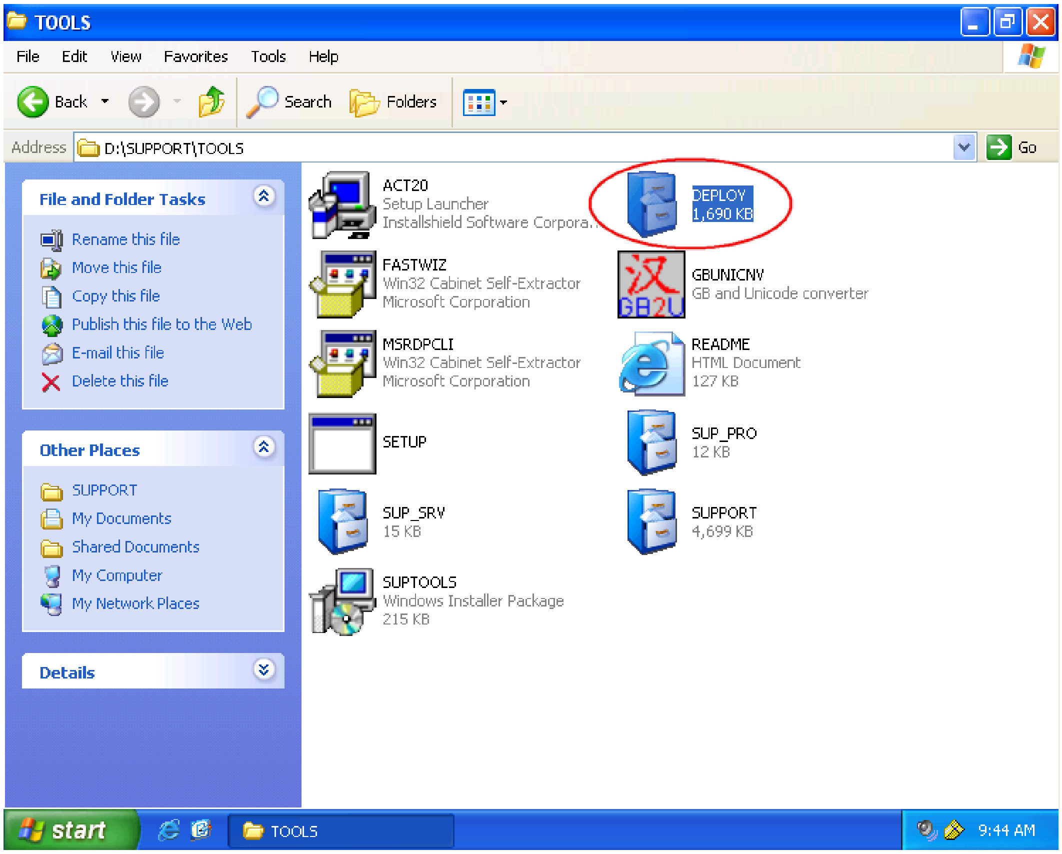
Prepare Source for Disk Duplication

Create an Answer file for using when setup Windows after a computer is cloned. And run Sysprep tool to prepare a computer to be a sample computer (source disk) for cloning.

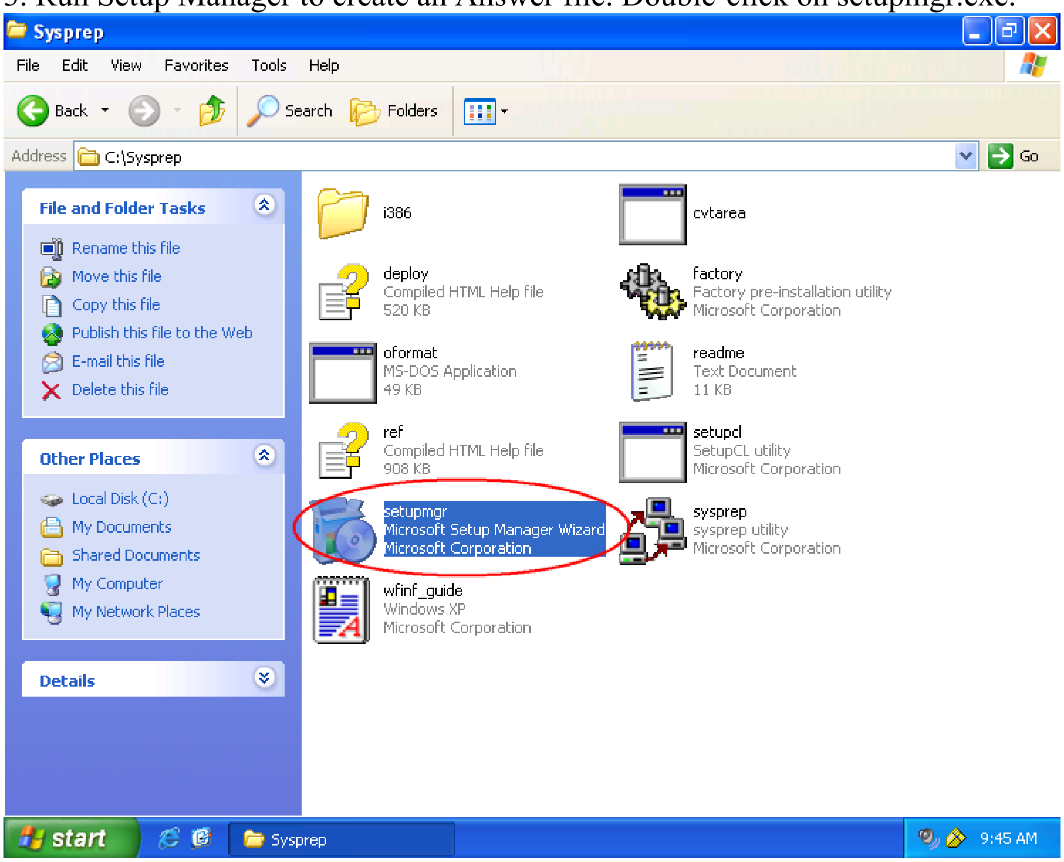
The Answer file should contains only general configuration not unique value on each computer. For instance, if you're going to deploy the image to all computers in the same time zone, it is good to configure time zone in the answer file so that you don't have to set time zone on each computer after cloned them. But if you're going to deploy the image in different time zone, you should not configure time zone in the answer file.

1. Install Windows XP, update patches and setup the basic applications on the sample computer.

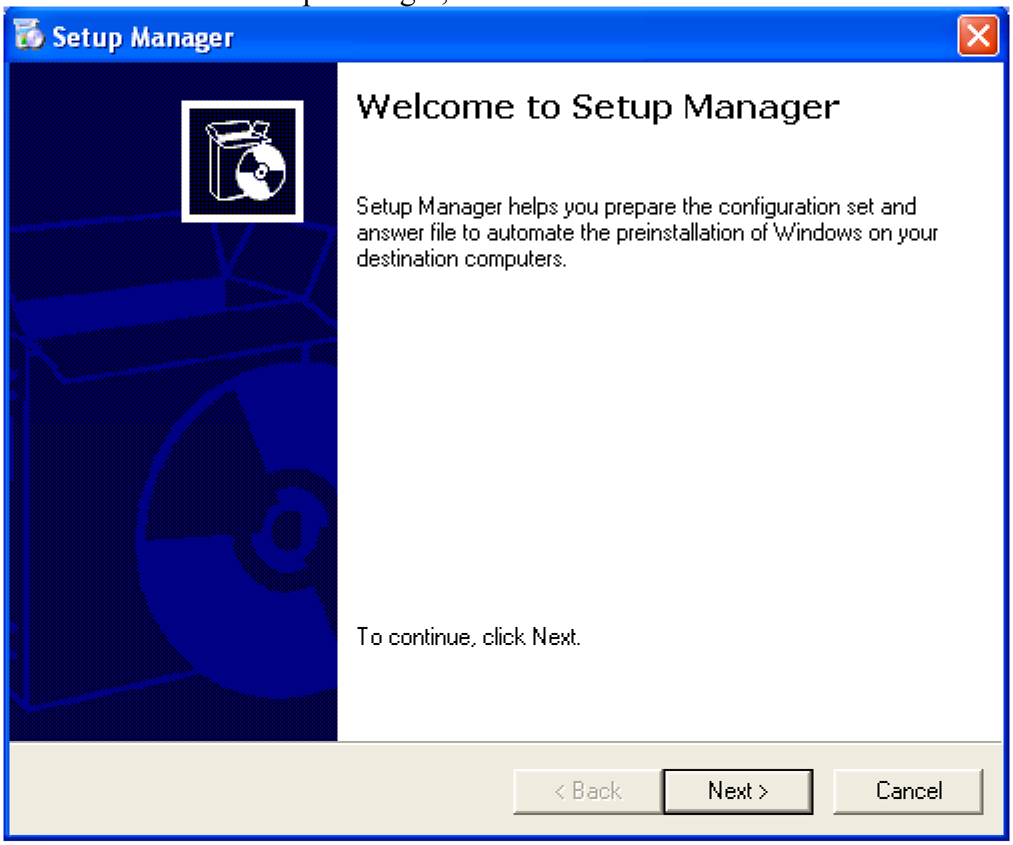
2. Extract Sysprep tool. Insert the Windows XP CD. Navigate to "CD-Rom DriveSUPPORTTOOLS" and extract **deploy.cab** to C:Sysprep. If you don't have Windows XP CD, you can download the Sysprep tool from Microsoft.
Note: You have to use the Sysprep tool version according to Windows version. For example, you **should not** use Sysprep for Windows XP on Windows Server 2003.



