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Market Overview: IT Process Automation, Q3 2011

by Jean-Pierre Garbani and Glenn O'Donnell
for Infrastructure & Operations Professionals

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Embrace IT Process Automation Technology As Your Foundation To Industrial IT

by **Jean-Pierre Garbani and Glenn O'Donnell**

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EXECUTIVE SUMMARY

The tasks of the IT infrastructure and operations (I&O) professional have become increasingly complex and susceptible to human error. This is a direct consequence of the sheer volume and diversity of business services and underlying IT infrastructure components. By masking IT's diversity and automating highly repetitive tasks, IT process automation is the key to industrializing your operations to improve productivity and reduce costs. In this market overview, Forrester evaluates the landscape of IT process automation technologies and vendors for I&O professionals to consider. To develop your path toward a complete solution, I&O professionals should evaluate the foundational pillars of IT process automation, such as workload and run book automation, as well as complementary capabilities, such as service catalogs and the use of complex event processing.

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NOTES & RESOURCES

Forrester interviewed 11 vendor and user companies, including Advanced Systems Concepts, Allen Systems Group (ASG), BMC Software, CA Technologies, Cisco Systems, HP Software, IBM Tivoli, iWave Software, Orsyp, Redwood Software, and UC4 Software.

Related Research Documents

["Workload And Process Automation Must Converge"](#)

June 6, 2011

["Market Overview: Workload Automation, Q3 2009"](#)

November 9, 2009

["IT Operations 2009: An Automation Odyssey"](#)

July 24, 2009

IT PROCESS AUTOMATION IS A DIVERSE MARKET THAT IS RAPIDLY CONVERGING

The roots of IT process automation run deep. The history of job scheduling, a foundational element of workload automation and subsequent IT process automation technologies, can be traced back to industrial production in which work orders have to be executed in a specific sequence by a machine as a function of its production capacity. It was the concrete realization of production planning that marketing and business dictated. In the world of IT operations, job scheduling targeted the work of operators juggling batches of punched cards, each representing a job with its own environment, data, and parameters. Over time this approach evolved into the modern, disruptive automation technologies now used in data centers. Forrester characterizes the key milestones of this evolution as follows:

- **Systems became distributed and diverse, making centralized management necessary.** It soon became apparent that scheduling jobs at the machine level was impractical and error-prone: Each operating system, application, and database spoke its own language. Shared data and interdependencies between systems made the need for a centralized management obvious. The result: Distributed job scheduling of yesterday transformed into what we know today as “workload automation.”
- **To be effective, automated processes required access to enterprise management solutions.** Workload automation needs to understand system availability performance and use validating logic to control the execution of tasks. As a result, workload management products began to include links to other enterprise management solutions such as system monitoring.
- **Run book automation expanded the automation model.** As workload automation replaced scripting in the launching of application and data processes, run book automation expanded the model to other types of IT processes, specifically IT management ones. Provisioning servers, for example, proved particularly attractive since it was both highly labor-intensive and error-prone. Automating server provisioning is today’s most common application of run book automation.
- **Cloud and virtualization are now accelerating the demand for automation.** Running jobs on diverse machines requires resources. This resource allocation, based on finite physical capacity, is a key point of workload automation: Often, many end-of-the-month workloads aren’t processed in due time (with dire business consequences) for lack of capacity or performance limitations. The flexibility of virtual environments, whether confined within a physical server or developed as a private or public cloud, presents complexity challenges where run book automation quickly found another niche.¹ Bringing virtualization and the cloud into the equation appears to be an elegant way to automatically allocate resources to workload processing where and when needed.

