

# LinMin™ LinMin Bare Metal

System Deployment & Recovery  
of Linux and Windows  
Physical and Virtual Systems

Laurent Gharda, Founder and CEO

[www.LinMin.com](http://www.LinMin.com)



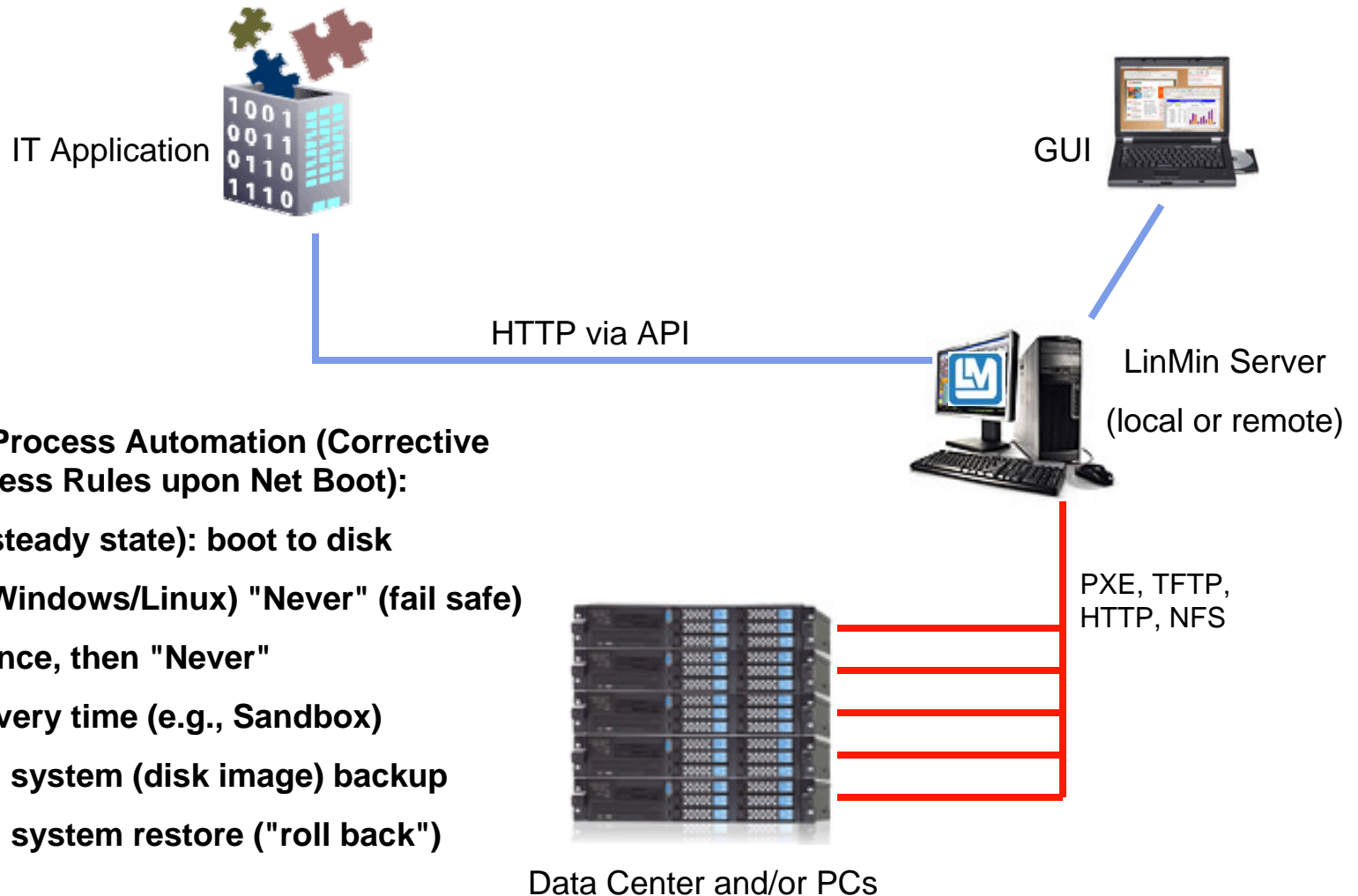


# LinMin at a Glance

- IT Software that Controls the *Pre-Operating System Domain*
- Provisions (remotely installs) the Operating System
  - Windows, Linux (and applications, scripts, files)
  - Provisioning by Push (for Production) and Pull (for Sandbox or PC deployments)
- Images (disk capture and restore of) Windows, Linux
- For Physical or Virtual Systems
- Managed via GUI (browser) or API (HTTP)



# LinMin Controls the Pre-OS Domain



## Operational Process Automation (Corrective Action Business Rules upon Net Boot):

- No action (steady state): boot to disk
- Provision (Windows/Linux) "Never" (fail safe)
- Provision once, then "Never"
- Provision every time (e.g., Sandbox)
- Perform full system (disk image) backup
- Perform full system restore ("roll back")



# LinMin Bare Metal Is Not:

- A Systems Management Framework
  - A "Live System" (physical or virtual) Management Solution
  - A System Monitoring Solution
  - An Application Monitoring Solution
  - A Patch Deployment Solution
  - A System Resource Optimization Solution
  - An Asset Discovery Solution
  - The Best Way to Snapshot, Deploy and Clone Existing Virtual Clients
- 
- Once LinMin has provisioned or imaged a physical or virtual system, your existing systems management infrastructure takes over...

