

Lab Management for the “Time” impaired

Introduction

There are many products available, both commercial and open source, that allow administrators to effectively manage Macs in lab environments.

While these products may differ in various ways, the one thing they all have in common is that each of them require a certain amount of skill and time involved to learn and deploy the system. For those administrators who are tasked with other duties or for those whose primary responsibility is not lab management, time may not be a plentiful resource.

The intent of this article is to give a fairly low cost, low time involvement solution for those who are charged with maintaining Macs in labs that doesn't require a lot of preparation time or time managing. This is just one person's opinion of just one of the many methods available to administrators for managing their Macintosh systems in lab environments. While I have yet to deploy this system in full, I plan on doing so, putting to use the concepts I describe. I will try my best to highlight any drawbacks or pitfalls I encounter as I deploy this model.

The tools we will be using are:

External firewire hard drive.

Apple's Mac OS X Server v10.4 (<http://www.apple.com/server/macosx/>)

Apple Mac OS X Client v10.4 (<http://www.apple.com/macosx/>)

Apple's Remote Desktop 2 (<http://www.apple.com/remotedesktop/>)

A must have for administrators. The remote management features of ARD are extremely useful and time saving.

NetRestore 3.1 (<http://www.bombich.com/software/netrestore.html>)

Faronics Deep Freeze Mac ARD (<http://www.faronics.com/html/DFMac.asp>)

Deep Freeze is a useful tool that allows a machine to be quickly “restored” to a pristine state upon reboot allowing you to make sure that a system is always in its original condition.

I'm not going to give an “in-depth” how-to instruction on lab management, but will give a concept for lab management that should prove useful. The documentation that is provided by the vendors I've mentioned will easily get you up and running. Applying some of the concepts that I will outline should be fairly straightforward.

This article will be categorized in the following manner.

- A. Image Building
- B. Image Deployment
- C. Remote Management

A. Image Building

Prior to building your base image, you first want to make sure that you've setup your OS X server and have met the minimum requirements for running NetBoot Services on your network.

You'll want to have a share created that will be home to your base image and that will be accessed as part of your image deployment process. I recommend that you create "restore" user that will have read-only access to this share. When creating the share in Workgroup Manager, be sure to turn off the other file service protocols that are not needed, such as FTP. Also be sure to turn off Guest Access to your share via AFP unless you have a need for it.

Creating your base image involves setting up your "perfect" environment. While everyone has a different idea of what that environment looks like, I will give you a few areas to consider as you're preparing your image.

We will begin with the assumption that you've already installed all your applications and are ready to finish your initial setup.

- 1. Apple Remote Desktop**

Make sure that before you wrap things up, you've gone into the Sharing System Preferences and have activated the Apple Remote Desktop Client and set your preferences accordingly. The Remote Management piece of this article will not work if this is not done.

- 2. Install Deep Freeze**

Make sure that you've also installed Deep Freeze on the image master. Setup a Deep freeze account you wish to use and then set Deep Freeze to boot into a "Thawed" state. The Deep Freeze documentation walks you through this process. The reason we want it to be in a "Thawed" state for deployment is that you may have post-action scripts that get run after you image process is complete. If the machine is in a "Frozen" state, then these after installation scripts may get undone by the Deep Freeze process.

- 3. Setup your environment**

Don't forget things such as the ScreenSaver, Energy Saver, Security Preferences, etc. Set all the preferences the way you want them to appear initially to the user. Be sure to run Software Update to fully patch your system prior to imaging.

- 4. Launch your installed applications**

Doing so not only allows you a chance to make sure the application is running, but it also lets you build some custom application preferences that you may wish to deploy to your user base. You can copy these items into their corresponding directories in /System/Library/User Template/English.lproj. The new user creation process of Mac OS X will use this template location to copy over an initial set of preferences to newly created users who have local, AFP, or SMB home directories. You can customize your user experience by being to give them a specific look for the Desktop, Dock, Finder Sidebar and

more. Some items such as Screensaver preferences are machine specific (based on the MAC address of the system) and are located in the ByHost directory of the user Preference directory. With a bit of help from post-action scripts available with NetRestore during the deployment phase, these items can be deployed as well giving you even further control over what your lab users see for the first time.

