Who is Platform Computing, an IBM Company

- Market leader in middleware and infrastructure management software for mission-critical technical computing and analytics distributed computing environments
- 2000+ global customers including 23 of 30 largest enterprises
- Simultaneously increases infrastructure utilization, application service levels and throughput, and reduces costs using heterogeneous, shared infrastructure
- Applications span technical computing, high performance computing (HPC) (design, research, engineering) and analytics (financial analytics, BI/analysis, data processing)
- Offerings scale from single-sites to large global grids
- 500+ professionals spread across 13 global offices
- Partnerships with Dell, HP, Cray, SAS, Intel, Microsoft, Fujitsu & 100+ select partners

# 1 Commercial HPC
60% of top Financial Services
Over 5 MM CPUs under management
What Does Platform Computing Do?

We optimise shared infrastructure for distributed HPC, Technical Computing and Analytics computing environments

Creates Shared Resource Pools
- For Compute & Data intensive apps
- Across heterogeneous resources
- Physical, virtual, cloud
- Easy user access

Delivers Shared Services
- Multiple user groups, sites
- Multiple applications and workloads
- Governance
- Administration/ Reporting / Analytics

Workload Management
- Policy & resource-aware scheduling
- Service level agreements
- Automation / workflow
- High utilization of resources

Transforms Static Infrastructure to Dynamic
- Harvest non-dedicated
- Burst internal / external
- Multi-hypervisor
- Multi-boot
Key Industries & Customer Benefits

- **Financial Services**: Better decisions in real time on trades with in-house applications

- **Semiconductor and Electronics (EDA applications)**: Faster time-to-market

- **Automotive, Aerospace & Defense, Consumer Products (CAD, CAE, MDA)**: Better product design

- **Research, Academia & Life Sciences (public domain & in-house applications)**: Petascale performance for grand challenge HPC problems

- **Oil & Gas** (seismic and reservoir simulation applications): Faster time to results for finding Reserves and for decisions on how to exploit producing reservoirs
Workstation, Cluster, Grid and HPC Cloud Evolution

**HPC Cluster**
- Commodity hardware
- Compute / data intensive apps
- Single application/user group

**Grid**
- Multiple applications or Group sharing resources
- Dynamic workload using static resources
- Policy-based scheduling

**HPC Cloud**
- HPC applications
- Enhanced self-service
- Dynamic HPC infrastructure: reconfigure, add, flex

1992
- Workstation

2002
- Cluster, Grid

2012
- Cloud
Platform and “HPC Cloud”

- “HPC Cloud” definition varies widely between end users
- Platform enables “HPC Cloud” capabilities across the families
- Starting point is core workload & resource mgmt

<table>
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<th>Capability</th>
<th>Customer Benefits</th>
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| Enhanced Shared Services             | • Enhanced self-service portal  
• Multi-tenant HPC sharing  
• Chargeback and reporting |
| Flexing Within an HPC Environment    | • Dynamic re-provisioning based upon workload  
• Cluster growing/ shrinking across mixed workload management systems and clusters  
• On-demand cluster creation by end users |
| Extending the Size of an HPC Environment | • Bursting to add resources  
• Harvesting servers / workstations  
• Consolidating clusters into shared grids |
Platform Computing Products

Platform LSF
Platform Symphony
Platform HPC
Platform Computing Offerings

HPC Workload and Resource Management

Platform LSF Family

Scalable, comprehensive cluster and grid workload and resource management suite for heterogeneous environments

Platform HPC

Simplified, integrated, purpose-built HPC management software supplied as a complete HPC software and hardware solution from your favourite HPC Partner. Foundation for HPC Cloud

Analytics Infrastructure

Platform Symphony Family

High-throughput, low-latency compute and data intensive analytics applications
- Highest performance & utilization
- Complex Computations (i.e., risk)
- Big Data Analytics via MapReduce
- Extract Transform Load (ETL)
Platform Computing Products

Platform LSF
Platform LSF Product Family

Overview
The most powerful workload manager for demanding, distributed and mission-critical high performance computing environments.

Key Capabilities
- Delivers a virtualized pool of shared IT resources
- Policy-driven and infrastructure-aware workload scheduling
- Highly scalable and available architecture for managing up to petaFLOP-scale resources
- Easy-to-use job management portal with simplified application integration
- Comprehensive reporting & analytics

Benefits
- Increases job throughput for faster time to results
- Reduces IT costs with dramatic gains in utilization
- Simplified management with a single platform for multiple applications/users and a heterogeneous infrastructure
- Improved visibility of resource usage for easier management and capacity planning
Platform LSF Family Add-Ons

Analytics
License Scheduler
RTM

Multi-Cluster
Session Scheduler
Process Manager

Adaptive Cluster
Application Center
MPI
Platform Computing Products

Platform Symphony
Platform Symphony Product Family

Overview
The most powerful management software for running low-latency compute and data intensive applications on a scalable, shared, heterogeneous grid