Just as distributed systems signaled the need to coordinate different forms of job scheduling into a centralized and unique solution, this integration of run book automation within workload automation, beyond its immediate benefits, is a signal that the different forms of automation must converge toward an integrated and centralized solution. Cloud computing and virtualization bring

together different forms of automation that, in turn, need to adopt a similar approach. An integrated IT process automation solution benefits I&O professionals because:

- **A centralized approach to automation minimizes the impact of change.** Many unpredictable forces thrust change on the demand and capacity of enterprise IT infrastructure. Uncoordinated automation solutions, developed independently of each other, would need constant revision and resynchronization. A unified and centralized solution simplifies this issue.
- **Automation solutions rely on systems management to be truly effective.** Disparate automation solutions lead to duplication of interfaces and data collection, creating potential inconsistencies between solutions. Adding to this inherent complexity, automation must react to triggers that are event-based, time-based, or user-initiated. To be truly effective, automation solutions need an interface to systems management to monitor performance, availability, and the capacity of the processing environment.
- **A consistent GUI abstracts the diverse forms of automation.** Gone are the days when automation required scripting in some programming language or text editing configuration files. Modern automation is based on simple drag-and-drop interfaces, where operations can be brought together to build a specific workflow. Although operations are different between a workload automation solution and run book automation, the operation library and its manipulation must present the same “look and feel” across all solutions to minimize the risk of errors in building the workflow.

KEY TECHNOLOGIES THAT MAKE UP THE IT PROCESS AUTOMATION LANDSCAPE

Advanced solutions in the IT process automation market tend to progress from a combination of disparate automation solutions toward a complete, integrated solution. An intermediate step is to present these solutions within a common framework that brings together some of the interfaces in common, for example, to system management. Eventually, the top of the evolutionary scale will be represented by the use of advanced technologies such as triggers: monitoring of service levels culminating in complex event processing (CEP) that mixes business and IT events to create intelligent triggers that lead to a more complete form of automation.

Four Solutions Represent The Foundation Of IT Process Automation . . .

Workload automation, run book automation, and varying types of low-level and high-level process automation are the foundational pillars of IT process automation. Most IT process automation vendors join the market as either workload automation or run book automation providers. Ideally, they should provide both and then expand their solutions toward multiple specialized forms of functional process automation. Low-level process automation targets pure IT processes that are usually script-based. High-level process automation targets processes that are automated through a service desk or other form of cross-functional communication. Forrester recommends that I&O professionals focus on the following fundamental pillars of IT process automation:

- **Workload automation.** This is the earliest and most common form of IT process automation. Any IT organization that reaches a certain level of complexity needs a workload automation solution to insure timely and accurate performance of its asynchronous processes.² Advanced Systems Concepts, ASG, BMC, CA Technologies, Cisco, IBM Tivoli, Orsyp, Redwood Software, and UC4 have thrived in this market for years.
- **Run book automation.** This is the second wave of IT process automation, born from the complexity and resource-consuming activities of IT operations. Server provisioning is the most widely adopted use for run book automation, but the principles are now applied to virtualization control and the diverse operations needed to make applications cloud-ready. The pioneers in this market, BMC Software, CA Technologies, IBM Tivoli, and HP Software, are now joined by a second wave of vendors such as iWave.
- **Low-level process automation.** This type of automation replaces script-based IT processes for typical IT operation activities, such as implementing a patch on an operational server. Other forms of low-level automation are those used to integrate applications at the user interface level. Redwood Software and UC4 have led the market in this area.
- **High-level process automation.** Release management, change control, and complex ITIL-derived processes are all examples of high-level IT processes that can be automated. These workflows often reside within a service desk engine, but this is certainly not a requirement. IBM Tivoli and UC4 offer the strongest capabilities, although the traditional service desk vendors — BMC, CA, and HP — provide a rich set of prepackaged process templates for common ITIL processes such as incident management and change management.

... But A Complete Solution Includes Complementary Technologies And Capabilities

A complete IT process automation solution requires the foundational elements plus a number of complementary technologies and capabilities. Depending on the initial approach of the vendor, these complementary technologies will facilitate workload automation or tend toward business process automation or the ability for a business user to actually create and run IT-related processes on-demand. For a complete IT process automation solution, Forrester recommends that I&O professionals evaluate the following complementary technologies and capabilities (see Figure 1):

- **Integration into a single automation framework or solution.** Several vendors have acquired different automation solutions over time. BMC, CA, HP, and IBM have acquired capabilities for process automation to complement their offerings built upon organic products. These solutions have been brought under a single umbrella and can share data and other interfaces through a common access framework, even though they may not be fully integrated at a process modeling and data modeling level. Some solutions such as UC4 or Advanced Systems Concepts have been built from the inside out to create a single automation solution with consistent user interfaces and process modeling layers.

