Using Microsoft Windows Encrypted File System (EFS)

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Agenda

- Protecting our Data
- Types of Data
- What is EFS
- How to use EFS
- Best Practices

Two types of disk encryption:

- Full Disk Encryption – Protects data in the event of a lost or stolen computer.
- Folder Encryption – Protects data against users who may have access to your computer.   The Microsoft Encrypted File Systems (EFS) is built into the Windows operating system.

What Should I Do? Identify Protected Data

Non-Public Information

- Social Security Numbers
- Bank Information
- Credit Card Information
- Date of Birth
- Personal Health Information
- Drivers License
- Government Issued ID
- Passport
- PIN
- Salary Information

Restricted Information

- Operational Procedures
- Network Topology
- Floor Plans
- Security Configurations
- Critical Asset List

What is EFS?

- A built in encryption mechanism for Windows 7, Windows 2000, XP, and Server 2003
- Can be used in a stand-alone or Microsoft public key infrastructure (PKI)
- Easy to use (almost too easy!)
- Can be used on either workstation or server

What is Encrypted File System

- EFS: Encrypting File System
  - Is part of the Microsoft Windows file system (NTFS).
  - EFS is user friendly and uses a public key encryption technology that works in conjunction with NTFS permissions to grant and deny users access to files and folders in Windows NT (excluding NT4), 2000 and XP (excluding XP Home Edition) operating systems.

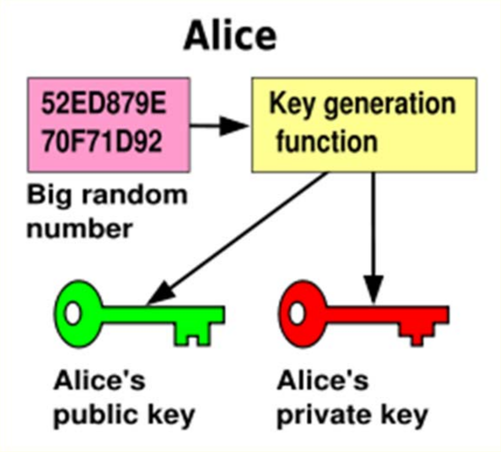
- EFS uses the standard DESX encryption algorithm, which is based on a 128-bit encryption key. However keep in mind that the encrypted files will only be as secure as your password.

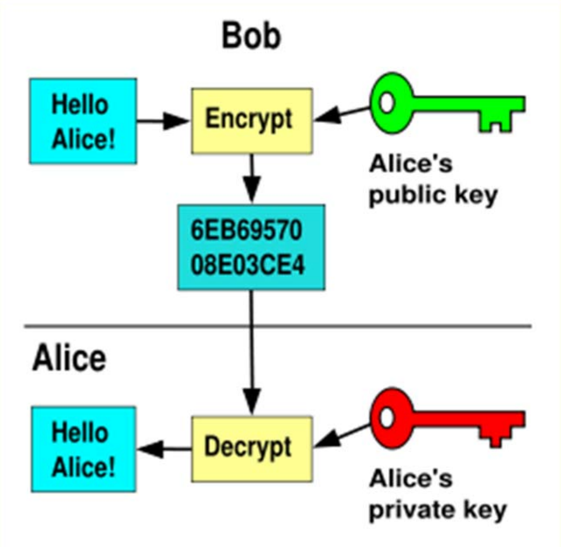
Encrypted File System

- EFS: Encrypting File System (cont'd)
  - Files can be encrypted individually, or a folder can be designated as encrypted, so that any file written to that folder is automatically encrypted.

Public Key Encryption

What is Public Key Encryption - User has a pair of keys – public and private. The private key is kept secret and the public key is made available



