PIVCON
MANAGEMENT PLATFORM

Multiple Images & Fast Torrent Distribution

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Agenda

Introductions

- About Pivcon

High Level Overview

- What is Pivcon Management Platform (PMP)?
- Benefits
- What Makes PMP Different?
- Key Features
- Specifications

Imaging & Deployment

- Image Building
- Image Deployment Details
- Deployment Times

Architecture Overview

- Supervisor Architecture
- Director Architecture
- Solution Installation Scenarios

Conclusion

- Benefits Recap
- Questions

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Pivcon Higher Education Team

Pivcon Inc.

- Founded in 2002
- Short for Pivotal Connections
- Software Development Firm
- Specializing in providing solutions at the intersection of system network, and software engineering.
- www.pivcon.com

Brett Thompson

- Product Engineering Manager / Sales
- Has built six systems since 1992.
- Worked in Higher Ed for 15 years.
- Lead Architect
- bthompson@pivcon.com

Rick Grakowsky

- Sr. Solution Engineer
- Has built three systems since 1998.
- Worked in Higher Ed for 12 years.
- Developer
- rgrakowsky@pivcon.com

Christopher Ogden

- Sr. Solution Engineer
- Supported labs in K-12 environment
- Worked at Cisco
- Developer
- cogden@pivcon.com

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Progress Bar...

- About Pivcon

- What is Pivcon Management Platform (PMP)?
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- Image Building
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- Supervisor Architecture
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What is Pivcon Management Platform?

Desktop Management Platform

- Specifically designed for Academic Learning Environments.
- Provides centralized management, deployment, provisioning, and control of desktops.
- PMP sits on top of Ubuntu Linux and provides the automated services to leverage the best of Open Source software.

Unique Approach

- Hybrid Virtual / Native Approach
- Powerful Supervisor Client
- PivotalPeering Distribution

Powerful

- Rapid Peer-to-Peer Distribution
- Automated Sysprep Provisioning
- Hierarchical Management

Scripting

- Extensible

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Benefits Overview

PMP and Competitors

- Reduces costs associated with management of computer labs.
- Reduces down time by providing quick rebuild, deployments, and replacement of hardware.
- Provides consistent learning environment for students.
- Increases staff efficiency by automating laborious tasks through automation and centralized management.

Where PMP Does More...

- Multiple simultaneous images with easy to use image Launcher.
- Very extensible platform.
- Rapid, and reliable.
- Remote deployment/image changes.
- Easily leverage existing data center infrastructure.
- Leverages your existing desktop hardware including multiple hard disk support.
- Virtual Disk based images (VHD).
- Remote management and diagnostic controls on PC's is excellent.
- Reduces person-hours related to advanced networking support.
- Designed specifically for educational institutions.

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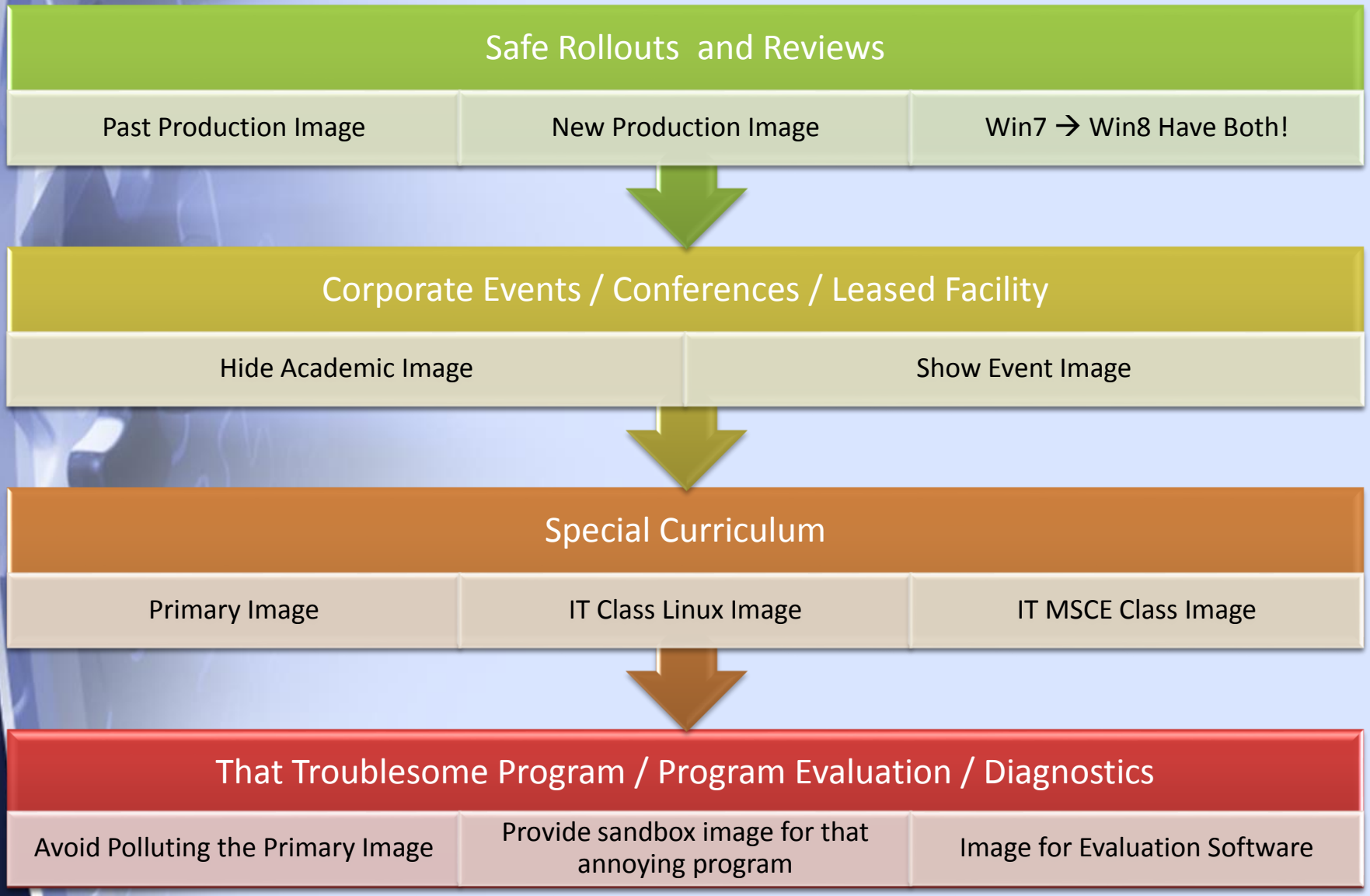
Times When Multiple Images Rock!



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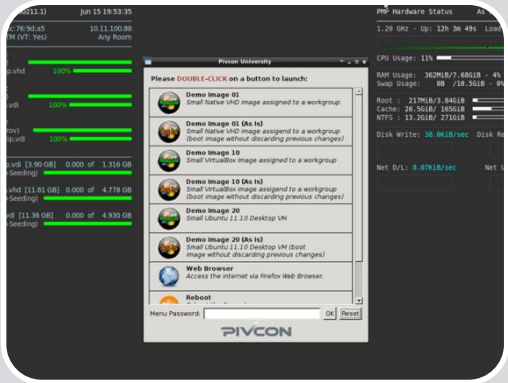
Solution Overview



Server:

PMP Director

- Manages Supervisors
- Configuration
- Control
- Monitoring
- Image Storage

Client:

PMP Supervisor

- Manages Guests
- Receives Images
- Hypervisor for VMs
- End User Platform

Guests:

Virtual Disks

- VHD Images
- Snapshots
- Scripting

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What is Native VHD Boot?

Supported on...

- Windows 8
- Windows 7 Enterprise
- Windows 7 Ultimate
- Windows Server 2008 R2
- Windows Server 2012/2012R2

What is it?

- Microsoft Virtual Disk in VHD format.
- Stored on NTFS Partition as a file
- Added to Windows Boot Configuration Data as a Bootable Option

What it does...

- Allows you to use virtual disk as your C: drive yet...
- Boot natively without a hypervisor
- Tools generally don't provide way to do snapshots, or boot nested snapshot trees

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Virtual Disk Benefits

Virtual Disks

- Snapshots
- Offline Patching
- Quick Revert
- Easy to Backup / Copy
- Direct Boot
- Portable

Multiple Simultaneous Image Support

- Multiple Native VHD Images
- Native Performance
- Shared Virtual Disks
- No need to blow out the current production image to deploy a new image
- Great for those last minute needs in your learning environments

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What Guests OS does PMP Support?

VirtualBox VM Boot

- **Windows 8** *all editions/bits*
- **Windows 7** *all editions/bits*
- **Windows Vista** *all editions/bits*
- **Windows XP** *all editions/bits*
- **Windows 2003-2012R2 Server** *all editions/bits*
- **Ubuntu**
- **Debian**
- **SUSE**
- **OpenSUSE**
- **Mandriva**
- **Fedora**
- **RHEL**
- **Solaris**
- **OpenSolaris**
- **FreeBSD**
- **PC-BSD**
- **OpenBSD**

Native VHD Boot

- **Windows 8 Pro/Enterprise** *(32 or 64-bit)*
- **Windows 7 Ultimate/Enterprise** *(32 or 64-bit)*
- **Windows Server 2008R2/2012/2012R2** *(32 or 64-bit)*

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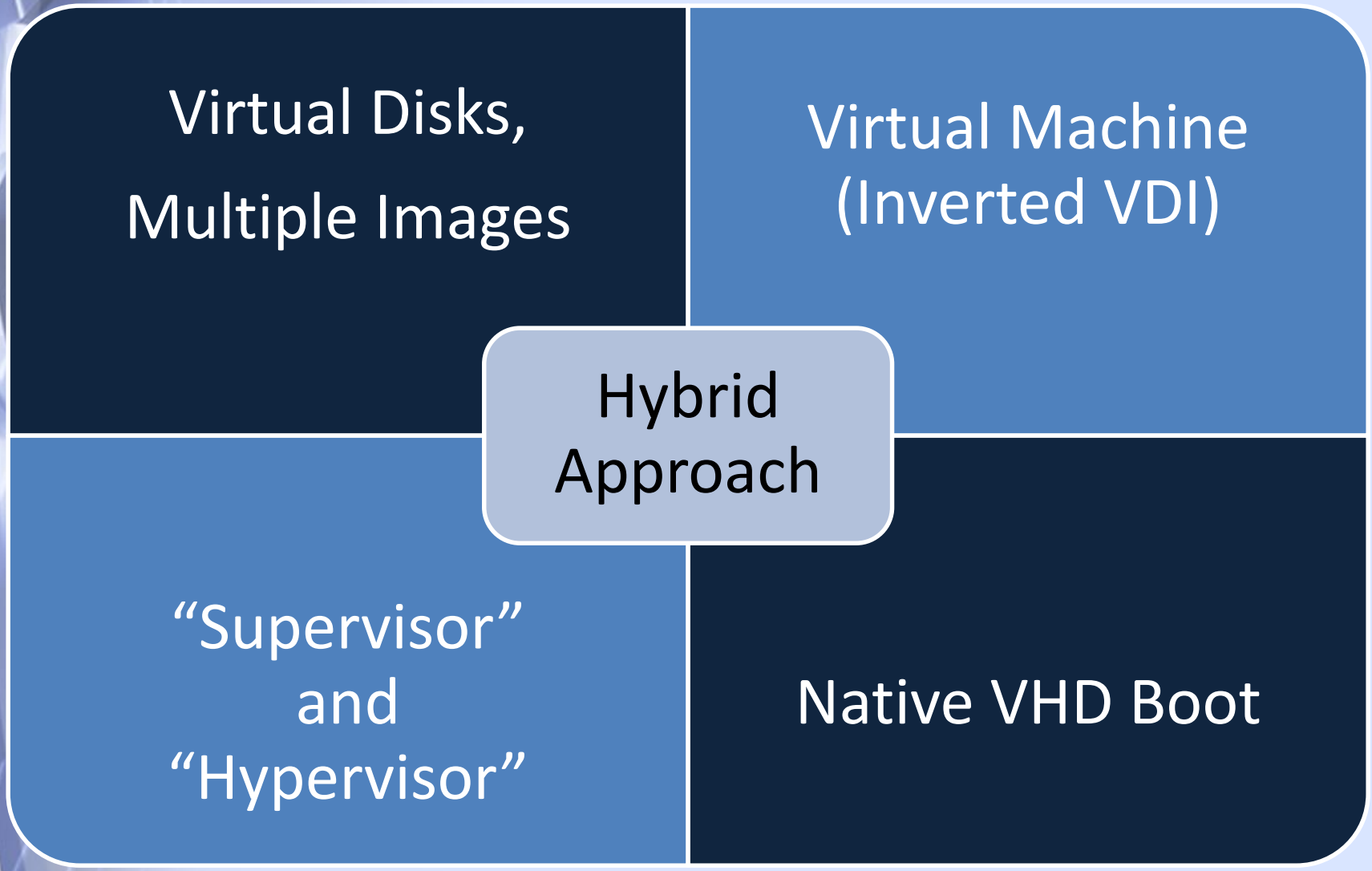
What Makes PMP Different?



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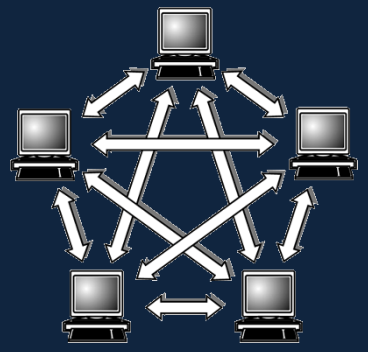
What Makes PMP Different?

