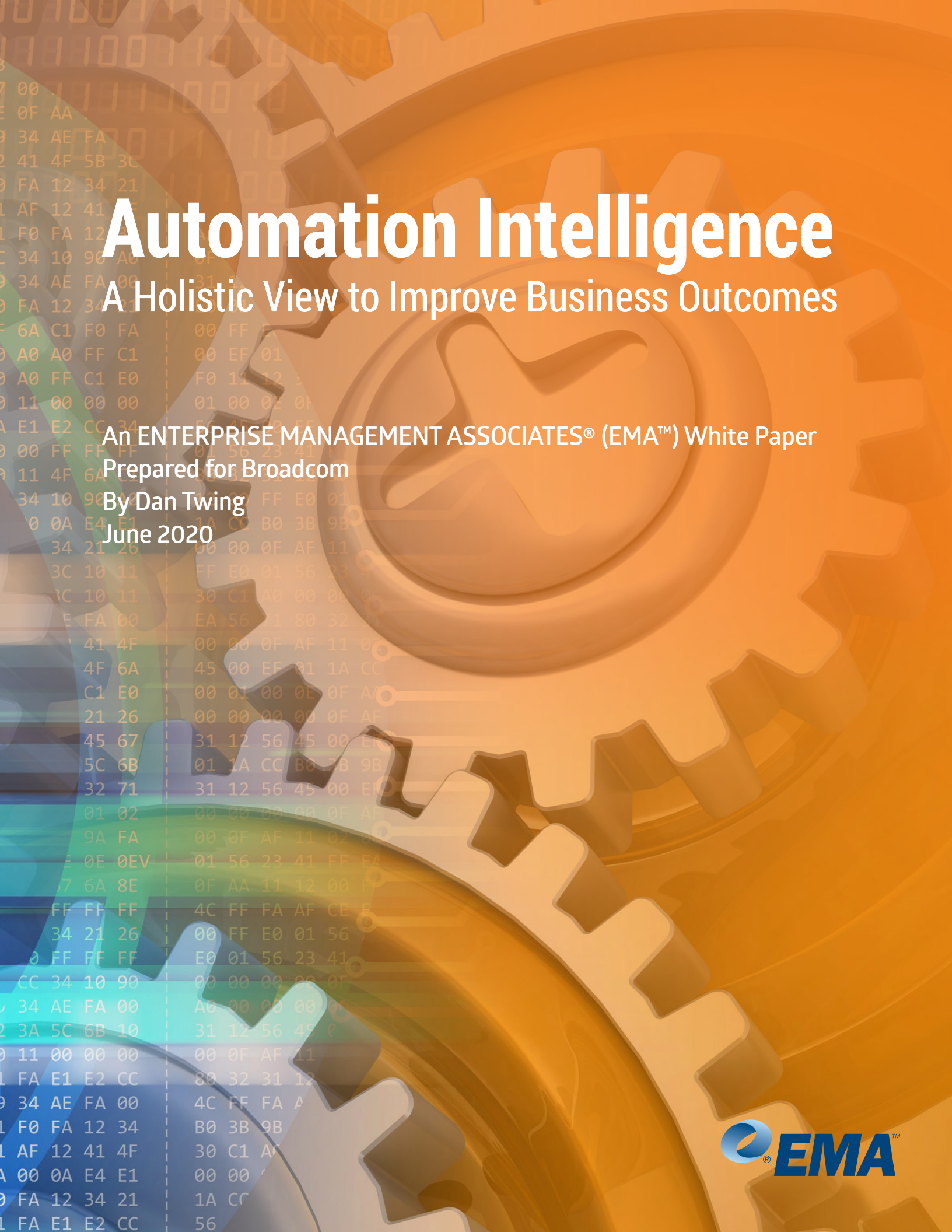
Automation Intelligence

A Holistic View to Improve Business Outcomes

An ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) White Paper
Prepared for Broadcom
By Dan Twing
June 2020