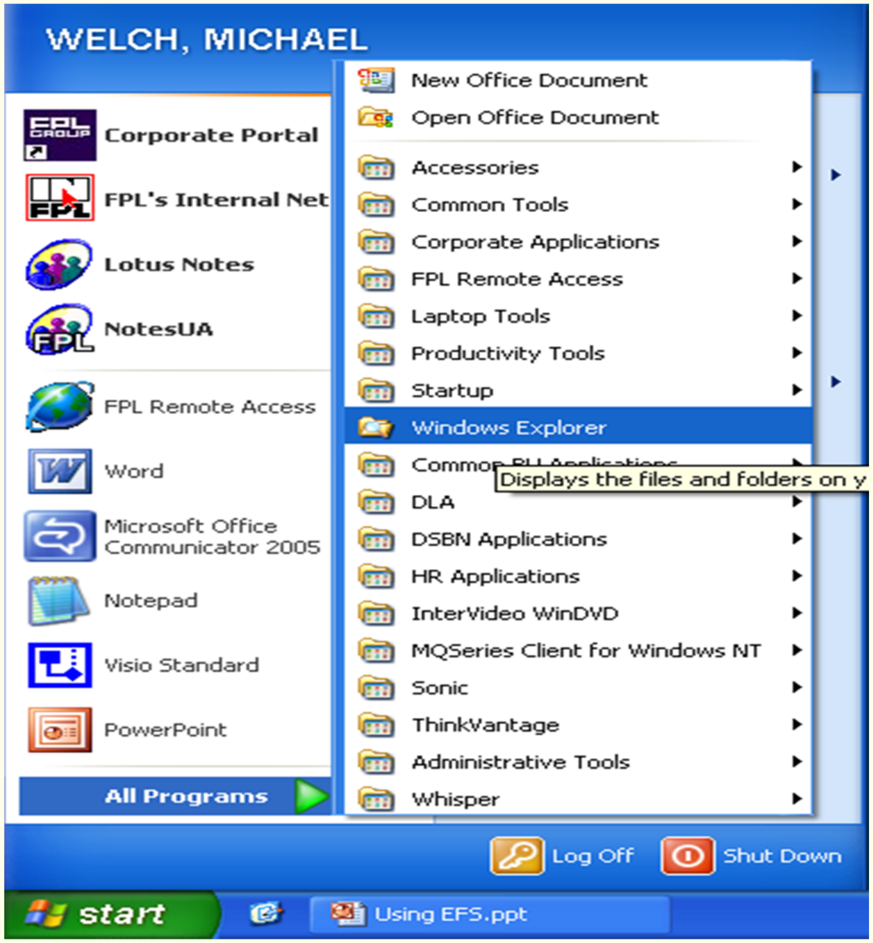


A big random number is used to make a public-key/private-key pair.

Anyone can encrypt using the public key, but only the holder of the private key can decrypt. Secrecy depends on the secrecy of the private key.

Encrypting a Folder in Windows

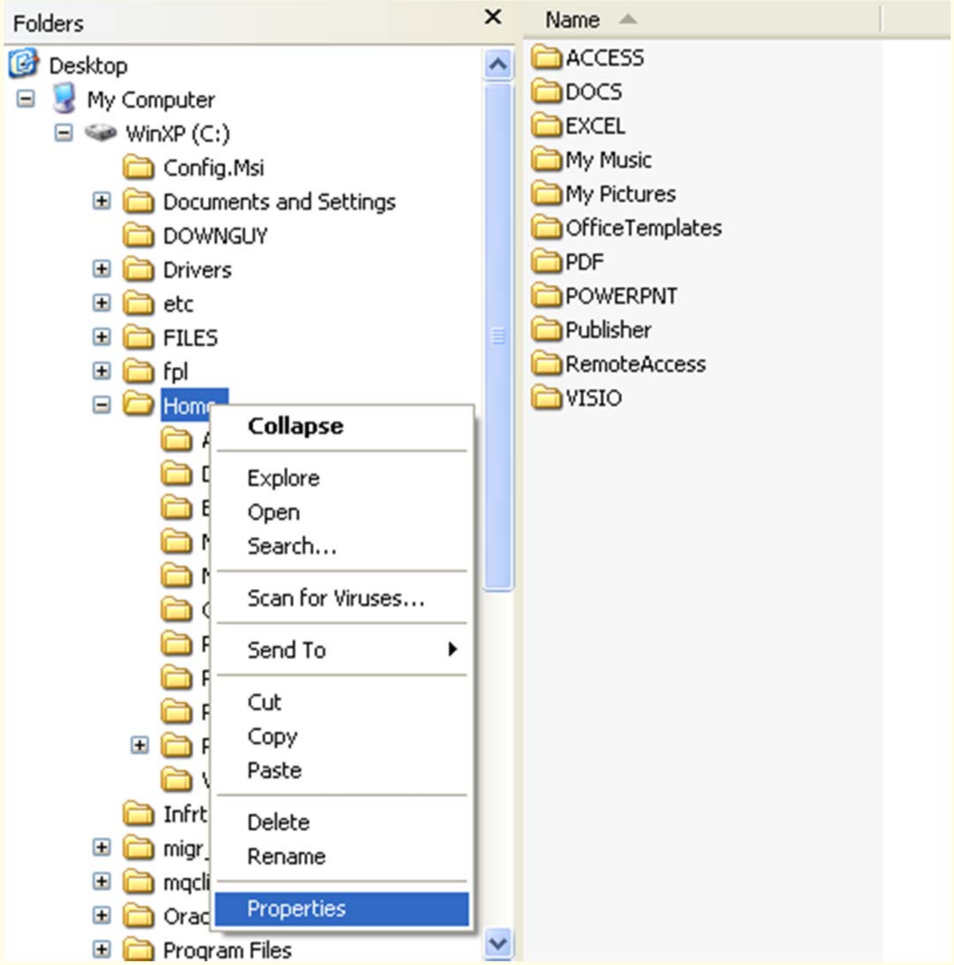
- Click Start, point to All Programs and then click Windows Explorer.



