Automating Windows Installation

in a VDI environment

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Contents

Introduction

This document highlights some tip and tricks to automate the installation of Windows Operating Systems from physical or electronic CD media. Of course true automation of VDI desktop deployment is through the use templates but the template itself needs to be initially created through the installation of the OS.

Creating a pre-packaged install media CD

In this section we'll focus on the automation of operating systems through the use of unattended installation procedures.

When we install Windows XP or just about any other operating system matter of fact we are asked numerous questions that help the install software setup the operating system. We are asked to fill in information about the serial number, hostname, disk configuration, network configuration to name a few. Most of this information is repeated every time we install the same operating system and becomes mundane. This section describes and walks you through how you can automate the inclusion of this information and make your installation completely unattended. Initially we'll focus on use the native tools available but in later will look at some third-party tools to make this automation even easier.

SetupMGR

Current Microsoft Windows operating systems include an application called setupmgr (Setup Manager) which is used to create a unattended answer file with the file name WINNT.SIF. This unattended answer file will include the repeatable information and automation instructions used to automate the installation of your operating system. The concept is simple. You create answer file, save a copy in the i386 folder of your operating system media CD and then boot from it. The end result is a fully installed operating system which was fully or partially automated.

So as promised lets walk you through this procedure in more detail. Initially we will work with an Windows XP image and focus on Vista later.

1. First thing you need to do is create the WINNT.SIF file by executing setupmgr.exe. This executable can be found inside the deploy.cab file which is located in > Install Media\support\tools:

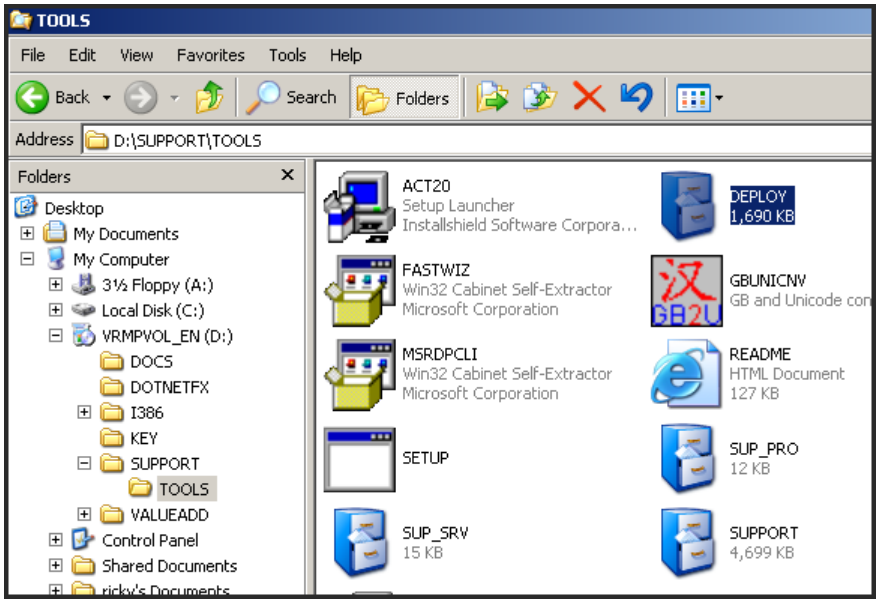

Figure 9.1

2. You need to extract the setupmgr and setupcl executable somewhere on your desktop.

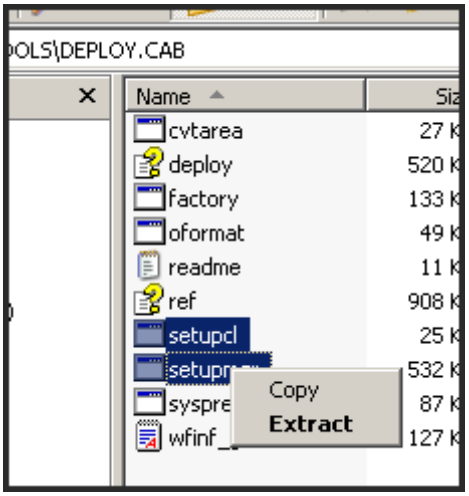

Figure 9.2

3. Next run the setupmgr.exe by double clicking on it. Click Next on the initial screen. On the next dialog box you will be prompted whether you want to create a new answer file or work with a previous answer file. For the purpose of this exercise select "Create New"

4. Select "Unattended Setup" we may review the other options later in this chapter.

5. Select "Windows XP Professional" as we intend to create an XP image in this exercise.

6. On the User interaction dialog windows you have multiple options to how setupmgr will allow the user at install to interact with the installation. Seen as we intend to make this installation fully automated we'll go for the "Fully automated" option.

7. Next select "Setup a CD"

8. Agree to the EULA license agreement.

What happens next is you are prompted for the repeatable information.

9. Go through and input Name, Organisation, decide on some screen settings like colour and resolution, specify your time zone, your product key.

In the next section under networking settings you are first asked what Computer Name. This information is ambiguous at this point as we have no plans for naming convention. We probably let the connection brokers help us dictate a naming convention and automate the naming of our operating systems.

10. So I would suggest the below check box and allow for a random computer name.

Figure 9.3

11. Input a password for the Local Administrators account, make any modifications to your network setting to reflect you environment, and decide whether you want this operating to become a member of a domain automatically at install. This probably not necessary as the connection broker will be responsible for this later.

12. In the Advanced Settings section I would normally default the parameters but you may decide that setting some of these parameters might be useful in your environment take for example: you may know that the printer configuration for each user will always be the same you could setup network printers at install saving you a job later.

The net result of these steps is the option to save a unattended answer file with the above information. For the purpose of this exercise we need to change the file type to a .sif file by first click Browse the change the drop box and select "Remote Boot file"