EXECUTIVE SUMMARY

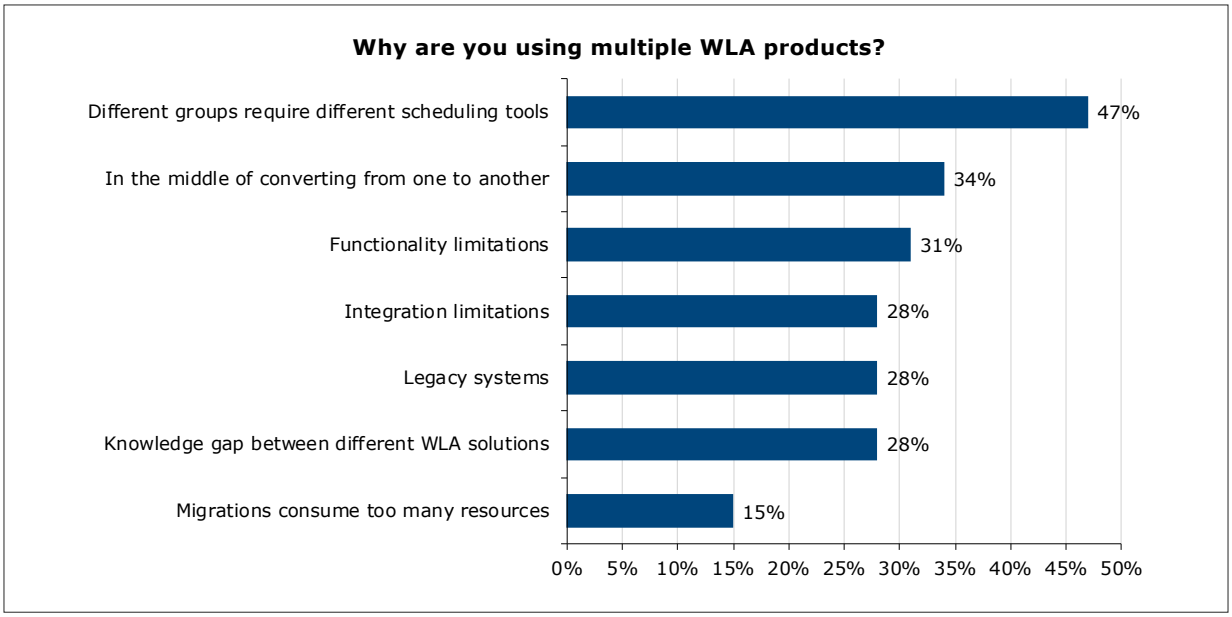
Automation is critical to modern IT operations. Workload automation (WLA) software is one of the critical tools required to run an effective IT operation. Large enterprises often have multiple WLA solutions, which make it difficult to create a holistic, end-to-end view of workload health and outcomes, and to see and resolve problems as they develop. This paper discusses automation intelligence solutions that can collect data from disparate WLA tools, combine the data, and analyze this data to predict outcomes, identify problems as they develop, and provide prescriptive suggestions to resolve developing problems quickly. Changes to the operating model for IT and benefits of automation intelligence are reviewed.

AUTOMATION INTELLIGENCE: A CONSOLIDATED VIEW

Modern businesses rely heavily on information technology. To ensure positive business outcomes, IT operations teams use many different management and monitoring tools to address changes and keep things running smoothly. Workload automation is one of the key tools, which automates the execution and control of unattended processes from simple file transfers to complex, multi-step job streams that complete processes begun in interactive applications, tie together disparate processes, report on the day's activities, and prepare systems for the next day of operations. IT departments run thousands of automated jobs every day. These automated activities can be triggered by time-based schedules or they can be triggered by events, such as the availability of a file or the completion of a process. Workload automation (WLA) software is one of the critical tools required to run an effective IT operation, and by extension, WLA is critical to a well-run business.

