# Workload Automation Q1 2010 – An EMA Radar Report™ OpsWise Vendor Profile

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# Table of Contents

# Introduction

Workload Automation (WLA), the natural maturation of Job Scheduling to enable broader IT Service Management, is not the sexiest technology in the data center, but few can argue the degree to which other technologies and business objectives depend upon WLA. Most enterprises are poorly positioned to exploit WLA for its layered advantages and, as a result, will endure longer and more frequent outages in combination with unnecessary resource inefficiency. A strategic, modular, and comprehensive WLA implementation delivers rapid ROI and enables broader IT optimization that supports business objectives.

The EMA Radar Report™ for Workload Automation evaluates current software solutions within the framework of a broader WLA maturity roadmap. This tool assists end users in the selection of WLA solutions that best fit their requirements. Because many enterprises incorrectly view WLA as an isolated software solution, EMA strongly encourages end users to consider the strategic implications of WLA within a broader ITSM framework before constructing a short list of candidates. The best solution will always depend on how it correlates to an accurate list of weighted requirements. As a later section describes, this report is based on scores across a broad set of such requirements and can act as a preliminary guide for product evaluation.

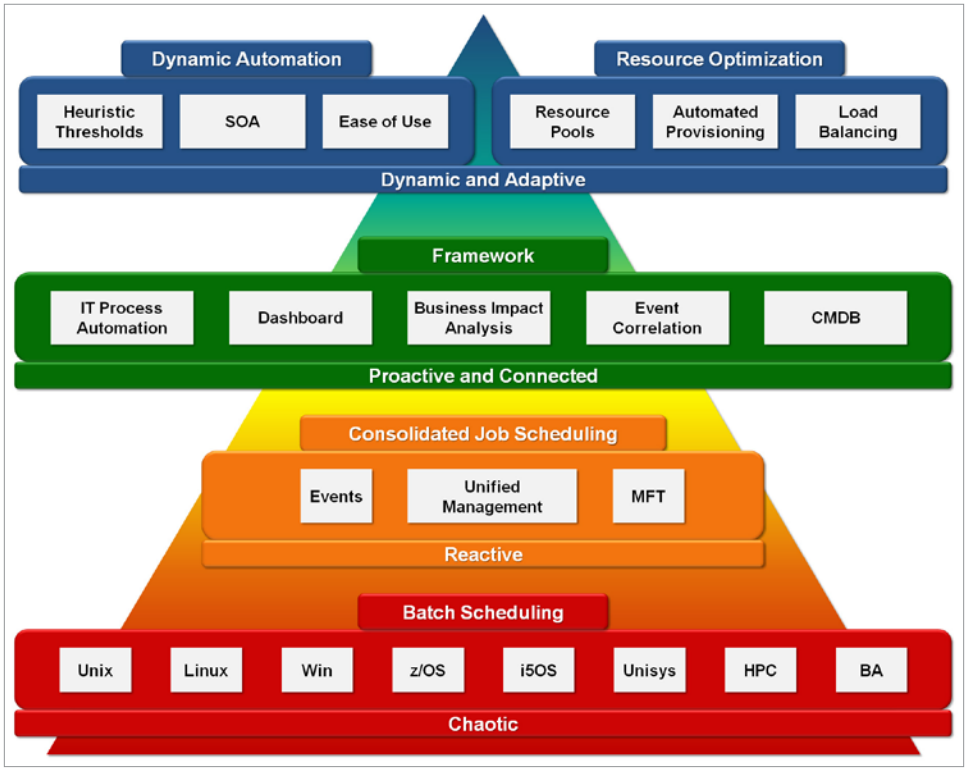



Figure 1: Workload Automation Maturity Pyramid.

# The Workload Automation Landscape

## Job Scheduling versus Workload Automation – A Question of Maturity

For decades, job scheduling software has automated the tedious batch submission of IT workloads. As the number and variety of platforms spread, "consolidated job scheduling" systems emerged to simplify workflow management across the enterprise. Figure 1 shows the Workload Automation

Maturity Pyramid. Once we connect Consolidated Job Scheduling to the ITSM[1] framework and add adaptation, the true definition of Workload Automation emerges.

Workload Automation (WLA) is a mature evolution of job scheduling that automates complex IT processing and includes support for event-driven workloads, multiple platforms, Web services, composite applications, Service Oriented Architecture, virtual systems, dynamic resource allocation, ITSM integration, and business service alignment.

Clearly, WLA addresses a much broader range of issues and concerns than Job Scheduling and these issues are critical to the emerging requirements of tomorrow's data center.

## Workload Automation Today

The EMA WLA Radar Report includes a number of very promising solutions, but none has yet reached the pinnacle of maturity. In measuring WLA maturity, five major factors come into play:

1. Job Scheduling – creating workflows across multiple platforms and applications
2. IT Process Automation – orchestrating ITIL process inputs and outputs
3. Resource Optimization – dynamic resource allocation, load balancing
4. Business Integration – linking IT services to business requirements, business impact analysis
5. Predictive Analytics – dynamic thresholding, heuristic monitoring

Figure 2 approximates the maturity of today's WLA solutions. Job Scheduling itself is quite mature but in other areas, even the best have lots more to accomplish.

