



Clouds for Marc3

August 8, 2011

www.platform.com/privatecloud

Today's Speaker



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VP Solution Sales
Platform Computing

Agenda

Introduction to Platform Computing

What We Understand About Marc3


The Path to the Cloud

Case Study

Platform Computing Enterprise Cloud Management

Who We Are

A company that helps customers run applications in a distributed environment

A large green curly brace on the left side of the slide, grouping the text to its right.

Platform Clusters, Grids, Clouds Computing

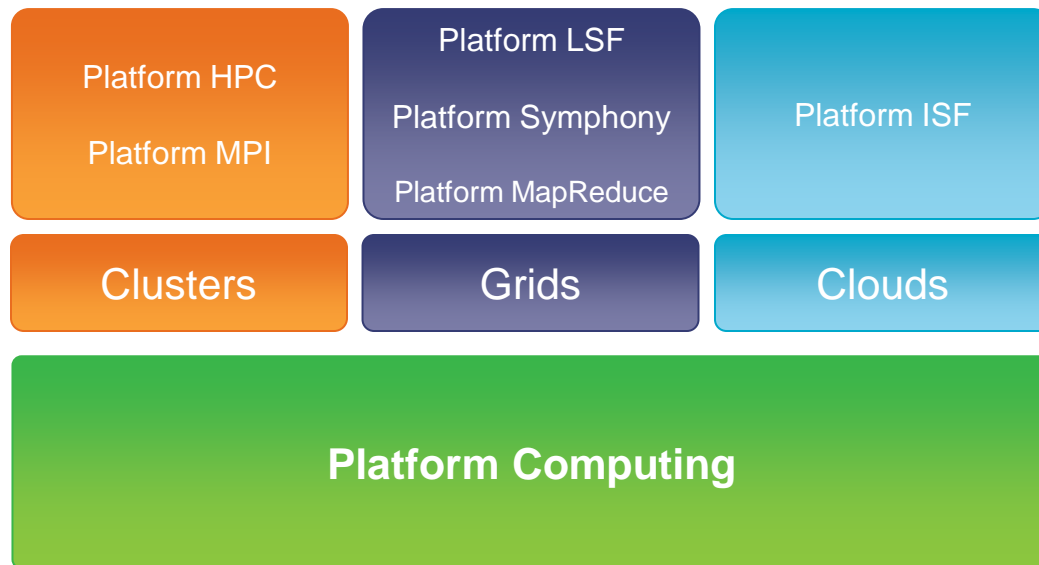
The leader in managing large scale shared environments

- 19 years of profitable growth
- 9 of the Global 10 largest companies as customers
- 2,000 of the world's most demanding client organizations
- 6M CPUs under management
- Headquarters in Toronto, Canada
- 550+ professionals working across 13 global centers
- Partnerships with Dell, HP, IBM, Intel, Microsoft, Red Hat and VMWare

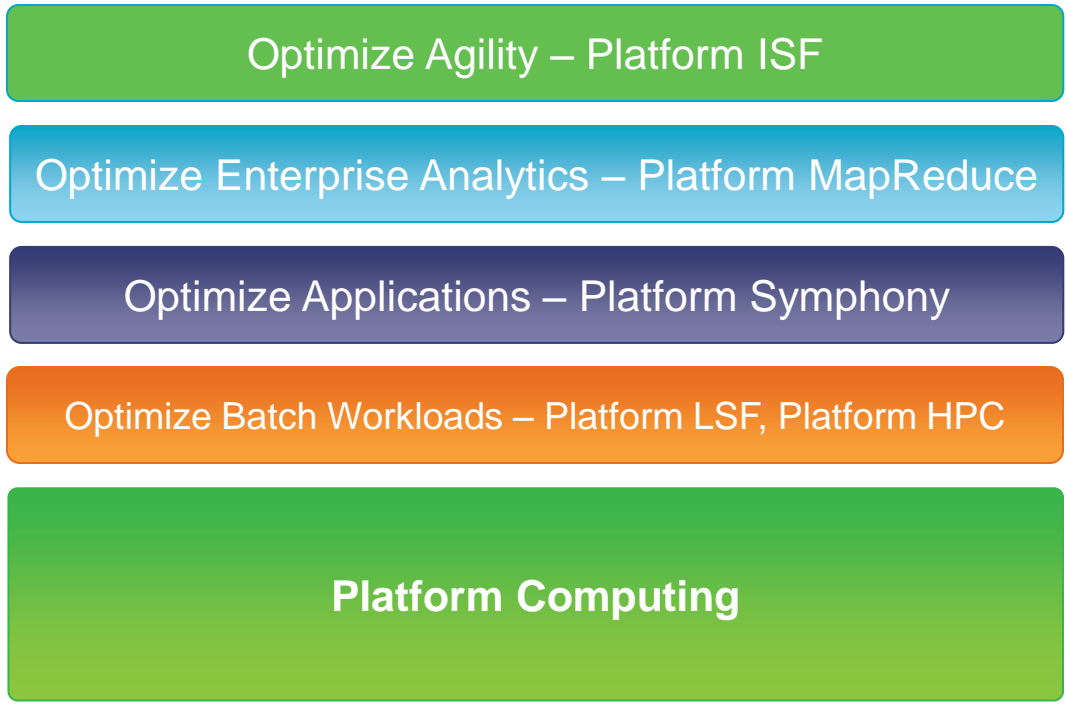
Overview: What Do We Sell?



