Data Center Trends

15% The average amount of data center compute capacity used

The percentage of most critical workloads that get 80 percent of the typical disaster recovery budget 20%

5:1 deployment of virtual servers to physical servers in the next three years

The percentage of customers that say heterogeneous management is very important 85%
Data Center Challenges

- Improve service levels for business users
- Address power and space constraints
- Manage costs
- Ensure high performance, security and availability
- Satisfy internal and external auditors
- Maximize current and future IT investments
Novell Approach to Cloud Computing
From a Big Box to a Big Cloud

1970

Mainframe:
Specialized Chips and Hardware

x86:
Standardized Hardware

Virtualization:
Abstraction from the Hardware

Cloud:
Hardware moves off-site

2010

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What is Cloud Computing?

Forrester definition:
- A standardized IT capability, delivered via Internet technologies in a pay-per-use, self-service way.

Gartner criteria:
- **Service-Based**: Consumer concerns are abstracted from provider concerns through well-defined interfaces
- **Scalable and Elastic**: Scale capacity up or down as the consumer demands, at the speed of full automation
- **Shared**: Services share a pool of resources to build economies of scale
- **Metered by Use**: Consumers pay based on usage, not on the cost of equipment.
- **Uses Internet Technologies**
What is Cloud Computing?

- SaaS
- PaaS
- IaaS

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Forms of Cloud Computing

Public

• Scalable and elastic computing services offered to external customers via the Internet.
• Typically multi-tenant, where multiple customers are able to share a single set of resources.

Private

• Dynamic and scalable computer services offered to internal customers using equipment the customer owns and delivered over a private network.
Intelligent Workload Management
The Evolution of the Workload

Today
- Integrated

Future
- Portable
- Platform Agnostic
Workloads Deliver a Business Service

**Workloads**

- Database workload on **physical** hardware in a legacy data center
- Application server **virtualized** in a private cloud
- Presentation and graphics server in a public **cloud**

**Business Service**

Example: SAP inventory report seen by user
The Customer Challenge: Manage a Siloed Infrastructure

Internal Cloud (On-Premise)
- Governance and Compliance
- IT Service Management
- Business Service Management
- Physical

External Cloud (Off-Premise)
- Governance and Compliance
- IT Service Management
- Business Service Management
- Cloud
Intelligent Workload Management: From Silos to Services

- Internal Cloud (On-Premise)
  - Governance and Compliance
  - IT Service Management
  - Business Service Management

- External Cloud (Off-Premise)
  - Build
  - Secure
  - Manage
  - Measure

Physical | Virtual | Cloud
Intelligent workload management enables IT organizations to manage and optimize computing resources in a policy-driven, secure and compliant manner across physical, virtual and cloud environments to deliver business services for end customers.
What Makes a Workload Intelligent?

**Policy-driven**
- Enables self-regulation and management according to business policy
- Recognizes when it is at capacity
- Finds alternative computing capacity as required to optimize performance

**Secure**
- Includes security controls that move with the workload between environments
- Enables real-time event tracking, monitoring and alerting

**Compliant**
- Understands its security protocols and processing requirements
- Delivers built-in log management and compliance reporting capabilities
- Recognizes when workload contains confidential information
WorkloadIQ: Lifecycle Activities

**Build**
- Assembly
- Preparation
- Migration

**Secure**
- Authentication
- Authorization
- Identity Provisioning
- Data Protection

**Manage**
- Patch Management
- Configuration
- Service Provisioning
- Cost Accounting

**Measure**
- Monitoring
- Auditing
- Analyzing
- Certifying
- Reporting and Visualizing

Physical  Virtual  Cloud
Stage 1

Analyse and Plan
IT Managers Require New Tools

• Secure and Event-driven Management to Ensure Compliance

• New Controls to Reduce Risk

• Customizable, Portable Applications

• Single Point of Management for Physical, Virtual and Cloud

• Measure Performance Against SLAs
Server Consolidation
Analysis and Planning

• **What is it?**
  - Server consolidation and disaster recovery require upfront planning and analysis to ensure a maximum return on investment

• **Where can you use it?**
  - Server consolidation
  - Consolidated recovery
  - Data center optimization and green IT

• **What are the benefits?**
  - Determine the optimal fit between resources and workloads
  - Analyze power and cooling costs for green computing initiatives
  - Manage virtual infrastructure growth on an ongoing basis
  - Measure business units based on resource allocation and usage
PlateSpin Recon

PlateSpin Recon Enterprise provides physical and virtual infrastructure analysis, planning, and reporting for data center initiatives.

- Workloads:
  - What resources are in the data center?
  - What workloads are running on those resources?

- Resources:
  - How efficiently are resources assigned to workloads?
  - Create plans to optimize workloads and resources
Consolidation

• **What is it?**
  - Multiple operating systems run on a single physical machine. Servers can be virtualized and de-virtualized as required to ensure the ongoing and continuous optimization of resources

• **Where can you use it?**
  - Server consolidation
  - Green IT
  - Data center optimization

• **What are the benefits?**
  - Maximize server utilization and avoid adding a new server for every new application
  - Lower server administration, maintenance and energy costs
  - Reduced software and hardware costs
  - Reduced complexity
  - Increase data center flexibility and hardware independence
  - A smaller data center footprint with no reduction in scalability
With PlateSpin Migrate, you can automatically migrate server workloads over the network.

