

Q&A

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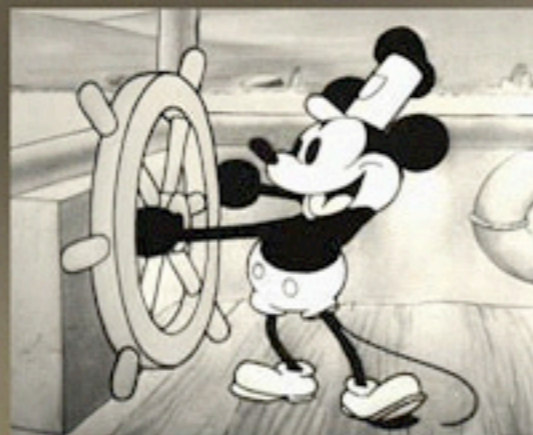
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IT803

Managing OS X Clients
with or without Open
Directory



WALT DISNEY
ANIMATION STUDIOS

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Senior Systems Engineer

Client management

Client management

Client management

- Software installation

Client management

- Software installation
- Hardware inventory

Client management

- Software installation
- Hardware inventory
- Application/OS setup/configuration

Client management

- Software installation
- Hardware inventory
- Application/OS setup/configuration
- Policy enforcement

Client management

- Software installation
- Hardware inventory
- Application/OS setup/configuration
- Policy enforcement

Configuration management

- Application/OS setup/configuration
- Policy enforcement

Configuration management

Examples:

- Enforcing password-protected screensaver
- Disabling Software Update
- Energy Saver settings
- Office 2008 save formats
- etc.



Configuration management

How?

- Manually
- Scripts
- In the image
- MCX

Manual Configuration



- Technician manually sets up things for the user at deployment
- Later changes = more tech visits
- Technicians sometimes forget things = more tech visits
- Users may change things = more tech visits...

Configuration in the image



Can work for a subset of system-wide settings, like:

- Energy Saver (desktop vs laptop)
- Login Window settings
- Network Settings (sometimes)

Configuration in the image



- Hard to change later without reimaging
- User-level settings difficult
- User might change things - how do you set them back?

Configuration in the image



Problems

- Network configuration in an image depends on available network hardware
- Energy Saver settings different for laptops and desktops

Configuration in the image

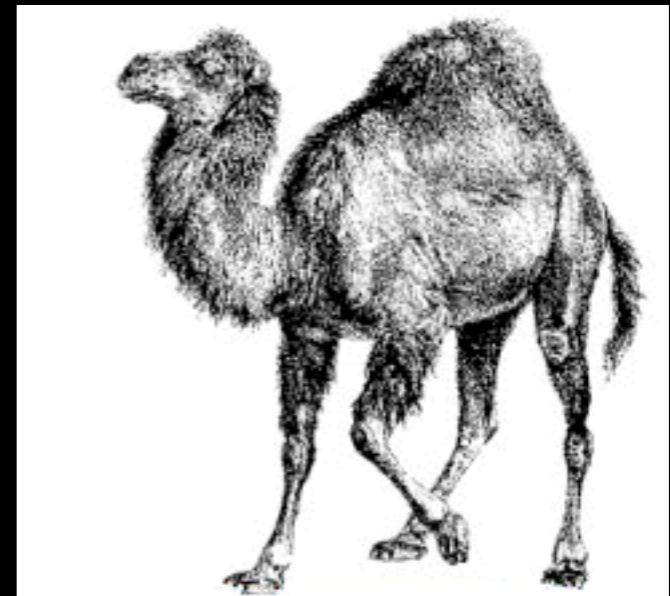


Problems

- Integrating these changes into your image build process

Configuration scripts

- Traditional UNIX-y method
- Scripts that run at:
 - startup
 - login
 - periodically



Configuration scripts

Scripts typically use:

- `/usr/bin/defaults`
- `/usr/sbin/systemsetup`
- `/usr/sbin/networksetup`
- or other command-line tools to make desired settings changes

Configuration scripts

- Can run at every startup or login to reset things back to approved state
- Require scripting knowledge as well as admin detective work

Configuration scripts

Script example:

```
#!/bin/sh
# laptop password enforcer
# this script, designed to run at logon, enforces:
# the Security prefs pane setting "Require password to wake this computer from sleep"
# but first, uses system_profiler to attempt to see if we're running on a laptop

IS_LAPTOP=`/usr/sbin/system_profiler SPHardwareDataType | grep "Model" | grep "Book"`

if [ "$IS_LAPTOP" != "" ]; then
    /usr/bin/defaults -currentHost write com.apple.screensaver askForPassword -int 1
fi
```

Configuration scripts

Problems to solve:

- Figuring out where the setting is stored
- Writing the script
- Getting the script on each machine
- Getting it to run in the appropriate context (as root, as current user)
- Getting it to run at the appropriate times

Configuration scripts

Another problem:

- GUI not updated to match the fact that you are managing an item; users may get confused or frustrated that their changes keep getting overwritten



MCX

- Managed Client for OS X
- aka:
 - Managed Client
 - Workgroup Manager
 - Policy



MCX

What can I manage via MCX?

- Available applications
- Classic
- Dock settings
- Energy Saver
- Finder settings
- Login options
- Media Access
- Mobile accounts
- Network settings
- Parental Controls
- Printing
- Software Update
- Available System Prefs
- Time Machine
- Universal Access
- more....



MCX





What can I manage via MCX?

- **Some** third party apps



MCX





Basic MCX concepts

- You can set managed preferences for:
 -  Users
 -  Groups (of users)
 -  Computers
 -  Computer Groups



MCX

Basic MCX concepts

- MCX precedence:
 -  Users
 -  Computers
 -  Computer Groups
 -  Groups (of users)



MCX

Basic MCX concepts

- You can manage preferences:
 - Never
 - Once
 - Often
 - Always



MCX

Basic MCX concepts

- You can manage preferences:
 - Once - preference is set once, but the user can then change. Useful for initial defaults



MCX

Basic MCX concepts

- You can manage preferences:
 - Often - preference is set at login. User can change, but it will be reset at the next login.



MCX

Basic MCX concepts

- You can manage preferences:
 - Always - preference is set and “locked” so the user cannot change it. Updates GUI.
Poor third-party support - use “often” instead.



MCX

Basic MCX concepts

- MCX data is stored in a directory service



MCX

Why use MCX?

- Supported by Apple
- Workgroup Manager!
- Easier to do many things; only way to do some things!



MCX

Why use MCX?