Basic job scheduling capabilities exist in many different IT environments. Operating systems include basic scheduling capabilities, such as Windows Task Scheduler or cron in Unix. Cloud environments also include basic scheduling, such as AWS Batch or Google Cloud Scheduler. Some applications also include scheduling features, such as big data and ERP software. The problem is that these are all separate environments with different capabilities and different user interfaces. WLA brings higher-level features and rationalizes scheduling to a common platform that can operate across several environments. These improved capabilities can be quite powerful with predictive analytics, reporting, auto-remediation capabilities, and awareness of SLAs. However, not all WLA solutions can operate across all platforms, so while WLA can help to provide a more comprehensive view, it is not always a holistic view from beginning to end for all processes and workloads.

Large enterprises often have multiple WLA solutions for a variety of reasons. They may have one scheduling solution for mainframe environments and another for distributed systems. Often, different divisions or different project teams make their own product selections. Others have upgraded to a new WLA product with the intention of making it the standard across the organization, but never migrate the older work from legacy WLA products to the newly acquired product. Even organizations that make an effort to standardize on a single WLA solution can end up with multiple WLA solutions through acquisitions. In this way, there can remain a lack of a consolidated view, leaving organizations without end-to-end visibility, control, and performance analysis across all scheduling activities. EMA research from 2019 showed that 59% of organizations surveyed were using two or more WLA products. The chart shows their reasons for using multiple products.



Automation intelligence is a companion product to WLA that integrates multiple scheduling solutions and can integrate with some applications directly. WLA software often interacts with applications with simplistic return codes that advise the software or operators of successful completions or problems. Automation intelligence can capture more complete data about application results and performance that goes beyond traditional job data directly from some applications through APIs. This expanded data can be included in understanding the critical path to achieving SLAs and can give better insight into the process and time taken within each stage, and provides more thorough real-time monitoring of SLAs and associated alerts.

EMA research found that 77% of those with multiple WLA solutions have cross-platform dependencies. As of mid-2019, 16% were using automation intelligence to manage the challenges of multiple scheduling solutions, and another 12% were regularly experiencing problems for lack of a consolidated view. Automation intelligence collects scheduling and job results data from multiple sources and creates a holistic record in near-real time, creating a comprehensive view.

Automation intelligence collects scheduling and job results data from multiple sources and creates a holistic record in near-real time, creating a comprehensive view.

Achieving a Truly Comprehensive View

Automation intelligence combines all of the disparate sources of workload results data to provide a comprehensive view that is more complete than any single WLA product can achieve. A comprehensive view is required to not only coalesce the data from all these sources, but also to understand the dependencies between the different workflows and the impacts on meeting SLAs.

- ***Cross-systems*** – Workloads running across the application landscape on distributed systems under the control of different scheduling solutions, whether environment-specific, connected by a single WLA product or across two or more WLA products.
- ***Cross-platforms*** – Workloads running across different platforms, such as mainframe and distributed systems. Many WLA solutions are specific to mainframes or distributed systems, but do not cohesively support both. Organizations can have different solutions for each platform, often from different vendors.
- ***Cross-vendor scheduling products*** – Workloads running under the control of WLA solutions from different vendors.
- ***Including application-specific events*** – The capability to compile very thorough event data via an API, directly from applications, providing a deeper view than WLA solutions.

HOMOGENOUS CONTROL OF WLA WITHOUT THE MIGRATION

No one likes the prospect of migrating IT systems of any type. It is disruptive, time-consuming, and risky, even when the new environment brings benefits and there is ample time for planning and testing. WLA software is no exception. Many organizations delay dealing with older WLA software or eliminating multiple products to standardize on a single WLA solution. While EMA research shows that more than 50% of organizations globally are considering migrating to get new features and possibly lower costs, many do not get past thinking about it and never actually make the change. Others will buy the new solution and start to use it for specific projects that require the new features, but never migrate everything and do not end of life the original WLA solution. Because automation intelligence provides a comprehensive view across schedulers, it eliminates many of the problems caused by running multiple schedulers. For many organizations that have deployed automation intelligence, the need to migrate is eliminated entirely. They end up with the best of both worlds—they have a comprehensive view and can see processes end to end even when they span schedulers, but they do not have to retrain staff and spend resources on a risky migration.

