An Inconvenient Truth

...about Enterprise Job Scheduling

Enterprise job schedulers are among the most enduring systems management tools still available today. Since their appearance nearly thirty years ago in mainframe environments, all large and most mid-size organizations have acquired a job scheduler — sometimes more than one — and have automated most critical batch processes.

But the IT landscape has undergone significant change. Legacy platforms are slowly giving way to new paradigms and new workloads — in real time.

In this white paper, we will discuss the challenges of today's predominant solutions and their preparedness for the ever-changing climate of Information Technology, and introduce you to the OpsWise Automation Center – the first new truly enterprise scheduler to emerge in nearly 25 years.

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Introduction

Since the 1970s, job scheduling solutions have been adapting to the ever-changing landscape of information technology.

Initially, job schedulers were monolithic programs residing on mainframe systems, providing end-to-end scheduling for mainframe environments. With the rise of distributed systems in the 1990s, new job schedulers were created to address automation challenges on these platforms.

ERP environments, with their own built-in schedulers, increased the level of scheduling complexity, and integrations were required to bridge these systems.

Mainframe products were quick to adapt by simply adding a network communications layer and agent architecture. You could control the enterprise – from the mainframe.

In turn, distributed systems products also adapted, with the creation of z/OS agents. You could now control the enterprise – from a UNIX or Windows server.

New classes of workloads in new environments are now emerging. The new workloads have different execution requirements, both batch and real-time, written in new languages such as J2EE and .NET, run in new environments such as virtualized clusters of commodity hardware (VMWare) and grid computing systems.

The old paradigms are struggling to cope with these changes. Modern workloads require modern automation solutions. Only a true workload automation broker can capitalize on the recent developments in Information Technologies. In the long run, the most obvious benefit will be significant cost savings.

The Traditional Options

For years, vendors of legacy job schedulers have been scrambling to offer updated features that are patched on top of aging scheduling products. Many of these features are needed simply to keep up with rapid changes in the IT arena.

The fact is, most of the job schedulers that dominate the market today are 20 to 30 years old. The code bases were designed by developers who left long ago to work on new products and technologies. Over the years, the code bases have become entangled and fragile, consisting of band-aids, patches, and overhauled modules, all laid on top of a stagnant, archaic architecture.

This type of situation has a severe impact on a product's ability to change and adapt to ongoing advances in IT. Release cycles are long and difficult, and the results can be tenuous at best. Such releases are not characterized by innovations and breakthroughs, but are often just a matter of trying to keep up with piecemeal demands made by customers.

This is not to say that the dominant vendors make no effort to appease their customer bases. At a minimum, many have developed new user interfaces, playing down the fact that significant work must still be done from obscure command-line and legacy "green screen" interfaces.

One of the most critical changes that have occurred is the *need for a truly integrated solution for mainframe and distributed systems.*

The largest vendors continue to offer disparate solutions that have been awkwardly bolted together or "integrated" via a common user interface. Despite claims of genuine integration, these solutions are more window dressing than leading edge and often result in "functionality by lowest common denominator."

With or without an attractive "common" user interface, the modern data center is nothing like what it was twenty or even ten years ago. A data center that historically monitored and controlled hundreds of servers must now handle thousands of servers. This is an exponential shift that cannot be addressed with user interfaces or patches. Most job schedulers simply were not designed to meet scalability requirements of this magnitude.

Another typical characteristic of legacy systems is a primitive notion of high availability – one that offers simple failover rather than the modern methods of clustering. Older systems are also incapable of responding to messages in real-time; they are stuck with messaging architectures based on polling technology that monitors for work. This introduces expensive lag times into every process.

The rigid architectures of the past also prohibit users from viewing their own workloads and data from a business perspective. Menus, screens, and data are organized from a programmer's "functional" perspective, and the user has no say in this structure.

A modern system must allow business users to see their own business workflows. Managers must be able to report on their IT workload based on business service perspectives and, consequently, service-level agreements (SLAs).

The most significant shift in the enterprise management arena is the transformation from primarily time-based, batch scheduling to real-time, event-based processing.

Much of this was brought on by emerging web technologies, such as SOA, J2EE, and .NET, as well as by external drivers such as Sarbanes-Oxley regulations.

Most job schedulers were developed in classical batch environments, centering on simple time-and-date-based calendaring. This architecture presents unwieldy restraints on the system's ability to keep up with demands for information 24 hours a day and efficiency improvements that require tasks be done "just in time."

Without event-driven capabilities, a system cannot be extended into real-time infrastructures and modern enterprise applications. Without event-driven capabilities, the system cannot assist in automating runbooks for IT Process Automation. Without these capabilities, the system cannot keep up.