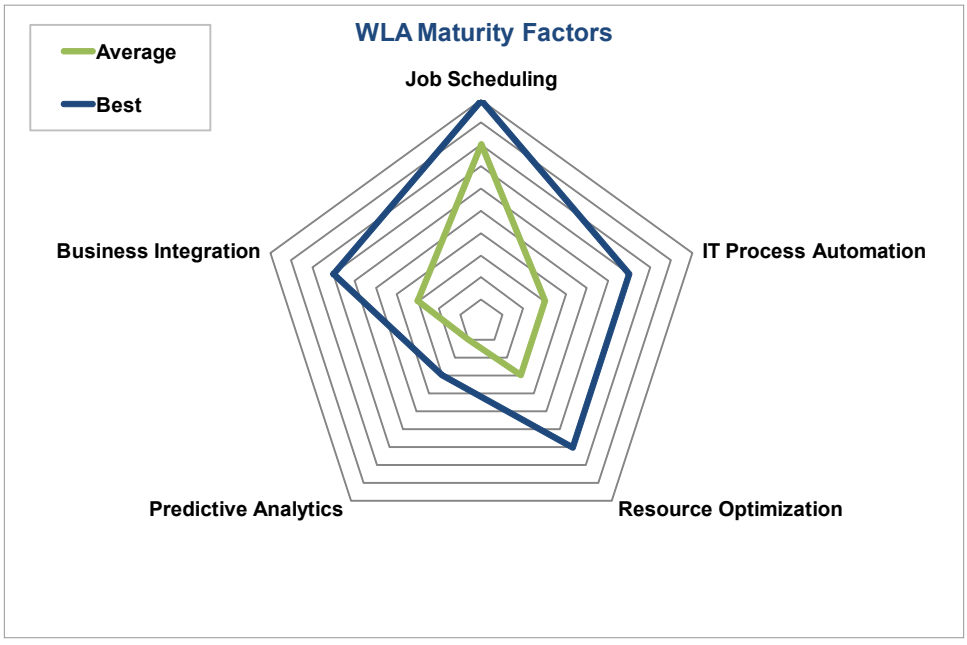



Figure 2: Measuring Today's WLA Maturity

1 ITIL defines IT Service Management (ITSM) as "The implementation and management of Quality IT Services that meet the needs of the business. IT Service Management is performed by IT Service Providers through an appropriate mix of people, Process and Information Technology."

Perhaps the greatest obstacle to WLA evolution has been its saturation. Virtually every major IT organization has at least one job scheduling solution (usually many more). There are solutions for mainframes, UNIX, Windows, CRM/ERP, file transfers, and others. Fitting Job Scheduling into the larger WLA architecture is like building an aircraft carrier from a jet ski. How far has WLA progressed?

## Job Scheduling - Grade A

Most vendors, large and small, deliver a robust set of Job Scheduling functions and features. The differentiators are breadth of platform support, usability, and cost. If there is a weakness in this subdiscipline, it may be dependency mapping across the enterprise.

## IT Process Automation - Grade B

Many vendors claim "built-in" process automation and this makes a certain amount of sense in products where scripted routines manage heterogeneous workloads. However, IT Process Automation (ITPA) is much more inclusive than a few proprietary scripted routines. ITPA acts as a railroad service with ITIL processes as the depots. WLA is just another spur of the railroad. For a flexible and open integration to ITPA, WLA needs a communication layer between its Job Scheduler and its process automation routines, and this communication layer exists for easy interface to external best-of-breed ITPA solutions. There are WLA solutions that integrate with companion ITPA products, but these integrations are not as open as they should be.

## Resource Optimization - Grade C

Notoriously resource-intensive, job schedules often stretch their critical execution windows to the limits and beyond with sometimes staggering consequences. Resource optimization, with its ability to shift workloads to unused resources or actually expand the resource pool, not only prevents late job finishes but reduces all critical windows. For example, when investment decisions depend on the output from a workflow, each minute has a dollar value – sometimes a very large dollar value. Resource optimization, through prioritization and dynamic resource allocation, recovers workflow minutes.

Mature Resource Optimization requires associated maturity in each of the following disciplines:

- Business Impact Analysis
- Business Integration
- Automated Provisioning
- Critical Path Analysis
- Workload Management

Several vendors in this Radar Report have advanced facilities for Resource Optimization. Vendors with solutions that address each of the above five points include (in alphabetical order):

| | |
|---|---|
| **ASG** | Unified Management Architecture, MetaCMDB, Business Service Platform for Distributed Workload Automation, Dynamic Resource Allocation |
| **BMC** | Batch Impact Manager, Atrium CMDB, Atrium Orchestrator, BladeLogic |
| **CA** | Critical Path Monitor, Job Resource Dependency Flow, Spectrum Automation Manager, Service Assurance |
| **IBM** | Workload Service Assurance, z/OS WLM integration, Critical Path Analysis, dynamic SAP job limit, Tivoli Workload Management, Automated provisioning. |
| **UC4** | V8 Dynamic Resource Allocation, load balancing |

In relation to Resource Optimization, the greatest shortcoming in current offerings is integration. Though the individual pieces are, to various extents, present, vendors have largely failed to smoothly orchestrate those pieces into an easily administered solution for Resource Optimization. Workload business priorities are often hardcoded in job scheduling databases rather than in a Service Catalog/ CMDB. Critical Path Analysis is reactive rather than predictive. Topology discovery and dependency mapping are often static, inaccurate, or limited.

That said, vendors have made enormous stride in this area and seem poised to extract more of its potential business benefits.

## Business Integration - Grade D

To manage workloads, one must be able to prioritize them so that operations staff can perform triage during problem "storms." Since the importance of a workload depends upon its business impact, prioritization requires a dynamic integration of IT service goals with business objectives. As axiomatic as this may seem, most organizations struggle to implement and maintain effective Business Integration.

Clearly, WLA vendors understand that Business Integration is valuable since most have a Business Impact Analysis function. Many offer interfaces specifically designed for business views and these interfaces allow business units to assign priorities to workloads and workflows. These priorities, typically resident in a job scheduling database, greatly benefit Workload Automation. However, business priorities should not reside in a job scheduling database. They belong in a Service Catalog[2] since business service expectations extend beyond the WLA environment.

Business Integration is part of a complex three-way relationship between Applications, Infrastructure, and Customers. Ultimately, the business must know the implications of any infrastructure or application anomaly, and such knowledge is possible only when we overlay discovered topologies and dynamically map dependencies.

## Predictive Analytics - Grade E

In the case of Workload Automation, Predictive Analytics (PA) typically uses time series statistical models (e.g., Box-Jenkins, autoregressive, or moving average) to forecast future variable behavior based on a series of historical data points. The value of Predictive Analytics lies in its potential to reduce manual maintenance of thresholds and to proactively prevent bottlenecks. Predictive Analytics simplifies the growing body of automation upon which tomorrow's data centers depend.