Peer-to-Peer Distribution



Minimal server requirements

PivotalPeering Distribution

As simultaneous node count goes up, speed doesn't decrease

Recoverable Distribution,

Picks up where left off

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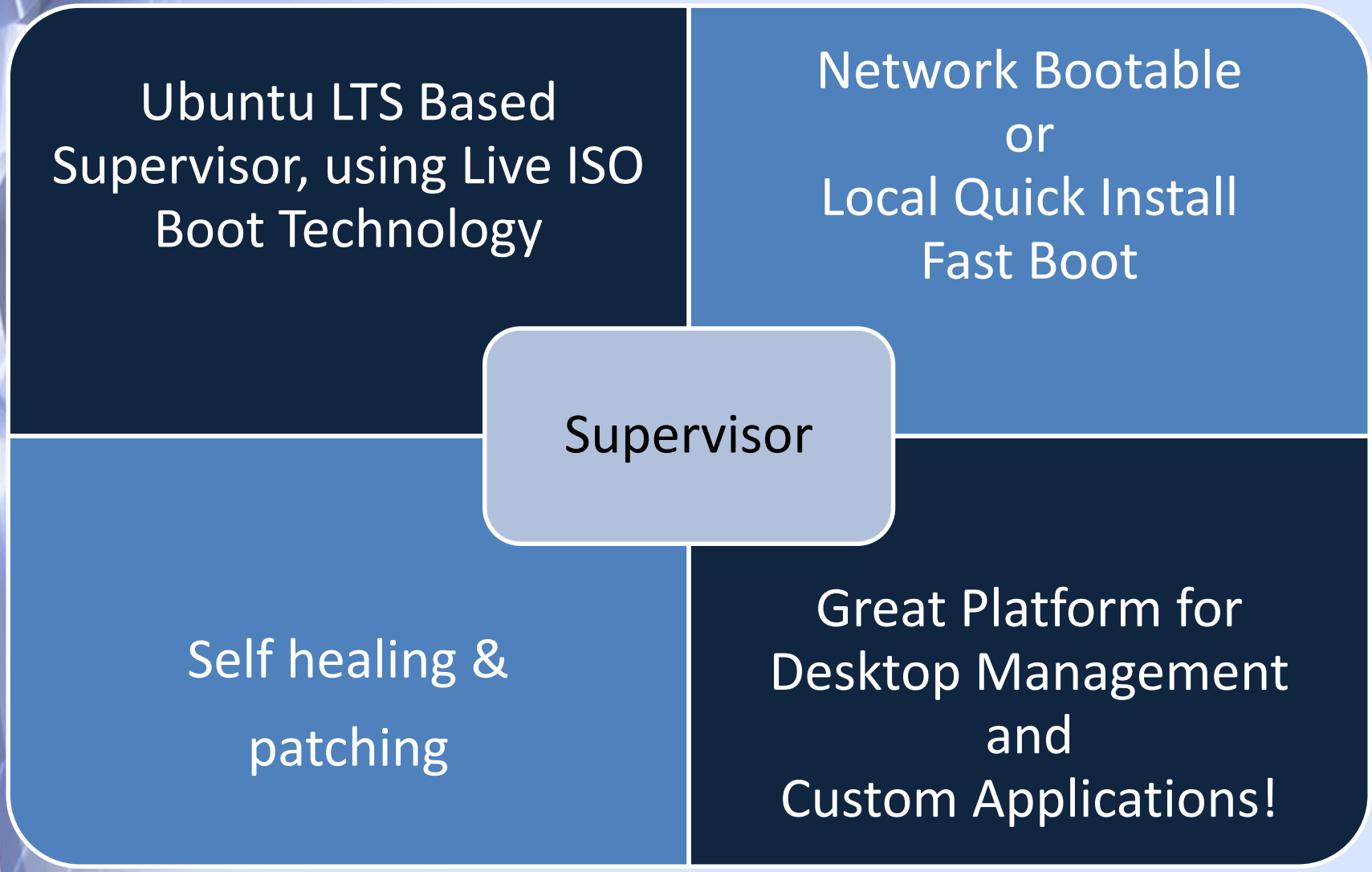
What Makes PMP Different?



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What Makes PMP Different?

Snapshot benefits for building your images...

Deployable as a single, compressed, monolithic file allowing fast distribution. Image format is also bootable.

Virtual Disks

Provides “Freeze”, “Unfreeze” and “Revert” Capabilities for your Labs

Virtual Disk Benefits, with Windows 7/8 Native Boot Option

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Minimum Hardware Requirements

	Supervisor Client		Director Server
	w/ VHD Guests	w/o Guests	Supporting 2000 Clients
Intel Compatible 64 Bit Processor	2.0 Ghz	1.4 Ghz	2.0 Ghz
VT-X Instruction Extensions Required?	**Yes***	No	No
RAM (minimum/recommended)	2/4 GB	1 GB	4/6 GB
Disk Space	240Gb	80Gb	100GB + Image Space
Network Interface Card	100 mbps required,1 gbps recommended		
Installation Method	PXE Boot, DVD-ROM, USB Thumb Drive		DVD-ROM
Run Virtualized?	Yes	Yes	Yes

* Essentially this is the case, but there are exceptions.

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Usage Examples

Supervisor with Images

- Computer Classrooms
- Computer Labs
- Learning Centers
- Science/Engineering Environments
- Digital Signage Networks
- Kiosks

Supervisor Only

- Web Browsing Stations
- Basic Thin Client Workstations
- IT Automation
- Hardware Testing/Diagnostics
- Digital Signage Networks
- Kiosks

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Why Hybrid?

We Love Virtualization

- Ideally everything would be virtualized.
- The goal of VDI is to achieve this and you can, but often with compromises that your users may not be as happy with!
- When we can virtualize and meet all requirements, by all means we should!

But when it falls short...

- We need to run Windows 7/8 natively, without virtualization...
- Yet we still want the benefits of Virtual Disks with the ability to boot them as Native VHDs.
- Smart Classrooms have...
  - SmartBoards
  - Document Projectors
  - Multiple Video Outputs
  - Video Conferencing
  - Audio/Visual Integrations
  - Crestron Integrations
- Some Curriculum Requires Demanding Apps...
  - AVID, 3D Studio Max, SolidWorks, SecondLife, etc.

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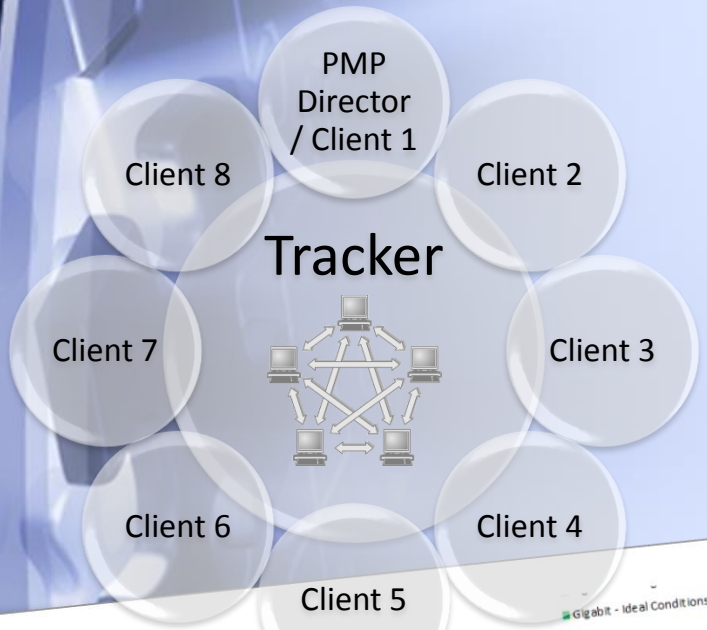
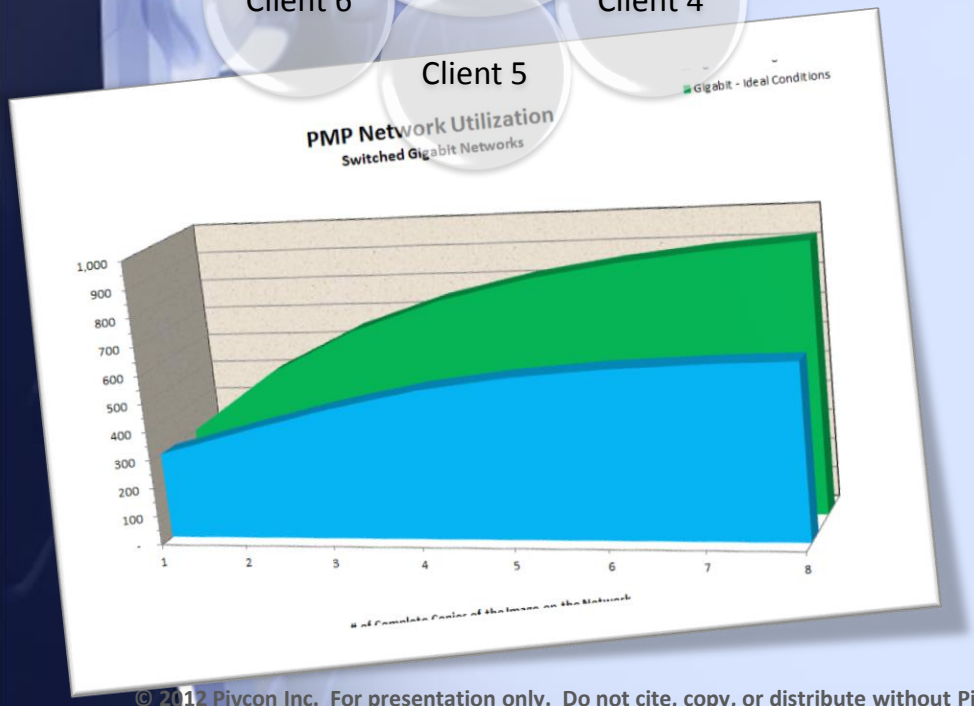
PivotalPeering Primer





Built on Torrent Technology

- Each client requests a random chunk of file from available chunks on network.
- Constantly informs tracker of what it has so others can get that chunk from it.
- “Swarm” forms within seconds of image deployment.
- PMP Director is often not even being used to feed many clients.
- PMP Director only needed to act as “seeder” when nobody else has the image yet, and only to “prime the pump”.
- Clients can start downloading images as soon as you create the torrent on your workstation, no need to wait for it to upload to Director.
- Scales wonderfully, anything can be a server.

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PivotalPeering Benefits

Restartable and Recoverable

Peer-to-Peer, Redundant

Rapid, Reliable

Disaster Recovery Backups

No Multicast Headaches, No Unicast Bottlenecks

2000+ Computers per Modest Server

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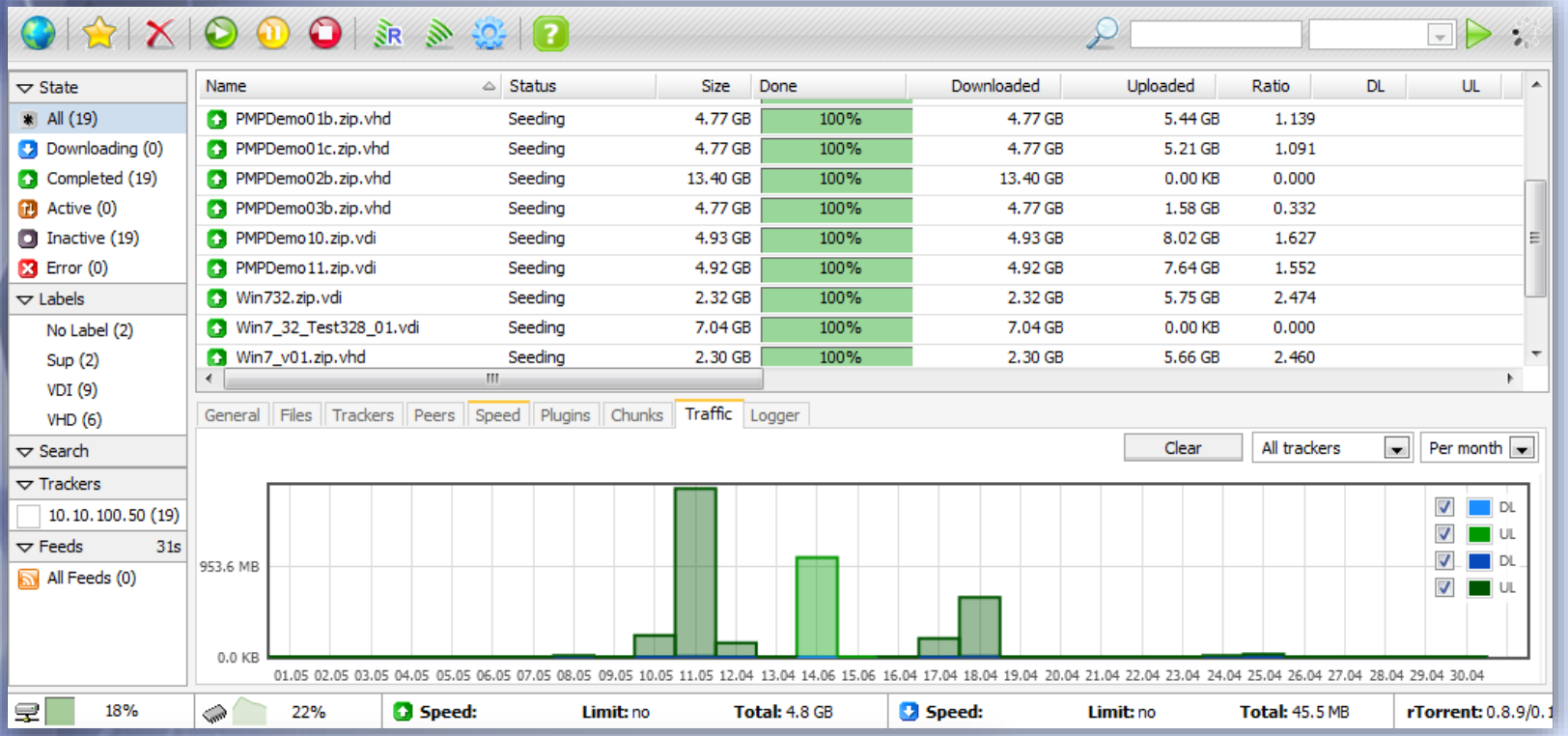
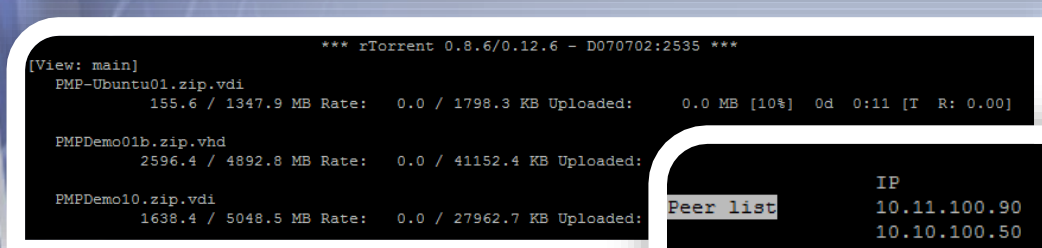
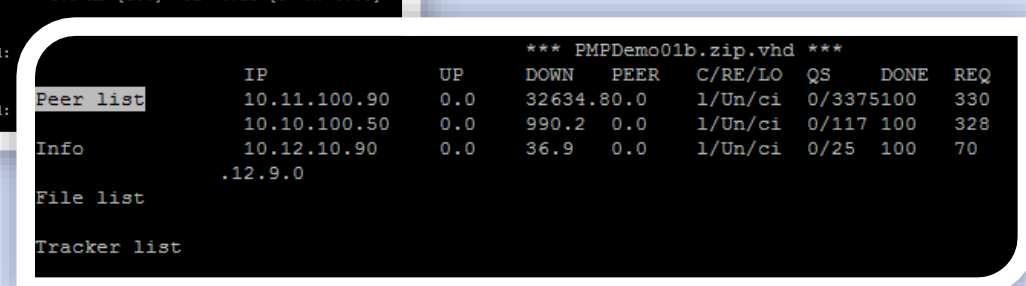
PivotalPeering Status







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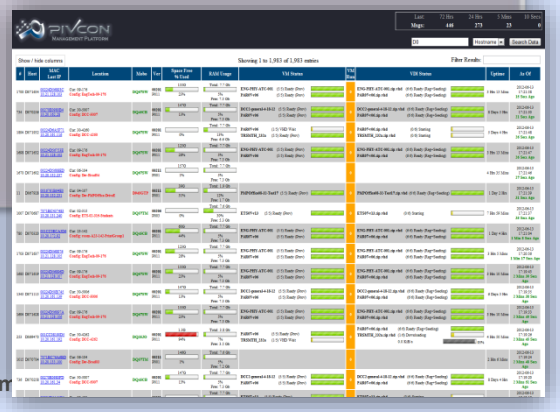
PMP Watch

