*Project*

Introduction to Remote File System

Remote file systems enable an application that runs on a client computer to access files stored on a different computer. Remote file systems also often make other resources (remote printers, for example) accessible from a client computer. The remote file and resource access takes place using some form of local area network (LAN), wide area network (WAN), point-to-point link, or other communication mechanism. These file systems are often referred as network file systems or distributed file systems.

Microsoft Networks is the native remote file system included in Windows Server 2003, Windows XP, and Windows 2000. Microsoft Networks provides remote access to files as well as access to remote printers and plotters. Microsoft Networks was called LAN Manager Network in earlier versions of Windows.

Microsoft also includes support for several other remote file systems on Windows:

* NetWare Core Protocol (NCP)
* WebDAV (file access that uses remote web servers)
* AppleTalk file and printer sharing (supports connections from Macintosh clients to systems running Windows Server 2003 and Windows 2000 Server)
* Network File System (NFS)
* IBM mainframe VSAM and AS/400 file access, included with Microsoft Host Integration Server 2000

Components of Remote File System

The following basic elements are required to implement a remote file system:

* Network redirector software installed on the client.
* A well-defined transport protocol used for communication.
* File server software installed on the server.

For example, the Microsoft Network remote file system is implemented as follows:

* The client for Microsoft Networks software provides the client network redirector components.
* The Common Internet File System (CIFS), which is also called the Server Message Block (SMB) protocol, defines the network transport protocol used for communication.
* The LAN Manager Server (sometimes called SMB Server) provides the file server service.

The network redirector software installed on the client consists of several software components, some that operate in user-mode and some that operate in kernel-mode.

The following sections discuss concepts that are important to developers of remote file systems on Windows Server 2003, Windows XP, and Windows 2000. The following topics are discussed:

Features

* Provides complete UNIX/POSIX file semantics. ([File locking](https://en.wikipedia.org/wiki/File_locking), etc.)
* Allows mounting of devices across the network (e.g. */dev/cdrom* can be accessed remotely)
* Transparent access to files. Users needn't know where a file is located.