

# Enabling Virtualization in Windows and Linux Environments

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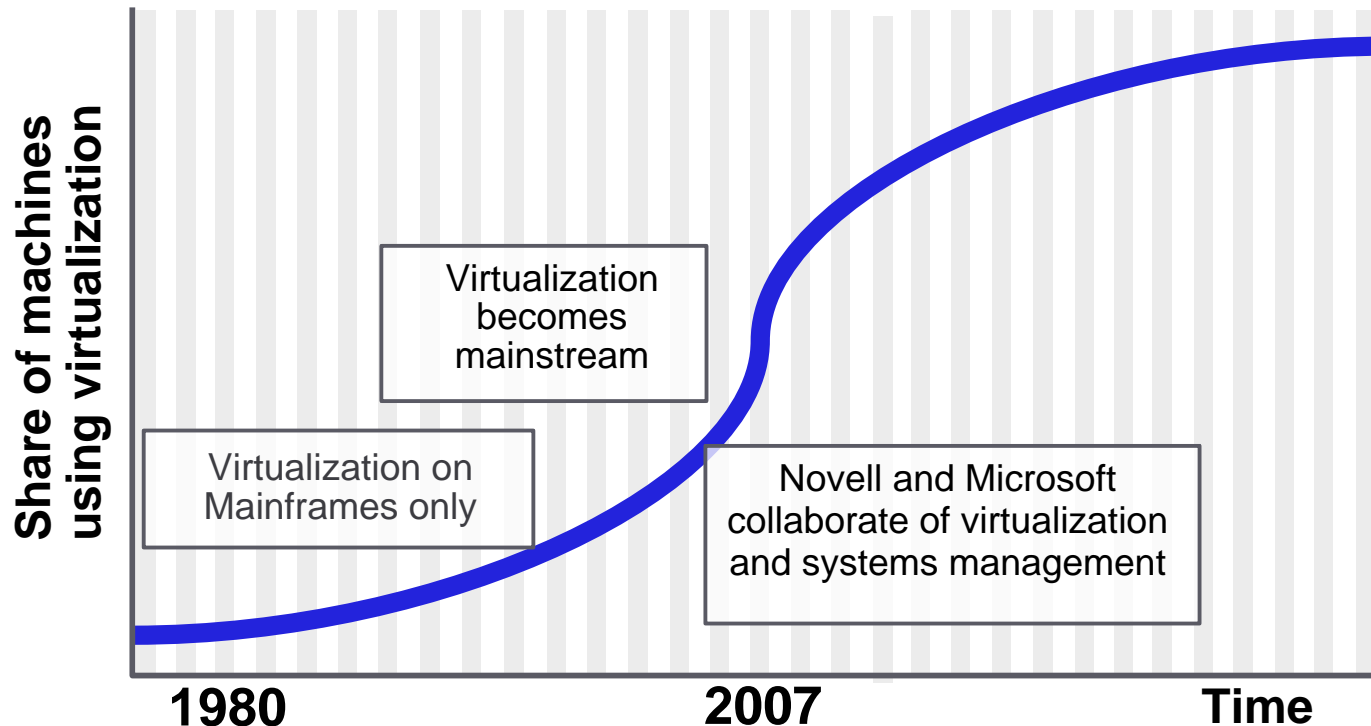
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General Manager  
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# Agenda

- **Virtualization—The Facts**
- The Microsoft Novell Partnership
- Virtualization Collaboration
- Heterogeneous Systems Management
- Summary

# Trends: You Are Not Alone



- IDC estimates that in 2006, 2.3MM virtual servers were deployed compared to 7.7MM physical servers.
- IDC reports that 76 percent of companies are planning to adopt or are adopting X86 virtualization in the next 12 months.

# Virtualization is Mainstream

## What started as:

- Increase server utilization and lower costs

## Has evolved to be:

- Improve IT environment flexibility
- Improve service availability
- Decouple software life cycle from hardware deployment cycle
- Enhance system and application security

# Virtualization: Reality

To facilitate consolidation of heterogeneous environments, IT must deal with:

- Disparate hardware systems
- Multiple application suppliers
- Mix of Operating Systems

# Lack of Interoperability Offsets Some Benefits of Virtualization

- Customers are leveraging virtualization to improve server utilization, decrease power consumption and increase business continuity
- Microsoft and Novell are working to create an optimized virtualization solution
  - Enable customers to run SUSE® Linux Enterprise Server virtualized on Windows Server “Longhorn” and Windows Server “Longhorn” virtualized on SUSE Linux Enterprise.