- If you can manage it with `defaults`, you can manage it with MCX
- Used by lots of other OS X admins
- User GUI (sometimes) updated to reflect settings



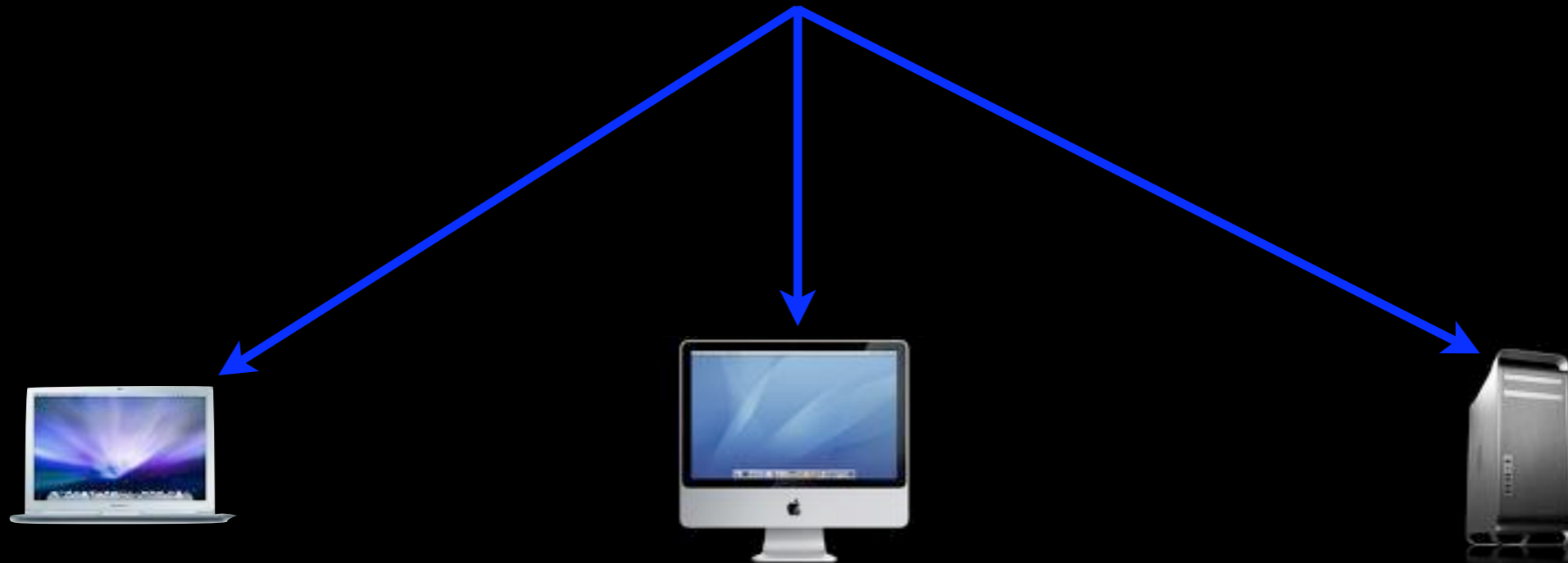
MCX

Implementation scenarios



Implementations

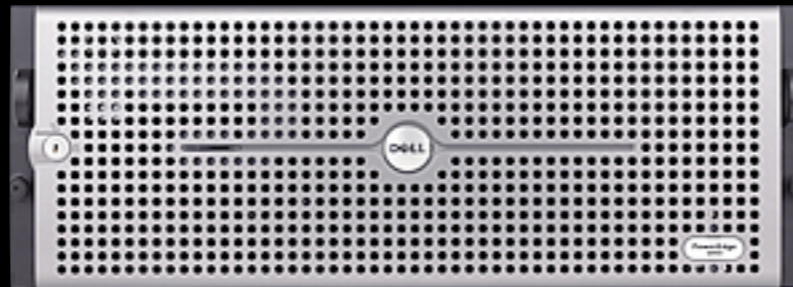
Open Directory





Implementations

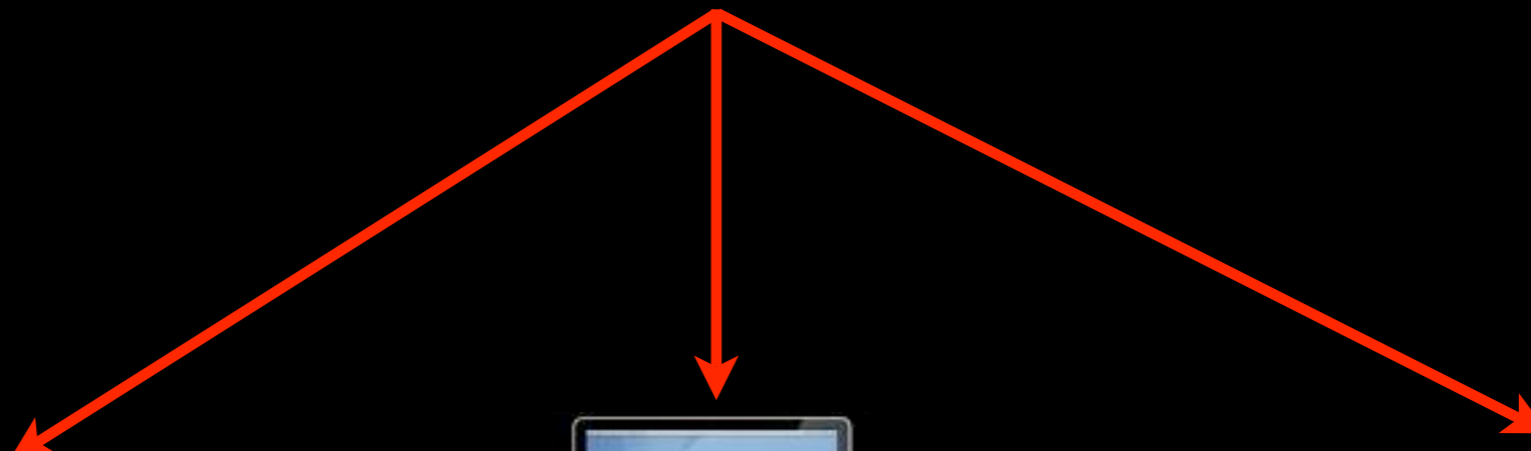
Active Directory
with Apple
schema extension





