PERPOS Version 3.1: Installation Guide

PERPOS Technical Report ITTL/CSITD 06-07

Sandra Laib
Matthew Underwood
William Underwood

December 2006

Information Technology and Telecommunications Laboratory
Computer Science and Information Technology Division
Georgia Tech Research Institute
Atlanta, GA

The Army Research Laboratory (ARL) and the National Archives and Records Administration (NARA) sponsor this research under Army Research Office Cooperative Agreement DAAD19-03-2-0018. The findings in this paper should not be construed as an official ARL or NARA position unless so indicated by other authorized documentation.

Table of Contents

INTRODUCTION **1**

HARDWARE CONFIGURATION **1**

WINDOWS 2000 ..... **1**

DISK MANAGEMENT **1**

INSTALLING OTHER REQUIRED SOFTWARE **2**

- MICROSOFT OFFICE 2
- ANTIVIRUS SOFTWARE 2
- QUICK VIEW PLUS 2
- INFORMATIK IMAGE DRIVER 2
- IMAGER 3
- ADOBE ACROBAT AND REDAX 3
- AMBER ABC TEXT CONVERTER 3
- MICROSOFT WORD FILE CONVERSION 3
- WINZIP 4
- INSTALLING ORACLE 4

INSTALLING THE PERPOS SYSTEM **10**

- PERPOS INSTALLATION CD 10
- INSTALLING THE APT 10
- INSTALLING ART 12
- PERPOS REFERENCE MANUAL 13
- CREATING USER NAMES AND PASSWORDS 13
- ERASING TEMPORARY AND DELETED FILES 14
- BACKUP OF CONTAINERS AND ART DATABASE 15
- TUTORIAL FILES 15
- FREEWARE PROVIDED WITH THE INSTALLATION 15
- COMMERCIAL-OFF-THE-SHELF SOFTWARE 16

REFERENCES **17**

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. TheFAT32 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

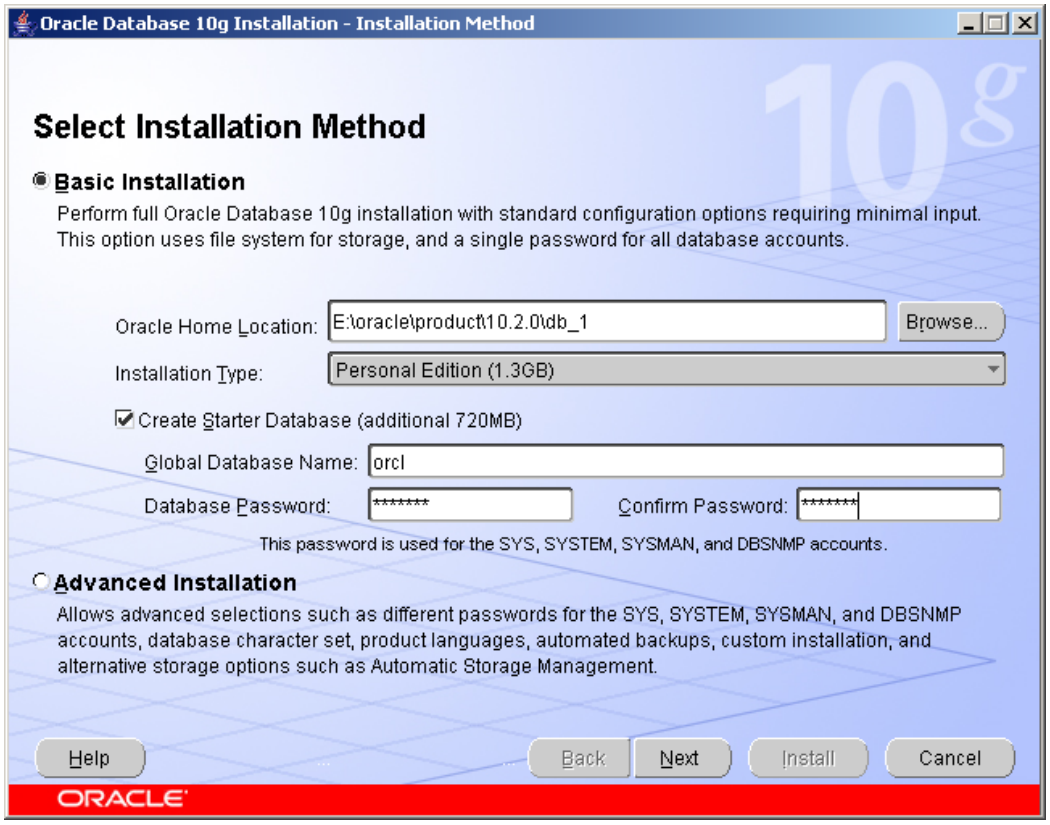
The APT uses WinZip and the WinZip Command Line Support Add-on. The WinZip command Line Support Add-on is free for licensed version WinZip 9.0 or greater. Follow the installation instruction that comes with the WinZip and the WinZip Command Line Support Add-on. The following options should be set in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