# LinMin Architecture and Operation



- Browser-based (for all routine operations/management)
- Scripts for occasional ISO file manipulations
- Database-driven (systems, roles, rules, etc.)
- File System for OS media, files, packages, applications, scripts and disk image snapshots
- Server-side Java services
- Application Programming Interface (API) to give external applications the ability to provision systems



# Who Uses LinMin? Partial Customer List



# LinMin Bare Metal Provisioning in 3 Steps



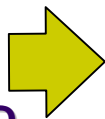
Upload into LinMin:

OS:

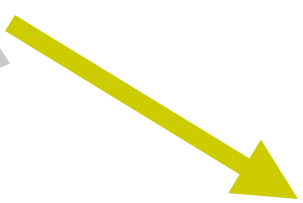
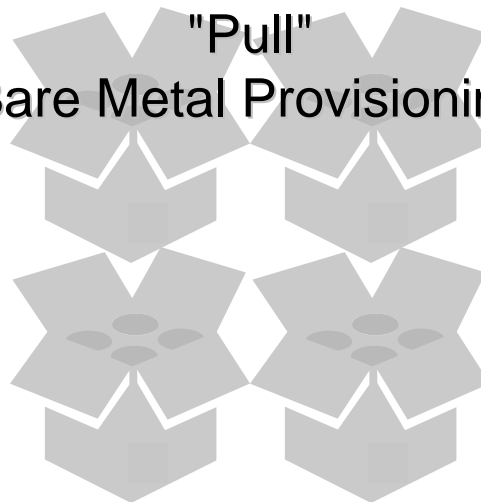
Red Hat®  
Windows®  
Novell®  
Fedora  
Ubuntu®  
CentOS  
Debian  
Rescue System CD

+

Packages  
Files  
Applications  
Configurations  
Scripts  
Images



Create "Roles" for  
"Push" &  
"Pull"  
Bare Metal Provisioning



Deploy to Physical  
and Virtual Machines



**Steps: 1**

**2**

**3**

*Repeatability, Accuracy, Continuity in Bare Metal System Deployment*

# Provisioning Method 1: "Pull" Provisioning (MAC-Independent)



- Select OS & Profile to install from the client screen (up to 400 choices)
- MAC-Independent: no server-side setup needed for each client
- Ideal for desktop environments and for server sandboxes

```
F1 Help  F2 Options 1-16

Welcome to the LinMin Bare Metal Provisioning Server

*** Defaults to BH within 60 seconds
BH: Boot to OS on hard drive
1: Red Hat Enterprise Linux 5.4 i386 - Web Server
2: Red Hat Enterprise Linux 5.4 x86_64 - Cloud Server
3: Windows Server 2003 i386 - Web Server
4: Windows Server 2008 R2 x86_64 - Enterprise Server
5: Fedora 11 i386 Firewall
6: CentOS 5.4 x86_64 - MySQL Server
7: Debian 5.0.3 x86_64 Virtual Private Server Host
8: SLES 11 x86_64 Linux - sles11_0_x86_64
9: CentOS 5.4 x86_64 - Cloud Server
10: Windows XP SP3
11: Windows 7 Ultimate
12: Windows 7 Enterprise
13: OpenSUSE 11.1 i386 Workstation
14: Ubuntu 9.10 x86_64 Karmic Koala Desktop

boot: _
```



# "Pull" Provisioning: Point and Click to Create Novell SLES Provisioning Role



**Step 1:  
Select**

SUSE System Role	
Distro Template (selection will submit form and auto fill below)	--Select Distro Template--
Enter keystroke(s) that appear on Client UI:	--Select Distro Template--
Enter menu item text:	OpenSUSE 10 SP2 i386 Linux
Locate kernel file:	OpenSUSE 10 SP2 x86_64 Linux
Locate initrd file:	OpenSUSE 10 SP3 i386 Linux
Enter additional kernel parameters:	OpenSUSE 10 SP3 x86_64 Linux
Locate Novell (AutoYaST, .xml) control file:	OpenSUSE 11 i386 Linux
	OpenSUSE 11 x86_64 Linux
	SLES 10 i386 Linux
	SLES 10 x86_64 Linux
	SLES 10 SP1 i386 Linux
	SLES 10 SP1 x86_64 Linux
	SLES 10 SP2 i386 Linux *
	SLES 10 SP2 x86_64 Linux
	SLES 11 i386 Linux
	SLES 11 x86_64 Linux

Notes for SUSE-based installations.

- The kernel file for a SUSE-based installation is called **linux**.
- The initrd file for a SUSE-based installation is called **initrd**.

Asterisk shows that  
LinMin has detected  
that the OS media  
has been uploaded

LinMin automatically  
fills the form with path  
to kernel, RAM disk,  
configuration file and  
optional kernel parameters

**Step 2:  
Done!**

SUSE System Role	
Distro Template (selection will submit form and auto fill below)	--Select Distro Template--
Enter keystroke(s) that appear on Client UI:	7
Enter menu item text:	SLES 10 SP2 i386 Linux
Locate kernel file:	pub/sles10_2_i386/CD1/boot/i386/loader/linux <input type="button" value="Browse"/>
Locate initrd file:	pub/sles10_2_i386/CD1/boot/i386/loader/initrd <input type="button" value="Browse"/>
Enter additional kernel parameters:	<input type="text"/>
Locate Novell (AutoYaST, .xml) control file:	pub/sles10_2_i386/sles10_2_i386_autoyast.xml <input type="button" value="Browse"/>

# "Pull" Provisioning: Point and Click to Create Windows Server Provisioning Role



**Step 1:  
Select**

Windows or Other OS System Role	
Distro Template (selection will submit form and auto fill below)	--Select Distro Template--
Enter keystroke(s) that appear on Client UI:	--Select Distro Template--
Enter menu item text:	MS Windows 2003 Enterprise Server 32-bit R2
Locate kernel file:	MS Windows 2003 Enterprise Server 64-bit R2
Locate initrd file:	MS Windows 2003 Server 32-bit R1
Enter additional kernel parameters:	MS Windows 2003 Server 32-bit R2
	MS Windows 2003 Server 64-bit R2
	MS Windows 2003 Web Server 32-bit R2
	MS Windows 2003 Web Server 64-bit R2
	MS Windows XP Pro SP2
	MS Windows XP Pro SP3