- Decouple workload from host infrastructure
- Live peer-to-peer workload migration
- Migration testing
- Sync-up prior to cut-over
Server Consolidation with PlateSpin® Migrate and PlateSpin Recon

Migrate is the conversion engine for your server consolidation

- PlateSpin Recon can be directly used
- Resizing partitions, CPU, networks cards, services, daemon, field…
- Any-to-Any Migration
Management

What is it?

- Intelligent automation to manage heterogeneous virtual machines to align IT to business requirements, control costs and minimize risks.

Where can you use it?

- Green IT
- Data center optimization

What are the benefits?

- It gives you more control and flexibility to align business objectives to IT value
- Control costs and minimize your risks
- Heterogeneous infrastructure management
Heterogeneous Management

Novell® Cloud Manager

Build and manage a private cloud on top of existing infrastructure

Enterprise virtualization technologies

Physical resources
Creating Enterprise Clouds

**Enterprise**
Software to build and operate a private cloud
Users: internal infrastructure and application teams

**Service/Outsource Providers**
Software to build and operate a public cloud
Users: hosting companies infrastructure teams and external application teams
Automation Makes IT Agile

- Policy
- Performance
- Risk
Workload Protection
Protection

• **What is it?**
  - Intelligent workload protection for heterogeneous physical and virtual machines environments running Windows and Linux.

• **Where can you use it?**
  - Local or off-site Disaster Recovery

• **What are the benefits?**
  - One solutions to protect all your business critical workloads
  - Reduce total cost of ownership of disaster recovery infrastructure
  - Improve recovery time objective performance
Why Downtime Matters

$41.3 Billion
Total economic damage from disaster in 2009*

$10.8 Billion
Economic impact felt in the US from disasters in 2009*

*September 2, 2010, Business Continuity and Disaster Recovery are top IT Priorities for 2010 and 2011 - Forrester
Better Understanding of Protection

78% of enterprises have indicated that improving disaster recovery capabilities is a high priority*

Critical Priority 30% - High Priority 48%

- Better able to identify and quantify risk
- Better understanding of economic impact
- Less tolerance for downtime and data loss

Consolidated Recovery
Leveraging Virtual Infrastructure for Protection of Physical Servers

Solution
- Replicate workload into an off-line virtual machine
- One-click failover
- One-click test restore
- Flexible failback

Benefits
- Drastically reduce TCO and RTO while achieving whole workload protection
- Simplify testing with bootable backups
- Finally a way to complete your DR architecture
PlateSpin Protect enables whole-workload replication of server workloads.
PlateSpin Forge®

World’s first disaster recovery hardware appliance with embedded virtualization

Protects up to 25 workloads out of the box

Plug In and Protect Disaster Recovery Solution for:
• Medium-sized enterprises
• Branch or field use for large-sized enterprises
• Hosted recovery

PlateSpin Forge Includes:
• Storage
• Replication software
• Remote management interface
• Hypervisor

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Benefits of Our Approach
Benefits of Our Approach

**Integrated**
- Build, secure, measure and manage workloads with an integrated product line
- Integrated management tools

**Interoperable**
- Support of popular virtualization solutions
- Simplified management in mixed environments
- Seamless integration in physical and virtual infrastructures

**Manageable**
- Policy-based workload management
- Automated lifecycle management of both physical and virtual resources
You Can Have Both

Control

Flexibility
Satisfied Customers
Customer Results
Private Cloud

Pernod Richard
www.pernod-ricard.com

“Novell Cloud Manager allows us to simply and automate many of our business processes, accelerate IT service delivery as well as provide visibility and cost transparency to the business. Strategically, this will provide us with a competitive edge.”
Customer Results
Migration and Consolidation

Essent
www.essent.com
“The PlateSpin solution from Novell saved Essent about €2 million for the data centre consolidation project alone.”

AXA Tech Asia Pacific
www.axa.com
“The ability to perform the migrations remotely and over the WAN with no need to be physically in contact with the source and target servers saved us weeks if not months of work.”

Atos Origin
www.atosorigin.com
“Using PlateSpin we were able to complete 61 migrations within the targeted migration windows, saving an average of four hours migration time per server.”
Customer Results
Disaster Recovery

Reed Smith
www.novell.com/success/reed_smith.html

“Had we not had PlateSpin Protect, we would have had no way to recover data for our older servers without maintaining an identical backup server, which is simply unfeasible… With PlateSpin Protect, we can recover multiple sites with the same set of hardware quite easily, in a matter of minutes.”

South Tahoe Public Utility District
www.novell.com/success/south_tahoe_public_utility_distric.html

“Without PlateSpin Forge in place, we would have really been scrambling, as it could easily take 25-30 staff hours to get a new server up and running … With PlateSpin Forge, we had the new server up and running within just three to four hours.”
Why Virtualization Solutions from Novell®

"Novell's early support for Xen virtualisation will help us make better use of our hardware, enabling us to concentrate more logical systems on each server. Not only will we reduce direct hardware costs, but we will also remove significant maintenance and licensing costs."