None of the surveyed vendors incorporates a true Predictive Analytics engine in their WLA solutions, though a few have some limited and very specific PA capability.

On the horizon, IBM's acquisition of SPSS bodes well for Tivoli's PA future. BMC may have a head start integrating its 2007 acquisition of ProactiveNet into Business Impact Manager. Likewise, UC4 added predictive modeling with its acquisition of Senactive in 2007. CA, a veteran of Predictive Analytics (remember Nugents?), now offers some predictive modeling and correlation with CA Spectrum Infrastructure Manager (acquired from Concord) and CA eHealth Performance Manager. Obviously, vendors understand the importance of PA for Business Service Management and EMA expects that further acquisitions will bolster the modeling capabilities upon which Workload Automation will eventually depend.

2 ITIL v3 defines a Service Catalogue [*sic*] as "a database or structured Document with information about all Live IT Services, including those available for Deployment." (Service Design)

# Assessing the Workload Automation Market

Assessing the WLA market involves much more than tallying features and functions. EMA distributed a 149-question survey to the targeted WLA vendors. The survey answers generated scores in 43 key performance indicators. Those scores percolated into five Profile Scores that constituted a "spider" diagram for each vendor. For a graphical cross-vendor comparison, we consolidated scores into three categories and created the EMA Radar, which maps the vendors in the market.. Figure 3 shows the general flow of data.

Aside from the questionnaire, EMA conducted detailed briefings with a focus on assessing ease of use and functionality. The analysts conducting the research average more than two decades of technical and architectural experience in data center automation, including Workload Automation.

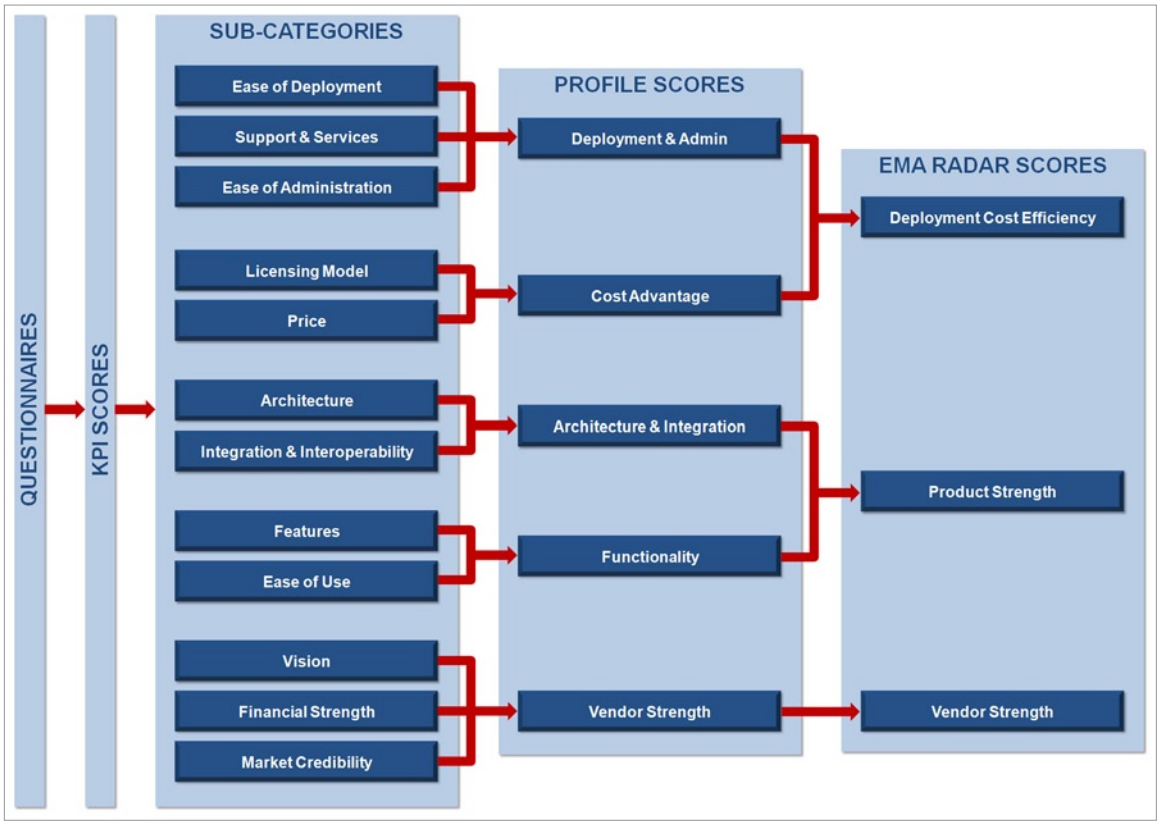



Figure 3: Workload Automation Assessment

## Characteristics of a Preferred Solution

EMA has designed its Radar Reports to assist end users in the selection of IT management software. It is fundamental and critical that the reader understand this is a starting point for an in-depth evaluation, rather than a finishing point. There is neither a single set of characteristics nor any single solution that will satisfy all end users. The EMA WLA Radar Report grades solutions on a broad set of criteria. The reader's task is to find the criteria that matter the most and select those vendors that scored best in those criteria. If the reader requires a solution that covers Unix and i5/OS, solutions that do not, regardless of functionality, are extraneous.

As guidance, EMA has assigned a Profile Score to the solutions across each of 5 main categories (as shown in Figure 3). Following is a brief description of each category.

## Deployment and Administration

Data center automation projects are like fish; the longer they linger, the more we want to toss them in the garbage. The duration and complexity of Workload Automation implementation varies by vendor and by the final blend of functions, features, and integrations. For those organizations with limited staffing resources and a mandate for quick ROI, this category is important because it answers critical questions:

- Does the solution deploy quickly and is the solution easy to administer?
- Does the vendor provide conversion utilities or services?
- How disruptive is the implementation process?
- Is there a good testing and migration facility?
- Does the vendor offer excellent customer support?
- How frequent are updates?
- How responsive is the vendor to code fixes?