**Step 2:  
Warning!**

Windows or Other OS System Role	
Distro Template (selection will submit form and auto fill below)	--Select Distro Template--
Enter keystroke(s) that appear on Client UI:	8
Enter menu item text:	MS Windows 2003 Server 64-bit R2
Locate kernel file: Warning - is media loaded correctly?	pub/win2003server64r2/w2k3t.0
Locate initrd file: Warning - Initrd file not found: /home/tftpboot/pub/win2003server64r2/w2k3t.sif	pub/win2003server64r2/w2k3t.sif
Enter additional kernel parameters:	

**LinMin  
automatically  
detects that the  
OS media is  
missing and  
issues warnings**

# "Pull" Provisioning Roles Menu: Selections Will Appear on Client Screen



Add System Role

Red Hat®, CentOS, Fedora or Asianux® ⓘ
Novell® SLES or OpenSUSE ⓘ
Ubuntu® or Debian ⓘ
Windows® or Other ⓘ

Key	System Roles Selection Menu As It Appears on Client's Display	Default System Role?	Edit System Roles
1	Red Hat Enterprise Linux 5.4 i386 - Web Server		<input type="checkbox"/> <input checked="" type="checkbox"/> Make Default <input type="button" value="↓"/>
2	Red Hat Enterprise Linux 5.4 x86_64 - Cloud Server		<input type="checkbox"/> <input checked="" type="checkbox"/> Make Default <input type="button" value="↓"/> <input type="button" value="↑"/>
3	Windows Server 2003 i386 - Web Server		<input type="checkbox"/> <input checked="" type="checkbox"/> Make Default <input type="button" value="↓"/> <input type="button" value="↑"/>
4	Windows Server 2008 R2 x86_64 - Enterprise Server		<input type="checkbox"/> <input checked="" type="checkbox"/> Make Default <input type="button" value="↓"/> <input type="button" value="↑"/>
5	Fedora 11 i386 Firewall		
6	CentOS 5.4 x86_64 - MySQL Server		
7	Debian 5.0.3 x86_64 Virtual Private Server Host		
8	SLES 11 x86_64 Linux - sles11_0_x86_64		
9	CentOS 5.4 x86_64 - Cloud Server		
10	Windows XP SP3		
11	Windows 7 Ultimate		
12	Windows 7 Enterprise		
13	OpenSUSE 11.1 i386 Workstation		
14	Ubuntu 9.10 x86_64 Karmic Koala Desktop		

**F1 Help F2 Options 1-16**

Welcome to the LinMin Bare Metal Provisioning Server

\*\*\* Defaults to BH within 60 seconds

BH: Boot to OS on hard drive

- 1: Red Hat Enterprise Linux 5.4 i386 - Web Server
- 2: Red Hat Enterprise Linux 5.4 x86\_64 - Cloud Server
- 3: Windows Server 2003 i386 - Web Server
- 4: Windows Server 2008 R2 x86\_64 - Enterprise Server
- 5: Fedora 11 i386 Firewall
- 6: CentOS 5.4 x86\_64 - MySQL Server
- 7: Debian 5.0.3 x86\_64 Virtual Private Server Host
- 8: SLES 11 x86\_64 Linux - sles11\_0\_x86\_64
- 9: CentOS 5.4 x86\_64 - Cloud Server
- 10: Windows XP SP3
- 11: Windows 7 Ultimate
- 12: Windows 7 Enterprise
- 13: OpenSUSE 11.1 i386 Workstation
- 14: Ubuntu 9.10 x86\_64 Karmic Koala Desktop

boot: \_



# Provisioning Method 2:

## "Push" Provisioning (MAC-Specific)



- Gives IT Precise Control Over Each System
  - OS and Apps
  - Host name, password, network settings, time zone
- Lets IT Pre-Stage Systems for Repurposing
- Lets IT Decide What Actions a System Takes:
  - LinMin to ignore the system, tell it to boot from local disk (Safe Mode)
  - LinMin to provision each time a system boots to the network
  - LinMin to provision once, then go to "Safe Mode" (boot from HD)
- 2-Step Setup:
  - Create Provisioning Role Template(s)
  - Assign Templates and Unique Parameters to Systems

# "Push" Provisioning

## Step 1: Create Provisioning Role Templates



Step 1:  
Select

Provisioning Role Template	
Distro Template (selection will submit form and auto fill below)	--Select Distro Template--
Name	Red Hat Enterprise Linux 4.6 i386
Type	Red Hat Enterprise Linux 4.6 x86_64
Path to kernel	Red Hat Enterprise Linux 5.1 i386
Path to initrd	Red Hat Enterprise Linux 5.1 x86_64
Enter any additional kernel parameters	Red Hat Enterprise Linux 5.2 i386 *
Template Data	Red Hat Enterprise Linux 5.2 x86_64 *
	SLES 10 i386 Linux
	SLES 10 x86_64 Linux
	SLES 10 SP1 i386 Linux

Asterisk shows that  
LinMin has detected  
that the OS media  
has been uploaded

Step 2:  
Done!