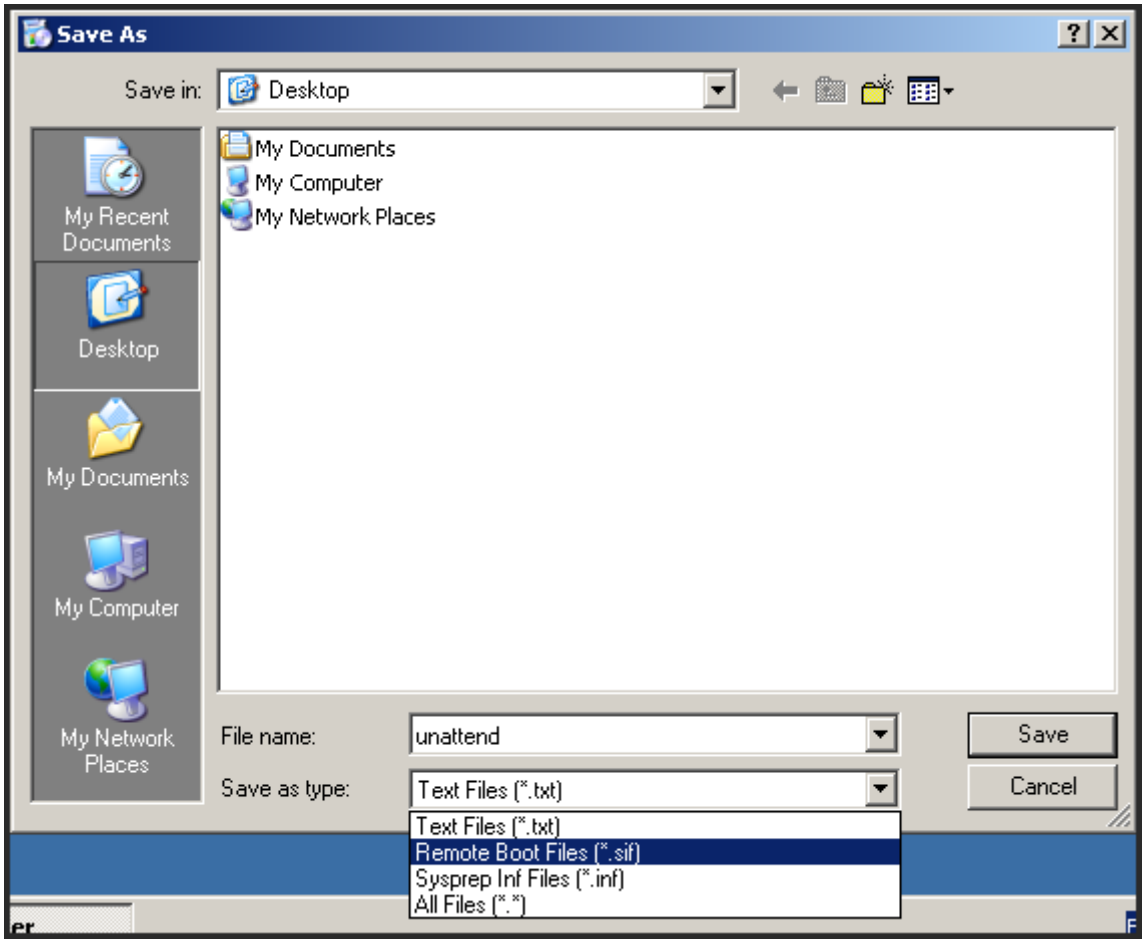

Figure 9.4

Save your file as WINNT.SIF. This is the file that the install software looks for in i386 to perform an automated install.

Tips and Tricks

Now eventually we'll want to somehow get this file into the i386 folder of your install media but at this point we still need to perform a few hacks on this file to get our install fully automated. Currently as it standards if we were to use the answer file winnt.sif the installation would pause when it came to the text mode options to partition the hard-drive used for installation. This you could argue required user interaction and isn't fully automated, so let's fix this minor irritant.

1. Open the winnt.sif with your favourite text editor (I just happen to prefer notepad++) and locate the [Unattended] section like so:

```
[Unattended]
   UnattendMode=FullUnattended
   OemSkipEula=Yes
   OemPreinstall=No
   TargetPath=\WINDOWS
```

2. Next after the " UnattendMode=FullUnattended" line add the following 2 lines of text:

```
 Repartition=Yes
 UnattendSwitch="Yes"
```

so it now looks like this:

```
[Unattended]
   UnattendMode=FullUnattended
   Repartition=Yes
   UnattendSwitch="Yes"
   OemSkipEula=Yes
   OemPreinstall=No
   TargetPath=\WINDOWS
```

This will trigger the install software to create a NTFS volume on the first disk using the maximum capacity for the System Disk (where the OS installed).

You do have the option to be more creative when it comes to the partitioning of your harddisks through this process but it's a little tricky and we'll save that for another book.

ISO Images

So at this point we have an unattended answer file but the question is what to do with it? We somehow need to get this file injected into the i386 folder of your install media which is typically a read-only CDrom. The best way to achieve that is to copy your install media into an ISO image which we can easily read and write to without having to create a new CD each time we make a change. The great thing about ISO images is that most hypervisor virtualisation platforms support them and encourage the use of ISO images.

So what is an ISO image? An ISO image is a flat file which contains a sector by sector copy of raw data as it would normally be presented on a CDRom disk. This format is defined by the International

Organization for Standardization (ISO). ISO image files typically have a file extension of .ISO but Mac OS X ISO images often have the extension .CDR. Its named after the ISO9960 file system used with CD-ROM media, but an ISO image can also contain UDF file system because UDF is backward-compatible with ISO 9660.

Using an ISO image means we can quite easily inject or extract files from our install media without having to rewrite a read-only CDrom. My tool of choice to perform these tasks is MagicISO or you could use WinISO or even a plethora of freeware alternatives.

So in this next section we'll walk you through the process.

1. First you need to make an ISO image of your install media. With the install media (Windows XP in this example) in a local CDrom drive open MagicISO, select the tools menu and click on Make ISO from CD/DVD-rom:

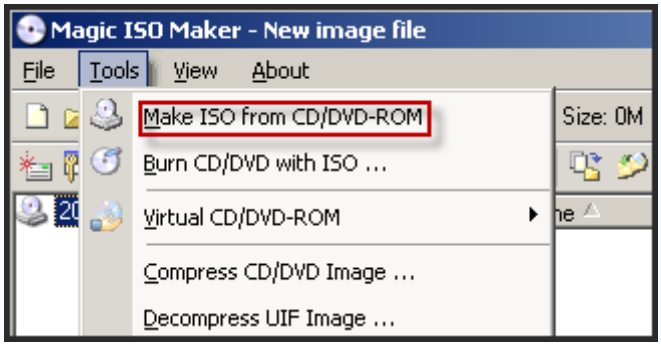

Figure 9.5

2. Next selct the relevant CDrom drive, give your ISO a filename and specify that you want to create an ISO format image:

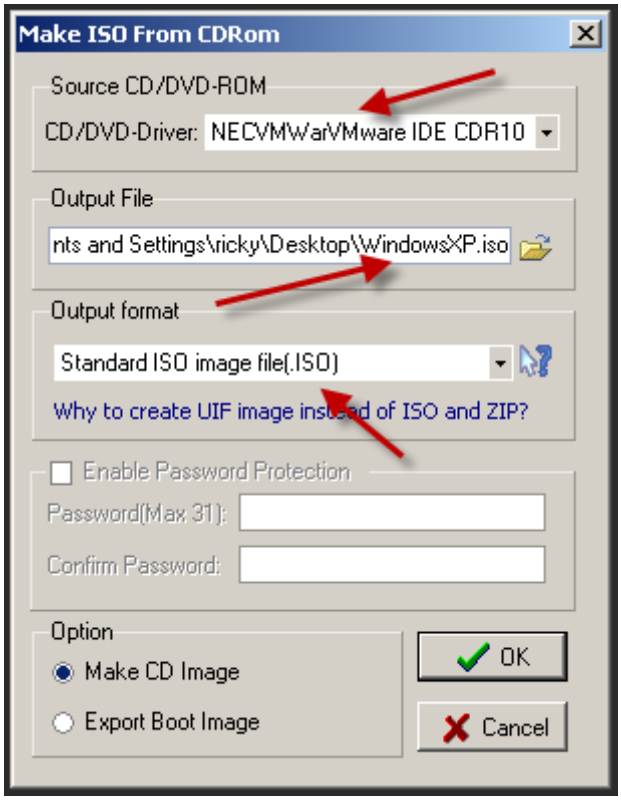

Figure 9.6

This will now create an ISO image of the install media.

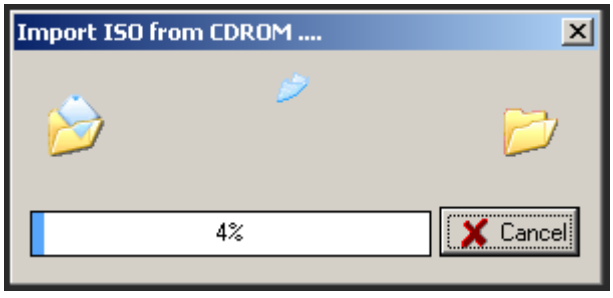

Figure 9.7

Once completed you may now open the newly created ISO image using MagicISO. From now on you can drag and drop file from your desktop environment into the ISO image as you please. So the first

thing you want to do is drag and drop the WINNT.SIF file into the i386 folder fo your ISO image like so:

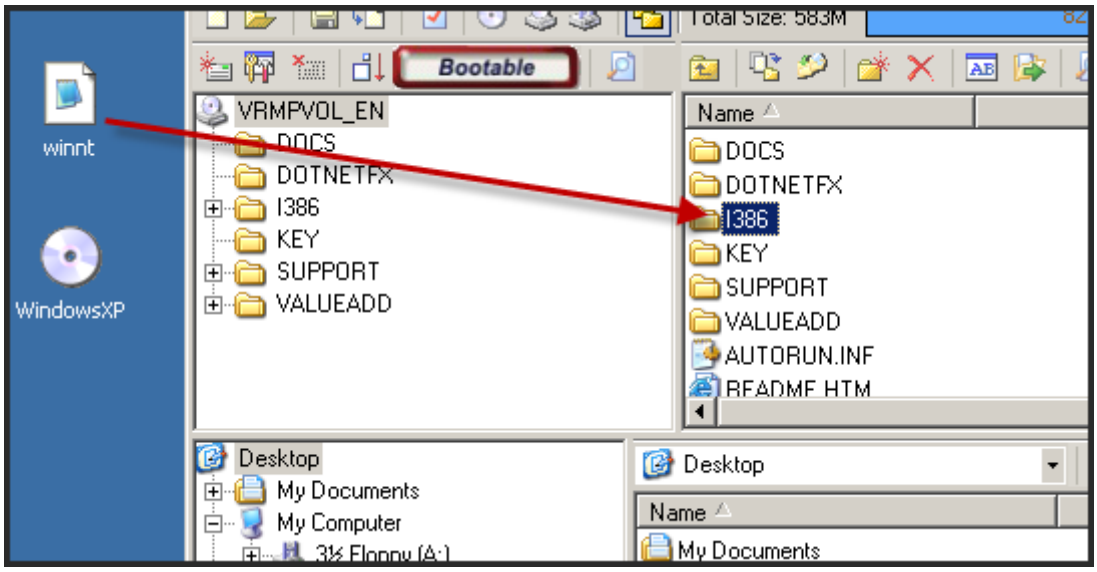

Figure 9.8

You can now re-save the ISO image which only take a second to do compared to initial creation of this file and that's it, finished. At this point the ISO image is ready for deployment and you can either write it as is to a CDrom disk or if you virtualisation platform permits install your operating system directly from it. Doing this has added benefit in the time need to install the operating system. Installing from a file on hard-drive is about 10 time faster than installing from a CDrom disk.

Extended Automation - nLite

There are third-party tools, free ones to be precise that can aid us extend what we can automate at install even further. These tools are called nLite and vLite for XP and Vista respectively. nLite maybe downloaded free of charge from http://www.nliteos.com/ and vLite from http://www.vlite.net.

The finished product from using these tool is pretty much the same as what we have just achieved with our unattended install ISO image but with an added bonus that we can automate a few other things as well as follows:

- We can integrate Service packs, Hotfixes and drivers into our ISO.
- We can remove components that are not need from the installation
- We can automate and tweak the installation.

So now let's walk through the process of creating an unattended XP ISO image using nLite. The final product we'll be an optimised image in which can be used to install XP in a ESX virtual machine. We may then use said image to create a template from.

Let's start off by opening up nLite and the first thing it requires is visibility of a local copy of install media. It's probably best at this stage to use a local copy of XP located on a hard-drive. nLite will need to modify and write to the install media before compiling a the finished product.

The next phase of compilation is to decide what modifications need to be included with the finished product. These options include:

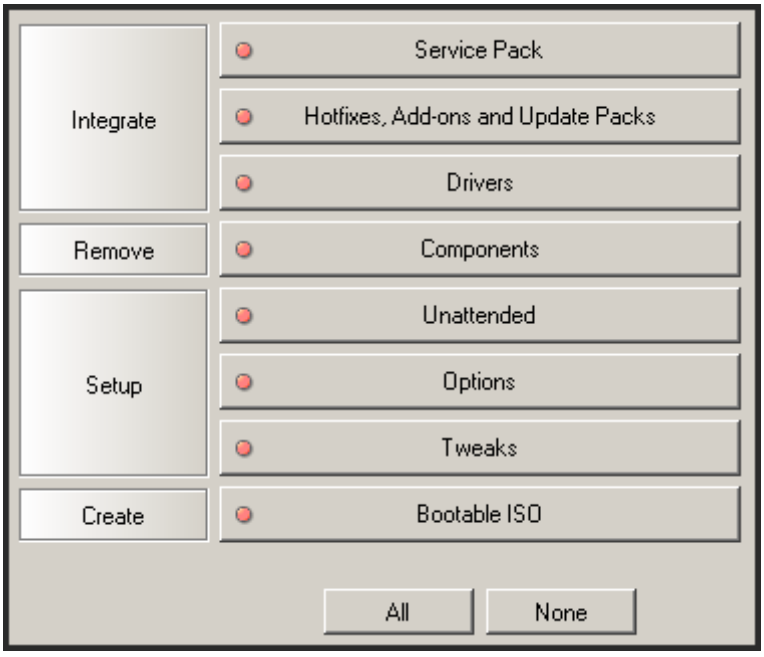

Figure 9.9

Service Packs: The user may slipstream current services packs to update the install media.
Hotfixes: The user may include needed hotfixes or updates into the install media.
Drivers: You may include hardware drivers that are required by your VDI installations. A example of using this feature is that you may want to include the LSI SCSI driver used by ESX XP virtual machine which is not included by default on standard distributions of Windows XP.
Components: Some aspects of the windows XP installation maybe removed to make the installation of XP thinner. For example there may be no need to include NT Backup with your installation or MIDI control. Removing these components will reduce the foot print on disk required by the XP installation.
Unattended: In this section you'll configure similar options to ones we saw in the WINNT.SIF which we reviewed in earlier sections but with added parameters.
Options: Within this dialog box allow you further optimise the installation by prompting for the user to make decisions like whether to use OEM branding or where to place the windows system files which usually reside in the Windows folder.
Tweaks: These options allow the user to optimise the final installation with providing some performance enhancements and make choices of which services should be started to name a few.
Bootable ISO: This function will be the components that aids you in creating the final ISO image or CD used for your installation of XP.

For the purpose of this book we should keep in mind that we are doing this for the creation of a virtual machine for VDI and should select the following then click next:

- Drivers
- Unattended
- Bootable ISO

The next dialog box prompts you for additional drivers to be included with this new install media and in this case it would be an idea to try to include the LSI drivers for the reasons mentioned previous. Click the insert button:

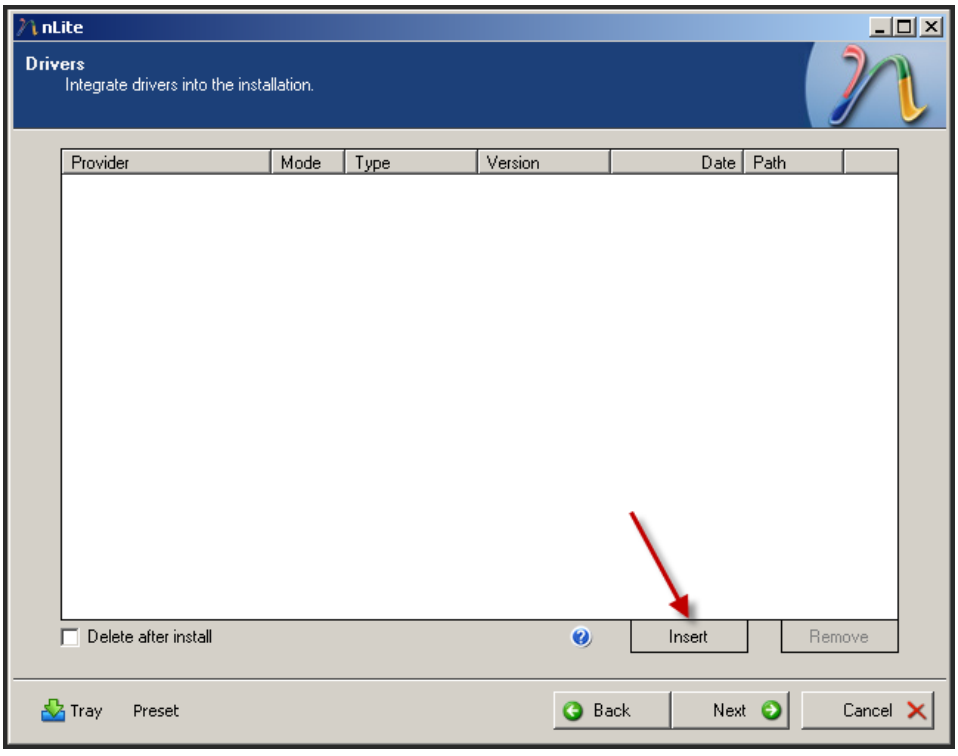

Figure 9.10

After clicking the insert button you can choose to install a single driver or a folder full of drivers:

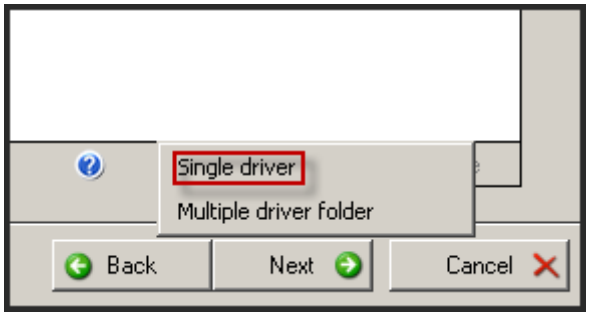

Figure 9.11

Now select the appropriate LSI driver:

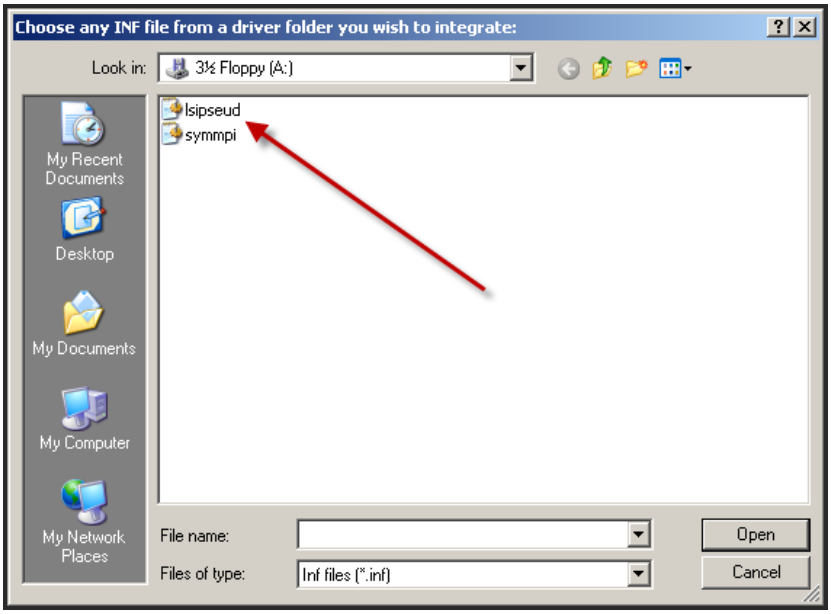

Figure 9.12

The next screen will prompt you to select a the relevant driver as in theory you may have a choice of multiple drivers.

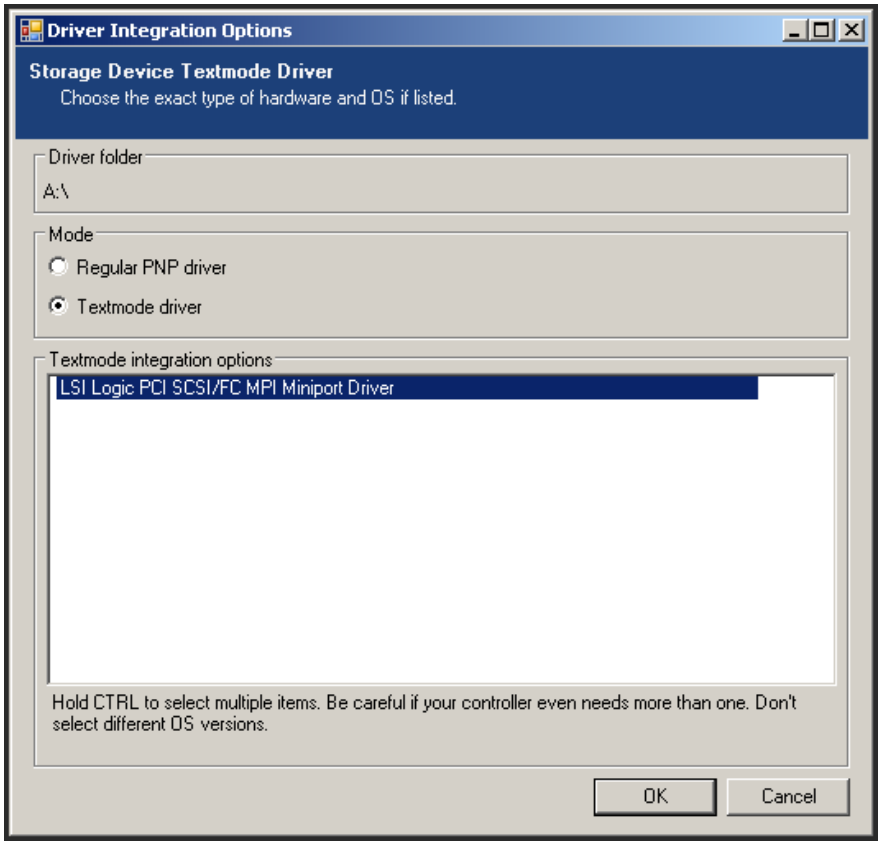

Figure 9.13

In the next section you'll be prompted for some setup information that will enable the automation of setup. Mostly the questions that are normally asked at install time will be answered here plus a few additional ones that might be useful.

On the "General" tab you'll specify the automation level and it's probably best to pick "Hide Pages". Also specify the Windows License Key, whether you want to turn off the built-in firewall and if you are using this for VDI its probably best to disable hibernation. The rest you could leave as default.

