

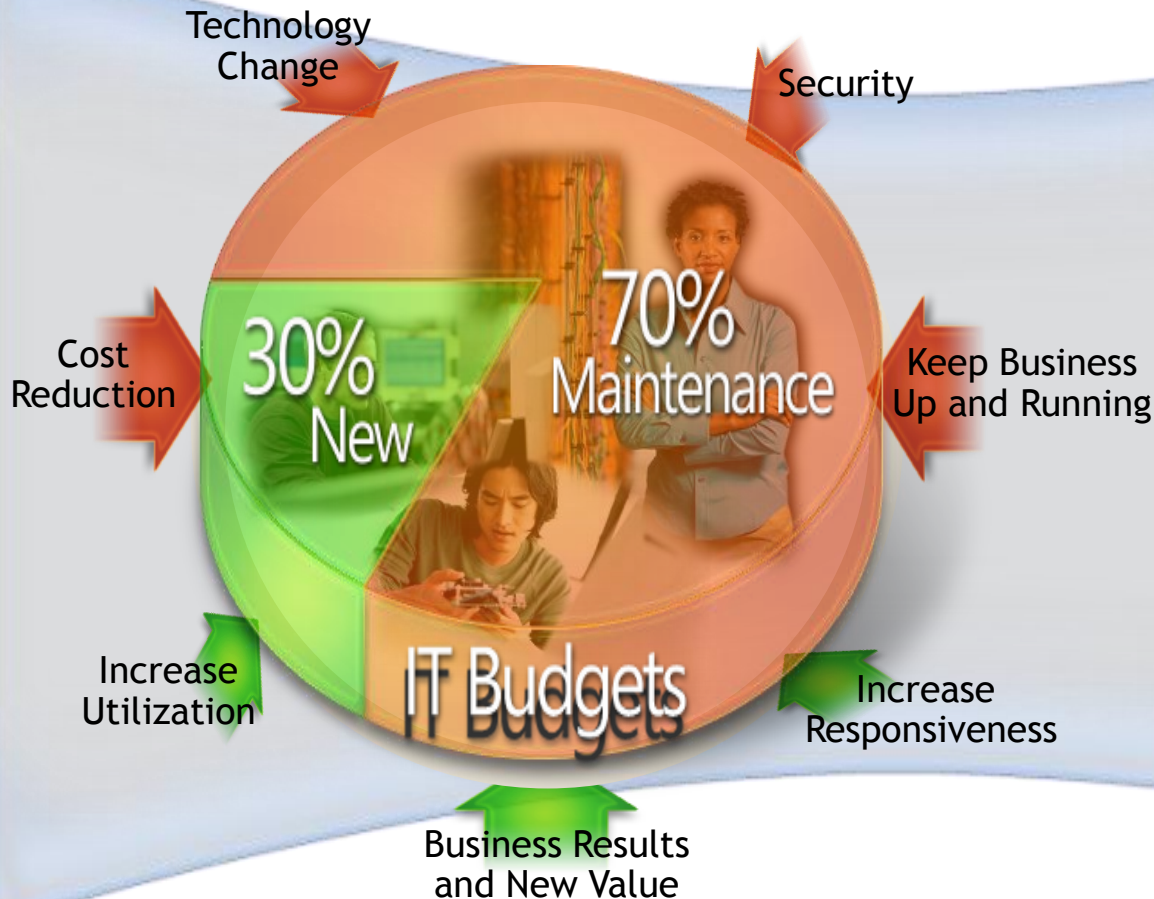


## Scaling Up Low Latency, Virtualization, Windows and Linux for Wall Street

Peter ffoulkes  
VP of Marketing, Adaptive Computing

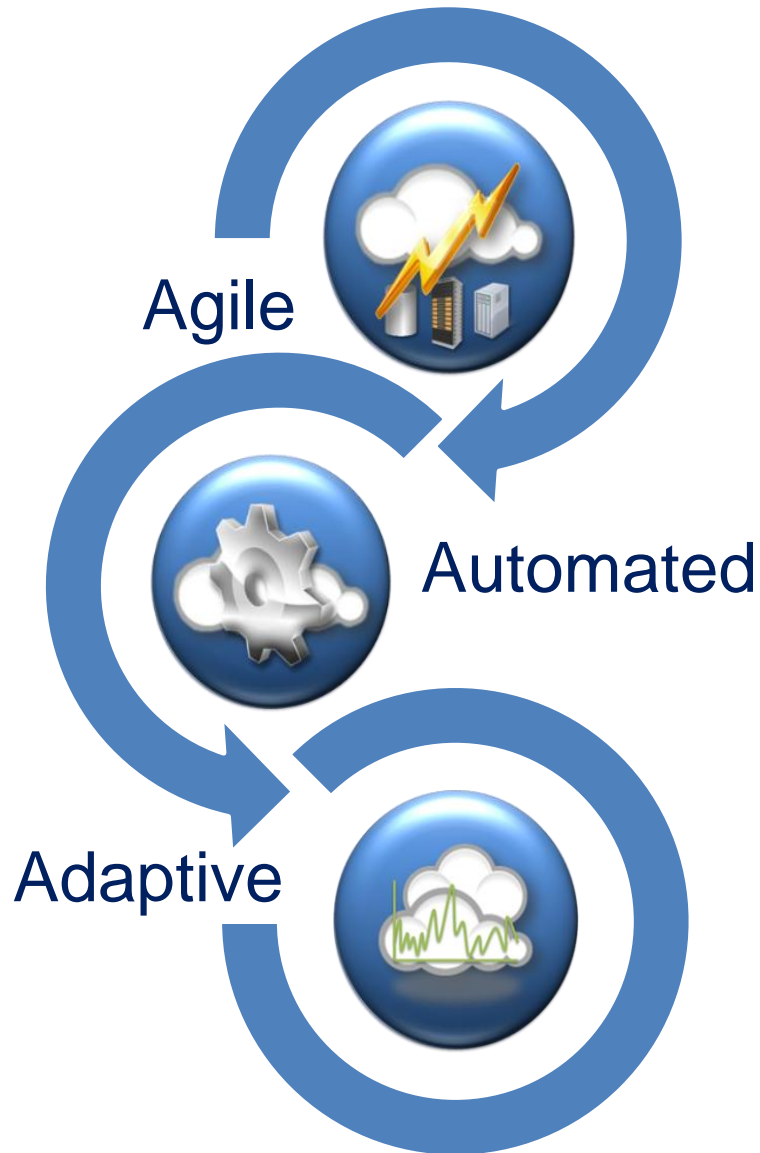
# Mixed Environments Add Complexity

## *Compounded by cross-platform challenges ...*



- Mixed environments common in most large data centers
- Multiple vendors, OSeS, support agreements, skills requirements
- Little cooperation between vendors
- Interoperability challenges, integration needs increase complexity and cost
- Bridging the divide between the commercial software and Open Source worlds
- Managing multiple user groups and silos of infrastructure

