

Workload Automation: The Heart of Enterprise Operations

An ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) White Paper
Prepared for Skybot Software™

October 2011



*IT & DATA MANAGEMENT RESEARCH,
INDUSTRY ANALYSIS & CONSULTING*

Workload Automation: The Heart of Enterprise Operations

Table of Contents

- Executive Summary1
- Introduction1
- The Business View of Enterprise Workload Automation2
- Enterprise Scheduler Requirements.....3
- The Skybot Scheduler Solution3
 - Scheduling.....3
 - Monitoring4
 - Security.....4
 - Auditing.....4
 - Reporting.....4
 - Platforms4
- EMA Perspective.....4
- About Skybot Software5



Workload Automation: The Heart of Enterprise Operations

Executive Summary

Workload Automation (WLA), or enterprise scheduling, is an essential capability for large IT organizations. Many IT workloads make operational and economic sense when run periodically. Designing, executing, and monitoring such workloads requires an appropriate software solution. Modern workload automation products extend traditional “job scheduling” capabilities with event-driven approaches and additional value-adding capabilities such as integrated file transfer and application-level integration.

Skybot Software is backed by Help/Systems, LLC, an industry leader in automated operations and job scheduling since 1982 with its products for the IBM i (System i, iSeries, AS/400) systems. This depth of experience is clearly visible in Skybot Scheduler™, an enterprise-capable and highly cost-competitive offering for distributed systems scheduling.

Introduction

Originally, job scheduling software automated the tedious batch submission of IT workloads. While most systems have some rudimentary ability to run tasks locally¹, those capabilities fall short in terms of ease of administration and the ability to define jobs across distributed systems and servers. As the number and variety of platforms has spread, distributed job scheduling systems emerged to simplify workload management across the enterprise.

These tools, however, have advanced far beyond their origins. Modern WLA provides a reliable backbone to enterprise operations, ensuring that complex business and IT processes are executed on time in the correct sequence. They orchestrate data extracts, transfers, and loads between systems, reconciliations, distribution of reports to end users, and many other business-visible tasks. At the infrastructure level, they control backups, logging, database maintenance, and other core infrastructure tasks. Choice of a solid workload automation tool thus remains essential to IT production operations for any company with complex system interactions supporting end-to-end business processes, or significant numbers of servers and other devices under management.

These tools can be very expensive when acquired from traditional vendors of IT management software, and more cost-competitive offerings are becoming available.

Modern workload automation
provides a reliable backbone
to enterprise operations.

¹ E.g., the *cron* on UNIX and Linux and Windows *at* commands.