“We believe Platform ISF is perhaps the most complete internal cloud software solution we’ve seen so far,” Staten says.



Infrastructure Optimization For Scale



Server and operational cost

Performance and agility



= The Platform Advantage

Marc3

Our understanding of Marc3's Goals

Marc3 Business Challenges

- **Alignment on Vision with Political/Educational/Industry stakeholders**
- **Defining Scope**
- **Funding**
- **Implementation**
- **Support Model**
- **Operational Funding**

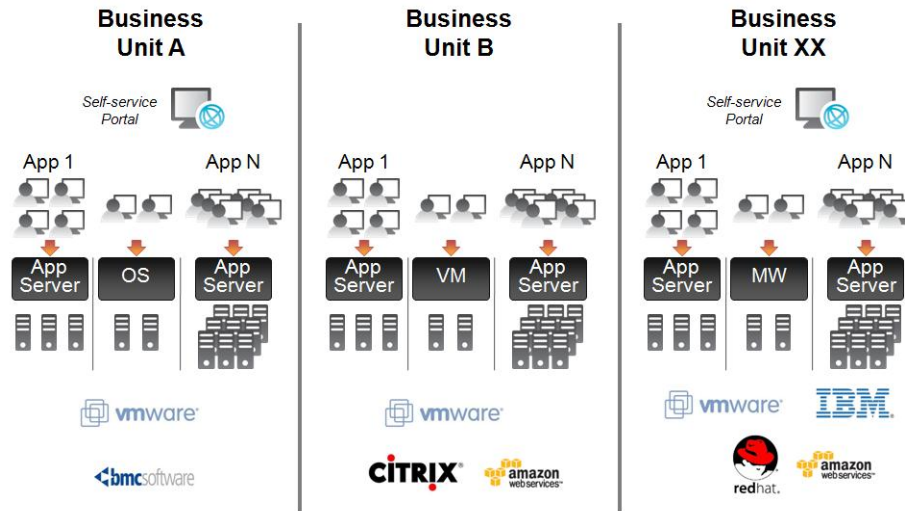
Marc3 Goals

- To support the preservation of the manufacturing base as a key component of Illinois' economy
- To collaborate with government, education and industry to facilitate innovation for Illinois companies
- To provide education and access to infrastructure to support competitive differentiation
- To ensure access for small and medium businesses to take advantage of cloud computing

A black and white photograph of a series of stone arches, likely part of a bridge or a large building, spanning the top of the slide.

The Path To The Cloud

Typical Technology Challenges



- Organizational/department desire to own & operate their environments
- Low utilization: over-provisioning & sprawl
- Not everything virtualized – physical
- Mix of technologies / management tools
- Too many manual processes
- Uncontrolled experimentation with external clouds
- Vendor lock-in

HPC



Extensions to existing HPC environments

- Morphing
- Harvesting
- Bursting
- 100% cloud

Enterprise



Infrastructure-as-a-Service

- Private & Hybrid
- Self-service
- Multi-Virtual and physical systems
- Policy / SLA driven automation