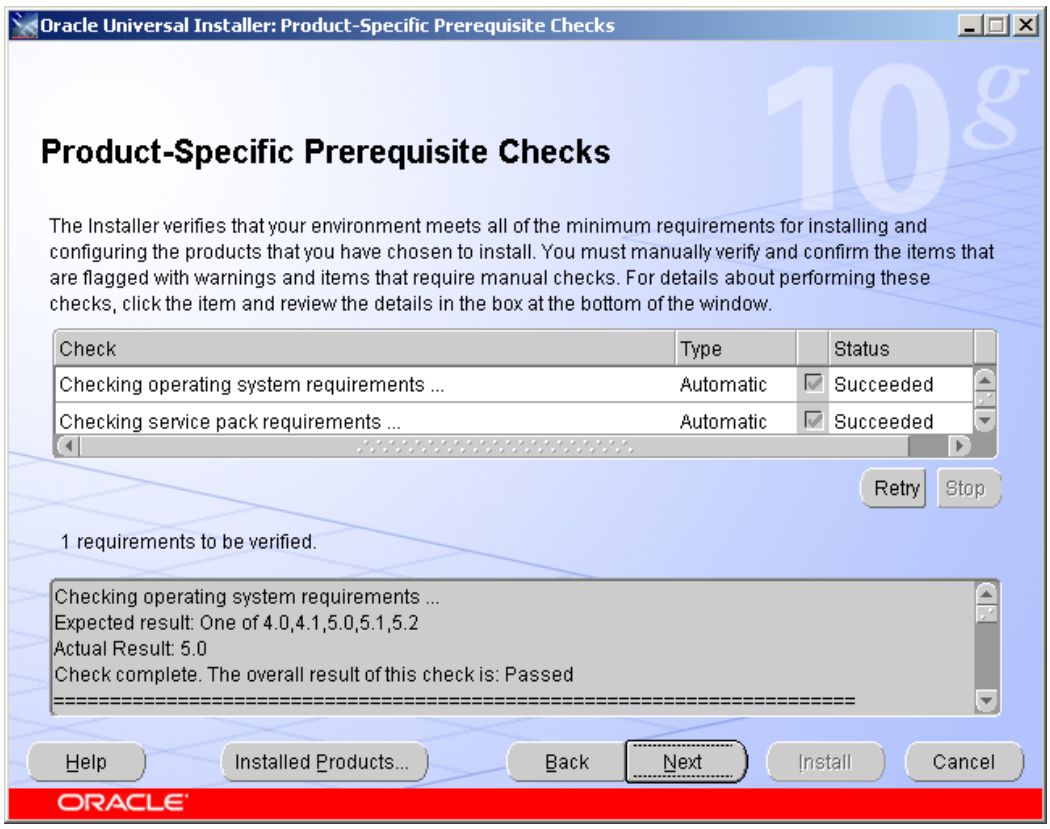
1. In WinZip, select Options > Configuration and select the Program Locations tab.
2. For the location of the Virus Scanner, browse to the location C:\NetworkAssociates\VirusScan\scan32.exe. The parameters will be automatically filled in.
3. For the location of the viewer, browse to c:\Program Files\Quick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

