Prevent Significant Business Disruptions

Predict Major Problems and Optimize Complex Workloads

Fortune 1,000 companies, particularly those in the financial services industry, struggle to manage complex, mission-critical workloads. They often have multiple workload automation or job scheduling systems from different vendors, which are integrated and highly dependent on each other, running sometimes more than 1 million jobs in a single day.

Without clear visibility into workloads, and without predictive capabilities to identify potential problems before they occur, organizations face issues that range from inefficient and underutilized workloads to entire systems crashing. Unplanned workload related delays or stoppages, especially for global companies, are extremely costly and potentially jeopardize business processes. For example, when the computer network system for a large global bank went down unexpectedly, and the bank lacked the proper controls and processes to prevent it, the company was fined approximately 20 million by the government regulatory agency. CA Technologies offers a workload analytics solution that leverages large volumes of workload automation data combined with predictive analytics to provide the visualization, adaptability and intelligence to successfully manage complex workloads.

Automic Automation Intelligence allows organizations—even those running complex workloads across millions of jobs—to predict and resolve workload issues with a single, unified view across all workload automation systems. This lets companies see how one potential problem or job delay will impact other systems, where the problem is located in a system and when it will strike.

With Automic Automation Intelligence, companies can:

- Significantly reduce the risk and cost of problems that impact the workload environment

- Proactively plan for growth by more accurately forecasting workload changes

- Improve productivity using a workload environment that becomes more efficient over time

- Optimize complex workload environments to improve IT operations

- Rationalize multivendor workload environments more effectively than traditional methodologies

50 Percent Reduction in Operating Costs

CA Technologies offers an industry-leading workload analytics solution that delivers powerful workload optimization and a significant ROI for companies with complex workloads. Some companies have seen ROI in weeks, although most see it after several months or a year.

The ROI spans both hard and soft cost savings, including a reduction in resources, time and staff training costs to monitor workloads and troubleshoot problems. In some cases, organizations have seen a 50 percent reduction in the cost of operating their environments. The savings result from staff no longer having to spend significant amounts of time dealing with problems like system outages or the system experiencing "false positives" that point to a problem when there's really not one, but still require staff time to investigate. Automic Automation Intelligence can cut costs and time spent following up on problems by 80 percent.

For example, a large global financial company realized a quick ROI by identifying areas where workloads were naturally degrading over time. The company was able to address them before they affected SLAs. Another large financial firm saw an immediate ROI by reducing batch inefficiencies and shortening the time needed to fix batch issues, which avoided SLA violations and fines.

Automic Automation Intelligence optimizes workload processing to drive more value from automation tools. It does this through advanced analytics such as predictive analytics, prescriptive analytics, artificial intelligence (AI) and machine learning. These capabilities help companies proactively manage increasingly complex workloads. For example, machine learning and AI help overcome the challenge of accurately predicting outcomes when special conditions, processing cycles or behaviors exist in the workload environment. The analytics dynamically and automatically adjust forecasts and predictions to account for variations in processing volume or other factors without disrupting workloads.

Unravel Workload Problems Before They Negatively Impact the Business

Automic Automation Intelligence delivers powerful workload optimization and significant ROI for companies with complex workload environments. It uses advanced analytic techniques, including adaptive intelligence and predictive analytics, across workload platforms, regardless of the vendor. This provides the necessary centralized visualization and derived analytical insights into workloads. The analytics help mitigate problems. Many service outages can be prevented by predictive analytics. This is where Automic Automation Intelligence

earns its stripes. Its unique ability to predict workload issues removes the challenges most companies face with inefficient workload environments and a lack of transparency. Many businesses today, for example, are highly dependent on computer processing power and end up managing their workloads in costly and inefficient ways. CA Technologies solves this problem by designing and automating workloads to use fewer computing resources and thus reduce related costs. Automic Automation Intelligence also provides simplified and improved visibility into workload processes to identify disruptions earlier.

Few vendors provide an analytics solution designed to improve workload processes. Automic Automation Intelligence offers domain-specific, vendor-agnostic features for advanced analytics like machine learning, time-based analytics and AI that observe trends across several years' worth of data—and look deep into the data. In addition, the solution can predict what will happen in the future by running simulations and making recommendations that enable companies to address problems rather than repeat them. Organizations can eliminate problems before they have a chance to disrupt systems. This is especially important for companies like financial in services that must meet stringent reporting requirements and cannot afford system interruptions.

Enhancing Workload Automation

Automic Automation Intelligence offers leading capabilities for workload automation, also known as job scheduling. It consumes and makes sense of data by using analytics to:

- Improve predictive modeling
- Enhance service-level monitoring
- Deliver reports and dashboards to visualize workloads in real time
- Leverage a single-pane-of-glass visualization across multiple scheduling environments and products

Virtually all aspects of a business rely on the job scheduling process, which is why workload automation is so critical. While Automic Automation Intelligence is not a job scheduling product, it addresses the inefficiencies that are inherent in such existing systems, which are sometimes decades old, to optimize the job scheduling process and make automation more efficient. This helps companies lower costs and improve the reliability and performance of mission-critical workloads.