Provisioning Role Template	
Distro Template (selection will submit form and auto fill below)	--Select Distro Template--
Name	Red Hat Enterprise Linux 5.2 x86_64
Type	Red Hat-Based
Path to kernel	pub/rhel5_2_x86_64/disc1/images/pxeboot/vmlinuz <input type="button" value="Browse"/>
Path to initrd	pub/rhel5_2_x86_64/disc1/images/pxeboot/initrd.img <input type="button" value="Browse"/>
Enter any additional kernel parameters	
Template Data	<pre>#text # ----- # Red Hat Enterprise Linux 5.2 x86_64 # # This control file was generated by LinMin Bare Metal Provisioning, # on \$date</pre> <div><input type="button" value="Import Control File Template"/> <input type="button" value="Variables Quick Reference"/></div>








































LinMin automatically  
fills the form with path  
to kernel, RAM disk,  
configuration file and  
optional kernel parameters

# "Push" Provisioning

## View All Provisioning Role Templates



Create a Provisioning Role Template

Template Name	Template Type	Edit/Copy/Delete
CentOS 5.4 i386 Linux - LAMP Stack	kickstart	  
CentOS 5.4 x86_64 Linux - MySQL Server	kickstart	  
Debian 5.0.3 i386 Web Server	debian	  
Debian 5.0.3 x86_64 Virtual Private Server Host	debian	  
Fedora 11 i386 Name Server	kickstart	  
OpenSUSE 11.1 i386 Workstation - Solar Design	yast	  
Red Hat Enterprise Linux 5.4 i386 - Light Server	kickstart	  
Red Hat Enterprise Linux 5.4 x86_64 VPS Host	kickstart	  
SLES 11 x86_64 SAP Server	yast	  
Ubuntu 9.04.0 x86_64 MySQL Server	debian	  
Windows 7 Ultimate	generic	  
Windows Server 2003 R2 Enterprise	generic	  
Windows Server 2008 R2 Standard	generic	  

Create a Provisioning Role Template

# "Push" Provisioning

## Step 2a: Assign Template to a System



LinMin Bare Metal Provisioning™

### MAC-Specific Provisioning Role

Unique System Nickname (e.g., Asset_1049)	Sandbox IBM 3380
Provisioning Role Template	Windows Server 2008 Standard Core 32 R2 x64
MAC Address	CentOS 5.4 i386 Linux - centos5_4_i386 Debian 5.0.3 x86_64 Web Server Red Hat Enterprise Linux 5.4 x86_64 VPS Host Windows Server 2008 Standard 32 R2 - w2k8std32 Windows Server 2008 Standard Core 32 R2 - w2k8stdCore32 Windows Server 2008 Standard Core 32 R2 x64
Host Name	
Domain Name	
IP Address	
Net Mask	
Domain Name Server	
Gateway	
Root Password	Enter <input type="password"/> Confirm <input type="password"/>
Time Zone	GMT-8
Enable Provisioning upon Network Boot?	<input type="radio"/> Ignore (boot from local disk) <input type="radio"/> Always Provision <input checked="" type="radio"/> Provision on next boot only, then set to ignore



# "Push" Provisioning

## Step 2b: Assign Unique Settings to System



LinMin Bare Metal Provisioning™

### MAC-Specific Provisioning Role

Unique System Nickname (e.g., Asset_1049)	<input type="text" value="Sandbox IBM 3380"/>
Provisioning Role Template	<input type="text" value="Windows Server 2008 Standard Core 32 R2 x64"/>
MAC Address	<input type="text" value="ff:0c:29:05:02:eb"/>

### Role Template Parameters

Host Name	<input type="text" value="sandbox8"/>
Domain Name	<input type="text" value="linmin-pxe"/>
IP Address	<input type="text" value="192.168.1.210"/>
Net Mask	<input type="text" value="255.255.255.0"/>
Domain Name Server	<input type="text" value="192.168.1.1"/>
Gateway	<input type="text" value="192.168.1.1"/>
Root Password	Enter <input type="password" value="....."/> Confirm <input type="password" value="....."/>
Time Zone	<input type="text" value="GMT-8"/>
Enable Provisioning upon Network Boot?	<input type="radio"/> Ignore (boot from local disk) <input type="radio"/> Always Provision <input checked="" type="radio"/> Provision on next boot only, then set to Ignore



# "Push" Provisioning Dashboard: All Systems at a Glance



Add MAC-Specific Role						
Nickname	Host Name	IP Address	MAC Address	Role Template	Provisioning	Edit/Copy/Delete
VPS490_IBM3340	VPS490_IBM3340	31.104.29.90	00:fb:02:a3:5d:aa	RHEL 5.4 x86_64 VPS Host	Ignore	
VPS491_IBM3340	VPS491_IBM3340	31.104.29.91	00:fb:02:a3:5d:a3	RHEL 5.4 x86_64 VPS Host	Next Boot	
Web117_DellR910	Web117_DellR910	31.104.30.117	00:02:55:b0:97:b3	Windows Server 2008 R2 Web	Next Boot	
Web118_DellR910	Web118_DellR910	31.104.30.118	00:02:55:b0:92:f4	Windows Server 2008 R2 Web	Ignore	
Web119_DellR910	Web119_DellR910	31.104.30.119	00:02:55:b0:4b:c9	Windows Server 2008 R2 Web	Ignore	
Web120_DellR910	Web120_DellR910	31.104.30.120	00:02:55:b0:42:9b	Windows Server 2008 R2 Web	Ignore	
Web121_DellR910	Web121_DellR910	31.104.30.121	00:02:55:b0:92:f7	Windows Server 2008 R2 Web	Next Boot	
Web122_DellR910_Test	Web122_DellR910	31.104.30.122	00:02:55:b0:92:d6	Windows Server 2008 R2 Web	Always	
Web123_HPSSL270z	Web123_HPSSL270z	31.104.30.123	00:2f:04:bf:c3:d9	RHEL 5.4 i386 - Light Server	Ignore	
Web124_HPSSL270z	Web124_HPSSL270z	31.104.30.124	00:2f:04:bf:c3:ca	RHEL 5.4 i386 - Light Server	Ignore	
Web125_HPSSL270z	Web125_HPSSL270z	31.104.30.125	00:2f:04:bf:c3:a3	RHEL 5.4 i386 - Light Server	Ignore	
Web126_HPSSL270z	Web126_HPSSL270z	31.104.30.126	00:2f:04:bf:c3:d1	RHEL 5.4 i386 - Light Server	Next Boot	
Web127_HPSSL270z	Web127_HPSSL270z	31.104.30.127	00:2f:04:bf:c3:d7	RHEL 5.4 i386 - Light Server	Ignore	
Web128_HPSSL270z	Web128_HPSSL270z	31.104.30.128	00:2f:04:bf:c3:fc	Debian 5.0.3 i386 Web Server	Ignore	
Web129_HPSSL270z	Web129_HPSSL270z	31.104.30.129	00:2f:04:bf:c3:c1	Debian 5.0.3 i386 Web Server	Ignore	
Web130_HPSSL270z	Web130_HPSSL270z	31.104.30.130	00:2f:04:bf:c3:c0	Debian 5.0.3 i386 Web Server	Next Boot	