# Essential Characteristics for Cloud and HPC



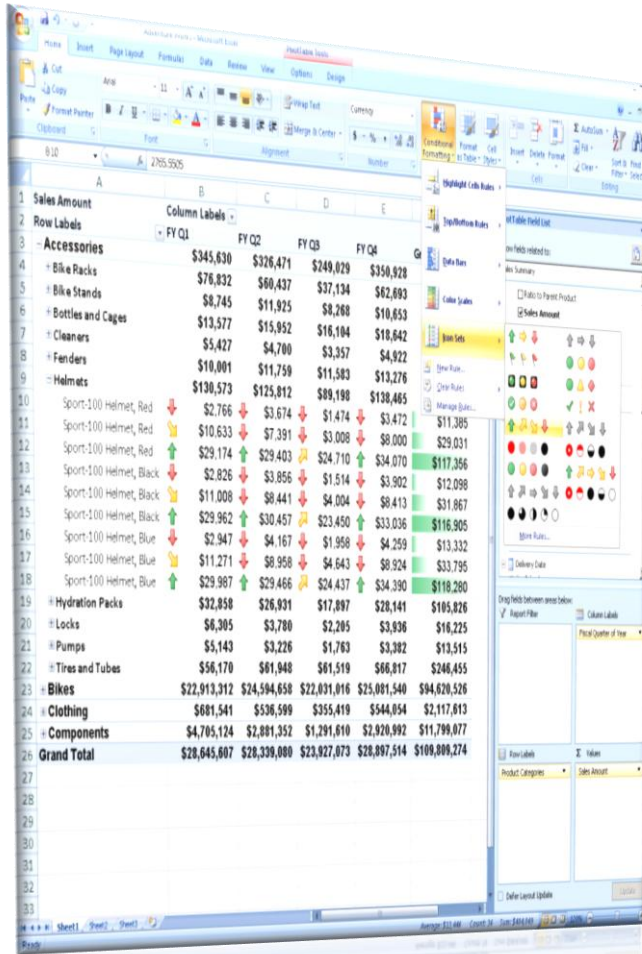
*Financial markets need a unique blend of enterprise IT and HPC*

Deliver business and HPC services rapidly, efficiently and successfully

Eliminate human error, enable scaling and capacity, reduce management complexity and cost

Anticipate and adapt intelligently to dynamic business and HPC service needs and conditions

# Low Latency, Performance & Scale



Sales Amount	FY Q1	FY Q2	FY Q3	FY Q4	
<b>Accessories</b>	\$345,630	\$326,471	\$249,029	\$350,928	
Bike Racks	\$76,832	\$80,437	\$37,134	\$62,093	
Bike Stands	\$8,745	\$11,925	\$8,288	\$10,653	
Bottles and Cages	\$13,577	\$15,952	\$16,104	\$18,642	
Cleaners	\$5,427	\$4,700	\$3,357	\$4,922	
Fenders	\$10,001	\$11,759	\$11,583	\$13,276	
Helmets	\$130,573	\$125,812	\$89,198	\$138,465	
Sport-100 Helmet, Red	\$2,766	\$3,674	\$1,474	\$3,472	\$11,385
Sport-100 Helmet, Red	\$10,633	\$7,391	\$3,008	\$8,000	\$29,031
Sport-100 Helmet, Red	\$29,174	\$29,403	\$24,710	\$34,070	\$117,356
Sport-100 Helmet, Black	\$2,826	\$3,856	\$1,514	\$3,902	\$12,098
Sport-100 Helmet, Black	\$11,008	\$8,441	\$4,004	\$8,413	\$31,867
Sport-100 Helmet, Black	\$29,962	\$30,457	\$23,450	\$33,036	\$116,906
Sport-100 Helmet, Blue	\$2,947	\$4,167	\$1,958	\$4,259	\$13,332
Sport-100 Helmet, Blue	\$11,271	\$8,958	\$4,643	\$8,924	\$33,795
Sport-100 Helmet, Blue	\$29,987	\$29,466	\$24,437	\$34,390	\$118,280
Hydration Packs	\$32,858	\$26,931	\$17,897	\$28,141	\$105,826
Locks	\$6,305	\$3,780	\$2,205	\$3,936	\$16,225
Pumps	\$5,143	\$3,226	\$1,763	\$3,382	\$13,515
Tires and Tubes	\$56,170	\$81,948	\$81,519	\$66,817	\$246,455
<b>Bikes</b>	\$22,913,312	\$24,594,658	\$22,831,016	\$25,081,540	\$94,628,526
<b>Clothing</b>	\$681,541	\$536,599	\$355,419	\$544,054	\$2,117,613
<b>Components</b>	\$4,705,124	\$2,881,352	\$1,291,610	\$2,920,992	\$11,799,077
<b>Grand Total</b>	\$28,645,607	\$28,339,089	\$23,827,073	\$28,897,514	\$109,898,274



