

Using Argon Client Management Services™ for Windows 2000 Professional Deployment

Introduction

Microsoft has made great strides in automating the deployment of their Windows 2000 operating system. By creating installation scripts, a system administrator can deploy Windows 2000 with little or no human intervention. Argon Technology Client Management Services (CMS) software allows you to further leverage OS deployment without having to physically visit each desktop. By exploiting the Wired for Management (WfM) features of corporate desktops, CMS can be used to perform fully unattended and scheduled OS rollouts after hours.

What is WfM?

Almost every corporate desktop purchased since 1998 is WfM-compliant. WfM is an industry standard that was initiated by Intel primarily to address total cost of ownership (TCO) issues surrounding corporate desktop computers. The WfM initiative conceived 2 main design features to make the corporate desktop more manageable.

- Support for Remote Wake-up (or Wake-On-LAN)
- The requirement to support network boot

A network boot is accomplished using the Preboot Execution Environment (PXE) network boot protocol. These 2 features were implemented to make tasks such as BIOS and software updates much easier.

Overview

This article demonstrates how to use Argon Technology Client Management Services for Windows 2000 deployments by leveraging the Wired For Management capabilities available on most corporate desktops today. With slight modification, you can use the following procedure to deploy Windows XP as well.

The following is an outline of the tasks that must be completed:

- Create a shared folder on the distribution server and copy the Windows 2000 Professional source files to a subfolder in this folder.
- Use the Windows 2000 Setup Manager to create an unattended installation file.
- Run the CMS Client Boot Manager Windows Deployment Wizard to create your boot image file and setup your network-booting environment.
- Configure your client PC for PXE network booting.
- Deploy Windows 2000 Professional on to your client PC.
- Fine-tune your deployment as needed

CMS software allows you to further leverage OS deployment without having to physically visit each desktop.

The Windows 2000 Setup Manager Wizard

The task of installing Windows 2000 on multiple client PCs can be quite tedious and time-consuming. Luckily, Microsoft provides the Windows 2000 Setup Manager Wizard, a program

that allows you to create unattended installation answer files to automate Windows 2000 deployment. Setup Manager is located in the DEPLOY.CAB file on the Windows 2000 CD in the \Support\Tools folder. The Windows 2000 Resource Kit also includes a copy of Setup Manager. The DEPLOY.CAB file is compressed cabinet file that contains all the tools you need to create your unattended installation file, including:

- *setupmgr.exe* - The Windows 2000 Setup Manager Wizard, which is used to create an unattended installation file.
- *unattend.doc* - A Microsoft Word document containing information crucial to the creation of an unattended installation file (or "answer file").
- *deptool.hlp* - A help file for the Windows 2000 deployment tools, including the Setup Manager.
- *readme.txt* - Up-to-date information about the Windows 2000 deployment tools, including a few corrections to the unattend.doc file which may come in handy.

Using the Setup Manager Wizard

The installation answer file provides Windows Setup with all of the information that the end user is typically prompted to provide during a typical Windows 2000 installation. For example, the answer file contains a "FullName" entry in the [UserData] section. If a value is provided, then Windows 2000 Setup will not prompt the user to provide a full name. There is a sample unattended installation file called UNATTEND.TXT in the \i386 folder on your Windows 2000 CD ROM. However, this sample file does not contain sufficient information for a "fully automated" Windows installation. The Windows Setup Manager Wizard (setupmgr.exe) helps you create a complete and error-free unattended installation file.

Getting Started

1. Create a share point on your deployment server. For this exercise, a folder named deploy is created. (*Note - your deployment server can be different computer from your CMS server.*)
2. Create a user account with read-only access to the shared folder. This account will be used to access the installation files during deployment.
3. Copy the \i386 folder located on the Windows 2000 Professional CD ROM to the deploy folder.
4. Rename the newly created \i386 folder to win2kpro.
5. Create a subfolder within the win2kpro folder and name it "\$oem\$".
6. Create a subfolder within the "\$oem\$" folder and name it "c". Your folder tree should look as shown in Figure 1.
7. Delete the sample UNATTEND.TXT file in the win2kpro folder.
8. Run the Setup Manager Wizard to create a new UNATTEND.TXT file.
9. Select "Windows 2000 Unattended Installation" when the Product to Install dialog box appears.
10. Select Windows 2000 Professional as the OS to install, then choose fully automated for the interaction level.
11. When you get the Administrator Password dialog box (Figure 2) be sure to enable auto logon by checking the "When the computer starts, I want to automatically log on as Administrator" box.
12. Set the auto logon times to 1. This is required to perform post-installation configuration when initial OS installation is completed.