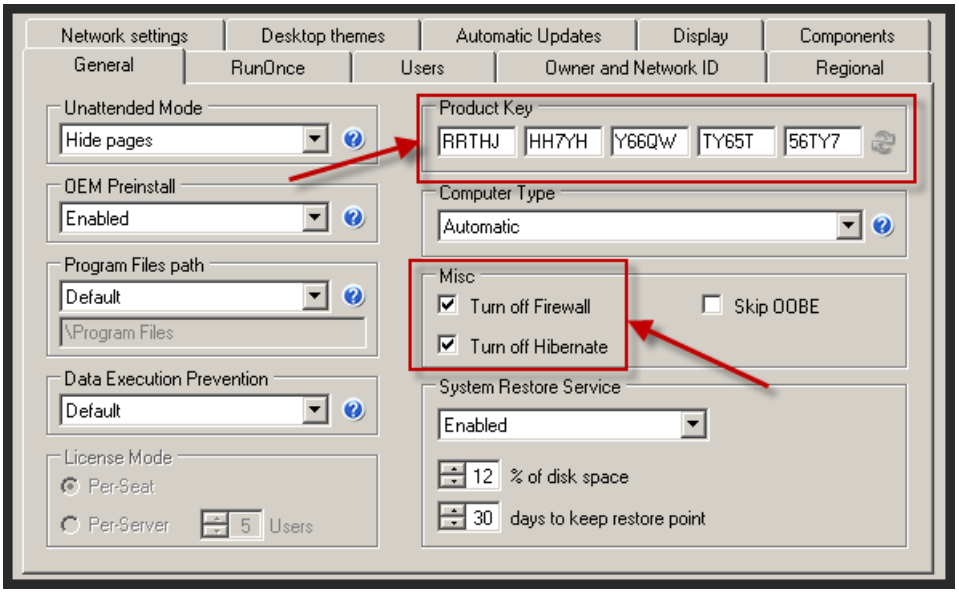

Figure 9.14

On the "Users" tab it's a good idea to set the local administrators password

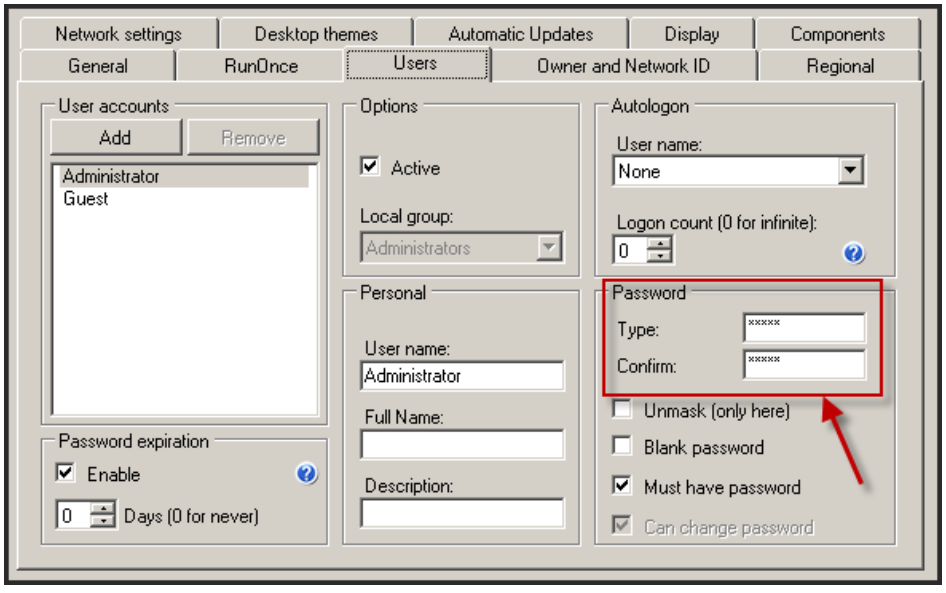

Figure 9.15

On the "Owner and Network ID" tab set the Workgroup parameter to "Workgroup". There's no point defining domain membership as this will be automated later with the use of templates. You need to set the Full Name and Organization fields otherwise the installer will pause for you to fill this information in.

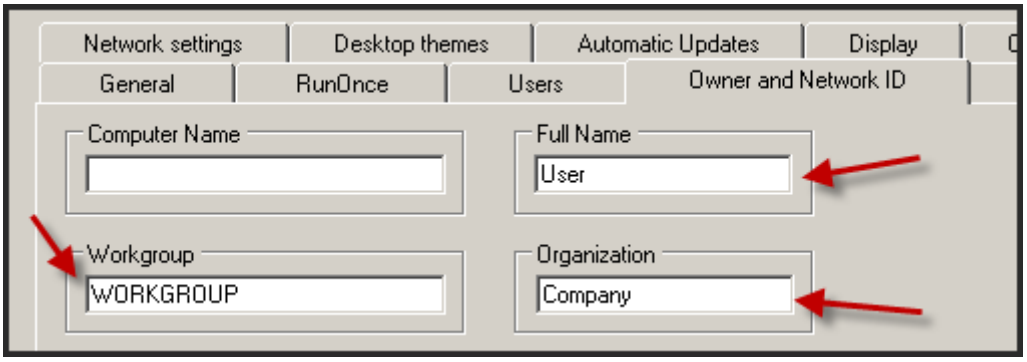

Figure 9.16

On the "Regional" tab make sure you change every parameter to suite the location and regional information of the installation. Again this will save you a job later.

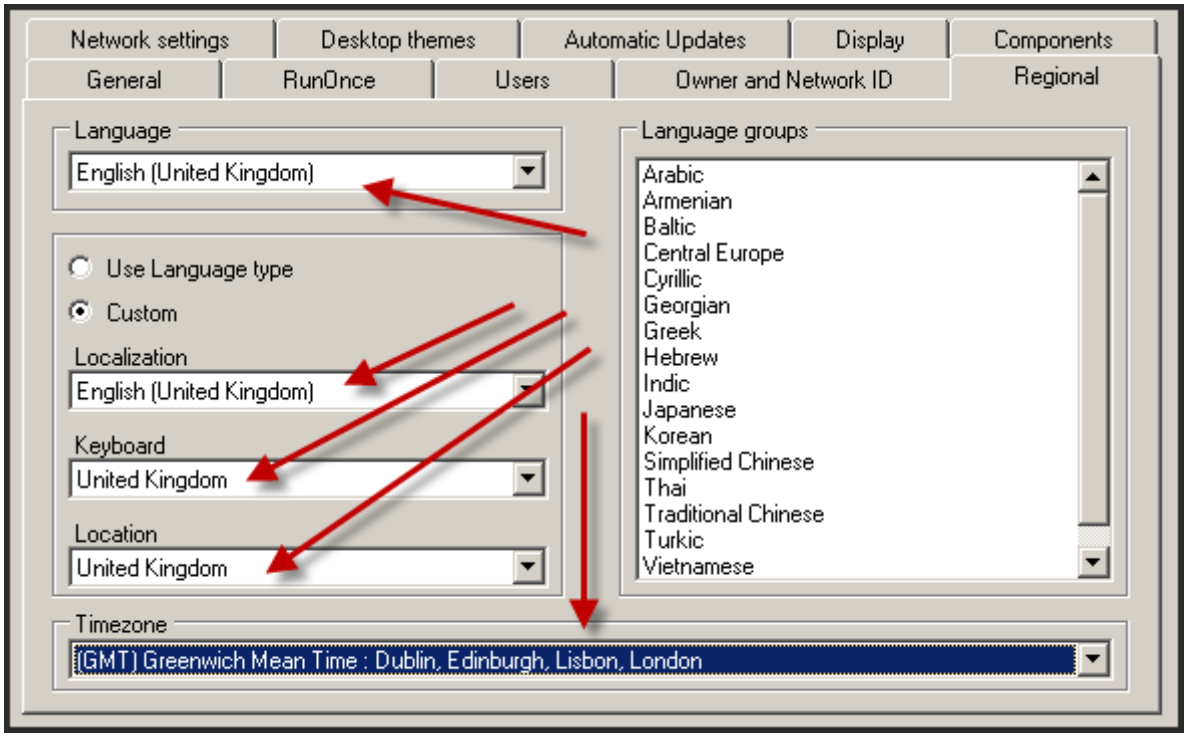

Figure 9.17

One thing that's worth doing is removing any network settings. The default is to set the IP address of the default network adapter to a static IP address. In terms of VDI everything needs to be as fluid as possible so using static IP addresses is not the way forward for the VDI sessions. Make sure you select a customer option and click the minus button on the "Network settings" tab so you have an empty configuration.

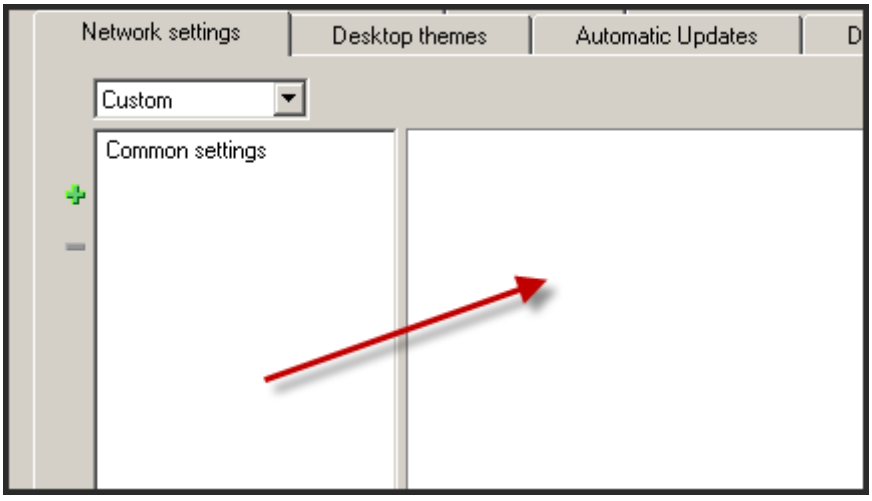

Figure 9.18

On the "Components" tab unless required it's a good idea to choose not install IIS. One of the key goals in automating the installation of a VDI session is keep the foot print as light as possible and choosing not install components of the base operating system that are not require is a good way of keeping it light.