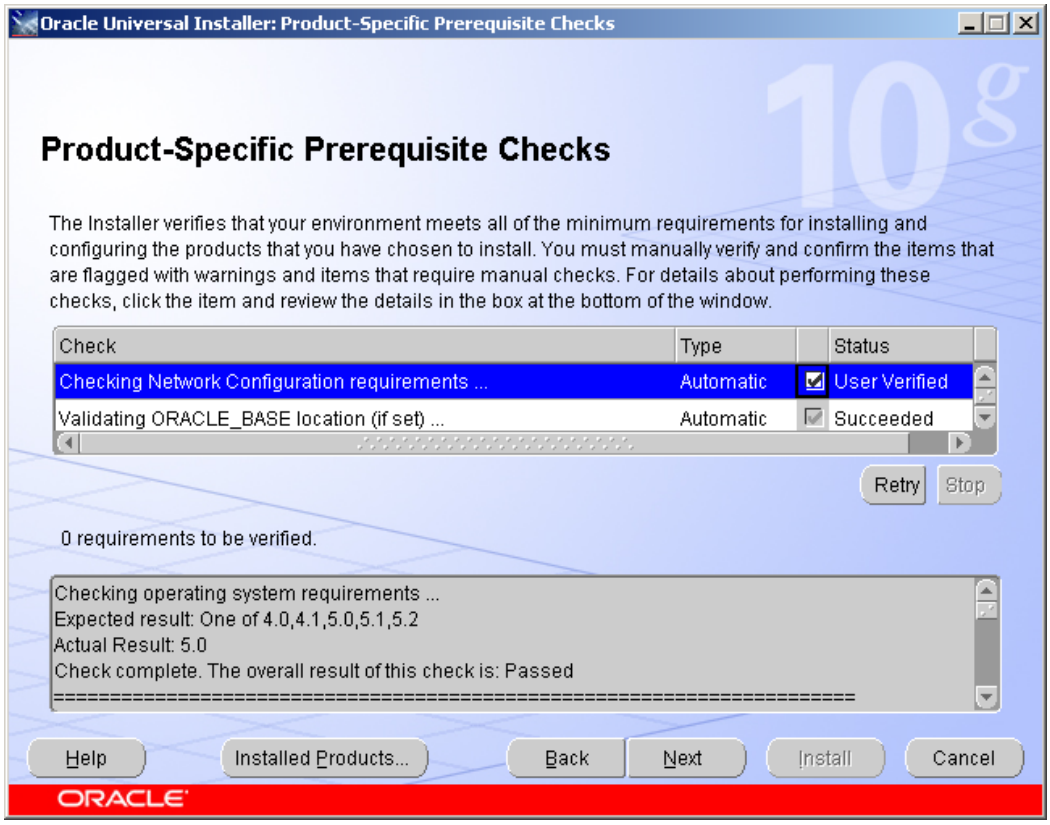
Installing Oracle

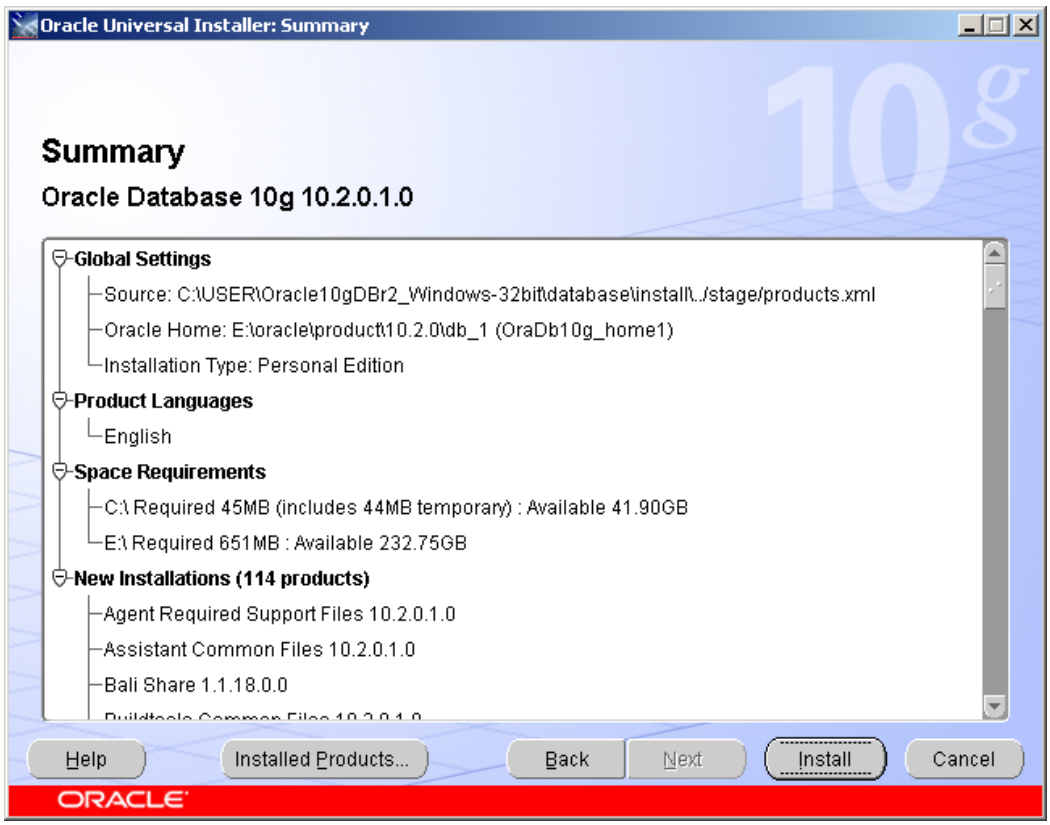
An edition of Oracle DBMS needs to be installed to support FOIA search. We install Oracle 10G Release 2, Personal Edition Basic Installation. Login as Administrator.