Workload Automation: The Heart of Enterprise Operations

The Business View of Enterprise Workload Automation

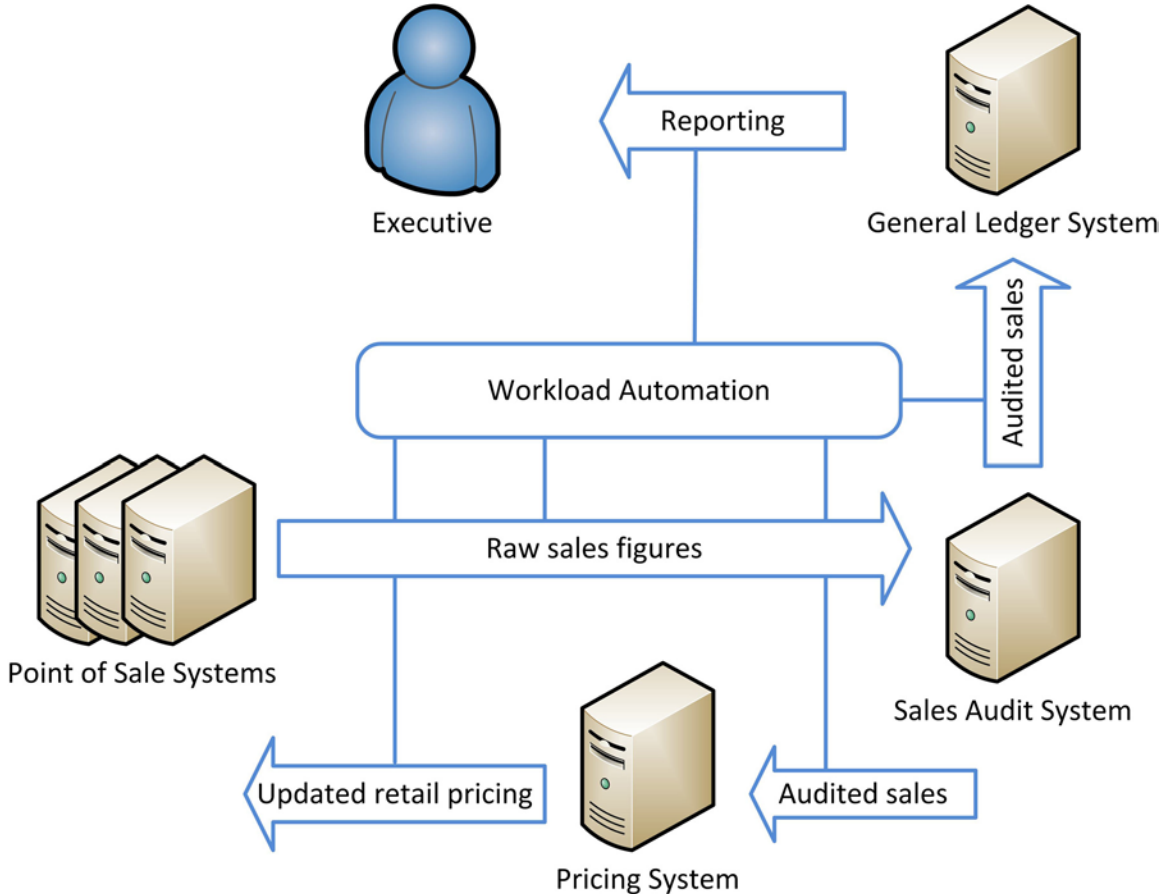


Figure 1. Workload automation in retail operations (simplified)

Figure 1 shows a typical enterprise workload automation use case. Retail point-of-sale systems feed raw sales figures to a Sales Audit system, perhaps on a nightly basis. That system processes the sales figures in batches, feeding that data in turn to the GL and perhaps the pricing system, often by FTP or an expensive single purpose file transfer system. Executive reporting may be run by automation and the previous day's audited sales figures are delivered to executives' inboxes in the morning. In the meantime, updated retail pricing is downloaded to the point-of-sale systems for the next day's operations. All of these feeds and reporting are complex and mission critical for the retailer. The workload automation capability at the center directly supports the enterprise business model and ongoing management.

The workload automation capability at the center directly supports the enterprise business model and ongoing management.

Workload Automation: The Heart of Enterprise Operations

Enterprise Scheduler Requirements

In a distributed environment, the scheduler essentially acts as an administrator, remotely logging into a system, executing commands, monitoring their progress and outcome, and taking further action based on those results. Job schedulers excel at repeatable processes like extracting data, auditing, running reports, transferring files, and so forth.

Traditionally, these job sequences have been tied to calendar events (for example, “every night at 2 AM”), but modern job schedulers can also react to events such as SNMP traps, file arrival/modification alerts, or application-specific triggers to start processing. The scheduler itself must be robustly integrated with monitoring, and able to send alerts to operations. In impersonating a user or administrator, the scheduler must often maintain complex sets of environmental variables. Agents can easily number in the hundreds or thousands, and therefore require management in terms of configuration and security.

It is therefore not simple to build a reliable WLA tool. The agents (software processes which proxy for the administrator in running commands) must be robust, secure, and compatible with a wide variety of operating systems. The central hub that controls the agents is a potential failure point for a critical enterprise process, and needs to be designed for high availability and continuity. Communication between hub and agents must be reliable and secure.

A WLA tool is a shared resource, and ideally supports delegation of ownership and administration. Since job definitions are critical production configurations, a full audit trail of all new and changed jobs is advisable and often required by auditors and regulatory authorities. And since a scheduler may support Service Level Agreements (SLAs), some degree of integration with IT service management practices is advisable, such as configuration, incident, and change management.

The Skybot Scheduler Solution

Skybot Software has introduced a product for IT departments looking for more than a basic job scheduler. Their product for distributed platforms offers the following rich feature set at an appealing price point:

Scheduling

- Easy administration with a modern, Web 2.0-based interface
- Ability to “group” agents for ease of administration
- Robust job dependencies with a variety of conditions to base further processing on (completed, failed, running, submitted)
- File monitoring capability – when file X is complete, start processing
- Ability to send and receive SNMP traps and kick-off job streams in response
- Support for “command sets” – macro-like combinations of commands defined internally to the scheduler
- Many different types of re-usable scheduling objects (date lists, agent groups, and more)
- Built in file transfer services, including FTP, SFTP, and FTPS

Workload Automation: The Heart of Enterprise Operations

Monitoring

- Notification on job overrun, underrun, and failure, with configurable tolerances for SLA requirements
- Ability to send SMTP (email) alerts
- Ability to monitor system processes and take actions

Security

- Ability to securely delegate management of jobs or job sets to certain administrators, while prohibiting management of others
- User-defined roles with change, view, or exclude authority for secured areas, actions, and objects

Auditing

- Full audit trail for administrative activities

Reporting

- Graphical dependency and forecasting/activity monitor views
- Many standard reports out of the box

Platforms

- Cross-platform support for Windows, Linux, and UNIX
- Native integration with Microsoft SQL[®] Server tasks
- Ability to script and run non-“well behaved” Windows GUI applications in a lights out mode
- Ability to move licensing from hot to standby (for example, in a failover scenario)

The product's server runs on Windows, UNIX, and Linux platforms² and uses a PostgreSQL back end. The tool has an attractively low cost of acquisition and ownership, compared to some of the enterprise platforms available in this space.

