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*File Management and System Structure*

Windows NT and Windows 2000 share many similarities in files and structure

## The Root Directory



We will begin at the root of your C: (or local system) drive. Within the above example you can find the core root folders of Windows 2000:

- Documents and Settings
- My Download Files
- Program Files
- Windows Update Setup Files
- WINNT

All of the user data is forced to the “Documents and Settings” folder (in sub-folders associated with the users account). As you download files from the Internet (or other places) your download files will be defaulted to the “My Download Files” folder. All of your Windows based programs will be stored in the “Program Files” folder under their respective sub-folders. All Windows update settings are placed in

the “Windows Update Settings folder”. Finally, the “WINNT” folder holds the bulk of Windows 2000 systems files.

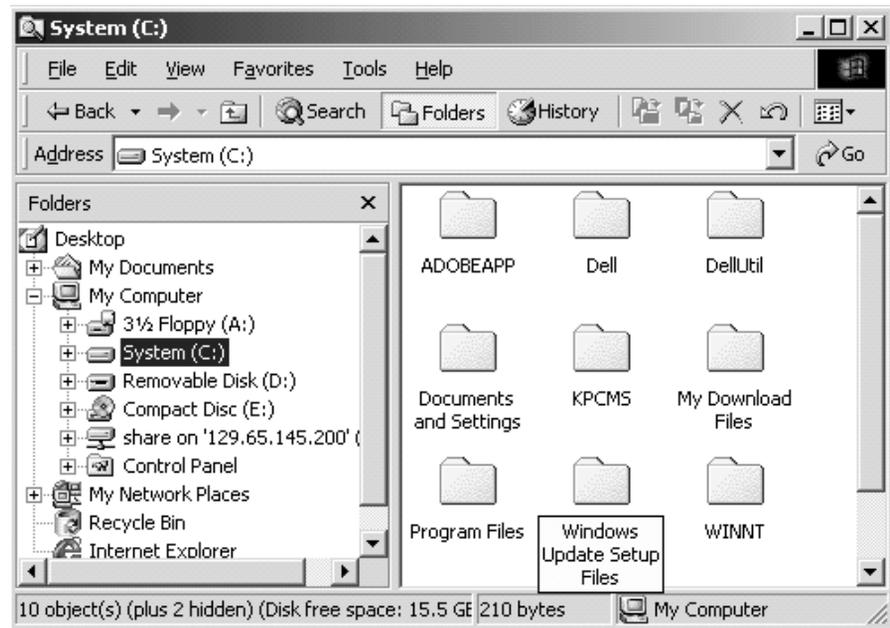
It is this simplicity of the root folder that makes Windows 2000 less dysfunctional than other operating systems by keeping the base of your hard drive clean and easy to understand. If we un-hide the system files in the root directory we end up with a more complicated display:



As you can see from the above example, files such as boot.ini, the autoexec.bat, config.sys, io.sys, msdos.sys, nt detect, ntldr and pagefile.sys are exposed (only for this example). These files play an important part in the booting and operation of your system - do not modify or delete them or your system may not function once

they are tampered with. You will also note the Recycles bin is exposed in the root directory. When you delete a file, it is placed in this special folder until you empty the recycle bin. Only after the Recycle bin has been emptied, is the file fully removed from the hard drive.

### Windows Explorer Default View



In the Windows Explorer default view you will see the following main objects in the Desktop tree:

- My Documents
- My Computer
- My Network Places
- Recycle Bin
- Internet Explorer

The “My Documents” object is actually a veritable sub-folder located within the “Documents and Settings” folder tree (more on that later).

The “My Computer” object displays all of the disk storage for your computer (including any network attached storage that has a drive letter specified).

The “My Network Places” object displays all network-available resources.

The “Recycle Bin” object is a short cut to the Recycle Bin folder.

The “Internet Explorer” object is a short cut to the Internet Explorer browser.

### My Documents and Settings



It is important to understand that Windows 2000 is a multi-user environment that allows each user that logs on to have their own private Idaho (they can configure their profile to their liking and not bother other user settings).

Directly underneath the “My Documents and Settings” folder you will find two or more sub folders. These sub folders are created when accounts are made on the local system. They are named with the user account name. Each of these sub folders contain all of the users profile information as well as the documents they generate

using Windows applications (Office, Adobe, etc.- found in the My Documents folder).

Also recorded here are the cookies generated by Internet use, Desktop settings, Internet Explorer favorites, and Start Menu items (for each specific user).

