EMA RADAR for Workload Automation (WLA): Q4 2019

REPORT SUMMARY AND STONEBRANCH PROFILE

An Enterprise Management Associates® Radar Report

Written by Dan Twing

Q4 2019

TABLE OF CONTENTS

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.

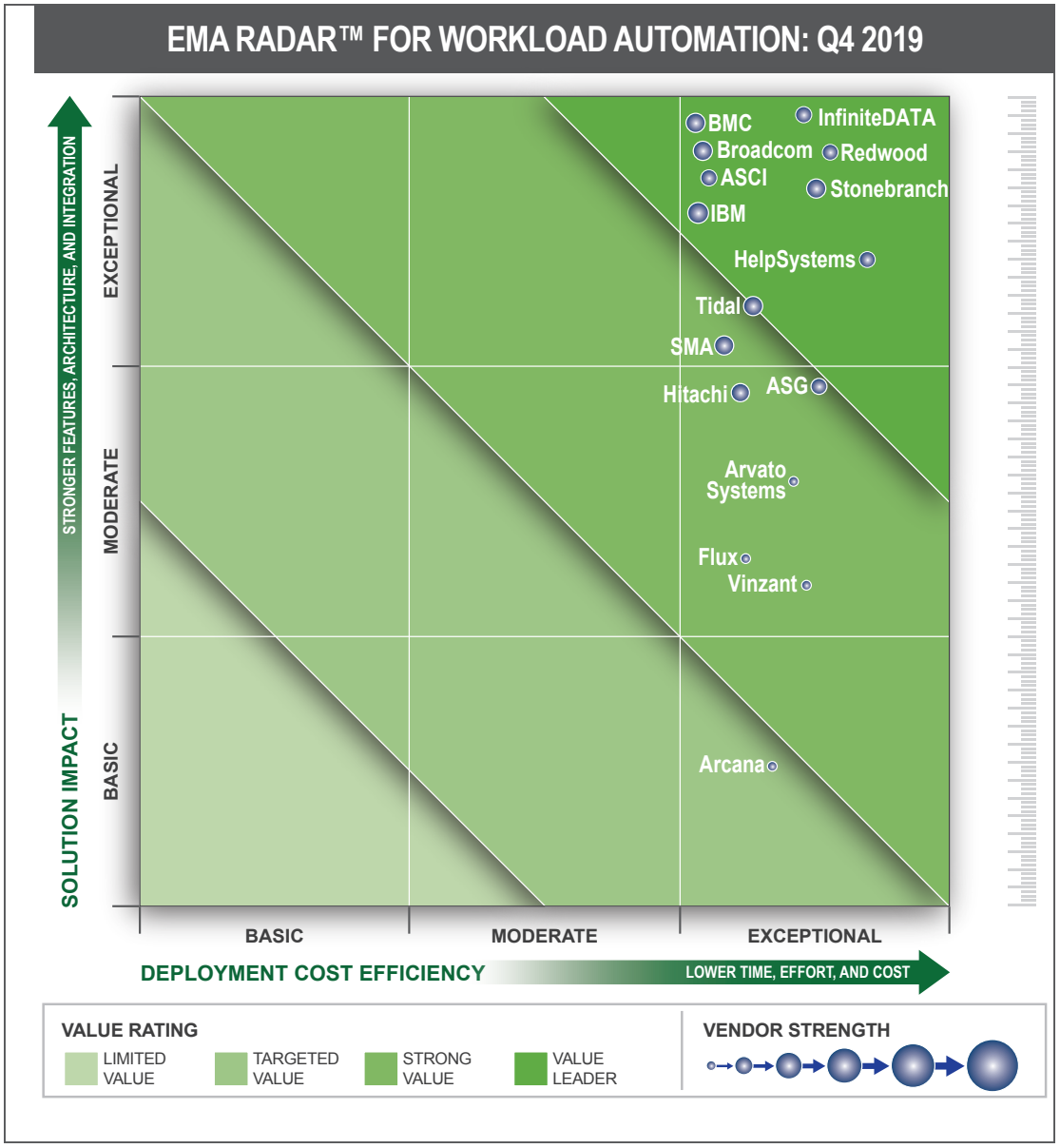
EMA WORKLOAD AUTOMATION RADAR RESULTS

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.