13. When you get to the Distribution Folder dialog box (figure 3) be sure to select No, this answer file will be used to install from a CD.
14. Save the UNATTEND.TXT file in \deploy\win2kpro folder as shown in Figure 4.
15. Launch Notepad and add the CD Key to the [UserData] section using the "ProductID" variable. See the sample file at the end of this paper and refer to the unattend.doc file for instructions.

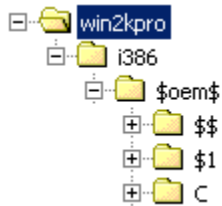


Figure 1

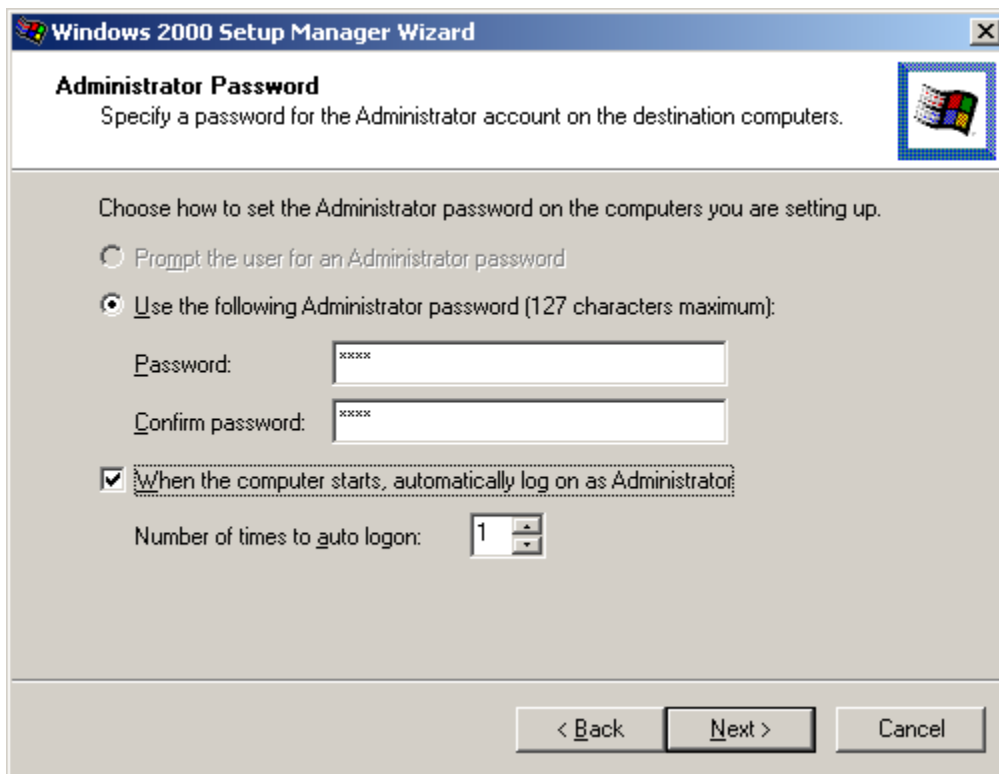


Figure 2

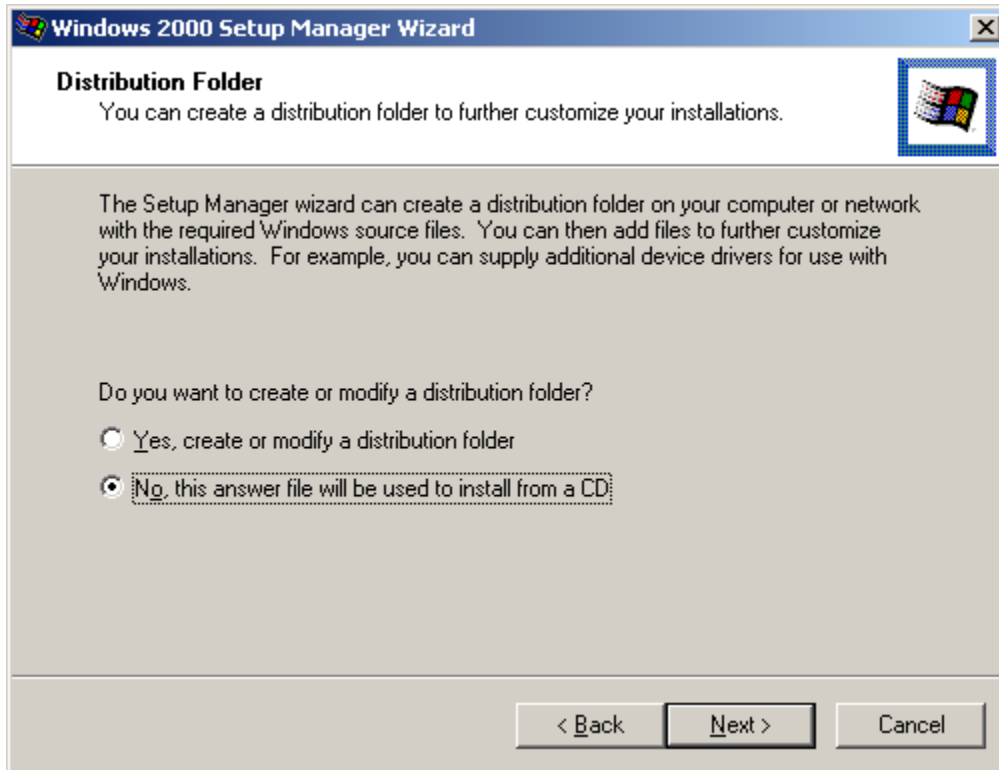