- Each system will be provisioned with a pre-determined profile (OS, web/app/DB server, workstation)
- Full hardware discovery is performed such that the client systems can have different CPU types, NICs, RAM, discs, etc.



# LinMin Also Provisions Rescue System CDs

- For remote repair of systems

LinMin Bare Metal Provisioning™

Provisioning Role Template

Name	<input type="text" value="CentOS 5.4 i386 Rescue System"/>		
Type	<div>Red Hat-Based</div>		
Path to kernel	<input type="text" value="pub/centos5_4_i386/disc 1/images/pxeboot/vmlinuz"/>	<input type="button" value="Browse"/>	
Path to initrd	<input type="text" value="pub/centos5_4_i386/disc 1/images/pxeboot/initrd.img"/>	<input type="button" value="Browse"/>	
Enter any additional kernel parameters	<input type="text" value="ramdisk_size=10000 text rescue"/>		

# LinMin API

## Application Programming Interface



- For integrating provisioning functionality into your apps
- Example: hosting control panel (below), load balancing app

Imposta Parametri di Reinstallazione

Scegli l' O.S.: *	<div>CentOS 5.3 i386 (32bit O.S.) CentOS 5.3 i386 (32bit O.S.) CentOS 5.3 x86_64 (64bit O.S.) Debian 5 (32bit O.S.) Debian 5 (64bit O.S.) Ubuntu 9.04 (32bit O.S.) Ubuntu 9.04 (64bit O.S.) OpenSUSE 11.1 (32bit O.S.) OpenSUSE 11.1 (64bit O.S.)</div>	Customer selects what OS to install on the dedicated server
O.S. Installato:		
Indirizzo IP:		
Netmask:		
Nameserver:		
Gateway:	95.141	
Password Root:	w88972	
Hostname:	ns1.beatscom.it	
Time_Zone:	Etc/GMT+1	

Imposta Annulla

# LinMin API

## Application Programming Interface



- "Teaching Mode" generates working API code for easy implementation

Results of previous action - "" (actionResults and actionResultsMsg)	
REQUIRED: One for all actions, both for Add action	Key values -- one required for all actions, both required for add action, both allowed for any action
Unique System Nickname (user_supplied_id)	<input type="text"/>
MAC Address (mac_address)	<input type="text"/>
OPTIONAL: Update action only	Change existing key values, valid only with update action --
New System Nickname (new_user_supplied_id)	<input type="text"/> ()
New MAC Address (new_mac_address)	<input type="text"/> ()
REQUIRED: for Add action OPTIONAL: for other actions	Role Template Parameters, for Add and Update actions
Provisioning Role Template (control_file_template)	<input type="text"/>
Host Name (node_name)	<input type="text"/>
Domain Name (node_domain)	<input type="text"/>
IP Address (node_ip_address)	<input type="text"/>
Net Mask (node_subnet_mask)	<input type="text"/>
Domain Name Server (node_nameserver)	<input type="text"/>
Gateway (node_default_gateway)	<input type="text"/>
Root Password (node_password)	<input type="text"/> ()
Time Zone (node_time_zone)	<input type="text"/> ()
Enable Provisioning upon Network Boot? (enable_provisioning_flag)	<input type="radio"/> Ignore (boot from local disk) <input type="radio"/> Always Provision <input type="radio"/> Provision on next boot only, then set to Ignore <input type="text"/> ()
Action (action)	<input checked="" type="radio"/> Read <input type="radio"/> Update <input type="radio"/> Add <input type="radio"/> Delete <input type="text"/> ()
Debug (debug) GET option shows input and output HTTP GET strings	<input checked="" type="radio"/> No <input type="radio"/> Show <input type="radio"/> GET
<input type="button" value="Submit"/> <input type="button" value="Reset"/> <input type="button" value="Clear"/>	