IT Shifting To A Service Organization



Business Units

- Faster delivery / self-service
- Pay for use / lower costs
- High SLAs



IT

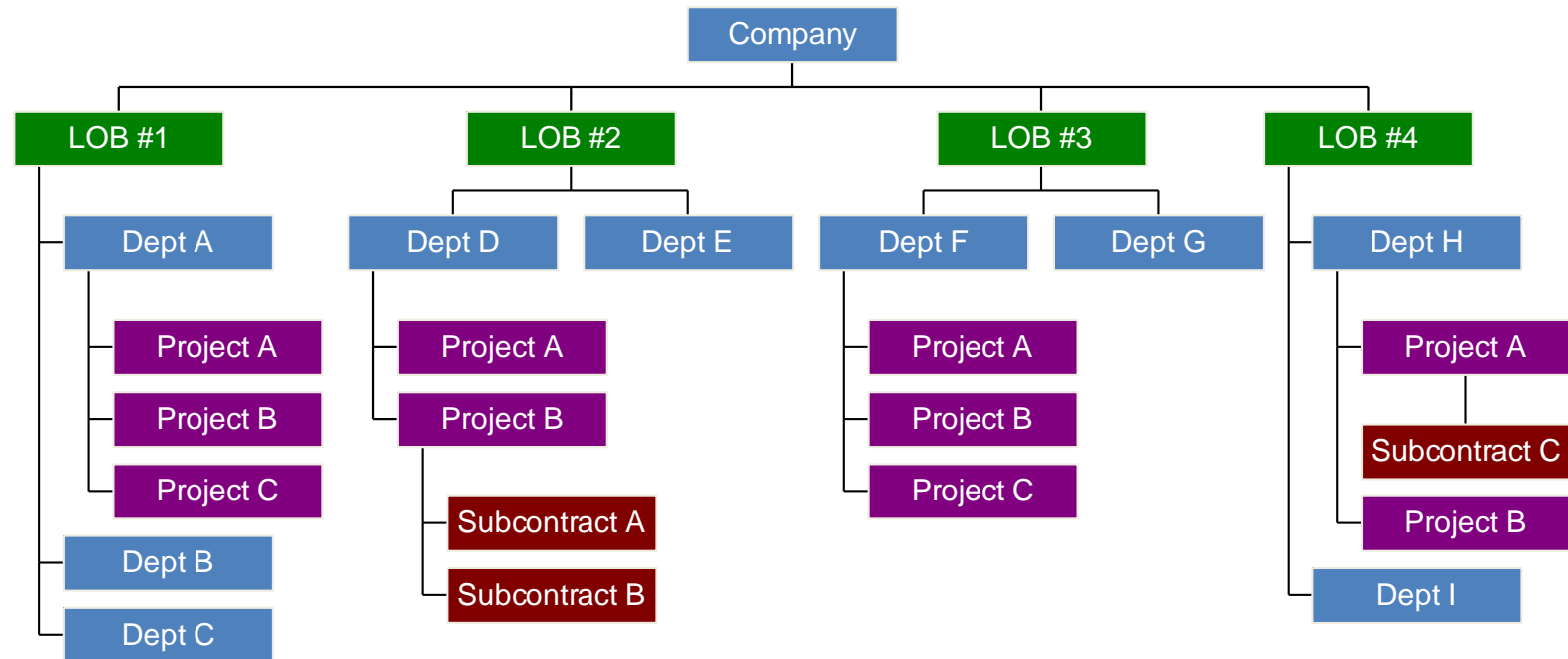
- Enable self-service
- Virtualize as much as possible
- Increase utilization at all levels
- Support multiple app architectures
- Increase operational efficiencies
- Achieve a greener data center

Customer Case Study

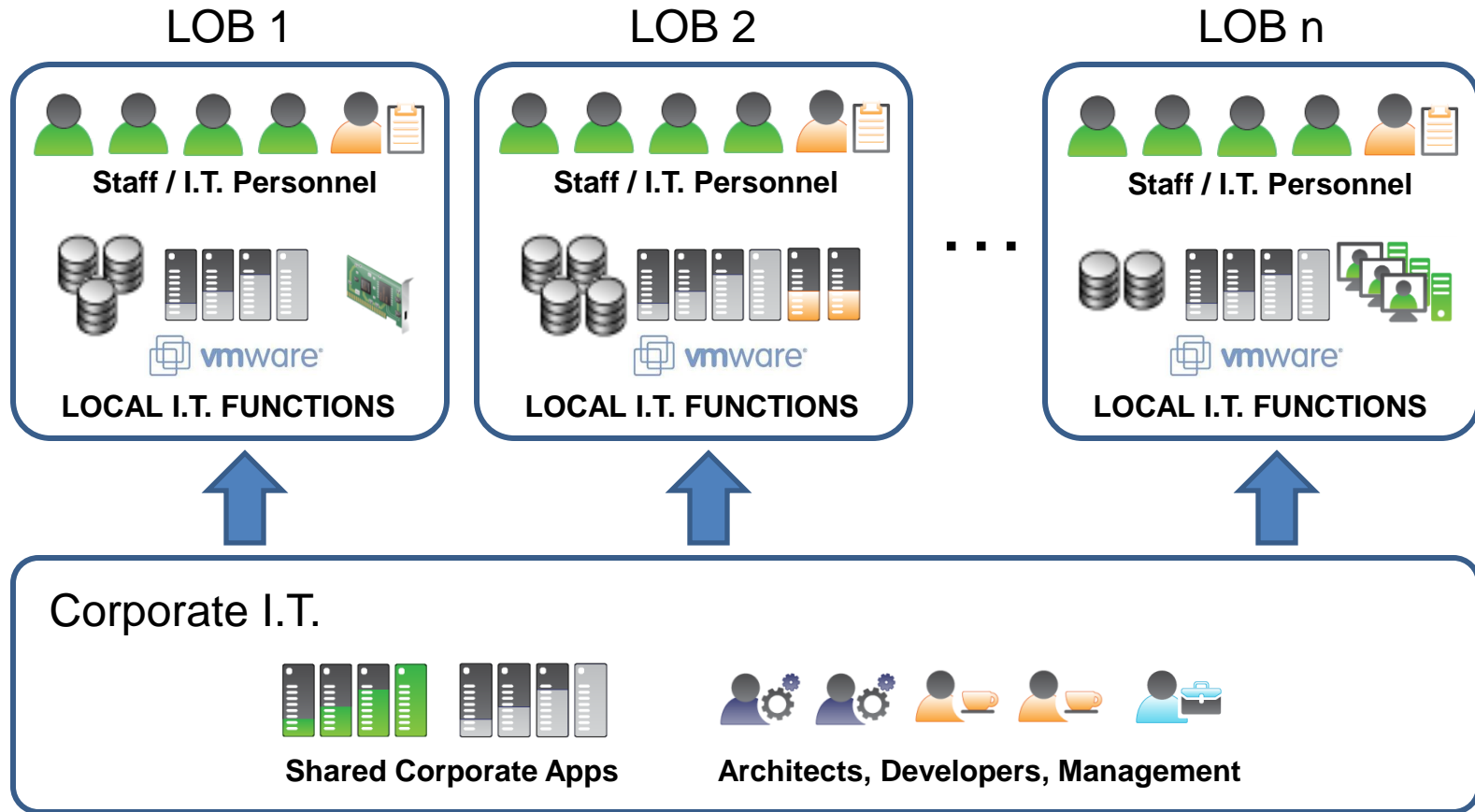
**A pragmatic approach to realizing a shared,
private cloud infrastructure**