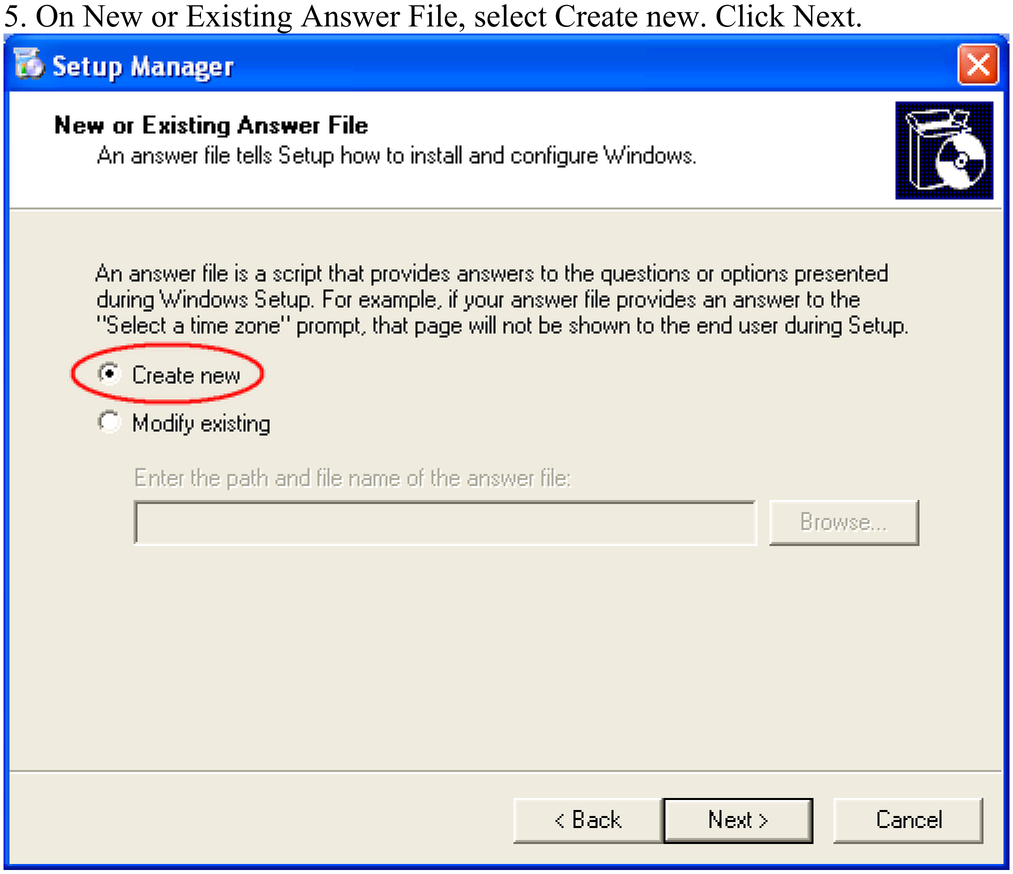
3. Run Setup Manager to create an Answer file. Double-click on setupmgr.exe.



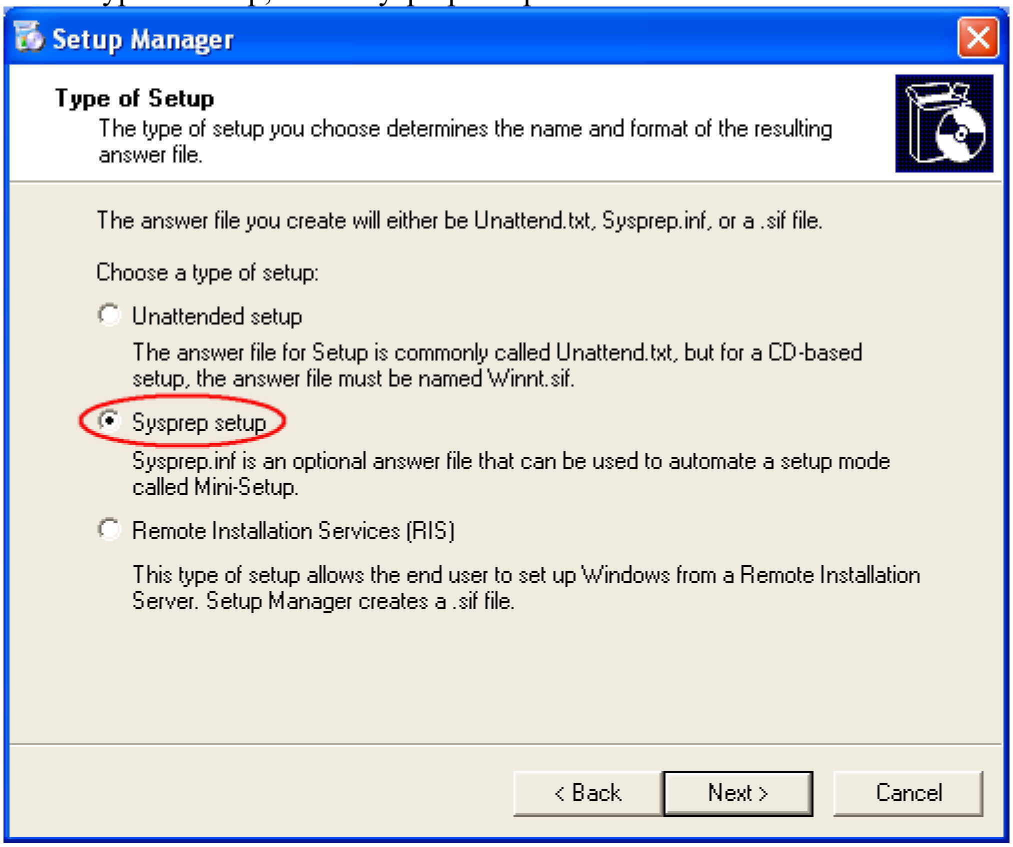
4. On Welcome to Setup Manager,click Next.



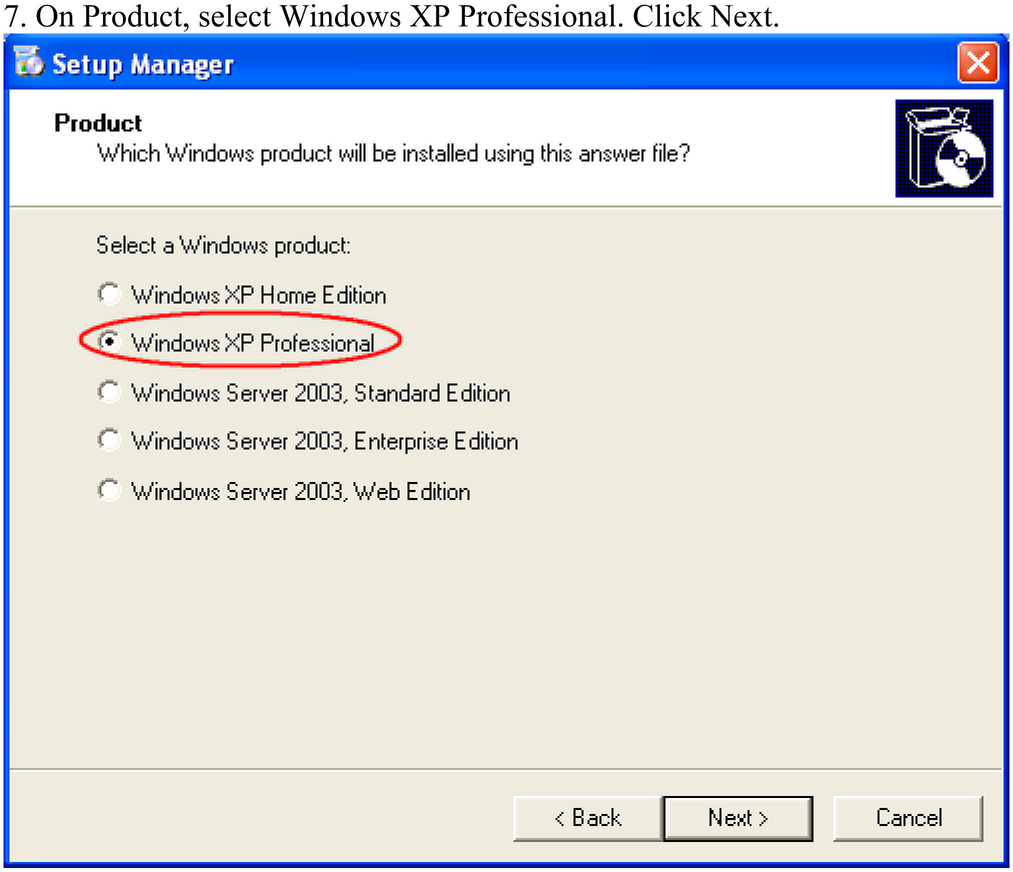
5. On New or Existing Answer File, select Create new. Click Next.