## Access to larger spreadsheets

- 256 columns -> 16K
- 64k Rows -> 1M Rows



## Expanded memory use

- 1GB -> 2GB



## Multi-threaded Calculations

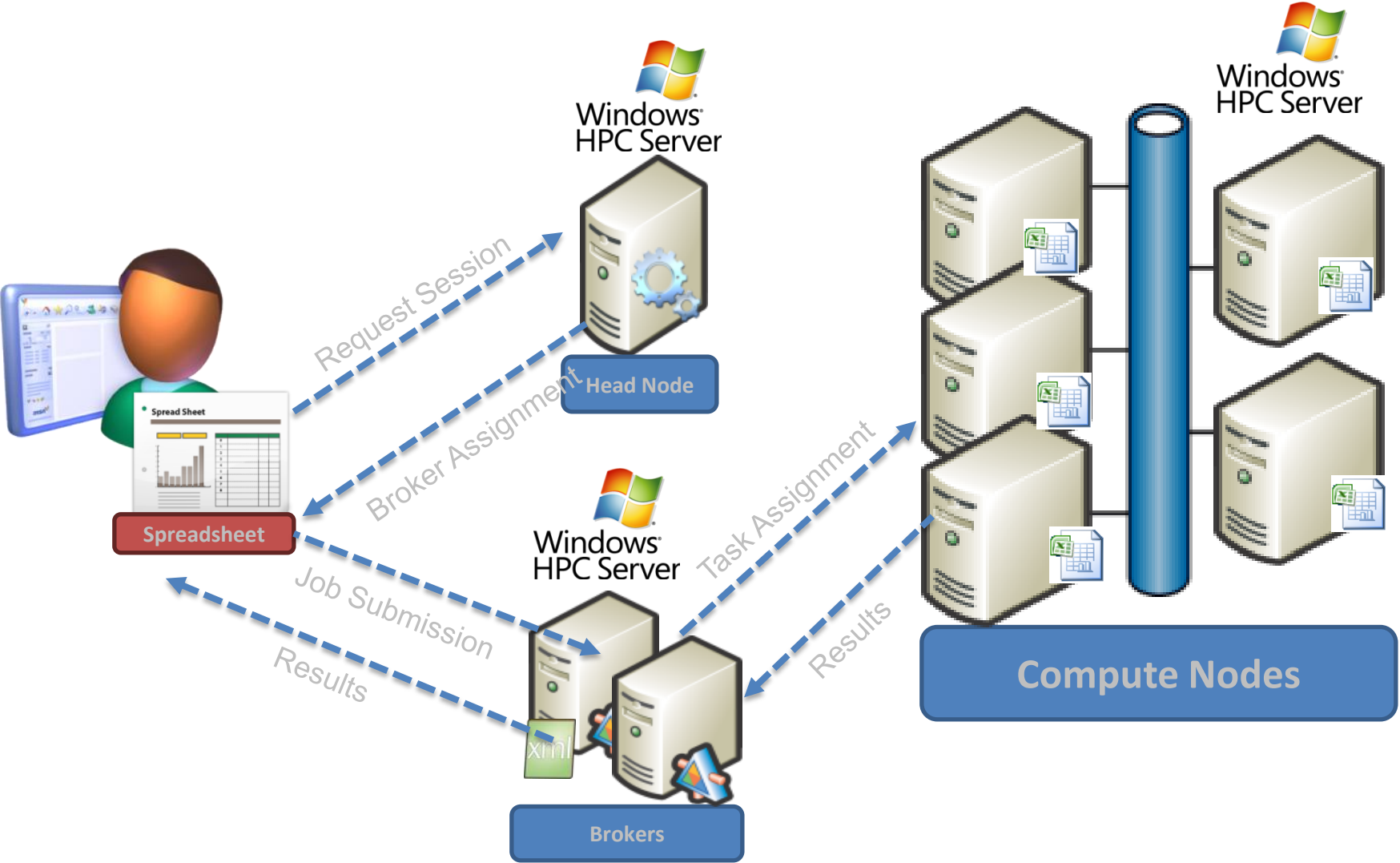
- Ability to take advantage of multi-core/CPU