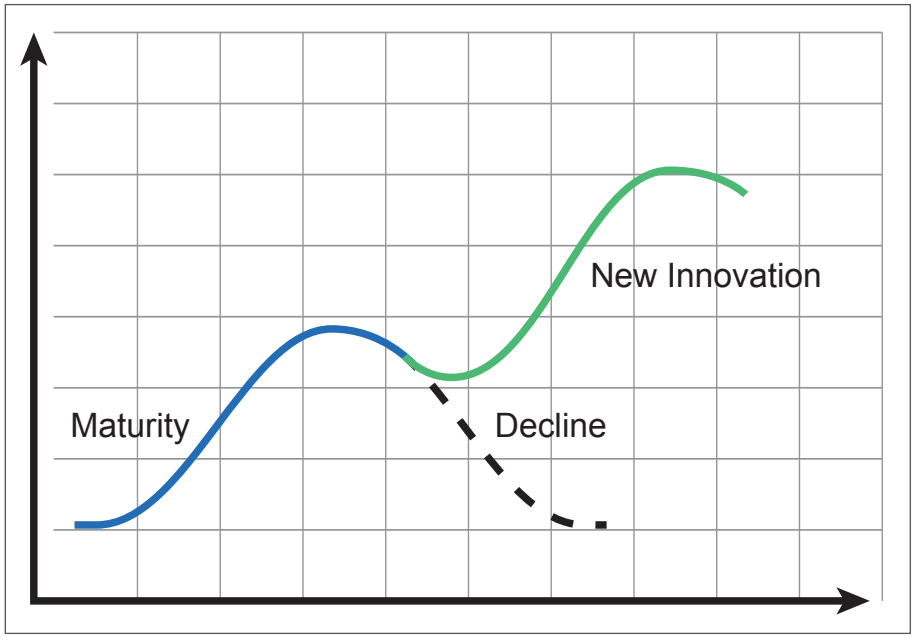
VALUE LEADER: STONEBRANCH

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.

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.