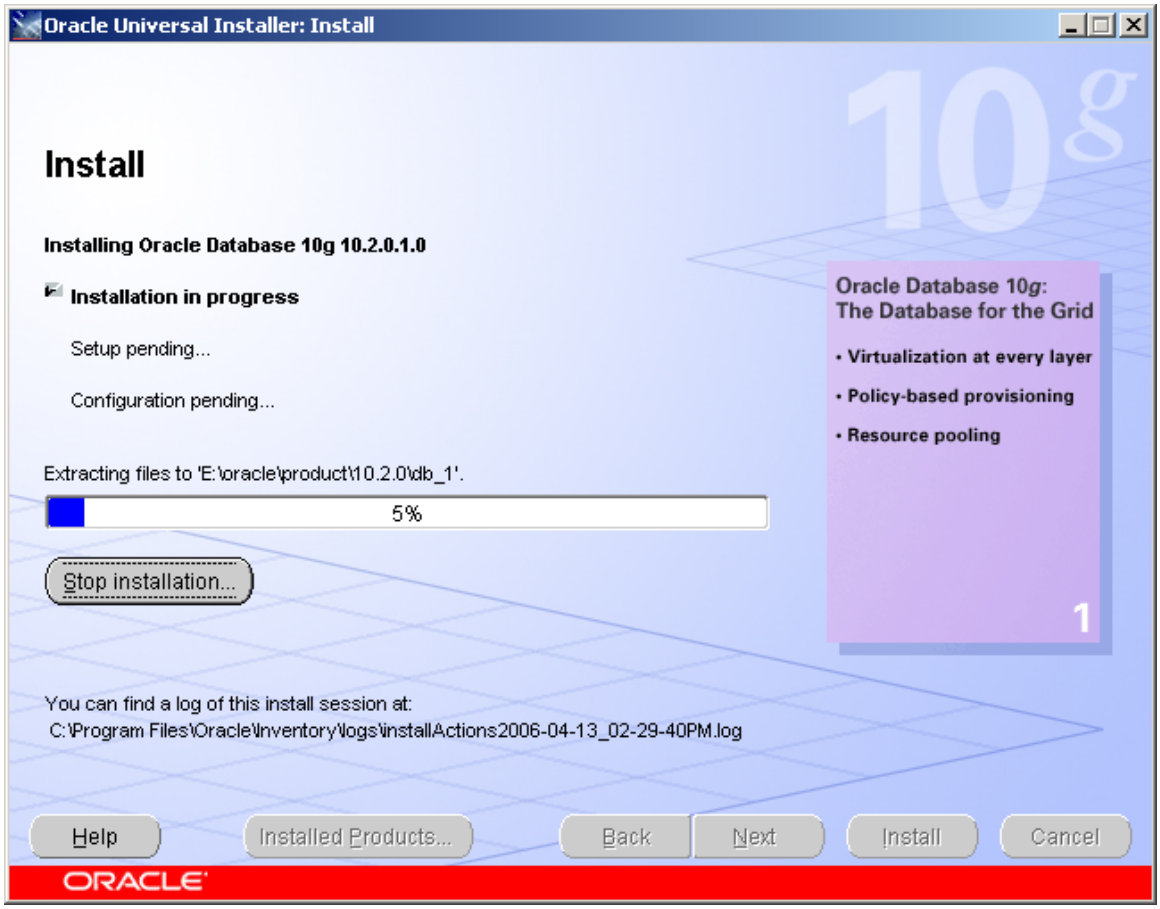
Run the Oracle setup file setup.exe. The following screens show the options that were selected.

