Image Creation Techniques

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Session IT821
About Us

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What will be covered

• Setting up your work environment
• Creating an image
• Preparing the image for deployment
• Testing

What isn’t covered

• Image planning (IT801)
• Image deployment methods (IT831)
• Maintaining images (IT841)
Image Creation
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• Set up your work environment
Image Creation

- Set up your work environment
- Build your perfect box
Image Creation

• Set up your work environment
• Build your perfect box
• Clean up the model
Image Creation

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• Clean up the model
• Create snapshot of model
Image Creation

• Set up your work environment
• Build your perfect box
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• Create snapshot of model
• Prepare the image for deployment
Image Creation

- Set up your work environment
- Build your perfect box
- Clean up the model
- Create snapshot of model
- Prepare the image for deployment
- Test!
Set up your work environment
Set up your work environment

- Three disk partitions or volumes:
  - Model
  - Work
  - Test
Set up your work environment

- Three disk partitions or volumes:
  - Model - use this volume to build your ideal box
  - Work
  - Test
Set up your work environment

• Three disk partitions or volumes:
  • Model
  • Work - base OS with your imaging utilities. Make sure it has space for your image.
  • Test
Set up your work environment

• Three disk partitions or volumes:
  • Model
  • Work
  • Test - use this volume to restore and test your image
Build your perfect box
Build your perfect box

- Install OS onto model volume
- Create default local accounts
- Install applications
- Configure and customize
Clean up the model
Clean up the model

- Delete .lproj, cache files, swap, logs, etc.
- Remove any extra users
- Clean up default users’ home dirs
- Don’t forget to empty the trash!
- Cleanup might be easier booted from the Work volume
Clean up the model

- Read the “man” page for asr!
- Open /Applications/Utilities/Terminal.app
- % man asr
Clean up the model

• asr manual page recommends:

# Delete the database of volumes:
rm -rf /Volumes/<imagevol>/var/db/volinfo.database

# Delete the virtual memory swap files:
rm -rf /Volumes/<imagevol>/var/vm/swap*

# If it exists, delete the sleepimage file:
rm -rf /Volumes/<imagevol>/var/vm/sleepimage

# Delete the BootCache.playlist? (10.2 - 10.2.1 systems)
rm -rf /Volumes/<imagevol>/var/db/BootCache.playlist
Clean up the model

- `asr manual page “Optional” cleanup items:

  # Configure Restore Image to start up in setup assistant:
  rm -rf /Volumes/<imagevol>/var/db/.AppleSetupDone

  # If you want to be rid of the admin account you used to set up the machine:
  nicl -raw /Volumes/<imagevol>/var/db/netinfo/local.nidb \ delete /users/<admin>
Clean up the model

• Consider capturing your final cleanup tasks as a script

• Ensure consistency!

#clean up global caches and temp data
rm -rf /Library/Caches/*
rm -rf /System/Library/Caches/*
rm -rf /Users/Shared/*
rm -f /private/etc/ssh_host*
Create snapshot of model
Create snapshot of model

What tool to use?
Create snapshot of model

What tool to use?

Disk Utility
System Image Utility
Carbon Copy Cloner
NetRestore Helper
Toast
SuperDuper
SyncProX

asr
rsync
ditto
radmind
dd

...more?
Create snapshot of model

What tool to use?

Carbon Copy Cloner

- Was the tool of choice a few years ago
- No longer recommended
- Apple’s tools today do the job very well

http://www.bombich.com/software/ccc.html
Create snapshot of model

What tool to use?

NetRestore Helper

• Creates NetBoot-NetInstall images
• Creates deployment images
• Creates NTFS images for dual-boot Macs

http://www.bombich.com/software/netrestore.html
Create snapshot of model

What tool to use?

radmind

- Not an imaging tool (manages filesystem item-by-item)
- Steep learning curve
- Powerful and flexible

http://www.radmind.org
Create snapshot of model

What tool to use?

System Image Utility

- Included with OS X Server Administration tools
- Creates NetBoot/NetInstall images
- Intended for use with a NetBoot server
Create snapshot of model

What tool to use?

NetBoot/NetInstall Documentation

- Apple’s “System Imaging and Software Update Administration” documentation
- Covers NetBoot, NetInstall, System Image Utility

http://www.apple.com/server/documentation
Create snapshot of model

What tool to use?

Disk Utility

- Builds ASR-restorable images
- Included with Mac OS X
- Recommended by 2 out of 2 presenters

/Applications/Utilities/Disk Utility.app
...so let’s use Disk Utility...
Create snapshot of model

Make sure permissions are enabled

- Boot from your Work volume
- Select ‘Model’ volume in Finder
- Get Info, “Ignore ownership...” should not be checked.
Create snapshot of model

Disk Utility

- Turn off virus scanning
- File ➔ New ➔ Disk Image from Folder
Create snapshot of model

Disk Utility

Select Model volume
Create snapshot of model

Disk Utility

• Don’t save your Model disk image on the Model volume!
• Set Image Format to “Compressed”
Create snapshot of model

Disk Utility

- This can take a while. Go get some lunch.....
Prepare the image for deployment
Prepare the image for deployment

Disk Utility

• Scan the image for restore
• Adds checksums to image to verify restored data
Prepare the image for deployment

Disk Utility

• Ready to test!

10.4.8_Intel.dmg
Test!
Testing your image, or... when clones go bad
Testing your image

Restore your image to your Test volume

- You can use Disk Utility
- or PSU Blast Image Config
- or NetRestore
- or command line “asr”!
Testing your image

What to test?

• Try your image on different hardware
• Desktop vs portable (Energy Saver settings, Locations, Airport, 802.1x)
• PPC vs Intel
• non-admin user accounts
• Application licensing/registration issues
• Common peripherals
Testing your image

Fixing minor image issues

• **Whoops!** I forgot something in my image. Do I have to start over?

• **Maybe not...**

• **While testing, can save images as read-write and make simple mods**
Testing your image

Fixing minor image issues

- Convert image to read-write
- Mount the image
- Make your changes
- Convert back to compressed
- Don’t forget to rescan for restore
Fixing bigger image issues

- Reboot from your Model volume
- Make your changes
- Clean up your model
- Create snapshot of model
- Test!

(does this sound familiar?)
Tips

- Keep images backed up! Save to one large external, mirrored FireWire HD, etc.

- Make images of clean OS X installs, saves time with new image creation.

- Compressed images will *restore* quicker than non-compressed images!
Q&A / Discussion
What’s next?

- IT831: Image Deployment Methodologies
  1:00 pm - 2:30 pm today

- IT841: Maintaining Order - Effective Image Maintenance Techniques
  3:30 pm - 5:00 pm today