## Integration with HPC

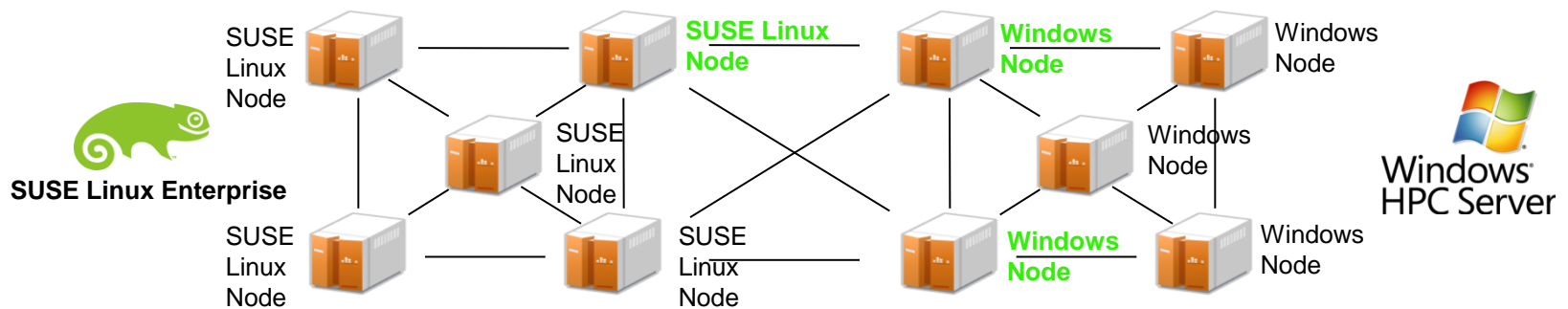
- OOB Support for Remote UDFs
- HPC Server v3 Supports Excel-on-Server