AUTOMATION INTELLIGENCE CHANGES THE OPERATION MODEL

By creating a comprehensive view of workload results, automation intelligence changes the operation model, empowering IT operations and bringing insights by comparing historical norms with current results. Automation intelligence improves IT operations by revealing business insights to increase business success. While some WLA products have some of these capabilities, they are not as useful if they do not see across systems, platforms, and WLA solutions from different vendors, and without enhanced application results data. Following are two key areas that automation intelligence can positively impact.

Automation intelligence improves IT operations by revealing business insights to increase business success.

Dynamic SLA Management

Service-level agreements (SLAs) have become a widely adopted best practice to define the expected quality of IT services delivered over time. Managing SLAs takes planning to ensure proper staff, documentation, training, infrastructure, and capacity (among many other things) will affect IT operations' ability to consistently live up to the level of service expected. Tracking and reporting on SLAs are part of the process and will depend on the frequency and interval of measurement. Missing SLAs can result in penalties, so effective organizations do not wait until an SLA is missed to make changes to resolve issues. However, the ability to identify and resolve an SLA issue quickly will determine how soon, and therefore how much, change can be affected to get the SLA back on track during the immediate measurement interval. Analytics and automation are important tools for IT operations to detect issues early and affect positive changes quickly.

Automation intelligence uses machine learning to build a record of historical norms and measure ongoing operations against those norms to detect variances and anomalies. Predictive analytics can see and alert potential SLA violations as they are beginning to happen to provide immediate awareness to the problem. Alerts, dashboards, and other reporting will inform operators of potential or developing problems in near-real time. This allows for ongoing, dynamic management of SLAs while there is time to make corrections and keep the SLA on track.

Automation intelligence can include prescriptive actions as recommendations to further shorten the response time for corrective actions to be taken. While early detection and warning are helpful, humans must become aware of the alerts and reports, comprehend the information, decide on an action, and take that action. Human response times will still add delay, allowing the problem to continue to build. More mature use of analytics and automation will include prescriptive suggestions for correction, which can help human operators move more quickly to take a corrective action and limit the problematic outcomes affecting an SLA. As use of predictive analytics matures further, integration with the underlying automation software can include automated remediation actions directly, without human intervention. This shortens the response time and keeps things on track to meet the SLA.

Improved Efficiency in Scheduling

Automation intelligence can also improve the scheduling process, both for ongoing adjustments to existing workloads and for changes either to existing workloads or to add new workloads. Capacity issues can arise often where processes see a continuous increase in data or transaction volumes. Schedules may need to be adjusted to keep completion times on track, to balance overlap of jobs competing for resources, or to change the resources used. The analytics provided through automation intelligence solutions can be very helpful in monitoring growth and advising the changes to schedules of dependent processes and other work or changes to compute, networking, or storage resources required to consistently meet SLAs.

Upgrades to existing or entirely new applications or workloads require planning as they are added into the established workflow and environment. Planning for such changes can be assisted with the analytics data provided by automation intelligence. This can include modeling of the changed environment and what-if analysis to see the predicted impact of changes. Better to learn through trial and error in a modeled environment than to move through the learning curve to the impact of changes in a live, production environment.

IMPROVING IT OPERATIONS' RELATIONSHIP WITH BUSINESS OPERATIONS

Business organizations have always had IT to support business operations. However, that support has not always been served up in direct alignment with changing business goals or in the language of business operations staff. IT evaluates business problems and challenges from an engineering and systems approach to apply technology to improve and automate processes. The intent is to improve the situation for the business operations managers and workers. Along the way, IT works the problem with a mix of infrastructure and subsystems that often do not represent the end-to-end business outcomes directly. What comes out the other side can look and sound foreign and unfamiliar to the very business people it is meant to help. IT has its own language, including a never-ending list of acronyms, and organizes infrastructure and teams around the subsystems used to address the work to be done. Businesspeople are focused on the end outcomes for their customers and do not always want to involve themselves in the underlying pieces and parts that must come together in IT. A bank teller needs customer balances to be updated and accurate from the prior day's activities and isn't really interested if a file transfer, networking, or server problem caused a delay in having accurate balances when the bank opens. The bank teller just needs account balances updated and accurate, and the teller platform running and responsive.

