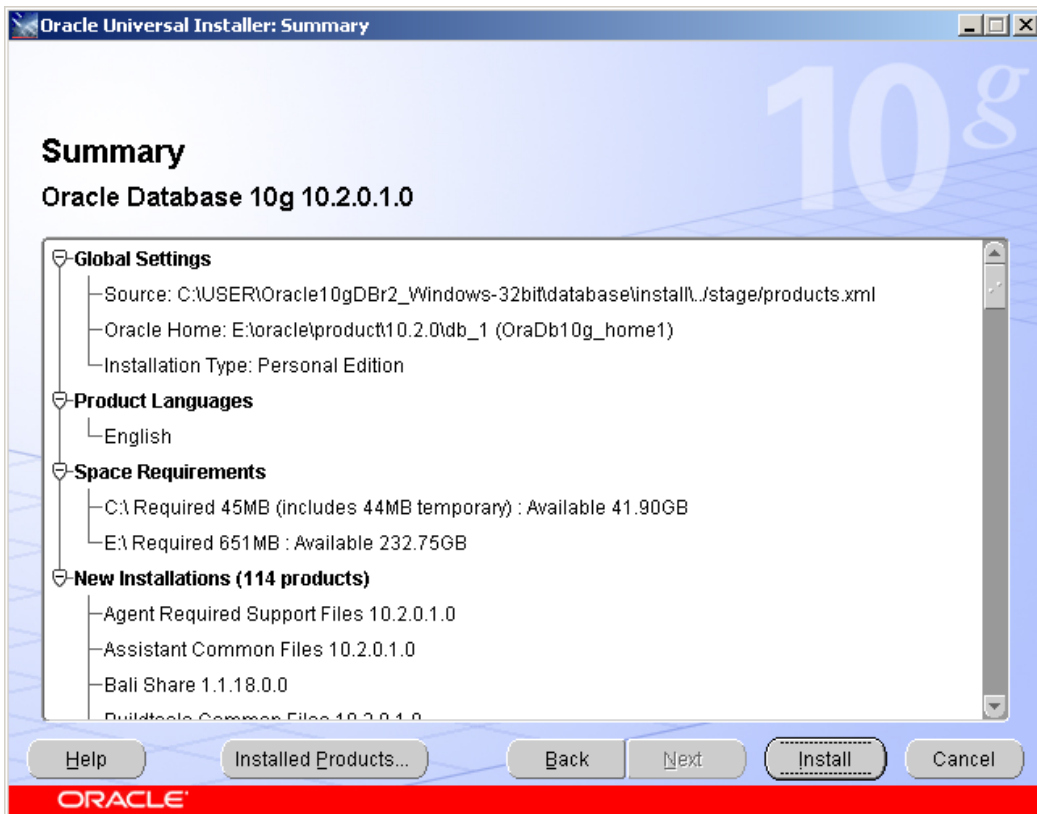
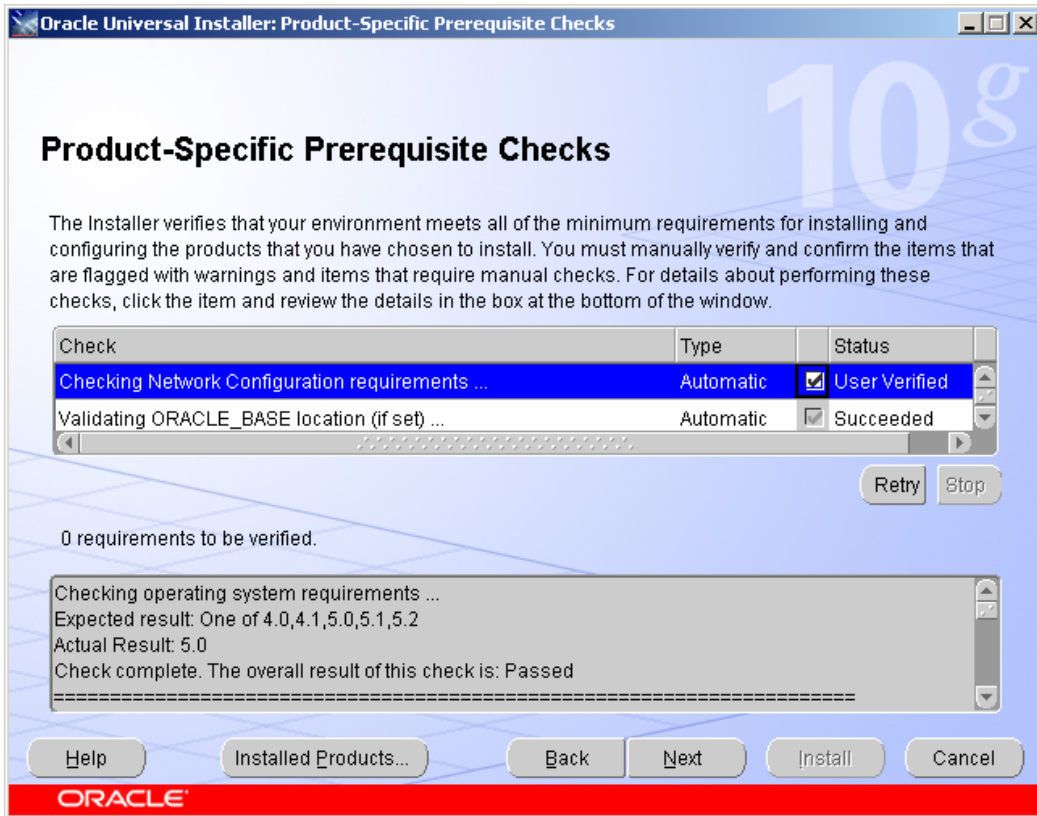
1. In WinZip, select Options > Configuration and select the Program Locations tab.
2. For the location of the Virus Scanner, browse to the location C:\NetworkAssociates\VirusScan\scan32.exe. The parameters will be automatically filled in.
3. For the location of the viewer, browse to c:\Program Files\Quick View Plus\Program\qvp32.exe.