About the Customer

- Major engineering conglomerate
- Multi-geography & multi-agency with semi-autonomous BUs
- Diverse areas of focus, multiple centers of expertise
- I.T. requirements constantly changing based on fluid client requirements



Customer Environment



Corporate I.T. supports common applications, but owing to specialized requirements, each LOB has its own I.T. function

Key Project Drivers

Old underpowered hardware in LOBs – *tight capital budgets*

Inability to share infrastructure – *re-inventing wheels, losing time*

LOBs need flexibility, but also need a properly supported environment

Need *economies of scale* but while preserving autonomy

Need central visibility and management of application licenses

Reduce / simplify local sys admin workload & responsibilities



Project Goals

Provide shared Infrastructure-as-a-Service (IaaS) for all LOBs

Leverage existing investments in virtualization & key applications

Self-service , pay-per-use – “push button deployment”

Maintain tight information security

Keep costs minimal – *both operational and sustaining*

Ensure stakeholder support – philosophy of “empowerment”



People, Process, Technology

Push or Pull?



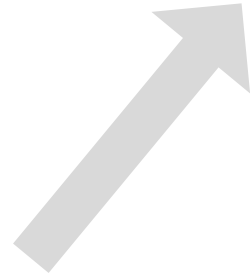
End User LOB users and administrators

Create demand for the private cloud by empowering users, offering better service, and preserving LOB autonomy.



LOB Managers

Centrally imposing standards will not work without strong customer "buy-in".



Corporate I.T., Developers, Project owners

Empowering the business with a more flexible I.T. services model

Key Concerns of LOBs

The voice of the customer

- Concern about “lock-in” to a single cloud ecosystem
 - *Lack of flexibility, reduced control and visibility to cost*
- Need to retain flexibility
 - *Need to be able to select technology appropriate to client and project demands. Cannot be constrained by Corporate I.T.*
- Need fast turnaround
 - *Cannot wait for I.T. approval and lengthy provisioning times*
- Preserve existing processes & tools
 - *Retain significant existing investments: applications, alerting systems, trouble-ticketing system etc..*
- Costs may be prohibitive?
 - *LOBs cannot support if value unclear*