## **Cookies**

A cookie is information that a Web site puts on your hard disk so that it can remember something about you at a later time. (More technically, it is information for future use that is stored by the server on the client side of a client/server communication.) Typically, a cookie records your preferences when using a particular site. Using the Web's Hypertext Transfer Protocol (HTTP), each request for a Web page is independent of all other requests. For this reason, the Web page server has no memory of what pages it has sent to a user previously or anything about your previous visits. A cookie is a mechanism that allows the server to store its own information about a user on the user's own computer. You can view the cookies that have been stored on your hard disk (although the content stored in each cookie may not make much sense to you). The location of the cookies depends on the browser. Internet Explorer stores each cookie as a separate file under a Windows subdirectory. Netscape stores all cookies in a single cookies.txt file. Opera stores them in a single cookies.dat file.

## **Desktop**

1) Using an office metaphor, a desktop is a computer display area that represents the kinds of objects one might find on a real desktop: documents, phone book, telephone, reference sources, writing (and possibly drawing) tools, project folders. A desktop can be contained in a window that is part of the total display area or can be "full-screen" (the total display area). Conceivably, you can have multiple desktops (for different projects or work environments you may have) and switch among them.

In its Windows product, Microsoft provides what they call an Active Desktop. It includes representations of and access to desktop objects and also dynamic Web content as well, including integrated links to Web sites and information areas that are generated as the result of sites pushing requested information updates to the user.

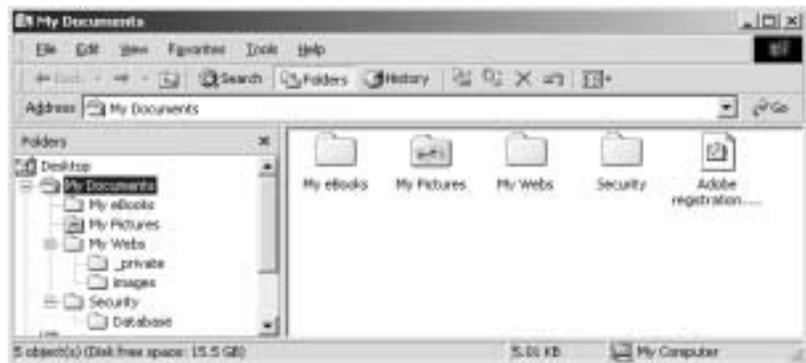
2) Desktop is also an abbreviated form of *desktop computer*, a personal computer that fits on top of a desk.

In this folder you will find all applications that are posted on the desktop.

### **Favorites**

All of your favorites are located here. When you add or remove favorites from Internet Explorer files are added and removed from this folder. If you want to move your Favorites from one computer to another, simply copy this folder in to the same folder on the other computer.

### **My Documents (aka c:\Documents and Settings\%username%\My Documents)**



There are three ways that you can get to your “My Documents” folder:

1. Use the Desktop Icon “My Documents”
2. Click on the My Documents Object in the Desktop tree (using Windows Explorer)
3. follow the Folder tree for C:\Documents and Settings

As you can see each of these are ascending in difficulty and you should establish a patter of access so that you gain access as quickly as needed. My suggestion is to always use the “My Documents” folder on the Desktop.

It should be noted that each of the folders and files located under the Documents and settings\%username% folder is owned by that user and is protected by the operating system. Office Templates are stored in C:\Program Files\Microsoft Office\Templates.

### **Start Menu**

Remember the Start Menu? Well here is where you would put programs specific to that user so that it does not show up on the Start menu for others. you would also place programs that you wish to launch for yourself at bootup as well.

### **All Users**

This is where you put all of the programs that you wish to have available for all users access through the Start menu.

## Program Files



All of the applications installed on your computer are located here. While we can not go through all of them there is one of you should be aware of - Netscape.

## Netscape

Netscape is used by some for both Internet browsing and e-mail. Finding your bookmarks and local e-mail folders can be difficult, so here they are:



Within The Netscape folder, you will find the “Users” folder. Within this folder lie each of the user account folders. All of your e-mail, including your bookmarks lies here. If you wish to move e-mail and bookmarks from one computer to another, move the folder associated with your account (under the Netscape Users folder) to the new computer in the same spot in the Program Files folder.

I should note that tampering with files in any of these folders could result in an application failing to load or work properly.