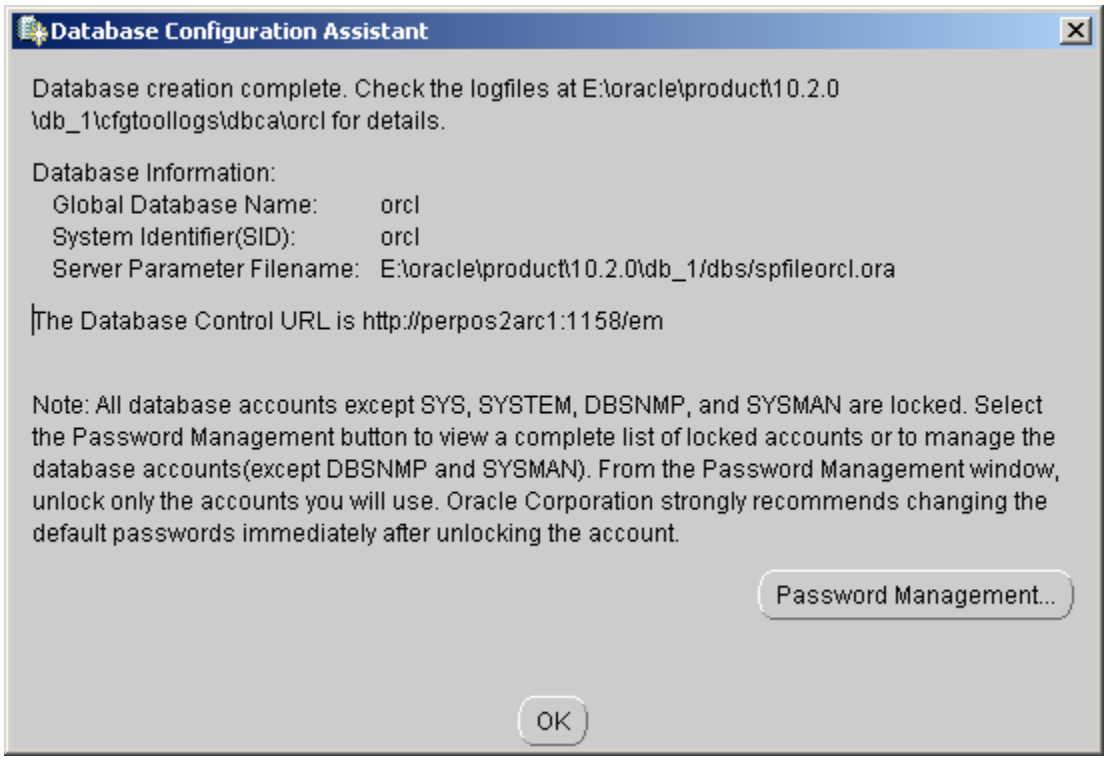

Oracle Database 10g Installation - Installation Method
Select Installation Method
Basic Installation
Perform full Oracle Database 10g installation with standard configuration options requiring minimal input. This option uses file system for storage, and a single password for all database accounts.
Oracle Home Location:
E:\oracle\product\10.2.0\db_1
Browse...
Installation Type:
Personal Edition (1.3GB)
Create Starter Database (additional 720MB)
Global Database Name:
orcl
Database Password:
Confirm Password:
This password is used for the SYS, SYSTEM, SYSMAN, and DBSNMP accounts.
Advanced Installation
Allows advanced selections such as different passwords for the SYS, SYSTEM, SYSMAN, and DBSNMP accounts, database character set, product languages, automated backups, custom installation, and alternative storage options such as Automatic Storage Management.
Help
Back
Next
Install
Cancel
ORACLE