- **Ability to combine automation solutions into a single process.** Here, solutions have been brought together as a single and seamless process approach, fully abstracting the differences between automation solutions. The modeling basis is unified either via a fully-shared model or via an abstraction layer atop disparate models, which offers the appearance of a common model. Smaller vendors such as Advanced Systems Concepts, Tidal Software, and UC4 offered combined process solutions first. Some larger vendors, such as BMC Software, Cisco (because it acquired Tidal), and IBM Tivoli, are now also delivering such unification.
- **Automation self-service.** This is the first stage where IT process automation meets business process automation. The end users of the process can choose from a service catalog and initiate the process execution themselves — without the need to involve someone from IT operations. At this stage, automation presents either complete process suites or expose reusable components that can be stitched together into new processes. Eventually, end users can plan execution of business process steps that will self-provision resources and load applications to achieve business objectives. Advanced Systems Concepts, BMC, CA, HP, IBM Tivoli, and UC4 have tightly integrated service catalogs and self-service process initiation. With Cisco's acquisition of Newscale to augment the Tidal technology, Forrester has high expectations for Cisco's ability to deliver this also.
- **Ability to use SLAs or history to trigger automated processes.** Behavioral insight such as performance, availability, and capacity factors governs the execution of any process by analyzing service behaviors and then triggering the appropriate actions. These decision triggers are most effectively tied to service objectives defined in service-level agreements (SLAs). This capability is used to plan execution resources, either based on a historical perspective (for example resource usage for this job at this time of the year), resource forecast (based on capacity management), or any form of predictive analysis that will help provision resources automatically. ASG, BMC, CA, Orsyp, Redwood Software, and UC4 offer the strongest integration of behavioral insight from SLA information.
- **Integration with IT management solutions.** Using SLA or any performance-oriented data requires a close integration with IT system monitoring. This could be achieved by integration with existing solutions or by including a monitoring capability within the automation solution. The latter is far less common, but fuller automation suites with such capability are emerging. This is a common feature among the vendors, although the richer product families and third-party ecosystems of the large vendors — BMC, CA, HP, and IBM Tivoli — tend to give them an edge on such integration. But other vendors are on the right path: ASG integrates its automation capabilities with its IT management solutions and Orsyp's acquisition of Sysload adds performance and capacity management capabilities to their automation suite.
- **Use of complex event processing as an automation trigger.** As performance data and other events become available, an analysis of these events coming from multiple sources can in turn create an event that will trigger an automated operation. Ideally, CEP will combine event sources from the business side and from the IT side to reach a conclusion and launch an

operation. UC4 has demonstrated CEP-based triggering that is superior to all others. Forrester's client inquiries and market insight lead us to expect rapid innovation and acquisition by most vendors to deliver far more robust analytics over the next 24 months. This enhancement of decision triggers will be among the most interesting and aggressive automation developments. End users stand to benefit greatly.

Figure 1 IT Automation Selection Criteria

Criteria	Benefit to IT ops
Workload automation	Automated execution of asynchronous application processes, based on date/time, events, or user request
Run book automation	Generic form of automation through the generation of scripts based on a library of potential operations conducted on software launched in context
Low-level process automation	A form of run book automation that triggers processes used in IT operations to automate routine technical tasks
High-level process automation	A form of run book automation that triggers processes that can be used in IT operations or in business processes to automate complex workflows
Integration into a single automation framework or solution	The grouping of all forms of automation within a single framework, with a common GUI, a common core technology, an integrated way of nesting automated processes and a common user interface
Ability to combine automation solutions into a single process	The ability to launch a form of process automation from another automated workflow being executed: for example, launching server provisioning from workload automation
Automation self-service	Availability of a catalog of automated processes (or a library of pre-defined processes) that can be launched by a user from a self service interface
Ability to use SLA or history to trigger automated processes	Ability to compare a process execution time with a predefined SLA and take some form of automated corrective action
Integration with IT management solutions	The capability to send or receive events or performance information from an enterprise monitoring solution
Use of complex event processing as an automation trigger	The use of an integrated complex event processing solution or a similar form of analytics to trigger the launch of an automated process

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Source: Forrester Research, Inc.