## Cost Advantage

Recently, there has been a growing emphasis on cost advantage as criterion for software evaluation. Nonetheless, cost is typically not the primary consideration. Grades are based primarily on price and licensing models. We asked each vendor to quote a price range for a common configuration. Where vendors did not supply pricing, EMA interviewed a handful of customers to determine pricing for this metric. Generally higher mainframe licence prices were levelled to approach a more equitable comparison between vendors with and without mainframe solutions. Though the report does not include the quoted prices, it uses the information for relative scores.

Note that this metric is essentially a measure of solution cost. It is not a measure of ROI, TCO, or overall value. Moreover, many vendors will provide discounts on list prices. As such, readers must evaluate requirements and, work with vendors on pricing, and evaluate value on many different criteria.

## Architecture and Integration

This section matters a lot to some companies and not at all to others, but it addresses the capability of the solution to manage complex infrastructure, application, and business frameworks into the future. The report includes specifics about breadth of support for platforms and applications as well as integration with CMDB, IT Process Automation, Load Balancing, event frameworks, and Managed File Transfer. Many will find the support tables useful in building a short list of solutions that match a targeted infrastructure.

## Functionality

Frankly, the vendors in the WLA Radar Report scored well in product functions such as calendaring, triggering, forecasting, alerting, security, reporting, trending, and logging. Also part of this category is Ease of Use. Here, there was more variability. Some interfaces were gorgeous, smart, and easy while others seemed a bit long in the tooth or cantankerous. Some were primarily graphical. Others were primarily in list format. Most offered both. While the graphical interfaces frequently appeal to executives, managers, and casual users, the list interfaces, with their information density, often appeal to administrators. Admittedly, this was the most difficult section to grade.

### Vendor Strength

For many organizations, a Workload Automation vendor is a meaningful business partner and, as such, requires vetting. The Vendor Strength section covers vision, strategy, financial strength, R&D, partnerships, channels, and market credibility. Four of the eight vendors are public companies (BMC, CA, IBM, and Cisco). The report had success in gathering data on all companies, though in the case of some private vendors, this information is not disclosed.

## Evaluation Criteria

EMA has divided the Workload Automation world into Job Scheduling Vendors and Workload Automation vendors. As described in the earlier section, Workload Automation Today, we took a straightforward approach to differentiation. In fact, we were a bit surprised at the inclusion of a very small and very new vendor in this space.

### Inclusion Criteria

For inclusion in the EMA Workload Automation Radar Report, a vendor had to offer the following as part of its solution:

- **Consolidated Cross-Platform Job Scheduling** – Including the z/OS platform
- **Resource Optimization** – Some combination of workload management, dynamic resource allocation, and load balancing pools
- **ITSM Integration** – Integration with some combination of IT Process Automation, CMDB, Business Impact Analysis, event frameworks, and Managed File Transfer

### Exclusion Criteria

If any vendors had failed to complete the questionnaire, they would have been excluded. Fortunately, this did not occur.

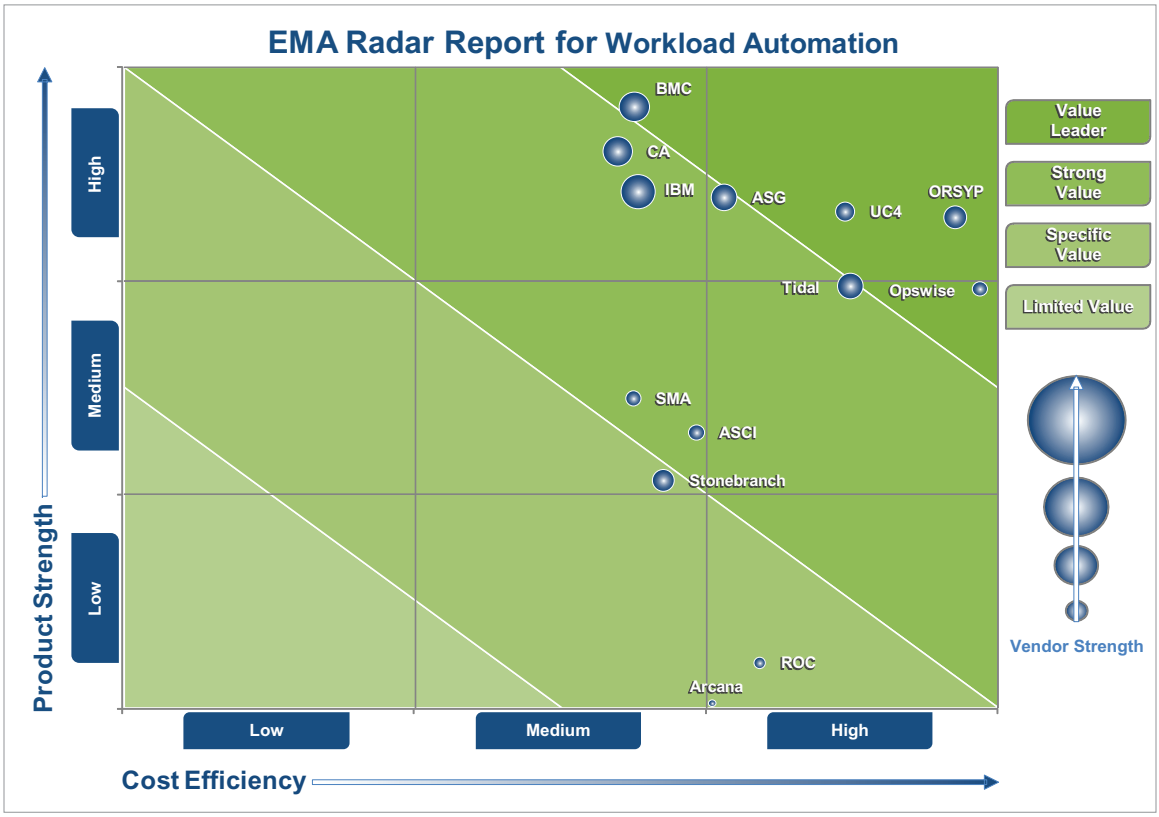
**Special Note:** Hewlett-Packard, despite its prominence in Business Service Management, does not appear in this study because HP does not offer a Job Scheduling solution. This seems an odd and critical omission for a vendor with so much investment in ITSM software. Workload Automation is critical, not because of its function, but because so many other functions depend on it, particularly Service Levels.

