EMA RADAR for Workload Automation (WLA): Q4 2019

An Enterprise Management Associates® Radar Report

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Q4 2019

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INTRODUCTION

Workload automation in 2019 is in a phase of consolidation of vendors and expansion of capabilities. It is a very mature market, one that has been around for more than 40 years. It is also a very saturated market, one that has seen adoption by a significant majority of potential users. As a result, there has been consolidation in this market. Most recently, HelpSystems acquired MVP. CA acquired Automic in 2016, and in 2018 CA was acquired by Broadcom. The expansion is coming in the form of broadening the span of influence of workload automation since many organizations are automating more types of IT operations activities and some are reaching across their organization to empower business users and automate business processes.

The primary driver of this change is digital transformation, which is sweeping the business world because it is thought to be integral to achieving business growth. Customers expect an on-demand, technology-driven experience. Businesses want workforce engagement using digital transformation to make employees more efficient and effective. Digital transformation can bring great improvements in the way customers, trading partners, and employees interact. Recent EMA research found that 73% of respondents feel that their organization is rapidly addressing digital transformation. Much of the drive for DevOps and agile development comes from the need to find better ways to get the new digital applications and processes up and running quickly. EMA also found that 78% feel that their organization is modernizing applications to support digital transformation. Many core applications are legacy designs that do not have the speed, uptime, or integration capabilities to support newly envisioned digital processes. These applications can hold back and slow down digital transformation efforts.

While digital transformation can bring great improvements and efficiencies, it does something else, as well: it brings great transparency. Customers become empowered with applications that show inventory, price changes, service times, etc. This near-real time information of every aspect of the availability, status, and expected delivery times of products and services can also expose internal problems customers would never have been aware of before digitalization. Every delay, slowed system, outage, or other internal problem is now on full display. Digital transformation can also stress legacy infrastructure systems and tools.

EMA found that 74% of respondents feel digital transformation requires more from their scheduling solutions, and 61% feel that the number of scheduling problems directly affecting business outcomes is increasing. Modernizing applications in support of digital transformation is important, to be sure, but so is modernizing the infrastructure management tools that keep the undercarriage of those digital processes running smoothly and reliably.

In the world of IT infrastructure management, lack of tools is rarely the issue. More often, the issue is having too many tools with overlapping capabilities. This is true in many areas of IT management, including scheduling and automation tools. EMA finds that 61% of respondents feel that they have too many scheduling and automation tools, while 73% believe they would be more efficient with the consolidation of scheduling and automation tools. Workload automation vendors are reacting to these trends by broadening the capabilities of their software to automate and control more aspects of both IT management and, in some cases, reaching deep into automating business processes directly.

One example is Robotic Process Automation (RPA). Several products now integrate with RPA tools and can orchestrate those tools. RPA software focuses more on data capture and automating steps that might be taken directly by users of business applications. Some have basic scheduling capabilities, but none have the sophisticated calendar and event triggers, audit logging, SLA integration, and other capabilities of the much more mature WLA software. Orchestrating RPA with WLA is logical and powerful. WLA can be used directly to automate business processes. Two vendors have long had forms of process automation that can stand alone or work in an integrated fashion with the WLA product. Recently, one workload vendor announced availability of a newly released RPA product that is fully integrated and intended to be orchestrated with their WLA product. EMA believes this is only the beginning of the features, integrations, and companion products that will be made available to expand the role of WLA to consolidate automation functions into fewer types of tools. WLA's role will also increase in adding value to the business side of organizations with the vision to make this class of software an important part of their future.

INTRODUCTION

In addition to the big moves and changing attitudes about WLA, many of the more workload-related trends predicted in the 2017 edition of this report were reflected in the recent releases of many products covered in this 2019 report. These include:

- **Embedded scheduling** – Full console capabilities available through web services allow applications to be deployed with scheduling intelligence built in.
- **Monitoring and control of release process** – As DevOps and continuous delivery have become more common, the need to orchestrate the application release process has grown, and WLA solutions have increased the capabilities for monitoring and automating the release process.
- **User community awareness** – More vendors now offer user communities and forums that enable the sharing of apps, add-ons, templates, and other customizations built by users. With more API support and the ability to embed scheduling awareness into applications, the discipline is advanced by users' innovations, taking advantage of more open WLA products.
- **Agent change management** – WLA solutions are predominately agent-based, and for those with thousands of servers in on-premises and cloud environments, updating agents can be overwhelming. Broader adoption of multi-cloud and increased use of containers, microservices, and serverless computing have increased the need for change management enhancements. Many vendors have answered this need.
- **Data awareness, file transfer control, and manipulation** – Big data remains big business for WLA solutions. Many products have been enhanced with significant native managed file transfer capabilities, data awareness, and data manipulation capabilities.
- **Increased self-service and business stakeholder involvement** – More organizations are taking advantage of self-service capabilities, and more development teams and business users are interacting with WLA products.
- **Machine learning/AI and cognitive computing** – Some vendors are using the term "AIOps" to describe their analytics and scheduling capabilities, as machine learning is showing up in parts of some products. While still early, this trend is advancing in the WLA space.

Given the trends observed, EMA made significant changes to the WLA Radar evaluation model and weighting of capabilities to effectively measure vendors that support the important legacy capabilities of WLA, as well as moving their products and this market toward the future of broader automation. These changes are highlighted in Appendix A, which includes details behind all the metrics used in this analysis. Digitalization is continuing to increase the importance of automation and influence priorities in WLA. It is having a direct impact on competition in the WLA market and causing a mature market to behave like a much younger market. This is evident in the results of the "2019 EMA Workload Automation Radar Report."

RESEARCH METHODOLOGY

The major challenge of this type of market evaluation is to avoid creating a simple feature comparison. EMA is aware that in order to be valuable for the end customer, any analyst report must thoroughly research and consider the client's perspective. Since enterprise IT is generally focused on solving actual customer challenges, each software feature is only relevant to this report if it solves a specific and important business problem.

To remain entirely objective, EMA based this Radar Report on a comprehensive survey with over 600 data points that can, for the most part, be measured unambiguously. All vendor survey questions were founded on customer feedback and vendor responses; they were thoroughly verified by a sequence of product demonstrations and end-customer interviews.

EMA acknowledges that in WLA, as well as in most other arenas of enterprise IT, there is no one best solution for every customer. Therefore, EMA evaluated each product along five dimensions:

- Functionality
- Architecture & Integration
- Deployment & Administration
- Cost
- Vendor Strength

Based on these five dimensions, a potential client might select a solution that is only rated as "average" in terms of functionality, but is easily deployed, requires minimal maintenance, and costs significantly less than some of the functionality leaders. Others may focus on key features and look for a product that balances advanced capabilities with cost and administrative effort.

EMA's guidance along these five dimensions will enable potential clients to determine which solutions warrant a closer look. This determination can mean narrowing down the field to only three vendors, or it may cause an organization to include lower cost alternatives into its RFP process. This report will have achieved its purpose if EMA has provided potential WLA customers with the background knowledge and guidance necessary to confidently make this preselection decision.

Research for the Q4 2019 WLA Radar Report took place starting in Q2 2019. For details on the requirements used to evaluate the participating vendors, and details on the changes to the measurement criteria from the 2017 report, please refer to Appendix A.

Evaluation Criteria

Each product feature was required to fulfill the following three criteria in order to be credited with a specific element or capability.

- **General availability**: The features needed to be generally available in the solution set at the time of the evaluation. Features that were in beta testing or were scheduled to be included in later releases of the management suite were not eligible for consideration. The cutoff date was July 31, 2019.
- **Included in cost**: All features in the evaluation also had to be priced into the total product cost. In order to evaluate the total cost for each product, EMA provided each vendor with four hypothetical customer scenarios to evaluate comparable list pricing.
- **Documentation**: All reported features had to be clearly documented for verification in publicly-available resources, such as user manuals or technical papers.