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# Bridging the Divide

November 2, 2006



- Microsoft and Novell announced a landmark agreement

## Delivering unprecedented customer value

- IP Assurance
- Interoperability
  - o Virtualization
  - o Heterogeneous systems management
  - o Directory and Identity Federation
  - o Document format compatibility

# Customers Support the Alliance



## Accomplishments

- Announced customers
  - AIG
  - Credit Suisse
  - Deutsche Bank
  - Wal-Mart
- 35,000 certificates activated
- Very strong customer pipeline
- Overwhelming customer support data

# Customers Have Spoken

## AIG

“It's critical that our technology offerings be forward-looking and be integrated and positioned to support our mission of delivering high value at a market price. Microsoft and Novell's commitment to working together to deliver interoperability and IP assurance helps us achieve that mission.”

Mark Popolano, Chief Information Officer

## Credit Suisse

“For us, interoperability is key. We see both Windows and SUSE Linux Enterprise as strategic platforms going forward, and we're very pleased to see Microsoft and Novell, who support these platforms, step up and work on interoperability.”

Tom Sanzone, Chief Information Officer

## Deutsche Bank

“Microsoft and Novell's agreement gives us the benefit of choice in platforms and tremendous flexibility that will help make our company more competitive and efficient”

Clemens Jochum, Chief Technology Officer

## Wal-Mart

“We have wanted information technology vendors to deliver interoperability and IP assurance between multiple platforms for some time now, and we are pleased that Microsoft and Novell are committed to fulfilling that need.”

Nancy Stewart, Senior Vice President and Chief Technology Officer

# Technical Collaboration Scope



## Virtualization

- Interoperability between Microsoft Virtual Server®, Windows Server® “Longhorn”, and SUSE Linux Enterprise



## Heterogeneous Systems Management

- Interoperability for managing mixed environments (WS-Management)



## Directory and Identity Federation

- Improve identity interoperability between Microsoft and Novell products



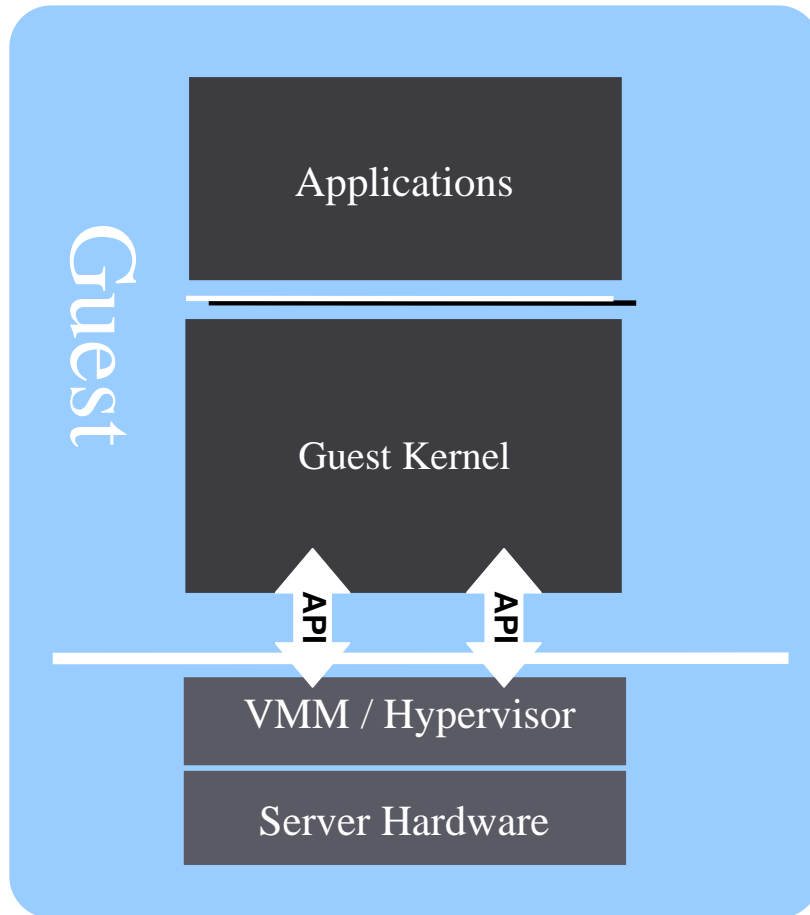
## Document Format Compatibility

- Enhance interoperability for Open XML Format and ODF documents between Microsoft Office and OpenOffice.org Novell Edition

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# OS Level Server Virtualization Architecture