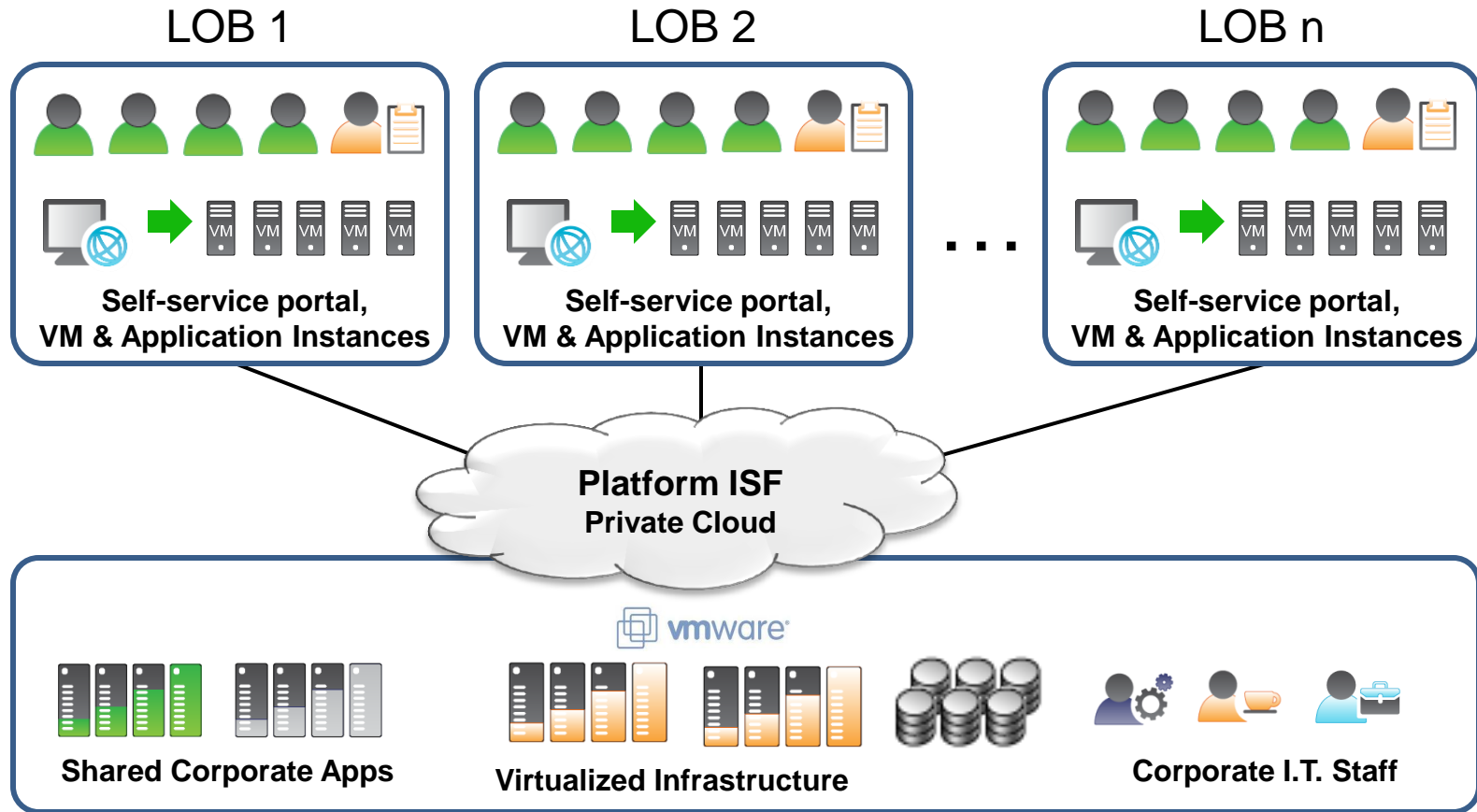
Customer Decision Process

Deliberative, Consultative, Thorough

- Requirement definition, business case
- Vendor discovery
- Definition of services
- Centers survey, funding determination
- Vendor selection
- Technical workflow design
- Alpha / beta implementation
- Training & hand off
- Feedback & refinement

**Platform ISF selected as a standard
Private Cloud Management Platform**

After Private Cloud Project



Virtualized private cloud infrastructure enabling economies of scale, more flexibility and better service levels for all.

Business Benefits

- Reduction in number of administrators required to manage a more diverse IT resource pool
- Dramatic reduction in cycle times to provision new assets
- Realization of an infrastructure “pay-per-use” model
- Reduction in planned capital spending & maintenance
- Increased user satisfaction with I.T. services
- Reduction in physical server count
- Consolidation of enterprise application licenses
- Flexibility to meet future demands on IT

Platform ISF Enterprise Cloud Management

Forrester Private Cloud Report

Platform Scores # 1 for Private Cloud



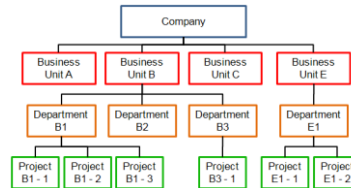
- **First quantitative report on private cloud vendors**
- **Leading industry analyst – James Staten**
- **15+ vendors analyzed**
- **Comprehensive**
 - **30 min scripted demo**
 - **Customer references**
 - **Written responses**
- **Evaluated across 10 criteria with ratings from 0-4 points**

Available at www.platform.com/privatecloud

Key Platform ISF Concepts



**Deep VMWare
Integration**



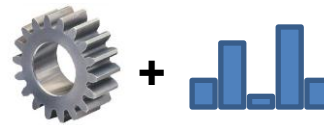
**Hierarchical
Self-service
Virtual Clouds**