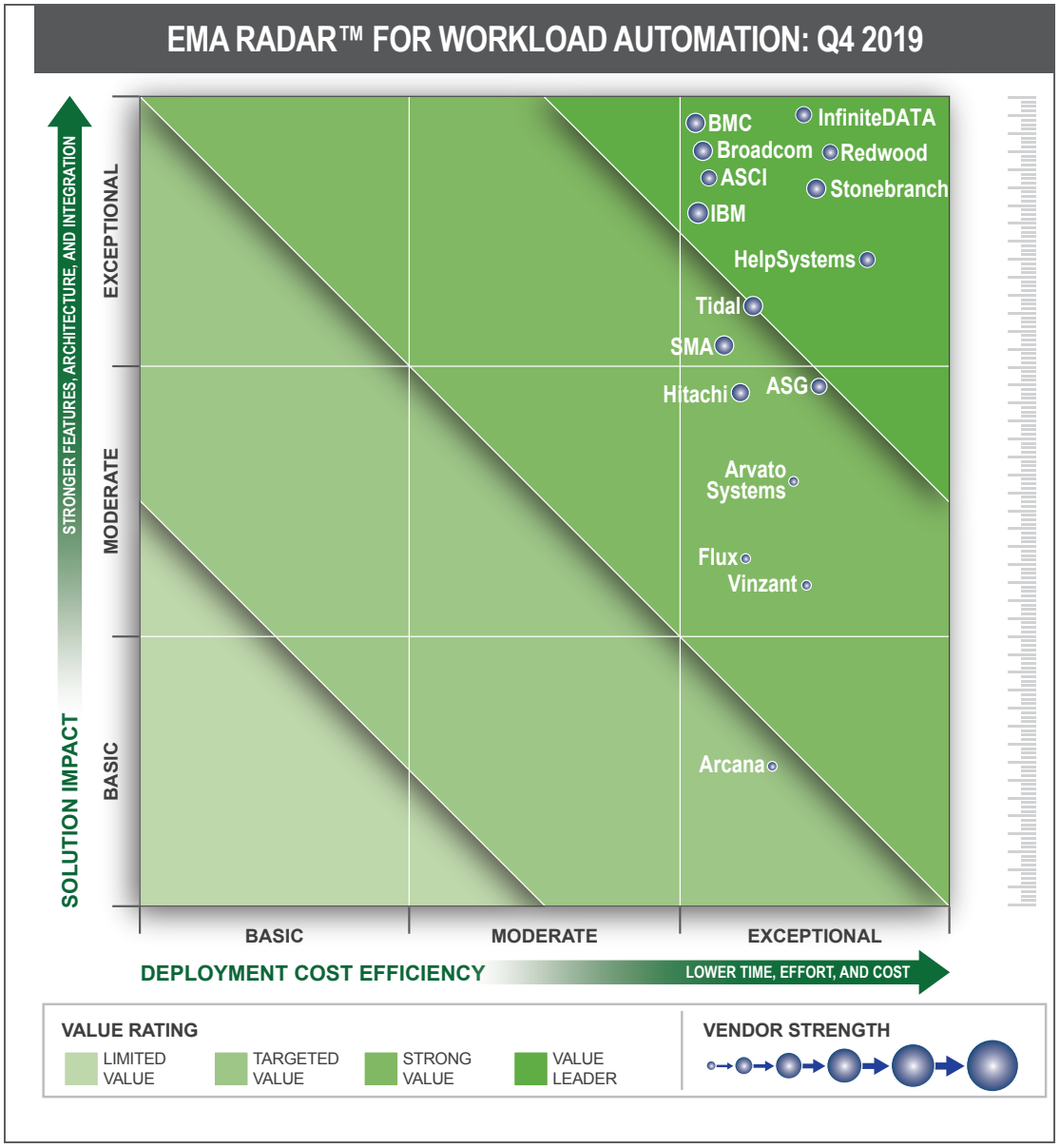
EMA WORKLOAD AUTOMATION RADAR RESULTS

The total product value is defined by comparing the overall product strength of each WLA solution (y-axis) with its cost efficiency (x-axis). Product Strength combines evaluation scores for Functionality and Architecture & Integration. Cost Efficiency is calculated from the scores achieved from the Cost Advantage and Deployment & Administration categories. The size of each vendor's bubble indicates the vendor's strength as identified in its individual review.

Key Changes Compared to the 2017 WLA Radar Report

Comparing the 2019 chart with the previous graph compiled in 2017, EMA makes the following observations:

- EMA included three additional vendors: Redwood Software with their RunMyJobs product; Hitachi, Ltd. with their JP1 product; and ASG with their Zeke and Zena products. ASG was previously covered in the 2010 and 2012 EMA WLA Radar Reports.
- Broadcom acquired CA Technologies, and CA Automic Workload Automation is the only Broadcom/CA product evaluated in this report.
- HelpSystems acquired MVP Systems in November 2018, and MVP JAMs is evaluated in conjunction with the current HelpSystems products.
- InfiniteDATA is now a Value Leader.



Value Leaders

ASCI: ASCI ActiveBatch is once again a Value Leader. The product's Integrated Jobs Library offers hundreds of prebuilt job steps, and the Service Library extends this power with strong API accessibility. ActiveBatch recently introduced a new REST API, added performance improvements for Microsoft SQL Server and Service Broker, and enhanced the FTP Event Trigger. New security features include multifactor authentication for the ActiveBatch Console, Web Console, Self-Service Portal and Mobile Operations (mobile application), and an out-of-the-box integration with CyberArk that allows workflows to dynamically retrieve credentials at runtime, simplifying credential management for workflows. To EMA, the standout feature is still the automated provisioning and deprovisioning of virtual and cloud-based resources, based on historical and predictive analytics. This was augmented with Heuristic Queue Allocation to add machine learning to enhance the performance of machine resources. ActiveBatch V12 also includes dynamic, user-defined queue characteristics, which can allow developers to configure workflows to monitor Queue Characteristics at runtime and select the Execution Queue best suited for the job. ASCI has also stepped up their services with ActiveBatch Academy, an online training portal, and a user certification program. ActiveBatch is a great choice to manage a diverse IT landscape across workload automation, business process automation, IT process automation, file movements, and big data.

BMC: BMC's Control-M is once again a Value Leader and the overall highest-scoring product in this year's WLA Radar Report. Control-M simplifies application workflow orchestration, making it easy to define, schedule, manage, and monitor application workflows. Since the 2017 EMA Radar Report, BMC has continued to improve an already strong product. The most significant change is near-zero downtime with in-place upgrades, and with the new annual release cycle for Control-M, BMC is making it easier for users to plan and upgrade to take advantage of powerful new features. BMC added support for cloud authentication and new native integrations with both AWS (Lamda, StepFunctions, Queues, and S3) and Azure (Function, LogicApps, Queues, and HDInsight). Jobs-as-Code was also expanded with new configuration, authorization, and deployment tasks, support for embedded scripts through JSON, and dynamic provisioning of Control-M in the cloud and with containers. BMC also added Automation API support for AI job types, and many other enhancements. Control-M is an outstanding choice for organizations that intend to give WLA its rightful place as a data center and development discipline with significant business impact.

CA Technologies: CA Technologies, a Broadcom company with the product Automic Automation, is once again a Value Leader. Broadcom acquired CA Technologies in November 2018, coming close on the back of CA's acquisition of Automic in 2017. Automic Automation remains the strategic WLA product for Broadcom. While all CA and Automic products continue to be supported, Automic Automation v12.3 is the only Broadcom WLA product reviewed in this report. Automic Automation provides automation for complex workloads across platforms, ERP systems, and business apps from mainframe to microservices and serverless in both cloud and on-premises. Automic Automation provides self-service automation with service catalog integrations (e.g., ServiceNow) and automation-as-code facilities for automation and orchestration. The product also simplifies automation for big data and offers self-services for data scientists to scale with strong governance on data flows. The Automation team has remained focused in the wake of several acquisitions. They have modernized the UI of several existing CA products and integrated them successfully into the Automic platform to leverage broader IT systems integrations and enable use of other automation modules, including continuous delivery and AIOps.

HelpSystems: HelpSystems is once again a Value Leader in this year's WLA Radar Report. HelpSystems acquired MVP Systems Software, and their JAMS WLA product in November 2018. MVP was also a Value Leader in the 2017 EMA WLA Radar Report. HelpSystems offers three secure, centralized enterprise workload automation solutions to run, manage, and monitor critical batch processes. This suite of mature solutions supports jobs and workflows on

all major platforms and applications, and can be integrated with or embedded on Windows, Linux, and IBM i. HelpSystems' solutions unify job scheduling and workload automation across the entire IT infrastructure. Batch processes that typically consume a costly mix of resources to run across separate environments can be managed from a single command center. Centralized job management minimizes operational costs associated with keeping critical batch processes running efficiently. The cross-platform capabilities of HelpSystems Workload Automation solutions enable organizations to extract maximum value from IT investments by creating business-focused workflows that span multiple platforms and applications, both on-premises and in the cloud.