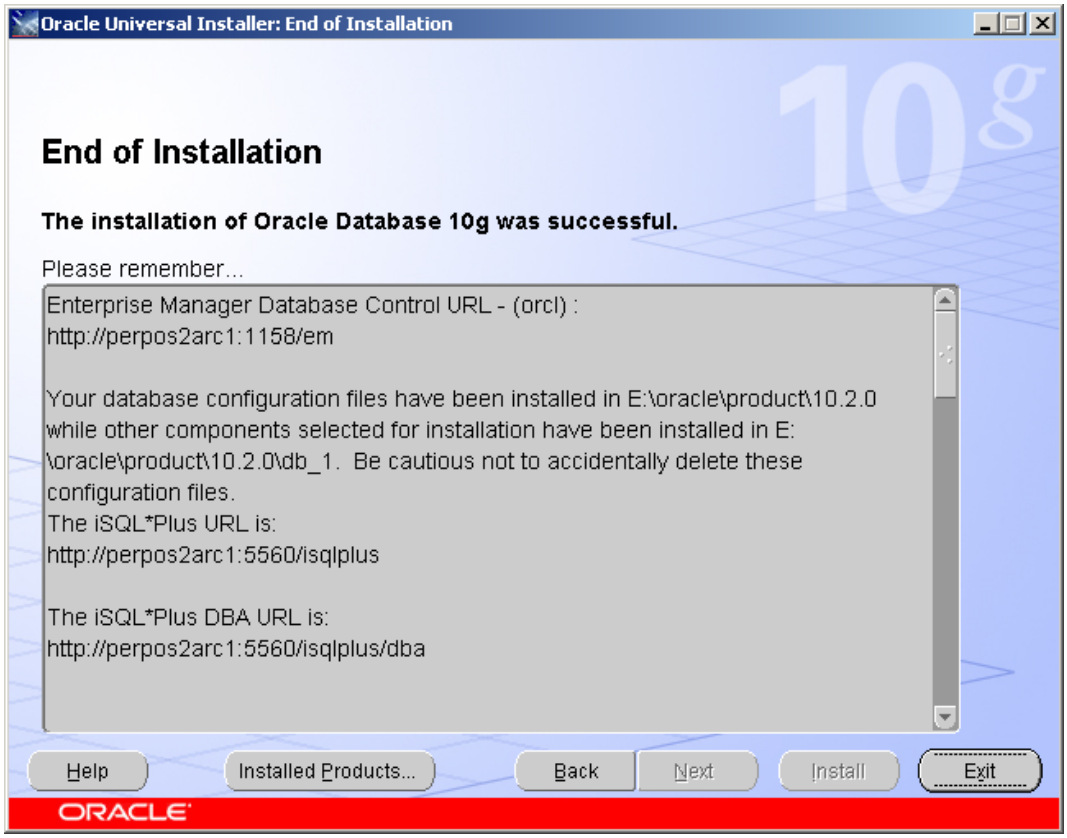

Oracle Universal Installer: Product-Specific Prerequisite Checks
Product-Specific Prerequisite Checks
The Installer verifies that your environment meets all of the minimum requirements for installing and configuring the products that you have chosen to install. You must manually verify and confirm the items that are flagged with warnings and items that require manual checks. For details about performing these checks, click the item and review the details in the box at the bottom of the window.
Check
Type
Status
Checking operating system requirements ...
Automatic
Succeeded
Checking service pack requirements ...
Automatic
Succeeded
Retry
Stop
1 requirements to be verified.
Checking operating system requirements ...
Expected result: One of 4.0,4.1,5.0,5.1,5.2
Actual Result: 5.0
Check complete. The overall result of this check is: Passed
Help
Installed Products...
Back
Next
Install
Cancel
ORACLE

