Global Information Assurance Certification Paper

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Basic steps to hardening a standalone Windows 2000 installation

The first consideration in a Windows 2000 installation is to define the purpose of the installation. One would set up a home machine very differently from one set up as a web server. Generally, it is a good idea to limit the roles any given machine will play, especially when connecting a machine directly to the internet, where every port you open or service you enable creates a potential security hole.

Installation of Windows 2000

There are a few security options that can be addressed while installing the operating system. If you are not using a script or performing an unattended installation, and have no need of a network connection, disconnect the machine until a strong administrator password has been set, service packs have been installed and necessary hot fixes applied.

File System Security

Be sure to format all partitions as NTFS, including the system partition. Windows 2000 runs best on an NTFS partition. Many of the features of Windows 2000 - resistance to fragmentation, file and folder level access rights, encrypted file systems, distributed file systems - can only be leveraged using the NTFS file system.

NTFS includes the use of encrypted file systems (EFS).[1] EFS is a capability, integrated into Windows 2000, which allows users to transparently encrypt files. Those needing to store sensitive data on a Windows 2000 machine should consider using EFS to add an extra layer of defense to protect their data.

The decision to implement EFS, however, should not be taken lightly, especially on a standalone machine. When encrypting files it is important to use a strong password and even more important not to forget it. If a user encrypts a folder and that user's account is deleted, the folder cannot be unencrypted because the user's key will no longer exist. Normally, the administrator could reset the user's password and then login to recover the encrypted files. This will not work if the account has been deleted[2].

More information can be found on EFS can be found at

http://www.infosecuritymag.com/articles/february01/features_applied_crypto.shtml

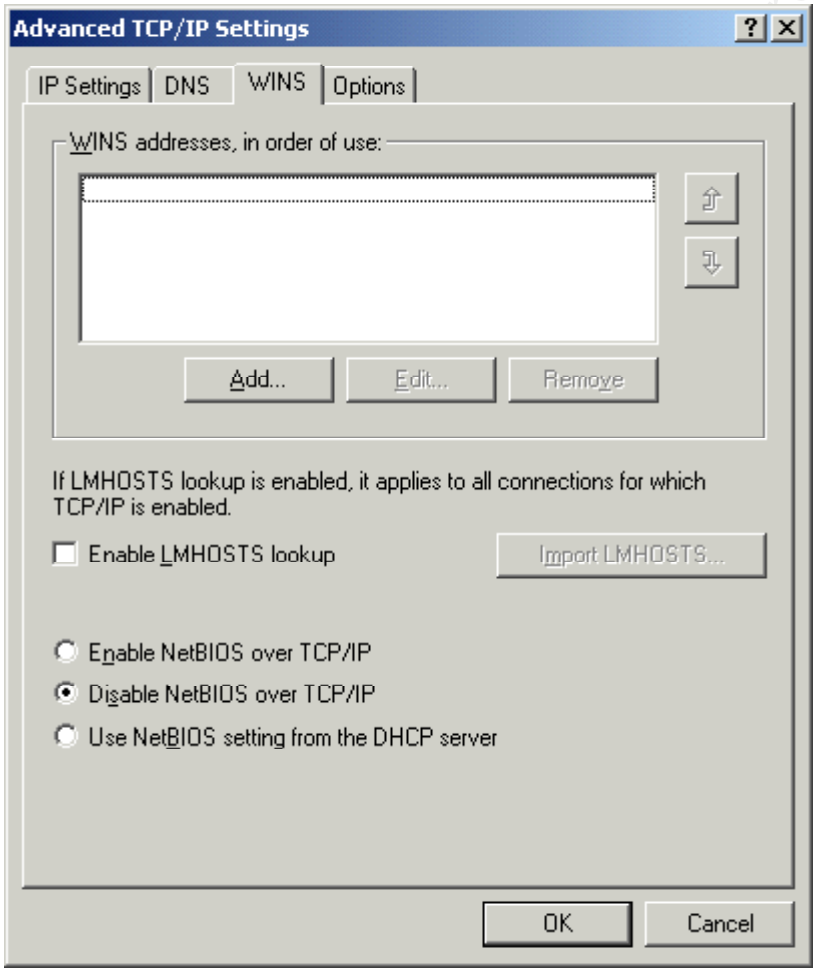
and

http://www.microsoft.com/windows2000/library/planning/security/efssteps.asp

Protocol Configuration

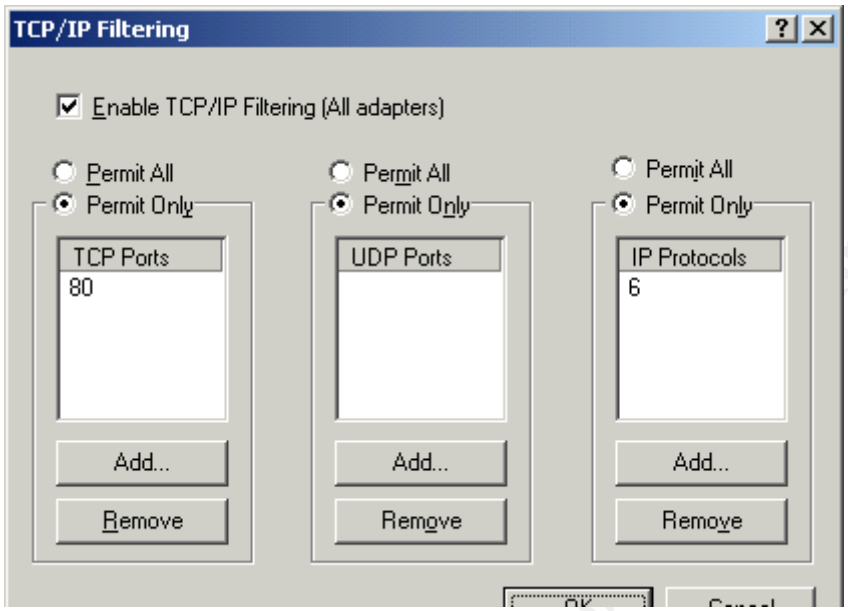
The next option during setup is the configuration of protocols. Use only what you need to get the job done. If you don't need Client for Microsoft Networks or File and Print Sharing for Microsoft Networks, it is best not to install them. If you need to have the Microsoft client installed or file and print sharing enabled, you will need more than a hardened workstation to protect you data, you will need a secure network infrastructure, including a firewall.

Configure the advanced TCP/IP options[3]. On the WINS tab, uncheck "Enable LMHOSTS lookup" and check Disable NetBIOS over TCP/IP.



On the TCP/IP options tab, select TCP/IP filtering. By enabling filtering you can prevent many incoming connections while, at the same time, allowing outgoing and established connections to work normally. If your machine is a single purpose machine, configure

the protocols you want to allow in. In the example below TCP is IP protocol[4] as defined in the IP protocol header and TCP port 80 is http. This configuration would allow incoming connections to a web server. These settings will prevent remote administration capabilities if not configured correctly, creating a Denial of Service on yourself.



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