InfiniteDATA: InfiniteDATA's AutomateNOW! workload automation suite is an enterprise workload scheduling and automation system with a focus on data processing and information delivery. This is the third-generation product from InfiniteDATA and brings an already modern architecture to a full microservices deployment model. It includes a fully web-based interface, a simple One-Click-Away navigation concept, and a single license for all features including Managed File Transfer, SLA monitoring, and 150 out-of-the-box integrations. Advanced features include contextual intelligence, reusable components, and dynamic workflows to create fewer, more powerful job definitions. InfinteDATA continues to impress with their clean architectural design and development speed. InfiniteDATA has a big and broad vision for enterprise automation and is driving hard to deliver that vision to enterprises. InfiniteDATA significantly matured their offering since the 2017 WLA Radar Report and moved significantly higher on the Radar chart as a Value Leader.

IBM: IBM Workload Automation (IWA) (formerly IBM Tivoli Workload Scheduler) is once again a Value Leader. Since the 2017 EMA Radar Report, IBM has continued to enhance the product. Three big gains in the 9.5 release earlier in 2019 include container-based deployment and containerized workloads, smarter workload organization, and improved dashboards. These enhancements are exactly the right priorities and are in complete alignment with EMA user research. The container enhancements dramatically reduce installation time by deploying IWA on Docker containers with easy upgrade and downgrade, and reduce the required software stack. Applications can be managed with IWA agents from the same or separate containers using APIs or the Kubernetes command line. New Workload Folders improve the organization of jobs and job streams while enabling more granular and improved security at the line of business level. The new Live Dashboard makes real-time, data-driven decision-making easier for business users, and includes machine learning algorithms for predictive estimation of job duration. WA includes built-in widgets for monitoring and support for external data sources via REST API. Clearly, the relationship with HCL continues to produce results for IWA users.

Redwood: Redwood Software makes their debut in the 2019 EMA WLA Radar Report as a Value Leader. Redwood's RunMyJobs (RMJ) solution was built to be offered as software as a service (SaaS), but is also available for on-premises installation. EMA believes RMJ to be the best WLA SaaS offering available because it is the only one purpose-built for that delivery model. It features a simple interface and an extremely flexible operational model that enables IT and business stakeholders to share a single point of visibility and control. With SaaS delivery, updates are automatic and remote administration is secure. Minimal effort is required to expand the size and scope of process automation. The RunMyJobs solution features an extremely flexible pricing model that includes all available functionality and unlimited connectors and control within a fixed platform fee. This approach gives administrators the freedom to add and remove connections or install platform agents on as many operating systems as they need, without worrying about licensing implications. RMJ is a highly featured workload automation solution for both traditional and containerized workloads.

Stonebranch: Stonebranch is once again a Value Leader. Stonebranch's workload automation suite is called the Universal Automation Center (UAC). This workload automation platform is comprised of the Universal Controller (UC), Universal Agent (UA), Universal Data Mover (UDM), and Universal Data Mover Gateway (UDMG). Stonebranch's software is simple, modern, and secure. Using its universal workload automation software, enterprises can seamlessly orchestrate workloads and data across technology stacks and ecosystems. Stonebranch delivers an entirely web-based application for managing and monitoring workloads and processes in real-time based on events within the modern enterprise. Their workload automation engine is available either as a service (WLAaaS) or on-premises. Stonebranch's agent technology is known in the industry as the only vendor-agnostic technology, due to its ability to work with any other scheduling engine on the market. In addition to being universal, these agents run on any platform or application, on a mainframe, distributed, or cloud environment. The agent also includes native managed file transfer functionality.

Strong **Value**

Arvato Systems: Arvato Systems' streamworks is once again Strong Value. The streamworks platform is based on more than 30 years of data center operations experience wrapped up in a very modern architecture. streamworks stands out for being developed and operated by a data center services company. They were using it before they were selling it to others. All the support personnel actually work on the product in operations roles. streamworks bridges the gaps in the new bimodal, hybrid IT environments by offering generic interfaces via REST and message queues and workload analytics, and by supporting continuous delivery processes. While it is the second-youngest WLA product covered in this report, the focus on modern architecture, team experience, and best practices make it an up-and-coming product in this space. All the foundational pieces are here. EMA is excited to see Arvato Systems continue to mature the product with more big data integrations, increased DevOps support, what-if analytics, and IT service management systems. EMA expects Arvato Systems to expand their sales channels and geographic coverage, since the product is certainly ready for prime time.

ASG: EMA is excited to have ASG Zeke and Zena return to the EMA Radar Report as Strong Value. ASG delivers multiplatform workload automation with ASG-Zeke for the mainframe and ASG-Zena for cross-platform automation. ASG-Zena provides cross-system application development and delivery automation for defining and managing a large number of computing tasks, or a more comprehensive collection of numerous tasks grouped together as a process. It offers a wide range of technology integration services—from basic to advanced and from cloud to mainframe—required to define, govern, and preserve workload value chains, including for agile and DevOps. ASG-Zena is a robust, enterprise-wide workload management solution for multiple OS environments that supports event-based scheduling as well as traditional time and date-based scheduling methodologies. It provides non-invasive integration with legacy mainframe applications, ERPs, and newer, message-aware environments.

Flux: Flux offers a lightweight, fully Java-based cross-platform workload automation solution that focuses on managed file transfer. Flux does not directly compete with traditional workload automation vendors, but should be seen as a unique tool for advanced managed file transfer that includes considerable workload automation capabilities. Flux provides an easy-to-deploy and easy-to-use central console with an intuitive workflow designer and script-free automation. Developers are provided with rich, customizable features and a lightweight footprint that can be embedded in business applications. Flux provides complete orchestration of managed file transfers within the solution. With visibility and tracking throughout the process, Flux reduces errors with drag-and-drop visual workflows and offers responsive, built-in automatic error handling mechanisms to orchestrate flows in a secure manner to improve compliance and security. Flux was founded in 2000 in Las Vegas, Nevada. Flux clients praise the company's customer service and the simplicity of the product.

Hitachi, Ltd.: Hitachi Job Management Partner 1 (JP1) makes its debut in the EMA 2019 WLA Radar Report as Strong Value. JP1 products provide intelligent monitoring, intelligent automation, and intelligent governance to meet IT operations management needs. First created in 1994, JP1 helps optimize IT operations for organizations of all sizes, with the goal of removing reliance on human operators. JP1 allows organizations to centralize, integrate, and control IT operations and utilize machine learning (AI) to create IT systems that operate with greater automation. Hitachi guarantees a minimum of ten years of support for each product version with backward compatibility for three prior generations. Certified JP1 support personnel are available to help build systems based on requirements and can respond to any inquiries concerning JP1 systems. Sales and support teams are present not only in Japan, but also in other parts of Asia, in North America, and in Europe.

SMA Software: SMA Technologies' OpCon is a cross-platform, event-driven workload automation and digital automation platform. OpCon contains automation modules, including OpCon Deploy for change management and DevOps support, OpCon Vision for a high-level overview dashboard with SLA monitoring and automated corrective actions, and OpCon Self-Service so non-IT end users can see a simplified view of workloads important to them and monitor and trigger automated processes. OpCon includes lifecycle management, disaster recovery, and high-availability features. OpCon supports all major operating systems, as well as virtualized and cloud environments. Integrated file transfer support and file parsing allows files to be searched with specified information stored in variables. File information can be totaled, compared among files, and used for downstream processing. OpCon's graphical workflow designer allows all workflow properties to be set from a single point.

