Welcome

To Advance through Presentation
Use Page Up and Page Down Keys


# The NetBoot Macintosh and You

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# Agenda

- What is NetBoot
- How NetBoot works
- How NetBoot affects you

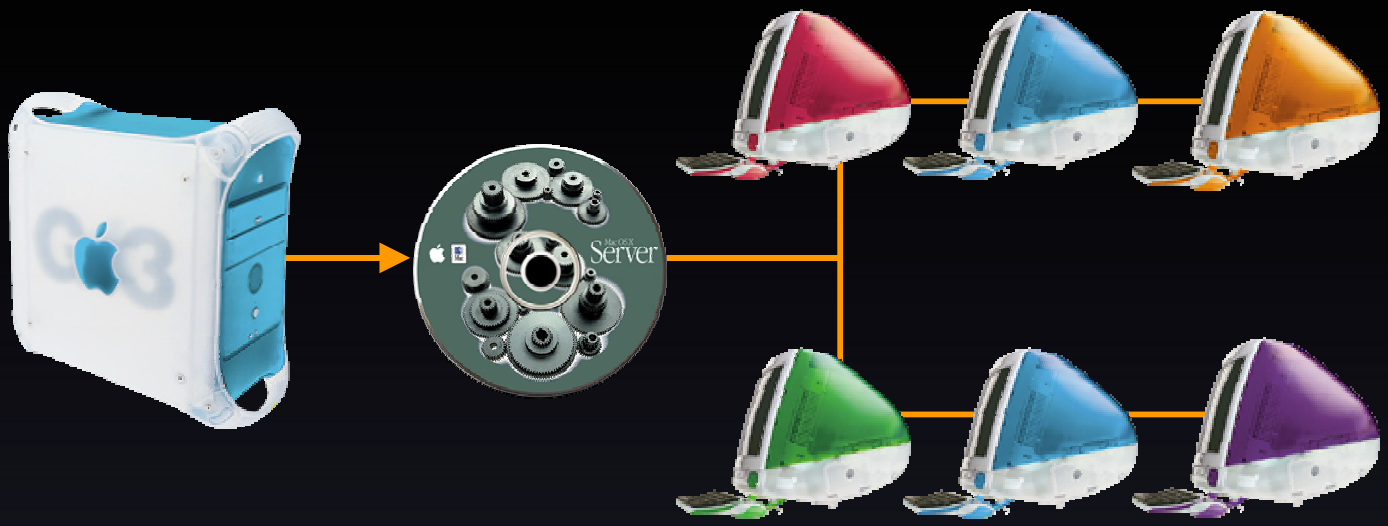
# What Is a NetBoot Macintosh?

- It's a Macintosh, running Mac OS 8.5.1
- iMac, Blue and White Desktop G3, or 1999 G3 PowerBook and all later computers
- Startup disk contents are provided by a server, instead of the local hard drive

# What's Different?

- Users log in and out
- Changes made to the 'local' network drives do not persist across reboots
- Bad things happen if the server crashes

# How Does It Work?



# NetBoot Components

- Mac OS X Server is the server
- Clients are ‘recent’ Macintoshes which use ROM in RAM technology with at least 32M of memory
- Recommend 100Mbit Ethernet; works acceptably from client side at 10Mbit

# Mac OS X Server

- AppleShare IP server
  - Provides file server capabilities and ‘local’ drives to clients
- Macintosh Manager server
  - Handles log in and out, saves user preferences and documents
- BootP server/tftp server
  - Assigns and distributes IP addresses

# The NetBoot Process

- Mac OS X Server is running
  - BootP, AppleShare, tftp, and Macintosh Manager servers

# The NetBoot Process

- Macintosh client is set up to NetBoot

# NetBoot Process (Cont.)

- Client Macintosh is started up
  - Requests an IP address with BootP, and asks for NetBoot info
- Server looks up client based on physical Ethernet address
  - Retrieves or assigns client an IP address
  - Returns information about network disks