Guest OS is tuned to run on respective hypervisors

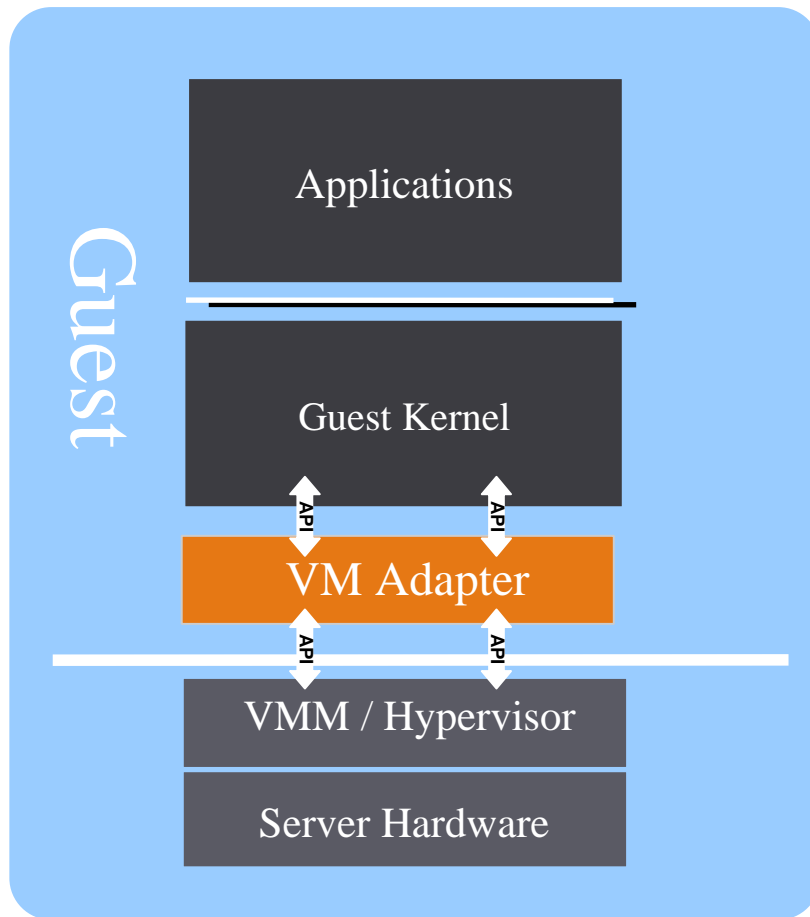
Novell calls it “paravirtualized”

Microsoft calls it “enlightened”

API's into hypervisor also provide better performance

But... APIs and tuning are specific to implementation and don't promote interoperability!

# OS Level Server Virtualization Architecture



Mutual collaboration on software adapters that translate APIs between respective hypervisor technologies

- Novell delivering adapter that enables Windows, codenamed “Longhorn,” Server to interface with SUSE Linux Enterprise Server using Xen
- Microsoft delivering adapter that enables SUSE Linux Enterprise Server to interface with Windows server virtualization

# Virtualization Milestones



Collaboration on software to enable SUSE Linux Enterprise Server 10 to run as a fully virtualized guest on SP1 of Virtual Server 2005 R2