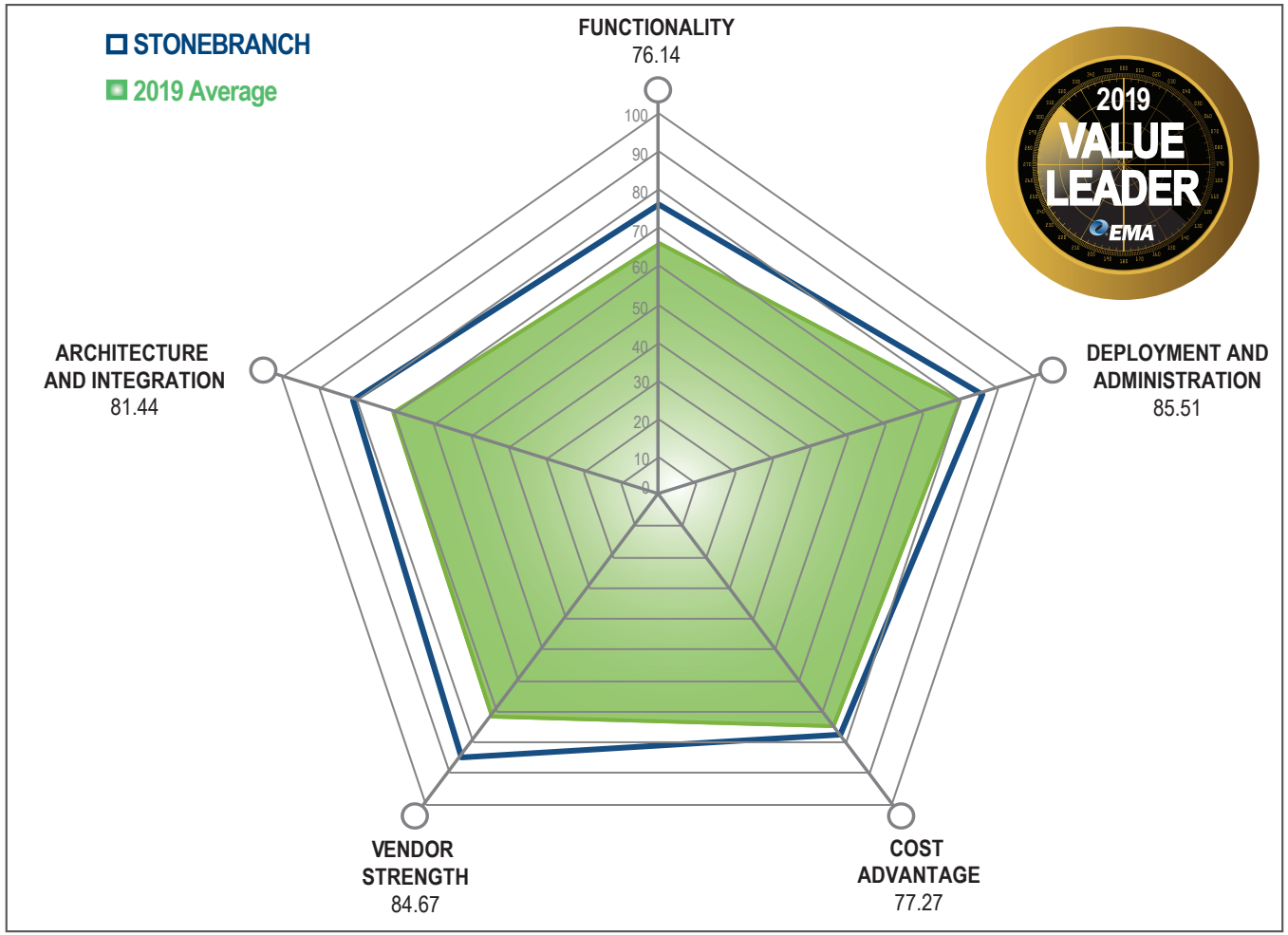
FUTURE OUTLOOK

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.

VENDOR PROFILE: STONEBRANCH

OVERVIEW



stonebranch

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Stonebranch has implemented several improvements since 2017, including improved REST APIs, headless operations, self-service capabilities, integration into service catalogs, cloud, and container deployment options. New integration capabilities allow for the building of custom tasks within the UI.