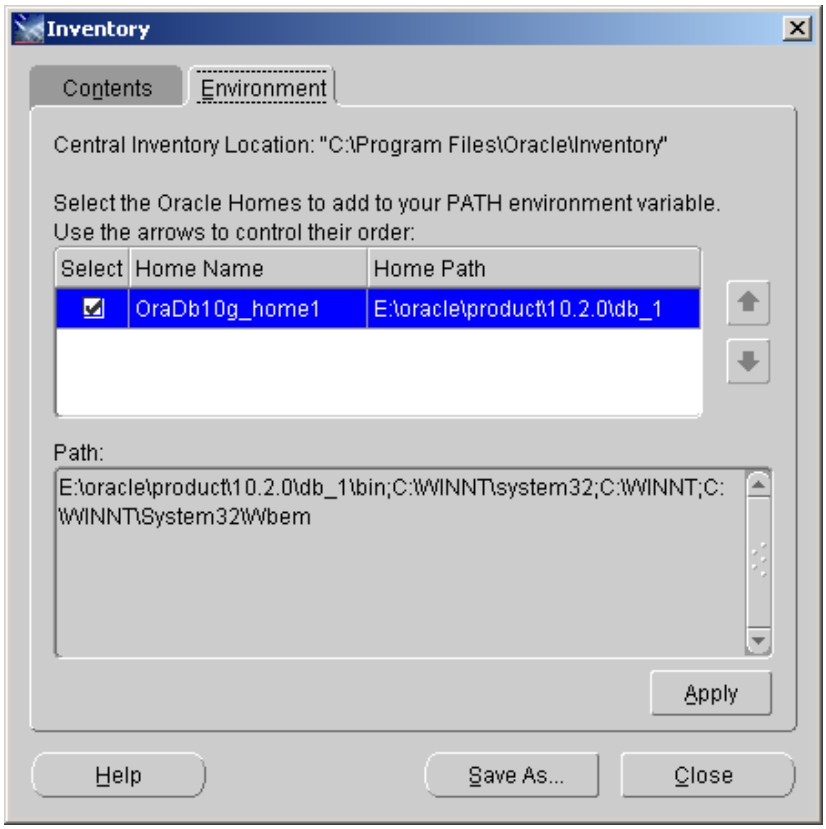

Oracle Universal Installer: Product-Specific Prerequisite Checks
Product-Specific Prerequisite Checks
The Installer verifies that your environment meets all of the minimum requirements for installing and configuring the products that you have chosen to install. You must manually verify and confirm the items that are flagged with warnings and items that require manual checks. For details about performing these checks, click the item and review the details in the box at the bottom of the window.
Check
Type
Status
Checking Network Configuration requirements ...
Automatic
User Verified
Validating ORACLE_BASE location (if set) ...
Automatic
Succeeded
Retry
Stop
0 requirements to be verified.
Checking operating system requirements ...
Expected result: One of 4.0,4.1,5.0,5.1,5.2
Actual Result: 5.0
Check complete. The overall result of this check is: Passed
Help
Installed Products...
Back
Next
Install
Cancel
ORACLE