Key Capabilities
- Accelerates service-oriented apps on a distributed grid
- Extreme app scalability and throughput with very low latency
- Compute and data parallel applications on a single platform
- Supports applications written in MapReduce logic and is 100% Hadoop compatible
- Sophisticated, hierarchical resource sharing
- Open and flexible: choice of OS, frameworks and languages

Benefits
- Higher quality analysis with faster results
- Reduces IT costs - dramatic gains in infrastructure utilization
- On-board new applications faster, reduce application maintenance costs
- Single management platform for multiple application types

Low Latency / Hi-throughput
- Sub-millisecond
- 17,000 tasks per second

Large Scale
- 10,000 cores per application
- 40,000 cores per grid

Heterogeneous & Open
- Linux, Windows, AIX
- C/C++, C#, Java, Excel, Python, R
Platform MapReduce for Hadoop

What does Platform MapReduce provide?

- Leverage of existing Storage Environment
- High resource utilisation and predictability
- Enterprise-class manageability and security
- High availability
- Scalability
- Open architecture – access data where it currently resides
- Connectors for various Databases and File Systems
- Shared Services / Multi-application workload capable
- Guaranteed SLA capabilities for key applications
Platform MapReduce

Application (MR Java, Hive, Pig, Oozie)

Hadoop Job Tracker + Grid

Hadoop File System

Platform MapReduce Grid

Current File Systems

HDFS Only

SQL, Oracle

Data Warehouse Environments

HDFS

GPFS

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Platform HPC

Overview
Easy-to-use and complete HPC cluster and workload management software sold with all major server brands

Key Capabilities
- Highly configurable, easy-to-use cluster management
- User-friendly, topology-aware workload scheduling
- Web-based interface for access anywhere and simplified application integration
- Robust workload and system monitoring and reporting
- Dynamic operating system multi-boot
- GPU scheduling and reporting
- Robust commercial MPI library, including Platform MPI

Benefits
- Faster time to full system readiness
- Reduces time to full user productivity
- Increases job throughput for faster time to results
- Reduces IT costs with dramatic gains in infrastructure utilization
- More science, less computer science

Web-Based Operational Dashboards:
Customers can monitor workload & system load for troubleshooting and capacity planning

Application Templates:
Users can run applications without writing wrapper scripts
Capacity Approach

Utilization

- Invisible cost of delay to productive use & utilization
- Extended learning period for users
- Extended time to fully operational system
- It takes a long time to “Sweat the Assets”

Open source management software

Time in months
Productivity Approach

- Faster time to full system readiness
- Faster time to full user productivity
- “Sweat the Assets” much earlier
- Better throughput & utilization
- Strong policies drive allocation of resources

Utilization

Time in months

- Open source management software
- Platform HPC
Platform HPC – Delivering Value

Reference Architecture – Leveraging tight integration of Platform HPC with your preferred x86 Server vendor, Interconnect (QLogic, Mellanox), GPU (NVIDIA, Intel), Storage supplier (DDN, Panasas), File System (Lustre, GPFS) and HPC Applications
Platform HPC – Delivering Value

Platform HPC provides partners and customers with the 5 R’s of Added Value

1 – Reference Architecture  
2 – Rapid System Deployment  
3 – Rapid User and System Productivity  
4 – Reporting and Analysis  
5 – Reduced Cost of Ownership

When combined, these capabilities deliver the most powerful HPC management product available
Platform HPC – Many New Customers

Better HPC Better Living

Plus new entries into Top 500 – NCHC, Airbus
Support

World-class support organization
- Comprehensive support offerings
- Consistently high customer quality scores
- Tailored consulting offerings
- Self-serve support options
- Superior quality

Mission Critical
- Technical Account Manager, Quarterly reports
- Technical Critical Care, Migration Planning Assistance
- Proactively investigate customer-specific issues
- Direct Access to R&D & Product Management

Premium
- Assigned Support Engineer (ASE)
- Faster SLA, Regular updates, fast ticket review
- Multi-site Co-ordination, Remote Health Monitoring
- Developer Support, Maintain customer profile
- After Hours Critical Changeover Coverage

Standard
- Local Business Hour Support
- Severity One 24x7 Hotline
- Software Q&A and Usage Assistance
- Software Upgrade and Patches
- Knowledge Base Articles, unlimited tickets
Platform Computing Partner Ecosystem

Strategic Partners

Premier Partners

Select Partners
Platform Computing and IBM

• What is the plan to support heterogeneous (non-IBM) hardware?
• Is there any impact to current customer’s subscriptions and support licenses from partners?
• Will customers be able to renew licenses and support through existing partners in the future?
• Will there be any impact to existing terms and conditions on partner agreements?
• What is the impact to the support experience?
• Will Platform continue current product roadmaps?
Thank you!