**Infrastructure
to
Applications**



**Heterogeneous
VM + Physical**



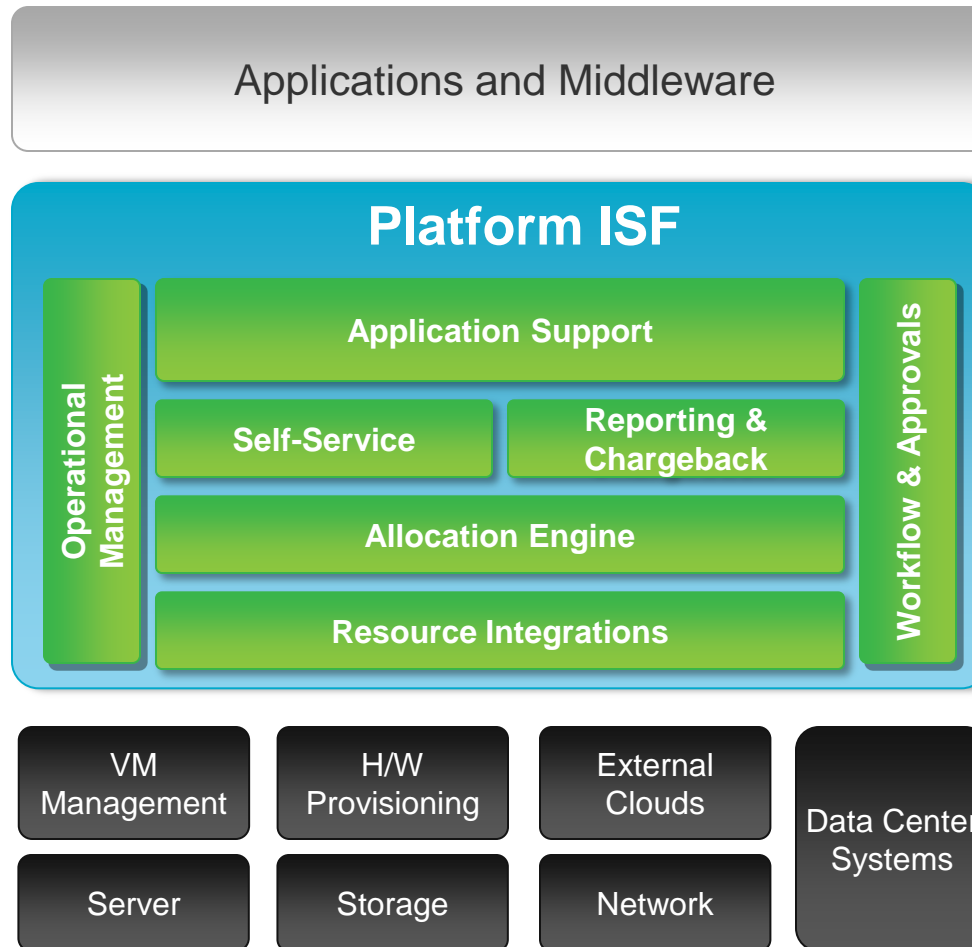
**Rapid Provisioning
and/or Flexing**



**Cloud
Cockpit**

Platform ISF for Cloud Management

Comprehensive,
Modular
Product



Request
to
Reclamation

Platform Cloud for the Enterprise

Consolidation with Control

- Multi-LOB consolidation into a private cloud
- Supports unlimited hierarchical org structures
- Allow LOBs to self-manage and maintain unique business requirements

Comprehensive

- Purpose built for cloud
- One comprehensive, yet modular solution
- Ready-to-deploy

Open Architecture

- Multi-VM, physical (included) and external cloud
- Easily fits into existing IT and security
- Supports transition to commodity cloud stack

Enterprise Grade

- 19 year history of large scale production systems (not a startup)
- Best-in-class enterprise support offering
- Not open source / toolkit

Possible Next Steps

Programs	Detail
Discovery Days	Define use cases and POC
Executive Briefing	Inspire your cloud thinking
Learn More	www.platform.com/privatecloud
Try	Free 30 day trial
Participate	Regularly scheduled webinars
Follow	Twitter @Platform_Cloud

Thank You !

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Appendix - Back-up and Reference Slides

Configuration and Setup of a Private Cloud

Reflect Organizational Realities

- Multiple levels & sub-levels of configuration – LOB, dept, project hierarchies
- Delegate resource management, empower project teams & local management

The screenshot displays a configuration window for an account. The 'Account Name' is 'Materials', and the 'Parent Account' is 'Engineering'. The 'Account Status' is 'Open', and 'Approval Needed' is set to 'No'. Below this, a table shows resource limits:

	CPU (MHz)	RAM (MB)	Disk Space (GB)	Number of Physical Machines
Available Resources	20000	8000	0	5
Current Limit	0	0	0	0
Resource Limit	4600	1120	0	2

The right-hand side of the interface features a tree view under 'Accounts & Users' with the following structure:

- Department01
 - NewDept
 - A1
 - Marketing
 - subproject
- Department04
- Department02
 - Engineering
 - Aerodynamics
 - Materials
 - Simulation - Contracted
 - Propulsion
 - Thermodynamics
 - Finance
- Department03

Departments map their own real-world organization sub accounts

Flexible, multi-level organizations & accounting LOB, Dept, Project

Flexible resource sharing. Resources on demand.

Delegate control to the most appropriate level for the business.

Better Cloud Management

- Deep integrations with leading hypervisors
- Supports popular data center provisioning & management tools
- Adapters to public cloud providers – avoid or control a “flight to the cloud”

Manage public cloud resources transparently as if they were local.

Deep Integrations leverage existing investments in tools, training & processes.

Freedom of choice
Single interface
hypervisor, provisioning tool and cloud provider agnostic.

The screenshot displays the Platform Computing management console. It features a hierarchical tree on the left with categories like DataCenter3, Cluster001, and various hypervisors (EC2, Hyper-V, etc.). Three overlapping panels show different resource views: 'Citrix XenServer Resources > VMs', 'EC2 > Physical Hosts', and 'VMware Resources > Hosts'. The VMware panel includes a table of physical machines with columns for Status, CPU usage, MEM usage, DataCenter, Zone, and Zone Environment.

Hosts	VMs	vCenter Servers	Resource Groups
delint06.lsf.platform.com	Up		
delint04.lsf.platform.com	Up		
db04b16.lsf.platform.com	Up		
db04b15.lsf.platform.com	Up		
db01b05.lsf.platform.com	Up		

Better Cloud Management *(cont)*

- Application Focus, multi-component application templates
- Auto-scaling, auto-flexing policies

The screenshot displays a cloud management interface with several key sections:

- Scaling Rules:** A table with columns 'Target' and 'Rule Name'. It shows two rules for 'WebSphere': 'Increase servers' triggered by 'AVG CPU UTIL (%) >= 95' and 'Decrease servers' triggered by 'AVG CPU UTIL (%) < 5'. Buttons for 'Add' and 'Delete' are at the top.
- Application Definitions:** A list of application definitions with columns for 'Application Definition Name', 'Component Type', and 'Creator'. 'Apache Load Balance' is selected. Other entries include 'Amazon EC2 Fedora Core', 'CentOS LAMP Stack', and 'JBoss Lo...'. Buttons for 'New Definition', 'Modify', and 'Delete' are at the top.
- Multi-tier Configuration:** A table with columns 'Tier', 'Default Flow Order', and 'Component'. It shows three tiers: Tier 1 (WebSphere, Virtual), Tier 2 (Apache Load Balancer, Virtual), and Tier 3 (Oracle 11g Database, External/Physical). Buttons for 'Cancel' and 'Next' are at the bottom.