- SUSE Linux Enterprise Server 10 add-ins available in Q2 CY 2007

Collaboration on software that translates between virtualization technologies

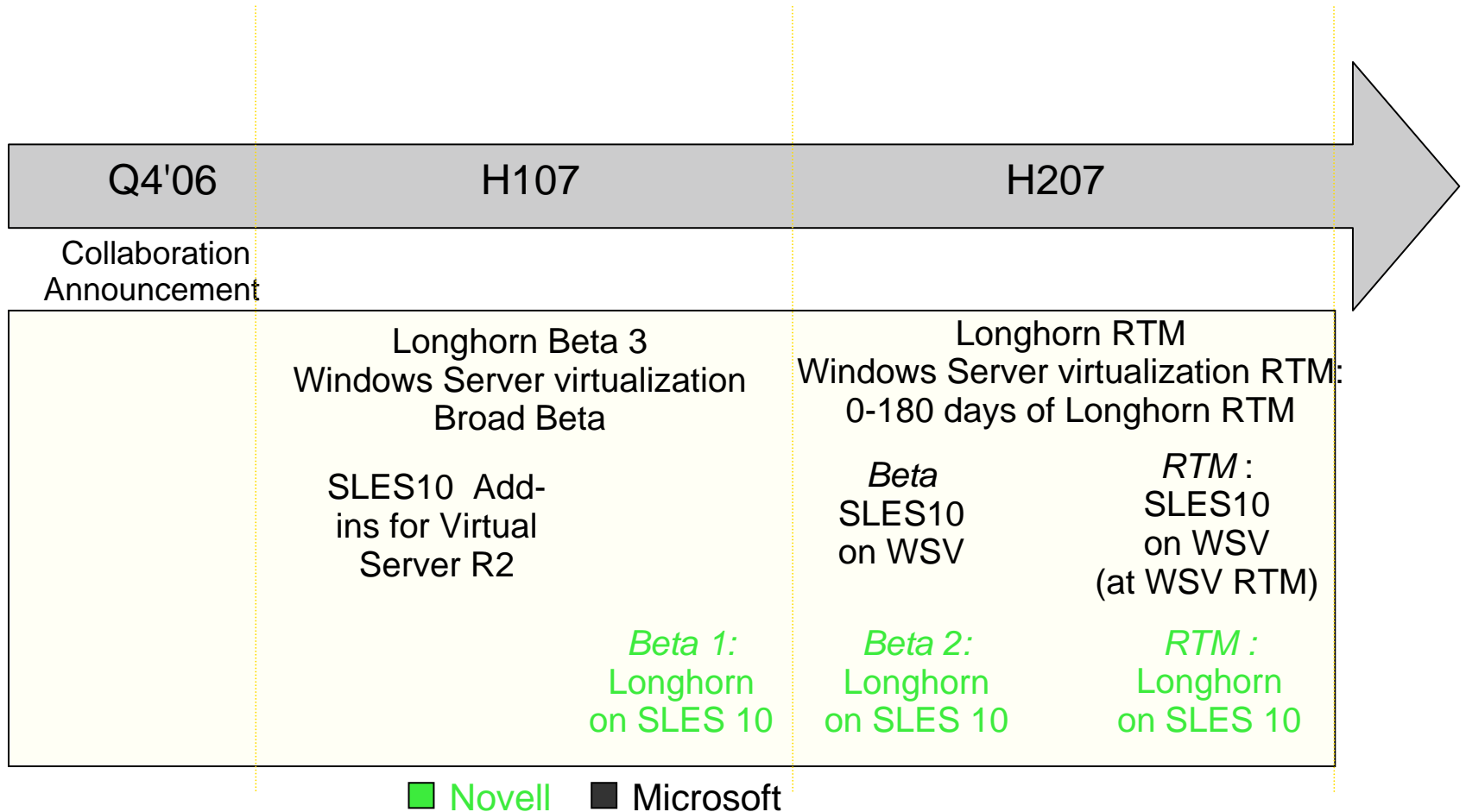
- Windows Server “Longhorn” supporting paravirtualized SUSE Linux Enterprise Server 10 guest<sup>1</sup>
- SUSE Linux Enterprise Server 10 supporting enlightened Windows Server “Longhorn” guest<sup>2</sup>

<sup>1</sup> Available when Windows Server virtualization releases w/in 180 days of Windows Server “Longhorn” in H2 CY 2007

<sup>2</sup> Available when Longhorn releases in H2 CY 2007



# Virtualization Roadmap



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# Systems Management Today



**Control Panel / Server Manager**

**Microsoft System Center**

**Windows Update/Microsoft Update**

**Third-party Tools**

**Active Directory**



**YaST**

**Novell ZENworks®**

**Novell Customer Center and ZENworks Linux Management**

**Third-party Tools / Open Source**

**Novell eDirectory™, OpenLDAP**

# Standards-based Systems Management

WS-Management is the first specification in support of the DMTF initiative to expose model agnostic management resources via a set of Web services protocols.

- Provides a universal management protocol
- Enables IT managers to remotely access heterogeneous devices
- Introduces uniformity of operations
- Interoperable with non-Microsoft OSs
- Addresses customers' concerns managing heterogeneous data centers

# WS-Management Interoperability



## WS-Management

- Microsoft and Novell technical collaboration with the WS-Management open source community
- Novell is working directly with the open source community to develop an open source implementation of the WS-Management specification.
- Novell and Microsoft to identify items from the WS-Management specifications for implementation and interoperability of WS-Management stacks.
- Verify interoperability between Novell's and Microsoft's WS-Management implementations via joint interoperability scenarios and test plans
- Additional details available at the end of Q1 CY 2007

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# Why You Should Care

- The Microsoft/Novell alliance puts customers first
  - Two companies collaborating to solve customer needs
  - Clear roadmap on when/how Microsoft and Novell will continue to work together
- Customers will get validated interoperability
  - Co-developed and jointly tested
- Commitment to continue to work together in the best interests of our mutual customers
- IP assurance as you deploy solutions that best solve your business issues

The image features a stylized globe with a grid of latitude and longitude lines. The top half of the globe is in shadow, while the bottom half is brightly lit. A blue, curved structural element, resembling a bridge or a network path, arches across the middle of the globe. The Novell logo is positioned on the left side of the globe, and the Microsoft logo is on the right side.

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