Here is the inconvenient truth relating to the state of the job scheduling market…

…for the majority of job scheduling systems, the transition from batch systems to real-time, event-driven workload automation cannot be accomplished with incremental product enhancements.

Despite all these developments, for years most major scheduling solutions have received little more than maintenance-level investment. For many users, this could result in unwelcome surprises in the coming months and years. Intermittent release cycles that deliver few features are not enough to take advantage of the monumental changes occurring in the IT arena today.

The Next Wave of Innovation

One hard fact of IT management is that over 80% of a typical IT budget is allocated towards maintaining existing systems. IT is under siege, coping with the complexity of highly distributed computing environments, further complicated by layer upon layer of legacy systems that have been added over the past thirty years, all supporting business-critical applications.

One byproduct of the situation is that very little is left over for advancing the company's business. Without endless supplies of money to throw at the problems that arise in everyday operations, IT managers must rely on intelligent technological solutions. They need a solution that simplifies their operations as much as possible, that allows them to automate as much as possible.

These managers are hampered by the legacy IT tools used to run their day-to-day operations. To effectively manage their business, IT requires an up-to-date architecture and functional design that directly addresses the challenges of today's data center. At a fundamental level, it must simplify how customers automate data center functions. It must increase the number and types of tasks that can be automated. And finally, it must be robust enough to handle modern data center scalability requirements.

In addition to the sheer numbers involved, the specific characteristics of today's data center workload have little in common with the workloads of past decades. Many tasks are now driven by events generated from real-time environments. This means

that internal systems must integrate with new technologies such as J2EE, .NET, and Web Services.

This new form of workload requires more than just an enterprise job scheduler — it requires an enterprise workload automation broker that can bridge legacy job scheduling requirements with today's advanced workload.

A workload automation broker must provide sophisticated tools for managing the abstraction and placement of the workload. This includes grid applications, virtualization, and service-oriented architecture (SOA). The solution must support state-of-the-art notification frameworks, including email, short message service (SMS), Java message service (JMS), Web Services, and Simple Network Management Protocol (SNMP). It must include seamless interfaces for agent and agentless workloads.

For the benefit of busy data center personnel, the workload automation broker must be simple to deploy and maintain. This means auto-deployment of agents and automated software updates.

For the business manager, the system must align with business units. Customers expect the ability to generate business service views on a daily basis. Business units need to manage and report on SLAs and to be in compliance with auditing requirements such as Sarbanes-Oxley.

Data center managers also expect licensing models beyond agent and MIPS-based pricing.

Finally, the modern workload automation broker must provide a feature-rich, customizable user interface. It should be based on Web 2.0 technologies. Customizable dashboards are needed to visualize workload by type, status, and business service. As a very core requirement, the user must be able to define and maintain both simple and complex graphical workflows, and to monitor and, if necessary, control those workflows in real-time. All system activity must be reliably documented through detailed, easily-accessible audits and comprehensive reporting facilities.

Introducing
Automation Center, by OpsWise

Single Solution for the Enterprise

OpsWise Automation Center offers the latest innovations in functional design, architecture, implementation, and compliance — all incorporated organically throughout its feature set rather than using separately developed add-ons sold for an additional license fee.
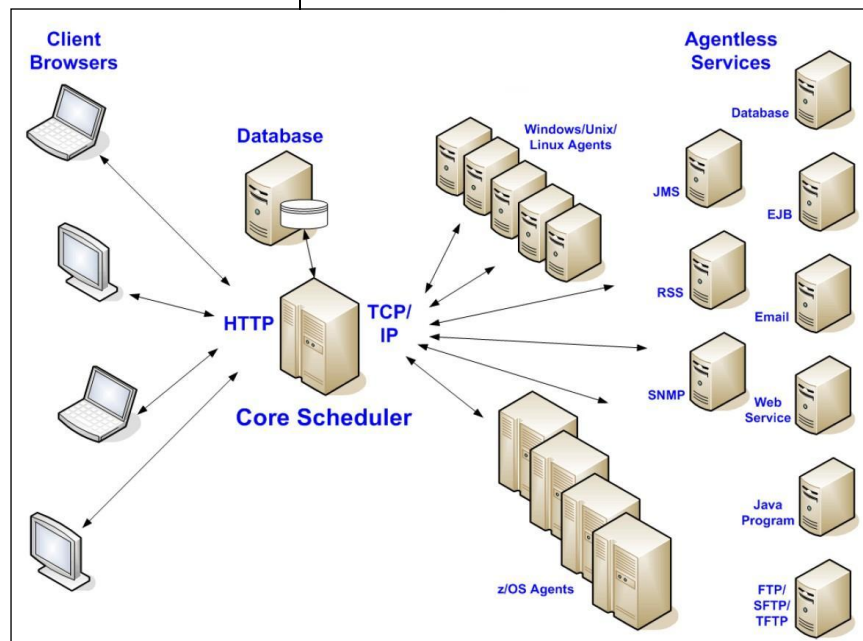
OpsWise Automation Center not only provides the time-and-date scheduling of an enterprise job scheduler, it is a workload automation broker capable of meeting the needs of real-time enterprises.