# NetBoot Process (Cont.)

- Client receives BootP response
  - Configures IP protocol stack
  - Requests “Mac OS ROM” file from server via tftp protocol
- Mac OS ROM is loaded into memory, made read only, and begins executing

# NetBoot Process (Cont.)

- Mac OS ROM opens AFP connection to server specified in BootP information and mounts DiskCopy image files from server as block device drives
- Mac OS boots normally from this disk
    - Open Transport starts up, and requests IP address via BootP. The BootP server resends the same address the system is already using and everyone is happy

# NetBoot Process (Cont.)

- Once the system loads all extensions, “Macintosh Manager” starts instead of the Finder and asks the user to log in
- A user logs in
- Macintosh Manager copies any preferences, appearance settings, etc., for this user down to this computer

# NetBooting, Even More

- The user actually uses the computer
  - StandardFile/Navigation Services will default user to open and save documents from the user's fileserver documents folder
- Files saved to the 'local' network drives will not persist after the computer reboots

# NetBoot Process, Fin

- Eventually, the user logs out
- Macintosh Manager copies any changed preferences back up to the server


# Demo

# Administration

- Administration privileges are necessary to make changes to the boot images
  - Updating or installing software, extensions, deleting items, etc.
- Macintosh Manager Application is used to create users, groups, assign privileges, etc.
- Web based configuration and administration of AppleShare server

# Administration (Cont.)

- Mac OS X control panels for changing network topology
- Mac OS X Setup Assistant eases first time configuration
- NetInfo database stores configuration information

# Client Side Implications

- Users log in and out
  - As they log in, their preferences and setup are copied down from the server onto ‘this’ computer
  - At logout, changed preferences are copied back up to the server
    - With the caveat that the system administrator controls what is saved and restored

# Client Side Implications

- The computer is already booted by the time a user logs in
    - Consistent system configurations
- Documents should be saved on the server
- Server-based data storage is better than local data storage
    - IMAP is better than POP3, for example

# Client Side Implications

- When a user logs out, the Finder and all applications quit
    - Background only applications do not quit
- Some users only access a “Panels” environment
- A NetBooted Macintosh may not have any local disk media

# Client Directions

- Preferences and user data will reside on server, and will not be copied on login/logout
- DHCP instead of BootP
- More security built into Mac OS
- Other authentication methods

# Server Directions

- DHCP instead of BootP
- Pure IP solution (no AppleTalk required)
- Gigabit interface
- Network Address Translation (NAT) support

# Product Markets

- NetBoot is useful in environments where centralized control is desired
  - Schools
  - Cyber-cafés
  - Open labs
  - Small businesses
- Not useful over slow links

# Being NetBoot Friendly

- Make sure you use FindFolder() to locate the Preferences and other folders
  - Use both the vRefNum and dirID that you get back
- If not necessary, do not put shared libraries in the Extensions folder
  - Leave them in the folder with your application

# More Things to Do

- Don’t write anything back to your application or application’s folder
    - Put serial numbers, registration information, etc. in the Preferences folder if appropriate
- Deal gracefully with locked media, including running from a locked disk or server volume

# Even More Things

- Be flexible about where your application data is located
- Lock files to insure against data corruption
- Be prepared to educate users about your application licensing and multi-launch issues

# Real Geeky Implications

- Use Macsbug 6.5.6a7 or later
- Determining if you are netbooted

```
Boolean IsSystemNetBooted ()
{ long value;
    if ( (Gestalt(gestaltSplitOSAttr, & value )== noErr)
          && ( value & ( 1 <<
              gestaltSplitOSBootDriveIsNetworkVolume) ) )
        return true;
    return false;
}
```

# Technical Resources

- Mac OS X Server information
  - http://www.apple.com/macosx/server/
- Making your application NetBoot friendly technical note
  - http://developer.apple.com/technotes/tn/tn1151.html


# Q&A

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