Distribution Status

- Remote Review of Deployment
- Hands-off Progress Updates
- Verify Status of All Computers
- Disk Space Status
- RAM Status
- Uptime
- What Image is Booted

Configuration Management

- Version of Supervisor on Each PC
- Hardware Inventory Information
- VT Mode
- Current IP Address
- Direct Login Access to each Supervisor



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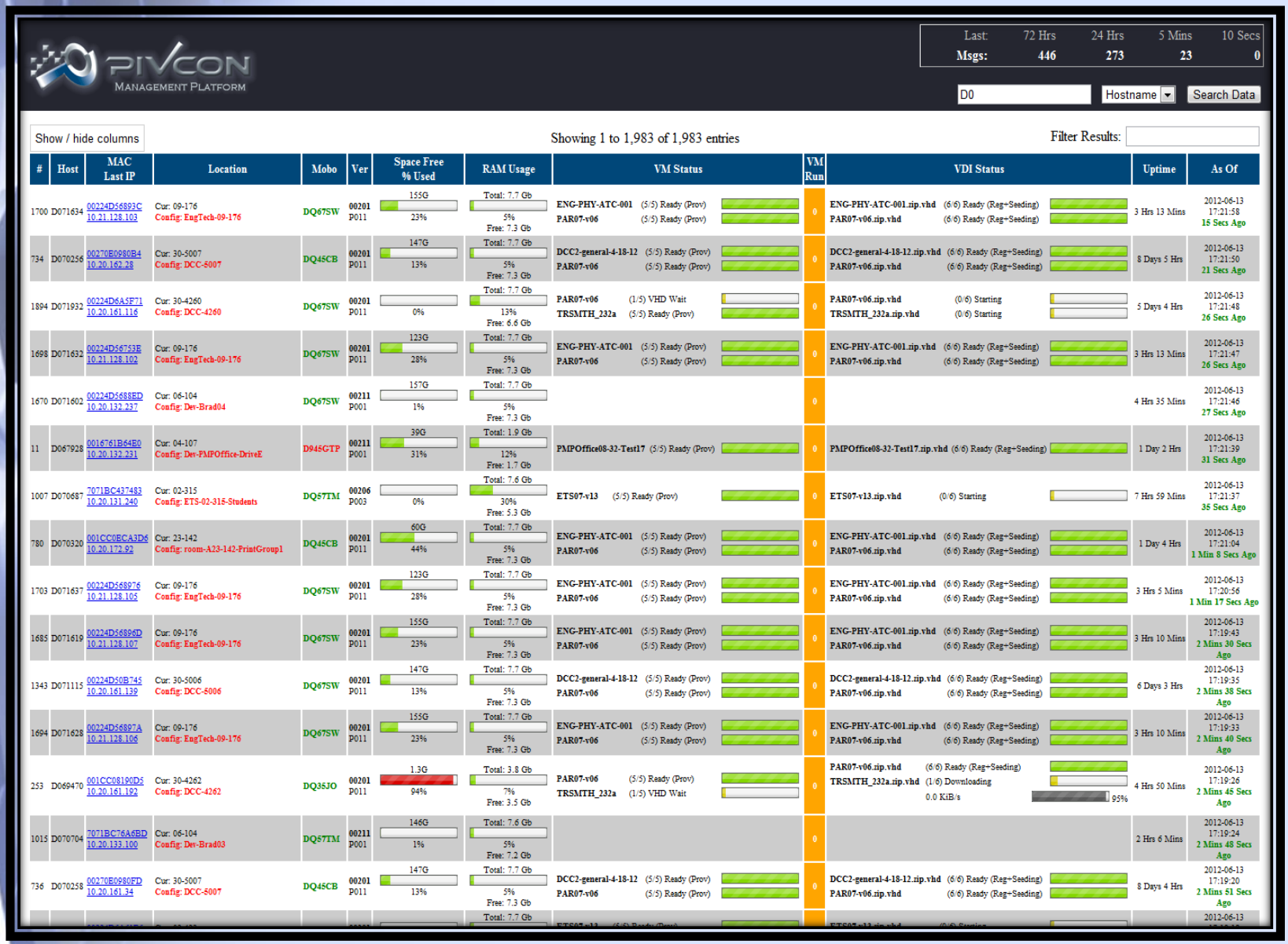
PMP Watch



PIVCON MANAGEMENT PLATFORM

Last:	72 Hrs	24 Hrs	5 Mins	10 Secs
Msgs:	446	273	23	0

D0 | Hostname | Search Data

Show / hide columns

Showing 1 to 1,983 of 1,983 entries

Filter Results:

#	Host	MAC Last IP	Location	Mobo	Ver	Space Free % Used	RAM Usage	VM Status	VM Run	VDI Status	Uptime	As Of
1700	D071634	00224D56893C 10.21.128.103	Cur: 09-176 Config: EngTech-09-176	DQ67SW	00201 P011	155G 23%	Total: 7.7 Gb 5% Free: 7.3 Gb	ENG-PHY-ATC-001 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	ENG-PHY-ATC-001.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	3 Hrs 13 Mins	2012-06-13 17:21:58 15 Secs Ago
734	D070256	00270E0980B4 10.20.162.28	Cur: 30-5007 Config: DCC-5007	DQ45CB	00201 P011	147G 13%	Total: 7.7 Gb 5% Free: 7.3 Gb	DCC2-general-4-18-12 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	DCC2-general-4-18-12.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	8 Days 5 Hrs	2012-06-13 17:21:50 21 Secs Ago
1894	D071932	00224D6A5F71 10.20.161.116	Cur: 30-4260 Config: DCC-4260	DQ67SW	00201 P011	0%	Total: 7.7 Gb 13% Free: 6.6 Gb	PAR07-v06 (1/5) VHD Wait TRSMTH_232a (5/5) Ready (Prov)	0	PAR07-v06.zip.vhd (0/6) Starting TRSMTH_232a.zip.vhd (0/6) Starting	5 Days 4 Hrs	2012-06-13 17:21:48 26 Secs Ago
1698	D071632	00224D56753E 10.21.128.102	Cur: 09-176 Config: EngTech-09-176	DQ67SW	00201 P011	123G 28%	Total: 7.7 Gb 5% Free: 7.3 Gb	ENG-PHY-ATC-001 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	ENG-PHY-ATC-001.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	3 Hrs 13 Mins	2012-06-13 17:21:47 26 Secs Ago
1670	D071602	00224D5688ED 10.20.132.237	Cur: 06-104 Config: Dev-Brad04	DQ67SW	00211 P001	157G 1%	Total: 7.7 Gb 5% Free: 7.3 Gb		0		4 Hrs 35 Mins	2012-06-13 17:21:46 27 Secs Ago
11	D067928	0016761B64E0 10.20.132.231	Cur: 04-107 Config: Dev-PMPOffice-DriveE	D945GTP	00211 P001	39G 31%	Total: 1.9 Gb 12% Free: 1.7 Gb	PMPOffice08-32-Test17 (5/5) Ready (Prov)	0	PMPOffice08-32-Test17.zip.vhd (6/6) Ready (Reg+Seeding)	1 Day 2 Hrs	2012-06-13 17:21:39 31 Secs Ago
1007	D070687	7071BC437483 10.20.131.240	Cur: 02-315 Config: ETS-02-315-Students	DQ57TM	00206 P003	0%	Total: 7.6 Gb 30% Free: 5.3 Gb	ETS07-v13 (5/5) Ready (Prov)	0	ETS07-v13.zip.vhd (0/6) Starting	7 Hrs 59 Mins	2012-06-13 17:21:37 35 Secs Ago
780	D070320	001CC0ECA3D6 10.20.172.92	Cur: 23-142 Config: room-A23-142-PrintGroup1	DQ45CB	00201 P011	60G 44%	Total: 7.7 Gb 5% Free: 7.3 Gb	ENG-PHY-ATC-001 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	ENG-PHY-ATC-001.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	1 Day 4 Hrs	2012-06-13 17:21:04 1 Min 8 Secs Ago
1703	D071637	00224D56897E 10.21.128.105	Cur: 09-176 Config: EngTech-09-176	DQ67SW	00201 P011	123G 28%	Total: 7.7 Gb 5% Free: 7.3 Gb	ENG-PHY-ATC-001 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	ENG-PHY-ATC-001.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	3 Hrs 5 Mins	2012-06-13 17:20:56 1 Min 17 Secs Ago
1685	D071619	00224D56896D 10.21.128.107	Cur: 09-176 Config: EngTech-09-176	DQ67SW	00201 P011	155G 23%	Total: 7.7 Gb 5% Free: 7.3 Gb	ENG-PHY-ATC-001 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	ENG-PHY-ATC-001.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	3 Hrs 10 Mins	2012-06-13 17:19:43 2 Mins 30 Secs Ago
1343	D071115	00224D50B745 10.20.161.139	Cur: 30-5006 Config: DCC-5006	DQ67SW	00201 P011	147G 13%	Total: 7.7 Gb 5% Free: 7.3 Gb	DCC2-general-4-18-12 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	DCC2-general-4-18-12.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	6 Days 3 Hrs	2012-06-13 17:19:35 2 Mins 38 Secs Ago
1694	D071628	00224D56897A 10.21.128.106	Cur: 09-176 Config: EngTech-09-176	DQ67SW	00201 P011	155G 23%	Total: 7.7 Gb 5% Free: 7.3 Gb	ENG-PHY-ATC-001 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	ENG-PHY-ATC-001.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	3 Hrs 10 Mins	2012-06-13 17:19:33 2 Mins 40 Secs Ago
253	D069470	001CC08190D5 10.20.161.192	Cur: 30-4262 Config: DCC-4262	DQ35JO	00201 P011	1.3G 94%	Total: 3.8 Gb 7% Free: 3.5 Gb	PAR07-v06 (5/5) Ready (Prov) TRSMTH_232a (1/5) VHD Wait	0	PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding) TRSMTH_232a.zip.vhd (1/6) Downloading 0.0 KiB/s 95%	4 Hrs 50 Mins	2012-06-13 17:19:26 2 Mins 45 Secs Ago
1015	D070704	7071BC76A6BD 10.20.133.100	Cur: 06-104 Config: Dev-Brad03	DQ57TM	00211 P001	146G 1%	Total: 7.6 Gb 5% Free: 7.2 Gb		0		2 Hrs 6 Mins	2012-06-13 17:19:24 2 Mins 48 Secs Ago
736	D070258	00270E0980FD 10.20.161.34	Cur: 30-5007 Config: DCC-5007	DQ45CB	00201 P011	147G 13%	Total: 7.7 Gb 5% Free: 7.3 Gb	DCC2-general-4-18-12 (5/5) Ready (Prov) PAR07-v06 (5/5) Ready (Prov)	0	DCC2-general-4-18-12.zip.vhd (6/6) Ready (Reg+Seeding) PAR07-v06.zip.vhd (6/6) Ready (Reg+Seeding)	8 Days 4 Hrs	2012-06-13 17:19:20 2 Mins 51 Secs Ago
							Total: 7.7 Gb					2012-06-13

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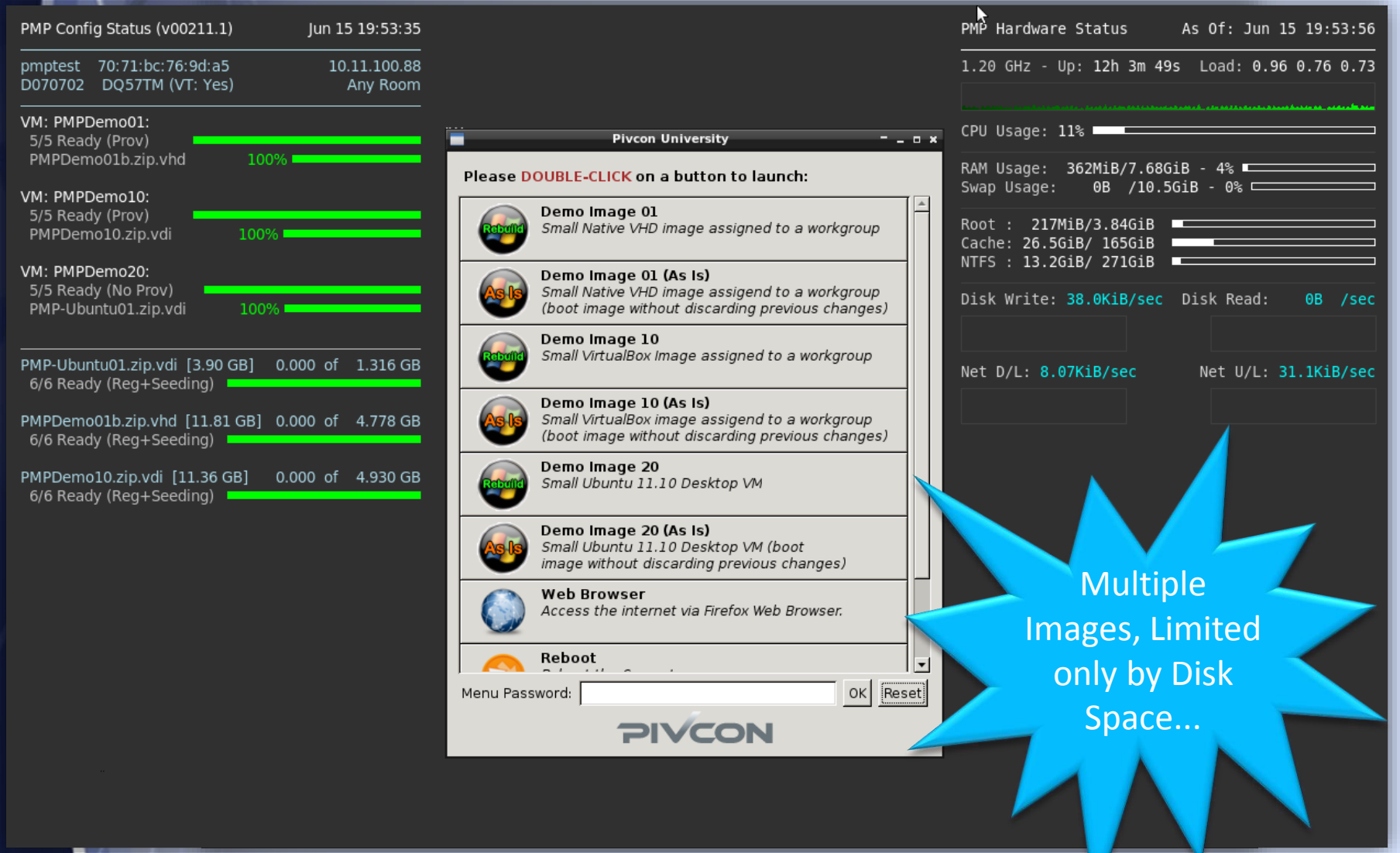
PMP Supervisor Screens



