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## Highlights

- Accelerate time-to-results with faster throughput and performance
  - Achieve higher levels of resource utilization
  - Improve the reliability of MapReduce jobs
  - Leverage Docker containers for service instances
  - Integrate with Apache Hadoop YARN to provide high availability for YARN resource manager entities
  - Manage on-premises and cloud-based clusters
  - Help reduce infrastructure, application development and management costs
  - Gain the agility to instantly respond to real-time demands
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# IBM Spectrum Symphony

*High-performance grid services for distributed computing and big-data analytics*

IBM® Spectrum Symphony software helps you control the massive compute power available in your current and future technical computing systems to address challenging and complex problems. This software can help you achieve breakthrough results in business and research by addressing challenges in parallel application development and deployment, and technical computing infrastructure management.

While a conventional batch scheduler can schedule jobs in seconds or minutes, IBM Spectrum Symphony can schedule tasks in milliseconds. This key difference means the solution can deliver faster, better quality results—even while using a smaller amount of infrastructure—to support online or near-real-time requirements.

## Increase grid performance and scalability

IBM Spectrum Symphony is an enterprise-class grid manager for distributed application services on a scalable, shared, heterogeneous grid. It can support up to 5,000 compute nodes, 128,000 cores and 300 applications. It has the flexibility to adapt to changing priorities and can reallocate more than 1,000 compute engines per second to different workloads in accordance with sharing policies and application priorities you define. This translates into better application performance, better utilization and an ability to respond quickly to business demands.

A fair-share scheduling scheme with 10,000 priority levels can be used for multiple jobs for a single application. Also, preemptive and resource-threshold-based scheduling is available with runtime change management. Slot allocations change dynamically based on job priority and server thresholds, loaning and borrowing. IBM Spectrum Symphony also supports multidimensional scheduling, with the ability to specify slot definition for each consumer in terms of up to four customizable resource metrics (core, memory, disk I/O and network I/O).



IBM Spectrum Symphony supports multiple clusters, allowing a set of resources to span multiple clusters and to be moved between clusters based on need. A single session can run across multiple clusters, both on-premises and on-cloud, efficiently managed via a single user interface.

## MapReduce, YARN and Docker integration

IBM Spectrum Symphony Advanced Edition includes an Apache Hadoop-compatible MapReduce implementation optimized for low latency, high reliability and policy-based resource sharing. Unlike the open-source solution, which has no capability to re-start failed services automatically, this function is built into the implementation of IBM Spectrum Symphony MapReduce, helping to improve reliability.

Integrating YARN with IBM Spectrum Symphony provides a robust setup that takes advantage of the resource scheduling functionality of both YARN and IBM Spectrum Symphony resource manager. It also provides high availability for YARN resource manager entities. Service instances can be run in a Docker container. This allows applications to be packed together into a portable Docker image that can run on different platforms, isolates applications from each other, and provides an added layer of application protection.

## Why IBM?

IBM Spectrum Computing offers a comprehensive portfolio of software-defined infrastructure solutions designed to help your organization deliver IT services in the most efficient way possible, optimizing resource utilization to speed time to results and reduce costs. These offerings help maximize the potential of your infrastructure to accelerate your analytics, high-performance computing (HPC), Apache Hadoop, Spark and cloud-native applications at any scale, extract insight from your data and get higher-quality products to market faster.

Whether deployed in a data center or on the cloud, IBM Spectrum Computing solutions fuel product development, critical business decisions and breakthrough insights in financial services, manufacturing, digital media, oil and gas, life sciences, government, research and education. From designing Formula One race cars to credit risk analysis, organizations in a wide variety of industries are using IBM Spectrum Computing as a foundation for software-defined infrastructure solutions for big data, analytics, HPC and cloud to improve business results.

## For more information

To learn more about the IBM Spectrum Symphony software, contact your IBM representative or IBM Business Partner, or visit: [ibm.com/systems/spectrum-computing/products/symphony/](http://ibm.com/systems/spectrum-computing/products/symphony/)



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IBM Systems  
Route 100  
Somers, NY 10589

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