# EMA Radar Report for WLA Vendors

The EMA Radar Report for Workload Automation includes the following vendors (in alphabetical order):

| VENDOR | PRODUCTS |
|---|---|
| Arcana | adTempus |
| Advanced Systems Concepts | ActiveBatch |
| ASG | ASG-Zena<br>ASG-Zeke<br>ASG OpsCentral<br>ASG BSP Distributed Workload Management<br>ASG BSP Enterprise Workload Management |
| BMC | BMC CONTROL-M<br>BMC Service Impact Manager<br>BMC Atrium CMDB<br>BMC Atrium Orchestrator |
| CA | CA Workload Automation<br>CA ESP Workload Automation<br>CA 7 Workload Automation<br>CA Workload Automation |
| IBM | Tivoli Workload Scheduler (for distributed)<br>Tivoli Workload Scheduler for z/OS<br>Tivoli Dynamic Workload Broker<br>Tivoli Workload Scheduler for Applications<br>Tivoli Workload Scheduler LoadLeveler<br>Tivoli Dynamic Workload Console |
| OpsWise | Automation Center |
| ORSYP | Dollar Universe<br>UniJob |
| ROC | Maestro |
| SMA | OpCon/xps |
| Stonebranch | Indesca<br>Infitran |
| Tidal (Cisco) | Tidal Enterprise Scheduler<br>Tidal Intelligent Automation<br>Tidal Intelligent Reporting<br>Tidal Transporter |
| UC4 | UC4 V8<br>UC4 Decision<br>UC4 Insight<br>UC4 ClearView<br>UC4 PrintView<br>UC4 KPI |

## The EMA RADAR™




## EMA Radar Market Map for Workload Automation

Interestingly, the survey respondents formed three clusters on the market map and these clusters corresponded to three distinct maturity levels of Workload Automation:

1. Workload Automation solutions
2. Consolidated Job Scheduling solutions
3. Job Scheduling solutions

As one would expect, the Workload Automation cluster is in the upper right corner of the market map while Job Scheduling is in the lower portion and Consolidated Job Scheduling lies in between the two.

### Value Leader


In the WLA market, value leaders have flexible architectures, ITSM integration, superb functionality, broad platform support, and pricing that yields the best overall value. As part of that value, vendors have shown a vision of broader operational efficiencies and innovation in one or more areas. Despite the maturity of the Job Scheduling market, Workload Automation, with its complex cross-process relationships, is somewhat juvenile by comparison.

There are no perfect WLA solutions. Each of our value leaders has weaknesses and all show considerable promise, though often from different perspectives.

BMC has the strongest product overall, scoring above average on functionality and higher than any other vendor on architecture and integration. BMC is also one of only a few vendors to seriously leverage CMDB technology for WLA Service Level Management. We especially praise BMC's advanced service-oriented problem diagnosis as workload failures are a common source of operational inefficiency and waste.

UC4 is a giant slayer for good reason. The UC4 WLA solution comes with an amazingly flexible and scalable data-centric architecture, a state-conscious process automation engine, and perhaps the most advanced implementation of application data awareness.

ORSYP garners special mention for its unique and innovative peer-to-peer architecture. Beyond the architecture, ORSYP excels in job discovery through its use of UniJob and interfaces with an impressive array of BSM frameworks. Also, ORSYP's recent acquisition of Sysload brings robust Workload Management capabilities to its suite.

Finally, we have included a brand new company in the Value Leader category – OpsWise. Their Automation Center product, released in December 2008, is a marvel to behold. The founders took full advantage of cutting-edge technology to construct an incredibly intuitive and attractive interface. With broad platform support, this JavaScript, Web 2.0, cloud-friendly offering is worth watching.

## Strong Value


CA has a long history in Job Scheduling and a prominent position in BSM. Not surprisingly, their products had the highest functionality score of any evaluated solutions, and their ITSM integration is impressive. CA has a formidable Workload Management function and solutions for pretty much any customer.

IBM's Tivoli Workload Scheduler is as functionally rich as almost any in the group and their integration with Workload Management (Load Balancing and Dynamic Resource Allocation) earns them a special award. This product is well-suited for massively complex environments and heavy use.

ASG, with its Unified Management Architecture and MetaCMDB, seems to understand exactly where Workload Automation is headed. Few can match ASG's tight weave of IT service objectives and business requirements.

Tidal, recently acquired by Cisco, brings a lot to the table. Tidal Enterprise Scheduler has broad platform support, broad application support, very rich scheduling functions, and many points of integration. For Windows environments, Tidal Intelligent Automation brings IT process automation for servers, MS Exchange, and Active Directory.

SMA's OpCon/xps reflects three decades of experience in Job Scheduling with its ease of use and functionality. SMA's history with Sperry and Burroughs now expands to almost every platform. This is a solid solution for Consolidated Job Scheduling that includes IT Process Automation capabilities at an attractive price point.

Advanced Systems Concepts Inc has a robust Consolidated Job Scheduling solution with a very slick interface. ASCI's ActiveBatch competes fiercely on price against larger vendors in the WLA landscape and has a broad span of platform and application support.

### Specific Value

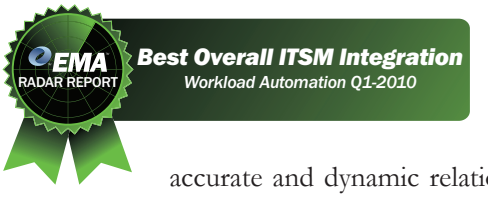

Assigning a score to Stonebranch posed a particular challenge because their product offering is unlike any other in the study. Indesca is a Consolidated Job Scheduling solution in that it consolidates disparate Job Schedulers. Indesca is not, however, a Job Scheduler. Rather, Stonebranch gives organizations the option to use their product as an agnostic integrator of Job Schedulers, thus leveraging existing resources, minimizing cost, and reducing project risk. Since Indesca is not, itself, a Job Scheduler, the Stonebranch score only loosely correlates to the value of the Indesca (and Infitran) solutions.

