Platform Computing

Platform Symphony 5.1

An Overview of New Features for Application Developers and Administrators

Written with Platform Symphony administrators and software developers in mind, this brief provides an overview of significant changes in the latest Platform Symphony release.

About Platform Symphony

Platform Symphony is the most powerful enterprise-class SOA middleware for running distributed application services on a scalable, shared heterogeneous grid. It accelerates a wide variety of parallel applications that help optimize decisions, quickly computing results while making effective use of available infrastructure. Unlike other solutions that perform poorly and lack dynamic resource sharing, Symphony's efficient low-latency architecture provides the performance and agility required to predictably meet and exceed throughput goals for the most demanding applications.

This Platform Symphony release delivers improvements in performance, scalability, manageability and application integration.

Among the major new features are:

- **Simplified application integration** – A new wizard provides fast, compilation-free integration of .NET services.
- **Improved resource harvesting** – New harvesting options are provided for desktops, servers and virtualization platforms.
- **GPU support** – Expanded support for developing and deploying GPU-aware applications on Platform Symphony clusters.
- **Enhanced performance and scalability** – Better scalability and improved benchmark results.

New Platform Symphony Features

Simplified Application Integration

With Platform Symphony 5.1, developers using Microsoft Visual Studio® 2008 or 2010 can benefit from compilation-free integrations with existing service code written as .NET assemblies. An easy to use wizard guides developers through the process of loading and analyzing existing .NET services. Required code and application profiles are generated automatically.

With this enhancement, developers familiar with Visual Studio can rapidly adapt existing .NET services to use Platform Symphony and perform end-to-end integration testing without leaving the IDE. This makes them more productive and relieves them of the need to learn the Platform Symphony API in detail before integrating an application.

Improved Resource Harvesting

New harvesting options for Platform Symphony 5.1 enable administrators to more efficiently tap idle cycles from resources residing elsewhere in the organization. Harvesting idle capacity improves overall efficiency and can help organizations avoid or defer spending on infrastructure.

Specific options exist for:

- Desktop Harvesting
- Server Harvesting
- Virtual Server Harvesting

Desktop harvesting (also referred to as desktop *scavenging*) has existed for some time, but new features make server harvesting more efficient and practical.

While desktop harvesting is *usage-based* (detecting the presence of a desktop user), server harvesting is *load-based*. The server harvesting software accurately monitors non-Symphony load on candidate servers to ensure that Platform Symphony services will not conflict with existing business applications.

Additional enhancements enable administrators to identify key processes related to important applications so that Platform Symphony will immediately stop harvesting cycles when these processes are present on a server that is a candidate for harvesting.

The virtual server harvesting option[1] allows Platform Symphony clusters to tap available resources from virtualization platforms including VMware® vCenter®, vSphere® or Citrix® XenServer®, logically expanding the Platform Symphony cluster during periods of high-demand to run calculations on VM-resident compute hosts. Similar to server harvesting, the virtual machine harvesting software monitors hypervisors closely to ensure that Platform Symphony workloads are not impacting other VMs.

GPU Support

Available for free download, Platform Symphony *Developer Edition* enables developers to build and test GPU-aware applications before deploying them to a production Platform Symphony grid. This functionality is important for organizations planning to share GPU resources on a grid or write service-oriented applications that can scale beyond the confines of a single GPU.

A new Platform Symphony option, Platform Symphony for GPUs, recognizes GPU devices as schedulable resources. It automates the detection and monitoring of GPUs, exposing details that include the mode of operation, GPU temperature, and ECC error counts. By detecting exceptions such as over-heating and by automatically invalidating jobs on GPUs experiencing errors, Platform Symphony manages GPU workloads more effectively, maximizing resource use, improving application reliability, and reducing administrator effort.

Enhanced Performance and Scalability

With Platform Symphony 5.1 performance has been improved allowing for larger clusters and more applications per cluster. Platform Symphony 5.1 supports sub-millisecond application latency, peak throughput of over 17,000 tasks per second through a single session manager[2], and scalability to hundreds of thousands of cores. Additional detail is provided in a new performance whitepaper titled High Performance SOA with Platform Symphony 5.1[3].

