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## Highlights

- Accelerate time-to-results for compute-intensive and data-intensive analytics such as Hadoop MapReduce
  - Gain cost savings and IT agility by creating a shared infrastructure for workloads of all types
  - Reduce deployment risk and time with pre-built integrations for applications
  - Support heterogeneous operating systems, file systems, storage and high-performance x86 systems, such as IBM® System x® iDataPlex®, IBM Power Systems™ and GPGPUs systems
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# IBM Platform Computing Solutions: Financial Markets and Insurance

*Create a high-performance computing (HPC) environment for complex modeling and analysis*

Regulations such as Basel III and Dodd-Frank in financial markets, and Solvency II in the insurance industry, are driving firms of all types and sizes to adopt a more active, enterprise approach to financial risk management. Many firms now need to report aggregated results overnight—and, increasingly, on an intraday basis.

IBM solutions such as IBM Platform Computing™ cluster, grid and high-performance computing (HPC) cloud management software and the IBM General Parallel File System (GPFS™) can help insurance and financial services organizations transform their IT environments for faster, more accurate analytics at less expense.

## Gaining greater capacity on-demand without additional cost

Credit risk and capital adequacy calculations are compute-intensive and require highly scalable infrastructures to support these simulations. At the same time, firms are focused on reducing IT spending. Grid computing technology meets both requirements by enabling firms to transform silos of dedicated hardware into a shared IT infrastructure.

IBM Platform Computing software enables the creation of a high-performance, shared infrastructure out of silos of hardware clusters. Rather than wait for days, weeks or even months for IT to provision new hardware, users gain additional IT capacity as needed. Firms have



reduced provisioning times from weeks to minutes, and deferred millions of dollars in hardware purchases by improving utilization rates of existing hardware. As a result, end users have immediate access to a larger pool of IT resources to support a wide variety of analytical workloads.

### **Accelerating time-to-results for analytics at a lower cost**

By sharing IT assets, IBM Platform™ Symphony grid management software enables financial services firms to deliver greater scalability and compute power to their pricing and risk applications without adding servers. The IBM Platform Symphony low-latency workload and resource manager optimally allocates IT resources to meet workload demands, avoiding both over- and under-allocation of resources.

As a result, compute-intensive analytics can be reduced from days to hours and from hours to minutes, respectively. Data-intensive analytics can be accelerated up to seven times or more on average.<sup>1</sup>

### **Addressing demands of modern-day risk management**

Financial firms today are focusing on managing financial risk, and in particular, counterparty credit risk (CCR). One measure of CCR is Credit Value Adjustment (CVA). To ensure a highly accurate CVA analysis, firms are adopting the Monte Carlo approach for simulation, and therefore require greater compute capacity. Even if a firm has sufficient servers for compute demands, however, CVA analytics are also highly data-intensive. They can potentially generate hundreds of terabytes of data in just a few hours, leading to I/O bottlenecks on typical 10 Gigabit Ethernet (GbE) networks.

Case in point: one of the world's largest investment banking firms needed to reduce its IT spend and dramatically increase its compute capacity to support its CVA initiative. Its current grid computing environment was developed ad hoc, resulting in high administration costs and brittleness. More importantly, the firm determined that it could not deliver the scalability to support the projected CVA workloads, in addition to the continually growing analytics demands from all business units.

The bank chose IBM for an end-to-end solution that included IBM Platform Symphony grid management software and IBM GPFS, along with IBM System x iDataPlex hardware. According to the investment firm's chief information officer, "IBM then proved its approach, taking an existing job that required two hours on 20,000 cores and running it in one hour on 10,000 cores. Achieving twice the performance on half the infrastructure was absolutely compelling for us."

The IBM Platform Symphony workload and resource manager improved utilization of the firm's existing and new IBM iDataPlex servers. With fewer idle resources, the firm quadrupled its compute capacity. The company also projected annual cost savings in the tens of millions of dollars due to easier system administration and greater system utility.

### **Accelerating financial modeling for insurance**

As insurance companies require more compute capacity to support complex capital adequacy and actuarial modeling, and deal with greater market uncertainty and stricter regulations, IBM Platform Symphony can play a key role in accelerating time-to-results for analytics across the enterprise from claims management to product development. For example, an international insurance company wanted to determine whether it

would be beneficial to carry out reattribution to policyholders of “inherited estate” money built up in the With-Profits Sub-Fund (WPSF) over many years. To support financial modeling for this type of strategic decision making, the company needed to quickly upscale its compute resources.

The firm now uses IBM Platform Symphony to accelerate financial modeling using one of the leading applications for actuarial modeling tools in the life insurance sector. As demand grew for more models with even greater granularity, the company needed to find ways to scale the solution across hundreds to thousands of CPUs.

Currently, the firm has thousands of CPUs spread across multiple data centers. According to the head of actuarial systems and modeling, with IBM Platform Symphony in place to orchestrate the analytical workload, they can now run up to 10 times the number of models as before in a comparable time frame. Processes that took 14 hours in the past can now be completed in less than three hours, so decision makers can have actionable information during the course of the day. These results are due to the ability to effectively run modeling jobs simultaneously across a much larger number of cores than in the past.

### **Improving throughput and scalability cost-effectively**

Many firms are evolving their financial modeling and risk management systems to comply with new internal guidelines and industry regulations affecting capital resources and risk-taking. With IBM and IBM Platform Computing solutions such as IBM Platform Symphony and IBM GPFS, organizations can improve the performance, throughput and scalability of their existing systems to handle increasing analytical needs while minimizing infrastructure costs.

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### **Eliminating file system bottlenecks**

When running data-intensive analytics such as CVA and Hadoop MapReduce, file servers and their network connections can become overwhelmed. When multiple jobs need to access the data on just a few file servers, for example, those file servers run slower—leading to project delays. Trying to alleviate the problem by adding more file servers means additional costs and IT headaches.

The solution:

- IBM GPFS removes data-related bottlenecks by providing parallel access to data, while retaining investments in existing network file servers through its support of Active File Management (AFM).
- If a file server is in high demand, IBM GPFS AFM can cache the data and deliver it through multiple network connections.
- By eliminating hot spots, this approach helps accelerate data access, computation and time-to-market.

For clients running workloads where data is distributed rather than localized—for example, Hadoop MapReduce—IBM GPFS supports a file-placement option (FPO) to maximize performance by ensuring that processing takes place right on the nodes where the data resides.

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### **Why IBM?**

By combining powerful systems with industry-leading HPC grid, clusters and HPC cloud management software from IBM, end users can focus on their work rather than on infrastructure management. IBM provides a wide range of hardware, software, support and services. These offerings accelerate time-to-value by integrating industry-leading IBM software with world-class servers, storage, networking and parallel file systems. IBM also helps organizations reduce deployment risk and time with pre-built integrations for applications including IBM Algorithmics®, Calypso, Murex and IBM InfoSphere® BigInsights™. By supporting more comprehensive analytics, IBM integrated solutions can help firms gain a more accurate, holistic view of their company-wide risk exposures.

## For more information

To learn more about IBM solutions for financial services, including IBM Platform Computing solutions, please contact your IBM representative or IBM Business Partner, or visit:

[ibm.com/platformcomputing/industries/financialmarkets.html](http://ibm.com/platformcomputing/industries/financialmarkets.html)

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<sup>1</sup> For more information about these results, see the white paper, "Analyzing big data at the speed of business," [ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&htmlfid=DCW03042USEN](http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&htmlfid=DCW03042USEN)



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