# Image Creation Techniques

Macworld SF 2007 Session IT821



#### About Us

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# Image Creation

# 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!



• Three disk partitions or volumes:

- Model
- Work
- Test

• Three disk partitions or volumes:

- Model use this volume to build your ideal box
- Work

#### • Test



• Three disk partitions or volumes:

Model

 Work - base OS with your imaging utilities. Make sure it has space for your image.





• 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

- 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



- Read the "man" page for asr!
  - Open /Applications/Utilities/Terminal.app
  - % man asr

	Terminal — grotty — 80x25	
ASR(8)	BSD System Manager's Manual	ASR(8)
asr Appl	e Software Restore; copy volumes (e.g. fro	m disk images)
asr server asr restore	<ul> <li>-source source —target target [options]</li> <li>-source source —config configuration [options]</li> <li>-source asr://source —file file [options]</li> <li>an —source [options] image</li> </ul>	tions]
multicast n	ntly copies disk images onto volumes, eit etwork stream. <b>asr</b> can also accurately c an intermediate disk image.	
on an HTTP the filesys indicate a	t form, <b>asr</b> copies <u>source</u> (usually a disk server) to <u>target</u> . <u>source</u> can be specifie tem, or an http or https URL. It can also multicast source. <b>asr</b> can also be invoked as a multicast server. In its third form	d using a path in be an asr:// URL to with its second

#### • 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

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>

- 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\*

What tool to use?

Disk Utility asr rsync ditto SuperDuper Toast

SyncProX Carbon Copy Cloner NetRestore Helper radmind dd ...more?



What tool to use?



Carbon Copy Cloner

- Was the tool of choice a few years ago
- No longer recommended for 10.4
- Apple's tools today do the job very well

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

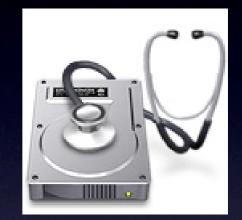
#### What tool to use?



#### radmind

- Not an imaging tool (manages filesystem item-by-item)
- Steep learning curve Powerful and flexible http://www.radmind.org

What tool to use? Disk Utility



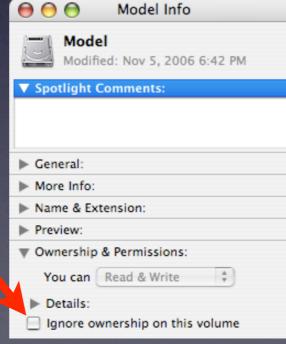
- Builds ASR-restorable images
- Included with Mac OS X
- Recommended by 2 out of 2 presenters
   /Applications/Utilities/Disk Utility.app

#### ...so let's use Disk Utility...



#### Make sure permissions are enabled

- Boot from your Work volume
- Select 'Model' volume in Finder
- Get Info, "Ignore ownership..."
   should not be checked.



Ś	Finder	File	Edit	View	Go	Wind	ow	Help
		Ner Ner Op	w Folde w Smai w Burn en	er Wind er rt Folde Folder	r	☆第N て第N 策O		
		Prin	se Win			∎ ¥W		
		Get	t Info			<del>ا</del> ۳		
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		Fin	d			ЖF		
		Col ×	lor Lab	el: • • •	• •			



#### Disk Utility

- Turn off virus scanning
- File → New → Disk Image from Folder

🧯 Disk Utility	File Edit	Images	Window	Help
000	New Windo	ow	ЖN	Utility
	New		•	Blank Disk Image
Burn New Image Com	Open Disk Close	Image	O%∑ ₩W	Disk Image from Folder Disk Image from (Select a Device)
	Get Info		жı	5
93.2 GB FUJITSU MI Model Work	Mount Eject Enable Jou	rnaling	∖⊂₩M ₩E ₩J	

#### Disk Utility

#### Select Model volume

000	Select Folder to Image	
	Model	🗘 🔍 search
<ul> <li>iDisk</li> <li>Network</li> <li>Model</li> <li>Work</li> <li>Vork</li> <li>Test</li> <li>gneagle</li> <li>gneagle</li> <li>Desktop</li> <li>Applications</li> <li>Documents</li> <li>Movies</li> <li>Movies</li> <li>Music</li> <li>Pictures</li> <li>sketch</li> </ul>	Name   Applications   apps   apps   adata   apos   apos <tr< th=""><th>Date Modified 11/3/06, 10:47 AM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 10/26/06, 10:01 AM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 11/3/06, 10:47 AM 11/3/06, 10:47 AM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 8/15/06, 3:40 PM 3/23/06, 12:52 PM 10/3/06, 9:19 AM Yesterday, 3:49 PM</th></tr<>	Date Modified 11/3/06, 10:47 AM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 10/26/06, 10:01 AM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 11/3/06, 10:47 AM 11/3/06, 10:47 AM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 3/23/06, 12:52 PM 8/15/06, 3:40 PM 3/23/06, 12:52 PM 10/3/06, 9:19 AM Yesterday, 3:49 PM
		Cancer Inage



#### Disk Utility

- Don't save your Model disk image on the Model volume!
- Set Image Format to "Compressed"

Ne	w Image From Folde	er
Save As: 10.4.8_In	tel.dmg	
Where: [ Work		•
Image Format	compressed	•
Encryption:	none	•
	Ca	ncel Save



#### Disk Utility

• This can take a while. Go get some lunch.....

000	Disk Utility Progress			
Creating Imag	e "10.4.8_Intel.dmg"	Cancel		
Creating	$\bigcirc \bigcirc \bigcirc$	Disk Utility Progress	s	
	Creating Image ' Copying	"10.4.8_Intel.dmg"	Cancel Disk Utility Progress	
		Creating Im Copying	age "10.4.8_Intel.dmg"	Cancel

# Prepare the image for deployment

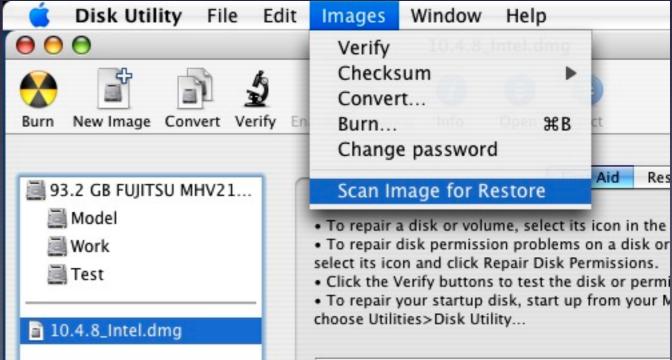
#### Prepare the image for deployment



#### Disk Utility

• Scan the image for restore

 Adds checksums to image to verify restored data
 Disk Utility File Edit Images



#### Prepare the image for deployment



#### Disk Utility

• Ready to test!



10.4.8\_Intel.dmg





#### Restore your image to your Test volume

• You can use Disk Utility



- or PSU Blast Image Config
- or NetRestore



• or command line "asr" !



#### 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





#### 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

	Convert Image	
Save As: 10.4.8_In	tel	
Where: 📁 Share	d	<b>;</b>
Incore Format	Current truncites	
Image Format Encryption:	read/write	



#### 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

### Continue the Learning . . .

- **IT831**: Image Deployment Methodologies
  - Thursday @ 1:00 pm 2:30 pm
- **IT841**: Maintaining Order Effective Image Maintenance Techniques
  - Thursday @ 3:30 pm 5:00 pm