Displays the files and folders on y

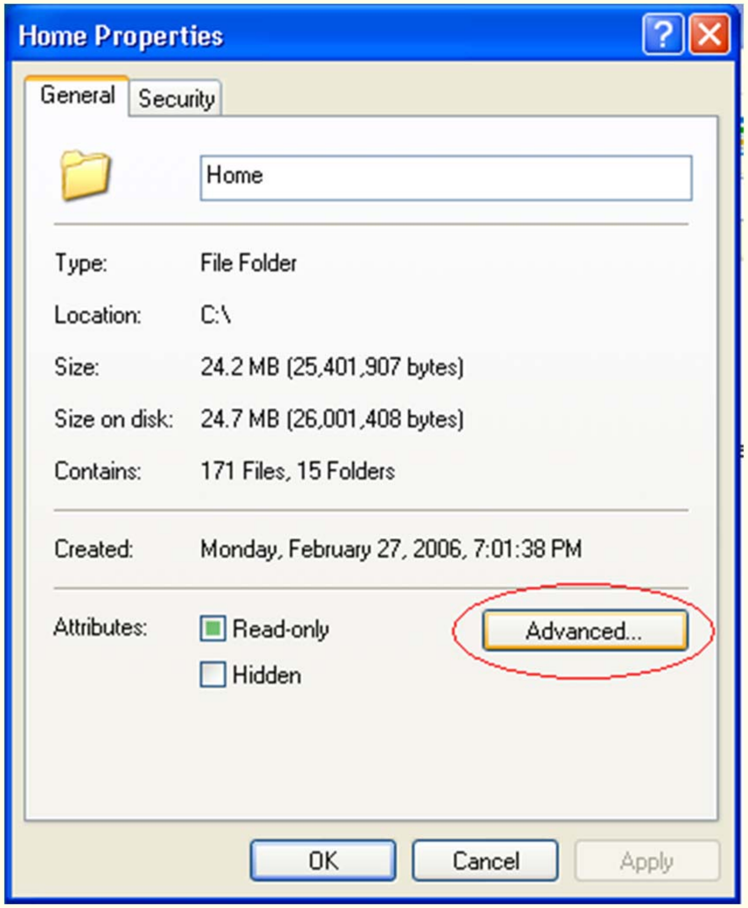
Encrypting a Folder in Windows

- Locate and right-click the folder that you want, and then click Properties.



Encrypting a Folder in Windows

- On the General tab, click Advanced.



Home Properties

General | Security

Home

Type: File Folder

Location: C:\

Size: 24.2 MB (25,401,907 bytes)

Size on disk: 24.7 MB (26,001,408 bytes)