Figure 3

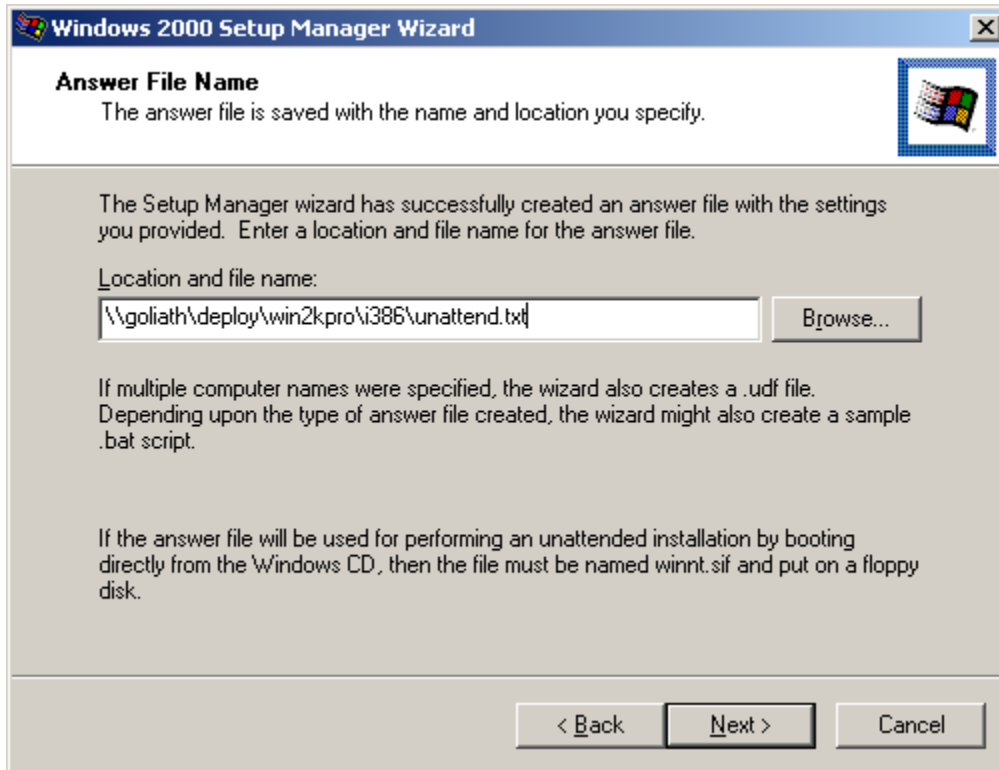


Figure 4

Applying your Windows 2000 Service Pack

Windows 2000 allows you to integrate one or more service packs with your installation source files by using a process known as slipstreaming. Slipstreaming integrates the contents of the service pack with the original OS installation files. Any subsequent Windows 2000 installation will include the integrated service pack automatically. This will eliminate the time normally required to apply the latest service pack