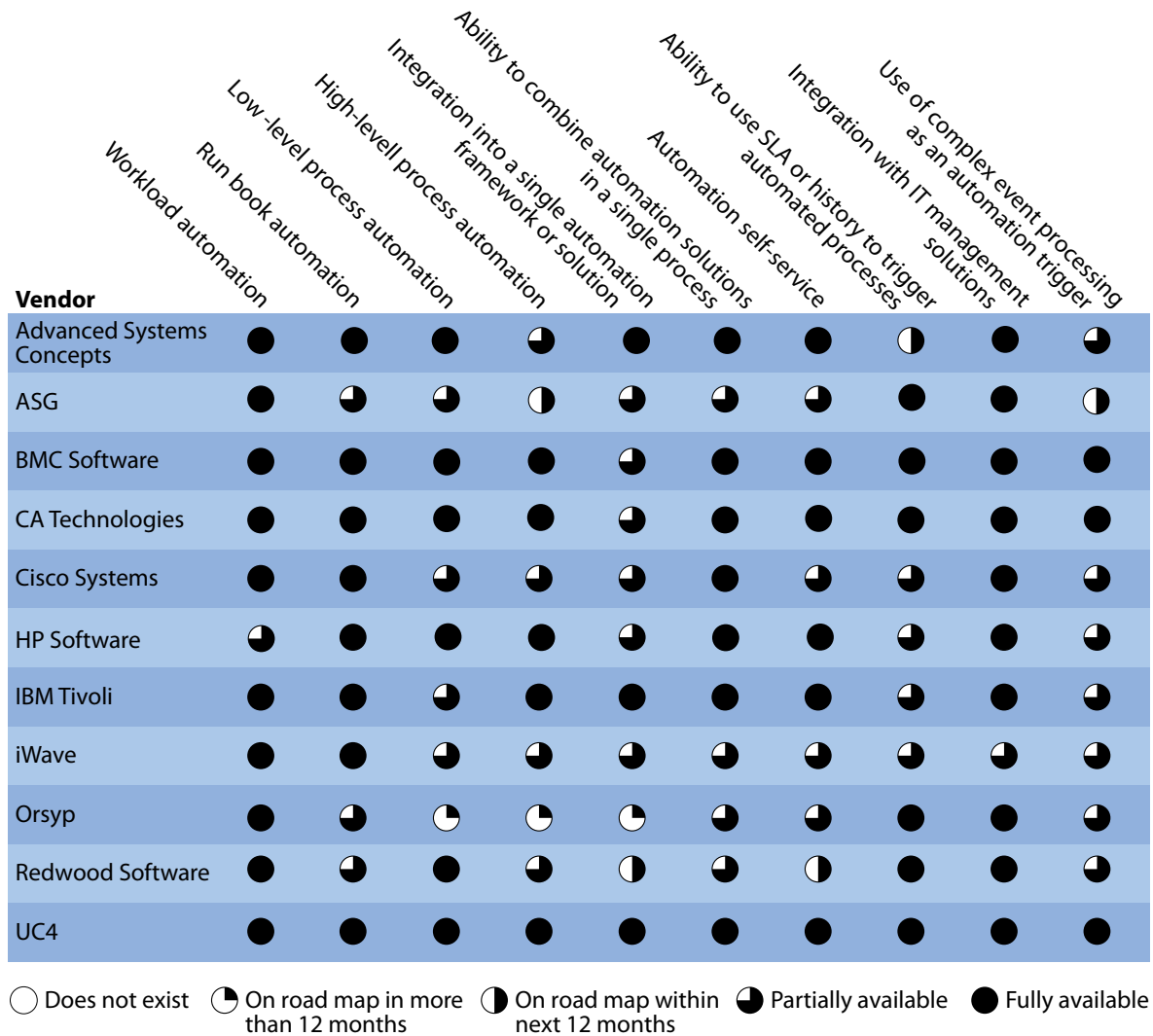
VENDOR REVIEW: THE LEADING PROVIDERS OF IT PROCESS AUTOMATION SOLUTIONS

The integration of diverse automation solutions is still a work in progress, as many vendors have thus far only assembled their existing products into a common framework that allows the combination of solutions into a single process. We believe that, eventually, this will be the norm rather than the exception: As automation solutions are combined into single plans or processes, the need for synchronization and complexity reduction becomes such that integration makes more and more economical sense. While there are many vendors offering IT process automation solutions, Forrester selected the following 11 as the most representative of the current trends (see Figure 2):

- **Advanced Systems Concepts.** ActiveBatch is the cornerstone of Advanced Systems Concepts' solution. The key element of ActiveBatch is its integrated job and service library, which offers a drag-and-drop interface that offers ready-made jobs and templates for databases, applications, and technologies. ActiveBatch integrates with VMware and Microsoft Virtual Machine Manager as well as with System Center Operations Manager, HP Software, Nagios Enterprises, and Zenoss. ActiveBatch is Windows-based and has agents to cover almost any element of infrastructure computing.
- **ASG.** ASG offers a complete workload automation suite with ASG-Zeke and ASG-Zena. Run book capabilities are present but don't provide specific preconfigured run book templates. ASG's recent acquisition of visionapp CloudFactory addresses cloud and virtualization. ASG enterprise automation management suite (ASG EAMS) will converge within the next year to provide an integrated automation solution.
- **BMC Software.** BMC Control-M, BMC Bladelogic, and BMC Atrium Orchestrator provide the workload and run book automation solutions, complemented by the possibilities offered by BMC Remedy Suite automated high-level processes. The overall combination of BMC solutions covers many aspects of nested automated processes supported by other BMC products in terms of IT monitoring and analytics. This suite of products is combined within the BMC BSM framework.
- **CA Technologies.** CA Automation Suite includes workload, process, server, virtual, configuration, and client automation. These solutions can be used to automate low- and high-level processes. CA Process Automation offers several Power Packs for CA Workload Automation that include integration for cloud burst, life-cycle management, remediation (service desk), self-service, and health check (to offer validation of workload environment).
- **Cisco Systems.** Cisco automation solutions come from the acquisition of Tidal Software. Cisco's solution includes workload automation, system management, and run book automation modules. The current vision is to integrate these modules into a single solution accessed through the self-service portal offered via the newScale acquisition. Cisco's vision embraces completely the concept of a converged enterprise level automation solution.