Tidal: Tidal AutomationTM (formerly Cisco Workload Automation) is an enterprise workload automation platform for automating and orchestrating cross-application, cross-platform workloads with centralized command and control. Tidal's library of enterprise integrations offers ready-to-run adapters and agents extending and expanding the reach and value of the Tidal platform. Comprehensive APIs allow Tidal to be embedded directly into processes and the command line interface supports scriptable integration. Tidal Automation enables both calendar-driven and event-driven automation, with a common user interface look and feel across the system that makes the tool easy to learn. The Tidal team has a broad vision of automation in support of IT operations and business processes. This vision is already being realized with Version 6.5.1, the version launched in June 2019 and evaluated for this report. The latest release includes improvement in usability, performance, scalability, and resilience. This release is available to Tidal's large customer community at no cost. Tidal Automation is a Strong Value product, delivering significant product improvements since the 2017 WLA Radar. The company has accelerated development to deliver on its ambitious roadmap, while maintaining a strong focus on customer service and support.

Vinzant Software: Vinzant's Global ECS provides graphical scheduling, automation, and control of complex job streams for multiple platforms in a heterogeneous, distributed production environment. It supports native agents for a wide range of distributed systems that can be managed from a single point, using either a Windows- or browser-based client. Global ECS includes user-definable recovery actions that enable built-in job logic to allow the production flow to self-correct. It also includes flexible exception management that allows for multiple methods of notification. Global ECS offers a simple deployment, with intuitive clients and a rich self-service capability via the web client. Users enjoy real-time interaction and management of live production queues, along with highly customizable real-time job and batch views. EMA encourages those who do not need the high-end features of more expensive and complex products to try the 45-day, full-featured, downloadable trial license. Vinzant Software was founded in 1987 in Hobart, Indiana, and is privately held.

Targeted Value

Arcana: adTempus is a job scheduling and process automation tool for Windows platforms. It is rated as Targeted Value because it is an affordable scheduling solution for limited-scale Windows deployments. Arcana's adTempus is easy to install, configure, and use without the need for training. adTempus can run any program, script, or batch file, and also has native support for tasks such as file transfer, email processing, and database operations. Its robust .NET API and command-line utility make it easy for the IT department to access scheduling features programmatically via PowerShell, VB.NET, C#, or Basic. Load-balancing, failsafe agents, and basic high-availability features are included and adequate for this type of solution. Founded in 1996 in Fairfax, Virginia, Arcana Development launched adTempus in 2003 as the successor of the Arcana Scheduler. Since adTempus scores very high in EMA's Cost Advantage category, EMA recommends taking a closer look at this solution if users need a quick way to reliably automate basic Windows-based workloads.

Advanced Systems Concepts, Inc.: Most Automated Management of WLA Administration

Advanced Systems Concepts, Inc. has the highest score in both Console Ease of Use and Automation of Management. This is a powerful combination. ActiveBatch includes a wide array of wizards on the console for creating jobs, job streams, dependencies, resource calendars, agent deployment, and more, including defining auto-remediation sequences. It is easy to define the workloads to be managed in ActiveBatch and to automate many resolution activities, including managing active jobs, schedules, server nodes, trigger events, user notifications, and more. There are also dynamic management capabilities for resources, priorities, and security. Fault-tolerant agents prevent problems from temporary loss of network connectivity or server availability. Automatic high availability of the central processing engine and administration panel are possible without third-party software. Users can also manually failover the central processing engine and administration panel. Alerts are also managed to prevent alert storms. Past history advises optimal dynamic alert thresholds, duplicate alerts are suppressed, and correlated alerts are aggregated. Alerts can be prioritized and there is a capability to predict future alerts. All of these features combine to make the job of defining and managing workloads easier, requiring fewer human resources to set up and stay on top of the problems that can arise in managing a WLA environment.

ASG: First to Orchestrate a Companion RPA Product

The ASG team has steadily improved the Zena product even as the company ownership changed. Now owned by a private equity firm, and with new senior management working together with long-term key development, product, and marketing staff, ASG is driving their product toward the future. ASG fully embraces digital transformation and is adding features that allow the orchestration of a much broader set of automation tasks, tools, and functions. ASG created their own Robotic Process Automation product that is fully integrated with Zena to orchestrate the automation end to end. While two other WLA products have companion process automation tools that can do some Robotic Process Automation (RPA)-like functions, ASG is the first to create a full RPA companion product designed to be orchestrated by their WLA product. They stepped up R&D in both the existing WLA product and the new RPA product, reflecting increased investment by ASG. Their product roadmap reveals a broad enterprise automation orchestration focus that aligns with EMA research and will bring more interesting capabilities in the near future.

Hitachi: Most Installed WLA Product

Hitachi's JP1 is installed with over 20,000 customers, making it the most installed WLA product. Hitachi JP1 is very popular in Japan and the broader Asian market. JP1 has a long history of delivering effective operations and workload management automation, and is well-liked by customers. Its wide use is evidence of the value customers receive. EMA believes that part of the reason Hitachi has attracted and retained so many customers is their guarantee of a minimum of ten years of support for each product version, with backward compatibility for three prior generations. This purposeful stability allows organizations to rationally plan for upgrades and confidently build integrations with a known lifecycle. In combination with Certified JP1 support personnel to help build systems based on requirements, customers can make investments in a product and a company they can count on for an extended timeframe.

Redwood Software: Best SaaS WLA Solution

Redwood's RunMyJobs® workload automation (WLA) was purpose-built to be software as a service (SasS). Redwood's SaaS delivery model takes advantage of public cloud. The consumption-based pricing allows customers to transition by following a systematic, cost-effective, planned, and phased migration process. Organizations are spared the need to add hardware to run two systems in parallel. Redwood's Migration Factory brings best practices and experienced professional services to help make the transition happen quickly and with the least disruption. Redwood has used their own automation software to automate the SaaS operations and keep costs low. RunMyJobs is also available for on-premises use. Redwood uses the same consumption-based pricing whether used on-premises or as SaaS. The SaaS deployment has an unusually low acquisition cost, with no additional infrastructure or management required. There are no costs for operating system maintenance, database maintenance, or downtime from upgrades, fixes, and patches. Since it's built from the ground up for the cloud, it's easy to use RunMyJobs to integrate applications seamlessly into next-generation operating models while covering transitional needs today. It connects directly with analytics tools and platforms, such as ServiceNow, to reduce the total cost of management.

Tidal: Greatest Customer Impact

Since acquiring the product from Cisco in November 2017, Tidal Software has made important strides in focusing on customer partnerships and improving customer ROI for the Tidal Automation™ platform. Its Tidal CustomerFIRST™ program spans three initiatives designed to increase the strategic value and impact of the Tidal platform. The first initiative is hands-on collaboration with customers through 1:1 sessions, user groups, surveys, and frequent webinars. The second initiative is expansion of technical support offerings. In addition to 24x7 direct access to support specialists, there are executive consultations, strategy reviews, dedicated account teams, and priority escalation. This expanded portfolio is one of the outcomes of the company's in-depth "Voice of the Customer" survey conducted with hundreds of customers. The third initiative consists of ongoing improvements to core product capabilities available to customers without a cost increase. Tidal released six service packs over the past two years, including Tidal Automation 6.5.1, with a significant architectural uplift. This positions customers for expanded use of Tidal in their organizations through quantifiable improvements to performance, scalability, and resilience. The Tidal Software team made a significant impact in the two years the product has been under new management. They quickly assessed the situation, gathered the voice of the customer, improved support and relationship management, and decisively executed against an expanded product roadmap. The results of these actions came out loud and clear in customer interviews and significantly improved Tidal's placement in the EMA WLA Radar.

WLA ENRICHMENT PRODUCTS

EMA follows a number of products that add significant and important capabilities to the management of workloads, but that are not schedulers or full workload automation tools. They are, however, important enough to this market to be covered in this report, but are not scored and included on the Radar chart. These products are included as WLA enrichment products. Two are add-on analytics tools and one is an agent network that enhances mainframe-based schedulers. A third analytics software, SMA Ascern, was included in this section in the 2017 report, but has since been discontinued.