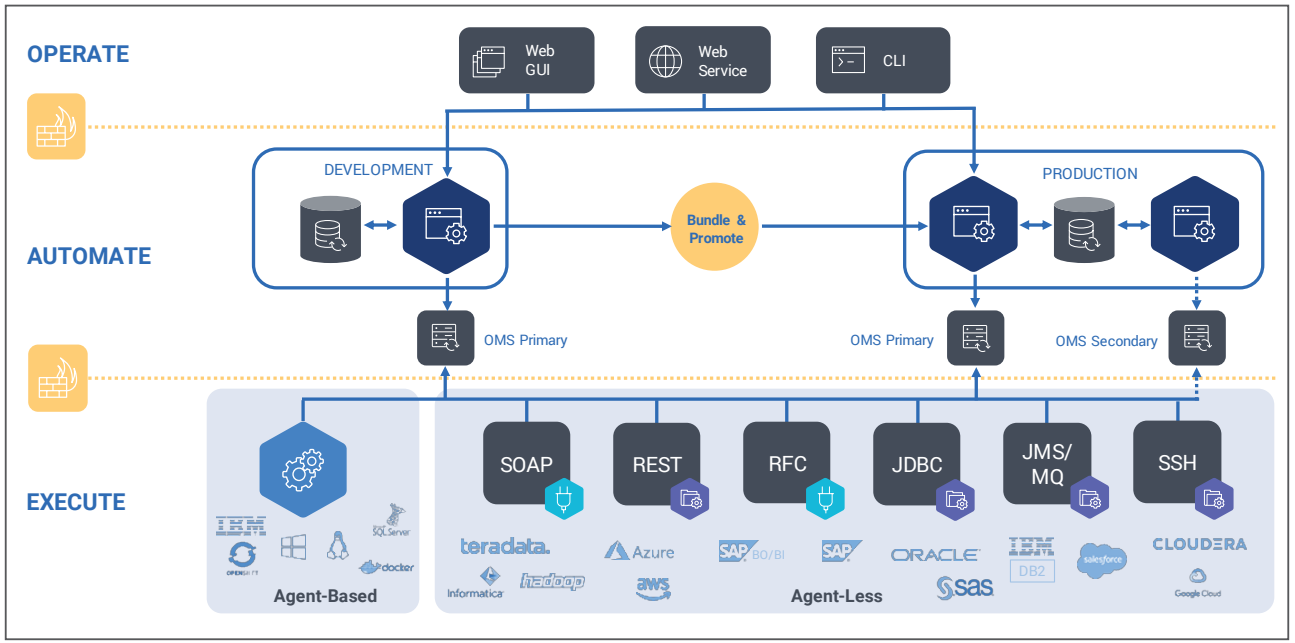
EMA RADAR™

Combined with quick and easy setup and an easy-to-use web application, Universal Automation Center can be implemented with minimal risk and disruption of operations.

Stonebranch was founded in 1999 and is headquartered in Atlanta, Georgia. With points of contact and support throughout the Americas, Europe, and Asia, Stonebranch serves some of the world's largest financial, manufacturing, healthcare, travel, transportation, energy, and technology institutions. The company builds dynamic IT automation solutions that transform business IT environments from simple IT task automation into sophisticated, real-time business service automation.

ARCHITECTURE

Universal Controller's architecture is simple to implement and maintain, supports commodity hardware and infrastructure, and scales to support large workload automation environments. Stonebranch technology is built upon a highly portable architecture with built-in fault tolerance and failover capabilities. The Universal Controller runs in an Apache Tomcat web application container supporting all operating systems with a Java runtime. It relies on a relational database. The Universal Agents are connected via a middleware message service called OMS, which provides fault-tolerant communication between the controller and agents. Stonebranch Universal Agent allows full functional automation for all key operating systems, regardless of the engines being used. Embedded in the Universal Agent architecture, Universal Data Mover can operate as an integral part of the Universal Automation Center solution, or independently as a standalone managed file transfer component supported by a secure, regulatorily compliant peer-to-peer protocol based on TCP/IP and TLS.



Stonebranch's Universal Automation Center (UAC) Architecture

KEY FEATURES SUMMARY

Web-Based Application

Universal Controller, the central workload automation engine, is a purely web-based application that allows all functions to be executed from any web browser on either a desktop or mobile device, without the need for any client installation or additional setup.

Vendor-Agnostic Agent Technology

Universal Agents are the only agent technology on the market that will integrate with any vendor's workload automation engine. The Universal Agent technology is available for all standard platforms, including mainframe, Windows, Unix, Linux, and many others. Deployments of any scale are possible.

Lifecycle Management

With built-in bundle and promotion capabilities, workflows can be developed and tested in isolation from production before being deployed. These features include scheduled deployment, automatic versioning, and the capability to review and back out changes. DevOps tools are supported with a rich set of REST API functions, and developers can create and maintain workload definitions in JSON or XML.

Integration Architecture

To complement the unique interoperability of the Universal Agent with any scheduler, Stonebranch has taken an open-source-based approach for providing both upstream and downstream integrations to any business application controlling or controlled by the Universal Automation Center in order to improve control and visibility across the environment. One particular feature of this DIY approach is Universal Task in combination with an extensive REST API, which allows users to build and customize their own task templates and integrations.

