

Platform Symphony 4.1

An Overview of New Features for Platform Symphony Administrators and Developers



Platform Symphony is the industry's fastest High-Performance Computing (HPC) software solution developed specifically for organizations that need to build highly responsive and scalable service-oriented applications. By employing a single, high-level programming paradigm for multi-core and multi-node environments, Platform Symphony enables organizations to:

- Win against the competition with faster pricing and risk analysis
- Build, test and deploy new applications quickly
- Be more agile and responsive to rapidly changing business demands
- Manage multiple applications on the same grid with dynamic policy-driven resource sharing

Platform Symphony 4.1 introduces a number of significant improvements over prior releases delivering improved application scalability and performance, and making Platform Symphony easier to deploy and manage. Some of the highlights of this latest release are covered here. For more information on these features, please see the Platform Symphony 4.1 release notes.

Platform Symphony 4.1 New Features

High-performance Direct Data Transfer

New enhancements to the Platform Symphony API allow developers to "avoid the middleman" by enabling application data to be transferred directly between a client and a service. This new Direct Data Transfer (DDT) facility maximizes the utilization of network bandwidth and improves throughput. Using DDT, client applications send tasks as usual through the Symphony API, and Symphony in turn passes a reference to where the application data can be found. With this reference, services retrieve application data directly from the client without placing any load on the Symphony Session Manager (SSM). The Direct Data Transfer process is transparent to client and service applications and the programming interfaces for sending tasks and retrieving data remain unchanged. DDT can dramatically increase task throughput, delivering improved overall application performance.

Application Data Compression

Depending on available network bandwidth, and the size of messages being passed to Platform Symphony services, some applications can benefit greatly from data compression. Typical application data sent to Platform Symphony services has been shown to compress up to 95%. Platform Symphony 4.1 makes it easy for developers to add session and task level compression that triggers automatically based on configurable thresholds. Application Data Compression is enabled with a single API call and may be used in conjunction with the Direct Data Transfer feature described above. Like Direct Data Transfer, Application Data Compression is transparent to applications, and allows dramatic improvements in task throughput and application performance.

Common data update

A common requirement in financial services applications is to share data between multiple service instances. An example might be market data or yield curve data that needs to be referenced in all distributed calculations. Making effective use of common data can improve performance by minimizing the amount of information that needs to be sent across the network for each task computation. *Common data update* is a new API feature introduced in Platform Symphony 4.1 that makes it easier for developers to update and maintain common data. Services can employ a new callback mechanism to automatically obtain updated common data so that it is resident in the service and ready for use with future calculations.

Selective task output retrieval

By default, the Platform Symphony Session Manager (SSM) will send calculation results to the client as soon as they are available. They are cached in the client API until the client application requests them. Since the delivery of results from the SSM are not necessarily synchronized with the client, under high-load conditions clients can be overwhelmed by too many received results and run out of memory. To avoid this potential problem, Platform Symphony 4.1 introduces a new mechanism that allows the client to selectively specify only the result sets that it is interested in. This ensures that the retrieved data set will be smaller, avoiding the possibility of a client running out of memory.

Scalability and Performance Improvements

A number of performance and scalability related enhancements have been made over prior releases including Platform Symphony now being certified to support up to 5,000 service instances per application. The Platform Management Console (PMC) performance for various types of management queries has improved as well. The number of concurrent downloads from the repository has been increased, and the time required for a scavenged host to relinquish itself from the cluster when a threshold is reached, is less than 5 seconds with Platform Symphony 4.1 enabling faster more responsive applications.

Networking and Security Enhancements

Platform Symphony now supports multi-homed hosts (hosts having more than one IP address). Firewall support is provided between client hosts and management hosts, and also between management hosts and compute hosts helping improve application security. The **egosh** command may now employ **ssh** as its underlying mechanism for secure communications rather than **rsh** which was the only mechanism supported previously.

Enhanced Resource Management and Sharing

With Platform Symphony 4.1, administrators can now tailor the number of slots available for each host in a resource group. This provides administrators with greater control and flexibility when host groups are comprised of different host types having different attributes and performance characteristics. To spread work more evenly among management hosts, a new "Balanced slot allocation policy" is supported with Platform Symphony 4.1. In cases where the workload characteristics exhibited by different resource consumers are different, Platform Symphony can be configured to take into account both the observed workload as well as configured share ratios, allowing consumers to reclaim more resources than their planned share ratios would normally allow, helping delivery better service during busy periods.

Improved Application Management

Applications on the cluster can now be upgraded without affecting running tasks and active sessions. Application profile modifications

may also be made without affecting applications "in flight", providing administrators with more flexibility and avoiding the need to stop critical application services to facilitate an upgrade.

Ease of Upgrades

Enhancements to the Platform Symphony upgrade procedure make it straightforward to upgrade from a Platform Symphony 4.0 cluster. Configuration and historical data are retained so that reporting is unaffected following the upgrade. Existing Platform Symphony 4.0 applications can continue running, even during and following the upgrade. This provides customers the flexibility to decide on their own schedule whether or not to take advantage of new features specific to Platform Symphony 4.1. The Platform Symphony 4.1 middleware (SSM) is fully compatible with previous versions of client software so that server/computing node upgrades can be performed independently of client upgrades.

New Supported Platforms and Compilers

Platform Symphony now offers native 64 bit support in its session manager (SSM) and other SOAM daemons allowing them to take advantage of 64-bit Windows and Linux operating systems. By using all available physical memory on a host, the SSM is less likely to need to page data to disk, thereby increasing performance dramatically for large applications. Other newly supported operating systems and compilers include:

- Solaris 10 x86 management host support
- Windows Server 2008 support (including the Standard, Enterprise and 64-bit HPC editions)
- AIX 5.2 (32 bit) client support for clients built using the XLC 7 and 8 compilers

For Further Information

Please contact:

Yonggang Hu

Platform Symphony Product Manager, HPC Products

yhu@platform.com

Tel: (905)-948-8448