For example, a large financial services company that runs about 60,000 jobs each night as part of a critical batch made the decision to integrate a new portfolio management solution for domestic customers into its workload environment. The system would run new jobs and change processes for others. The company tested it, then put it into production. The result was disastrous. The addition crashed the entire system. For the next several days, hundreds of people urgently worked to fix the problem and get the system back up and running. Meanwhile, the company was unable to adequately serve customers, missing many critical service-level agreements (SLAs), and losing business and money.

Because so many systems and applications were integrated with cross dependencies, the company couldn't simply revert the changes to resolve the problem. The issue was eventually resolved, but at a significant time and cost expense. When the company later wanted to implement a different portfolio management solution for international customers, it worked with CA Technologies to avoid repeating its earlier mistake. CA Technologies ran tests using its AI simulation capability to determine the way the new management solution would impact the existing environment. The simulation predicted how workloads would perform in the new environment before they were actually moved into production, and

how systems would be affected. The simulation also identified problems that would impact the systems. Once those issues were resolved, testing continued until all potential problems were detected and fixed prior to the rollout of the system.

Expert Advice and Automation for Platform Migration and Consolidation

According to a recently released research report "The Shifting Role of Workload Automation," a large percentage of companies are changing, actively considering changing or have already added new workload automation tools for job scheduling. "A big part of the market migrated to new WLA [workload automation] tools over the past five years as the demands on workload automation began to change and users searched for better tools in response," according to the paper.

Many companies use multiple platforms across their workload environments, yet as noted in the report, an emerging trend is organizations consolidate their workload automation to a single platform and even switch vendors to simplify workloads. This also saves the expense of having multiple licenses for different vendors' products and training staff to handle job scheduling for each system.

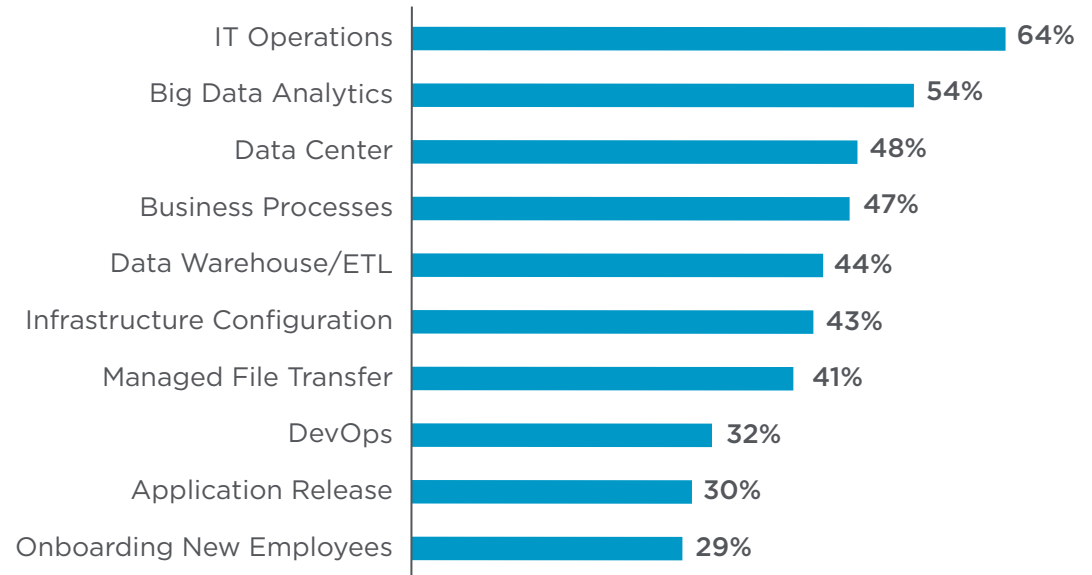### Need Help With Workload Migration?

CA Technologies' workload migration assistance and services is vendor and platform agnostic. Our migration services provide pre-migration workload testing as well as post-migration validation.
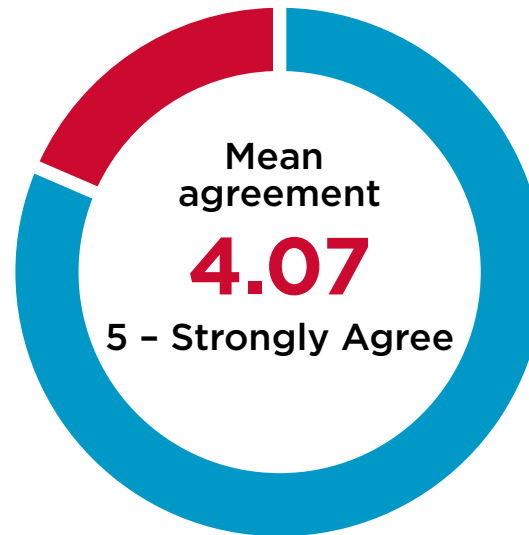
CA Technologies' products and services reduce the time and risks associated with migrating a critical scheduler to a new vendor platform. Through Automic Automation Intelligence's rich visualization and reporting capabilities, it's possible to identify potential issues with platform transitions to ensure a smooth, successful migration. Leveraging its machine learning, Automic Automation Intelligence can transfer the knowledge and understanding of one vendor's product to another automatically.