ROC Maestro for Open Systems consolidates cron and WinAT scheduling with simplicity, efficiency, and functionality. This product installs very quickly and requires only an hour or two of training to operate.

Arcana adTempus is a Windows Job Scheduling solution that downloads from its Web site for $449 per server. For small shops with a limited number of Windows servers, adTempus is a very accessible and cost-effective pathway to impressive Job Scheduling functionality.

## Exceptional Characteristics

To recognize exceptional characteristics in the Workload Automation market, the following products have been highlighted:

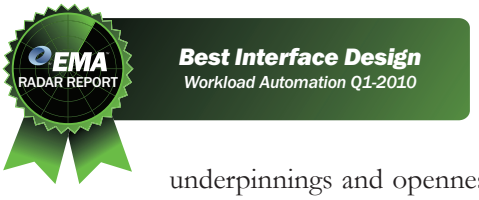



### Best Overall ITSM Integration: BMC

BMC wins this award for many reasons. To succeed in IT Service Management, IT must manage services according to business requirements. For WLA, ITSM requires an accurate and dynamic relationship between business risk and workload service levels. In keeping with the precepts of ITIL, BMC uses its popular Atrium CMDB to maintain such a relationship. Batch Discovery uses the CONTROL-M DB to build a CI (CMDB Configuration Item) for the batch service and forms a relationship between that CI and all of the CIs for the components where that service will run. This is far superior to an approach where business risk is hard-coded in the scheduling database.

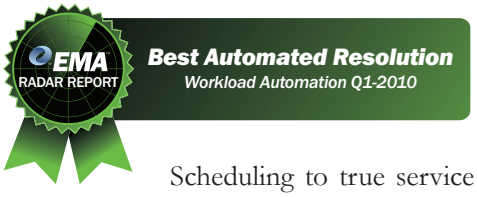

### Best Workload Management Integration: IBM

No other vendor has as much experience in Workload Management as IBM. Not surprisingly, IBM's Tivoli Workload Scheduler earns special recognition for its integration with Workload Management. With its Workload Service Assurance feature, IBM continually monitors each job's critical path in relation to business risk and dynamically allocates resources for business-optimal throughput. Of course, IBM also tightly integrates with z/OS through its WLM Service Class settings.



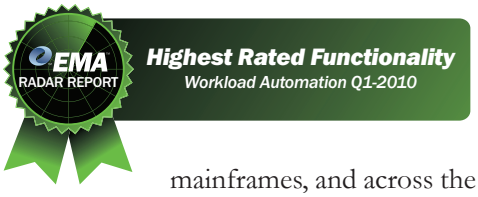

### Best Interface Design: OpsWise

The OpsWise Automation Center interface is elegant, attractive, and intuitive. It fully deserves this award not only for these characteristics, but for its cutting-edge underpinnings and openness. From Web 2.0 services to contextual Wiki tutorials, this interface is center ring.



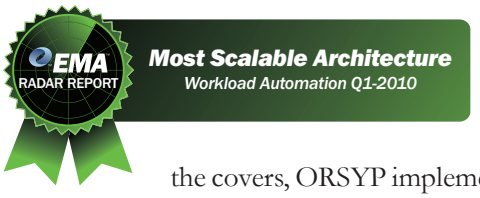

## Best Automated Resolution: BMC

BMC's approach to automated diagnosis and resolution of schedule incidents deserves special mention. With Batch Impact Manager (BIM), BMC elevates us from Job Scheduling to true service management. The user can relate service requirements to jobs and BIM tracks status, estimated completion, deadline, slack time, etc. From the service view, the user can open an analysis viewpoint and activate critical path filtering in order to focus on important jobs. BIM predicts problems and allows what-if scenarios. Given the frequency of scheduling events and the personnel resources required to resolve those events, BIM brings with it a very potent cost justification.



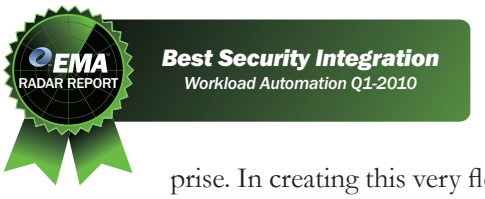

## Highest Rated Functionality: CA

With seven job scheduling products and decades of experience in this segment, CA's functional strength should come as no surprise. On distributed platforms, mainframes, and across the ITSM process landscape, CA has added breadth to its depth of capabilities. Workload Automation r11, combining the best attributes of several top tier products, will further enhance CA's functional dominance.




## Most Scalable Architecture: ORSYP

Few architectures look simpler than peer-to-peer (P2P) and ORSYP's architecture looks so simple that one might not properly credit its developers for its innovation. Under the covers, ORSYP implements numerous functions that give administrators an unblemished sense of centralization. The architecture is lightweight, highly resilient, immensely scalable, and easy to manage.