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PMP Supervisor Screens

```
PMP Hardware Status          As Of: Jun 18 18:57:37

1.20 GHz - Up: 0h 2m 46s     Load: 2.46 0.99 0.37

CPU Usage: 17%

RAM Usage:  553MiB/7.68GiB - 7%
Swap Usage:    0B  /10.5GiB - 0%

Root : 7.33MiB/3.84GiB
Cache: 6.22GiB/ 165GiB
NTFS : 73.0MiB/ 271GiB

Disk Write: 71.4MiB/sec   Disk Read: 1.33KiB/sec

Net D/L: 83.5MiB/sec      Net U/L:  732KiB/sec
```

```
PMP Config Status (v00211.1)                Jun 15  7:39:55

pmptest   70:71:bc:76:9d:a5                 10.11.100.88
D070702   DQ57TM (VT: Yes)                  Any Room

VM: PMPDemo01:
  5/5 Ready (Prov)
  PMPDemo01b.zip.vhd                100%

VM: PMPDemo10:
  4/5 Provisioning (v2)
  PMPDemo10.zip.vdi                 100%

VM: PMPDemo20:
  1/5 VDI Wait
  PMP-Ubuntu01.zip.vdi              100%

PMP-Ubuntu01.zip.vdi [3.90 GB]    0.000 of   1.316 GB
  6/6 Ready (Reg+Seeding)

PMPDemo01b.zip.vhd [11.81 GB]     0.000 of   4.778 GB
  6/6 Ready (Reg+Seeding)

PMPDemo10.zip.vdi [11.36 GB]      0.000 of   4.930 GB
  6/6 Ready (Reg+Seeding)
```

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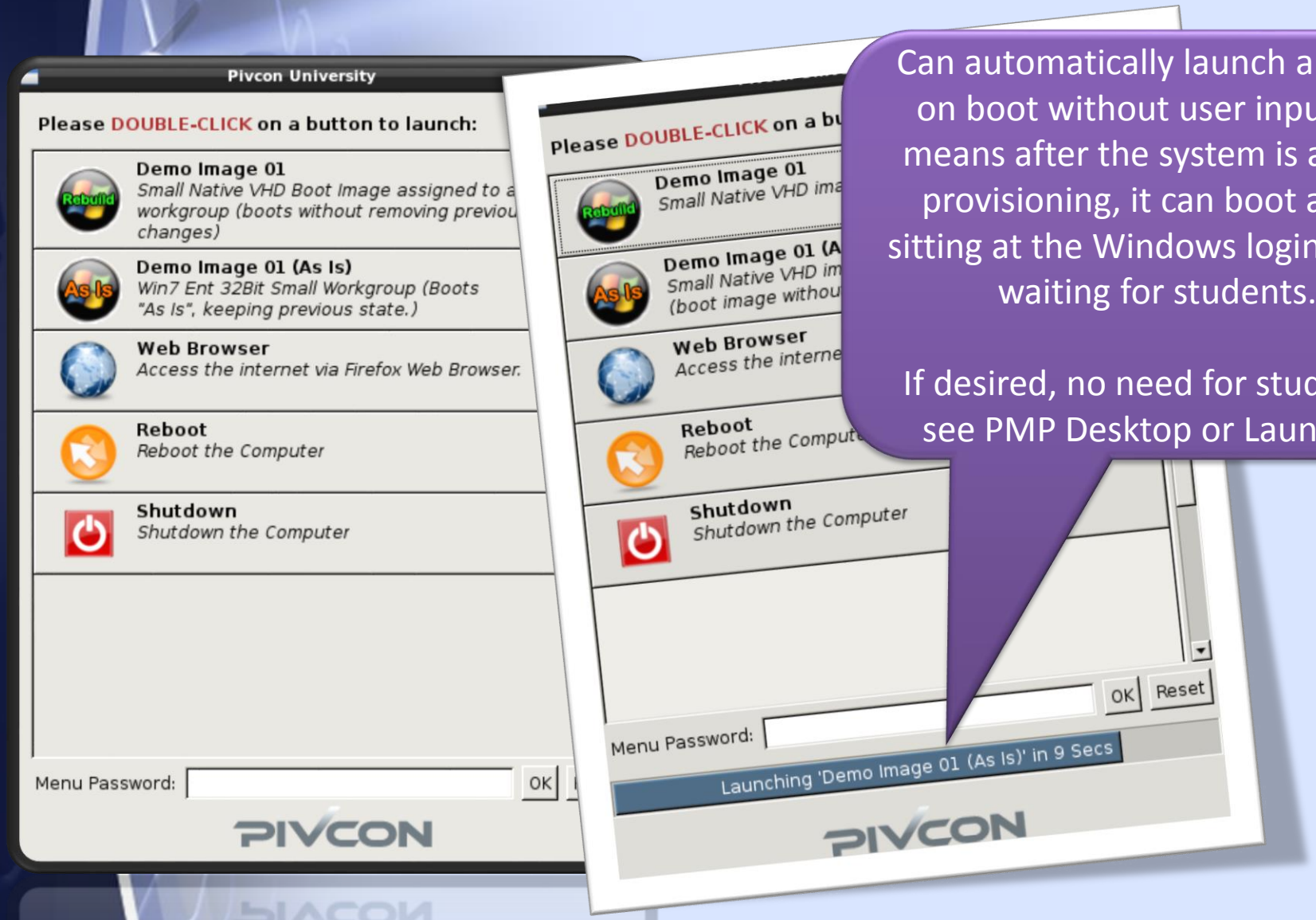
PMP Launcher



Can automatically launch an image on boot without user input. This means after the system is all done provisioning, it can boot and be sitting at the Windows login prompt waiting for students...

If desired, no need for students to see PMP Desktop or Launcher...

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Launcher Benefits

Dead Simple Launching

- Can add Icons
- Can add Descriptions
- Auto Launching w/ Countdown
- Double Launching Protection
- Centrally pushed updates, updates in real time.

Configuration Options

- Can control what is shown
- Password Protected Options
- Window Size
- No PMP Desktop Launching

More Options!

- Allows Multiple Images to be Chosen by User
- Allows Extensibility, you can add your own non-image launchers to launch Linux tools like Web Browsers, VDI, RDesktop, etc.

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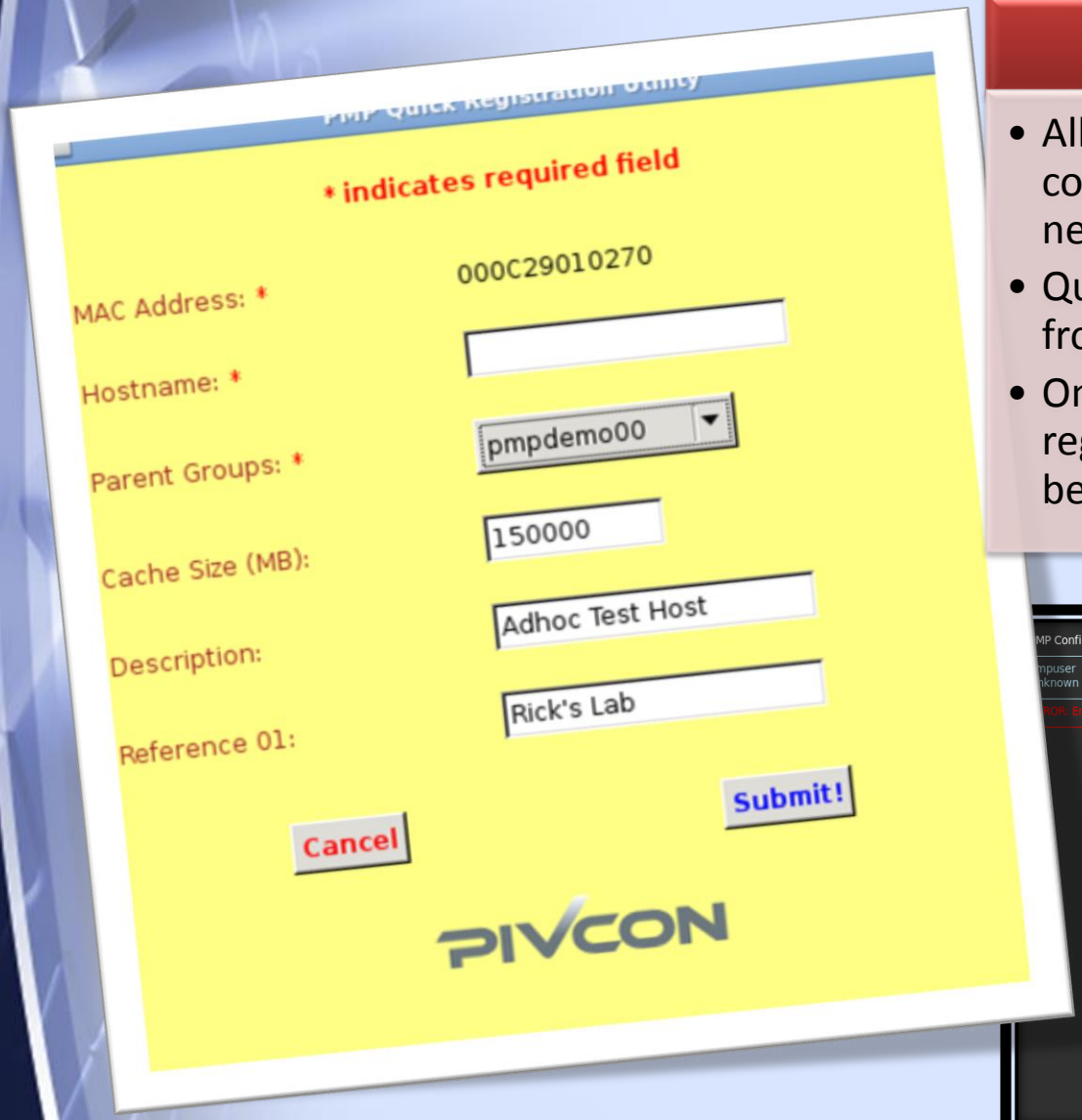
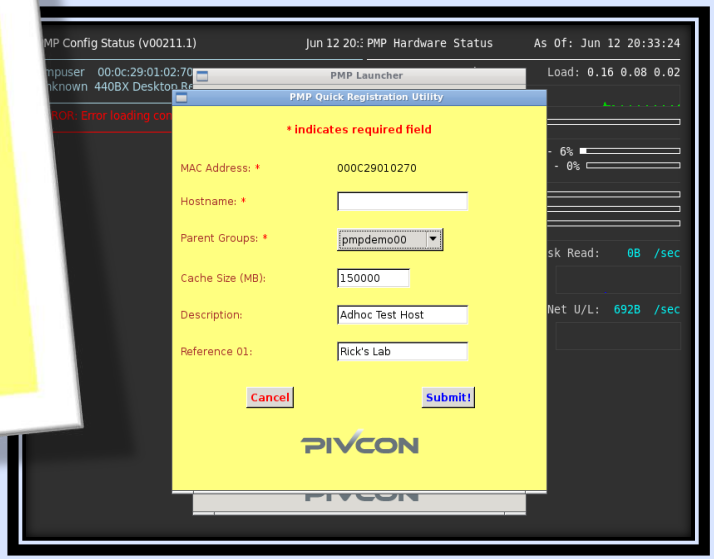
PMP Quick Registration



QuickReg

- Allows junior staff to quickly load computers into the database w/o needing any database access.
- Quickly change Parent Group right from supervisor.
- Only comes up if node is not registered, otherwise you need to be admin to access.



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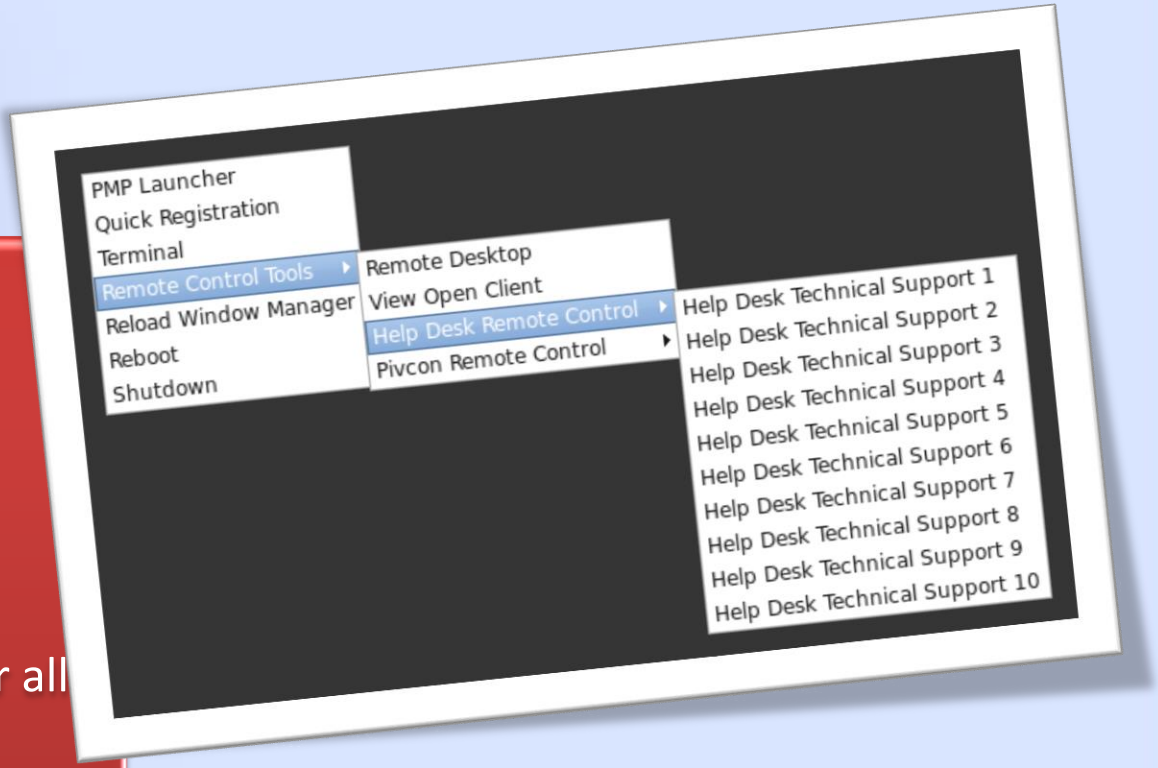
Right Click Limited for Students!

Limited Student Menus

- Not intended for use by students.
- Used by Lab Assistants.
- RDesktop client to access your computer easily.
- Your Help Desk & Pivcon remote support access for all users.
- Quick Registration only works if node is not registered.
- Terminal requires password.
- Password protection menu option in Launcher to enable Tech Menus.



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Right Click Tech Menus!

Right Click Tools Rock!

Desktop Tools: Provides numerous desktop-related features.

Easy access to technical tools to make your life easier when you need to dig in.

Powerful platform for managing your images.

Even if Supervisor is in User Mode, you can switch to tech mode with a password.

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Remote Management Benefits

Remote Control

- SSH Access to Supervisor
- Reverse VNC
- Auto-Reverse VNC
- SSH Tunnels
- Help Desk

Remote Command and Control

Target groups of computers with built-in PMP Commands and Actions

It's Linux!

- Full suite of Linux Open Source Management Options
- SNMP
- cron
- etc.

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Progress Bar...