Terma Software

Terma Software provides an AIOps platform for workload intelligence, including the ability to leverage workload data to provide measurable predictive analytics. Workload automation analytics can be collected from one or more workload automation or job schedulers, including AutoSys, Tidal, CA7, and IBM Workload Automation. The Terma suite of workload analytics offerings includes five products. The TermaANALYTICS™ workload data repository and prediction engine accesses and stores the critical historical workload data from multiple vendors' job schedulers. TermaUNIFY™ (formerly JAWS™) provides Workload Automation Analytics, unifying jobs into Jobstreams™ and allowing for service-level assurance, critical path management, and enterprise-wide visibility into business-critical applications. It can discover anomalies, optimize schedules, and predict in real time, on a minute-to-minute basis, complex, interconnected processes. Using data from the TermaANALYTICS platform, TermaINSIGHT™ provides advanced analytics and reporting to create and deliver information about the workload environment in the form of rich graphics and other analytical tools. Self-service reports can be delivered on a scheduled or ad hoc basis to desktop or mobile devices. TermaVISION™ provides visibility into the workload environments through an easy-to-install, web-based interface. For planning and what-if analytics, Terma provides a Simulation and Modeling Solution. While many workload automation products have some native analytics capabilities, Terma can add a whole new level of insight. Terma excels at providing a single, rational view for those with cross-vendor and cross-platform scheduling environments. The products are available on-premises or as software as a service (SaaS). Terma was founded in 2003 and has offices in Boulder, CO and New York, NY.

Digitate

Digitate's AI/ML-based cognitive product, ignio, is the core of three products currently: ignio for AIOps, ignio AI.WorkloadManagement, and ignio for Airdrops. ignio AI.WorkloadManagement (formerly ignio for Batch) is a workload management analytics tool that combines machine learning and automation to allow proactive management of batch processing. ignio workload management establishes a comprehensive view across job schedulers and the underlying infrastructure while streamlining batch processing, calculating "'what-if"' and "if-what" impacts, and reducing latency for high-performance IT. ignio can reduce the time required to plan and make changes with impact analysis in minutes, and provides differentiators in three key dimensions: Learn, Resolve, Prevent. Learn constructs a comprehensive blueprint that provides a single source of truth connecting multiple schedulers, applications, and infrastructure layers. It establishes cross-silo support and deep visibility by using machine learning techniques to self-learn normal behavior. Resolve provides a proactive command center for operations as well as intelligent alerts management. Prevent enables proactive planning and improvements by using analytics coupled with domain knowledge to produce prescriptive recommendations with evidence and business cases. ignio learns the batch context by automatically connecting across multiple schedulers. It predicts future batch outcomes and can diagnose and prescribe actions to resolve problems. Planning for growth and change is assisted using the what-if analysis engine. ignio workload management supports BMC-Control M, CA Autosys, CA Automic $ Universe, SMA OpCon, and Tivoli Workload Scheduler. Digitate is a Tata Consultancy Services (TCS) venture founded in 2015 with offices in Santa Clara, CA and Pune, Maharashtra, India.

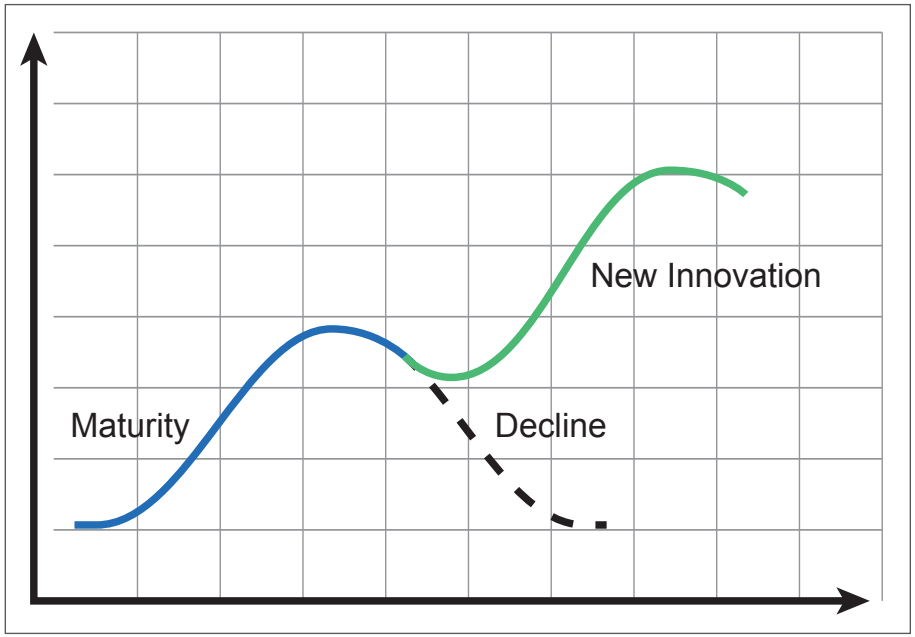
Beta Systems Beta 92 EJM

Beta 92 Enterprise Job Manager (EJM) Discovery provides a data center with z/OS distributed job management via a wide, independent agent network for distributed servers with central mainframe scheduler control. Beta 92 can work with most mainframe schedulers, including IBM Workload Scheduler (IBM/z), CA7, BMC Control-M, and others. The _beta job|z agent network allows the workload to be distributed among decentral servers while controlling it centrally via the mainframe and z/OS scheduler, allowing a simple connection to a large range of applications operated under Unix, Linux, and Windows. The locally installed _beta job|z agent communicates synchronously or asynchronously with the z/OS _beta job|z agent network to run jobs, and communication is encrypted for secure data transfer. This combination allows the entire IT environment to benefit from the reliability of the mainframe applications. All functions can be triggered via a modern HTML5 Web Front End, which includes analytics functionality. The Discovery agent network delivers a powerful command set custom designed for direct automation of SAP® systems. The Discovery agent network receives jobs via JES or the z/OS scheduler, and forwards the tasks to the Discovery agent. This asynchronous communication greatly reduces the mainframe load. Privately-held Beta Systems AG creates enterprise management software for both data center intelligence (DCI) and identity access management (IAM). Beta 92 EJM is one of a number of workload automation tools that are part of the DCI product portfolio.

FUTURE OUTLOOK

The workload automation market is a 40-year-old market that, in some ways, is behaving like a much younger market. The consolidation of vendors and the saturation in enterprise accounts using these products (71%) are characteristics of the mature market that it is. However, the recent innovation and increasing competition are characteristics of a much younger market. Many of the leading vendors are experimenting with describing their software not as workload automation, but as workflow automation, automation orchestration, and other names that reflect the expansion of workload automation into broader areas of IT process automation and business process automation.

The workload automation market is at a mature point in its lifecycle, but the new innovations to expand the types of IT and business processes to be automated and controlled reflect the beginning of a new, revitalized lifecycle. This is an extension of the lifecycle for some products as new capabilities are added to expand the use of the product. However, for some products, it will be a revitalization of the market and a whole new lifecycle. The difference will be whether the architecture is radically updated or entirely new products are created. Several products have already seen entirely new generations of the product created with entirely new architectures, code bases, and capabilities. It will be important to understand the extent to which a product has been extended or recreated, but there will be many new uses for these products in the near future.