CIOs are aware of this problem. Many IT organizations have taken a more business relationship management focus to how they serve their organizations, raising the focus of IT teams above the underlying infrastructure and subsystems involved. While IT needs to keep all those underlying parts operating, they cannot lose sight of what is most valuable to their organization's top line or bottom line impact. Additionally, IT needs to communicate the implications and value of technology in terms that business leaders and business staff understand.

WLA is no different than the rest of IT in needing to be more aware of the business outcomes as the end result of the work they do. WLA has seen a trend over the past several years to provide more direct info to business stakeholders. WLA solutions have added dashboards and other reporting for business users. However, workloads are defined within jobs and further organized into job streams. While this is the efficient way for IT to organize the work, the business stakeholders only care about the end result. Providing status on a given job or even a job stream that is only a step or two of the ultimate business outcome doesn't provide helpful information to a business stakeholder. Telling a retail store manager that job STOCK428 is delayed and will complete two hours late doesn't inform the store manager when the day's shipments will arrive and when the stocking crew should be scheduled.

A View of Schedules From the Business Stakeholder Perspective

Automation intelligence can bring insight to business stakeholders as well as IT operations. Another advantage of compiling job data from across multiple platforms and schedulers is that the data can be reconfigured into the business stakeholder view. A dashboard that puts IT operations results into the language and structure of the ultimate business stakeholder is a powerful way for IT to improve the relationship with the ultimate business customers. The manager of the bank tellers or the retail store manager can be provided with a business outcome-focused dashboard that starts with the outcome they care about: updated bank balances or the timing of deliveries. If there are problems delaying these ultimate outcomes, the status of the end outcome is more meaningful than the status of a file transfer or a job that is partway through the process.

A dashboard that puts IT operations results into the language and structure of the ultimate business stakeholder is a powerful way for IT to improve the relationship with the ultimate business customers.

Increased Information Sharing with Business Stakeholders

Automation intelligence can include rich dashboards and other reporting that are more holistic and more meaningful to business stakeholders than what is available from several separate scheduling solutions. When the information is in the language of the business user and is focused on the outcomes important to them, that information is more useful. Many WLA solutions have added more business user outreach with dashboards and reports, but these are often little used by business stakeholders. EMA research found that about 40% of organizations are using WLA dashboard features for business stakeholders, and another 12% rolled out dashboards to business users and later stopped the practice for lack of use. Automation intelligence improves the richness of the data and makes it more meaningful to business stakeholders, increasing actual information shared.

Faster Path to Digital Transformation Through Modeling

Another way IT can improve the relationship with business stakeholders is through faster delivery of new applications. Much of the discord that can happen between IT and business operations is due to timing and frequency of change. Change is disruptive to smooth IT operations. That which is known and has been operating for some time is predictable and easier to manage. IT operations teams like things to run smoothly and consistently. Business operations must adapt to changing markets and customer preferences to keep the business relevant and growing. Digital transformation has significantly increased the pressure to develop new applications and processes, imposing more change and with greater urgency. This creates inherent conflict between IT operations and business operations. Modeling and what-if analysis capabilities within automation intelligence solutions allow IT to deploy changes more quickly and confidently. The impacts on processes directly being changed, as well as to surrounding processes, can be identified and balanced before production deployment, minimizing negative impacts. EMA research finds that 85% of IT organizations believe they would benefit from the ability to simulate changes. IT operations and business operations can work together and make adjustments in the modeled environment to balance tradeoffs and deploy changes faster and with less risk.

BROADCOM'S AUTOMIC AUTOMATION INTELLIGENCE

Automic Automation Intelligence is a predictive analytics platform for workload automation data. It provides organizations with the necessary visualization, adaptability, and intelligence to successfully manage complex workloads across multiple scheduling solutions. Workload automation analytics provides service-level assurance, critical path management, and enterprise-wide visibility. Automic Automation Intelligence turns critical workload data into business insights.