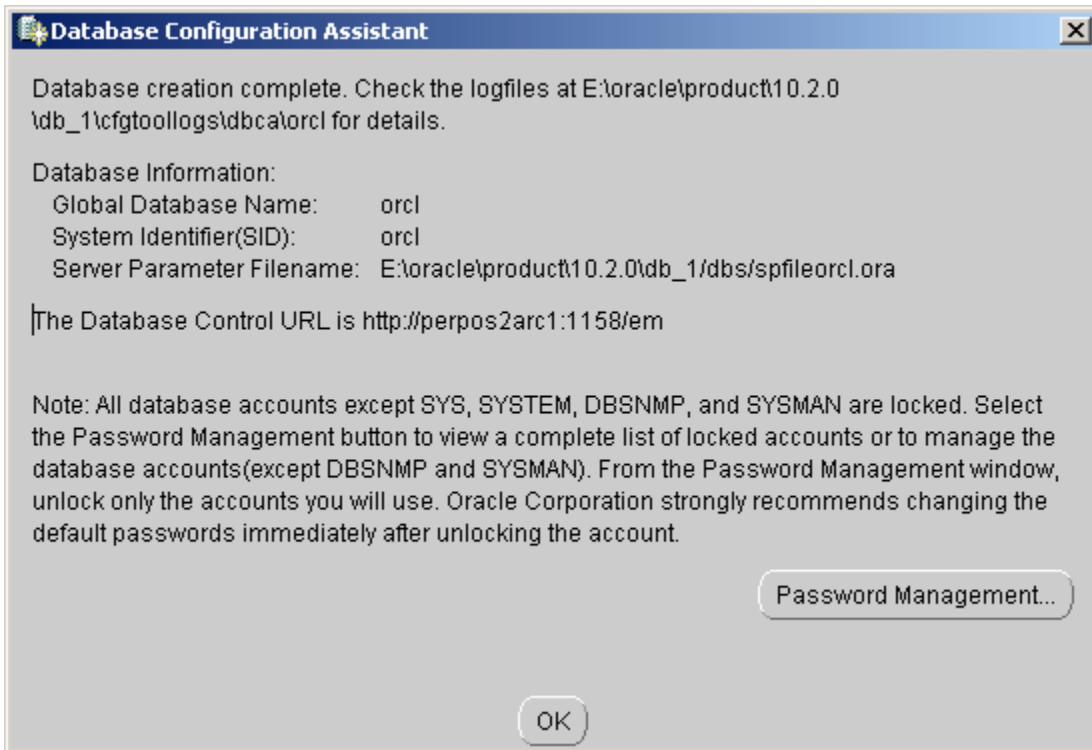
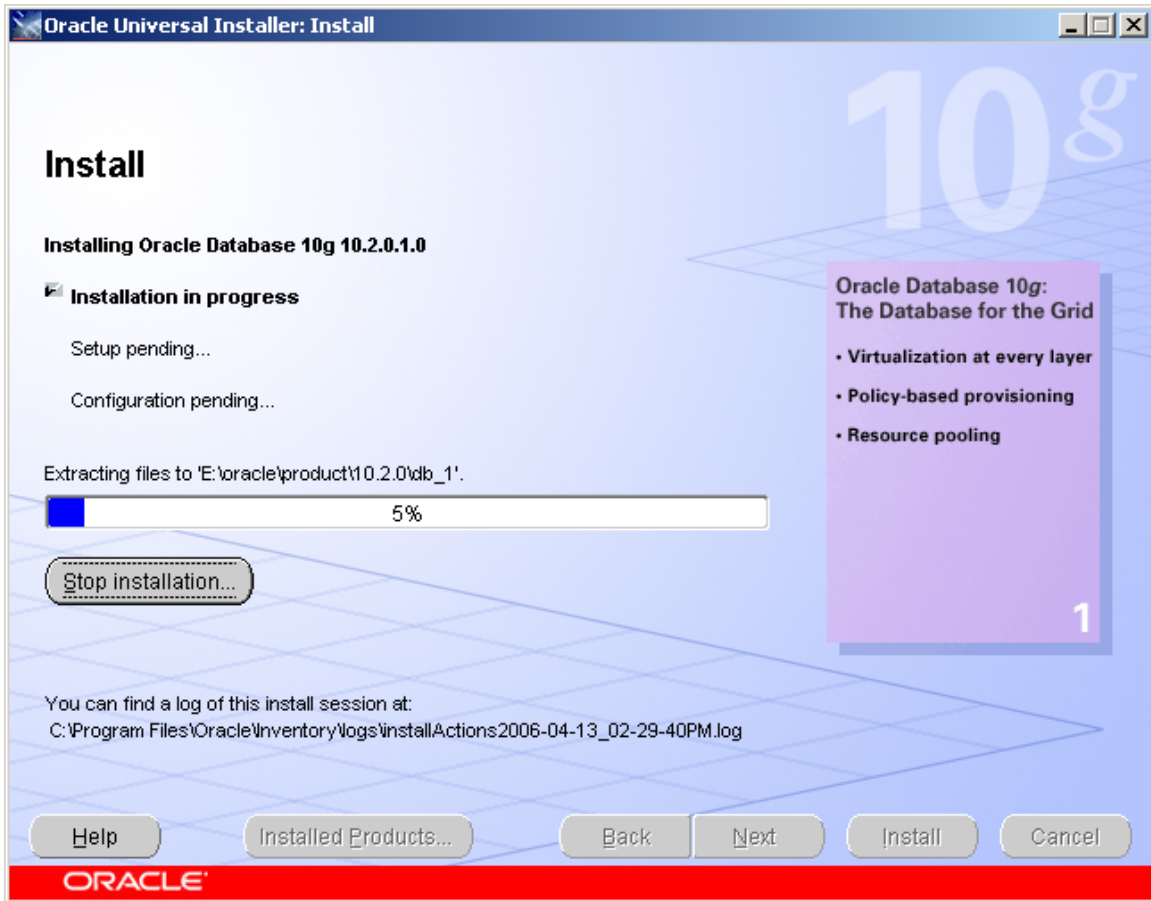
Installing Oracle