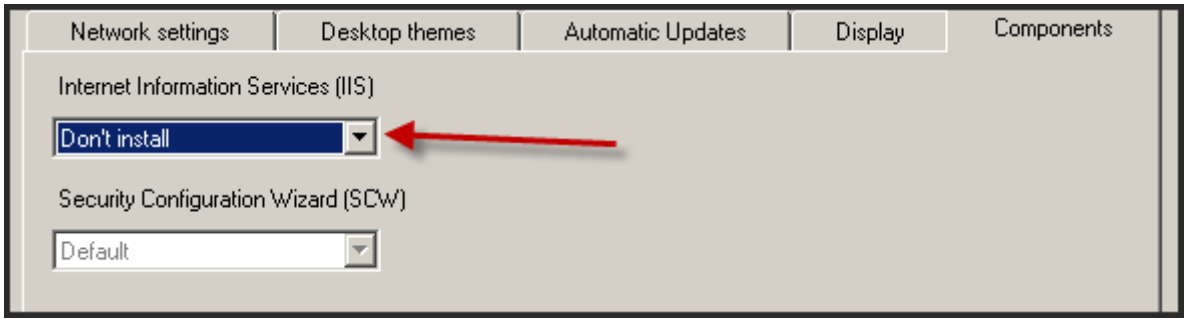

Figure 9.19

At this point you could default the rest of the tabs in the unattended portion of this configuration. But this decision is up to you as you could require more automation dependant on you environment for example you may need to create local users which you could with this time saving method.

At this point you are prompted if you'd like to apply the changes to install files which will be used to create the install media used to install your VDI session's operating system.

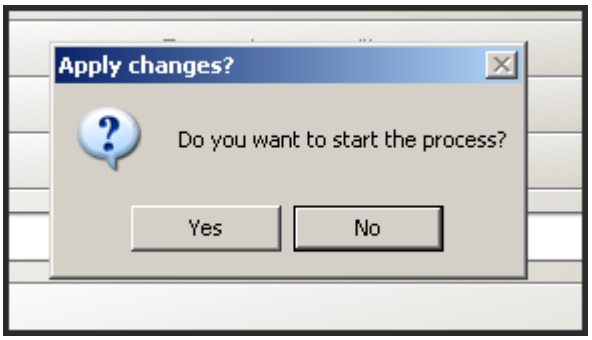

Figure 9.20

So the last task is create the install media ISO image. You do this by clicking on the "Make ISO" button then specifying a filename and location to locate your ISO image.

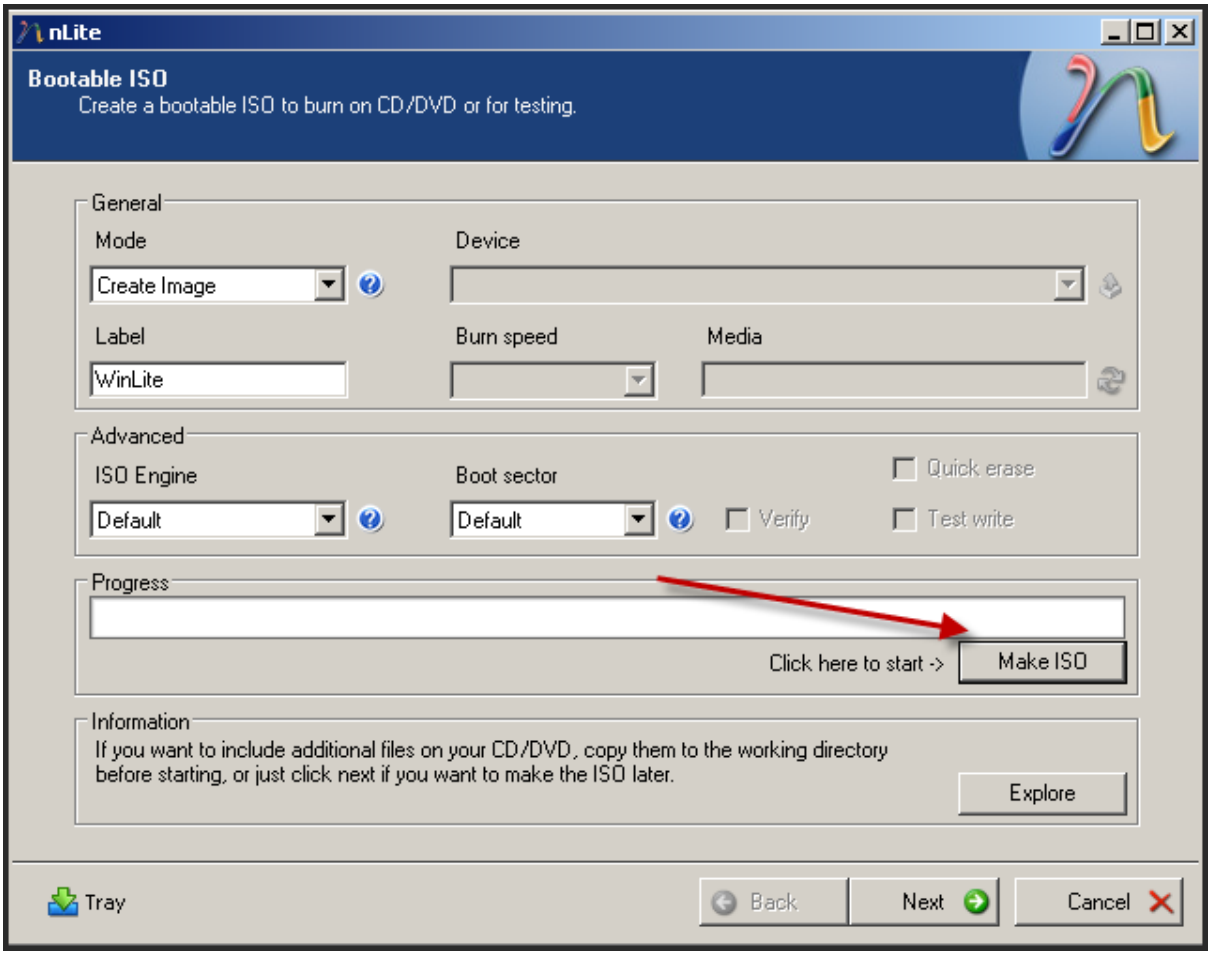

Figure 9.21

At this point you have a fully automated install media of Windows XP in a ISO file.

Enjoy Automation. ☺

Extended Automation - vLite

The object of this next section is walk through the same approach as we did with the last section expect this time we'll create an unattended Windows Vista install media. This time though we'll need use an application known as vLite opposed to nLite which was developed for Windows XP whereas vLite is for Vista.

One prerequisite of vLite is to have the Vista Automated installation kit (AIK) installed. You will be prompted for this the first time you load up vLite. Just a quick heads up the AIK is about 1.3GB in size and may take some time to download so it's time to make some coffee.

After installation you may have to search and manually copy the "wimgapi.dll" file into the folder where vLite is installed.

As before the first time you get going with vLite you will be asked for the installation media and this will then prompt you to make a local of media to work on.