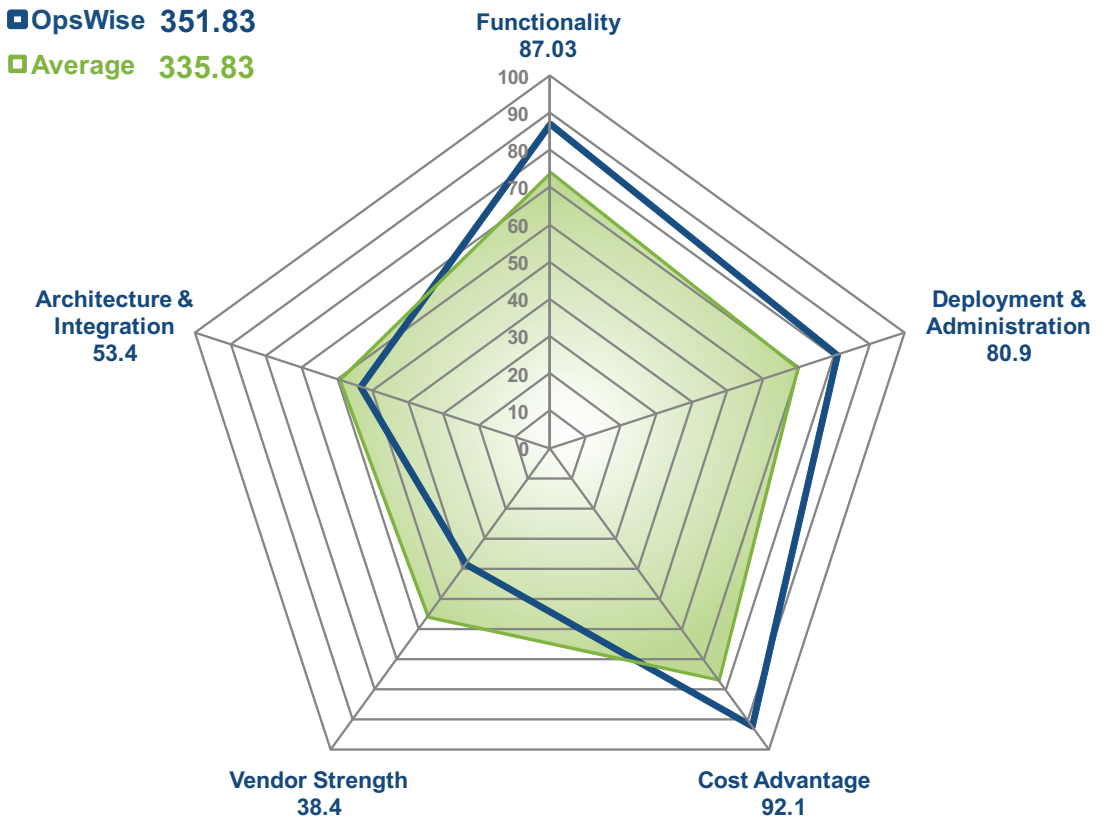



## Best Security Integration: CA

As part of its WLA solution, CA includes an Embedded Entitlements Manager. More than a tool, this is a communications layer for security management across the enterprise. In creating this very flexible and functional tool, CA brings decades of experience in security, including z/OS, for the best security architecture, tool, and scope of coverage.

## OpsWise






## Deployment and Administration

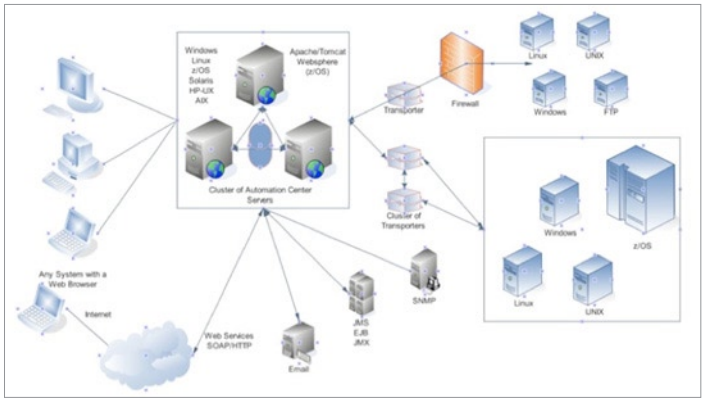
OpsWise boasts flexibility and speed in implementation. The architecture allows a technology swap-out or integration with the existing infrastructure through an internet-enabled data center. The design is fault-tolerant and highly scalable, priding itself on the ability to process large amounts of data. OpsWise has a history of rapid implementations across heterogeneous environments. The user interface is impressive, graphical, and intuitive.

## Cost Advantage

OpsWise sports the lowest entry price of any vendor in the study. The ease of deployment adds to this advantage.

## Architecture and Integration

OpsWise is new and small so its architecture and integration are limited but not as much as one would expect. The product supports a broad range of platforms and applications, includes load balancing functions, Managed File Transfer, RDBMS capabilities for automating SQL and Stored Procedures, and APIs to multiple frameworks. The z/OS integration (JES2, RACF, ACF2, etc.) is surprisingly robust, including z/OS job restart at the step level that is Sysplex-aware.




## Functionality

The OpsWise interface is a gem. It monitors critical paths, has intuitive reporting capabilities, and enables advanced administration with very little training.

## Vendor Strength

OpsWise is small and its product is new so its score in vendor strength is low. Still, this company has remarkable vision, even when compared to the big guys.

## SWOT Analysis

### Strengths

OpsWise has the paradoxical advantage of being last to the party among WLA vendors. Whereas others are often mired in aging architectures, OpsWise, using technologies like Web 2.0, Ajax[3], and Apache, has taken a clearly "open" path.

Automation Center seems well-suited for a cutting-edge data center or Cloud environment, although, some enterprises are choosing to replace their existing scheduler or deploy OpsWise for a specific project.

The OpsWise interface is extremely intuitive.

Automation Center installs very quickly and requires very little training.

3 Ajax, an acronym for Asynchronous JavaScript + XML, is a development tool for interactive Web applications. Ajax, with its asynchronous data retrieval, improves application performance.

### Weaknesses

The primary weakness of Automation Center is its lack of ITSM integration.

OpsWise is a small and very new company.

## Summary

OpsWise, established in 2005, is a very recent entrant in the Workload Automation field of competitors but they have entered with authority. Automation Center, released in September 2008, has all the advantages of recent design and technology advancements. OpsWise scores very well in Deployment and Administration, Functionality, and Cost Advantage but poorly in Vendor Strength (new company). Automation Center does not yet integrate with CMDBs and IT Process Automation solutions, so its score in Architecture and Integration is somewhat low this year. Their target customer is the cutting-edge data center and cloud environments (e.g. Amazon EC2[4]), but OpsWise does have successful deployments at more traditional datacenters and (though not primarily in the swap-out business) has displaced competitive products. For customers who can look past the small company size to a very functional, well-designed, and cost-effective product, Automation Center belongs on the short list.

