

IBM Spectrum Computing family

Accelerating time to results for compute- and data-intensive applications



Highlights

- Increase competitive advantage with faster results and increased throughput
- Reduce costs by consolidating IT silos and driving maximum utilisation
- Manage complexity of heterogeneous applications, users and locations
- Deploy mission-critical applications and next-generation workloads on premises, in the cloud and in hybrid environments
- Improve ROI by maximising value from existing resources while benefiting from a shared scale-out distributed environment.

The value of a shared scale-out, distributed platform

As the speed of innovation increases, businesses and organisations need an infrastructure capable of accelerating time to results for compute- and data-intensive applications. These applications fuel product development, critical business decisions and scientific breakthroughs in industries such as financial services, manufacturing, digital media, oil and gas, life sciences, government, research and education.

Line-of-business teams are constrained by long processing times and an explosion of data. At the same time, IT is attempting to manage costs while maintaining service levels to the business teams. There is also interest in using commodity x86-based resources, virtualisation and cloud and in taking advantage of the evolving trend toward accelerators such as graphics processing units (GPUs). Against an insatiable need for more computing power, many applications exist in over-provisioned infrastructure silos with low utilisation.

High-performance analytics and new generations of applications require your organisation to find more compute power than ever before to stay competitive. Businesses must re-examine how resources are being used instead of simply adding more. Complex management tools can also add an unnecessary burden on performance and budgets.

Businesses are discovering the value of a shared scale-out distributed computing platform capable of managing clusters, grids and clouds. This platform helps consolidate IT silos and optimise heterogeneous applications – for both low-latency parallelised and batch workloads – on a dynamic software defined computing infrastructure.

Share the power, reap the rewards

The IBM Spectrum Computing family of products and services includes resource and infrastructure management for distributed, mission-critical high-performance computing (HPC), analytics and big data applications, as well as the new generation of cloud-native applications that increasingly rely on open source frameworks such as Hadoop and Apache Spark. IBM Spectrum Computing has solutions to meet today's needs and scale as your organisation grows. The net effect: maximum utilisation and greater throughput with reduced cost and faster time to results. IBM® Spectrum Computing products also integrate with IBM Spectrum Storage solutions designed to enhance the speed and efficiency of storage and simplify migration to new workloads.

Perfecting workload management: Automatic resource-aware scheduling policies for every task and resource offer higher utilisation and greater throughput. Jobs are automatically started and stopped and moved to the right resource in the right priority to help maximise every available part of your infrastructure (Figure 1).

Increase job throughput and resource utilisation via intelligent job scheduling

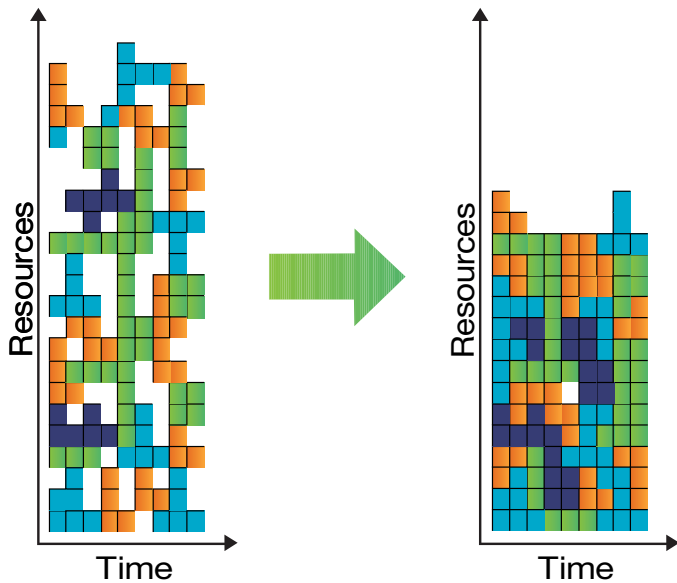


Figure 1. Increased efficiency through automatic resource-aware scheduling in IBM Spectrum Computing.