Download the latest service pack available for Windows 2000 from Microsoft's website. Service Pack 3 was the latest version at the time this document was written. The quickest method for slipstreaming is to run the service pack executable with the `-s` switch and the pathname of the folder containing the i386 subfolder. For example,

```
w2ksp3.exe -s:d:\deploy\win2kpro
```

The example above assumes that the source folder resides on drive d. The UNC format can also be used, e.g. `w2ksp3.exe -s:\\goliath\deploy\win2kpro`. Note, the i386 folder containing the source files must reside in the win2kpro folder otherwise the process will fail.

Windows OS Deployment Stages

The Client Boot Manager (CBM) is the main administrator application for Argon Technology Client Management Services. From here, you can configure deployment preferences and create boot image files for Windows deployment. A typical deployment boot image file performs the following tasks:

- Partitions the client PC's hard drive
- Formats the client PC's hard drive
- Initiates OS deployment
- Removes or un-assigns the client PC from the deployment boot image file

All deployment boot image files contain a batch file named *PROCESS.BAT*. *PROCESS.BAT* is the central processing script for deployment and is responsible for partitioning and formatting the client's local drive and kick starting the OS deployment. The *PROCESS.BAT* file uses *SETTAG* commands so that the Boot Server can track the status of each client PC and prepare it for the next deployment stage. *SETTAG*, a DOS utility included with CMS, updates the Boot Server on the deployment status for each client PC throughout the stages mentioned earlier. If, for example, a client PC failed to complete disk formatting due to power failure, the client PC would automatically resume at the disk formatting stage instead of repeating the disk-partitioning task previously completed. The CBM Deployment Wizard temporarily assigns a deployment image to a client. When the '*SETTAG -q remove*' command is issued from the boot image, the Boot Server will remove the temporarily assigned image file so that the client is not trapped in an endless deployment loop. The client will revert back to using its default boot image file.

Configuring Client Boot Manager for OS deployment

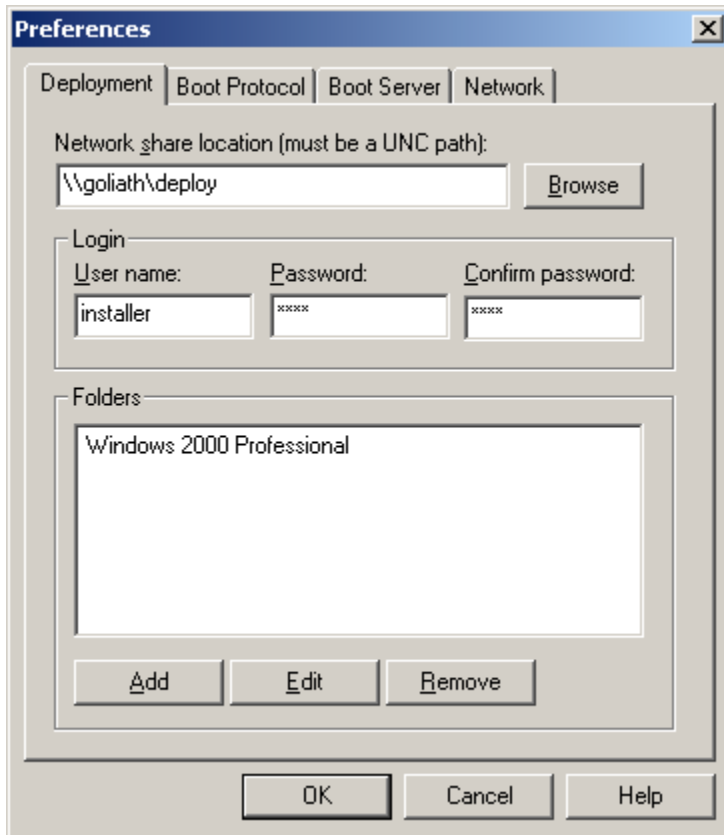


Figure 5

Once the Windows 2000 Professional source files and the unattended answer file are in place, the next step is to configure the Client