4 Amazon Elastic Compute Cloud (EC2) is a web service that provides resizable compute capacity.

# Future Market Directions and Conclusion

This report addresses two WLA customer classes. The first class of customer wants consolidated scheduling across a limited variety of platforms and applications and has only moderate concern for broader ITSM integration. For such a customer, current vendors offer rich function, rapid implementation, and attractive pricing. The other customer class faces the challenge of efficiently integrating complex composite workloads into a massively heterogeneous ITSM framework. This high-end customer has a list of requirements numbering in the hundreds and increasingly severe ROI limitations.

For such high-end customers to succeed, they must have a strategy. ROI depends on the alignment of strategy with market directions and the modular implementation of that strategy. At this level, any WLA strategy focuses much more on integration than on function. Frankly, job scheduling functionality is already robust and mature. After all, job scheduling established its operational value more than three decades ago.

Workload Automation, unlike Job Scheduling, is not yet mature, but its development holds enormous promise for further operational savings. The efficient management of complex composite workloads spans many ITIL processes and technology silos. Organizations must understand the impact on job workflows in the event of a component failure and then translate that impact to business requirements. Without this knowledge, prioritization is little more than a guess.

## Event Correlation and the CMDB

In the future, WLA will integrate tightly with event correlation. Correlation depends on dynamic topology discovery and dependency mapping. The logical repository for this information is the CMDB where the CIs for failing components have a clear relationship to workload service levels and business risk.

## Service Catalog

Workload prioritization critically impacts Service Level Management, Event Management, and Incident Management. In essence, organizations cannot effectively manage workloads in the absence of an associated business risk. As a stopgap, many WLA vendors now allow for hard-coded assignment of risk levels to each workload. In some cases, this static operational value may percolate to business service alerts. Aside from the inaccuracies associated with static values, one must question the validity of operational staff assigning business risk. This is the province of the Service Catalog and mature WLA solutions will enable business owners to establish risk dynamically within the Service Catalog. The CMDB will correlate that risk to workload service levels and infrastructure component dependencies.

## Dynamic Resource Allocation and Load Balancing

Many of today's WLA solutions include load balancing and a few include integration with dynamic resource allocation via automated provisioning and virtualization. Most of these solutions are somewhat crude in their approach to prioritization, once again relying on hard-coded risk levels. Still, this area is advancing rapidly and vendors grasp the importance of infrastructure abstraction and optimization. One need only examine the average server utilization to likewise grasp its importance. When WLA solutions incorporate APIs to best-of-breed automated provisioning and load balancing, customers will have opportunities for huge savings in infrastructure and facilities.

## Predictive Analytics

Workload optimization depends on performance monitoring and performance monitoring depends on thresholds. However, dozens of static thresholds across thousands of components are notoriously inaccurate and impossible to maintain. Further, bottleneck mitigation almost always follows business impact. The answer is Predictive Analytics where thresholds vary according to historical performance data and heuristic forecasts automatically prevent bottlenecks prior to business impact.

WLA is a long way from Predictive Analytics. The algorithms depend on complex regression models and this level of automation has not earned the trust of IT management. EMA predicts a few false starts in this area, but some vendor is going to get it right. Because of the complexity of this feature, the first vendor with a workable, incremental solution will have a key competitive advantage.

# Appendix A: The EMA Radar Report™ Methodology

EMA defines criteria for the market to be evaluated and conducts primary research to develop a list of vendors that meet these criteria. Initial product data is gathered through questionnaires and vendor discussions. Basic data from relevant vendors is compiled into the EMA Solution Center for the market evaluated.

EMA further defines a model client and uses this client perspective to conduct the Radar Report evaluation. The list of vendors included in the Solution Center is narrowed to a final list based on: 1) product fit for the model client; 2) customer feedback; and 3) EMA perception of market importance. Additional vendor/product data is collected through a combination of lab evaluations, demos, additional vendor discussions and/or interviews with reference clients.

Collected data is evaluated based on a weighted analysis of the market criteria from the perspective of the model client. Evaluations are reviewed with vendors and adjusted as warranted to provide an accurate view of the vendors and their offerings and strategies. Final scores generate a graphical depiction of each vendor/product based on the following five key dimensions:

1. Ease of Deployment & Administration – This dimension rates vendors on start-up cost and effort as well as ongoing operational cost and effort. Ease of Deployment is measured by scoring implementation timeframe, support, professional services, training, and auto-discovery factors. Ease of administration and automation of management are measured for the Administration component.
2. Cost Advantage – Considering licensing models, price for license as well as maintenance costs, this dimension scores products on their relative price advantage when compared to others in the market. Low price, flexible licensing model and reasonable maintenance costs are awarded the highest scores.
3. Architecture & Integration – This dimension assesses the strength and extensibility of the core architecture as well as the ease of integration and availability of existing modules for integration with other products.
4. Functionality – This dimension assesses the features of the products on a number of important factors for the product category. Completeness of the product features as well as ease of use is measured.
5. Vendor Strength – This dimension considers not just the vendor's financial strength and presence in the market, but also their vision, market credibility and partnerships/channels to reflect their overall strength as a supplier.

Each of the five dimensions result in a score of 0 - 100, with the highest possible total vendor score being 500.

To provide a market wide comparison, this data is summarized by contrasting the Product Strength against the Cost Efficiency of the products evaluated. Product Strength is the combined scores for Functionality and Architecture & Integration. Cost Efficiency is the combined scores for Ease of Deployment & Administration and Cost Advantage.

The EMA Radar Report represents EMA analysis of how certain vendors measure against criteria for that marketplace, as defined by EMA. EMA does not endorse any vendor, product or services, and does not advise technology users to select only those vendors placed in the "Value Leaders" category.

## About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that specializes in going "beyond the surface" to provide deep insight across the full spectrum of IT 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 IT professionals and IT vendors at www.enterprisemanagement.com or follow EMA on Twitter.

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