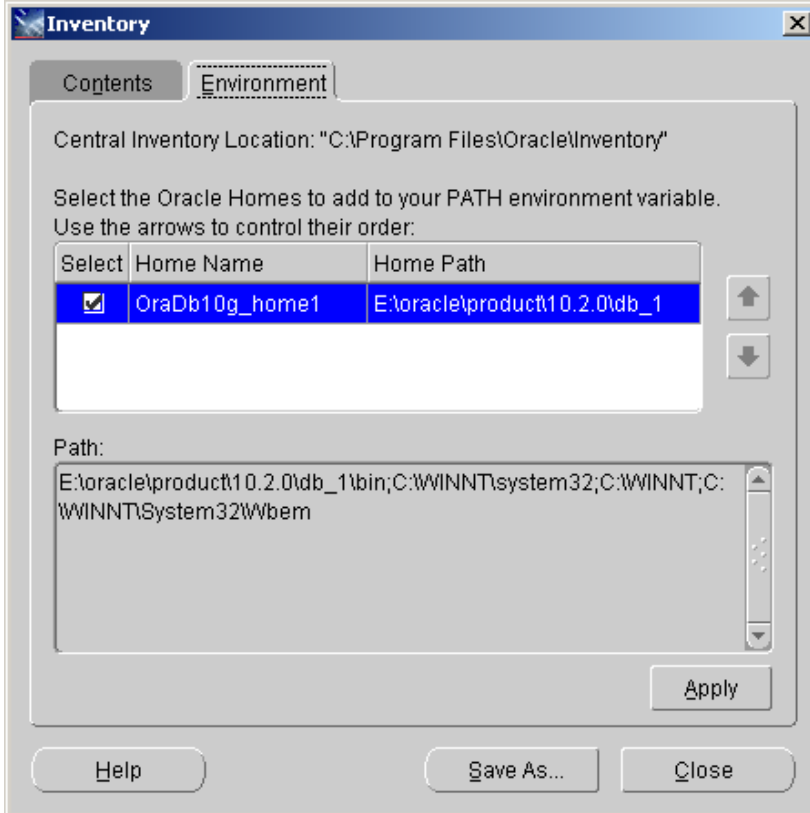
An edition of Oracle DBMS needs to be installed to support FOIA search. We install Oracle 10G Release 2, Personal Edition Basic Installation. Login as Administrator.