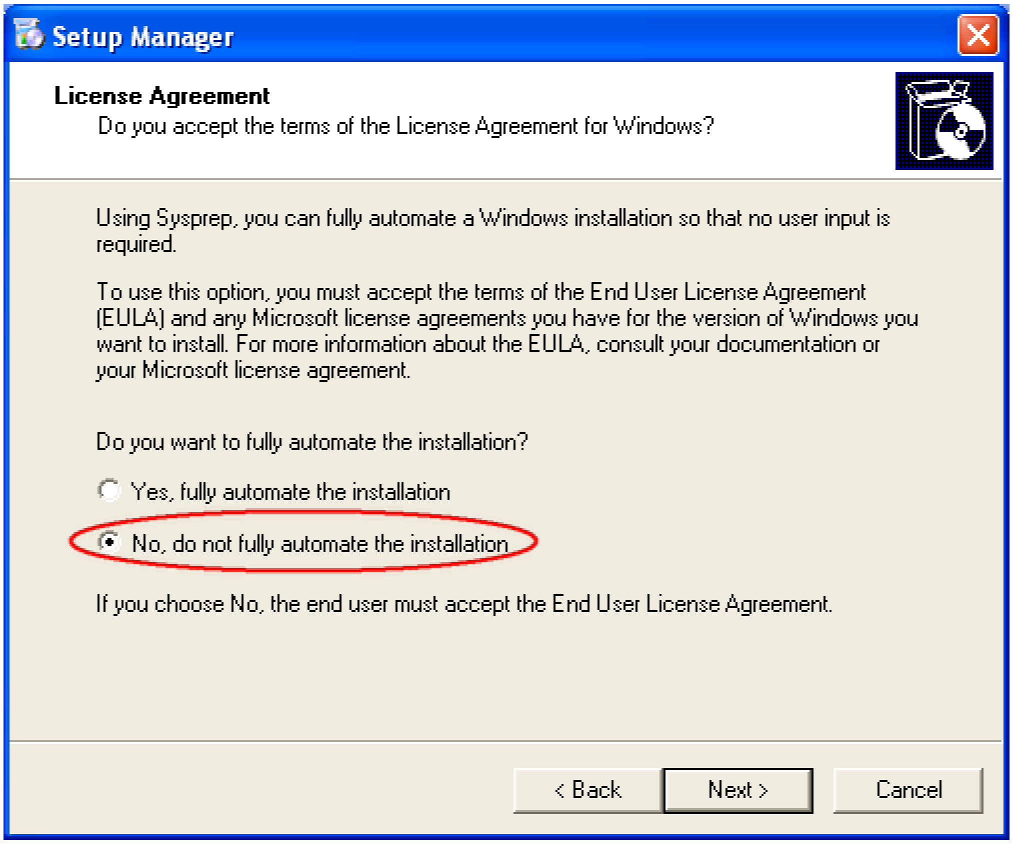
6. On Type of Setup, select Sysprep setup. Click Next.



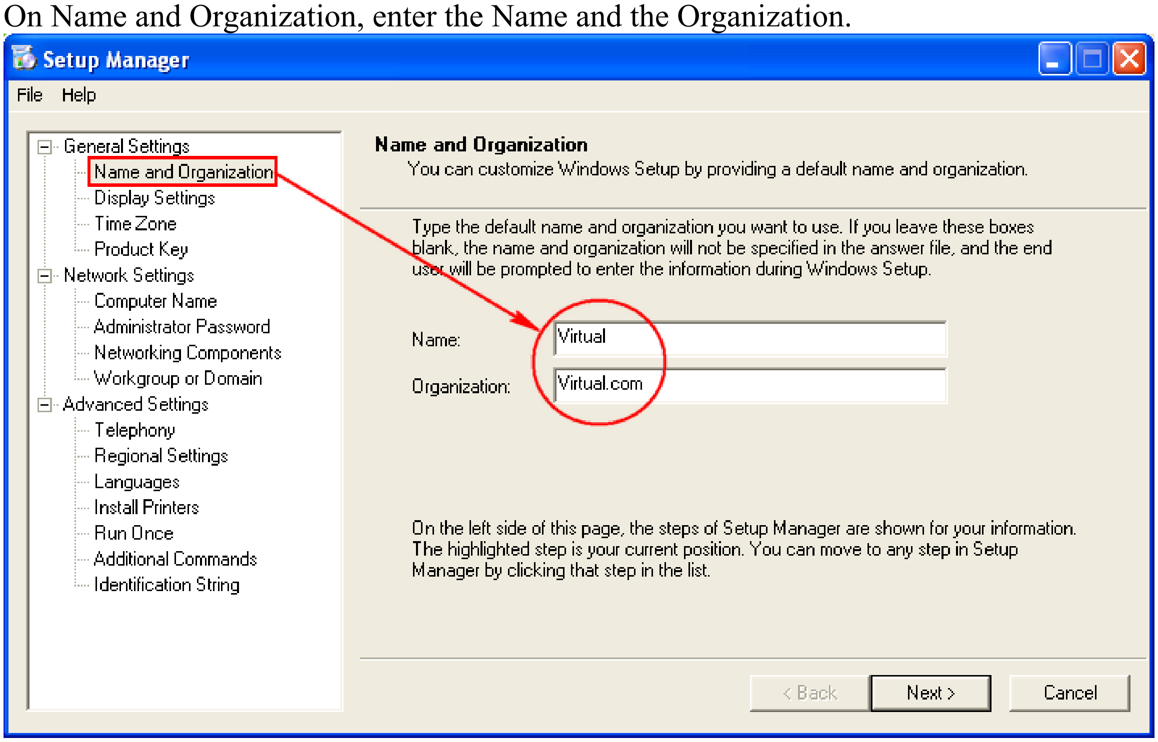
7. On Product, select Windows XP Professional. Click Next.



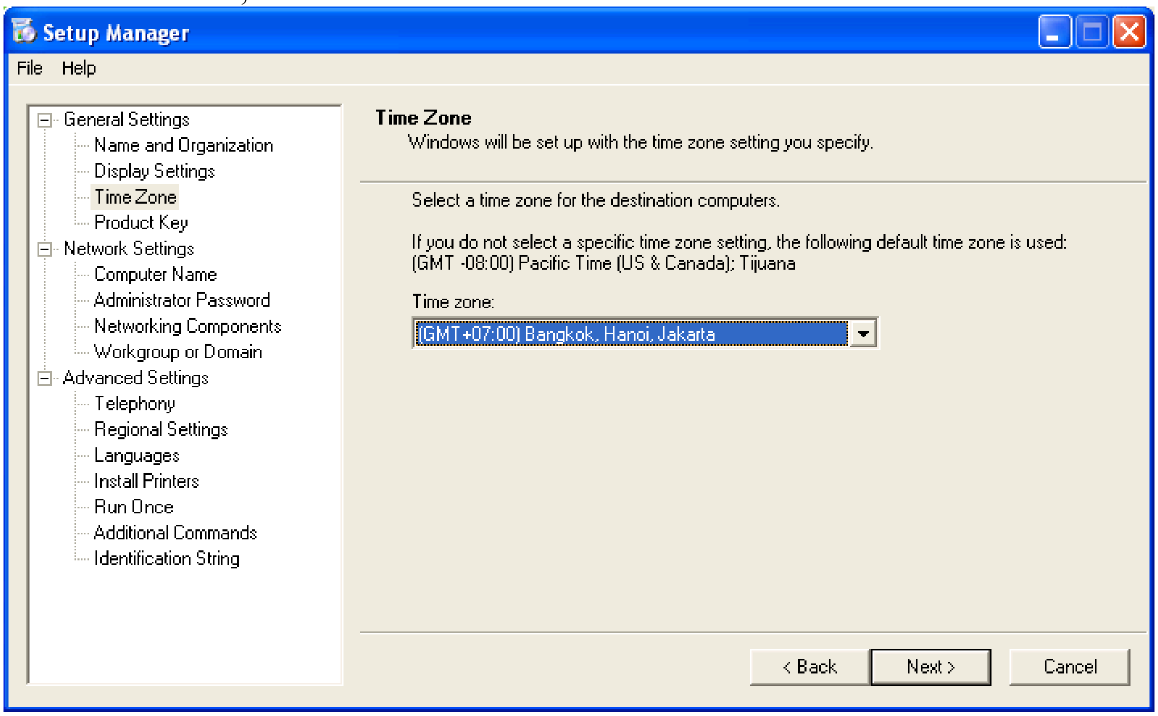
8. On License Agreement, select No, do not fully automate the installation. Click Next.



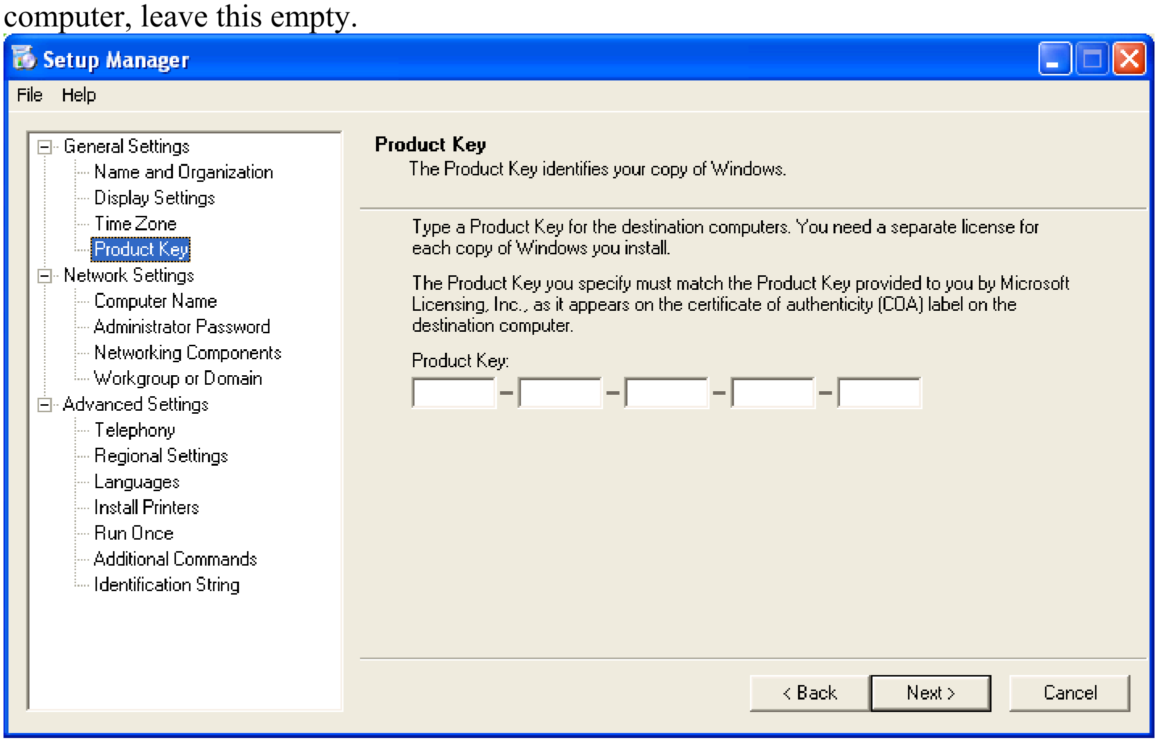
9. Now you can configure the general configuration in your environment. I'll show sample configuration.
On Name and Organization, enter the Name and the Organization.