Horizontal Scalability

Through its internal architecture, Universal Automation Center provides horizontal scalability with the addition of just one additional OMS Server (see architecture diagram). During performance benchmark testing with their infrastructure partner DELL in 2019, a single instance of the Universal Controller was able to handle up to 9.4 million transactions or jobs per day with no issues. Stonebranch software performs 7x better than the results of its previous benchmark test in 2014.

Security & Compliance

Universal Automation Center ensures compliance with a centralized audit trail of company processes, errors, and remediation by utilizing the latest security and auditing standards. Stonebranch performs regular penetration testing on all UAC components in cooperation with trusted external partners, such as DELL, AWS, and Secuvera. Stonebranch software additionally complies with PCI DSS security standards.

Real-Time Automation

In addition to traditional time-based and event-based schedules, each schedule has the capability for dynamic decision-making. Using combinations of variables, run criteria, and conditional paths, a single schedule can be dynamically scaled as the business workload grows. This makes Universal Controller's workload automation dynamically scalable with little or no operational effort. This "liberation" from old-style scheduling and its decades of resulting habits also facilitates user adoption of Universal Automation Center and a resulting expansion beyond traditional workload automation.

Self-Service & ITSM Integration

Universal Controller's role-based and business service concepts, as well as the integration with ITSM tools, extend to providing custom user experiences based on the user's role. This reduces training needs and increases both user acceptance and the benefits of dynamic workload automation.

Integrated Data Supply Chain

The integrated Universal Data Mover component, a subcomponent of Universal Agent, allows clients to fully integrate their enterprise-wide data supply chain into this layer of process orchestration. The UDM monitors for key data to arrive, and then transfers that data between different platforms and (cloud) storage technology using event-driven process triggers. Data transfer is encrypted and fault-tolerant.

Automated Conversion Tool

Stonebranch includes the Express Conversion Tool (XCT) to convert customers from other WLA tools. XCT allows customers to perform their own migration at their chosen pace.

EVALUATION SUMMARY

DEPLOYMENT & ADMINISTRATION

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

ARCHITECTURE & INTEGRATION

ARCHITECTURE	
Business Focus	Strong
Scalability	Outstanding
Dynamic Workload Placement	Strong
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	Solid
ITPA Integration	Solid
Capacity Management Integration	Outstanding
MFT Integration	Outstanding
Big Data Integration	Solid
Social Media Integration	None
Heterogeneity Across Environments	Outstanding
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	Strong
Forecasting, Analytics & Reporting	Strong
Alerting	Solid
Security	Outstanding
What-If Scenarios	Solid
Conditional Logic & Auto Remediation	Strong
Logging/Auditability	Outstanding
Business User Features	Outstanding
Hadoop Support	Solid
RPA Orchestration	Solid
EASE OF USE	
Simplicity of GUI	Outstanding
SLA & Policy Awareness	Outstanding
Root Cause Analysis	Strong
Mobile Device Support	Outstanding
Language Support	Solid
Available Help Resources	Outstanding

COST ADVANTAGE

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

VENDOR STRENGTH

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

VENDOR PROFILE: STONEBRANCH

CUSTOMER LOCATIONS

NUMBER OF CUSTOMERS = 100 = 1000

Languages Available: English

NOTE: Internationalization can be supported via resource bundles for any LTR languages (excepting Arabic).

FAVORITE FEATURES MENTIONED IN CUSTOMER INTERVIEWS

"These are the simplest agents to work with."

"I love the single, easy-to-use, web-based GUI to manage and monitor all automated processes."

"I like the flexibility. There is a lot you can do. It is night and day compared to our prior tool. There are automation capabilities for so many processes."

"I like that it is lightweight, but has depth."

"The REST APIs are my favorite because they are very powerful."

"We were able to manage 90% of the transition ourselves because the technology is so easy to use."

"Stonebranch adds credibility in the eyes of IT customers."

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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