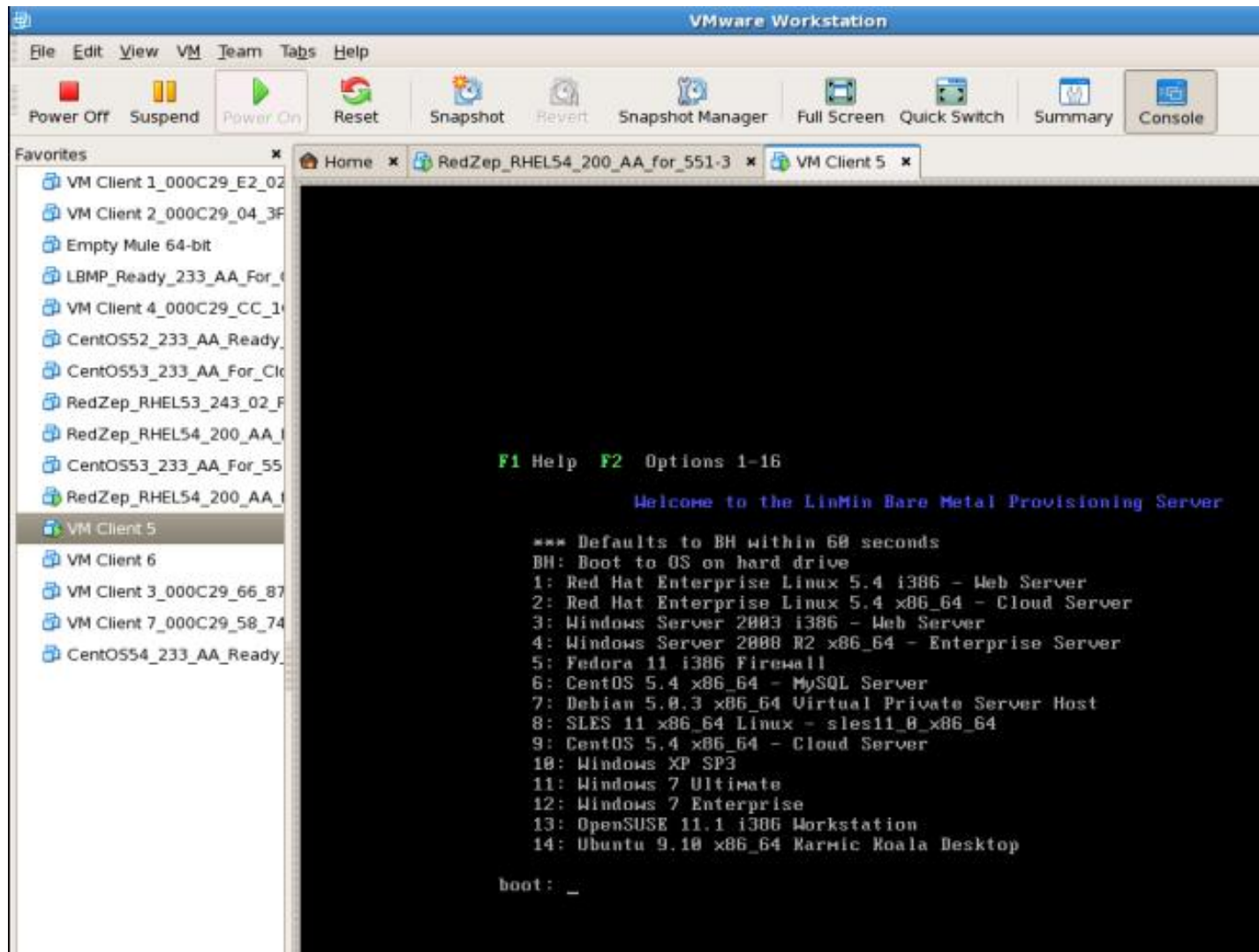
# "I use Virtualization: Why do I need LinMin?"



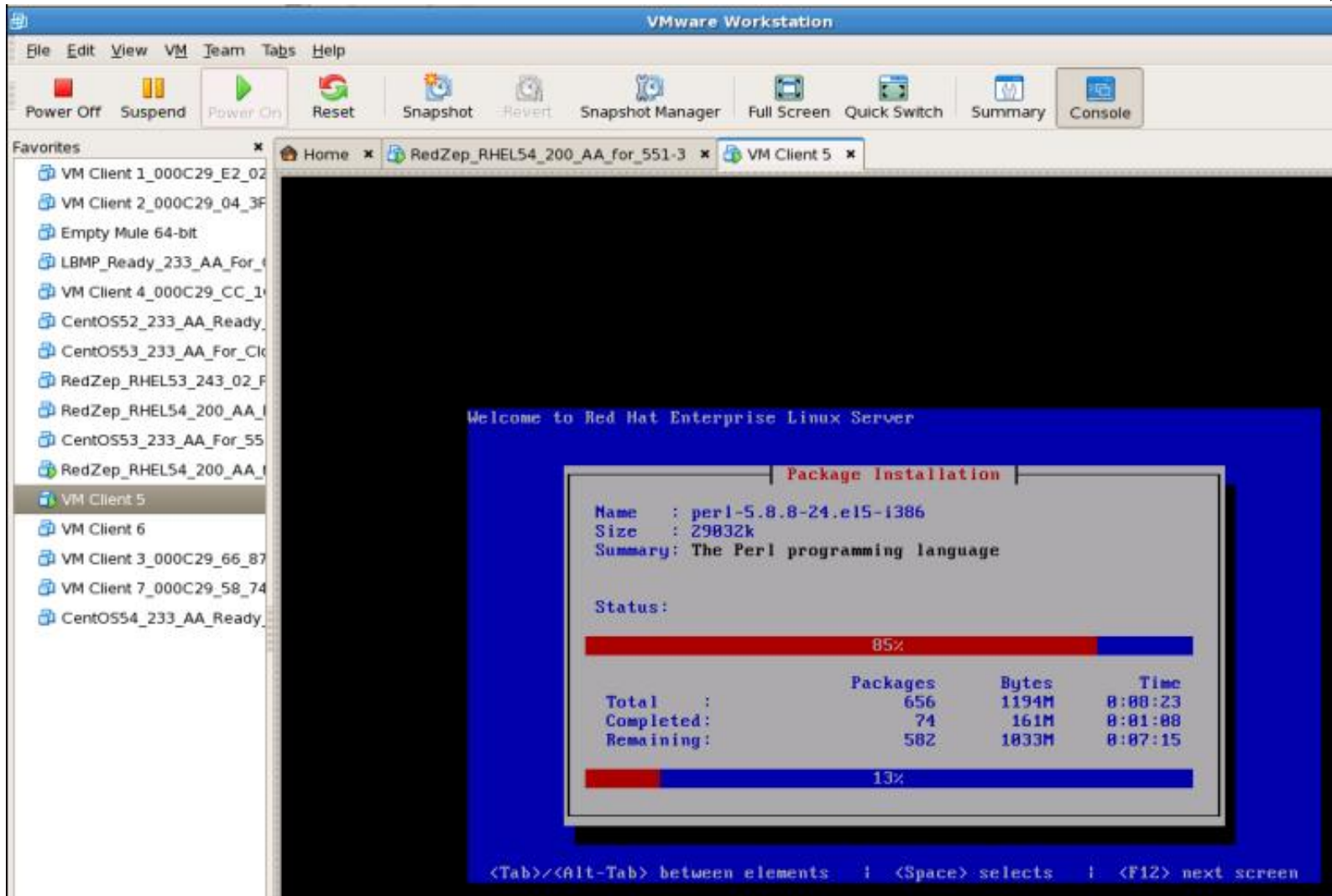
With LinMin, you don't need DVDs/CDs, and you can refine, then repeat:

- Create "Logical Golden Images" (Provisioning Role Templates)
- Provision Physical and Virtual systems with the same Role
- Imaging a physical system, a Host hypervisor or a Virtual Client is the same
- Use LinMin to create, fine-tune and test "that first VM" for a given Role
- Use LinMin to maintain the "Logical Golden Image" for each Role
- Once you have deployed "that first VM" for a given role into your virtualized environment using LinMin, use your native virtualization tools to snapshot, clone and deploy these VMs

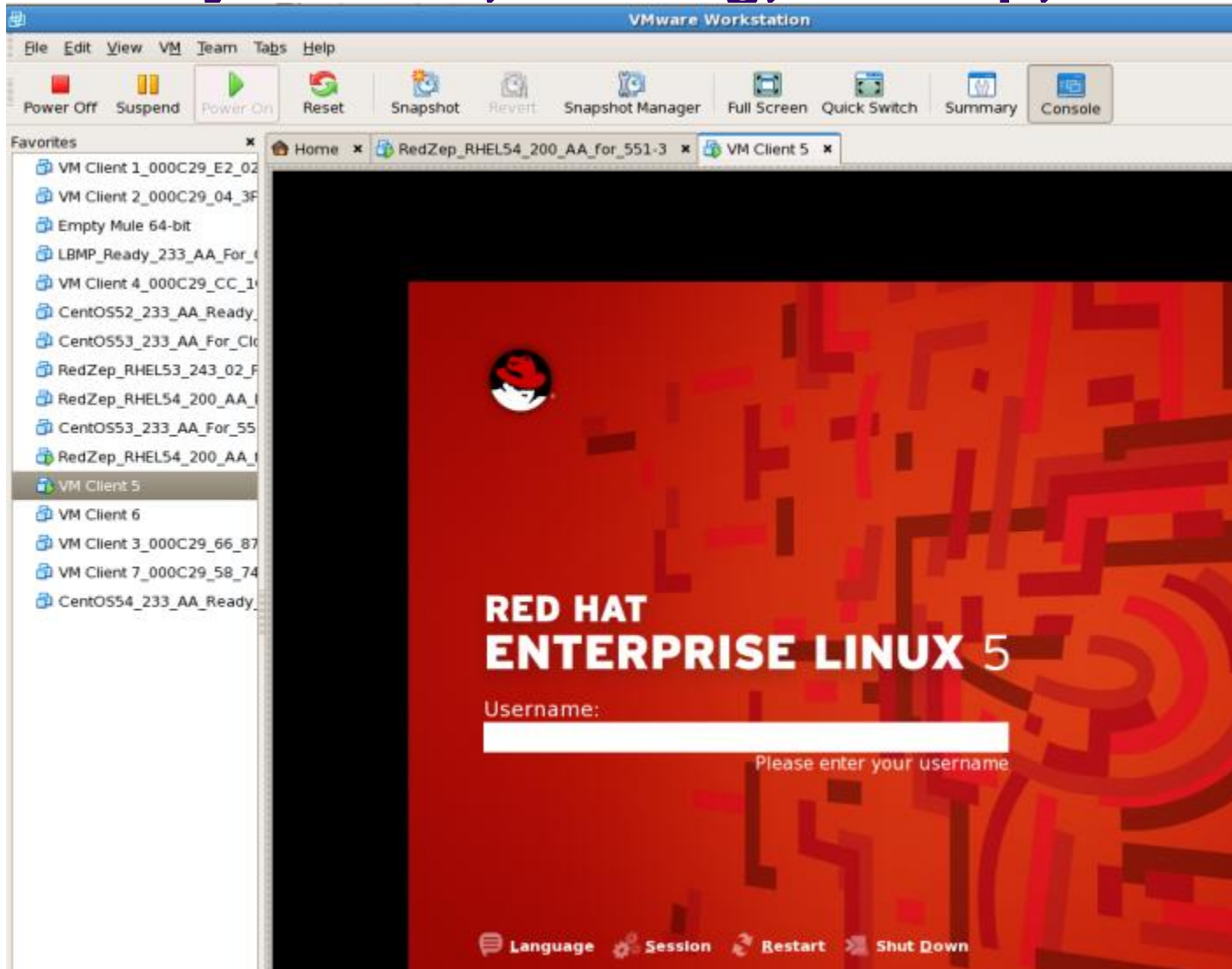
# VMware Example: "Push" Provisioning



# VMware Example: Red Hat Enterprise Linux Being Provisioned



# VMware Example: VM Ready for Use, Cloning, Backup, etc.







# Disk Imaging

# Imaging Rules: Backup, Restore, Clone



LinMin

LinMin Bare Metal Provisioning™

Main Menu

Boot Menu

Provisioning Profiles

Imaging Profiles

Help

Disk Image Snapshot Profiles

- Click on the "Add Profile" button to create a new system disk image snapshot profile.
- Click on button to see profile details and to edit the profile.
- Click on button to make a copy of the profile and create a profile for another system.
- To delete a profile, click on button.
- Click on button to create disk image snapshot of the specified system the next time it boots using Network Boot. This will copy the contents of all disks and partitions into a single file that will be stored on the network for disaster recovery purposes.
- Click on button to restore the system from an existing disk image snapshot stored on your network the next time it boots using Network Boot. **All contents of the system will be lost and replaced with the disk image snapshot you specify.** This function is highly system hardware-dependent.
- Click on button to take no disk image snapshot action the next time the system boots using Network Boot.

Add Profile

Profile Name (e.g., Asset_1049 or Blade_12)	MAC Address	Disk Image Snapshot File Name	Next Boot Action	Edit/Copy/Delete
Rack 2 Slot 4 Blade 8	00:13:20:58:48:9a	Rack 2 Slot 4 Blade 8_2008-3-11	Backup	
Rack 2 Slot 4 Blade 9	00:13:20:58:48:9b	Rack 2 Slot 4 Blade 9_2008-3-11	Restore	
Rack 2 Slot 4 Blade 12	00:13:20:58:48:9e	Rack 2 Slot 4 Blade 11_2008-3-12	Backup	
Rack 2 Slot 4 Blade 13	00:13:20:58:48:9f	Rack 2 Slot 4 Blade 10_2008-3-13	Backup	

Add Profile

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- IT Staff Configures "Next Network Boot" snapshot/rollback profiles through the Browser-based GUI
- Profiles can be easily copied to reduce configuration time and possible errors
- Systems can be restored to a fully "known-good" point in time upon IT request
- System-Specific (tied to MAC address) "Hardware Specific Snapshot/Rollback"
- Complements (does not replace) file-based backup/restore solutions

# Imaging Role Example



LinMin Bare Metal Provisioning™

## Edit Disk Imaging Profile

Profile Name (e.g., Asset_1049 or Blade_12)	<input type="text" value="Rack 2 Slot 4 Blade 8"/>	
MAC Address	<input type="text" value="00:13:20:58:48:9a"/>	