B. Image Deployment

Now that you've setup your base image to work from, you should be ready to make an image of your client system you wish to deploy. Boot off your external firewire drive and run NetRestore helper. The first thing you will create will be a master image of the drive on your client system (not the firewire drive you're booted from). Select your source and set your options appropriately. Save the master image to your firewire drive.

Once it is finished, you can copy that image up to your server and put it into the share you created for storing the images.

If for some reason you cannot utilize NetBoot, then you can just keep the image on your firewire drive and use it for your deployment process. Instead of continuing with the next steps in the image deployment you would be finished. Just boot your lab machines from the firewire drive and use NetRestore to put your master image onto each of the machines. Then move onto the final phase of Remote Management.

Next you want to use NetRestore Helper to create your NetInstall Set. This will be the NetBoot image your systems will boot from. It's a custom netboot image that automatically launches NetRestore allowing for a fully automated deployment. Once the NetInstall set is created, NetRestore Helper will allow you to customize its configuration. You'll want to do this using your own server settings, username/password and share location for your master image. If your planning on deploying a customized User Template, then you may want to consider using NetRestore post-action script facility to have it execute its byHost-fix.sh shell script. Also consider using the set-names.sh script to automate the computer naming of the lab machines. Use of these types of scripts is explained in the NetRestore documentation.

Now that your NetInstall set has been created, copy it up to your server and put it into the Library/NetBoot/NetBootSP0 directory. Use the Server admin application to enable the NetInstall image on the server. If you want the clients to automatically netboot that image, then also set it to be the default netboot image.

Warning If you've setup the NetInstall configuration to be fully automated, then any machine on your network that netboots will netboot that image and have its drive erased automatically. Reference the NetBoot Service documentation for examples on how to use

the netboot filters. Use of the filters allows you to only let your lab machines netboot, denying others by default.

All that is left to do is to netboot your lab machines. If you've setup the process to be fully automated, then just sit back and wait. If not, then once the NetRestore application is launched, select your image configuration and proceed to restore. Once done, reboot the computer.

C. Remote Management

Now that the master image is in place, all that is left to do is a few post-install actions. Since you activated Apple Remote Desktop access in your master image, we will use it to finish with our post-install actions using the Apple Remote Desktop Admin application

1. Binding to your Directory service.

More than likely you'll want your users to authenticate to some directory service such as Active Directory (AD) or Open Directory (OD). However, you may have a setup where your systems just automatically log in under a pre-fab account, if so, then just skip this.

Binding to Active Directory can be accomplished in a couple of ways. For those not comfortable with the command line, you can just use the Control feature of ARD to connect to the remote machine and manually setup the Directory services within the Directory Service Application.

Another option is to just use the Send Unix command of ARD to execute a script on the remote machine to perform the AD or OD binding. You would use the dsconfigad for AD binding or the dsconfigdap for OD binding. Google searches on those terms will help bring up examples for your scripts. Also check with AFP548.com and the MacEnterprise mailing list for additional help and/or example scripts. This works well for Tiger, but your experience may vary with Panther.

The nice part about the Send Unix command is that you can save these tasks for future use, saving you time.

2. Last minute changes

Now is the time to make any last minute changes. If you didn't set the computer name as a post-action script, then you want to that now. Consider using the Send Unix command to perform that action using the scutil command on the client, or you can always set it manually in the Sharing Preference of System Preferences.

3. Freeze

After all last minute changes are in place, the final step is “Freezing” the machine with Deep Freeze. This can be performed manually or via an ARD script. For manual freeze, just control the remote client and run the Deep Freeze application and set it to a frozen state upon reboot. Deep Freeze documentation explains this clearly. But the simpler approach is to use the saved ARD tasks that Deep Freeze for ARD ships with and installs on you admin station. This allows you to select your clients and execute the task automatically make the preference change for you. All that is left for you to do is reboot the machines.

Conclusion

For those of you with time constraints, I hope you find this information useful. It’s just another example of what you can do in the realm of Macintosh management and by no means is the “best” way of doing things. This was designed to give those with little time to spend in this area the basic building blocks to get their lab up and running as quickly as possible.

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