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- Key Features
- Specifications

- Image Building
- Image Deployment Details
- Deployment Times

- Supervisor Architecture
- Director Architecture
- Solution Installation Scenarios

- Benefits Recap
- Questions

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Pivcon Approach to Images

Utilize Virtual Disks

- Fast
- Portable
- Hardware Independence
- Build images on staff's desktop computers
- Snapshots

Leverage Sysprep

- Most compatible
- Hardware Independence
- Driver Injection
- Abundance of online resources
- Numerous integration options
- Domain Join
- SID Handling

Allow Patching

- File System Patches
  - Add/remove Files
  - Apply ZIP Patches
- Registry Patching
  - Add Keys
  - Modify Keys
  - Remove Keys
- Inject Printers

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Image Building – High Level Overview

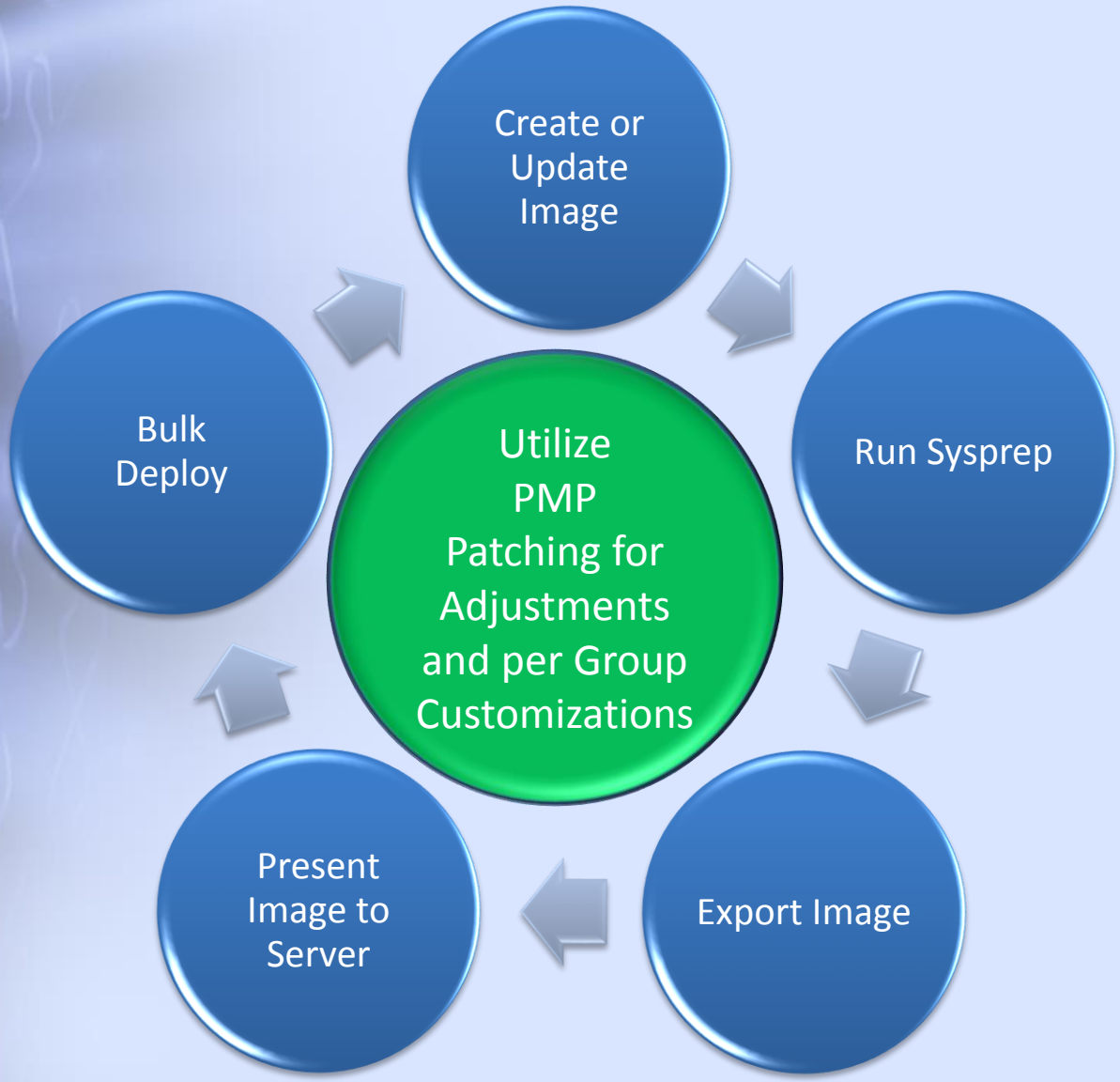

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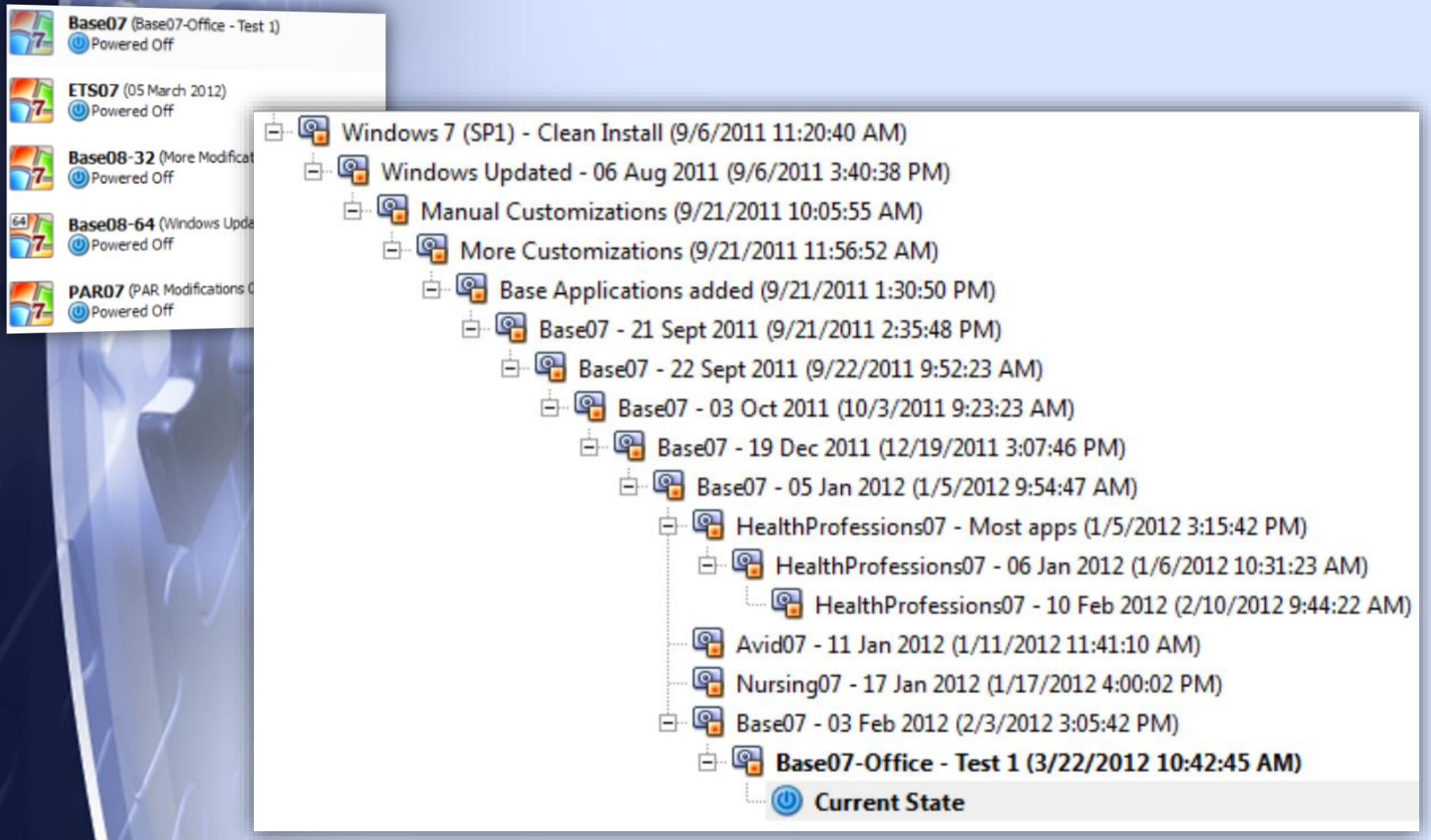
Image Building – Snapshots



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Supervisor Image Deployment Progression

Configuration Daemon	• Background process automatically detects new configurations • New configuration is processed and any configuration changes initiate a provisioning process to add or remove images
Starting	• New VD/VM configuration found • PivotalPeering initiated
Downloading	• Image transferring to client • Hash check performed, any problems with transfer detected • Becomes official seeder
Copying	• Copy / Decompress to cache • Keeps original file available to seed other nodes • Register VD / VM
Provisioning	• Differencing Disk Snapshot - Allows rollback to re-sysprep • Post-deployment processes (Sysprep) and Scripting/Patching • Differencing Disk Snapshot - Allows rollback to steady state
Ready	• Appears as boot option on launcher menu • Rebuild: Drops differencing disk and creates new one before booting • As-Is: Boots without dropping differencing disk

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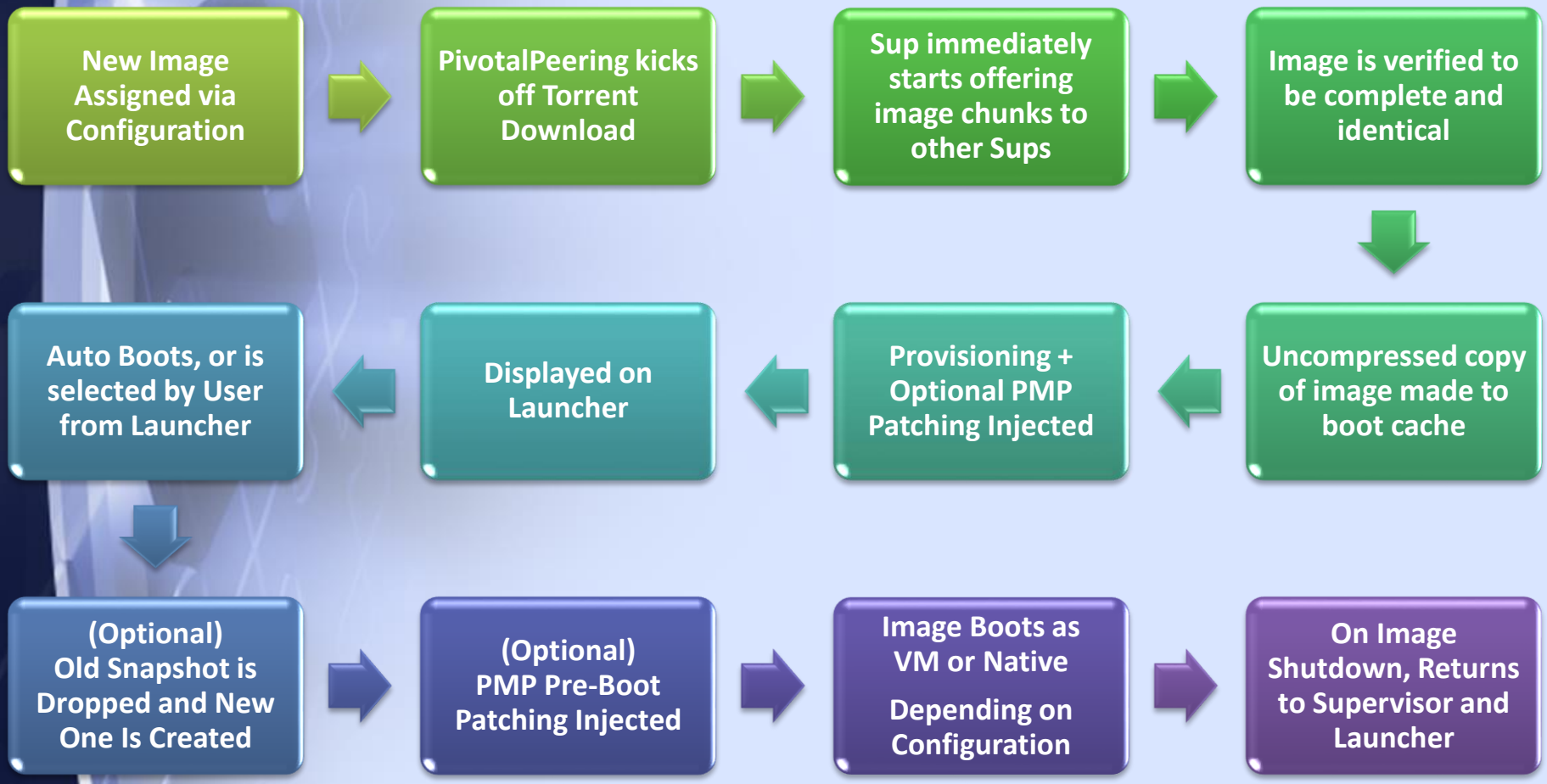
Image Deployment High Level Overview



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PIVCON
MANAGEMENT PLATFORM

Demonstration Video
Image Distribution and Configuration Walkthrough

Deployment Times – 30GB Image

Generalized Deployment Timings for a 30 GB Image, Compressed to 17 GB, In Different Computer/Network Environments								
Phase	Computer/Network Environmental							
	Optimal		Good		OK		Older Gear (100 mbps)	
	GB/min	Secs	GB/min	Secs	GB/min	Secs	GB/min	Secs
PC POST Time		15		20		25		25
Booting		40		50		60		80
Downloading	5.00	204	2.50	408	1.75	582	0.60	1700
Copying/Uncompressing	6.00	170	1.50	680	1.00	1020	0.75	1360
Optional: Provisioning (Sysprep)		720		1200		1500		1500
Optional: Patching (optional)		20		40		50		50
Booting to Windows		55		65		75		90
Time w/o Sysprep	9 Mins	504 Secs	21 Mins	1,243 Secs	30 Mins	1,812 Secs	55 Mins	3,280 Secs
Time w/ Sysprep + Domain Join	20 Mins	1,224 Secs	41 Mins	2,443 Secs	55 Mins	3,312 Secs	80 Mins	4,780 Secs
Optimal	Modern computers, 2 seeders, switched gigabit network, gigabit to the client, fast client hard drives							
Good	Modern computers, switched gigabit network, gigabit to the client, some network contention, average client hard drives							
OK	3 Year old computer, some switched gigabit, gigabit to client, numerous shared gigabit links, average client hard drive speeds							
Older Gear	5 Year old computer, gigabit to switches, but 100 mbps to clients, network contention, average client hard drive speeds							

Your provisioning/sysprep times may vary from ours depending on what drivers are injected during your sysprep process, and what anti-malware software you install, and the size of patches you deploy. Some anti-malware software can add minutes to the process due to the overhead induced by their scanning and initialization processes. These times were done on images without anti-malware products installed, and with typical patches.