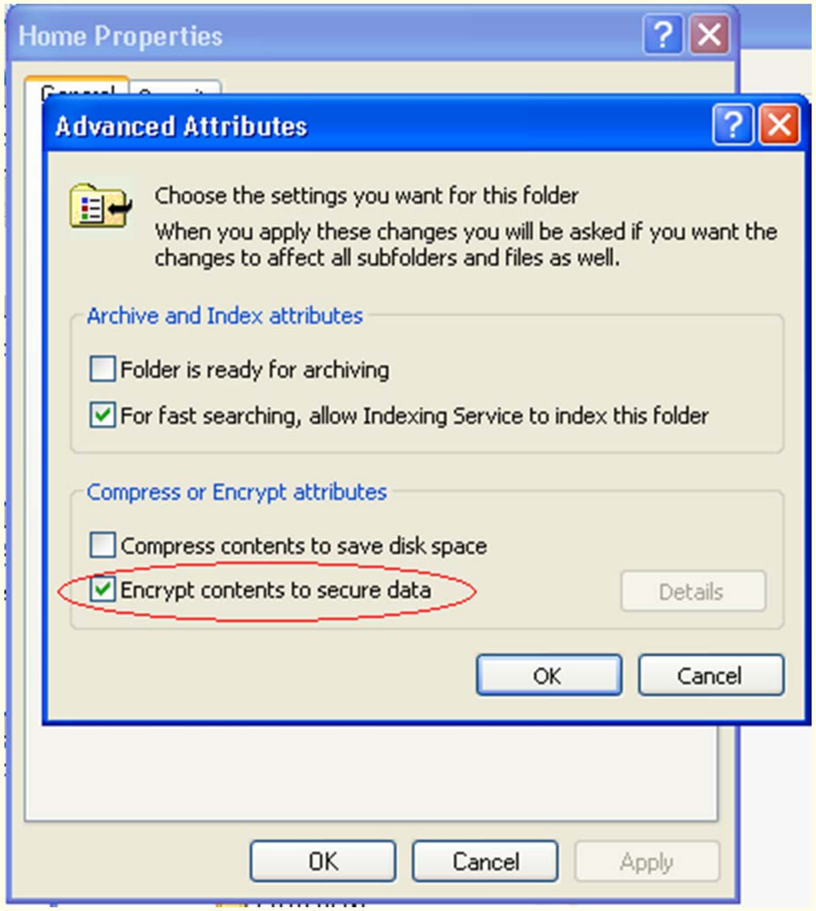
Contains: 171 Files, 15 Folders

Created: Monday, February 27, 2006, 7:01:38 PM

Attributes: ▣ Read-only ☐ Hidden

Encrypting a Folder in Windows

- Under Compress or Encrypt attributes, select the Encrypt contents to secure data check box, and then click OK.



Home Properties

Advanced Attributes

Choose the settings you want for this folder

When you apply these changes you will be asked if you want the changes to affect all subfolders and files as well.

Archive and Index attributes

☐ Folder is ready for archiving

☑ For fast searching, allow Indexing Service to index this folder

Compress or Encrypt attributes

☐ Compress contents to save disk space

☑ Encrypt contents to secure data

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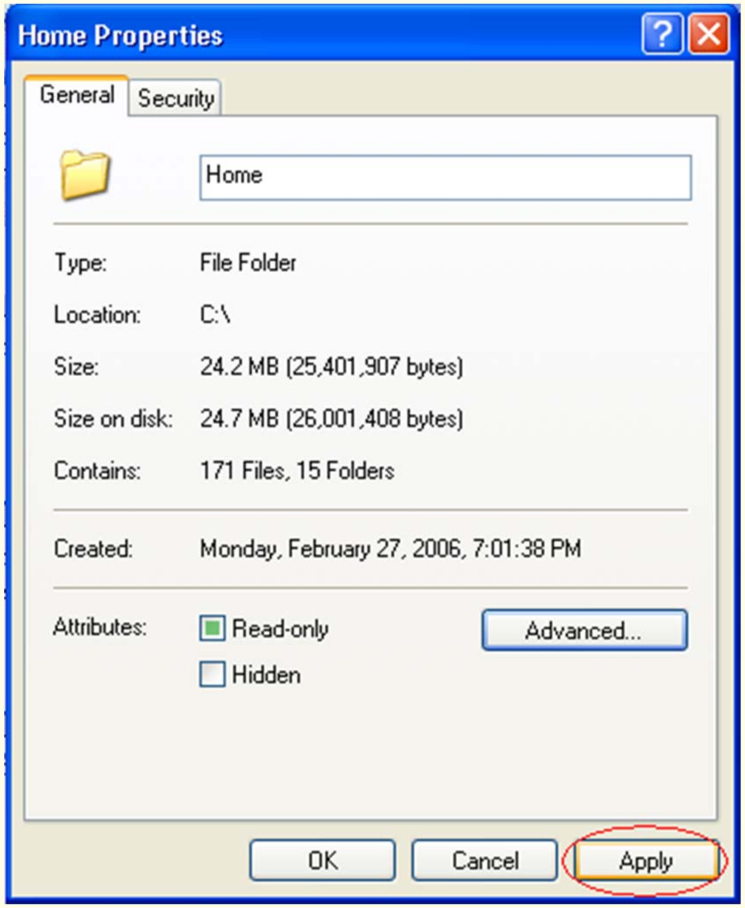
Encrypting a Folder in Windows