Alexander Schanz
Head of Linux Competence and Service Centre
DFS Deutsche Flugsicherung GmbH

"...I want to take a moment to commend you and your team on recent support, assistance and excellent performance on the Server Consolidation Project...The PowerConvert product was extremely helpful and we estimate that it probably saved us about 150 man hours during our pilot. It is not often we find a product that performs exactly as advertised, but PowerConvert did just that."

Eric Sierka
Vice President - Vendor Management Office, Information Systems
Commerce Bank

"We estimate that the cost of using Xen and SUSE Linux Enterprise for virtualizing Windows systems is just 10 percent of the leading equivalent solution."

Norihito Kuniyoshi
Managing Director
Casio Information Service Co., Ltd.

"We are also using Xen to virtualize many of our Microsoft Windows servers," said Zackman. "We are now moving everything we can to Linux."

Sean Zackman
Field Engineering Manager
NEXCOM

"PlateSpin PowerConvert has been a great asset to our software toolset. We have converted our entire test lab from physical to virtual, improving uptime, and eliminating costly maintenance contracts for our old decommissioned servers. As we look towards converting our 100+ physical production servers, PlateSpin will play a key role in that process."

Thomas Grieell
Network Development Manager
California Casualty Management Company
VIST Financial
Diversified Financial Services

Workloads
- Applications: Financial and Banking Software

Business Issues
- System downtime costs
- Reliability and security of the data center
- Managing user information across all applications
- Compliance with regulatory requirements

Novell® Solution
- SUSE® Linux Enterprise Server with built-in Xen Virtualization
- Novell ZENworks®
- Novell GroupWise®
- Novell Identity Manager

Results
- Consolidated 10 servers in its data center to date
- Reduced power and cooling costs
- Improved server performance
- Plan to consolidate up to 90% of the servers in data center, for a savings of around $50,000 in hardware and downtime costs
Cardium
IT Services Firm

Workloads
- Oracle databases
- Server hosting
- Mission-critical and highly-available applications

Business Issues
- Deal with rapid business growth and a large number of servers
- Simplify infrastructure and server management challenge
- Offer highest levels of security and availability for clients’ systems
- Consolidate servers

Novell® Solution
- SUSE. Linux Enterprise Server with Xen Virtualization
- High Availability Storage Infrastructure for high availability and performance

Results
- Consolidation from 25 to eight physical servers
- Utilization of 95% of available computing power – rather than 60% typical with leading proprietary virtualization solutions
- Considerable time savings in maintenance and administration
- Significant cost reductions
Messaging Architects
Virtualization

**Workloads**
- Development and hosting platform
- Virtual appliances running email security, compliance and archiving software

**Business Issues**
- Needed flexible delivery method for software that was integrated with development environment
- Required global support capability
- Needed to manage virtual machines across many locations

**Novell® Solution**
- Partnered with IBM and Intel
- SUSE® Linux Enterprise Server with Xen Virtualization
  - Virtual appliances enabled rapid deployment of software solutions
- Novell ZENworks® Orchestrator
- Novell eDirectory™

**Results**
- Reduced administrative time by 50% by using Xen virtualization software with Novell ZENworks® Orchestrator
- Reduced customers hardware costs by an average of $12,000 through use of virtual appliances
- 90% utilization of existing servers in hosted data center using Xen
Casio Computer
Virtualization

**Workloads**
- Windows Web services
- In-house applications

**Business Issues**
- Consolidate about 700 physical server into a central data center
- Cost-effective Windows server consolidation
- Performance of virtual Windows workloads

**Novell Solution**
- SUSE Linux Enterprise Server with Xen Virtualization
- SUSE Linux Enterprise Virtual Machine Driver pack to run consolidated Windows and Linux servers with improved performance

**Results**
- Reduced its costs of virtualization to around 10 percent of the alternative solution
- Achieved fully virtualized workloads running at around 90-100% of native performance by using paravirtualized drivers
Sumitomo Electric Industries
Virtualization

Workloads
- Database management system
- Application Server
- In-house Web applications

Business Issues
- Gain more efficient use of existing hardware
- Provide secure environment for running mission-critical server systems
- Deploy cost-effective disaster recovery solution

Novell® Solution
- SUSE® Linux Enterprise Server with Xen Virtualization

Results
- Extended life of key applications on virtual servers
- Minimized hardware investments through more efficient use of resources
- Disaster recovery using virtual servers and live migration (Osaka-Tokyo)

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Comprehensive Services Offerings

Technical Training
- Traditional classroom
- On-demand training
- Online virtual classroom
- Self-study materials
- Custom training

IT Consulting
- Consistent and well-defined methodologies
- Innovation combined with practical approaches
- Deep and varied experience

Technical Support
- Award winning website
- Global support centers
- On-site support
- Dedicated support engineers account management

Novell Services and Partners
Virtualization Solutions from Novell®

See it  Try it  Buy it

- http://www.novell.com/virtualization
- http://www.novell.com/cloud-manager
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