# Low Latency HPC Services for Excel

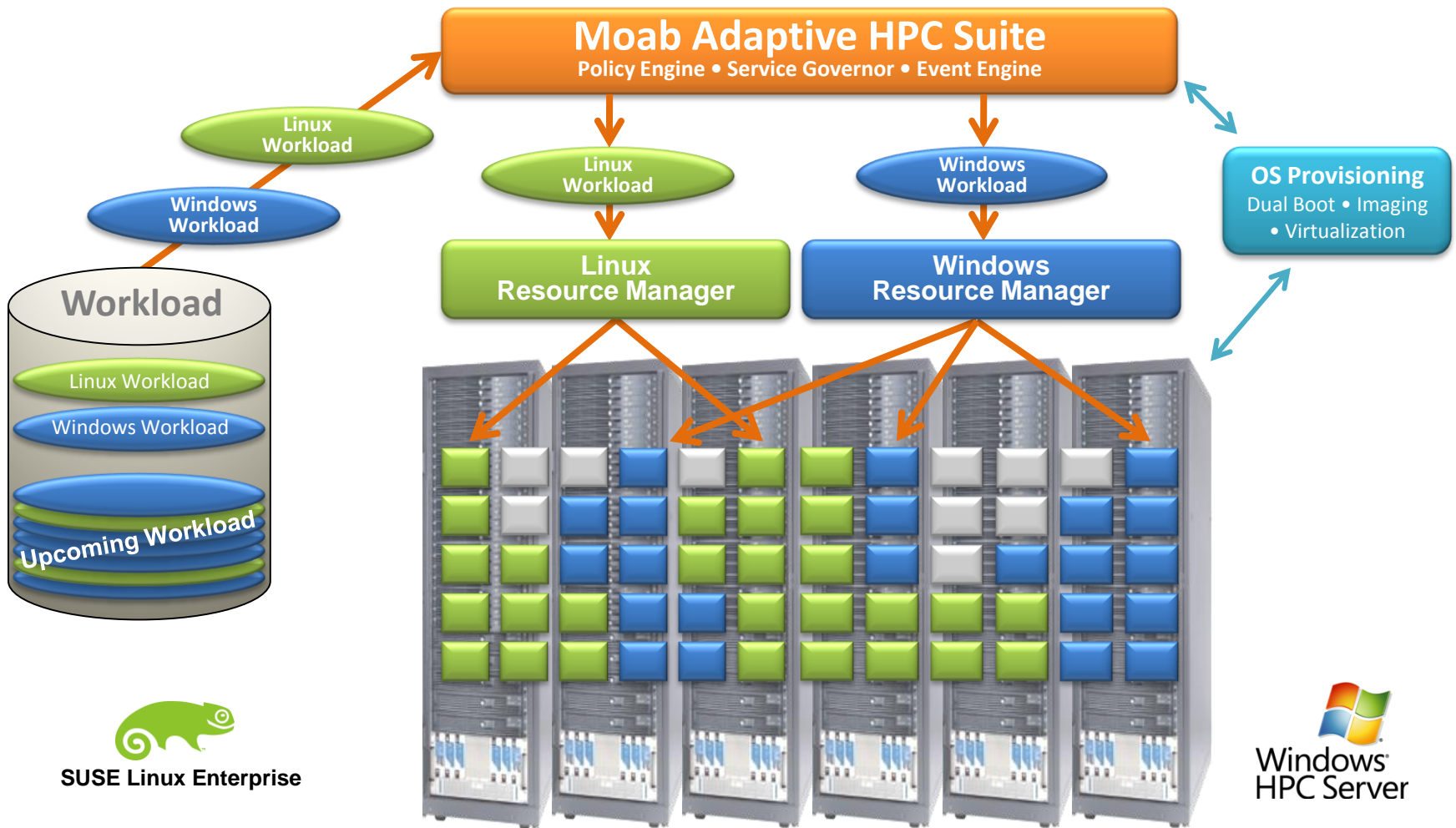


# Dual Boot / Hybrid Windows & Linux

- **Manual deployment & management of dual-boot clusters**
  - Manually set up an environment that supports Windows & Linux on the same physical server cluster
  - Up to cluster admin to setup processes to migrate servers between various operating systems
- **Hybrid dual-boot clusters**
  - Moab Adaptive HPC Suite™ manages resources dynamically based on policies that integrate both the Windows and Linux job queues
  - Users have single point of job submission
  - Administrators have a single point of control
  - Managers have a full view of what is happening across their environment



# On-demand Provisioning Works



# Cloud and Real-Time Infrastructure

*“The design goal of private cloud computing is to enable frequently requested and standardized IT services to be delivered in a completely automated way, from service request through service delivery. The services are delivered and hosted on a shared pool of resources (servers, storage, network).”*

*RTI is the technology architecture behind elasticity, dynamically increasing and decreasing or repurposing service capacity based on real-time demand, planned schedules or to meet SLAs. RTI maps the demand for services into just the right level of resource supply required. There are few vendors that provide such functionality.”*

**Gartner**

Gartner: Provisioning and Configuration Management for Private Cloud Computing and Real-Time Infrastructure– February 28 2011 ID:G00210884, Donna Scott, Ronni J. Colville

# Cloud and HPC Triple Play



SUSE Linux Enterprise



Windows HPC Server  
2008 R2

Moab Adaptive HPC Suite™



 **Adaptive**  
COMPUTING

Novell. **INTEROP** **ABILITY** **Microsoft**

## Agile Automated Adaptive

- SUSE Linux HPC
- Optional support for Red Hat (from Novell)
- Dual-Boot With Windows Server HPC
- MOAB Adaptive HPC Suite
- Single, Low Price

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Novell. **INTEROP** **ABILITY** *Microsoft*

<http://www.moreinterop.com>

<http://www.microsoft.com/hpc>

<http://www.novell.com/hpc>

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