Run the Oracle setup file setup.exe. The following screens show the options that were selected.











Even though the interface between Oracle and the PERPOS System is compactable with versions as early as Oracle 8i, we recommend using Oracle 10G Release 2 or greater. Some of the earlier versions, including Oracle 10G Release 1, had a problem with the permissions which were granted to the ORACLE_HOME directory. This problem caused the error message “Provider cannot be found. It may not be properly installed.” Even though the Oracle client had been correctly installed, users without administrator privileges were denied access to the required files.

The solution to the problem should it happen in future versions of Oracle is to unset then reset the privileges to the ORACLE_HOME directory. The ORACLE_HOME directory is the directory in which Oracle was installed. In the above example the ORACLE_HOME is equal to “E:\Oracle\product\10.2.0\db_1”. The following steps should solve the problem.

1. Log on to Microsoft Windows as a user with administrator privileges.
2. Launch Windows Explorer and navigate to the ORACLE_HOME folder.
3. Right-click on the ORACLE_HOME folder and choose the “Properties” option.
4. Click on the “Security” tab of the “Properties” window.
5. Click on “Authorized Users” item in the “Name” list.
6. Uncheck the “Read and Execute” box in the “Permissions” list.
7. Re-check the “Read and Execute” box you just unchecked.
8. Click the “Advanced” button and in the “Permission Entries” list make sure you see the “Authenticated Users” listed there with: Permission = Read & Execute,

Apply To = This folder, subfolders and files. Make sure the “Apply onto” dropdown box is set to “This folder, subfolders and files”.