Callout 1: Resource allocations can flex dynamically based on rules that track configurable resource usage metrics

Callout 2: Complex applications can be multi-tier, on configurable network segments with variable numbers of physical or virtual components.

Callout 3: Departments can create their own application definitions or tap published definitions from other groups or Corporate I.T.

Better Cloud Management (cont)

- Self-Service, configurable approval policies
- Work with applications or individual VMs

Departments instantiate their own application environments and **pay for only what they need.**

The screenshot displays the Platform Computing management interface. On the left is a vertical 'Navigation Pane'. The main area is divided into several sections:

- Application Definitions and Instantiation:** Shows icons for various operating systems and applications like Amazon, CentOS, Hadoop, JBoss, Platform Computing, Tomcat, and Windows.
- Applications:** A table listing application instances with columns for App definition, Application Name, Owner, Status, and Number of Machines.
- VM Status:** A table showing VM details with columns for Name, Template, # of, Memory, CPU(%), MEM(%), Disk Size (MB), Mode, and Account Name.
- Actions:** A menu for VM management including Start Up, Shut Down, Reboot, Suspend, etc.

Callouts provide additional context:

- Self-service access to application environments tailorable to client requirements.** (Points to the Application Definitions section)
- Users retain flexibility to create their own VMs for ad-hoc requirements using local or centrally stored templates.** (Points to the Applications table)
- Users have full control over their environments regardless of hypervisor, taking Central IT out of the management loop** (Points to the VM Status table)

Better Cloud Management *(cont)*

- Applications can be tailored within prescribed bounds on instantiation
- Department pre-allocate resources, simplifying capacity planning

▼ Component		
Component	JBoss	Load Balancer
Type	VIRTUAL	VIRTUAL
Quantity	4	1
CPU per Machine	1	1
Memory	1024	(Range: 512 - 2048 MB)
Storage	200	(Range: 0 - 2147483647 GB)
OS	[[Gold] CentOS 5.3 x86] [Gold] CentOS 5.3 x86 (snapshot)	

Environments can be scheduled in advance for particular time periods enabling **better capacity planning** with financial incentives for planned usage..

Enterprise applications can be tailored when instantiated, **preserving flexibility** while providing **central visibility** to licensed software & resource usage.

Start Time * Apr 10, 2011 10:00 EDT

End Time * Jan 11, 2012 10:00 EDT (No Expiry)

Only once

All day, every day

All day, every work day

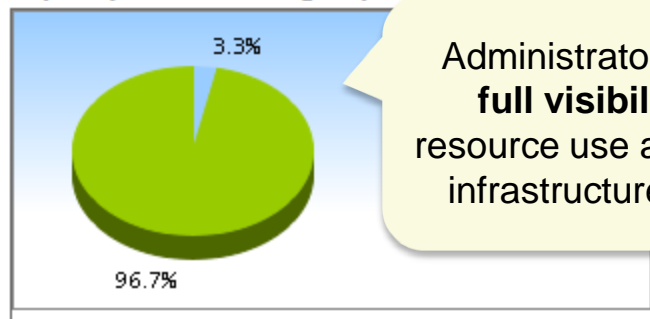
All day, every weekend

Custom recurrence pattern

Better Cloud Management *(cont)*

- Central visibility to overall physical, virtual and public cloud resource use
- Adjust application policies to more fully utilize resource and avoid cost

Capacity for resource group: db04b09Pool Hosts

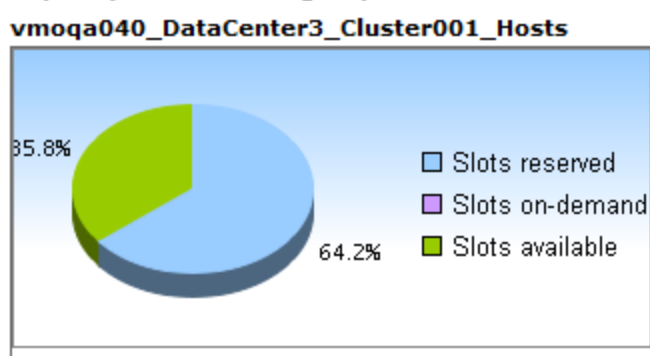


Administrators have **full visibility** to resource use across all infrastructure types

	Apr 10	Apr 11	Apr 12	Apr 13	Apr 14	Apr 15	Apr 16
Reserved (1 slot = 256 MB)	2	2	2	2	2	2	2
On-demand (1 slot = 256 MB)	0	0	0	0	0	0	0
Usage	2	2	2	2	2	2	2
Available slots	58	58	58	58	58	58	58
Total slots	60	60	60	60	60	60	60

Access to future planned resource use helps I.T. **anticipate demand** and **plan capacity** appropriately.