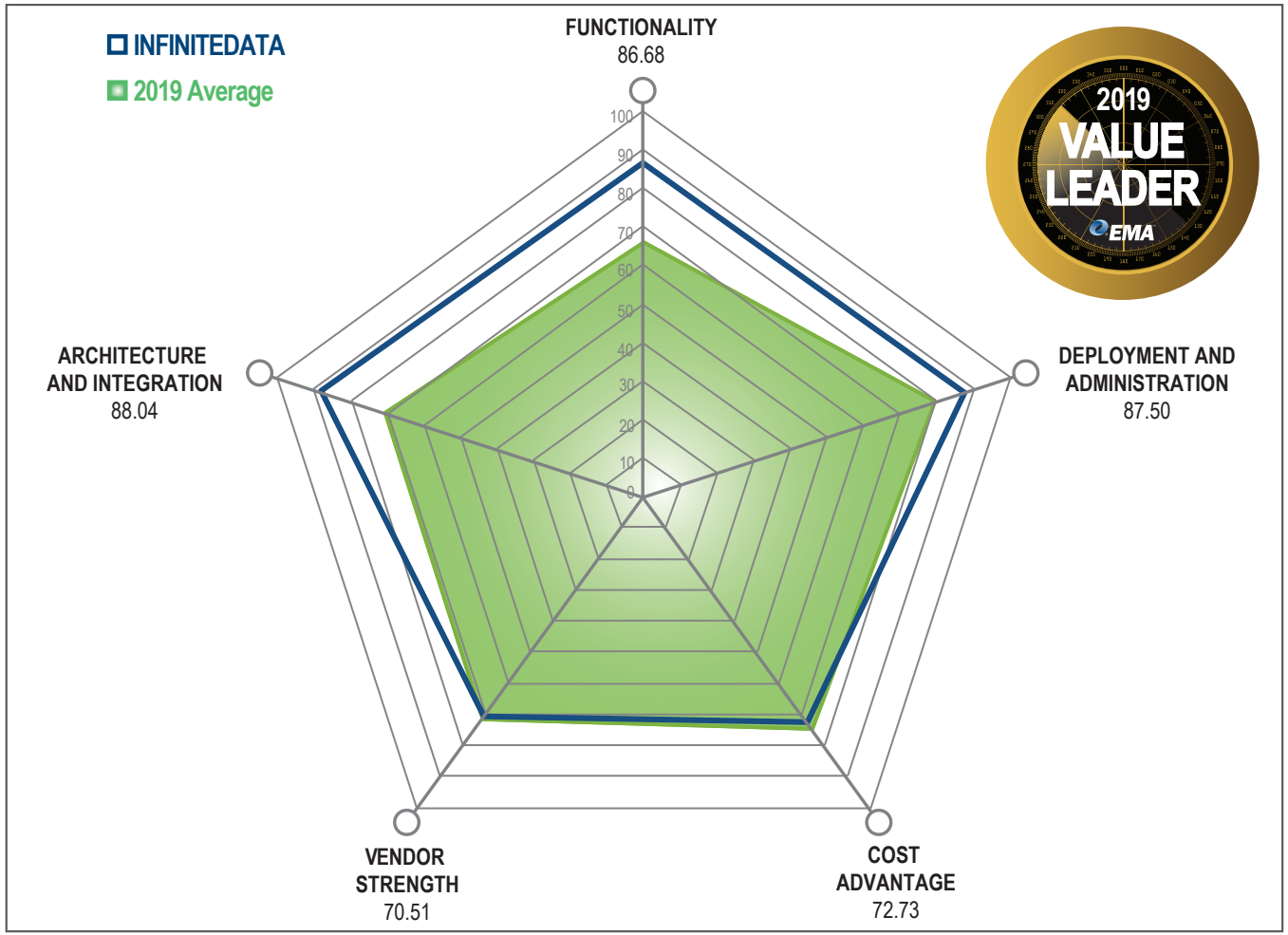


FUTURE OUTLOOK

Even as new generations of products are created, support for mainframes must be continued and even brought more into the core of the next-generation products. Mainframes have been predicted to become less and less important and many would have thought they would be mostly phased out by 2020. Rather, mainframes continue to be a high-throughput, high-reliability means of processing. Support for mainframe workload automation varies across the products in this market. Some older products were created first for the mainframe and have been modernized and refreshed. Some vendors continue to rely on a separate mainframe tool from their distributed tool. There are some that have integrated the capability to do both distributed and mainframe systems from their product. EMA finds that the importance of workload automation on mainframes remains, and may even be increasing slightly. This trend is expected to continue.

IT may finally be moving toward more autonomic, self-correcting, self-healing systems. This is a concept that has been discussed and strived toward for some time, but there are signs that some of these capabilities are starting to become a reality. The shifting role and capabilities of workload automation tools is broadening the processes that these tools can automate. Workload automation is morphing into much broader enterprise automation orchestration, and may eventually play a large role in bringing autonomic capabilities to IT management and business process orchestration.

OVERVIEW



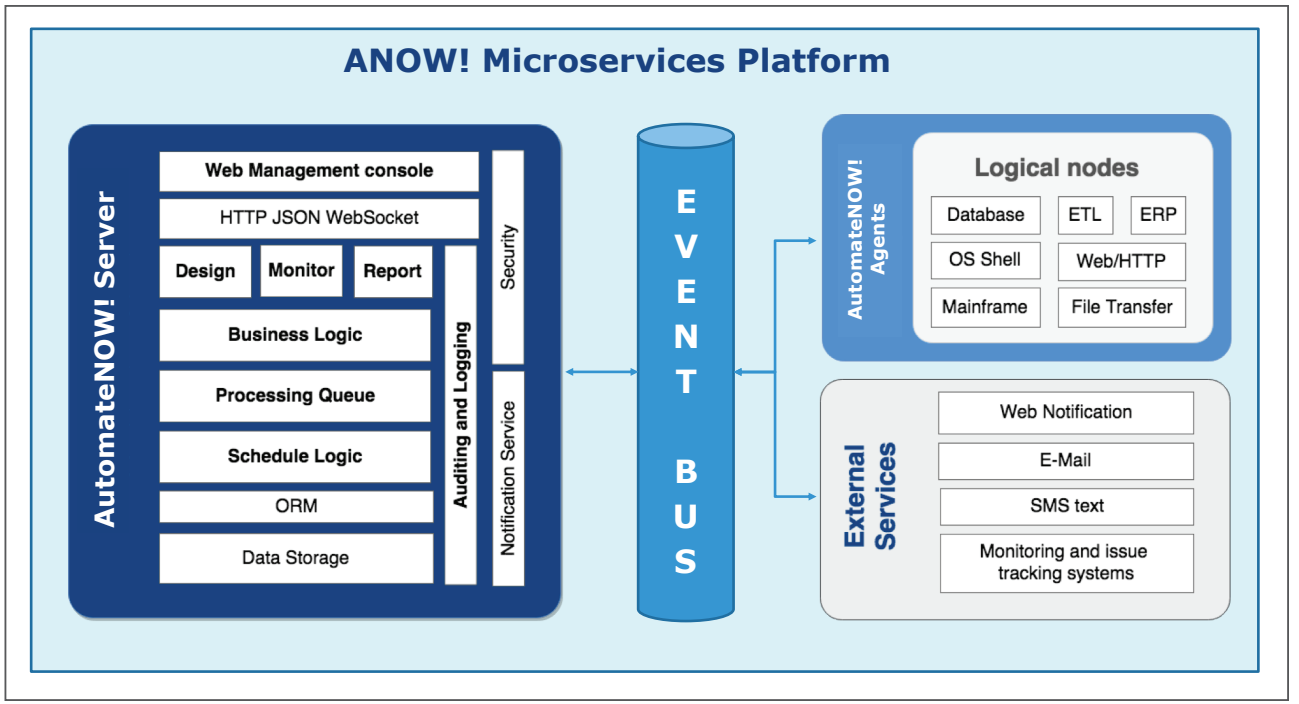
InfiniteDATA's AutomateNOW! workload automation suite is an enterprise workload scheduling and automation system with a focus on data processing and information delivery. This is the third-generation product from InfiniteDATA and brings an already modern architecture to a full microservices deployment model. It includes a fully web-based interface, a simple One-Click-Away navigation concept, and a single license for all features including Managed File Transfer, SLA monitoring, and 150 out-of-the-box integrations. Advanced features include contextual intelligence, reusable components, and dynamic workflows to create fewer, more powerful job definitions. InfiniteDATA continues to impress with their clean architectural design and development speed. InfiniteDATA has a big and broad vision for enterprise automation and is driving hard to deliver that vision to enterprises. InfiniteDATA significantly matured their offering since the 2017 WLA Radar Report and moved significantly higher on the Radar chart as a Value Leader.

InfiniteDATA was founded in 2010 in Warsaw, Poland by a team of data warehousing and business intelligence professionals from the global data warehousing practices of HP, Teradata, Oracle, Accenture, and BMC. InfiniteDATA ScheduleIN workload automation was first released in 2012 and

initially targeted improving the workload scheduling of big data activities. In 2018, the third-generation product was released as AutomateNOW!

ARCHITECTURE

InfiniteDATA's AutomateNOW! remains the youngest product in the WLA market and has one of the most modern architecture designs rooted in microservices. It consists of a fully functional server, sets of processing nodes (agents) of different types, and connectors to SMS gates or ITSM channels. The product scores extremely well on the Architecture part of Architecture & Integration, and now includes integrations that were lacking in the 2017 analysis including CMDB, ITPA, Cloud, and Capacity Management integration. Areas like Dev/Ops and Jobs-as-Code APIs were also improved as the third-generation product has matured significantly since 2017.



InfiniteDATA AutomateNOW! Architecture

KEY FEATURES SUMMARY

Easy Deployment
InfiniteDATA's AutomateNOW! does not require client software for installation. A browser-based interface is all that is required. The user interface is intuitive and includes AtGlance and OneClickAway features to allow users a quick start. A one day workshop gets users up to speed quickly. The security model allows for advanced, dynamic management of user privileges.