Disk Image Snapshot File Name	<input type="text" value="Rack 2 Slot 4 Blade 8_2008-03-11"/>	
Boot Drive Partition of the System to Capture Image Snapshot	<input type="text" value="/dev/hda"/>	

OK

Cancel

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- IT Staff Pre-configures snapshot/rollback profiles through the Browser-based GUI
- Each system will have all its partitions backed up and stored on the network
- Systems can be restored to a fully "known-good" point in time upon IT request
- Since the OS is not running during snapshots, full file/service/database integrity is ensured
- System-Specific (tied to MAC address) "Hardware Specific Backup/Restore" = Snapshot/Rollback
- Can be used to clone systems with identical hardware

# Which Approach to Use When?



- "Pull": MAC-Independent Provisioning
  - ✓ When many systems have the same OS/App requirements with DHCP IP addressing (Desktops, servers in a sandbox)
  - ✓ When client-side users need to be given the choice of working OS & configurations (e.g., built-to-order; employee desktop rollouts)
- "Push", MAC-Specific Provisioning
  - ✓ When deterministic control over selected systems' configuration is needed ("This system will always have this OS/Distro, these applications, this IP address and be configured just so, regardless of its hardware")
- Imaging and Snapshot/Rollback
  - ✓ When all system OS, Apps, data and system state needs to be restored to a known-good state, or to clone to like systems

# Alternatives to LinMin Bare Metal



- Install from Physical Media (CD-ROM/DVD)
  - Pros: it's simple, it works
  - Cons: time consuming (human and elapsed), non repeatable, error prone, requires manual installation of applications and manual system configuration
- Open Source "Build Your Own" Provisioning Solution
  - Pros: Enticing on paper (zero software cost), fun to build
  - Cons:
    - Labor Costs to Build, Configure, Test and Maintain
    - Time to Implement and Cost to Maintain
    - No predictable commercial technical support
- Other Commercial Provisioning Solutions
  - Pros: Highly sophisticated and capable
  - Cons:
    - Price (10x to 30x more expensive than LinMin)
    - Longer learning curve and implementation times
    - Limited Linux options; no disk imaging; "heavy" solutions



## Analyst and Customer Quotes...

*"LinMin is doing for the system provisioning space what Henry Ford did to the automobile industry: they introduced a product that works, is reliable and that everybody can afford."*

Industry Analyst

*"I installed LinMin in just a few minutes and immediately started to provision dozens of Linux blades. LinMin is easy to use and allows me not to have to set foot in my data center. It saves me incredible amounts of time while giving me full control over how each system is provisioned. And with its incredibly low price, LinMin paid for itself in a few days."*

Customer



## Next Steps

- Learn more: <http://www.LinMin.com/>
- Start today: [On-line Store](#)
- Not sure? [Download Trial Version](#)