Implementations

LDAPv3
with Apple
schema extension



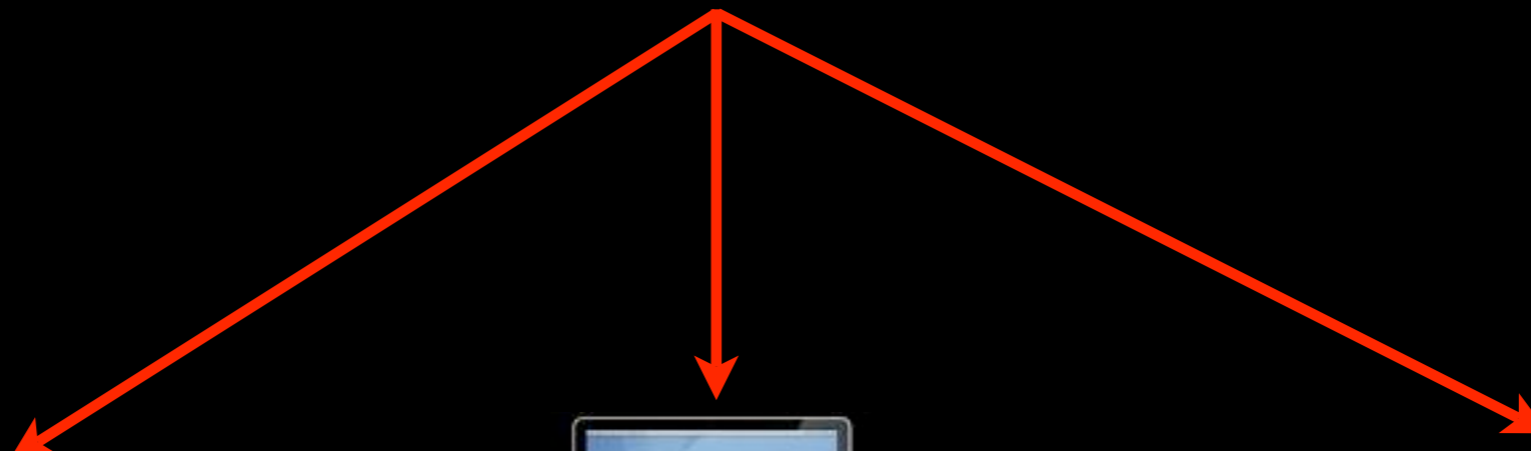


Implementations

LDAPv3
with Apple
schema extension



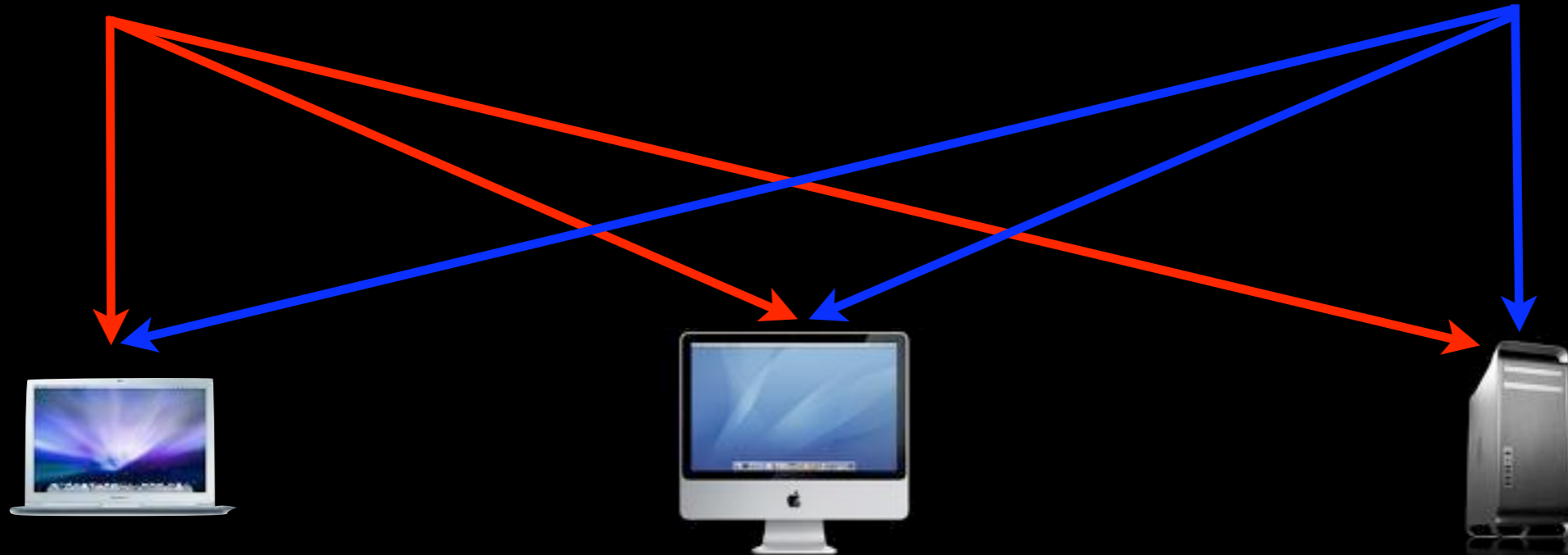
OpenLDAP
Red Hat DS
Novell eDirectory





Implementations

Dual Directory

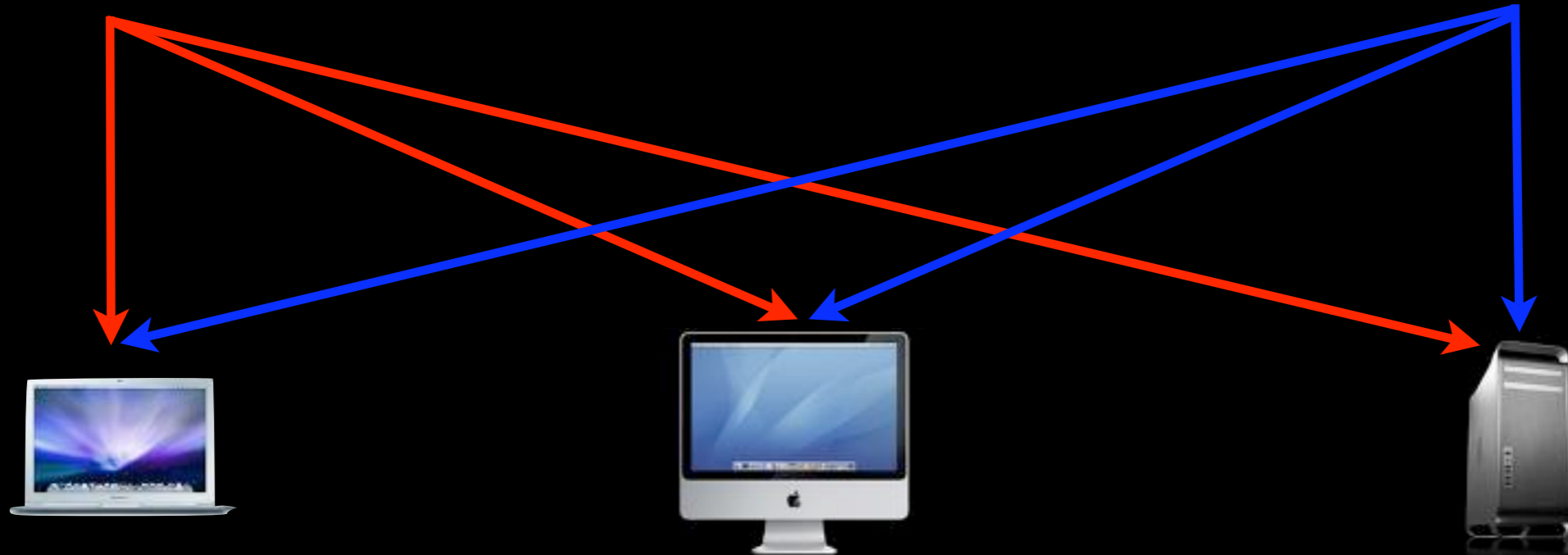




Implementations



Dual Directory
aka
Magic Triangle

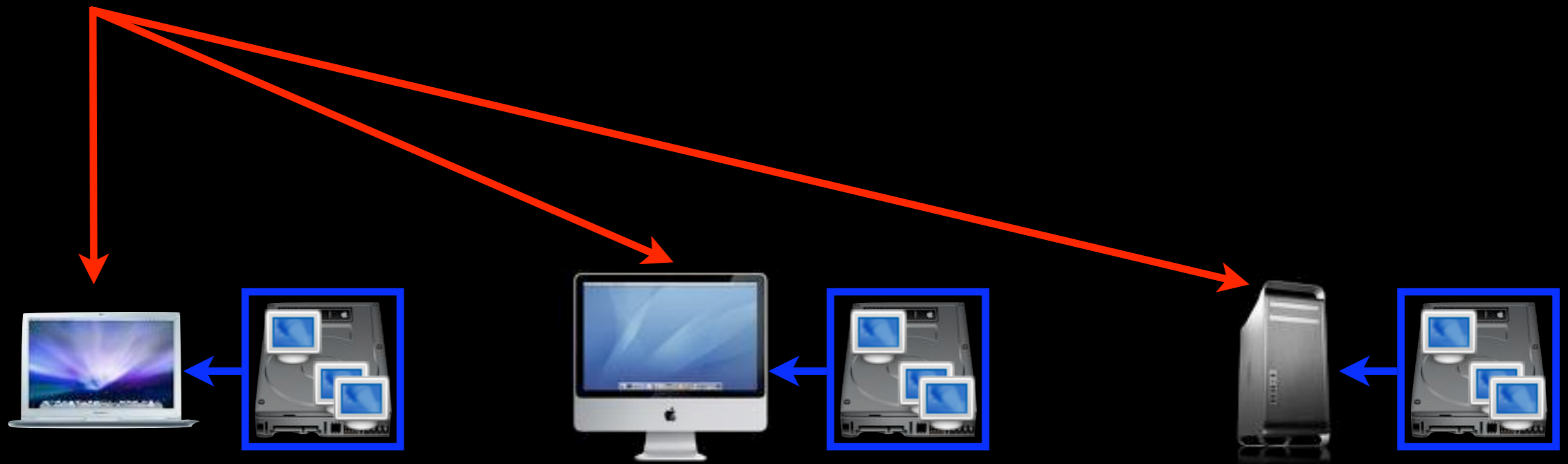




Implementations



Dual Directory

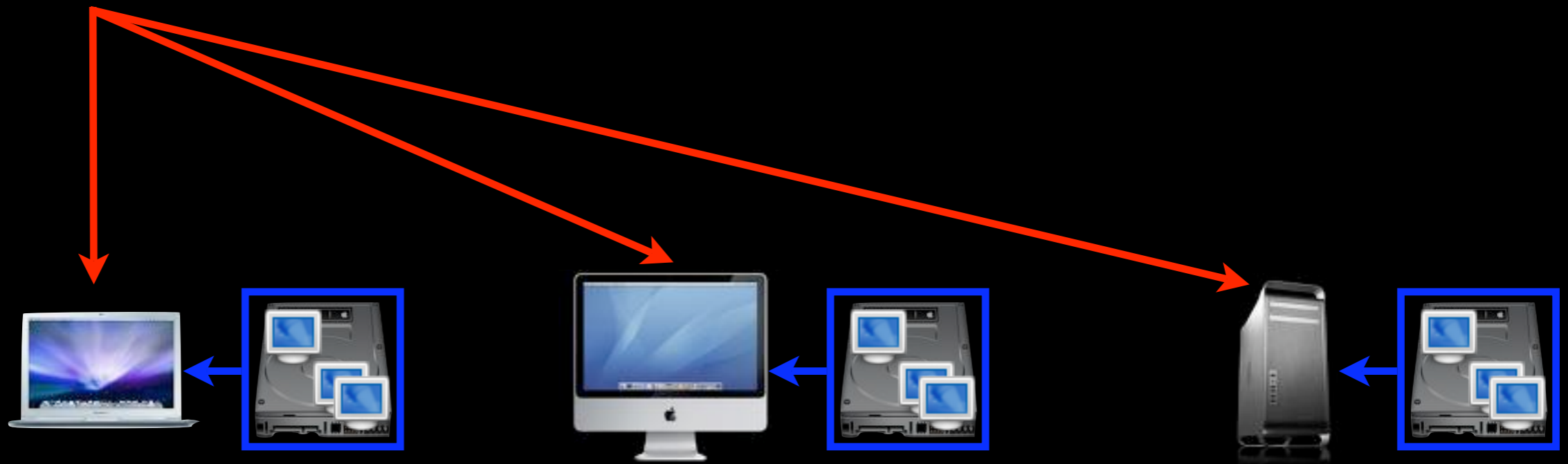




Implementations



Dual Directory
with
Local MCX





Implementations

No Network Directory





Implementations

No Network Directory
with
Local MCX





Local MCX



Local MCX

Leopard requirements for local MCX:

- A way to copy files onto each workstation:
- Apple Remote Desktop, FileWave, radmind, Casper, LanREV, rsync, scp...



Local MCX

- Let's get started...



Local MCX


Workgroup Manager

[http://support.apple.com/downloads/
Server_Admin_Tools_10_5_5](http://support.apple.com/downloads/Server_Admin_Tools_10_5_5)