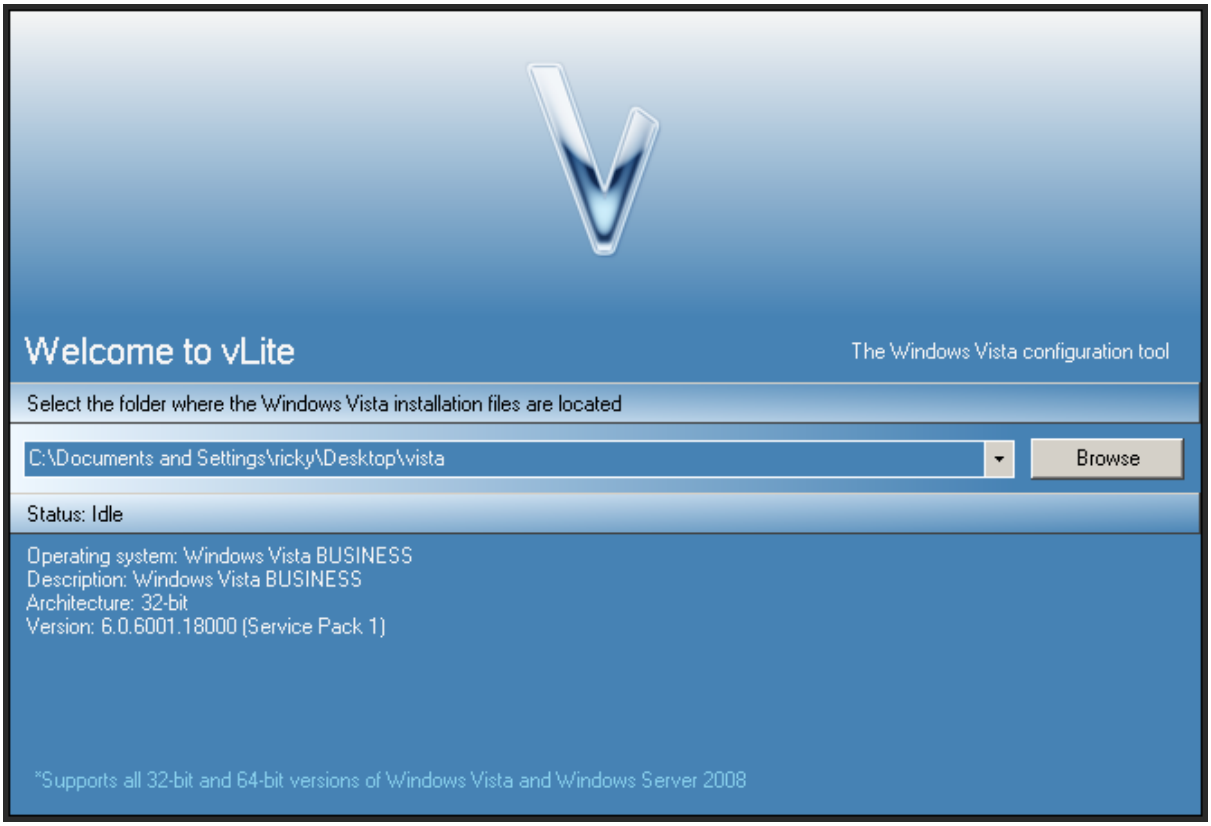

Figure 9.22

You will be prompted for a Vista version and version you choose is determined by the license choices you make.

Please note we have really discussed what version of the operating system to use with VDI and there's a good reason for that. When it comes to Microsoft Windows operating system there are some rules to follow.

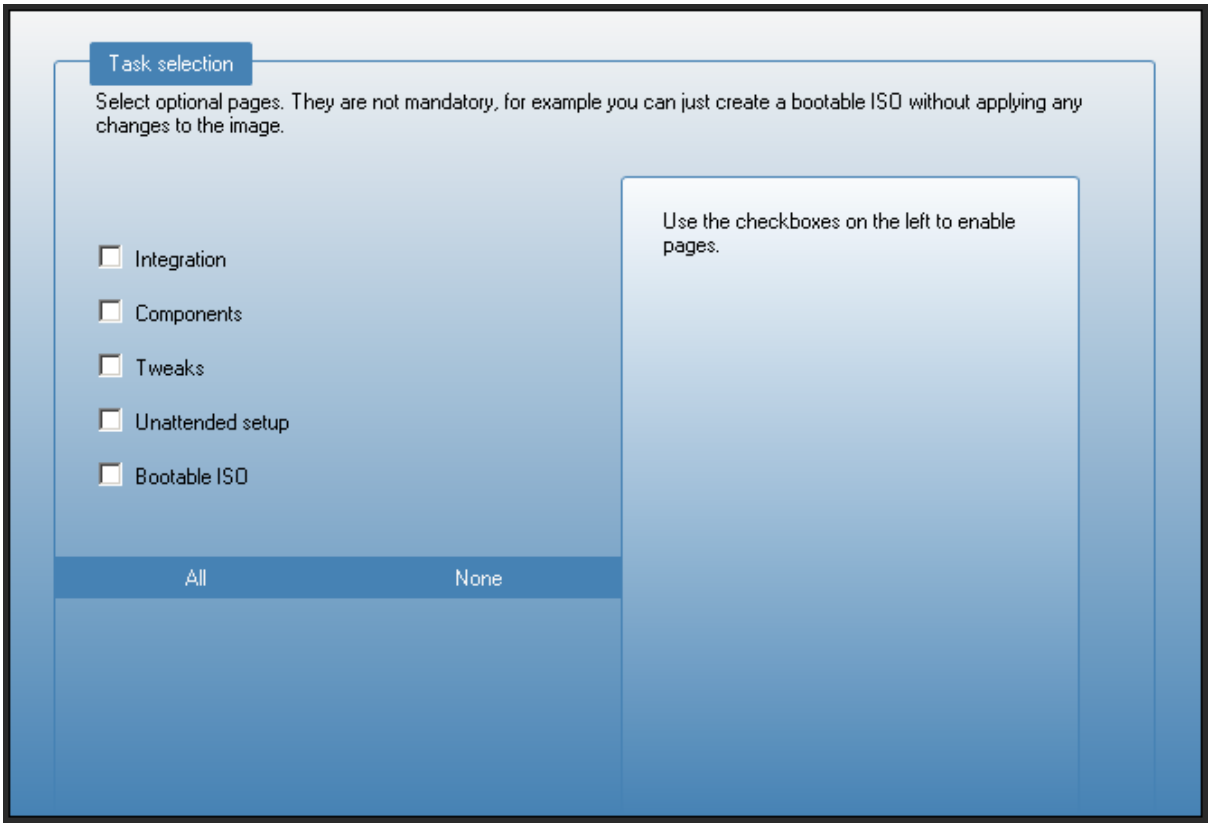

Figure 9.23

Integration:

- Service Packs: The user may slipstream current services packs to update the install media.
- Hotfixes: The user may include needed hotfixes or updates into the install media.
- Drivers: You may include hardware drivers that are required by your VDI installations.

Components: Some aspects of the windows Vista installation maybe removed to make the installation of Vista thinner. For example there may be no need to include Games with your installation or Speech support. Removing these components will reduce the foot print on disk required by the Vista installation.
Tweaks: These options allow the user to optimise the final installation with providing some performance enhancements and make choices of which services should be started to name a few.
Unattended Setup: In this section you'll configure similar options to ones we saw in the WINNT.SIF which we reviewed in earlier sections but with added parameters.
Bootable ISO: This function will be the components that aids you in creating the final ISO image or CD used for your installation of Vista.

As in the previous section we need to answer the question which we'd normally be asked at install time like specifying the Vista License serial (Product Key) and whether or not we want to be asked to activate at first logon. Now again the purpose of this exercise is automate as much of the installation as possible.