9. Click the “OK” button until you close all of the security properties windows.

Installing the PERPOS System

PERPOS Installation CD

The PERPOS System installation CD includes the following files and directories:

Archival Processing Tool.msi	Processing	Windows Installations Program for the APT, viewers, archive extractors, file format converters, filters, and password recovery, and file decrypters.
Archival Repository Tool.msi	Repository	Program for installing ART and its databases
CD-0001		Examples of Personal Computer e-records
ConvPack.exe		Microsoft legacy File format converters
EraserSetup.exe		Program that removes all traces of a file from your hard drive
Installation Guide.doc		This File
PC Files Test Suite		A directory containing examples of the files that can be identified by the File Type Identifier
Samples		This directory is a copy of the directory that get installed under the “Work Area” directory during the Archival Processing Tool installation. It contains three sample containers

Installing the APT

If not already logged in as a user with administrator privileges, do so at this time. In Explorer, or My Computer, execute Archival Processing Tool.msi on the installation CD. This program will install the Archival Processing Tool (APT) as well as viewers, archive extractors, file format converters, filters, password recovery, and file decrypters used by the APT.

The following files are installed in the [Program Files]\Archival Processing Tool directory.

AATVB.dll	Dynamically Linked Library used by APT.exe
APT.dat	User defined data file
APT.exe	Archival Processing Tool
filexo.chm	Compiled HTML Help file for determining possible file formats based on the file extension
Redactor8.dot	MSWord Redactor freeware from Veterans Adm. ¹
StripSFX.exe	Helper exe used by APT.exe to remove executable header from self-extracting archives

The following shared files are installed in the [Program Files]\Common Files\Archival Tools directory.

ManifestLibrary.dll	Dynamically Linked Library used by both the Archival Processing Tool and Archival Repository Tool to read and write manifest.mf files in containers
PERPOS TR 06-02.pdf	PDF version of the PERPOS 3.1 Reference Manual
PERPOS TR 06-02.chm	Compiled HTML Help version of the PERPOS 3.1 Reference Manual which is used as the help file for both the Archival Processing Tool and the Archival Repository Tool
StorageManagementAssist.dll	Dynamically Linked Library used for defining and finding repository locations for containers in both the Archival Processing Tool and the Archival Repository Tool
Transfer.avi	Animation file use in dialogs in both the Archival Processing Tool and the Archival Repository Tool

Seven subdirectories are also created in the Archival Processing Tool directory. The files in these directories are modifiable only by someone with administrator privileges.

- Converters
- Decrypters
- Extractors
- Filters
- Password Recovery

¹ Another free MS Word redactor Add-in for MSWord 2003 is available from Microsoft. <http://office.microsoft.com/en-us/assistance/HA012193991033.aspx> However, it also does not remove hidden metadata.


Repairers
Viewers

Four directories are created off the root of the drive containing the operating system and one under the Work Area directory.

Holdings
Library
Reference
Work Area
 Samples

The following three sample containers are installed in the Work Area\Samples directory. These containers can be used to try out some actions in the Preservation Activity of the Archival Processing Tool,

Convertible.tar
Decryptable.tar
Repairable.tar

And, the  icon is created on the Desktop for the Archival Processing Tool. This icon is for all users. It shows up on the Desktop for users created after the installation as well as for all existing users.