Local MCX

Workgroup Manager Connect

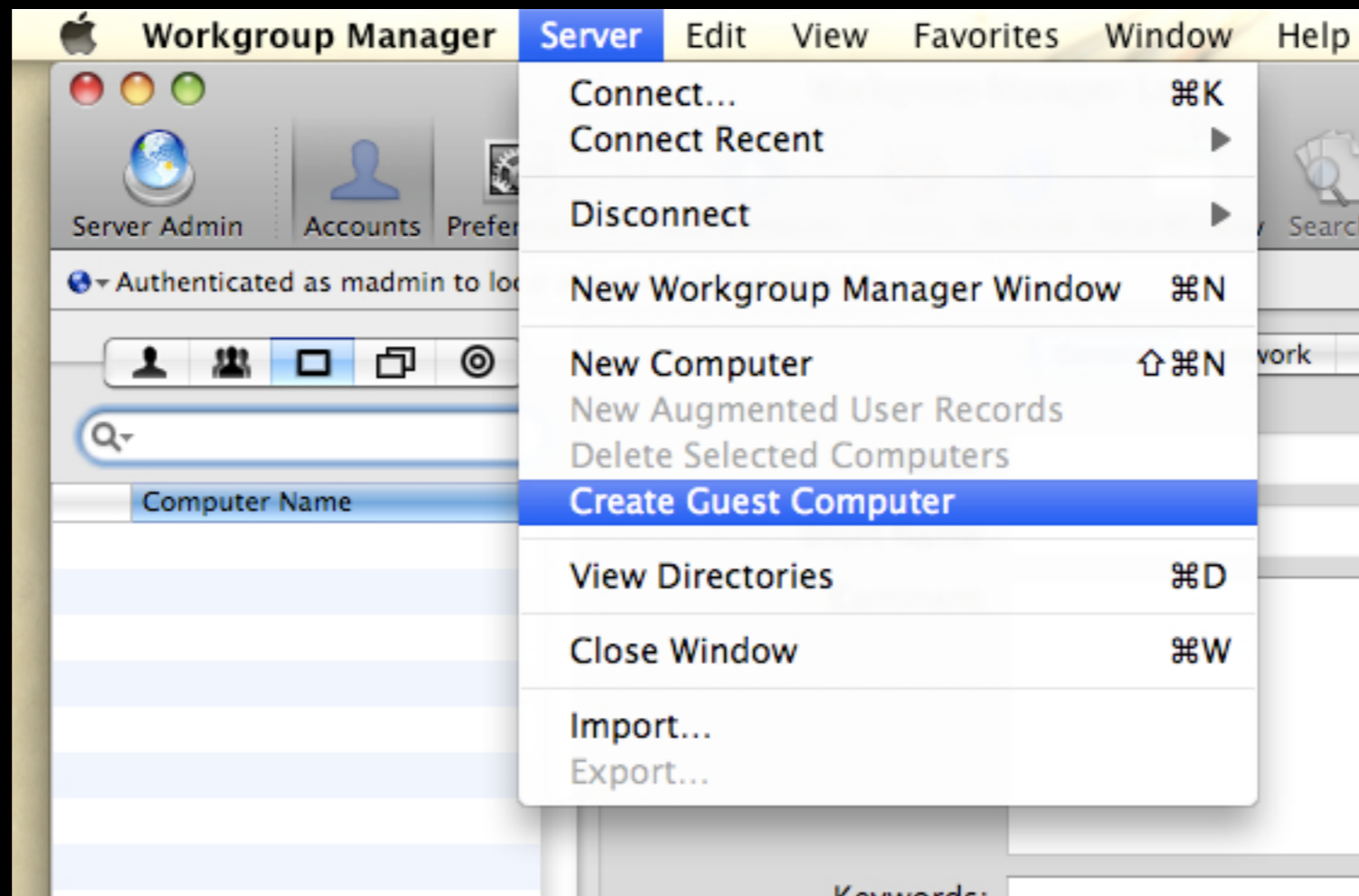
 Address: localhost

User Name: localadmin

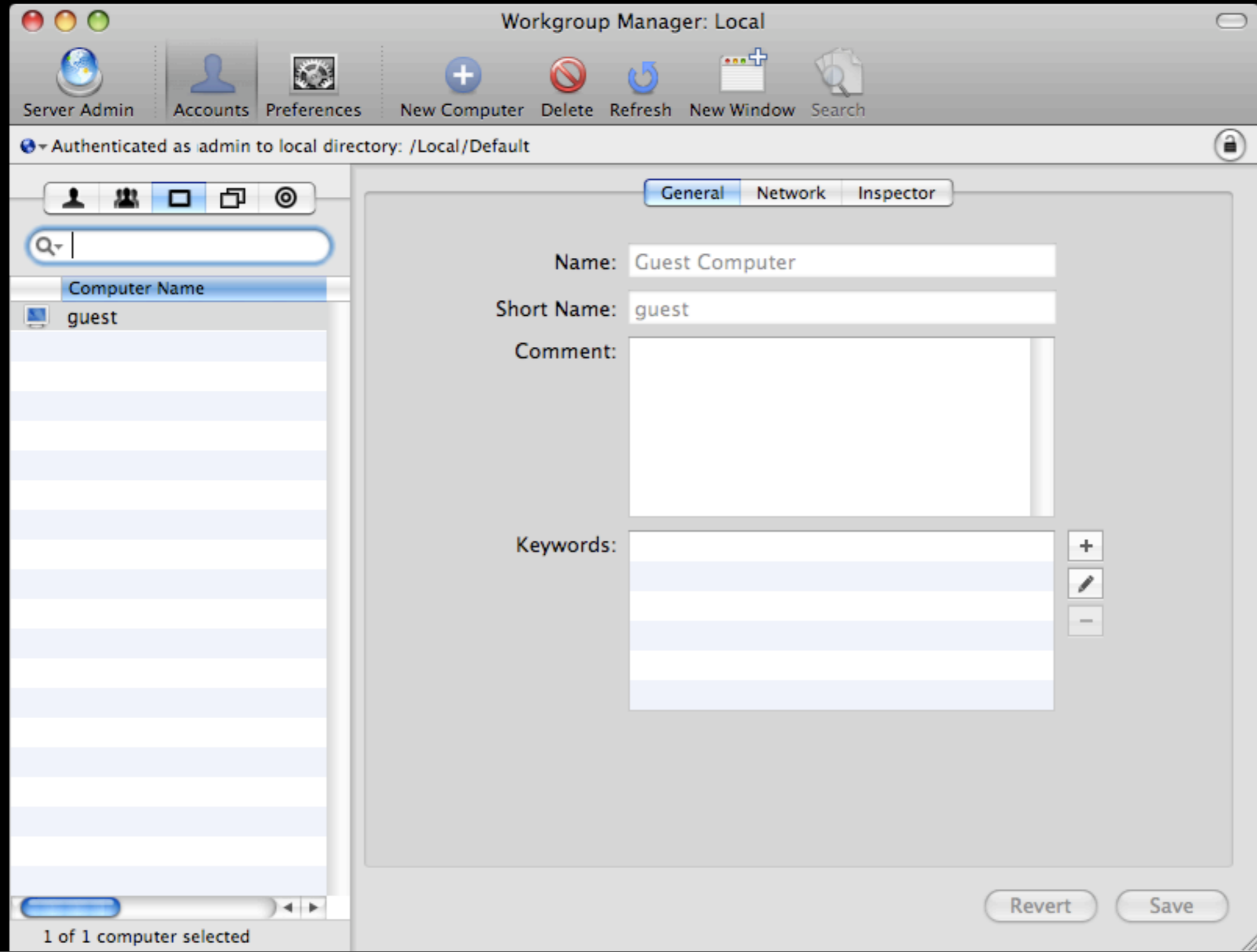
Password:
 Remember this password in my keychain