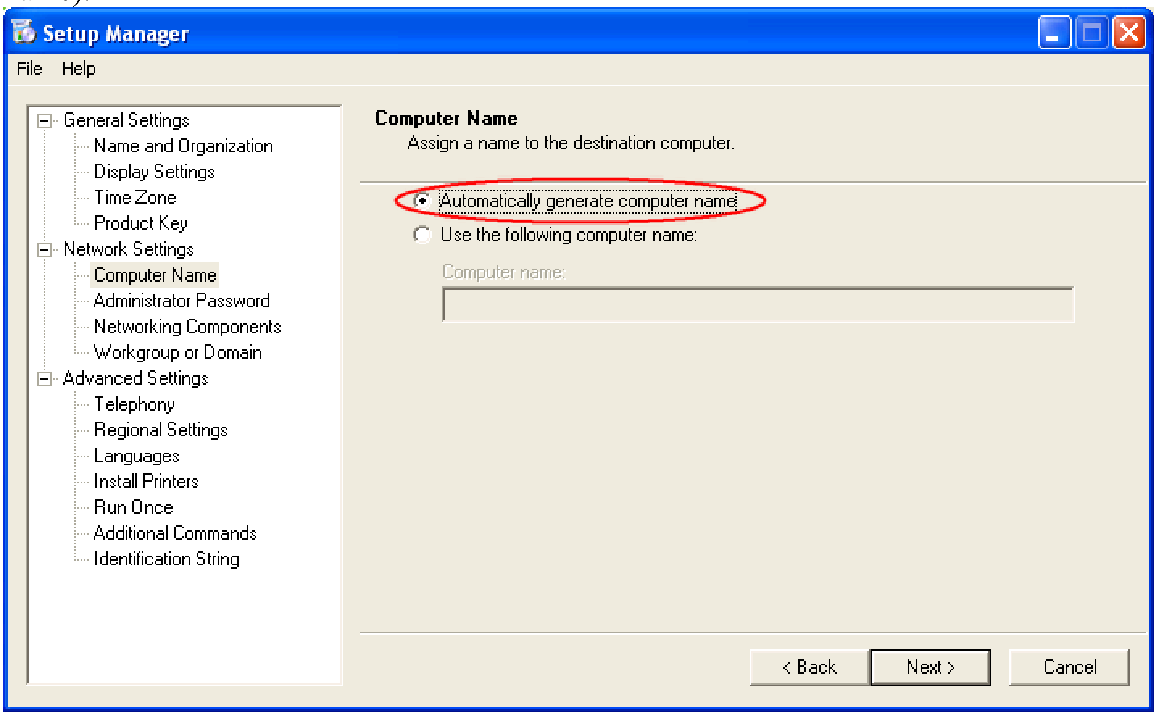
10. On Time Zone, select the time zone.



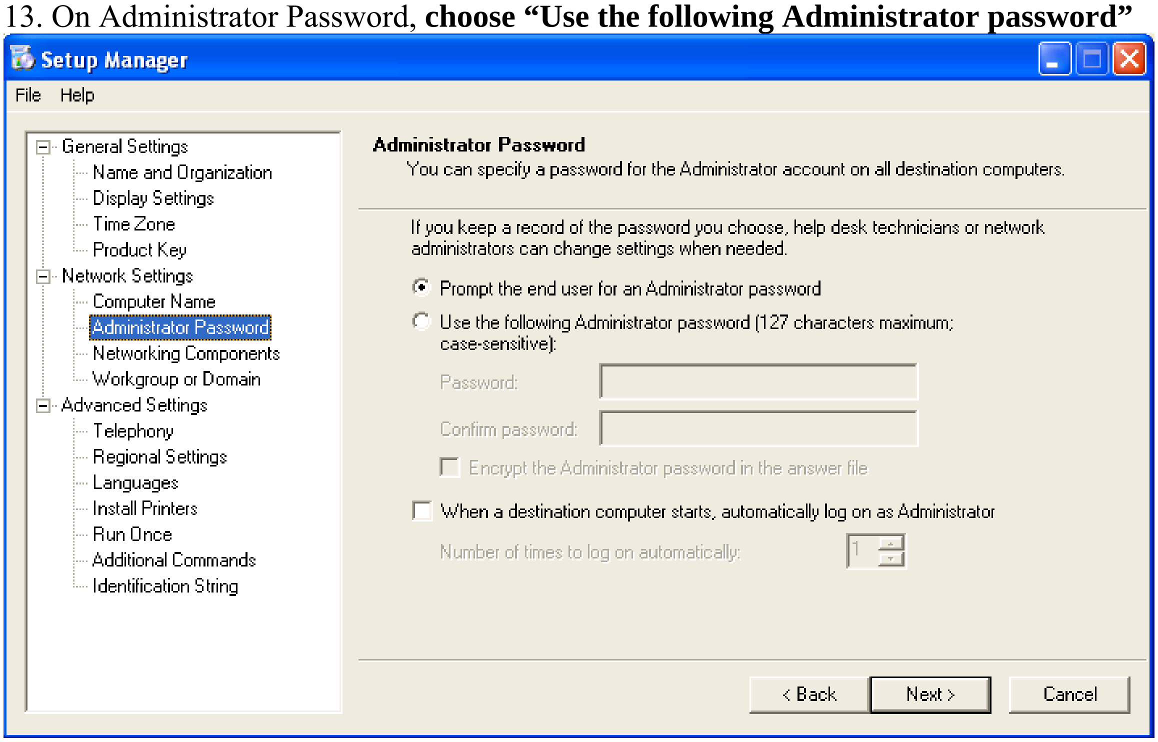
11. On Product Key, enter the Windows product key if you have Windows corporate key (one key can be installed on many computers). If you have an unique key on each computer, leave this empty.



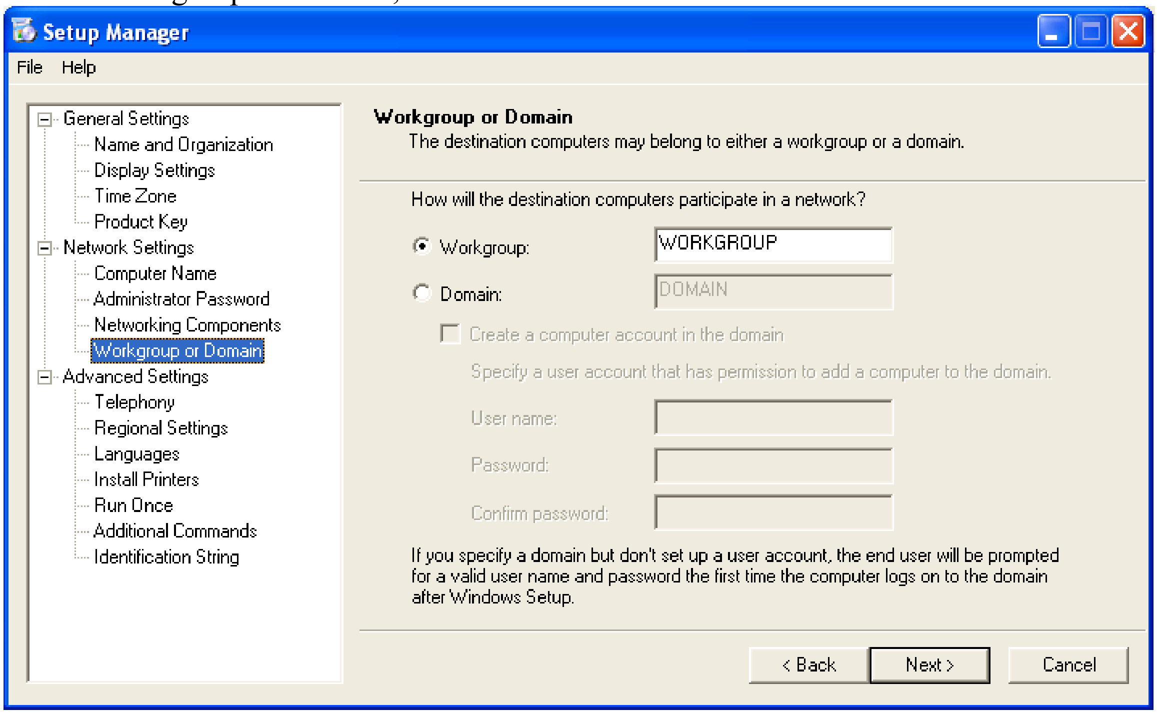
12. On Computer Name, select Automatically generate computer name so that each computer after cloned and run sysprep, it'll has unique computer name (Auto-generated name).