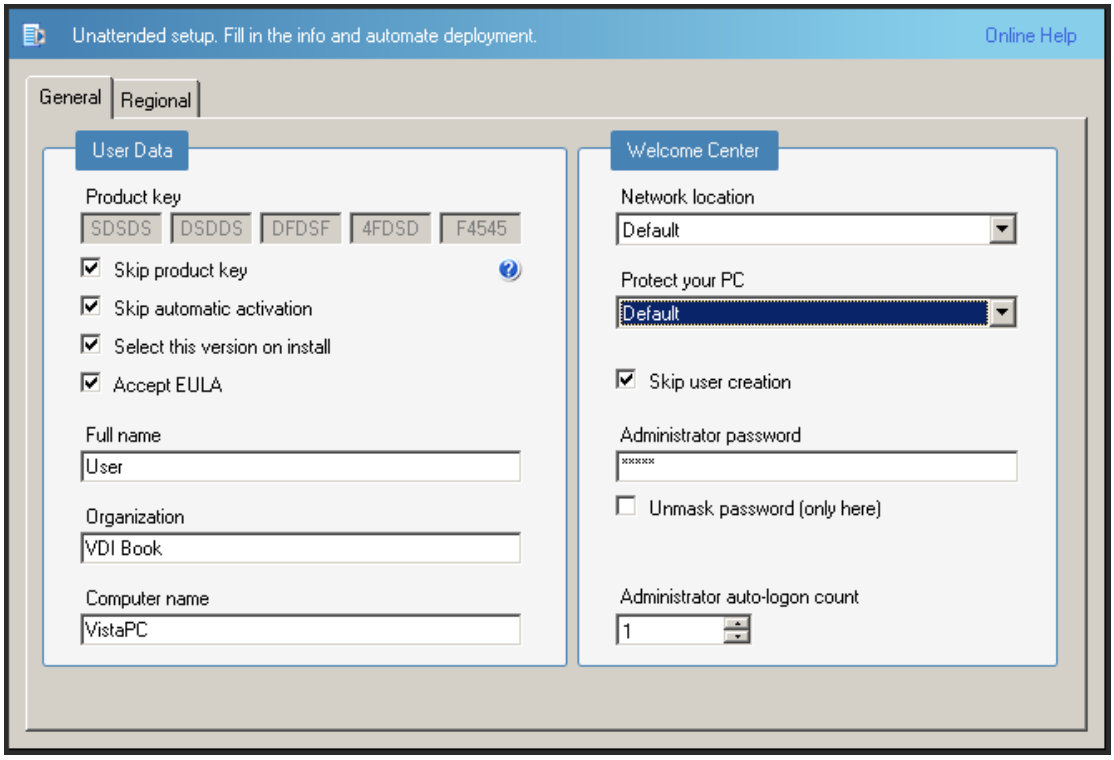

Figure 9.24

Also remember to specify your regional information.

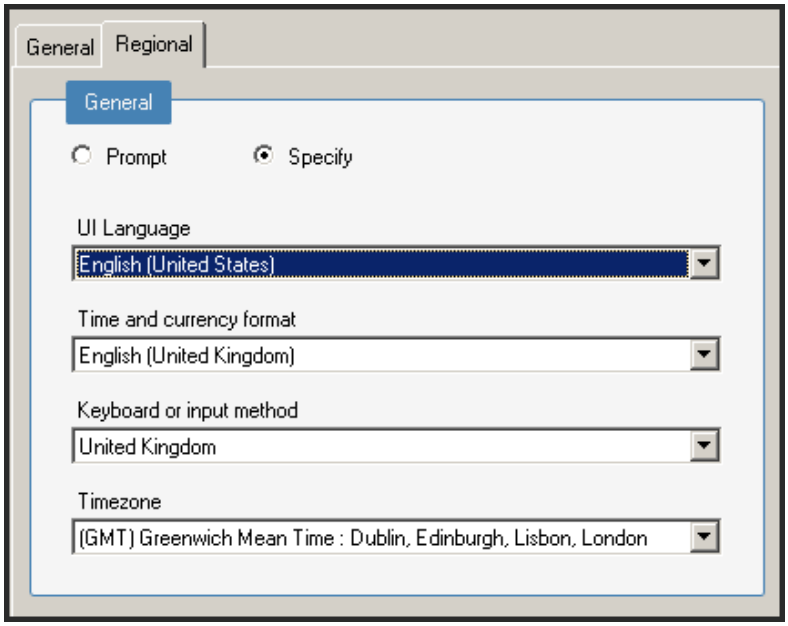

Figure 9.25

Now because I was using a media that included multiple different versions of Vista when I tried to apply the parameters I just specified I was prompted with a question. Do I want to rebuild the whole media with my parameters of just the version of Vista I specified

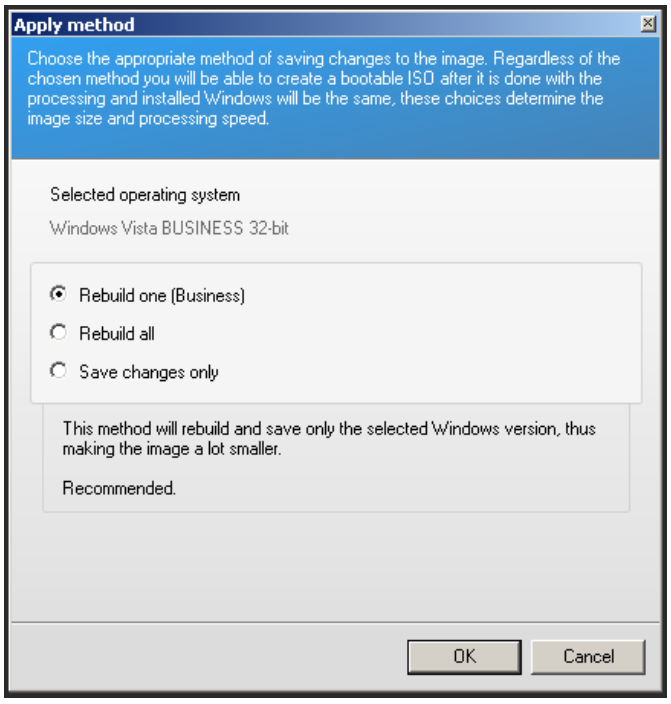

Figure 9.26

Now because the installation of Vista is simplified we don't have to put as much effort into creating this install media. For example Vista comes with drivers for the LSI adapter used in VMware virtual machines so there's no need to include one with the media.

At this point vLite will now go away and start rebuilding the install media in the folder you specified right at the beginning of this process after which we can then build an ISO image to install from.

So on the next screen we need to click on the "Make ISO" button and then specify a filename and a path to locate you install media in ISO file format.

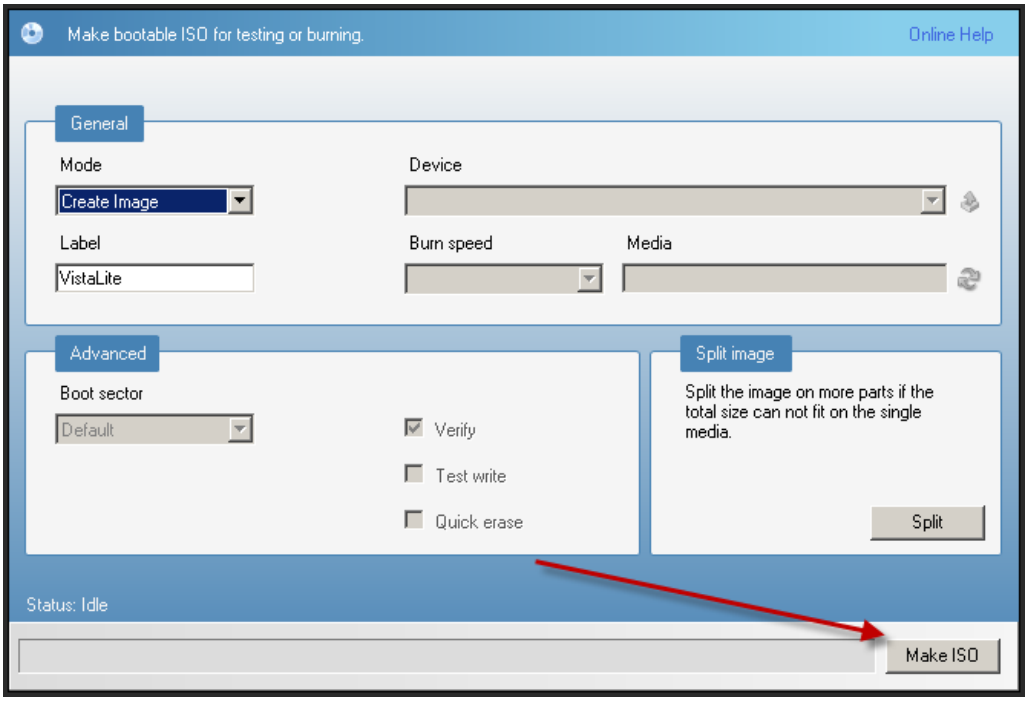

Figure 9.27

After a few minutes the fruits of your labour will be complete, a ready to install automated version of the Vista install media.