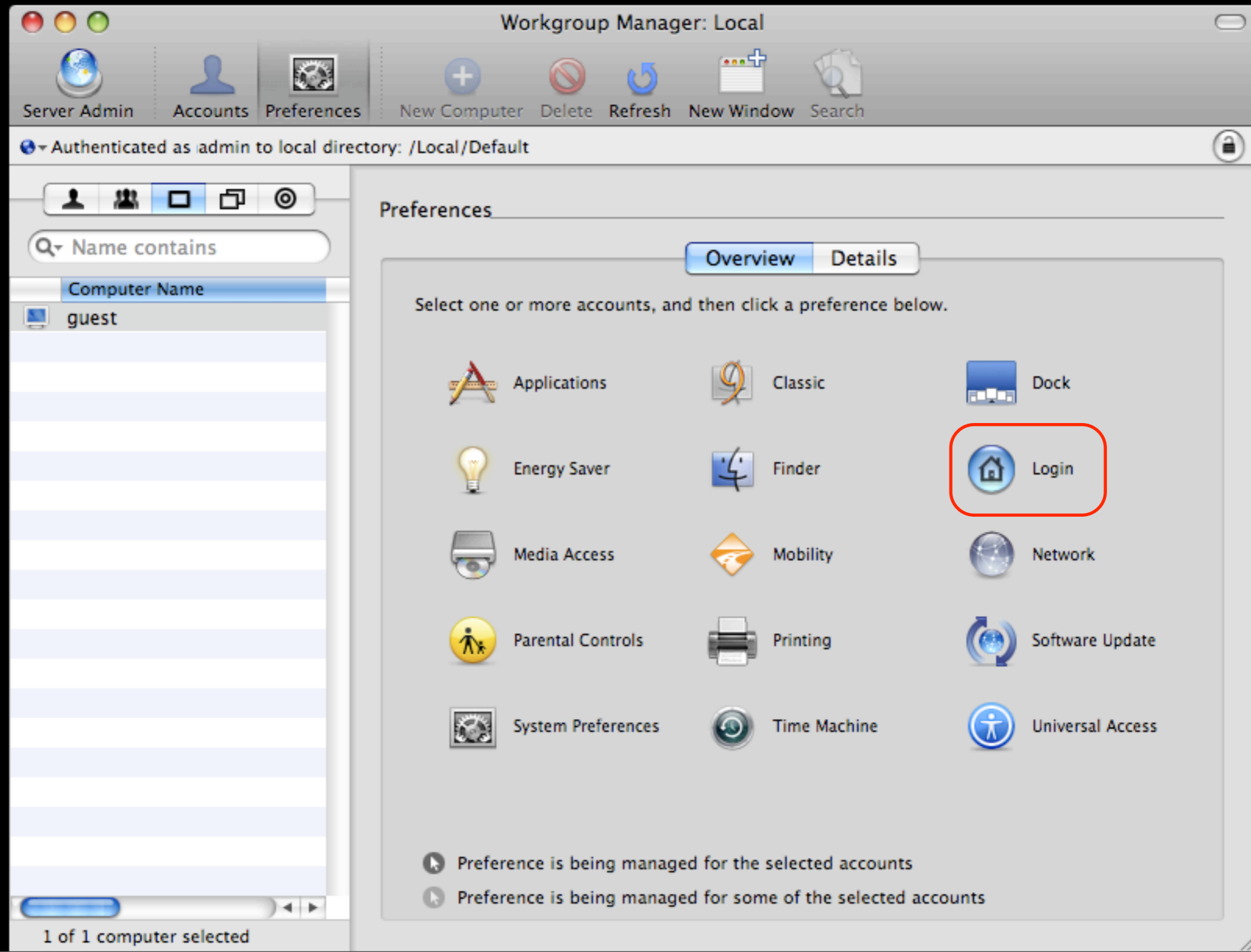
Local MCX



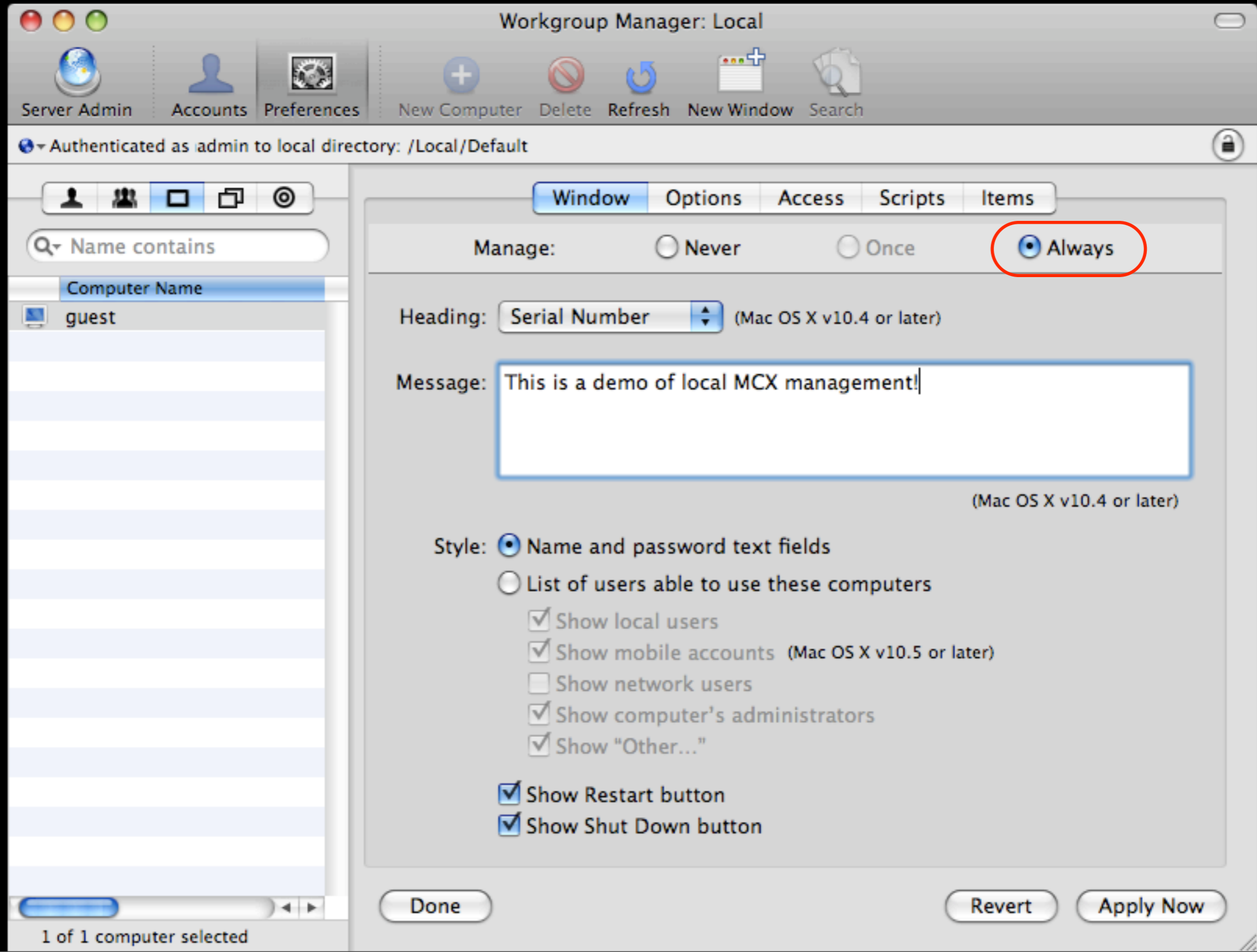
Local MCX



Local MCX



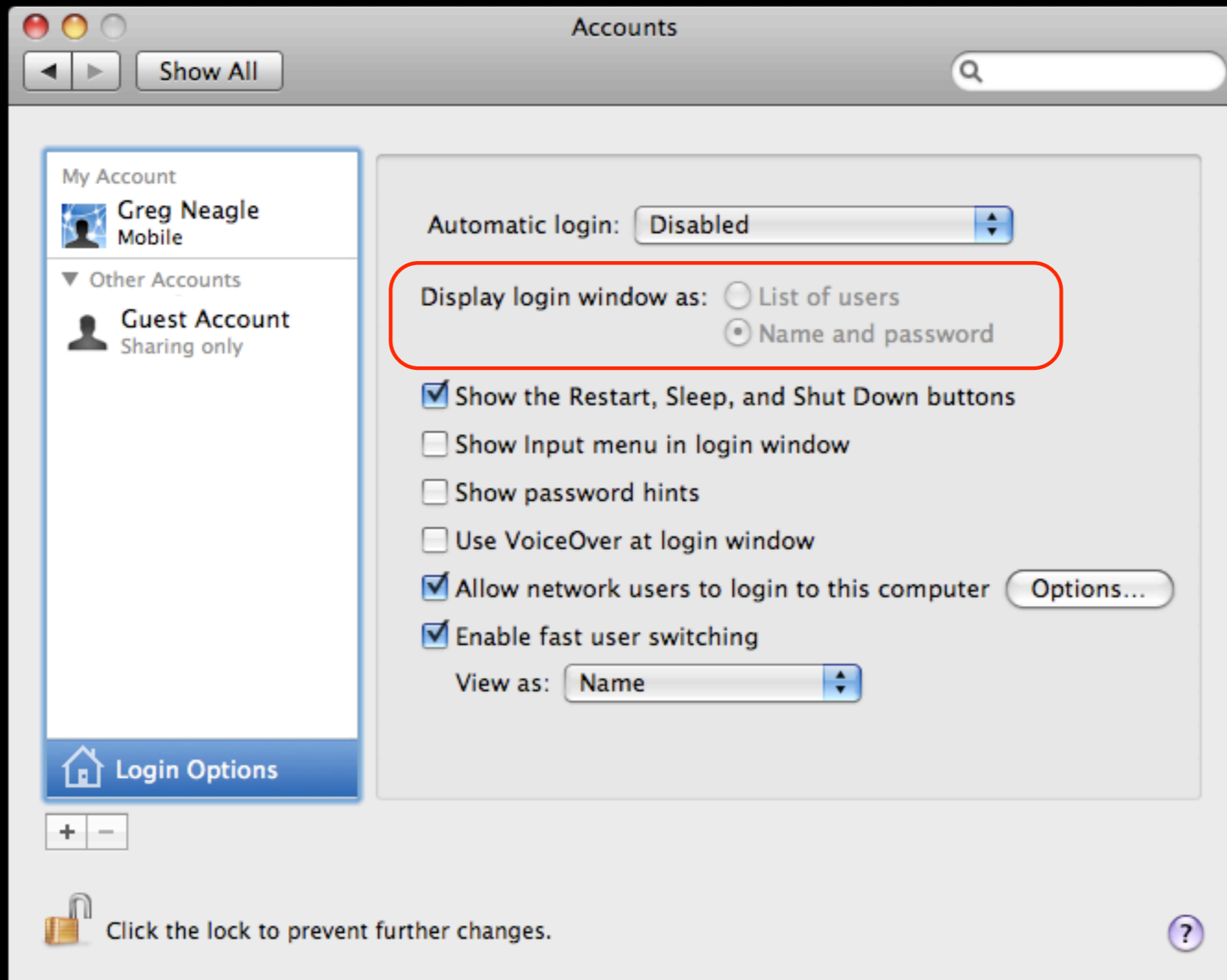
Local MCX



Local MCX



Local MCX





Local MCX

To deploy, just copy:

```
/private/var/db/dslocal/nodes/  
Default/computers/guest.plist
```

to all your machines.



Local MCX

- Limitations of this approach
 - All settings in guest.plist
 - Not modular
 - Hard to mix-n-match



Local MCX

- Better approach:
 - Use Computer Groups



Local MCX

- Computer Groups
 - New in Leopard
 - A computer can belong to multiple groups
 - Each group can have management settings



Local MCX

- Each computergroup can have management settings:
 - loginwindow group