OpsWise Automation Center is truly native to all platforms — not just separate, platform-specific "integrated" schedulers. The core server and agents can run on Windows, UNIX, and Linux operating systems **and** as a native z/OS application.

Pure Web Interface

The OpsWise Automation Center user interface has been developed with an intuitive design that leverages the latest Web 2.0 technologies. The system is accessible from anywhere, using the most popular browsers. One hundred percent of user and administrative functions can be performed via the web interface. There are no obscure command lines to learn or unwieldy desktop installs to perform.
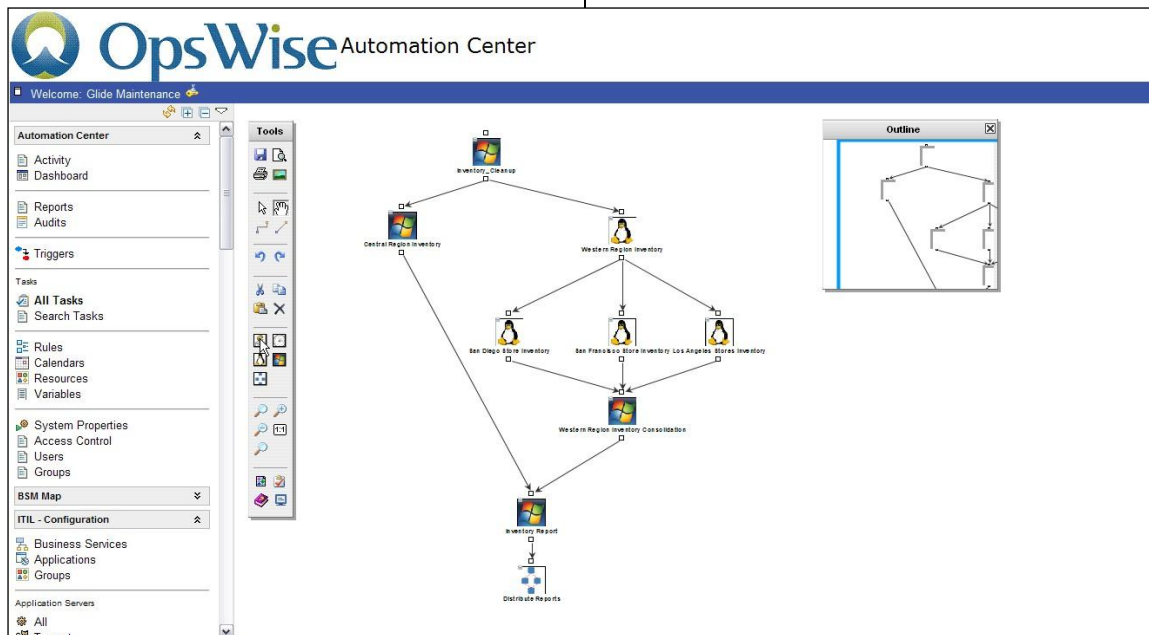
It's up to you how you want to set up your environment. **You** choose how to implement the software; your options are not dictated by software restrictions.

This seamless integration reduces complexity, minimizes errors and vastly improves your ability to access comprehensive visualizations of your data and workflows.

In short, OpsWise Automation Center is the last scheduler you'll ever need.

Define Business Process via Graphical Workflow

A central component of OpsWise Automation Center is the integrated drag-and-drop workflow definition tool. This feature allows you to define workflows that closely model your business processes. While working within the workflow module, you can import existing task definitions or create new tasks on the fly. You can develop simple or complex workflows and zoom in or out to view the details or overview as required.

When the workflow kicks off, you can monitor its activity in a table view or

graphically — or both. You can create your own activity displays, specifying which activity you want selected and what details should be included. Like the workflow itself, the activity display is completely customizable.