Capacity for resource group: vmoqa040_DataCenter3_Cluster001_Hosts



Sites may **charge differentially** for planned vs. ad-hoc on-demand resource requests, creating a **financial incentive** for LOBs to plan more carefully.

	Apr 10	Apr 11	Apr 12	Apr 13	Apr 14	Apr 15	Apr 16
Slots reserved	68	68	68	68	68	67	67
Slots on-demand (1 slot = 256 MB)	0	0	0	0	0	0	0
WebSphere Load Balance_labuser01_1	0	0	0	0	0	0	0
CentOS LAMP Stack_0304171308	0	0	0	0	0	0	0
Hadoop Cloudera_labuser01_1	0	0	0	0	0	0	0
JBoss Load Balance_labuser01_1	0	0	0	0	0	0	0
Tomcat Sample_labuser01_1	0	0	0	0	0	0	0

Single Pane of Glass for Cloud Admins

- Manage all I.T. services through a comprehensive, unified interface

A **Cockpit view** provides enterprise-wide visibility to servers and applications

Comprehensive resource monitoring enables smarter allocation for **more efficient resource use.**

Platform ISF - Mozilla Firefox

Resource Center > Cockpit View

Logoff
User Name: Admin

Mar 28, 2011 11:17:18 EDT Refresh Auto

Zone	Up	Down	Maintenance	Application Count	Instance Count	CPU(%)	Memory(%)
Default	7	0	0	1	58		

Zone: Default

Physical Hosts Applications

Physical Machine	Status	CPU(%)	MEM(%)	DataCenter	Zone	Environ
tyan08.cloud.dns	Up			Toronto	Default	-
tyan07.cloud.dns	Up			Toronto	Default	-
dpe02.lsf.platform.com	Up			Toronto	Default	-
dpe01.lsf.platform.com	Up			Toronto	Default	-
delamd07.lsf.platform.com	Up			Toronto	Default	-
clb01b04.lsf.platform.com	Up			Toronto	Default	-
clb01b03.lsf.platform.com	Up			Toronto	Default	-

Physical Machine: tyan07.cloud.dns

Virtual Machines

Instance	VM Host name	IP Address
tc_1_0321152449367	-	-
Wln2008_Gold	-	-
VMGold_Image	-	-

Physical Machine: tyan07.cloud.dns

Events Details Performance Alarms

bits per second

From 2011/03/27 11:17:20 To 2011/03/28 11:17:20

Inbound Current: 66.11
Outbound Current: 195.88
In Peak Out Peak

tyan07.cloud.dns - Disk Usage

GB

From 2011/03/27 11:17:20 To 2011/03/28 11:17:20

Disk Utilized Current: 1.75
Peak Disk

tyan07.c.cloud.dns - Load Average

Processes

From 2011/03/27 11:17:20 To 2011/03/28 11:17:20

15 Second Average Current: 0.00
1 Minute Average Current: 0.02
15 Minute Average Current: 0.00
Total

Billing, Chargeback accounting

- Flexible reporting on billing, allocation and capacity
- Configurable cost models create incentives to deploy environments on the most cost efficient platforms to sustain and manage

Reports & Chargeback > ISF Reports

ISF Reports

Report Type: Capacity Report

Resource Group: All Virtual Groups

Date Range: Quarter to Date

Sort By: Resource Group Name

Produce Report

Flexible reporting interface allows various reports to be run by group over different time periods.

Clients have full **visibility to billing** based on usage of different resources types.

Item	Type of Item	Unit	Hourly Unit Price
<input checked="" type="checkbox"/>	Memory reserved for VMs	GB	\$ 0.05 USD
<input checked="" type="checkbox"/>	Memory allocated for on demand VMs	GB	\$ 0.07 USD
<input checked="" type="checkbox"/>	Number of vCPUs on reserved VMs	N/A	\$ 0.13 USD
<input checked="" type="checkbox"/>	Number of vCPUs on on demand VMs	N/A	\$ 0.14 USD
<input checked="" type="checkbox"/>	Number of reserved physical machines	N/A	\$ 0.25 USD
<input checked="" type="checkbox"/>	Number of on demand physical machines	N/A	\$ 0.26 USD

Apply Revert

Category	Item	Total Hours	Rate	Amount
RESERVED	VMs (GB - Memory)	0.02 (details)	\$0.05	\$0.00
	VMs (vCPUs)	0.06	\$0.13	\$0.01
	Physical machines	0.03	\$0.25	\$0.01
				\$0.02
ON_DEMAND	VMs (GB - Memory)	0.05 (details)	\$0.07	\$0.00
RESERVED	VMs (vCPUs)	24.53	\$0.13	\$3.19
	VMs (GB - Memory)	12.26 (details)	\$0.05	\$0.61
ON_DEMAND	VMs (vCPUs)	0.09	\$0.14	\$0.01
				\$6.68
				\$0.05

Flexible pricing schemes based on virtual or physical resource use and metrics such as vCPUs or total memory.