 - screensaver group
 - mobile users group
 - etc...



Local MCX

Computer Groups

LoginWindow

FileVaultLocalAccounts

ScreenSaver

SecureVM

Dock

MobileAccounts

SoftwareUpdateOff

TimeMachine

Office2008

SidebarItems



Local MCX

Desktops

LoginWindow
TimeMachine
Dock
SoftwareUpdateOff
Office2008
SidebarItems

Laptops

LoginWindow
TimeMachine
Dock
SoftwareUpdateOff
Office2008
SidebarItems
MobileAccounts
SecureVM
ScreenSaver
FileVaultLocalAccounts

Demo



Local MCX

- Complication:
 - how to add the local machine to a computer group?



Local MCX

- Complication:
 - Guest Computer doesn't work when added to computer groups



Local MCX

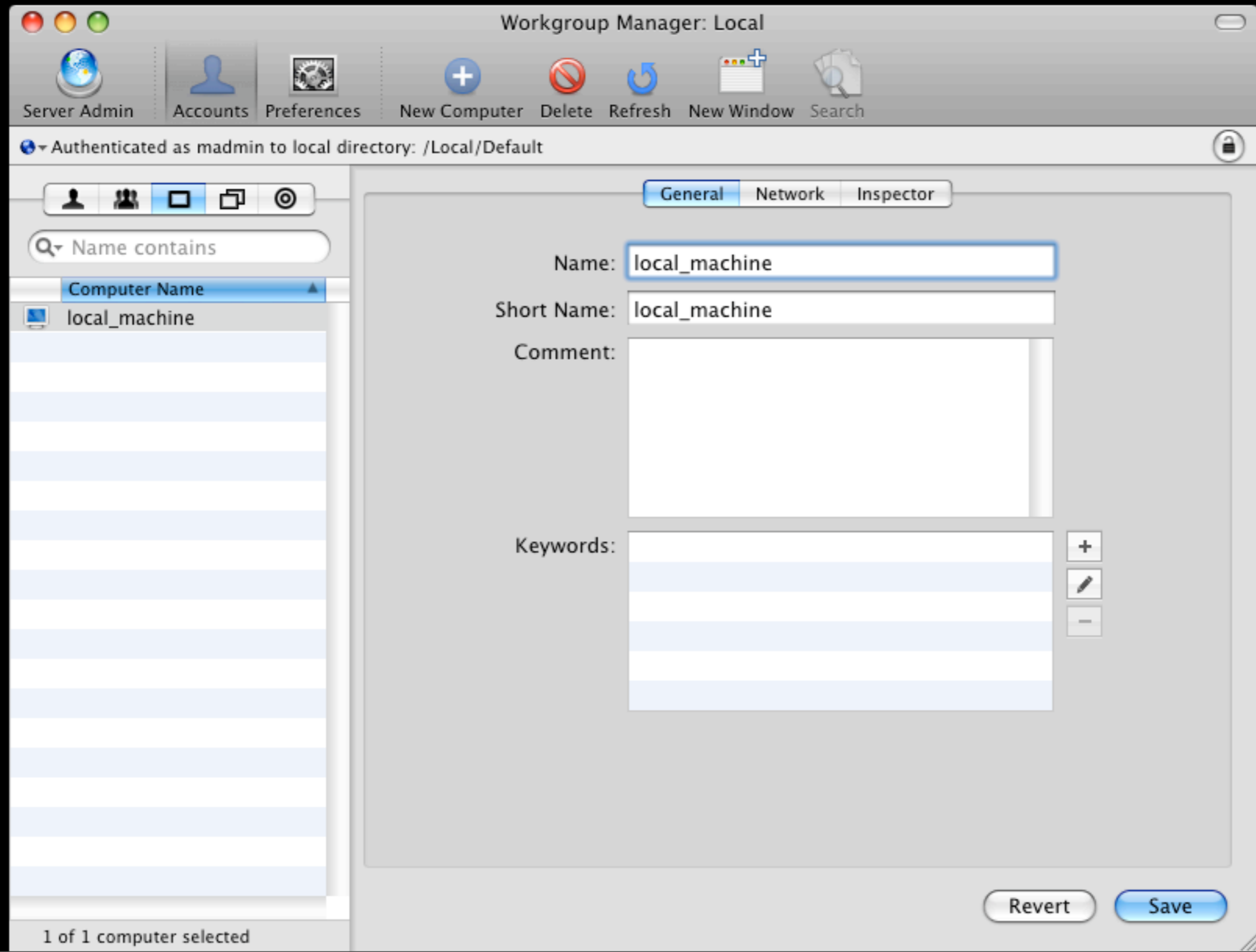
- Solution:
 - Create a local_machine record