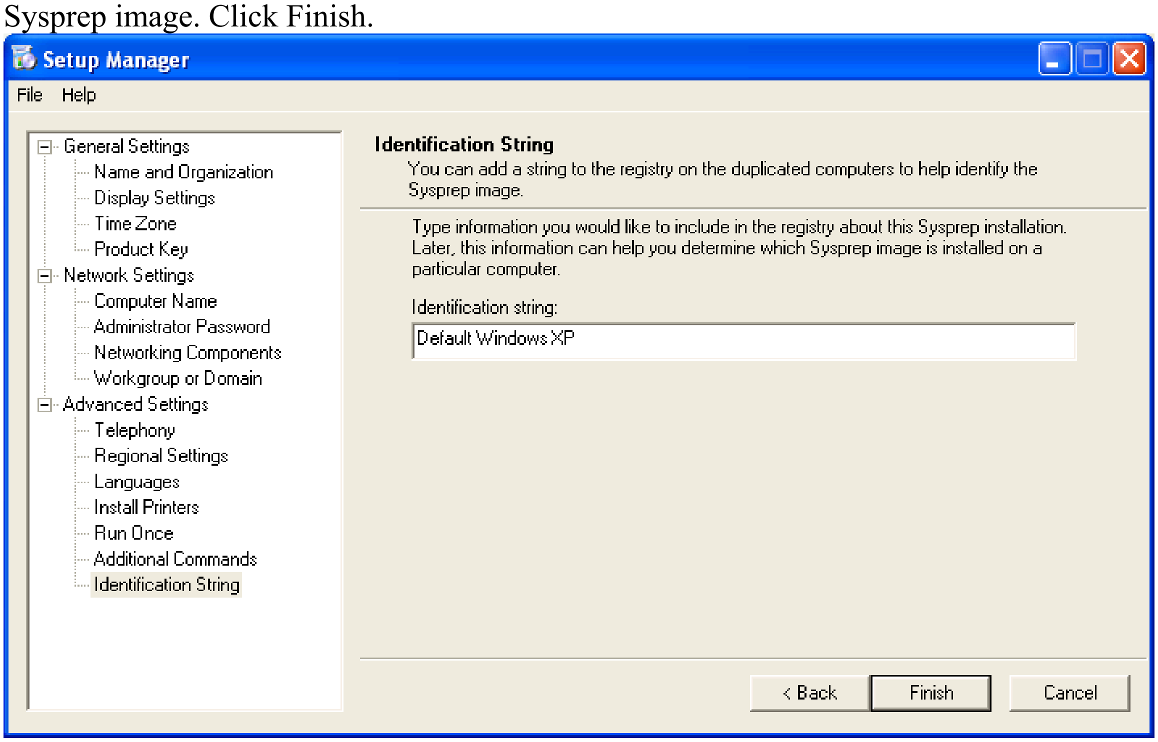
13. On Administrator Password, **choose "Use the following Administrator password"**



14. On Workgroup or Domain, leave as default.

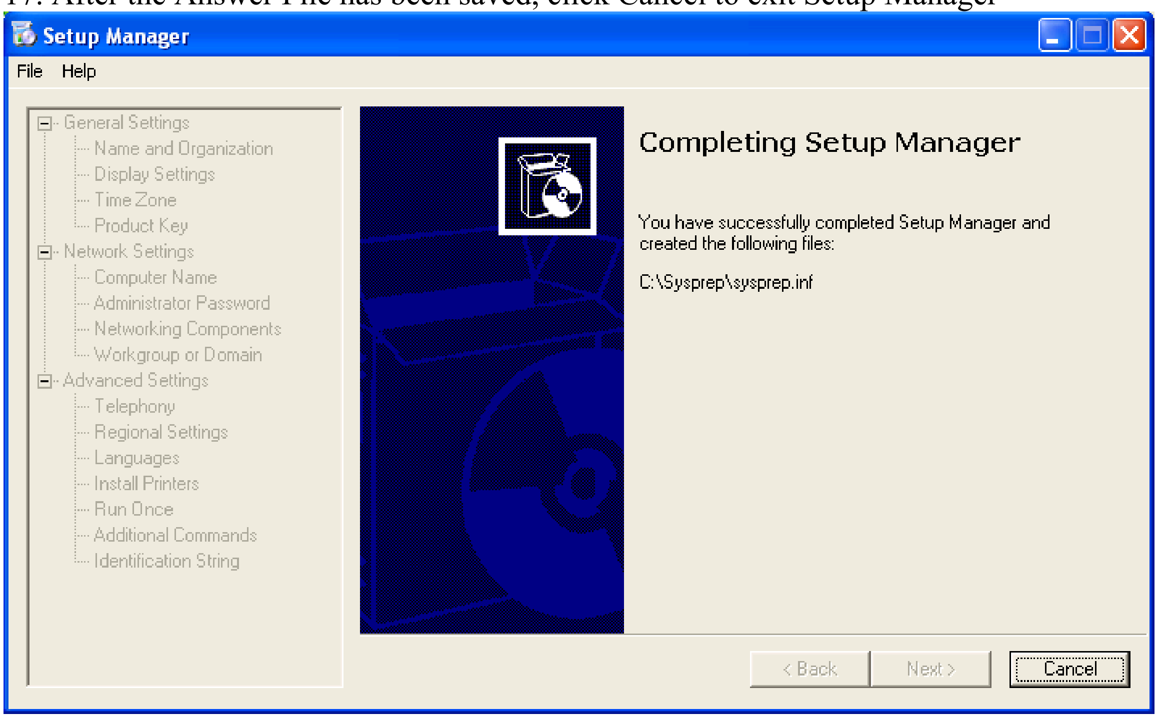


15. On Identification String, give some name to identify this sysprep image. It'll keep this information in the registry so you'll know that this computer was cloned from which Sysprep image. Click Finish.

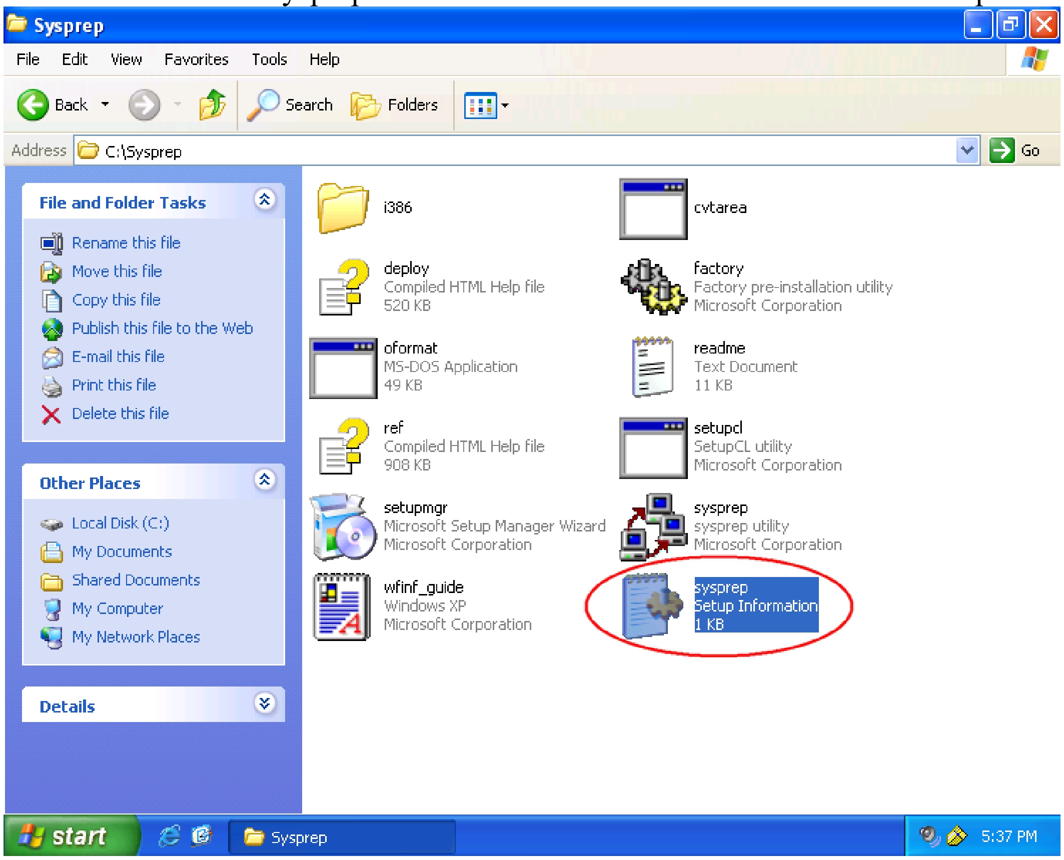


16. Save the .inf file. This is the Answer file that you've configured. Save it in the same folder and click OK.

17. After the Answer File has been saved, click Cancel to exit Setup Manager



18. You noticed the Sysprep's Answer file has been created in Windows Explorer.



19. Download the latest version of DriverPack BASE (8.12.5 at time of writing) and whatever DriverPacks you need at http://www.driverpacks.net/ .

20. Extract BASE to a folder by running the .exe you downloaded (example: DPs_BASE_8125.exe)

21. In the folder you extracted BASE to, open the 'bin' folder. Copy DPsFnshr.ini and extract DPsFnshr.7Z to C:\ on the computer you'll be running Sysprep on.

22. Inside of the BASE 'bin' folder, open the 'wnt5_x86-32' folder. Copy ROE.exe to C:\sysprep, and extract DevPath.exe from M2.7z to C:\ on the computer you'll be running Sysprep on.