Installing ART

If not already logged in as a user with administrator privileges, do so at this time. In Explorer or My Computer, execute Archival Repository Tool.msi on the installation CD. This program will install the Archival Repository Tool (ART)

The following files are installed in the [ProgramFiles]\Archival Repository Tool directory. [ProgramFiles] is a system environmental variable. It is possible to see all system environment variables. To see the variables click on the Start, then click Run, then type "cmd" without the quotes in the dialogbox, when the command window opens type "set" without the quotes. This displays all the environmental variables

ARAVB.dll	Dynamically Linked Library used by ART.exe
ArchivalToolsOracleConfiguration.sql	Oracle configuration script used to create the interface between Oracle and both the ART.exe and the FOIASearch.exe
ART.exe	Archival Repository Tool

FOIASearch.exe	A FOIA search application that can be used in stand alone mode or can be called from with the ART.exe
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The same set of shared files are installed in the [ProgramFiles]\Common Files\Archival Tools directory as were describe in the Installing the APT section above. These files are used by both applications. So, they are installed by both applications. This way it does not matter in which order the application are installed.

The following three files are installed in the [ALLUSERSPROFILE]\Application Data\Archival Tools directory. [ALLUSERSPROFILE] is another environmental variable that can be displayed as described above.

Art.mdb	This is the database where all the repository data is kept.
PageEstimates.txt	This is a text file of page estimates by filetype that is imported into the Art.mdb
Schema.ini	This is a schema file used to import the PageEstimates.txt file.

These files have been moved to this location so that all users no matter what privileges they use them. In the case of Art.mdb its parent must have create file and delete file privileges.



The  icon is created on the Desktop for the Archival Repository Tool. This icon is for all users. It shows up on the Desktop for users created after the installation as well as for all existing users.

PERPOS Reference Manual

To make a copy of the PERPOS Users Guide available on the Desktop:

1. Select Start>Programs>Archival Tool.
2. Place the cursor over PERPOS Reference Manual.
3. While holding down the Shift and Ctrl keys press the left mouse button down and move the cursor over the desktop, then release the mouse button.

Creating User Names and Passwords

A user name and password for each archivist should be created. This user name will be automatically inserted into fields that record whom has taken a specific archival action, e.g., withdrawal or redaction of a record.

User names and passwords are created by selecting Start > Programs > Administrative Tools > Computer Management >Local Users and Groups. Place the mouse pointer on

the Users folder and right click the mouse. Select New User. Enter User Name and Password and select Create.

Erasing Temporary and Deleted Files

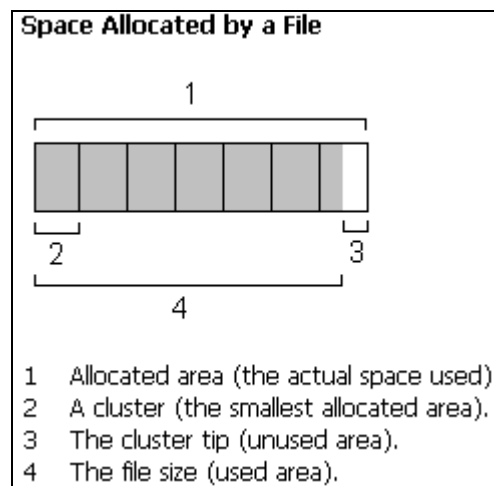
An operating system, such as MS-DOS and Windows, uses a file system to keep track of the data on the hard disk: directories, files, their location, size, dates etc.

Normally, when you delete a file, the operating system does not actually erase the file; it only removes the reference of the file from the file system table and marks the area occupied by the file unused. Therefore, anyone can recover the file using any disk maintenance utility capable of reading the disk directly. The data will not be destroyed until a program writes over the deleted file, and even after that, it may be possible to recover some or all of the data by studying the disk with specialized equipment.

If you want to ensure that your confidential data will not end up in wrong hands, you should properly overwrite a file before removing its reference from the file system table.

The virtual memory storage of the Windows operating system is called the paging file (or the swap file). The operating system may store any information from the memory to the disk whenever it wants. This means that the paging file may contain pieces of documents and other sensitive information.

Furthermore, in FAT and FAT32 file systems, files are stored in clusters. If a file does not entirely take up a cluster there is slack space in the cluster at the end of the file, which may contain information that was part of another file. The figure below illustrates this.