- Click Apply



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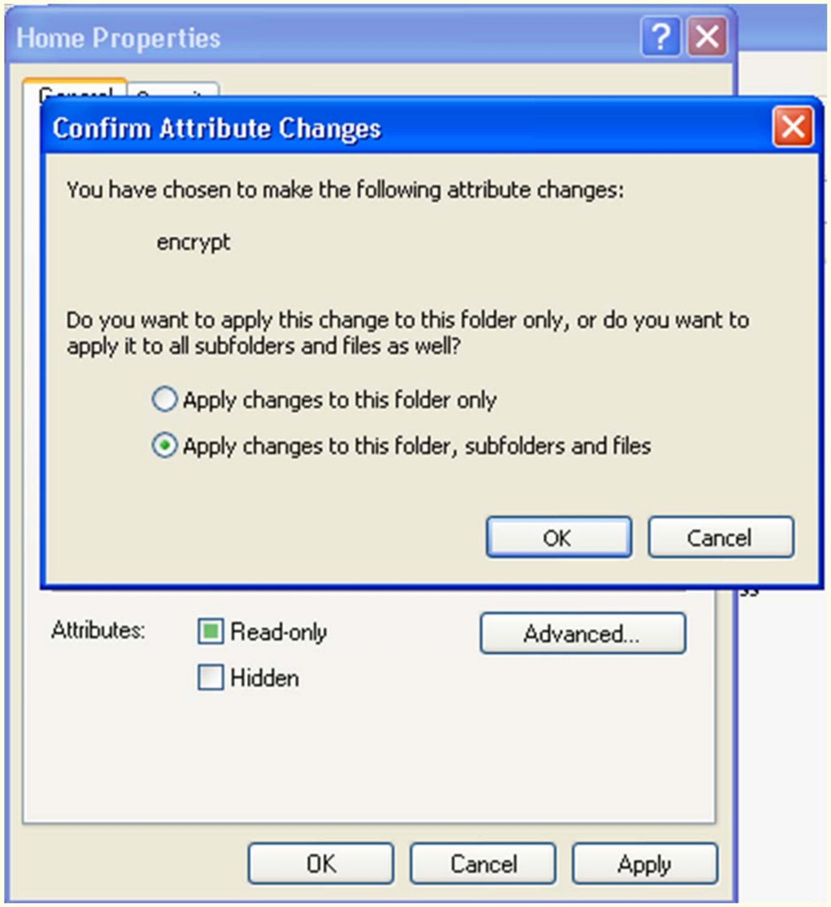
Encrypting a Folder in Windows

- In the Confirm Attribute Changes dialog box that appears, use one of the following steps:
  - If you want to encrypt only the folder, click Apply changes to this folder only, and then click OK.
  - If you want to encrypt the existing folder contents along with the folder, click Apply changes to this folder, subfolders and files, and then click OK.



Home Properties

Confirm Attribute Changes

You have chosen to make the following attribute changes:

encrypt

Do you want to apply this change to this folder only, or do you want to apply it to all subfolders and files as well?