It is not simple to build a reliable
workload automation tool.

EMA Perspective

Enterprise Management Associates (EMA) views production scheduling within a broader topic of WLA. Workload automation is an evolution of production scheduling that automates complex IT processing and includes support for event-driven workloads, multiple platforms, Web services, composite applications, SOA, virtual systems, dynamic resource allocation, ITSM integration, and business service alignment.

Production scheduling is perhaps the most important foundational element in all of this. The ability to control an automated workflow across multiple IT resources is essential. While more advanced applications may be built on this foundation, its core services remain a requirement.

² The Skybot Scheduler Enterprise Server supports the following operating systems: Windows Server 2003, Server 2008, Server 2008 R2 (Windows 7 Server), AIX 5.3, 6.1, 7.1, RedHat Enterprise Linux 5, RedHat Enterprise Linux 6, Suse Enterprise Linux 10, Suse Enterprise Linux 11, and Ubuntu Linux 10.04.

Workload Automation: The Heart of Enterprise Operations

Inclusion of an integrated FTP engine is significant alone, as this can replace costly dedicated file transfer infrastructure.

Skybot Software's parent company, Help/Systems, implemented its first scheduling tool in 1982 for the IBM i platform. Their years of experience in supporting the IBM i platform (legendary for its stability) clearly show through in their entry into the distributed systems market, which boasts a clean, usable interface, solid coverage of essential scheduling requirements, as well as many advanced

features. Inclusion of an integrated FTP engine is significant alone, as this can replace costly dedicated file transfer infrastructure, such as Connect: Direct. The ability to delegate administration on a job-by-job basis ensures that the scheduler can support a federated management model, and the ability to control poorly behaved Windows applications for "lights-out" processing is also a differentiator.

Going forward, Skybot Software has indicated that Active Directory integration is a priority; this will allow for improved administration and eliminate the need to store certain credentials in the database.

EMA predicts that traditional production scheduling will increasingly overlap with the runbook automation and BPM/Web Services Choreography spaces. For example, Skybot Scheduler's ability to monitor and respond to changes in system processes starts to move it into the runbook automation space. As workloads become more dynamic, EMA believes that production schedulers will need to interoperate more with management infrastructure to route workloads for optimal usage of resources (for example, if a workload is estimated to require a certain amount of capacity, perhaps a new virtual server should be spawned.)

Similarly, Skybot Scheduler's direct interaction (not mediated through a command line) with MS SQL Server presages application-layer BPM choreography. Skybot Software also indicates they intend to extend their automation engine to invoke Web services, serving as a choreography engine and moving them into new market opportunities in the BPM space.

In summary, Skybot Scheduler is a strong entry into the multi-platform enterprise WLA space, and it should be considered for both its robust functionality, as well as attractive cost of acquisition and maintenance.

About Skybot Software

Skybot Software™ is the developer of Skybot Scheduler™, the next generation of enterprise automation software for Windows, UNIX, and Linux servers. Skybot Software is backed by Help/Systems, LLC the industry leader in automated operations software for IBM Power Systems servers. With almost 30 years of scheduling experience, Help/Systems, LLC knows what it takes to deliver industrial strength, high-quality, and easy-to-use enterprise automation software. With products like Robot/SCHEDULE and Robot/SCHEDULE Enterprise, Help/Systems has helped more than 15,000 customers around the world automate their job schedules.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at www.enterprisemanagement.com or blogs.enterprisemanagement.com. You can also follow EMA on [Twitter](#) or [Facebook](#).

This report in whole or in part may not be duplicated, reproduced, stored in a retrieval system or retransmitted without prior written permission of Enterprise Management Associates, Inc. All opinions and estimates herein constitute our judgement as of this date and are subject to change without notice. Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies. "EMA" and "Enterprise Management Associates" are trademarks of Enterprise Management Associates, Inc. in the United States and other countries.

©2011 Enterprise Management Associates, Inc. All Rights Reserved. EMATM, ENTERPRISE MANAGEMENT ASSOCIATES®, and the mobius symbol are registered trademarks or common-law trademarks of Enterprise Management Associates, Inc.

Corporate Headquarters:

5777 Central Avenue, Suite 105
Boulder, CO 80301
Phone: +1 303.543.9500
Fax: +1 303.543.7687
www.enterprisemanagement.com
2338.100511