Scalability with Microservices-Based Architecture
By utilizing microservices, both servers and agents are easy to deploy with dynamic scalability and high availability. Agents deploy with advanced resource management and self-healing capabilities. The application performance monitoring capabilities provide a new awareness of processes on both the server and agent levels.

Contextual Intelligence
AutomateNOW! includes an advanced approach to leveraging variables that can be inherited and passed throughout workflows and can dynamically determine processing paths and automated operator actions.

Sensors and Monitors
Sensors and monitors are able to sense data from different parts of an organization's ecosystem. Sensors and monitors can be logically combined into decision trees and can include deduction algorithms to measure and report on SLA measures and take automated operator actions.

Out-of-the-Box and User-Defined Integrations
Over 150 out-of-the-box integrations are included with AutomateNOW! including integrations with ERP, ETL, databases, cloud, messaging queues, big data, RPA, and social media. Additionally, AutomateNOW! also incorporates functionality that lets users build their own integrations and task types.

Reusable Components and Dynamic Workflows
Tasks, workflows, nodes, and resource definitions are reusable, and combined with contextual abilities act as needed in the context of a given process. Workflows can be built on dynamically acquired values creating the possibility for hundreds of thousands of related processes out of a small number of definitions. As a result, users require fewer process and job definitions, lowering development costs and reducing change management efforts.

Analytics to Forecast Processing Times
Processing start and end times can be forecasted using advanced algorithms for any process in the system. Historical data collection, priorities, current system bandwidth, resource allocation and statistics are used to create forecasts and predict SLA impacts.

Gantt Charts and Critical Path Analysis and Notifications
Multi-level critical path analysis and Gantt charts reveal bottlenecks fairly quickly in the design phase or later in the stabilization process. This leads to meaningful execution timing optimizations. The critical path can be tracked for change events on any level, and a catalog of automatic actions can be performed depending on the change event.

Advanced Self-Service Capability
Administrators can create templates for predefined services that allow non-IT users to easily automate their own tasks. This offloads work for operators and administrators, and provides flexibility and visibility to business users.

Automated Migration from BMC Control-M
AutomateNOW! includes automatic migration tools that allow conversions from BMC Control-M within hours for both open systems and z/OS.

EVALUATION SUMMARY

DEPLOYMENT & ADMINISTRATION

EASE OF DEPLOYMENT	
Deployment Time/Effort	Outstanding
Conversion Facilities	Strong
Job Discovery & Import	Strong
Staff Training	Outstanding
SUPPORT AND SERVICES	
Customer Support	Outstanding
Professional Services	Outstanding
EASE OF ADMINISTRATION	
Console Ease of Use	Outstanding
Upgrade Process	Outstanding
Test Environments	Outstanding
Automation of Management	Outstanding

ARCHITECTURE & INTEGRATION

ARCHITECTURE	
Business Focus	Outstanding
Scalability	Outstanding
Dynamic Workload Placement	Outstanding
Breadth of Platform Support (incl. agentless)	Outstanding
Breadth of Application & Database Support	Outstanding
Disaster Protection	Outstanding
Containerized Workloads	Outstanding
Container Deployment	Outstanding
INTEGRATION/INTEROPERABILITY	
Comprehensive API	Outstanding
Cloud Integration	Strong
CMDB Integration	Strong
ITPA Integration	Strong
Capacity Management Integration	Outstanding
MFT Integration	Outstanding
Big Data Integration	Outstanding
Social Media Integration	Strong
Heterogeneity Across Environments	Strong
Jobs-as-Code	Outstanding

EVALUATION SUMMARY

FUNCTIONALITY

FEATURES	
Automation Design Flexibility	Outstanding
End-to-End Monitoring	Outstanding
Compliance Management	Strong
Triggering	Outstanding
Self-Service Portal	Outstanding
Forecasting, Analytics & Reporting	Outstanding
Alerting	Strong
Security	Outstanding
What-If Scenarios	Solid
Conditional Logic & Auto Remediation	Outstanding
Logging/Auditability	Outstanding
Business User Features	Outstanding
Hadoop Support	Outstanding
RPA Orchestration	Strong
EASE OF USE	
Simplicity of GUI	Outstanding
SLA & Policy Awareness	Strong
Root Cause Analysis	Outstanding
Mobile Device Support	Outstanding
Language Support	Outstanding
Available Help Resources	Strong

COST ADVANTAGE

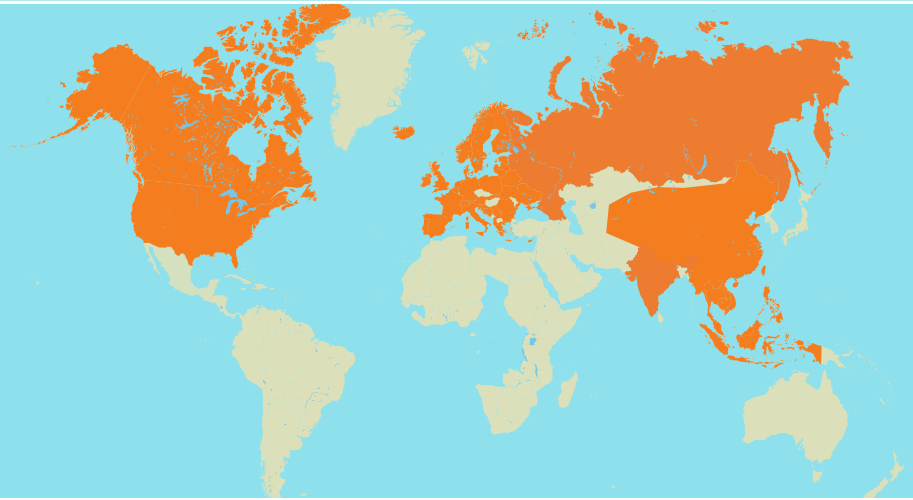
Flexibility of Licensing Model	Outstanding
Pricing Scenarios	$$
SaaS Availability	Outstanding

VENDOR STRENGTH

Vision	Outstanding
Strategy	Strong
Financial Strength	Strong
Research & Development	Outstanding
Partnerships/Channel	Strong
Market Credibility	Solid
Geographic Coverage	Strong

VENDOR PROFILE: INFINITEDATA

CUSTOMER LOCATIONS



NUMBER OF CUSTOMERS = 100 = 1000

Languages Available: English, French, German, Spanish, Italian, Polish, Russian, Chinese, Japanese, Korean, and Portuguese

FAVORITE FEATURES MENTIONED IN CUSTOMER INTERVIEWS

"We find the critical path analysis extremely useful."

"I like that the product is very visual. You can see what's happening and react very quickly."

"The simplicity of the product is very good. You can start in a few hours. No manual to read, just start using."

"What's super unique is the flexibility of InfiniteDATA as a vendor."

"The ease of implementation tops my list. Transitioning from BMC was very easy."

"We like using it to manage cloud costs. Turning on and off cloud VMs as needed saves us 45% on cloud computing expenses."

"The product is cheaper, better, and more flexible than what we were using."

Measurement Criteria

Research for the Q4 2019 WLA Radar Report took place starting in Q2 2019. Vendor input is included in the process of updating the measurement criteria. For the 2019 report, significant changes to the measurement criteria were made to both Architecture & Integration and Features to capture the significant changes in workload automation in support of application modernization and digital transformation trends.

EMA used the following requirements to evaluate the participating vendors. Please keep in mind that these categories were weighted differently, depending on their importance to a business-driven WLA solution. Highlights reflect new measurement criteria for 2019. In addition to new criteria, the weighting assigned to various criteria were adjusted as follows to reflect new trends in the marketplace and give less importance to criteria where there is less differentiation among vendors.

Model Weighting Changes and Additional Measures for 2019

1. Within Architecture: Raised the weight of Scalability and lowered the weight of Dynamic Workload Placement and Container Deployment. Added Containerized Workloads.
2. Within Integration/Interoperability: Lowered the weight of Managed File Transfer Integration. Added Big Data Integration and Social Media Integration.
3. Within Features: Lowered the weight of End-to-End Monitoring, Conditional Logic & Auto Remediation, and Big Data Support. Added Automation Design Flexibility, Business User Features, and RPA Orchestration.