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PMP Supervisor Components

Configuration Services

- Supervisor Patching
- Image Patching
- Linux Environment Mgmt
- Hard Disk Partition Management
- Oracle VirtualBox
- Virtual Disks

PivotalPeering Services

- Peer to Peer Service
- Decompression
- Recovery
- Purging

Monitoring and Management Services

- Configuration Status
- Command Listener
- Message Queuing
- Remote Control
- Inventory Collection
- Extensive open source options

Desktop Features

- Launcher Menu
- Launch Native VHDs
- Local Web Browser
- Kiosk / DSN Applications
- Remote Desktop Client

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Supervisor Special Features

Provisioning and Seeding while VBox VM's are being Used	Works Disconnected (laptops, carts, etc.)	Installs on Hard Drive, DVD, USB, or Remote PXE Boot
Sealed ISO, with Copy on Write Protection	Centralized Supervisor Upgrades via PivotalPeering	Multiple Supervisors
Small Footprint < 1 GB Disk < 300 MB RAM	Auto Boot Images	Can be set to only boot on request

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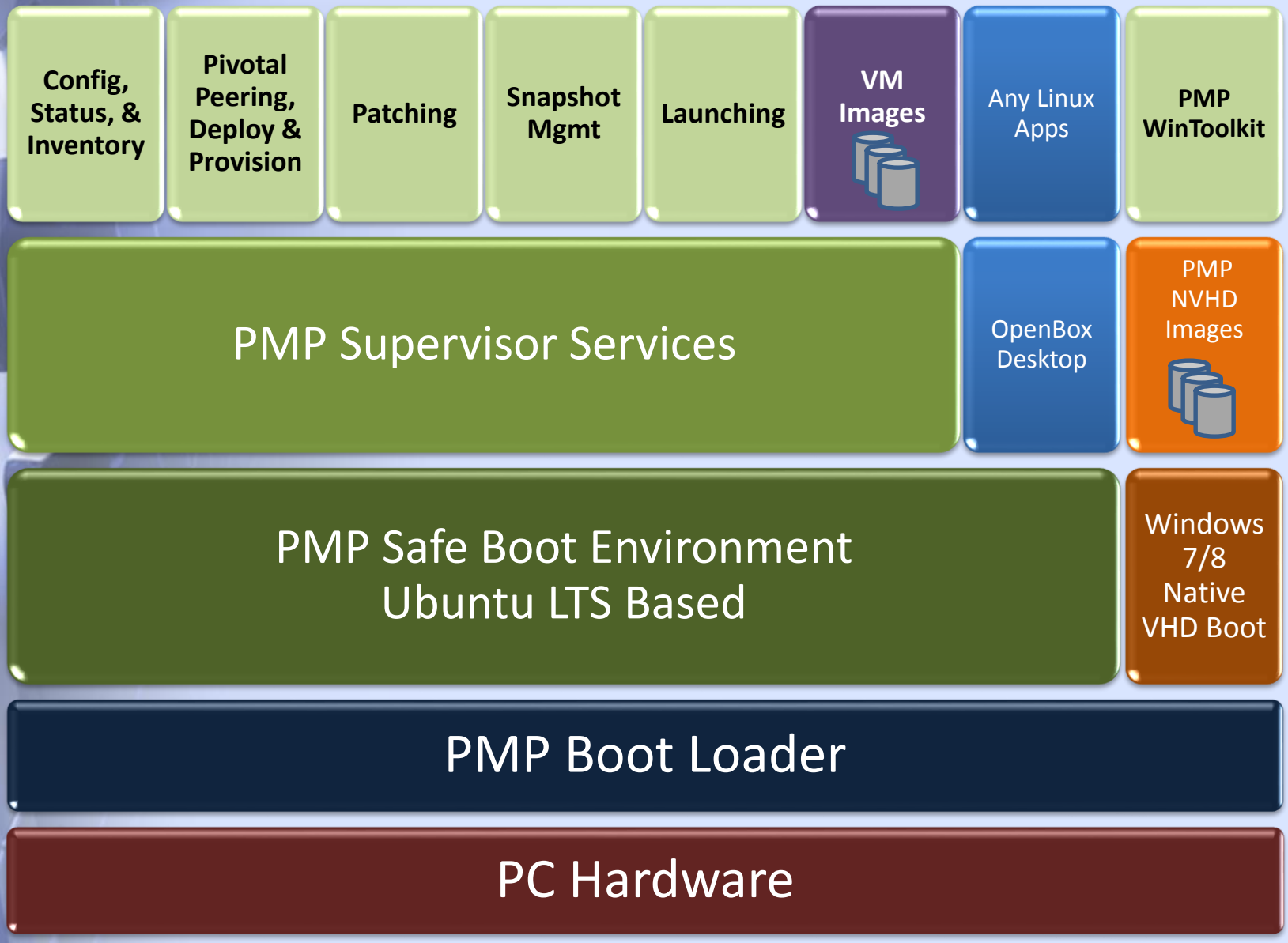
Supervisor Overview



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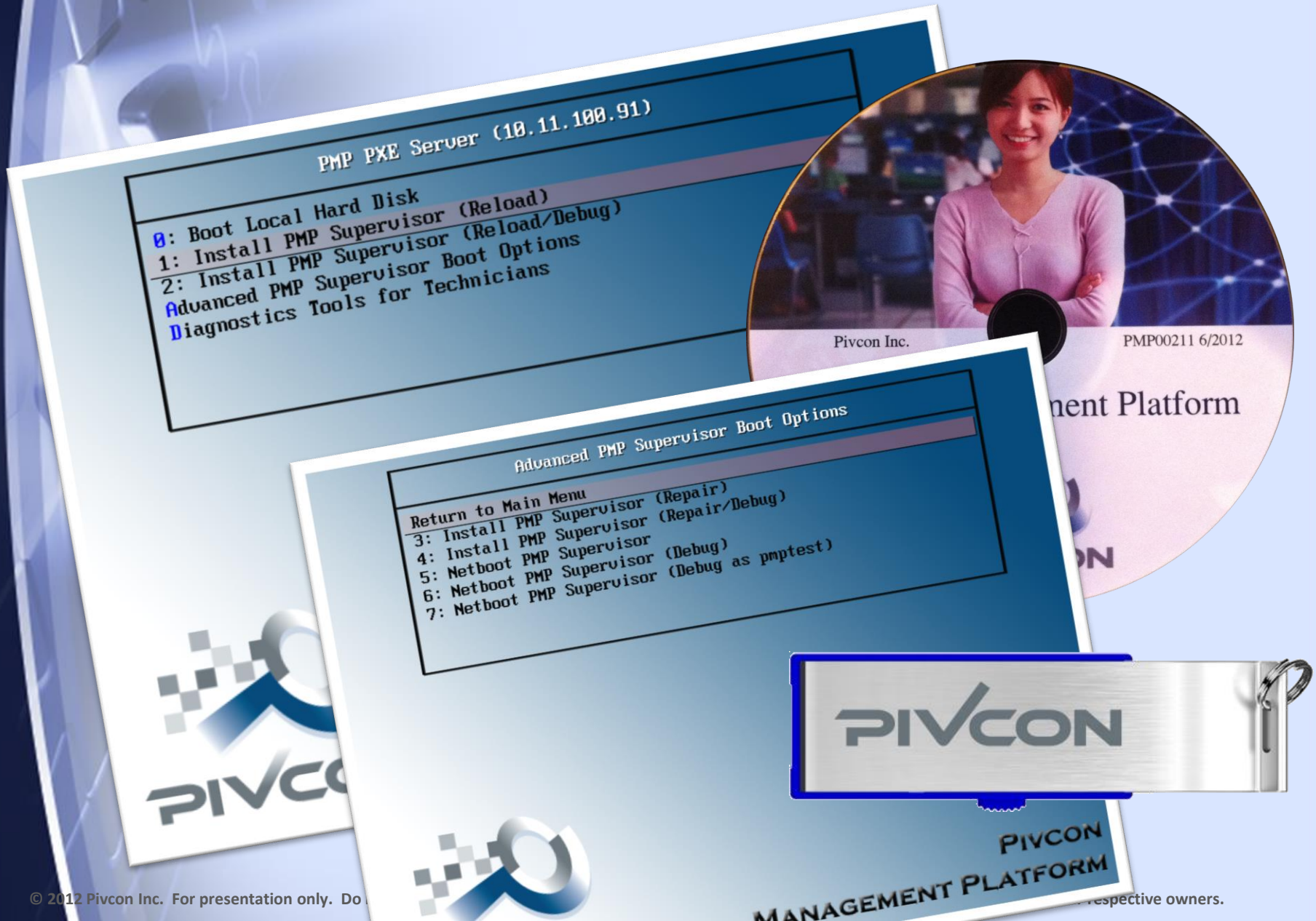
PXE Boot / DVD Boot / USB Boot



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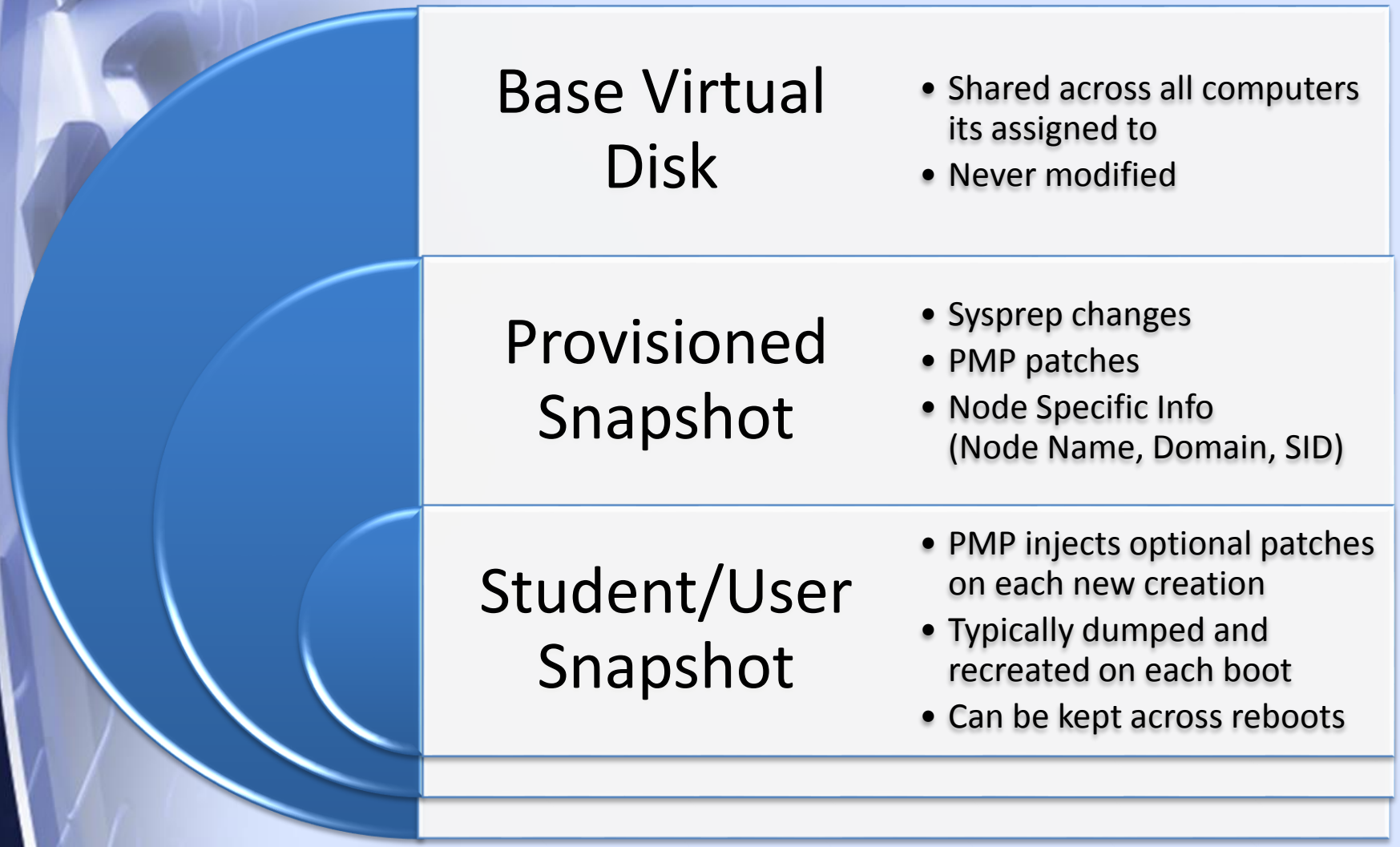
Guest: Virtual Disk Snapshots



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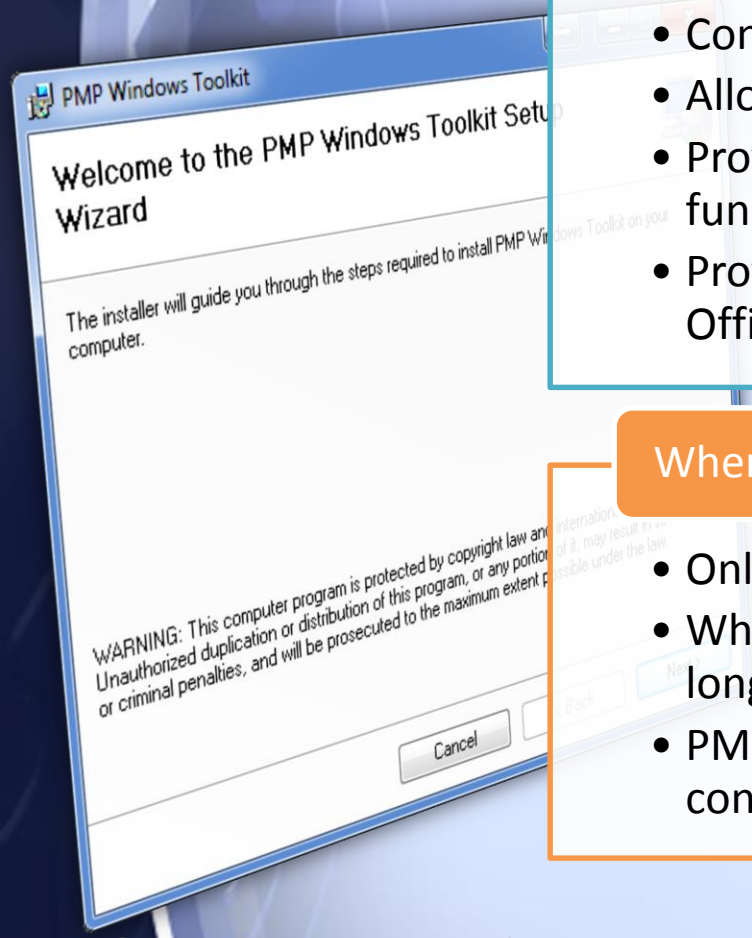
PMP WinToolkit



What does it do?

- Installs as a Windows Service that starts very early in the boot process
- Continues communication with PMP Director
- Allows remote management
- Provides inventory gathering and PMP Watch functionality
- Provides support for PMP add-on products, like PMP Office

When is it needed?