There are several folders located here that are of interest:

- Options
- Repair
- System
- System32

While all of the other folders are important we must limit our examination to these four folders...

### **Options**

In the Options folder, you will find three basic sub folders:

1. I386
2. NWClient
3. Mapi

#### *I386*

The I386 sub folder contains all of the install files for Windows 2000. If you add devices or change the OS in any way these files will be required in order to complete the modification. The full path name is: c:\winnt\options\i386.

#### *Nwclient*

The Nwclient sub folder contains all of the components needed to install Novell's NetWare Client on a Windows 2000 computer.

#### *Mapi*

The Mapi folder contains all of the Mapi drivers required for Outlook to access HP's OpenMail server.

### **Repair**

A backup copy of essential files can be located here -- just in case they are blown away by some process or user activity.

## **System**

The system folder contains required 16 bit DLL files that help to operate your system (Mouse, shell, etc.).

## **System32**

All 32 bit processes are located in this subfolder and its many other sub-folders.

## **Security**

Implementing security in your computing environment provides several important benefits:

First, a good security system confirms the identity of the people that are attempting to access the resources in your computing environment. This prevents imposters from accessing, stealing, or damaging system resources, such as sensitive data or mission-critical computer programs.

Second, a good security system protects specific resources in the environment from inappropriate access by users. For example, by implementing system security, you can ensure that only corporate management personnel have access to employee payroll information.

Finally, a good security system provides a simple, efficient way to set up and maintain security in your environment. For example, you can set up password policies that can be globally applied to all users within your environment.

Through proper implementation of system security that is tailored for your specific business needs, you can create a computing environment that provides your users with all of the information and resources they need to be successful, while protecting the information and resources from damage and unauthorized access.

## **Security features**

To help you accomplish these goals, Windows 2000 introduces a number of new security features:

- Central storage of security policy and account information
- Automatic updating and synchronization of all security policy and account information across domain controllers

- Per-property access control for objects
- Transitive trust relationships between domains
- Multiple authentication mechanisms, for authenticating both internal and external users, including users of Windows NT Version 4.0
- Common administrative tools to manage access control and account information
- Smart card support for secure storage of user credentials

Encryption for data that is transported over the network or stored on disk.

### File and Folder Permissions

File permissions include Full Control, Modify, Read & Execute, Read, and Write. Each of these permissions consists of a logical group of special permissions.

Folder permissions include Full Control, Modify, Read & Execute, List Folder Contents, Read, and Write. Each of these permissions consists of a logical group of special permissions.

### How inheritance affects file and folder permissions

- After you set permissions on a parent folder, new files and sub folders created in the folder inherit these permissions. If you do not want them to inherit permissions, select “This folder only” in Apply when you set up special permissions for the parent folder. In cases where you want to prevent only certain files or sub-folders from inheriting permissions, right-click the file or sub-folder, click Properties, click the Security tab, and then clear the “Allow inheritable permissions from parent to propagate” to this object check box.
- If the check boxes appear shaded, the file or folder has inherited permissions from the parent folder. There are three ways to make changes to inherited permissions:
  - Make the changes to the parent folder, and then the file or folder will inherit these permissions.
  - Select the opposite permission (**Allow** or **Deny**) to override the inherited permission.
  - Clear the **Allow inheritable permissions from parent to propagate to this object** check box. Now you can make changes to the permissions or remove the user or group from the permissions list. However, the file or folder will no longer inherit permissions from the parent folder.

If neither **Allow** nor **Deny** is selected for a permission, then the group or user may have obtained the permission through group membership. If the group or user has not obtained the permission through membership in another group, then the group or user is implicitly denied the permission. To explicitly allow or deny the permission, click the appropriate check box.

### **Setting up permissions and auditing**

You set up permissions and auditing by viewing the security properties of files, folders, shared folders, printers, and Active Directory objects.

When you set up permissions, you specify the level of access for groups and users. For example, you can let one user read the contents of a file, let another user make changes to the file, and prevent all other users from accessing the file. You can set similar permissions on printers so that certain users can configure the printer and other users can only print from it.

You set up auditing to detect and record security-related events, such as when a user attempts to access a confidential file or folder. When you audit an object, an entry is written to the Windows 2000 security log whenever the object is accessed in a certain way. You determine which objects to audit, whose actions to audit, and exactly what types of actions are audited. Once you set up auditing, you can keep track of users who access certain objects and analyze security breaches. The audit trail can show who performed the actions and who tried to perform actions that are not permitted.