1. Set the CBM Deployment Preferences to point to the server and the source folder created earlier. You will notice in Figure 5 that the network share and Windows 2000 folder is consistent with the network share and source folder created earlier.
2. Use CBM to create a client record for your client PC and assign it to the *default.ldr* loader file. See Figure 6
3. Create your Windows 2000 deployment image file.
4. Press F7 to launch the Image File Creation Wizard.
5. Select the Create a deployment image to install Windows and select Windows 2000 from the OS list.
6. Assign the deployment boot image file to the client record created in Step 2 as shown in Figure 7.
7. Configure your client PC to perform a network boot. This is usually done by changing the boot order in the PC's system BIOS so that LAN, Network, MBA or PXE is listed as the first boot device.
8. Boot the client PC from the network.

9. You can monitor the deployment status in CBM by pressing the F9 function key to display the Client Status dialog.

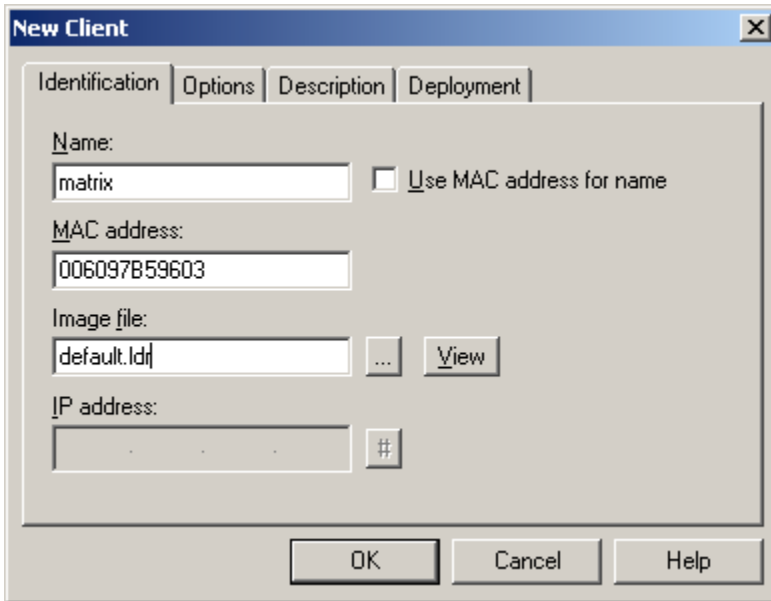


Figure 6

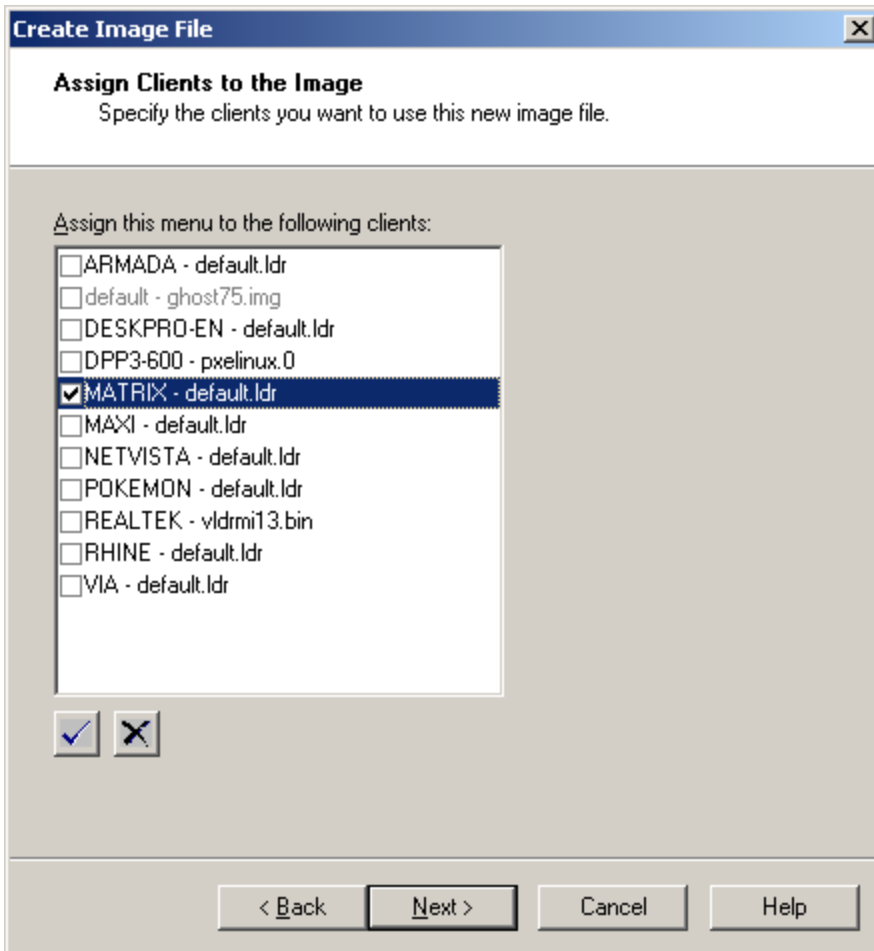


Figure 7

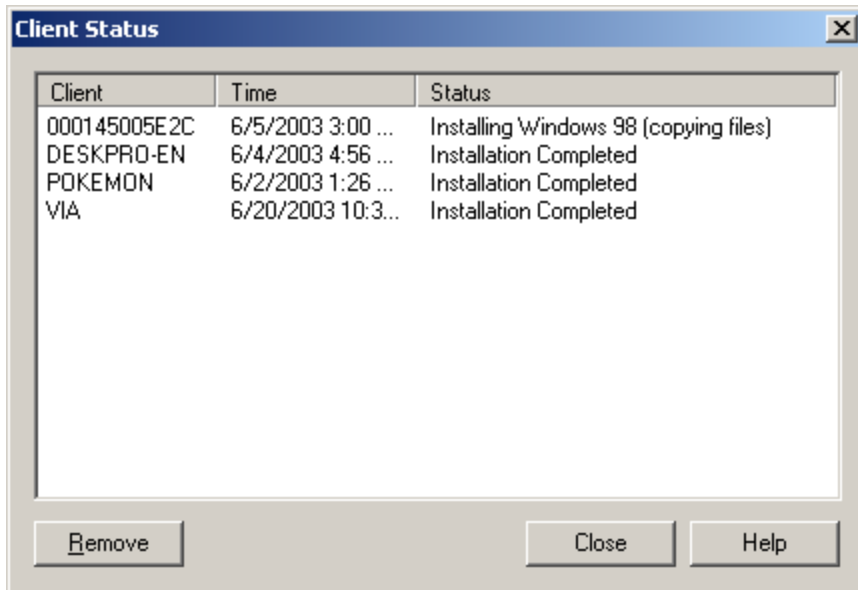


Figure 8

Remote Wake-up

Remote Wake-up (RWU) provides the ability to remotely power-on a client PC over the network. Most WfM-compliant desktops support RWU. CMS includes RWU functionality that can be used to wake-up one or more client PCs. If your client PCs supports RWU, then you can schedule the