- Only in the native VHD boot scenario
- When we natively boot a VHD, the supervisor is no longer running in the background
- PMP WinToolkit takes over the PMP command, control and status roles needed on the guest

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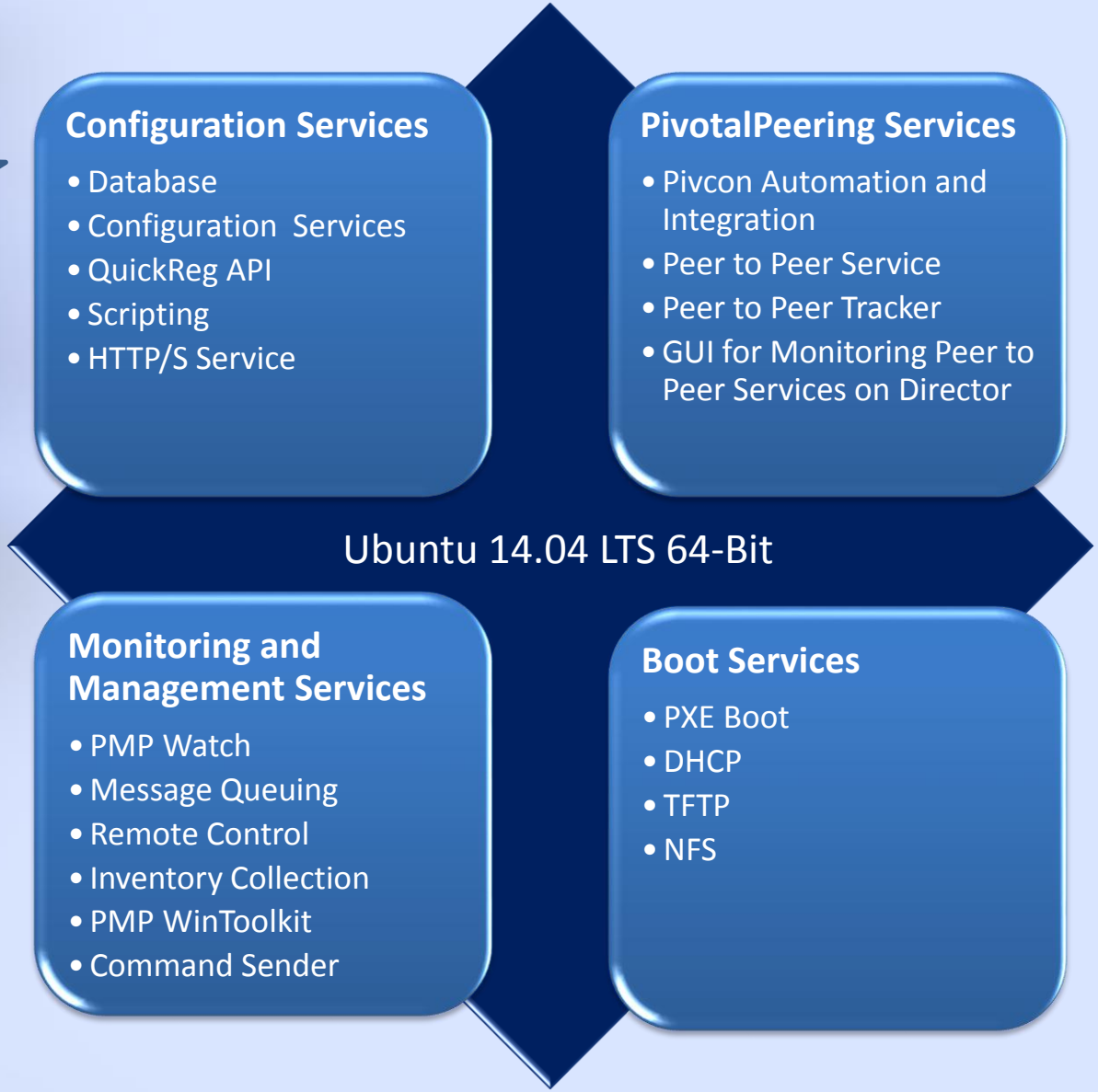
PMP Director Components

Few resources needed, runs great as a VM!

Runs great on a PC too!



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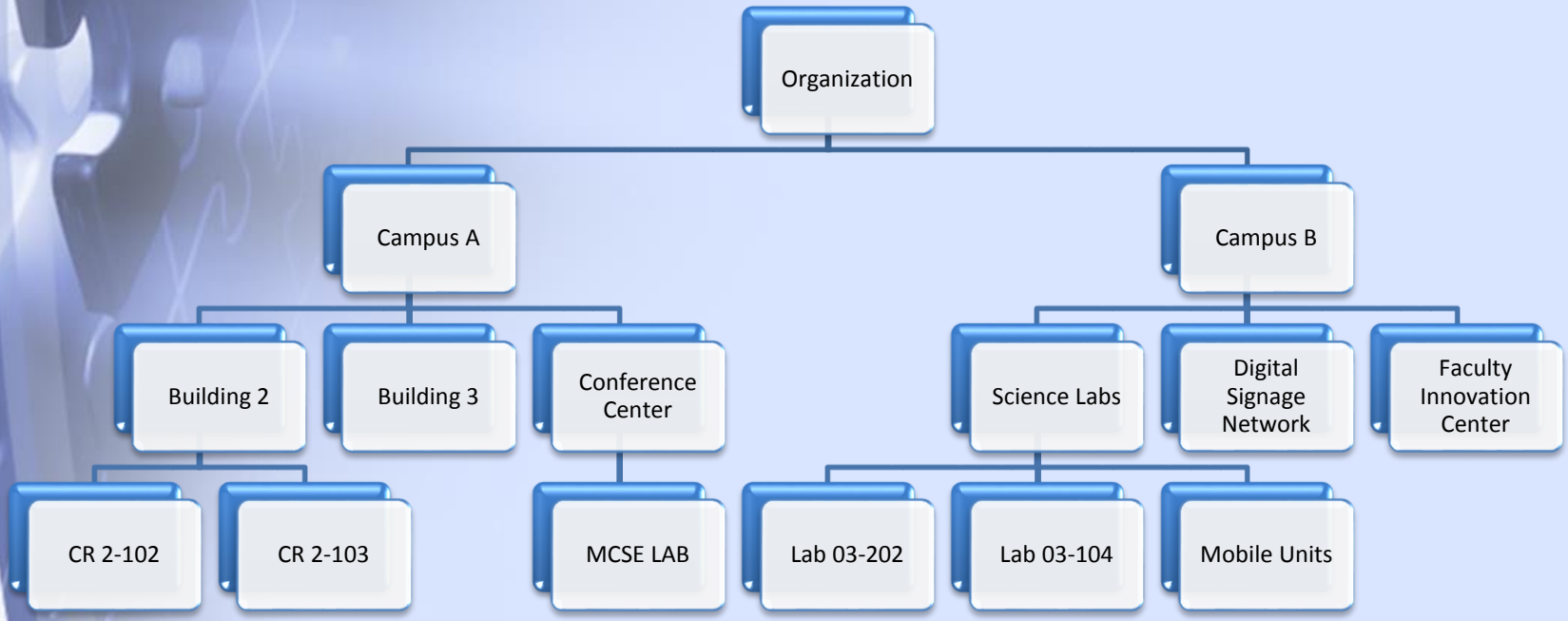
Configuration Hierarchies!

Assign computers to a "Parent Tree" in the hierarchy.

Lower levels inherit from parents.

You can override any setting at any level.



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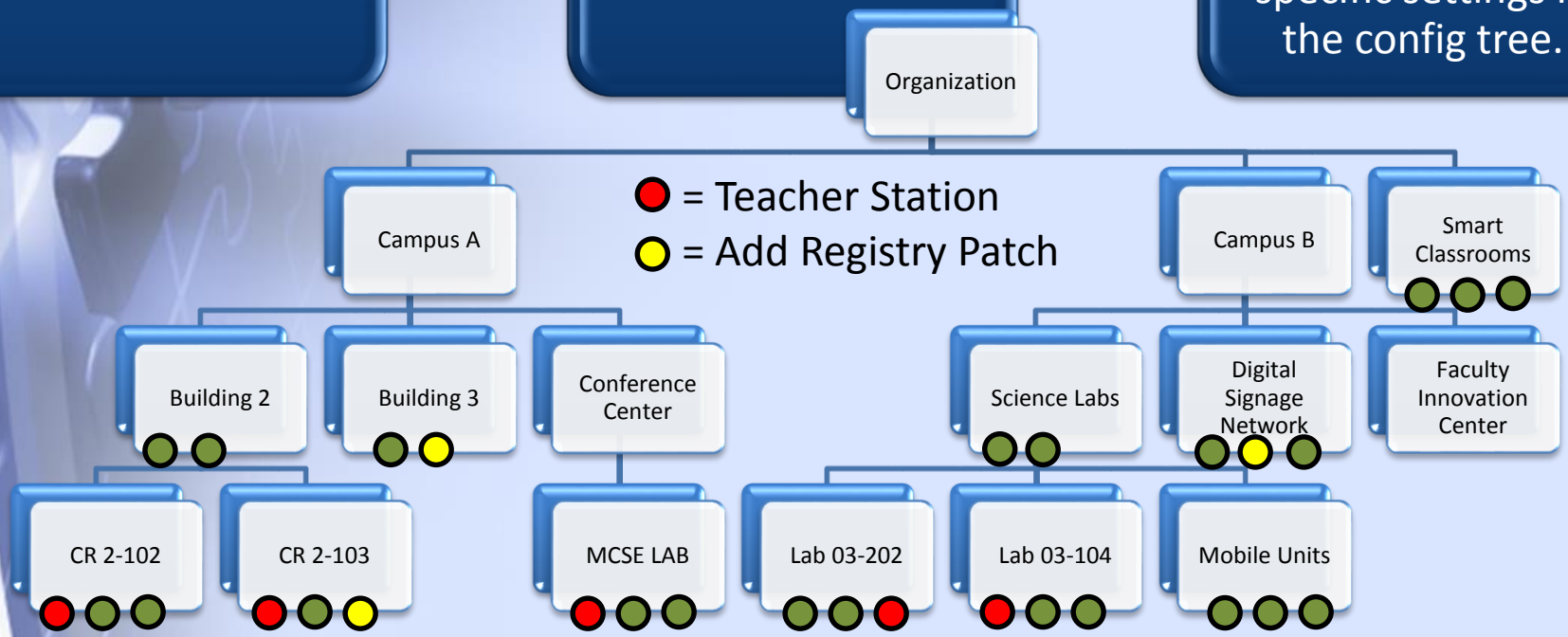
Grouping Nodes

If you have a bunch of computers in different configuration trees...

... and now need them to share a common configuration snippet...

... you can assign them to node groups and apply configuration to that group which overrides those specific settings in the config tree.



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Per Node Configuration

Finally, if you just want to set specific configuration options for a specific node...

... no need to create a organizational tree for just one node ...

... every node already has a per-node configuration element!

When to use?

- Put in Tech Mode by default as its your office test computer.
- Have it auto-connect back to you for remote control on every boot.
- Node specific hardware configuration adjustments.
- Testing a new configuration and want to limit to one node to be safe.

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Remote Command and Control

Centralized Control...

- Send to any level on the Configuration Tree
- Send to specific nodes
- Utilizes reliable and secure message queuing system

Send Commands to Supervisor...

- Reboot, Shutdown, Power Save
- Shutdown VMs, Start a VM, Start a VHD
- Open CD/DVD Trays
- Invoke Supervisor Tasks
- Execute Programs

Send Commands to Windows Guests...

- PMP Windows Toolkit Service implements listening component
- Reboot, Shutdown, Logoff, Power Save
- Create Shortcuts
- File System Changes
- Registry Changes
- Execute Programs

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Progress Bar...

- About Pivcon
- About You
- Reaching Out
- Booth

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Benefits Recap

PMP and Competitors

- Reduces costs associated with management of computer labs.
- Reduces down time by provide quick rebuild, deployments, and replacement of hardware.
- Provides consistent learning environment to students.
- Increases staff efficiency by automating laborious tasks through automation and centralized management.

Where PMP Does More...

- Multiple simultaneous images with easy to use image Launcher.
- Leverages your existing desktop hardware including multiple hard disk support.
- Easily leverage existing data center infrastructure.
- Very extensible platform.
- Virtual Disk based images (VHD).
- PivotalPeering: Super fast, and reliable.
- Remote management and diagnostic controls on PC's is excellent.
- Reduces person-hours related to advanced networking support.
- Remote deployment/image changes.
- Designed specifically for educational institutions.

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Purchasing PMP

Evaluate

- Evaluate before you buy
- Includes some professional consulting services

Offering to first 5 interested organizations.

Cost

- Comparable to other enterprise solutions.
- Quantity price breaks
- Modular, only modules you need.

Sources

- Direct from Pivcon
- From channel partner.
- Check with us to see if its possible to purchase on state contract.

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Case Study: Monroe Community College

About MCC

- Located in Rochester, NY
- Unit of State University of New York
- 37,000 Students
- 17,500 Credit Students
- 90 Academic Programs
- Two campuses and two extension sites
- Over 2,000 Academic Learning Environment Computers

Pivcon Management Platform
Case Study

PIVCON

MONROE COMMUNITY COLLEGE

Organization Size:
In Fall 2011, Monroe Community College (MCC) enrolled over 17,500 credit students supported by more than 1,500 full and part-time faculty and staff with an academic learning environment of over 2,000 desktop computers spread across two campuses and two extension centers.

Organization Profile:
Monroe Community College is a unit of the State University of New York (SUNY) and is one of only 28 community colleges out of over 1,400 across North America selected for board membership with the prestigious League of Innovation in Community Colleges. Founded in 1961, MCC prides itself on providing an affordable, quality education for more than 37,000 students in the Rochester, NY area. MCC offers over 90 academic programs across two main campuses, two specialized centers and various community sites.

Business Situation:
MCC's Communications and Network Services (CNS) department, within the Educational Technology Services division, was tasked with replacing their aging classroom image deployment and management system. The system had become slow and unreliable, did not work well with the latest modern operating systems, and required identical hardware for each image to work well. MCC needed a new platform that would allow them to quickly and reliably deploy multiple images in their multi-campus academic learning environments. The new platform would rely less on a proprietary means for automating common tasks in a Microsoft Windows® environment while being both scalable and flexible enough to meet the current and future needs of this leading academic institution. CNS was an extensive user of virtualization technology in the data center, and desired a solution that provided the benefits of virtualization. VDI was explored, but did not fit the bill as CNS also needed the performance and compatibility of native hardware due to the extensive deployment of high end audio/visual, 3D engineering, and other demanding software applications required by MCC's curriculum.

Solution:
After reviewing numerous products and proposals, including VDI and Software Streaming solutions, MCC selected the Pivcon Management Platform (PMP) as its product of choice starting with the Fall 2010 semester. PMP provided support for Microsoft Windows® 7 in both the Native Virtual Hard Disk and pure virtualized environments, which allowed them to leverage their existing infrastructure, required no new data center hardware investments, and significantly reduced their deployment timelines, while greatly increasing the reliability of the deployments. The solution also opened up the opportunity to deploy non-Microsoft operating systems to support special curriculums where needed.

Benefits:
With more than 2,000 computers now running under PMP in the academic learning environment, MCC has realized a number of benefits. These benefits greatly increased reliability and significantly reduced deployment timelines. MCC leveraged their existing data center infrastructure, reduced the complexity of their network infrastructure to support image deployment, and increased the capability to modify images in the field without the need to fully deploy a new image. Simply put, MCC didn't need to upgrade or invest in new servers, storage, or network gear due to the low data center requirements of the PMP platform.

PMP provides many of the benefits of VDI, while maintaining native hardware performance and compatibility that allows for the deployment of the demanding applications needed by their academic programs. Further, the PivotalPeering distribution technology provided very fast deployment times leveraging their installed base of desktops while dramatically minimizing the demand on data center resources.

Deployed PMP

- Deployed PMP in Fall of 2010
- Currently on over 2,000 Computers
- Deployed using Native VHD Boot Mode
- Deployed using PivotalPeering Distribution
- Consolidated Images and Achieved Hardware Independence
- 75% Reduction in Enterprise IT Hardware Requirements and Labor
- Significantly Increased Deployment Efficiency and Reliability

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Contact Pivcon

Pivcon Inc.