Local MCX

- computer record contains MAC layer address of en0

Local MCX



Local MCX

The screenshot shows the 'Workgroup Manager: Local' window. The title bar indicates the user is authenticated as 'madmin' to the local directory. The interface includes a toolbar with icons for Server Admin, Accounts, Preferences, New Computer Group, Delete, Refresh, New Window, and Search. Below the toolbar, a search bar is set to 'Name contains'. A sidebar on the left lists various system components, with 'Computer Group Name' selected. The main pane shows the 'Members' tab, which contains a table with one entry for the local machine.

Name	ID	Short Name
local_machine	CE15A8BC-5955-	local_machine

At the bottom of the window, there are 'Revert' and 'Save' buttons. A status bar at the very bottom indicates '1 of 12 groups selected'.

Demo



Local MCX

- Problem:
 - You can't just copy that file to every machine - it has YOUR machine's MAC layer address.



Local MCX

- Solution:
 - Automatically create or update the local_machine record via script



Local MCX

```
root# ifconfig en0 | awk ' /ether/ {print $2}'  
00:1b:63:93:8b:ac
```



Local MCX

```
root# dscl . -create /Computers/local_machine \  
ENetAddress 00:1b:63:93:8b:ac
```



Local MCX

```
root# dscl . read /Computers/local_machine  
AppleMetaNodeLocation: /Local/Default  
ENetAddress: 00:1b:63:93:8b:ac  
GeneratedUID: 15BEE70A-A32D-4A33-  
B740-93CBE95F75A4  
RecordName: local_machine  
RecordType: dsRecTypeStandard:Computers
```



Local MCX

```
#!/bin/sh
```

```
MAC=`ifconfig en0 | awk ' /ether/ {print $2}`
```

```
GUID="15BEE70A-A32D-4A33-B740-93CBE95F75A4"
```

```
dscl . -create /Computers/local_machine ENetAddress $MAC
```

```
dscl . -create /Computers/local_machine GeneratedUID $GUID
```




Local MCX

List of parts:

- plist files in `/private/var/db/dslocal/nodes/Default/computergroups`
- `/private/var/db/dslocal/nodes/Default/computers/local_machine.plist`
- Startup script to create/modify `local_machine.plist`



Local MCX

Limitations compared to “network” MCX:

- Hard to manage at the user level
- Harder to push out changes
- Not 100% supported by Apple



Local MCX

Advantages over “network” MCX:

- No network infrastructure changes
- Management settings cannot disappear when machine is off the network
- Easy to test without breaking other machines



MCX examples/demo



MCX tools

MCX tools

System Profiler

The screenshot shows the System Profiler application window titled "midnight". The window displays a list of system settings in a table format. The left sidebar shows a "Contents" menu with categories like Network, Software, and Preference Panes. The main pane shows a list of settings with columns for "Name" and "Value". The setting "DoNotOfferNewDisksForBackup" is selected and highlighted in blue. Below the table, the details for this setting are shown: "DoNotOfferNewDisksForBackup:", "Value: 1", "State: often", and "Source: timemachine (Computer Group)".

Name	Value
delaySeconds	1
TimeMachine.menu	0
▼ com.apple.scheduler.ByHost	
AbsoluteSchedule	{ "com.apple.SoftwareUpdate" = { SUCheckSchedulerTag =
▼ com.apple.screensaver	
askForPassword	1
▼ com.apple.screensaver.ByHost	
askForPassword	1
▼ com.apple.systempreferences	
com.apple.preferences.accounts.forceFVForNewUsers	1
com.apple.preferences.users	(MultipleSessionEnabled)
▼ com.apple.TimeMachine	
DoNotOfferNewDisksForBackup	1
▼ com.apple.virtualMemory	
UseEncryptedSwap	1
▼ com.microsoft.autoupdate2	
HowToCheck	Manual
▼ com.microsoft.office	
2008\FirstRun\SetupAssistCompleted	1
▼ com.Mobility	

DoNotOfferNewDisksForBackup:
Value: 1
State: often
Source: timemachine (Computer Group)

MCX tools

mcxquery

```
> mcxquery -user gneagle
```

```
<snip>
```

```
com.microsoft.autoupdate2
```

```
    HowToCheck
```

```
office2008 (Computer Group)
```

```
often
```

```
Manual
```

```
com.microsoft.Excel
```

```
    2008\Default Save\Default Format
```

```
office2008 (Computer Group)
```

```
once
```

```
57
```

```
com.microsoft.office
```

```
    2008\FirstRun\SetupAssistCompleted
```

```
office2008 (Computer Group)
```

```
often
```

```
1
```

```
com.microsoft.Powerpoint
```

```
    2008\Default Save\Default Save\Default Format
```

```
office2008 (Computer Group)
```

```
once
```

```
Microsoft PowerPoint 98 Presentation
```

```
com.microsoft.Word
```

```
    2008\Default Save\Default Format
```

```
office2008 (Computer Group)
```

```
once
```

```
Doc97
```

```
<snip>
```



More MCX resources

More MCX resources



- Apple's client management documentation:
http://images.apple.com/server/macosx/docs/User_Management_v10.5.mnl.pdf
- More on local MCX:
<http://managingosx.wordpress.com/2008/02/07/mcx-dslocal-and-leopard/>

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