Windows 2000 deployment for after hours when network traffic is low and there is less chance of disruptions. Check your client PC documentation to determine if RWU is supported. The network adapter in the client PC must also support RWU.

Lights-out Deployment

You will notice that the client PC remains on after installation is completed. By tweaking the boot image file, you can force the client to perform a subsequent network boot wherein the "PBOOT /shutdown" command is executed. This will force the computer to power-off automatically.

1. Add a [GuiRunOnce] section of the UNATTEND.TXT file then add the following value:
cmd0=c:\CLEANUP.CMD
2. Change the line OemPreinstall=No to OemPreinstall=Yes (Whenever you change the UNATTEND.TXT file you must rebuild your deployment image)
3. Open your deployment boot image file using CBM provided by CMS, and locate the PROCESS.BAT file
4. Right-click on this file and select Edit from the menu.
5. Change the dolocal section as follows by removing the SETTAG command.

```
:dolocal
```

```
pboot /nologo
```

Add a new docleanup section as follows. See Figure 9.

```
:docleanup
```

```
settag -q remove
```

```
pboot /shutdown
```

6. Copy SHUTDOWN.EXE to \win2kpro\%oem%\c folder. SHUTDOWN.EXE is included on the Windows 2000 Resource Kit. The version of SHUTDOWN.EXE in the NT Resource Kit will work as well.
7. On the deployment server, create a batch file called CLEANUP.CMD and save it in the \win2kpro\%oem%\c folder.