can use existing reports or create your own workload reports. These can be displayed in the user interface, printed out, or exported as PDF, Excel, or XML-formatted files.
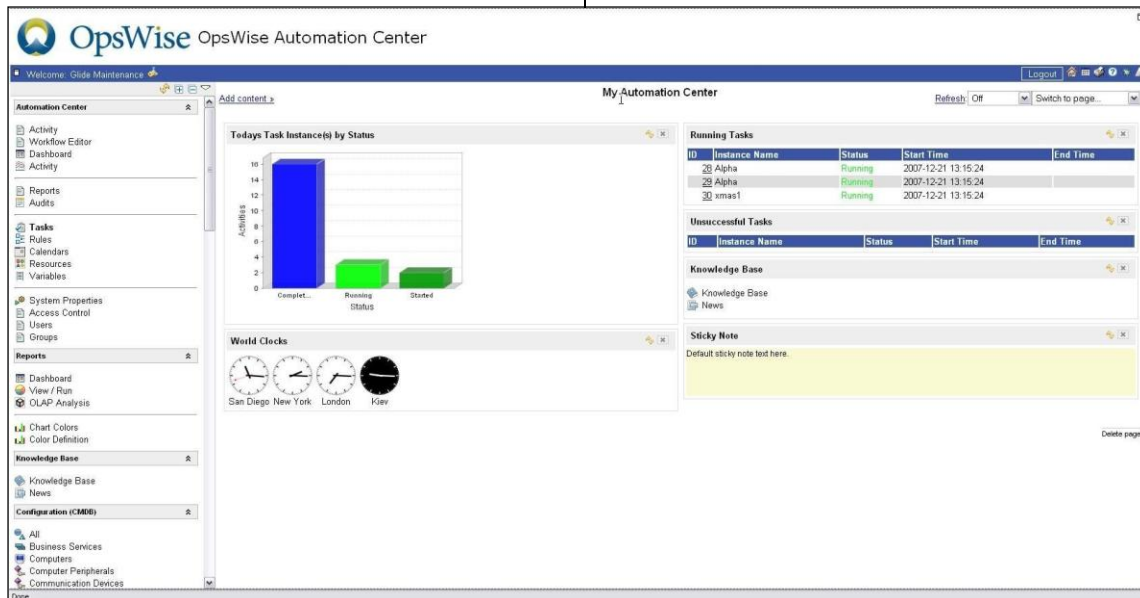
Dashboards, Reporting, & Customizations

The OpsWise Automation Center user interface gives you complete flexibility in defining custom home pages for each user. Home pages can include user-specific tasks and reports, for example, as well as graphical widgets that display real-time views of a particular running workload.

The user interface can be customized to fit your business requirements. Administrators can create customized action buttons, forms, fields, and tables that extend the solution's capabilities. For example, you could implement an action button that flags a record as approved and saves it to the database. You could then modify your navigation pane to display approved and unapproved records under separate menu options.

For reporting, the Automation Center provides a built-in report generator. You

Business View Alignment

The OpsWise product includes a built-in configuration management database (CMDB) that auto-discovers the topology of your enterprise. This feature helps business users define the business services and the enterprise resources that they require. Business users can also monitor their own workloads based on their own business service view. They can even create automated dashboards for monitoring specific workloads.

Auto-Deployment and Auto-Discovery

OpsWise Automation Center includes an impressive array of automated enterprise management features. At the click of a mouse, OpsWise auto-discovers your network and applications. It provides you with a list of servers available for deployment. The system can auto-deploy agents across the enterprise and automatically update existing agents. The

system also provides a graphical display of agent status.

Clustering for Fault Tolerance and High Availability

Beyond simple high availability, system administrators can set up clusters of two or more nodes for fault tolerance, load balancing, and unprecedented scalability.

Manage Dynamic Workload

OpsWise provides hooks into operating system performance that allow administrators to load balance based on the real-time availability of system resources.

Powerful Integrations

The OpsWise Automation Center is deeply integrated with the operating systems where it runs — z/OS, Linux, UNIX, and Windows. On all platforms, OpsWise provides real-time file monitoring and file browsing. For z/OS, OpsWise supports the step re-run and re-start features.

The system also provides point-to-point transfer capabilities via FTP/SFTP. Database monitoring is also supported, along with database query and stored procedure execution.

Integrated Role-based Security

System security is managed from within the product. Administrators add users and groups, then define and assign access permissions to the users and groups. These access permissions can be assigned at extremely granular levels, down to a specific task or group of tasks if required.

Summary

OpsWise Automation Center applies emerging technology to the challenges of today's automation. It is an enterprise job scheduler and workload automation broker that allows you to manage the workload of your entire enterprise – from any platform, from a web-based interface.

Who is JME Software?

JME Software was formed in 2004 to create and deliver a new generation of tools and applications for managing, monitoring, securing, and automating 21st century IT infrastructures. JME's solutions simplify the management of systems, networks and applications across the entire enterprise — from mainframes and mid-range servers to Windows and Linux.

OpsWise, a division of JME, is committed to developing a comprehensive line of IT operations solutions addressing the challenges of the modern data center.

The OpsWise Automation Center product line has been developed by leading technical entrepreneurs with many years of prior experience developing scheduling and event management software for both mainframe and distributed environments.

OpsWise
A JME Software Company