APPENDIX A

ARCHITECTURE & INTEGRATION	
ARCHITECTURE	
Business Focus	Includes measures about dashboards, reports, triggers, service catalog integration, auto-discovery, SLA awareness, and others.
Scalability	Includes measures about number of endpoints, size of active deployments, hardware required for specific workloads, support for virtualized and cloud environments, maximum jobs for a single installation, load balancing, and others.
Dynamic Workload Placement	Includes measures about SLA-driven thresholds, business impact analysis, workload placement factors (e.g., utilization, performance, policies, compliance issues, etc.), cloud support, cost of workload placement, multiple endpoints, resource contention, and others.
Breadth of Platform Support (incl. agentless)	Operating systems supported.
Breadth of Application & Database Support	Common business applications and databases supported.
Disaster Protection	Includes measures about fault tolerance, high availability, failover, automated job rerun, manual job rerun, mid-job restart, auto remediation, alternate schedules, and others.
Containerized Workloads	Measures the ability to manage container-based workloads, Docker support, and in conjunction with Kubernetes, agents in application containers and applications in agent containers.
Container Deployment	Measures the ability to deploy the WLA product within a container and in conjunction with Kubernetes, as well as a container image for agents included out of the box.

APPENDIX A

ARCHITECTURE & INTEGRATION	
INTEGRATION/INTEROPERABILITY	
Comprehensive API	Includes measures about exposed scheduler elements for job stream objects, performance metrics, and supported API standards, such as JAVA RMI, SOAP, REST, etc.
Cloud Integration	Includes measures about dynamic placement in the cloud and specific public clouds supported.
CMDB Integration	Includes measures about CMDBs supported and extent of support.
ITPA Integration	Includes measures about built-in, companion, and third-party process automation features and products supported.
Capacity Management Integration	Includes measures about creating, reconfiguring, or decommissioning virtual machines, shifting workloads, supporting Docker containers, and ensuring performance based on SLAs.
MFT Integration	Includes measures about file transfer capabilities supported natively, integration with third-party file transfer products, and file transfer features supported, including triggers, protocols, data manipulation, etc.
Big Data Integration	Specific products and Hadoop ecosystem components integrated out of the box.
Social Media Integration	Specific social media platforms supported out of the box.
Heterogeneity Across Environments	Includes awareness of and interaction with other schedulers, integration with companion and third-party infrastructure monitoring tools, business application monitoring tools, alerting tools, and ITSM tools. Also involves discovering dependencies across different schedulers, between jobs and underlying infrastructure, and across business units.
Jobs-as-Code	Includes capabilities to define job scheduling and job definition artifacts in code-like notation, store them in software configuration management tools with the code, test with the code, promote from environment to environment with the code, include operational insight into execution status and progress, support SLAs, etc.

APPENDIX A

FUNCTIONALITY	
FEATURES	
Automation Design Flexibility	Includes measures about automation construct types for job/task, listeners/watchers, monitors/sensors, resources, events, folders and definition organization, logic, nesting, etc.
End-to-End Monitoring	Includes measures about dashboard views for job stream performance across all environments, real-time performance by business unit, historical performance, performance against SLAs, and overview (e.g., jobs on time, about to be late, late, and failed).
Compliance Management	Includes measures about templates for specific compliance standards (e.g., HIPAA, SOX, or PCI), custom compliance policies, real-time compliance monitoring, compliance-aware job placement, and standard compliance reporting.
Triggering	Includes measures about available triggers (e.g., calendar, events, dependencies, file actions, message queue, email events, applications, databases, SNMP traps, etc.), message queues supported, types of calendars supported, multiple conditions, conditional logic, and priorities.
Self-Service Portal	Includes measures about capabilities provided to business users, such as triggering; editing; defining; viewing status; restarting jobs, job streams, or automated processes; dashboard views; and mobile device support.
Forecasting, Analytics, & Reporting	Includes measures about native and third-party predictive analytics, warning thresholds, critical path views, past job performance, decision heuristics, graphical job dependency views, modeling of new jobs, historic performance reporting, GANTT and PERT charts, event capture, SLA impacts, job processing costs, and others.
Alerting	Includes measures about means of alerting (e.g., SNMP, email, text, etc.), alert priorities, customization of notifications, routing rules, and others.
Security	Includes measures about security roles, role-based access, dynamic privileges, record-level access controls, namespace controls, and others.
What-If Scenarios	Includes measures about simulating the effects of new job streams on existing jobs, new job streams on SLAs, and performance of jobs under development.
Conditional Logic & Auto Remediation	Includes measures about automatic issue resolution, remediation based on events, historic data, or predictive, and others.
Logging/Auditability	Includes measures about activities logged including user interactions, job statuses, errors, result logs, schedule changes, logins and logouts, resource contentions, job stream performance, and others.
Business User Features	Capabilities for non-technical users including dashboard features, such as reporting, planned vs. actual outcomes, job lifecycle management, monitoring, etc.
Hadoop Support	Includes support for various Hadoop distributions and Hadoop Ecosystem integrations.
RPA Orchestration	Specific product integrations supported out of the box.

APPENDIX A

FUNCTIONALITY	
EASE OF USE	
Simplicity of GUI	Includes measures about GUI elements, graphical wizards (e.g., creating jobs, dependencies, deploying agents, creating reports, defining job priorities, defining SLAs, defining auto remediation sequences, etc.), web-based aspects of UI, dashboard customizations, and others.
SLA & Policy Awareness	Includes measures about SLA awareness, monitoring, proactive notification, automated actions triggered by SLAs at risk, reporting, etc.
Root Cause Analysis	Includes measures about diagnostic information collected including error messages, active processes, instructions at time of failure, open files, file operations at time of failure, performance metrics, resource availability, and others.
Mobile Device Support	Includes measures about mobile environments supported (e.g., iOS, Android, Windows) and the UI features supported on each environment.
Language Support	Measures the number of languages supported.
Available Help Resources	Includes measures about online knowledgebase, videos, online training, and others.

DEPLOYMENT & ADMINISTRATION	
EASE OF DEPLOYMENT	
Deployment Time/Effort	Includes measures about deployment options, trials, training, proof of concept, installers, high-availability setup, install services, and automatic provisioning.
Conversion Facilities	Includes measures about conversion tools for CRON, VBScript, PowerShell, and specific competitor products.
Job Discovery & Import	Includes measures about auto-discovery of jobs, job dependencies, job streams, schedule files, etc.
Staff Training	Includes measures about available training onsite, via video, interactive tutorials, etc., as well as knowledgebase, certification programs, and technical events.
SUPPORT AND SERVICES	
Customer Support	Includes measures about support hours and means of support (e.g., phone, email, chat), forums, knowledgebase, help functions, online manuals, etc.
Professional Services	Includes measures about direct services supported including report creation, system configuration, business planning, prototype creation, custom scripting, online training, videos, on-location training, etc.
EASE OF ADMINISTRATION	
Console Ease of Use	Includes measures about console design, features, web and mobile support, and others.
Upgrade Process	Includes measures about maintenance windows, wizards, test and development environments, agent change management, rollback for agents, console, UI, and others.
Test Environments Included	Availability within the production install.
Automation of Management	Includes measures about automated collection of diagnostic information, automated alert management, auto-remediation, failover, and other automated management features.

APPENDIX A

COST ADVANTAGE	
Flexibility of Licensing Model	Includes measures about pricing options including by job, MIPS, sockets, cores, concurrent jobs, enterprise license, etc., as well as mixing license types.
Pricing	Several configurations were considered and pricing was compared across all vendors.
SaaS Availability	SaaS offering details like multi-tenant vs. multi-instance, VPN and port considerations, agent connection, interacting with on-premises workloads, etc.

VENDOR STRENGTH	
Vision	How the vendor views the market and the direction they are taking their product.
Strategy	How the vendor approaches the market and positions their product.
Financial Strength	A light look at overall financial strength (where available).
Research & Development	Budget allocations for development teams in comparison to revenues and the number and frequency of new features.
Partnerships/Channel	Number and types of partnerships, channels, and ecosystems created.
Market Credibility	General sense of position and reputation in the marketplace.
Geographic Coverage	A review of countries with direct sales, channel sales, and deployed customers.

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 EMA's 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 blog.enterprisemanagement.com.

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