Simplifying complexity: Heterogeneity introduces complexity because applications can have very different hardware, operating systems (OS), physical, virtual and cloud resource requirements. IBM Spectrum Computing can reduce this complexity by managing heterogeneity, consolidating IT silos into shared services and simplifying management of all resources.

Delivering ease of use: An easy-to-use end-user web portal simplifies job submission and management and hides the complexity of multiple user groups, sites, applications and

workloads. IBM Spectrum Computing automates the intelligent matching of compute demand with resource supply across virtual and physical domains with robust management, monitoring and analytics for chargeback, reporting and governance.

Transforming static to dynamic: Application workloads are serviced automatically by the most appropriate resource running locally and in the cloud, helping transform a static IT infrastructure into a dynamic, software defined infrastructure that is workload- and resource-aware.

Intelligent workload and resource management

IBM Spectrum Computing provides highly flexible policy-based scheduling models to make sure all jobs are correctly prioritised and matched to the right resources. Chargeback and allocation helps ensure groups get their share of resources to meet business requirements. Fair sharing with high utilisation enables organisations to get more work done on the same resources and infrastructure, resulting in lower costs.

IBM Spectrum Computing is a leader in infrastructure and cloud management software:

- Clients include **9 of the 10 largest** global companies
- **More than 2,500** of the world's most demanding clients
- **Over 5,000,000** server processors under management
- **20-plus years** of dynamic, innovative growth

Accelerate throughput up to 150 times for simulation, design and research using IBM Spectrum Computing software¹

High-performance application adoption and deployment made easier

IBM Spectrum Computing makes it easy for organisations to accelerate business insights from all of their data by leveraging the most current scale-out applications and open source frameworks. IBM Spectrum Computing solutions are simple to manage and use, helping accelerate time to full system readiness

and full user productivity. Key features include web-based interfaces, robust workload management with intelligent job scheduling and flexible application integration. IBM Spectrum Computing can scale from a single on-premises cluster to span multiple clusters including large and cloud and hybrid installations (Figure 2).