23. Extract your DriverPacks with either 7-zip or WinRAR. If you have WinRAR integrated into your shell you can just control-click the Packs you want to select them, then right-click on one and choose "Extract Here". Make sure that they are all merged into the same folder structure under the 'D' folder (D\C, D\G, etc). You should also have a set of files ending with wnt5_x86-32.ini. These contain the various exceptions that DPsFnshr.exe reads when it runs.

24. Move extracted DriverPacks ('D' folder) and wnt5_x86-32.ini files to C:\ on the computer you'll be running Sysprep on.
24a. If you are slipstreaming DP_Graphics_A, create a dummy (Notepad) file in C:\. Name it ATICCC.ins if you want the Catalyst Control Center or ATICCP.ins if you want

the Catalyst Control Panel installed when Radeon hardware is detected. The file can be blank as DPsFnshr.exe just looks for the file name. DPsFnshr.exe deletes the .ins file when it is finished running.
24b. If you want, you can modify the extracted driver packs to remove hardware you don't need. If you do, remember to move the modified driver pack to D\3\ (i.e. D\3\C, D\3\CPU, etc). If you want DPsFnshr.exe to run as intended (do to paths in the wnt5_x86-32.ini files), though, I would leave things like the DriverPack Graphics A unmodified.

25. Open a Command Prompt and run

C:\DevPath.exe C:\D

and then

C:\makePNF.exe C:\D

NOTE: Since you are loading your DevicePath with DevPath.exe, you can leave out the ***OemPnPDriversPath*** entry (under the [Unattended] section) in your sysprep.inf file. ***OemPnPDriversPath*** has a 512 characters limit, but DevPath.exe gets around this by writing directly to the registry entry that ***OemPnPDriversPath*** gets loaded into by sysprep.

26. Open C:\DPsFnshr.ini in Notepad. Since we aren't actually running BASE we have to change the configuration for the Finisher manually. Generally, you will only need to edit the KTD and KTDlocation variables at the very top. If you do not want KTD enabled set:

KTD = "false"

If you want to KTD, put 'paths:' and then a list of folders in D you want to keep. Even if you want to keep all the drivers, I would still recommend specifying them individually due to the "double D" and Desktop.ini bugs in Finisher. For example, in my configuration, I want to keep all of the drivers. I have a D\3 folder when I've put my 3rd party and modified driver packs, and a D\G folder that contains an unmodified Driver Pack Graphics A. So my KTD line looks like:

KTD = "paths:D\G;D\3"

KTDlocation tell Finisher where to move the D folder to if you have KTD enabled. For example, I move my drivers to C:\WINDOWS\Options\Drivers so my KTDlocation line is:

KTDlocation = "%SystemRoot%\Options\Drivers"

27. Edit c:\sysprep\sysprep.inf and add the following lines under the [Unattended] section:

UpdateInstalledDrivers = Yes
DriverSigningPolicy = Ignore

NOTE: ***UpdateinstalledDrivers*** specify that Plug and Play is called after Mini-Setup, to re-enumerate all the installed drivers, and to install any updated drivers in the driver path. ***DriverSigningPolicy*** setting this policy setting to "ignore" disables any warnings from driver signing about unsigned vendor-supplied drivers. Disable the Driver Signing Policy by checking "***Ignore***" in System Properties > Hardware > Drivers Signing…

28a. (optional) If you want the Mass Storage drivers that come with XP added to your sysprep.inf then add the line:

[SysprepMassStorage]

to the very end of your sysprep.inf. Then, run

c:\sysprep\sysprep.exe -bmsd

28b.We want to add the MassStorage drivers we downloaded in the drivers packs so we can avoid unbootable systems that lack the SATA drivers. There is a script that will automatically generate a text file of entries that we can manually add to the **sysprep.ini** in the **[SysprepMassStorage]** section.

28c. Copy the following script into a text file and save it as **HWIDS.cmd**:

```
#BEGIN

rem %1 is path to MassDriverPacks Folder
IF "%1"=="" GOTO EOF
IF NOT EXIST %1 GOTO EOF

SETLOCAL ENABLEDELAYEDEXPANSION
SET STDOUT=%cd%\HWIDS.TXT
TYPE>%STDOUT% 2>NUL

::traverse drivers path
CALL :TRAVERSAL %1

GOTO EOF

:TRAVERSAL
PUSHD %1
for /f %%f in ('Dir /b *.inf') do (
 for /f "eol=- tokens=2 delims=," %%i in ('find /i "pci\ven" %%f') do (
  for /f "tokens=*" %%j in ("%%i") do (
    for /f "tokens=1* delims=_" %%k in ("%%j") do (
     if /i "%%k" EQU "PCI\VEN" (
       for /f "usebackq tokens=1* delims=; " %%a in ('%%j') do (
        echo %%a=%cd%\%%f>>%STDOUT%
       )
     )
    )
  )
)
```

)

FOR /F %%I IN ('DIR /AD /OGN /B') DO (
CALL :TRAVERSAL %CD%\%%I
)
POPD
GOTO EOF

:EOF

#END

28d. Move the **HWIDS.cmd** file to the **C:** directory and the command prompt, run;

C:\HWIDS.cmd D\M

28e. HWIDS will run through the drivers and create **HWIDS.txt** in the directory you ran it from. (**C:\HWIDS.txt**) Open **HWIDS.txt** and copy the entire thing at the end of the **[SysprepMassStorage]** section. You should see similar entries which were generated when we ran **sysprep** with the **-bmsd** flag.

Example:
PCI\VEN_8086&DEV_2652&CC_0106 = C:\D\M\IN\1\iaahci.inf
PCI\VEN_8086&DEV_2653&CC_0106 = C:\D\M\IN\1\iaahci.inf
PCI\VEN_8086&DEV_27C1&CC_0106 = C:\D\M\IN\1\iaahci.inf
PCI\VEN_8086&DEV_27C5&CC_0106 = C:\D\M\IN\1\iaahci.inf
PCI\VEN_8086&DEV_27C3&CC_0104 = C:\D\M\IN\1\iastor.inf
PCI\VEN_8086&DEV_2652&CC_0104 = C:\D\M\IN\1\iastor.inf

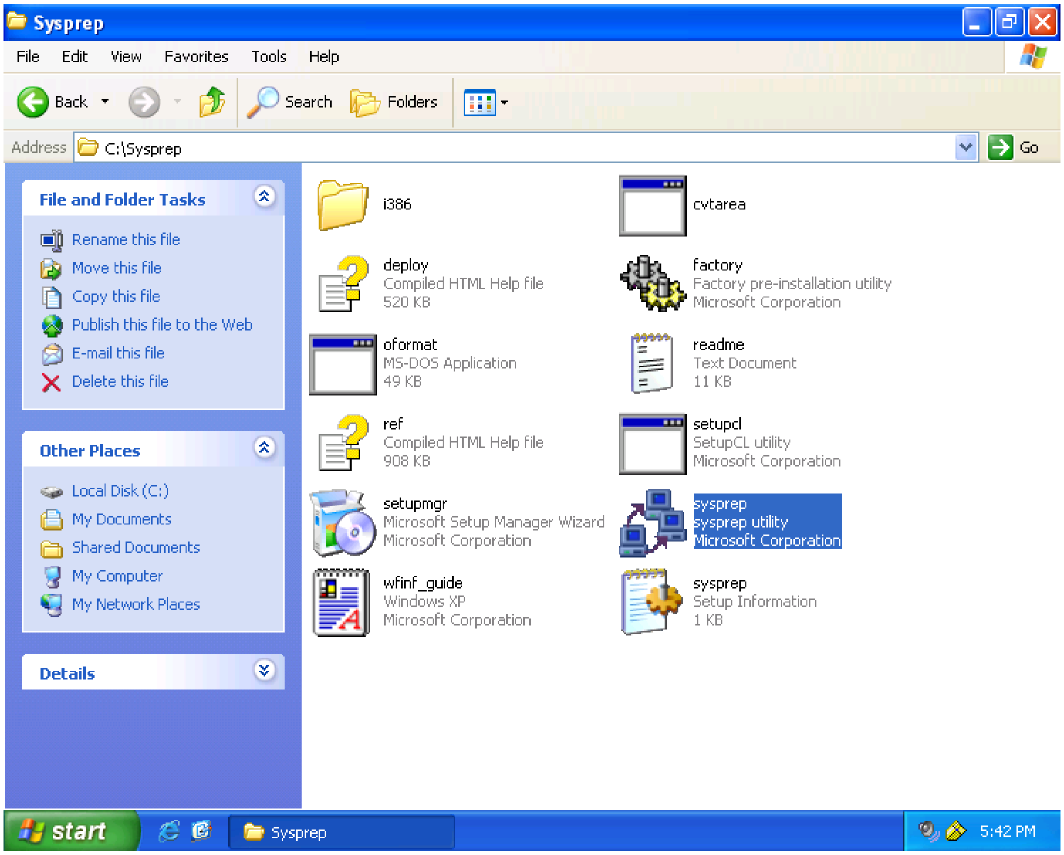
IMPORTANT: The next step will cause programs to run on next boot. Do not reboot after this point or your hard work will be lost!