Broadcom's Automic Automation Intelligence was adapted from the acquired Terma Software Labs family of workload analytics products. Terma Software innovated the use of machine learning for predictive analytics of workload data and was partnered with the Broadcom family of workload products (originally CA products) since its inception in 2003. Broadcom acquired Terma Software Labs in late 2019.

Automic Automation Intelligence is integrated with AutoSys, CA7, and Jobtrac WLA products from Broadcom currently with Automic integration. General availability is expected in September 2020. Automic Automation Intelligence is also integrated with Tidal Workload Automation and IBM Workload Automation. Automic Automation Intelligence can be integrated with any workload solution through APIs. A summary of key features is shown in the table.

AUTOMIC AUTOMATION INTELLIGENCE

Features Summary	Description
Cross-Platform/Vendor Visibility	Real-time single point of view across IWS z/d, CA 7®, Jobtrac, AutoSys, and Tidal Workload Automation solutions.
Enhanced Workload Analytics	Predict outcome of SLAs before they impact the business. Proactive alert management to resolve before any impact to the business.
Dynamic Service-Level Management	Discover and track service-level agreements (SLA) across platforms and schedulers simply by identifying the job that needs to be delivered.
Improved Change Control	Simulate potential changes against defined SLAs before going to production. Limits SLA breaches and allows you to optimize complex batch processing across vendors and platforms.
Business Monitoring	See your workload from line of business and business process perspectives instead of a series of unrelated job streams.
Dynamic Critical Path Discovery	Real-time discovery of critical path to determine requirements to meet SLAs.

EMA PERSPECTIVE

Automation is critical to modern IT operations. From tracking and escalating service tickets to configuring and monitoring software-defined infrastructure to running thousands of daily and weekly jobs, modern IT operations run on automation. Automation is important because it makes IT staff more productive, increases use of best practices defined within the automated steps, and eliminates human error using predefined steps for repetitive tasks. In the constantly changing IT operations environment, new forms of automation are emerging while existing forms of automation are being continuously improved. Automation of scheduled tasks and jobs (workload automation) is one of the longest used forms of automation in IT operations. Starting over 40 years ago as basic job scheduling, a stream of new features and capabilities evolved and matured this form of automation to keep it at the forefront of IT operations. Automation intelligence is a companion product to WLA that improves WLA by making both the application and the operators better informed.

Improved intelligence is a must-have to further mature all forms of automation, including workload automation. WLA has always known what to run and when. It has not always had the benefit of a memory of past outcomes. By collecting and storing key outcome data over weeks or months, and looking at the trends in runtimes, problems that arise cause problems, dependencies, human operators, their business stakeholders, and the software itself to become better informed about the workloads being run. With the benefit of "memory" of past outcomes, the software can predict completion times, identify problems before they arise, make prescriptive suggestions to resolve issues, and even take automatic corrective actions. By integrating automation intelligence across all scheduling solutions in use, this intelligence can be applied across multiple products from different vendors and see end to end even for processes that span multiple schedulers. No enterprise IT operations team should be without this insight.

The insight provided to IT operations from automation intelligence brings an improved understanding of batch impact due to failures, latency, or operator error, allowing operations teams to avoid or reduce risks from delayed or failed jobs. Operations teams can operate more efficiently and at reduced costs with the gains in visibility to manage value streams end to end. They can optimize costs and better align execution to strategy. Better visibility into resource utilization, job dependencies, and sensitivity to changes in transaction volumes can help to prioritize strategic initiatives. The entire point of workload automation is to make sure key work is done at the right time and completed correctly. Customer experience and satisfaction are maximized when key work is done successfully and on time. Using AI-driven insights to detect and resolve issues faster or even better by preventing them from occurring in the first place is the best way to ensure a great customer experience.

Using AI-driven insights to detect and resolve issues faster or even better by preventing them from occurring in the first place is the best way to ensure a great customer experience.

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. You can also follow EMA on Twitter, Facebook, or LinkedIn.

Corporate Headquarters:
1995 North 57th Court, Suite 120
Boulder, CO 80301
Phone: +1 303.543.9500
www.enterprisemanagement.com
3992.06232020