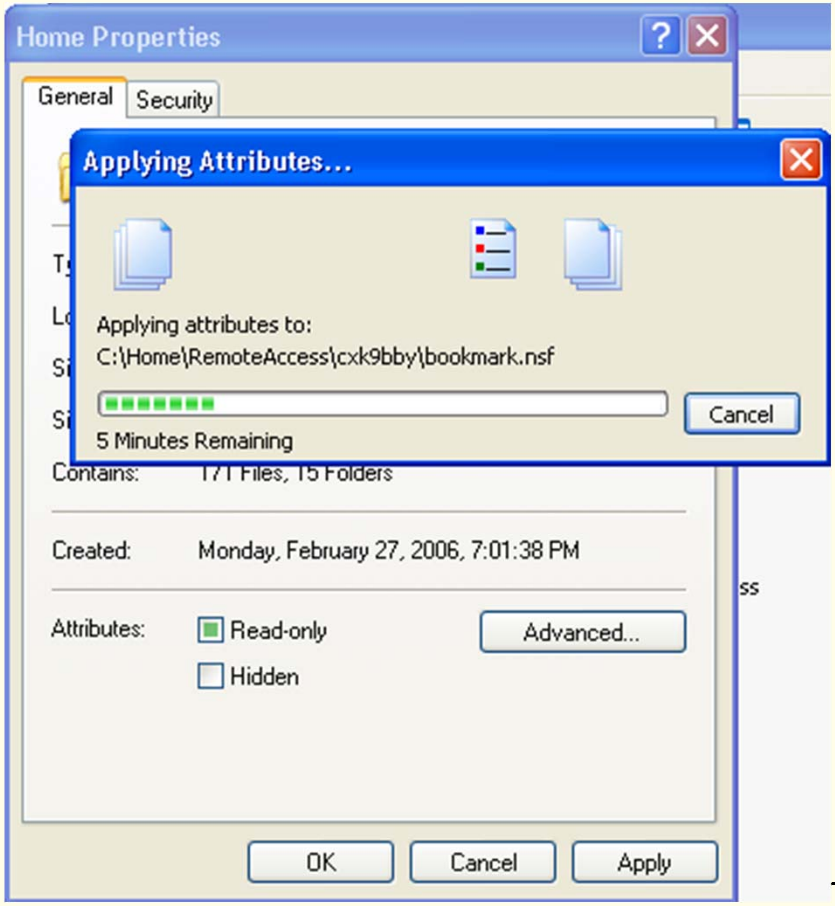
○ Apply changes to this folder only

● Apply changes to this folder, subfolders and files

Attributes: ▣ Read-only ☐ Hidden

Encrypting a Folder in Windows

- Once you click Apply the Attributes will be applied
- Once completed, the files and folders will turn color to identify it as encrypted



Home Properties

Applying Attributes...

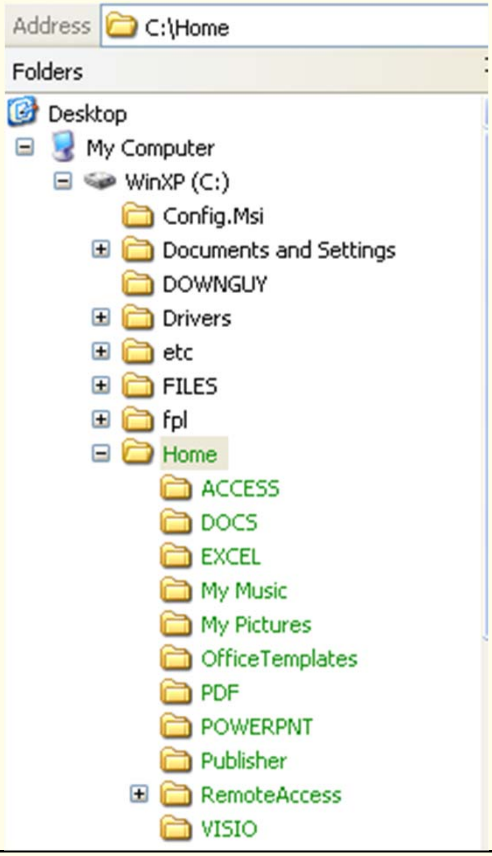
Applying attributes to:
C:\Home\RemoteAccess\cxk9bby\bookmark.nsf

5 Minutes Remaining

Contains: 171 Files, 15 Folders

Created: Monday, February 27, 2006, 7:01:38 PM

Attributes: ☑ Read-only
□ Hidden



Address C:\Home

Limitations of EFS

- Risk of data loss
- NTFS only
- When copying the file, you will lose encryption when coping to non-NTFS file system or if the machine is not trusted for delegation
- EFS is only part of the solution!

Best Practices

- **Ask Yourself - Do you have restricted/sensitive information on your computer system: if yes – then you need to:**
  - Encrypt C:\HOME
  - Encrypt C:\Documents and Settings\YourSLID\My Documents
  - Encrypt C:\Documents and Settings\YourSLID\Local Settings\Temp
  - Always encrypt folders rather than individual files.
  - Encrypt any “other folder” that stores sensitive information
  - Always use strong passwords
  - Use the Encrypted File System

Best Practices

- **Do NOT encrypt any of the following:**
  - Any application or program files that other users may need to access.
  - The root directory, C:\
  - Any Windows system directory, such as: C:\WINNT, C:\WINNT\SYSTEM, C:\WINNT\SYSTEM32

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