29. Open a Command Prompt and run

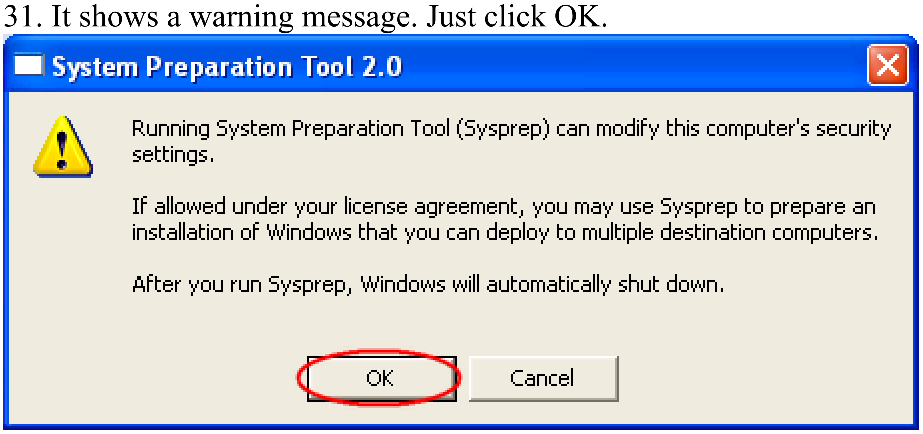
C:\sysprep\ROE.exe 937

This tells Windows to run C:\DPsFnshr.exe on the next reboot. I found that using [GuiRunOnce] in sysprep.inf to run DPsFnshr.exe resulted in the dreaded desktop.ini bug. Using ROE.exe to create a RunOnceEx entry for DPsFnshr.exe does not have this issue. **DO NOT REBOOT BEFORE THE NEXT STEP OR DPsFnshr.exe WILL RUN**!

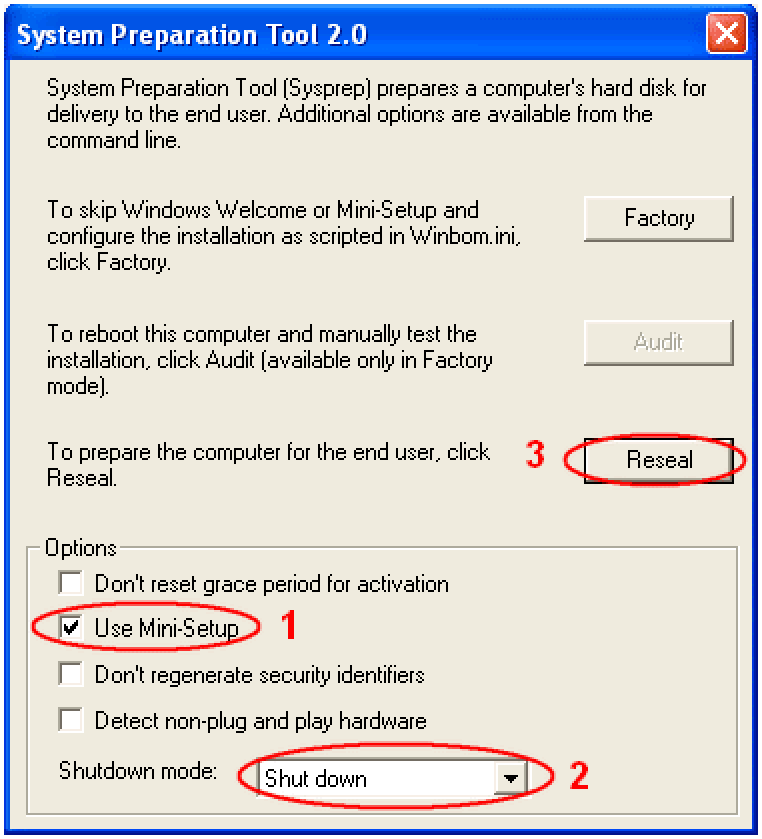
30. Next, let's prepare this computer as a sample computer for cloning by run Sysprep.exe.



31. It shows a warning message. Just click OK.

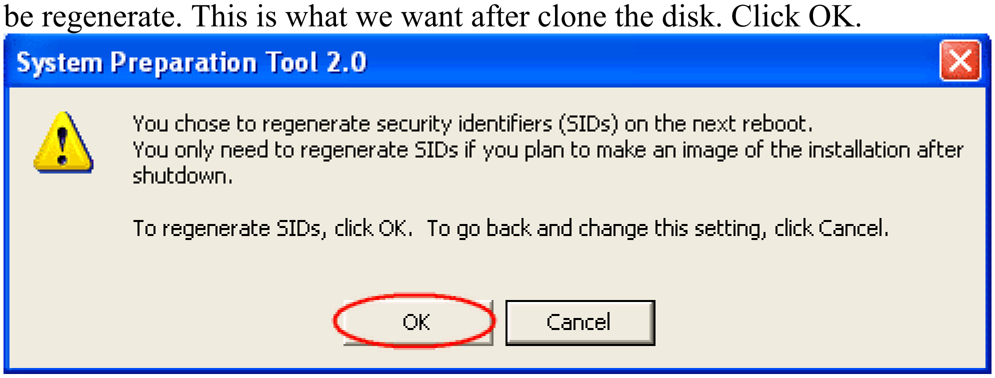


32. To make Sysprep use Answer file after cloned, check on Mini-Setup. Select Shutdown mode to Shutdown. Click Reseal.

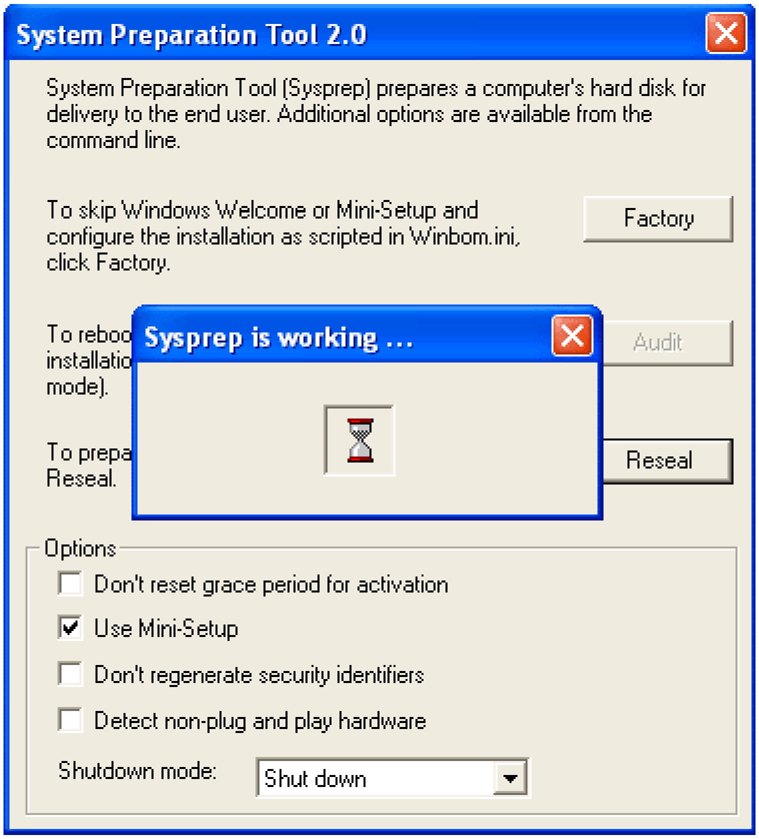


Note: "Don't reset grace period for activation" - Activation is not required when you use Volume License media (VL versions of Windows XP) in conjunction with the VL product keys.

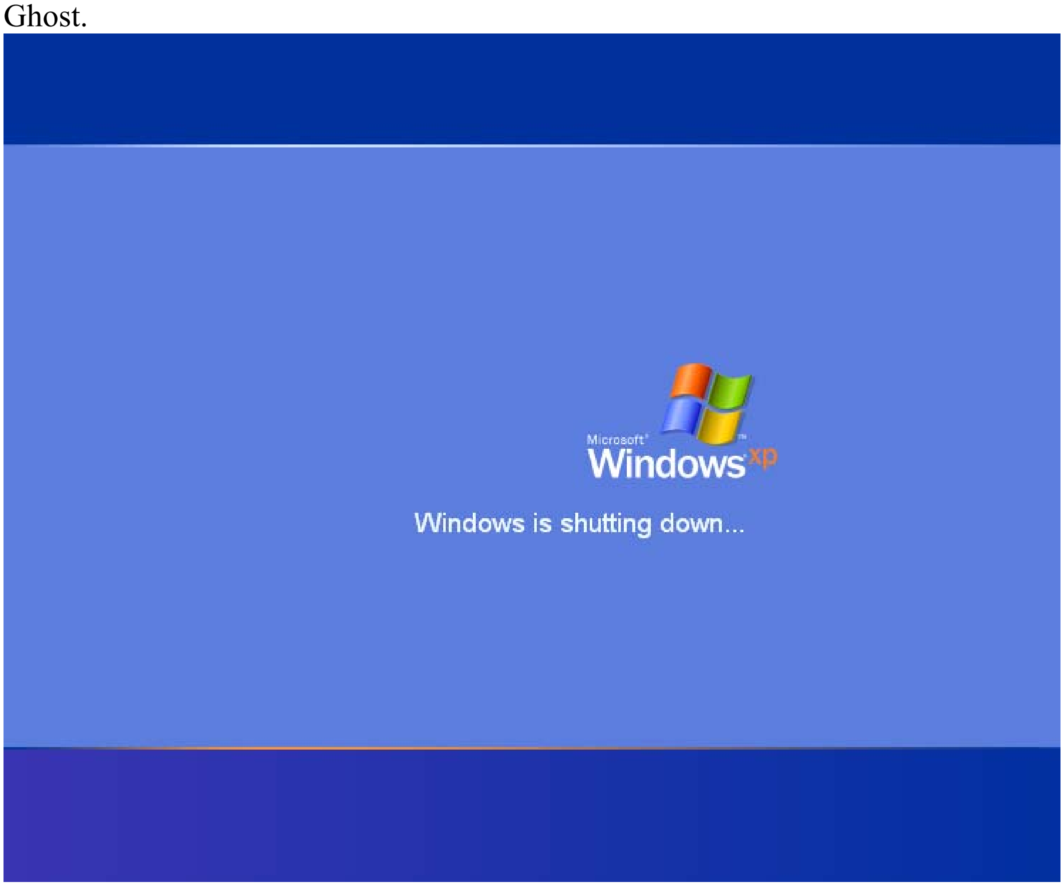
33. It shows a warning message again that after reboot the security identifiers (SIDs) will be regenerate. This is what we want after clone the disk. Click OK.