New Platform Symphony Edition

A new edition of Platform Symphony called Platform Symphony *Cluster Edition* enables organizations with smaller application requirements to take advantage of the performance and enterprise class features of Platform Symphony. Platform Symphony *Cluster Edition* is functionally equivalent to Platform Symphony, but is tailored to customers running departmental clusters. Conversion to the full version of Platform Symphony requires a simple license change, providing a non-disruptive upgrade path.

Available as a free download, Platform Symphony *Developer Edition* enables developers to rapidly develop and test applications without the need for a production grid. Once applications are running in the *Developer Edition*, they are guaranteed to run at scale once published to a scaled-out Platform Symphony grid.

Multiple Repository Services per Cluster

As of Platform Symphony 5.1, multiple repository servers can be configured per cluster. This enables clusters that span geographies to load application services more quickly in parallel, while limiting network traffic over slow wide-area links. This feature also makes it faster to deploy new application services on large individual clusters by enabling compute hosts to load services in parallel.

Package Dependencies

Platform Symphony 5.1 provides enhancements for modular applications that share common components. By enabling complex applications to be expressed as collections of smaller packages with defined dependencies, applications become easier to manage and maintain. Disk space is also conserved on repository servers, and deployment speed is enhanced because only altered components need be distributed to compute hosts when updates are made.

Algorithmics Integration

Algorithmics and Platform Computing have joint engineered a state-of-the-art integration for Platform Symphony with AlgoBatch, a core component of the Algorithmics risk management suite. This integration is support by Algorithmics and available to Algorithmics customers deploying grid environments.

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[1] This functionality was previously referred to as "Platform ISF Adaptive Cluster for Symphony", but is now called "Platform Virtual Machine Harvesting for Symphony". The capability has been renamed so that it is consistent with other harvesting approaches.

[2] Applications designed scale horizontally to use multiple session managers can of course scale throughput even higher.

[3] Platform Symphony Whitepapers are available at the link http://www.platform.com/resources/literature

The Algorithmics-Symphony integration brings several advantages to Algorithmics environments[4] including improved performance and dynamic resource allocation. The integration also simplifies management by enabling administrators to attach common descriptive tags to workloads so that Platform Symphony administrators and Algo administrators can reference jobs using common terminology.

Resource Management Improvements

Platform Symphony 5.1 enables administrators to limit the number of service instances that an application (or session type) can run on a host even if there are more slots available. These more granular controls provide the flexibility to have remaining slots used by other applications residing on compute hosts such as data caches.

New sharing policies in Platform Symphony make it easier for organizations with multiple consumers to express loaning and borrowing policies. This enables better utilization and a larger pool of apparent resources for each consumer.

Usability Enhancements

Platform Symphony 5.1 incorporates several new usability enhancements that will be of interest to cluster administrators. Graceful host removal features make it easier to quickly remove closed dynamic hosts through the management console or via the command line. For customers running multiple versions of Platform Symphony on the same cluster, new facilities are provided to enable auto-selection of the most recent Platform Symphony version to avoid the need to specify versions explicitly.

Expanded API support

In addition to the broad set of client and server-side APIs supported in Platform Symphony, a new Python API is being made available for Platform Symphony. The Python API is provided both on the client side and the server side. Because Python itself is multi-platform, Platform Symphony developers who prefer to work with Python will enjoy more flexibility when integrating applications in heterogeneous environments.

New Platform Support

Platform Symphony 5.1 supports the following additional operating system and software development platforms:

Additional Operating Systems

- Windows 7
- Windows Server 2008 R2
- Windows HPC Server 2008 R2
- RHEL 6

Additional Developer Platforms

- Microsoft Visual Studio 2010
- Microsoft .NET 4.0 runtime

A full list of supported operating systems is available on Platform.com.

[4] A whitepaper detailing the integration is available at http://www.platform.com/resources/literature

Platform Computing

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