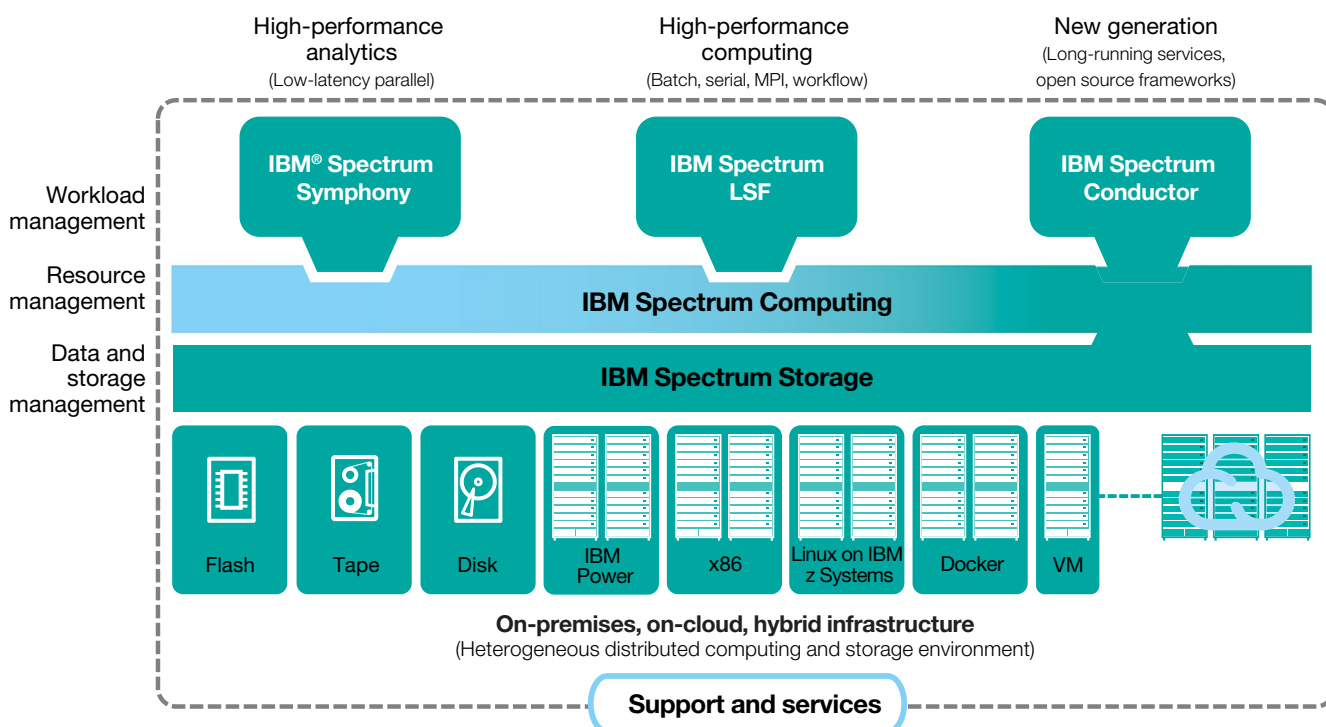


Figure 2. IBM Spectrum Computing family architecture including IBM Spectrum Symphony, IBM Spectrum LSF and IBM Spectrum Conductor.

Choose the right IBM Spectrum Computing products and services for you

- **IBM Spectrum Symphony:** High-throughput, low-latency workload and resource management for compute- and data-intensive analytic applications. IBM Spectrum Symphony can reallocate more than 1,000 compute engines per second to different workloads – and with sub-millisecond overhead per task, it can provide throughput of 17,000 tasks per second²
- **IBM Spectrum LSF:** Powerful and comprehensive workload management products for demanding, distributed and mission-critical heterogeneous HPC environments. Scale across millions of jobs, accelerate throughput up to 150 times and manage up to petaflop-size resources³
- **IBM Spectrum Conductor:** An integrated application- and data-optimised platform for efficiently analysing, accessing and protecting data across scaled-out infrastructures. Achieves up to 60 percent faster insights from all data by leveraging new technologies including Apache Spark and Docker⁴
- **IBM Spectrum Computing services, support and training:** Assessments, consulting, deployment optimisation and user training help you maximise value.

Why IBM?

IBM Spectrum Computing offers a comprehensive portfolio of workload, resource and infrastructure management solutions designed to help your organisation deliver IT services in the

most efficient way possible. By optimising resource utilisation to speed time to results and reduce costs, these offerings help maximise the potential of your infrastructure to accelerate your HPC and analytics workloads as well as new-generation cloud-native applications and open source frameworks such as Hadoop MapReduce and Apache Spark. IBM Spectrum Computing gives you the flexibility to deploy software defined computing as a shared service across your choice of infrastructure, whether on premises, in the cloud or between sites as a hybrid cloud.

IBM Spectrum Computing solutions fuel product development, critical business decisions and scientific breakthroughs in financial services, manufacturing, digital media, oil and gas, life sciences, retail, government, research and education. More than 2,500 clients – including 23 of the top 30 largest global enterprises – use IBM Spectrum Computing solutions.

For more information

To learn more about the IBM Spectrum Computing family, contact your IBM representative or IBM Business Partner (BP), or visit: ibm.com/spectrum-computing



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^{1,3} 'HPC Workload Management Tools: A Competitive Benchmark Study,' ibm.com/services/forms/signup.do?source=stg-web&S_PKG=ov26443

² Based on internal IBM testing.

⁴ STAC Report: Spark Resource Managers, Phase 1 (March 28, 2016), stacresearch.com/news/2016/03/29/IBM160229

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