34. Sysprep is working.



35. The sample computer is shutting down. After the system shutdown, its disk can now be cloned to other disk now. Next post, I'll show how to clone a disk to disk using Norton Ghost.



Tips

Clean out the HKLM\Software\Microsoft\Windows\CurrentVersion\DevicePath key in the registry. Everytime you run sysprep it appends the path state in OEMPnPDriversPath in the sysprep.inf file to this registry key on the base image. This can make this key extremely long if you do not clean it out.

Before Re-Seal your image run “cleanmgr” from a command prompt. Purge Internet cache history from Internet Explorer and Mozilla. Defrag image at least 2x. Run Nullfile.exe this tool zeros out free space.

Customizing Sysprep.inf

There are other sections to the sysprep.inf then what I will use in this example but in my environment I only use these so I will stick to these. Many of these are also optional and many don’t seem to have an effect in my environment will be comment it out, but I will explain them to you.

I would suggest running setupmgr.exe in the sysprep folder to create a base sysprep.inf file and to then edit it by hand from then on as setupmgr.exe can delete some of your customizations.

```
;SetupMgrTag
; ----------------- Sysprep Notes -----------------
; Note: All notes in this files must have a ';' before them, and the first line should not be changed from ';SetupMgrTag'. Options like OemPnPDriversPath can be removed or comment it out with ;  if don’t have an effect in your environment.
;
; Things to know:
; 1: Verify if you need a new HAL and add appropriate UpdateUPHAL or UpdateHAL lines below under the [unattended] section or use the “Multi-universal Hal options” hack.
;
; 3: Verify the admin password in the [GuiUnattended] section
;       If done properly this file is deleted after sysprep completes so this should not be a security issue
;
[Unattended]
;OemPnPDriversPath="Drivers\1\1;Drivers\1\10;Drivers\1\11;Drivers\1\12;Drivers\1\13;Drivers\intel"
 DriverSigningPolicy=Ignore
 InstallFilesPath=C:\sysprep\i386
 TargetPath=\WINDOWS
 ExtendOemPartition=1
 KeepPageFile=0
 OemSkipEULA=Yes
 UpdateInstalledDrivers=Yes
 NonDriverSigningPolicy=Ignore
 UpdateServerProfileDirectory=1
[Sysprep]
  BuildMassStorageSection=Yes
```

```
[GuiUnattended]
 AdminPassword="ADMIN_SECRET_PASS"
 EncryptedAdminPassword=NO
 OEMSkipRegional=1
 OEMDuplicatorstring="20091105 - v1.0"
 TimeZone=10
 OemSkipWelcome=1
 AutoLogon=Yes
 AutoLogonCount=3
[FavoritesEx]
 Title1="Google.com"
 URL1="http://google.com"
[UserData]
 FullName="Your Name"
 OrgName="Your Orginization"
ComputerName=*
ProductKey=xxxxx-xxxxx-xxxxx-xxxxx-xxxxx
[Display]
BitsPerPel=32
Xresolution=1024
YResolution=768
Vrefresh=72
AutoConfirm=1
[TapiLocation]
CountryCode=1
Dialing=Tone
AreaCode=719
LongDistanceAccess="9"
[RegionalSettings]
LanguageGroup=13,17,3,2,5,16,4,12,15,7,8,10,11,9,6,14,1
Language=00000409
[Networking]
InstallDefaultComponents=Yes
[Identification]
JoinWorkgroup=TEMPORARY
[GuiRunOnce]
;Command0=c:\drivers\scripts\cleanup.bat
[SysprepMassStorage]
*pnp0a00=c:\windows\inf\machine.inf
*pnp0a01=c:\windows\inf\machine.inf
*pnp0a04=c:\windows\inf\machine.inf
*pnp0a03=c:\windows\inf\machine.inf
pci\cc_0604=c:\windows\inf\machine.inf
pci\cc_0601=c:\windows\inf\machine.inf
...Shortand for this post...
pci\ven_1055&dev_9130=c:\windows\inf\mshdc.inf
pcmcia\micron-mtcf____-392d=c:\windows\inf\mshdc.inf
pci\ven_1179&dev_0105=c:\windows\inf\mshdc.inf
```

-Section by Section

[Unattended]

OemPnPDriversPath= Since you are loading your DevicePath with DevPath.exe(Driverspack), you can leave out the ***OemPnPDriversPath*** entry (under the [Unattended] section) in your sysprep.inf file. ***OemPnPDriversPath*** has a 512 characters limit, but DevPath.exe gets around this by writing directly to the registry entry that ***OemPnPDriversPath*** gets loaded into by sysprep.
DriverSigningPolicy=Ignore This will let SysPrep silently install drivers that are not signed
InstallFilesPath=c:\sysprep\i386 This should be the location of the i386 folder from the Windows XP CD
TargetPath=\Windows The folder name to install windows to
ExtendOemPartition=1 Depending on the third-party software you use to create and apply the images, you may be able to shrink or increase the disk image to fit the size of the target disk. When you are using Sysprep with NTFS volumes in environments in which the drive sizes may differ, use the following method:

1. Create your image using a partition/volume less than or equal in size to the smallest hard disk installed in the target computers.
2. After you run Sysprep and the image is created (using whichever disk-imaging software you want), do not let the imaging software extend the volume when applying the image to the target computer. Check the documentation included with the disk-imaging software for information on how to prevent this.
3. Modify the Sysprep.inf file to use the ExtendOemPartition key in the [Unattended] section to extend the partition to the full size of the target disk or the extra size (in megabytes) that you want.

Values:

ExtendOemPartition = 0 (do not extend)
ExtendOemPartition = 1 (extend to the end of the disk)
ExtendOemPartition = number_in_megabytes (extend the volume this many megabytes in size)

When the duplicated disk is placed in a computer and turned on, the volume is extended by Windows Setup to the size you specified in the Sysprep.inf answer file. This allows Windows to update the NTFS metafile information to reflect the correct volume size and maintain file system integrity.

KeepPageFile=0 Deletes the page file to help make sure no residual from the other hardware is still hanging around
OEMSkipEULA=Yes Accepts the EULA for you automatically
UpdateInstalledDrviers=Yes Reinstalls any drivers that have updates to them
NonDriversSigningPolicy=Ignore Ignores warnings about unsigned files that are not drivers
UpdateServerProfileDirectory=1 More Info The article talks about this setting with a hotfix and SP2, but in this hotfix seems to be included in SP3. This setting takes the administrator profile and copies it to the default profile.

[Sysprep]

BuildMassStorageSection=Yes Extremely important as this will build all mass storage drivers

[GuiUnattended]
AdminPassword=… Set this to your password
EncrypedAdminPassword=NO I always opt out of encrypting the admin password as I have had times this step fails and encrypting the password disables the autologon feature use further down, also remember that this file will be deleted before the first login.
OEMSkipRegional=1 Skips the Regional options page
OEMDuplicatorString=”Clones Name” This is a key put into the registry so you can track what clone a computer came from
TimeZone=10 10 just happens to MST so you will need to change this to your time zone
OEMSkipWelcome=1 Skips the Welcome Screen
AutoLogon=Yes Logs the administrator into the computer automatically after sysprep finishes
AutoLogonCount=3 Will log the administrator on for 3 reboots. Note that if you log off the PC it will log you right back on until you restart

[FavoritesEX]
Title1=”Google.com” This is to add a favorite to IE automatically but it has yet to work for me. Change the number for each new site
URL1=http://google.com The URL to match Title1

[UserData]
FullName=”Your Name” The name in which the computer is registered to
OrgName=”Your OrgName” The organization in which the computer is registered to
ComputerName=* Let sysprep pick a random computer name
ProductKey= Put your volume license key in here, if you do not have one leave this value blank. Look for another post from me shortly to get around typing in the key on every computer if you don’t have a VLK

[Display]
BitsPerPel=32 32bit color
xResolution=800 set the monitor to 800×600 for older models
yResolution=600 set the monitor to 800×600 for older models
vRefresh=60 60 Hz
AutoConfirm=1 Confirm the resolution change, if you don’t set this to 1 you will need to click ok within 15 seconds to keep the video settings once they change

[TapiLocation]
CountryCode=1 1 is for the US, change this accordingly
Dialing=Tone Set the modem to tone dialing
AreaCode=404 Your area code
LongDistanceAccess=”9″ Set this to the number the computer will need to use to get an outside line

[RegionalSettings]
LanguageGroup=1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17 Installs all languages
Language=00000409 set the default to English

[Networking]
InstallDefaultComponents=Yes Installs all the default network protocols

[Identification]
JoinWorkgroup=Temp Joins the computer to a workgroup called Temp

[GuiRunOnce]
Command0=c:\drivers\scripts\cleanup.bat Runs a program once the computer boots into windows if you need any cleanup or extra tweaks.

[SysprepMassStorage]
This section is created automatically and contains a list of mass storage drivers.

- Creating the Mass Storage Devices List

SysPrep will need to know what type hard drive drivers to load during setup so you should always create you [SysprepMassStorage] section to help it out will all your drivers. The get this section filled in with all your values run sysprep.exe with the -bmsd switch.