Eraser (version 5.7) developed by Tolvanen <http://www.tolvanen.com/eraser/> is Freeware that removes all traces of a file from your hard drive. In addition to wiping a file, Eraser can remove any leftover copies by wiping all the free space on the drive, including the

leftover space between the end of a file and the border of the next unit of hard drive space.

Eraser offers two overwriting methods that are based on the clearing and sanitization matrix in the National Industrial Security Program Operating Manual [DoD 2006]. The patterns used for overwriting are based on Peter Gutmann's paper [Gutmann 1996].

Eraser is available from SourceForge <http://sourceforge.net/>. Since Eraser is Freeware that can be redistributed, the PERPOS CD contains the zip file Eraser57Setup.zip. The files in this zip can be extracted to a temporary directory. Then execute EraserSetup.exe. The program will be installed in C:\Program Files\Eraser.

Backup of Containers and ART Database

The four directories shown below have containers of records. They should be periodically backed up to either tape, CD or DVD.

- Holdings
- Library
- Reference
- Work Area

The ART.mdb database contains metadata about the records and should also be periodically backed up.

Tutorial Files

The PERPOS distribution CD contains some tutorial files. These are in the directories

- CD-0001
- PC Files Test Suite

These directories should be copied to C:\.

Freeware Provided with the Installation

ARCE.com Vers. 3.1 copyright Chin and Buerger 1988.

Booz.exe 2.0 Zoo extractor, lister by Rahul Dhesi

Hyper.exe A hyper archive extractor by Klaus Peter Nischke and Peter Sawatzki

LHA 2.55 copyright by Haruyasu Yoshizaki

Unarj.exe by Robert Jung

Tar.exe

RV.exe Viewer ARC, ARJ, HYP, LZH, LZS, PAK, ZIP & ZOO by Raymond T. Kaya

Fcrakzip

Pxunsec.exe Password Recovery for Paradox 3.5 and 4.0 Databases by Randolph Beck

PxDazz.exe Password Recovery for more recent Paradox Databases by Randolph Beck
Winwu.exe word 2.0 unprotect
Wfwcd.exe Recovers Word for Windows 1.0-2.0 Passwords by Fauzan Mirza
Wpcrack.exe Recovers passwords for WordPerfect 5.x files by Greg Sullivan
Fzc105.exe
Msofpass.exe Recovers passwords-Excel 5.0&7.0, MSWord 6.0-7.0 © by Dmitry Sumin
Word97cr.exe Password Recovery for MSWord 97 by Dmitry Sumin
Wpuncryp.c Given the correct password, decrypts WordPerfect 5.x files
WPMD 3.0 - The File Doctor for WPerf 5.x, Software by Seidman Wp5md.exe
Fixfoxpro.exe repairs foxpro databases
Zip.exe infozip Repairs zip files
NB4.exe Converts WordPerfect notebooks to dbf
Erase 5.8WP5MD - Repairs WordPerfect 5.x files

Commercial-Off-the-Shelf Software

Licenses are also needed for the following COTS software.

Microsoft Office 2000
McAfee VirusScan
AmberText
QuickView Plus
Informatik Image Driver
WinZip32 (wzunzip.exe Free add-in for command line version)
Oracle 10G Standard Edition

References

[DoD 2006] Department of Defense. National Information Security Program Operations Manual (NISPOM). DoD 5220.22-M, Feb. 28, 2006. www.dss.mil/files/pdf/nispom2006-5220.pdf

[Gutmann 1996] P. Gutmann. Secure Deletion of Data from Magnetic and Solid-State Memory. *Sixth USENIX Security Symposium Proceedings*, San Jose, California, July 22-25, 1996
http://www.usenix.org/publications/library/proceedings/sec96/full_papers/gutmann/

[Underwood et al 2006]W. Underwood, S. Laib and M. Hayslett-Keck. Reference Manual for PERPOS: An Electronic Records Repository and Archival Processing System, Version 3.1. PERPOS TR ITTL/CSITD 06-2, Information Technology and Telecommunications Laboratory, Georgia Tech Research Institute, September 2006.