- **HP Software.** HP is the only “big four” management vendor without a proprietary workload automation solution; there is, however, a partnership in place with Orsyp.³ As workload automation may represent as much as 30% of a data center’s activity, HP Software capabilities to low- and high-level IT process automation such as provisioning or release management is not fully integrated with workload automation.
- **IBM Tivoli.** Tivoli offers a palette of low- and high-level automation solutions that cover the spectrum of business processes to provisioning of resources to the customization of a specific data center environment. Workload automation takes advantage of these automation capabilities to use the cloud as a resource for the conformance to SLAs. This combines with multiple products within the Tivoli framework such as the Tivoli Request Manager and Tivoli advanced event management.
- **iWave.** iWave is a generic automation solution built on an enterprise class orchestration engine to which specific accelerators provide the specific adapters to automate a workflow. Accelerators are prebuilt solutions that address specific problems. For example, there is an accelerator for dynamic server provisioning, intelligent fault remediation, and disaster recovery, among others. There is a self-service portal as well as an operation portal to monitor workflow execution.
- **Orsyp.** Orsyp is a workload automation specialist with a unique peer-to-peer architecture (rather than master-slave) that is well-suited to large-scale implementations. Orsyp is taking the path to integration with run book automation by better monitoring of the computing resources available with its acquisition of Sysload’s performance and capacity management solution. Orsyp plans to capitalize on these capabilities to provide a full suite of data center automation solutions.
- **Redwood Software.** Redwood Cronacle offers a workload automation solution that is uniquely web-based. It offers a proactive SLA analysis to predict execution results and integrates with existing management tools. The next steps in Cronacle’s evolution are to offer a cloud-based SaaS solution and to develop a cloud and virtual environment solution. Redwood Software is also part of the SAP Quality and Risk Management portfolio for the automation of high level business processes.
- **UC4.** UC4 One Automation embodies the trend toward IT process automation convergence to cover the full spectrum of today’s automation needs more than any other vendor’s solution. One Automation provides a platform that combines workload and run book automation with system management integration and complex event processing under one umbrella. Eventually this platform will cater to all the automation needs of the enterprise.