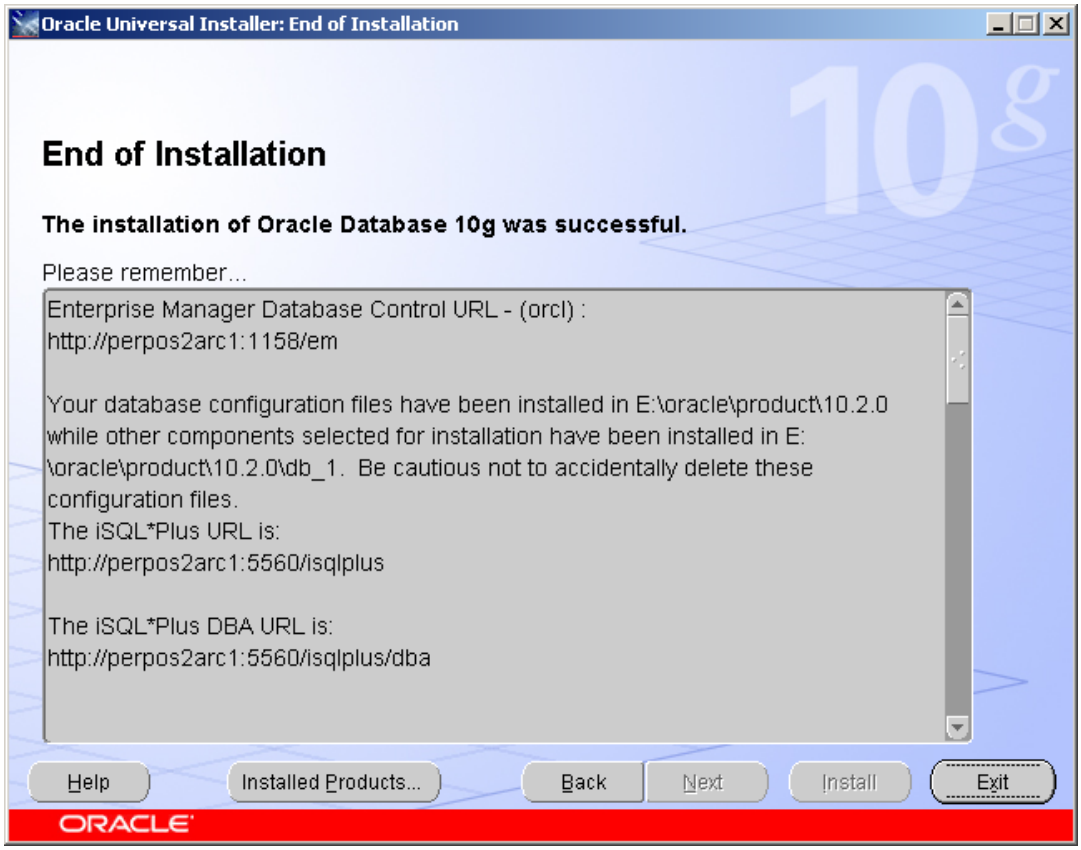

Oracle Universal Installer: Summary
Summary
Oracle Database 10g 10.2.0.1.0
Global Settings
Source: C:\USER\Oracle10gDBr2_Windows-32bit\database\install\../stage/products.xml
Oracle Home: E:\oracle\product\10.2.0\db_1 (OraDb10g_home1)
Installation Type: Personal Edition
Product Languages
English
Space Requirements
C:\ Required 45MB (includes 44MB temporary) : Available 41.90GB
E:\ Required 651MB : Available 232.75GB
New Installations (114 products)
Agent Required Support Files 10.2.0.1.0
Assistant Common Files 10.2.0.1.0
Bali Share 1.1.18.0.0
Help
Installed Products...
Back
Next
Install
Cancel
ORACLE


Oracle Universal Installer: Install
Install
Installing Oracle Database 10g 10.2.0.1.0
Installation in progress
Setup pending...
Configuration pending...
Extracting files to 'E:\oracle\product\10.2.0\db_1'.
5%
Stop installation...
Oracle Database 10g:
The Database for the Grid
• Virtualization at every layer
• Policy-based provisioning
• Resource pooling
You can find a log of this install session at:
C:\Program Files\Oracle\Inventory\logs\installActions2006-04-13_02-29-40PM.log
Help
Installed Products...
Back
Next
Install
Cancel
ORACLE


Database Configuration Assistant
Database creation complete. Check the logfiles at E:\oracle\product\10.2.0\db_1\cfgtoollogs\dbca\orcl for details.
Database Information:
Global Database Name: orcl
System Identifier(SID): orcl
Server Parameter Filename: E:\oracle\product\10.2.0\db_1/dbs/spfileorcl.ora
The Database Control URL is http://perpos2arc1:1158/em
Note: All database accounts except SYS, SYSTEM, DBSNMP, and SYSMAN are locked. Select the Password Management button to view a complete list of locked accounts or to manage the database accounts(except DBSNMP and SYSMAN). From the Password Management window, unlock only the accounts you will use. Oracle Corporation strongly recommends changing the default passwords immediately after unlocking the account.
Password Management...
OK


Oracle Universal Installer: End of Installation
End of Installation
The installation of Oracle Database 10g was successful.
Please remember...
Enterprise Manager Database Control URL - (orcl) :
http://perpos2arc1:1158/em
Your database configuration files have been installed in E:\oracle\product\10.2.0 while other components selected for installation have been installed in E:\oracle\product\10.2.0\db_1. Be cautious not to accidentally delete these configuration files.
The iSQL*Plus URL is:
http://perpos2arc1:5560/isqlplus
The iSQL*Plus DBA URL is:
http://perpos2arc1:5560/isqlplus/dba
Help
Installed Products...
Back
Next
Install
Exit
ORACLE


Inventory
Contents
Environment
Central Inventory Location: "C:\Program Files\Oracle\Inventory"
Select the Oracle Homes to add to your PATH environment variable.
Use the arrows to control their order:
Select
Home Name
Home Path
OraDb10g_home1
E:\oracle\product\10.2.0\db_1
Path:
E:\oracle\product\10.2.0\db_1\bin;C:\WINNT\system32;C:\WINNT;C:\WINNT\System32\Wbem
Apply
Help
Save As...
Close



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\procduct\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	Windows Installations Program for the APT, viewers, archive extractors, file format converters, filters, and password recovery, and file decrypters.
Archival Repository Tool.msi	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,

Convertable.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 an 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

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 Crtl 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

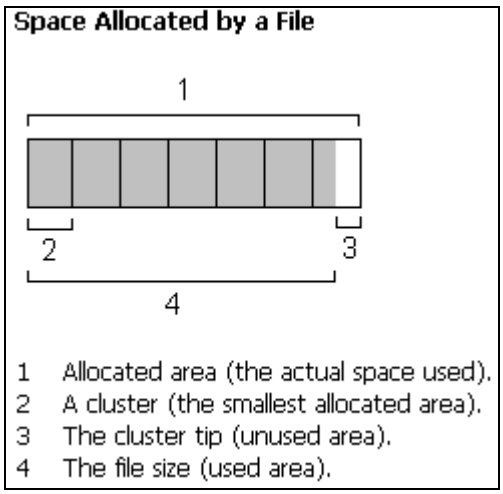
An operating system, such as MS-DOS and Windows, uses a file system to keep track of the data on the hard disk: directories, files, their location, size, dates etc.

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 Buerg 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.