Note: The CLEANUP.CMD batch file contains code that will force the client PC to perform post-installation tasks when the first user logs on to the client PC. In this exercise, the administrator account will be used for the first auto logon immediately after installation is completed.

The CLEANUP.CMD should be as follows:

```
c:
cd \
REM Instructs the client to jump to the "docleanup" section
REM in the PROCESS.BAT file on the next network boot.
start c:\settag -q bf=boot.ldr:|<boot image>:t140='docleanup':Completed
REM Restart the PC.
c:\shutdown /L /R /T:0 /C
REM SHUTDOWN.EXE is included in Windows 2000 Resource Kit.
```

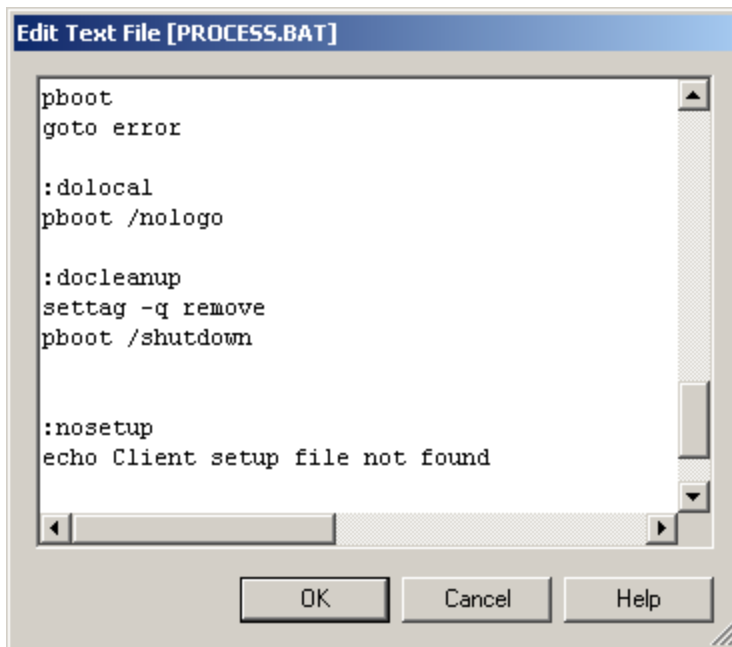


Figure 9

Note, you must substitute <boot image> with the actual name of your boot image file. The Windows 2000 Deployment image file is named intall2K.img by default. Additional commands can be executed from the CLEANUP.CMD batch file. For example, you can automate the installation of WinZip by adding the following code:
START /WAIT c:\utils\winzip32.exe /autoinstall

Caveat

The SETTAG command issued from the CLEANUP.CMD file will not be successful unless your network adapter is properly detected, and the TCP/IP protocol is installed and configured during deployment. If your network adapter is unsupported by default, you must copy the required Windows 2000 driver files to the win2kpro folder and modify the UNATTEND.TXT file accordingly. Refer to the unattend.doc for instructions.

Conclusion

Most corporate client PCs sold today are WfM-compliant and therefore have many of the client-side components to ease desktop management chores. Argon Technology Client Management Services provides the server-side components to enable a complete solution to automate your Windows OS deployment including a Deployment Wizard, RWU and Client Status Monitor. The level of automation is, however, dependent on the unattended answer file (UNATTEND.TXT). If all answers are provided here, your OS installation should proceed uninterrupted without any human intervention.

Sample UNATTEND.TXT file

```
[Data]
AutoPartition=1
MsDosInitiated="0"
UnattendedInstall="Yes"
[UserData]
FullName="Conrad Lawes"
OrgName="Argon Technology Technologies"
ComputerName=PANTHER
ProductID=XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
[Unattended]
UnattendMode=FullUnattended
OemSkipEula=Yes
OemPreinstall=Yes
Tar getPath=WINNT
[GuiUnattended]
AdminPassword=password
AutoLogon=Yes
AutoLogonCount=1
OEMSkipRegional=1
TimeZone=35
OemSkipWelcome=1
[Display]
BitsPerPel=8
Xresolution=800
YResolution=600
Vrefresh=60
[GuiRunOnce]
cmd0=c:\cleanup.cmd
[Identification]
JoinWorkgroup=CONSULTING
[Networking]
```