Figure 2 Comparing The Capabilities Of The Leading IT Process Automation Vendors



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Source: Forrester Research, Inc.

RECOMMENDATIONS

PRIORITIZE ENTERPRISE STRATEGY WHEN SELECTING YOUR AUTOMATION VENDOR

Realize that the tools you use to automate your IT processes today will extend to automating your business processes tomorrow. To make strategic decisions, not just tactical ones, I&O professionals must select vendors that address today's needs while satisfying an architectural vision for the future. To do this, Forrester recommends that I&O professionals:

- **Understand today's needs for automation.** The term "automation" is diluted by too many disjointed definitions. We focus on process automation to clarify this corner of the market, but even here, there is confusion. Do your research to learn the differences and similarities, but more importantly, learn how these solutions can fulfill your needs. Workload automation is already present, even if you don't recognize it because of confusing vendor product names and messaging. It would be wise to consolidate with the other forms of IT process automation discussed in this market overview. Workload management vendors have solutions to help you get there.
- **Strive for product consistency if you're developing your path toward the private cloud.** The benefits of virtualization and private cloud should not be a debate. Who wouldn't want on-demand capacity provided in a pay-per-use, self-provisioned fashion? IT process automation is the cornerstone to enabling these new infrastructure technologies and models. Most of the vendors Forrester evaluated are able to offer an integrated provisioning solution that can also be used outside of workload automation. This is most evident with BMC, CA, HP, and IBM Tivoli, but Cisco has grand ambitions around its UCS architecture, and cloud automation specialists all strive for the same ideal. These specialists are outside the scope of this market overview. I&O professionals should prioritize the interoperability between these products to realize the benefits of virtualization and the private cloud.
- **Pressure vendors to share — and stick to — their plans and road maps.** Understand your vendor's path toward the convergence of IT process automation and business process automation. If your vendor doesn't provide an integrated suite of automation solutions but fits your immediate needs, make sure that their plans are compatible with your organization's probable evolution to business process automation in the mid-term. Avoid multiple solutions that will simply add complexity that you don't need.

SUPPLEMENTAL MATERIAL

Companies Interviewed For This Document

Advanced Systems Concepts

CA Technologies

ASG

Cisco Systems

BMC Software

HP Software

IBM Tivoli

Redwood Software

iWave Software

UC4 Software

Orsyp

ENDNOTES

- ¹ Cloud solutions aren't a thing, they're a how, and most enterprise I&O shops lack the experience and maturity to manage such an environment. See the July 26, 2010, "[You're Not Ready For Internal Cloud](#)" report.
- ² Today's I&O executives must tackle complexity by learning what it is and how it applies to IT operations. To do so, I&O must focus on the bigger picture and how IT operations interconnect and interrelate. To get started, assess six key indicators: 1) time management; 2) release and deployment of business services; 3) configuration and change management; 4) incident and problem management; 5) infrastructure projects; and 6) batch updates and applications. See the March 23, 2011, "[Assessing Complexity In IT Operations](#)" report.
- ³ Orsyp is a "Gold Business Partner" of HP Software for the Americas, EMEA, and APAC. There is a Smart Plug-In 3.2 for Orsyp Dollar Universe in HP Operations Manager for Unix. Source: Hewlett-Packard Development, HP Software Partners, Orsyp (http://h20229.www2.hp.com/partner/directory/ax/us/orsyp.html?jumpid=reg_R1002_USEN).

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