Rochester, NY

www.pivcon.com

800.959.5370

sales@pivcon.com

Brett Thompson

Sales / Product Manager

bthompson@pivcon.com
800.959.5370 x101

Rick Grakowsky

Sr. Solution Engineer

rgrakowsky@pivcon.com
800.959.5370 x103

Chris Ogden

Sr. Solution Engineer

cogden@pivcon.com
800.959.5370 x102

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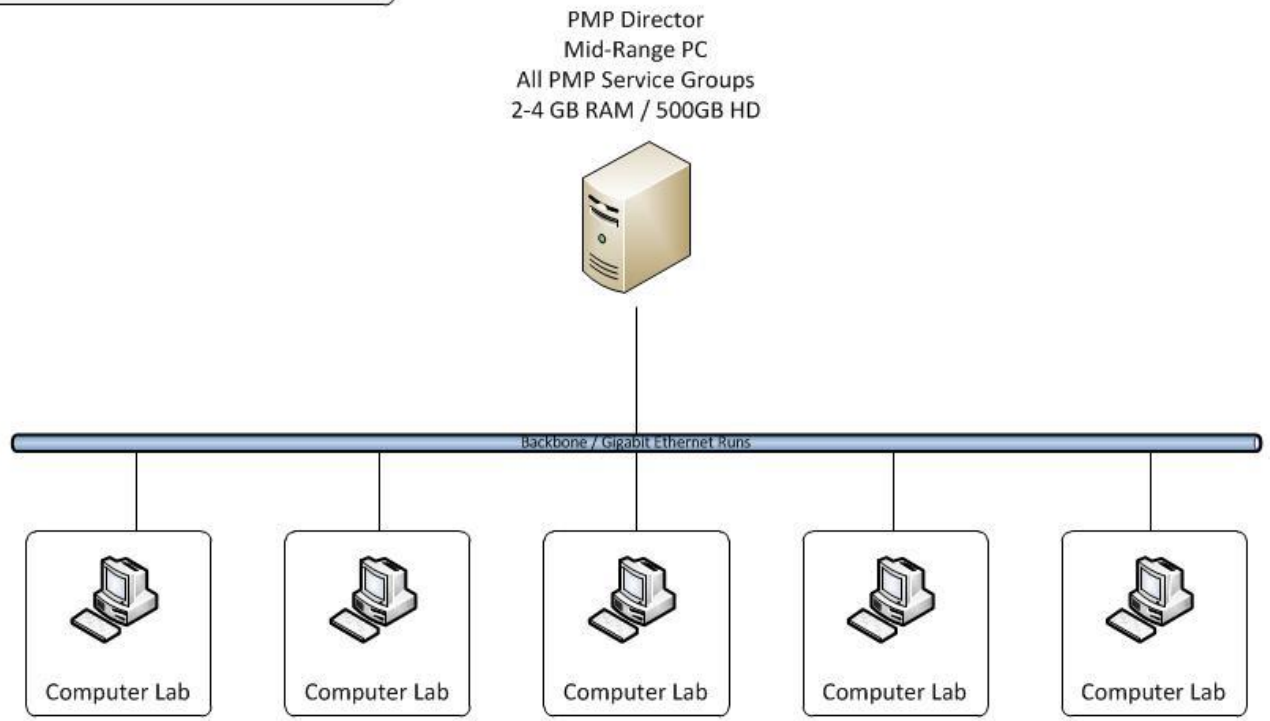
Small Solution Installation Scenario

This small-scale deployment represents serving around 300 computers using a single mid-range PC for the PMP Director. The amount of storage required would be dependent on the number of images to be deployed and how many backup versions you decided to retain.

PMP Service Groups:

A: Configuration Services: MySQL Database and node configuration services
B: Monitoring Services: PMPWatch, RabbitMQ and CMDListener/CMDSender
C: PivotalPeering Services: rTorrent, OpenTracker and ruTracker
D: Boot Services: PXE Boot, TFTP and NFS (PMP ISO and Image Distribution)

Pivcon Management Platform
Sample Deployment Scenario 1
Small Scale Deployment



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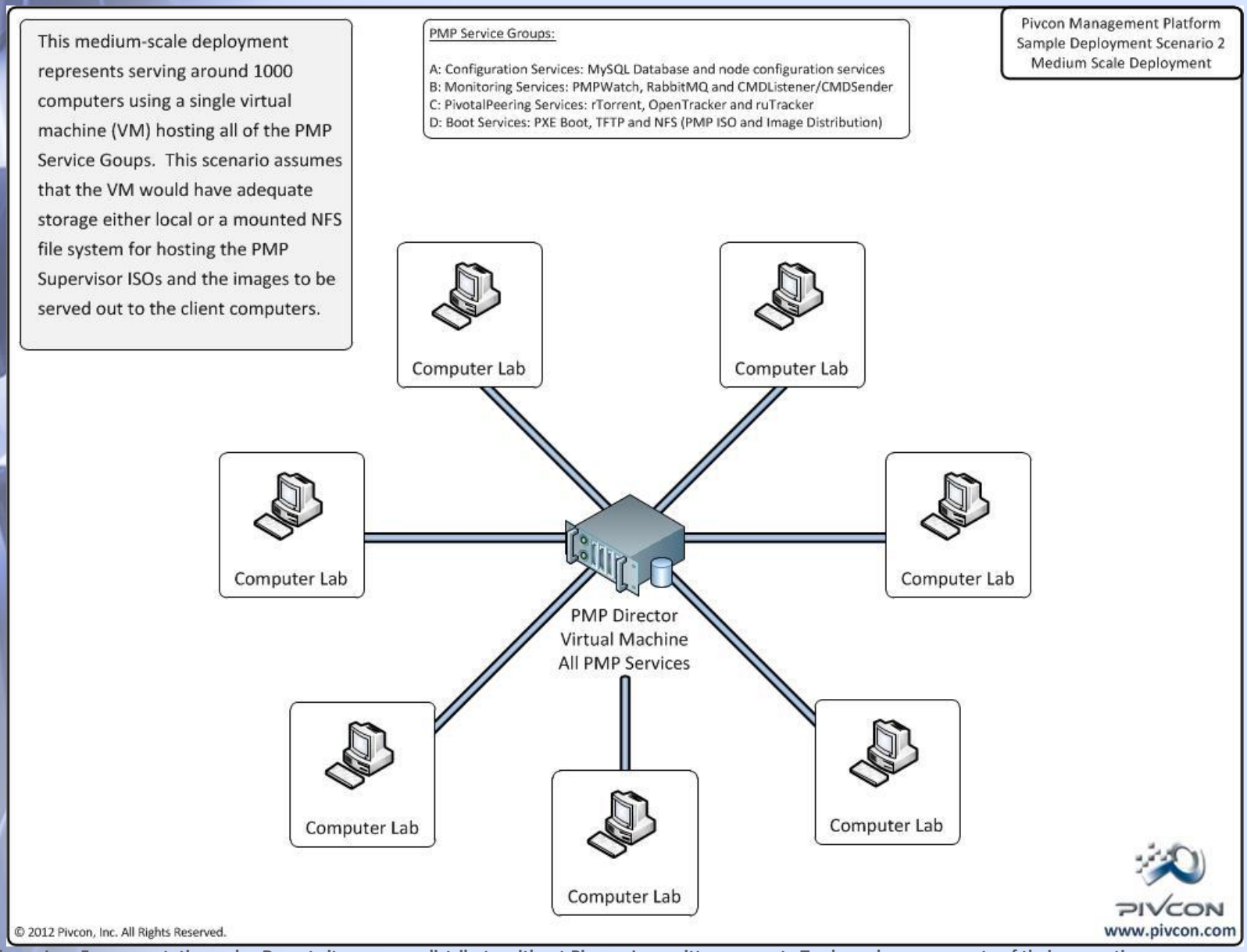
Medium Solution Installation Scenario



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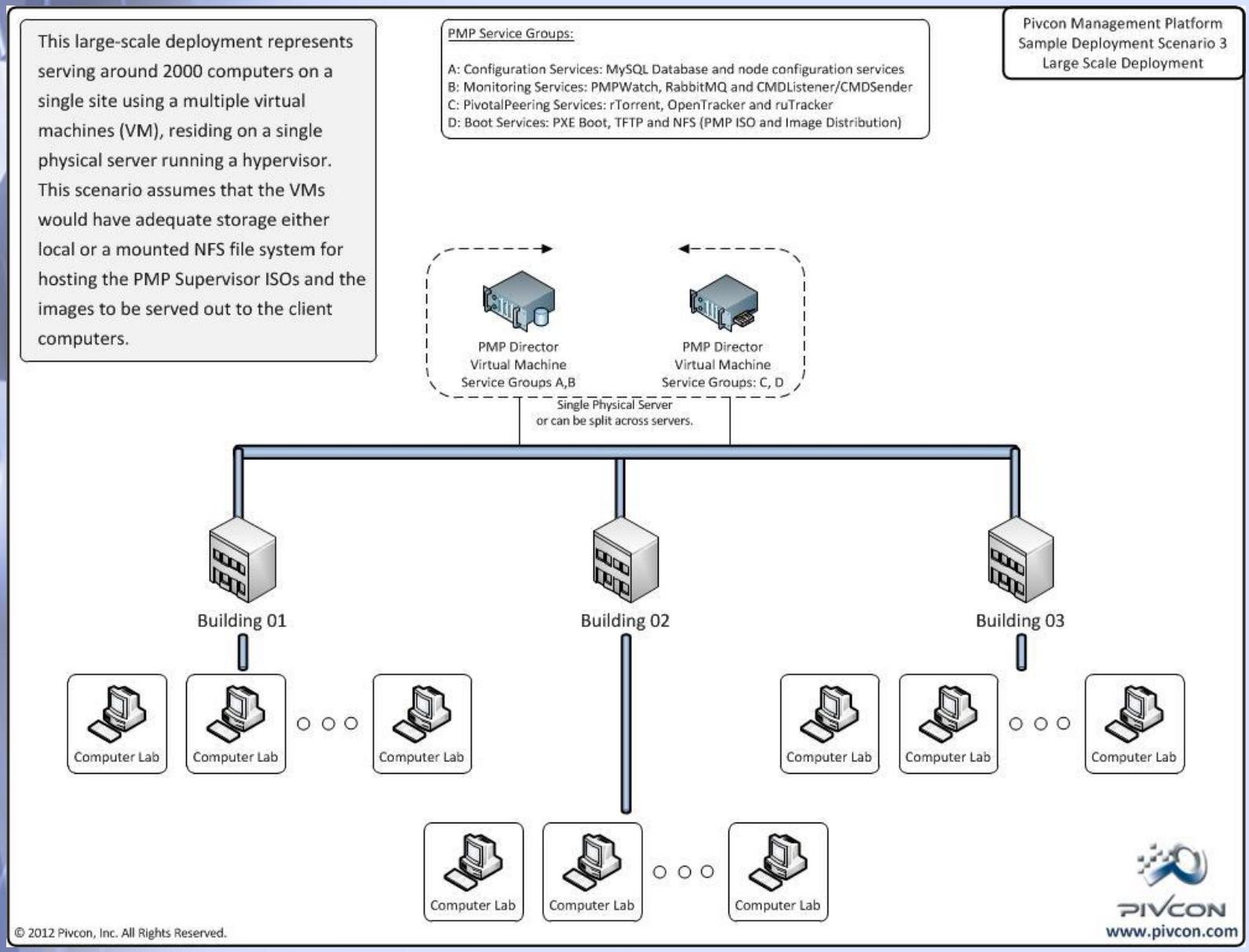
Large Deployment Scenario



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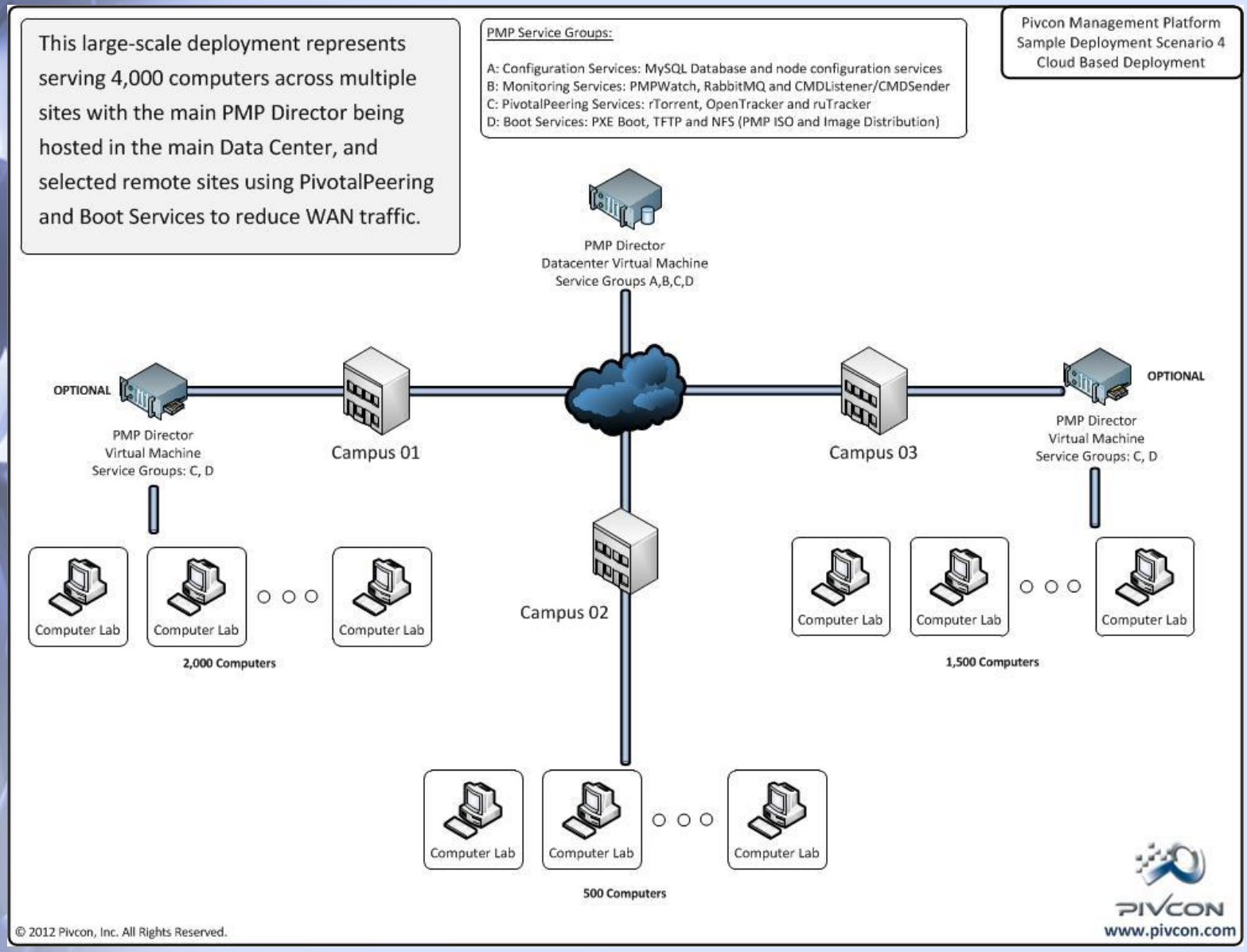
Cloud/Very Large Deployment Scenario



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