Leveraging CA Technologies' products to analyze a system provides an understanding of the complete workload environment and what impact changes will have. Because of CA Technologies' understanding of multiple vendors' workload products and the underlying data in these products, the company can provide a roadmap to conversion along with a before and after state of a company's workload environment. In between these before and after states, CA Technologies' solution can perform a majority of the workload job definition conversion automatically. This enables a switch or consolation to take place faster, more efficiently and more reliably.
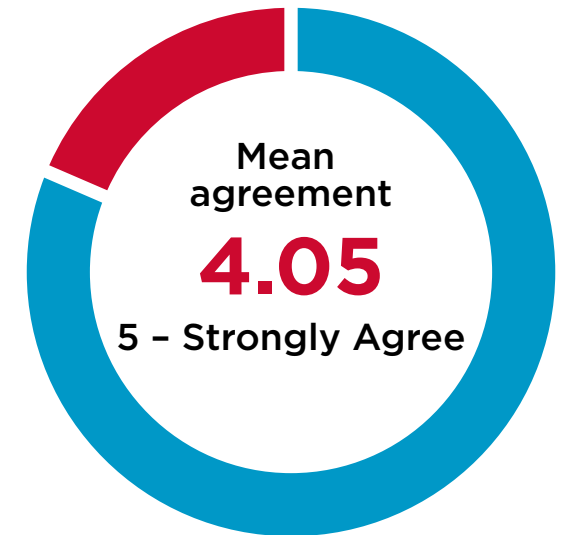
Functions automated[1]

Function	%
IT Operations	64%
Big Data Analytics	54%
Data Center	48%
Business Processes	47%
Data Warehouse/ETL	44%
Infrastructure Configuration	43%
Managed File Transfer	41%
DevOps	32%
Application Release	30%
Onboarding New Employees	29%

Our need for automation is growing rapidly[1]

Mean agreement
4.07
5 – Strongly Agree

Our use for automation is growing rapidly[1]

Mean agreement
4.05
5 – Strongly Agree

[1] "The Shifting Role of Workload Automation: WLA Expansion Creates a Foundation for Broader Business Process Automation and Digital Transformation" by Enterprise Management Associates, 2018

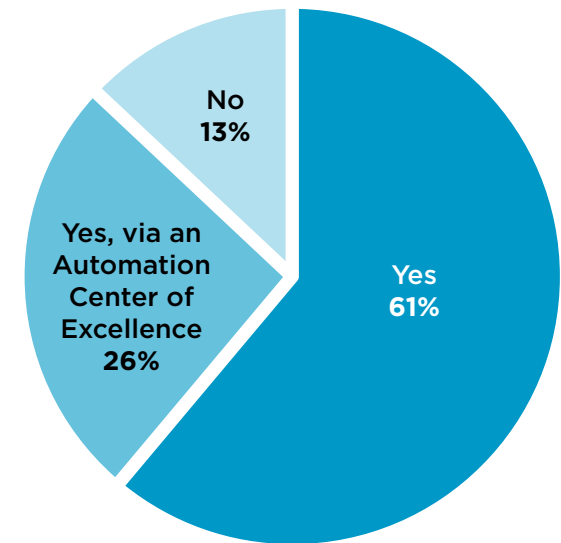## Empowering Businesses by Interpreting Workload Data

Many companies have been using their current systems for many decades. Over time, other technologies, platforms and applications were added, leading to overwrought systems serving thousands of interconnected processes. The homegrown bolt-ons that many organizations implemented solved immediate problems or served point-in-time needs, but no single employee likely understands the entire end-to-end intricacies of the system, how it's connected with other systems or how this affects workloads. With Automic Automation Intelligence, companies don't need employees who have in-depth knowledge of the systems' complexities. Instead, the solution interprets data and information, then presents it in an easy-to-consume format that removes the challenge of knowing how everything works and fits together.

Normalizing workload data and making information easy to understand, without vendor or product-specific terminology, enables employees without extensive experience in workload automation to become immediately productive. This eases the "graying workforce" challenge many mainframe clients are facing with experienced employees and subject matter experts heading into retirement and taking their knowledge with them. With Automic Automation Intelligence, companies can hire recent college
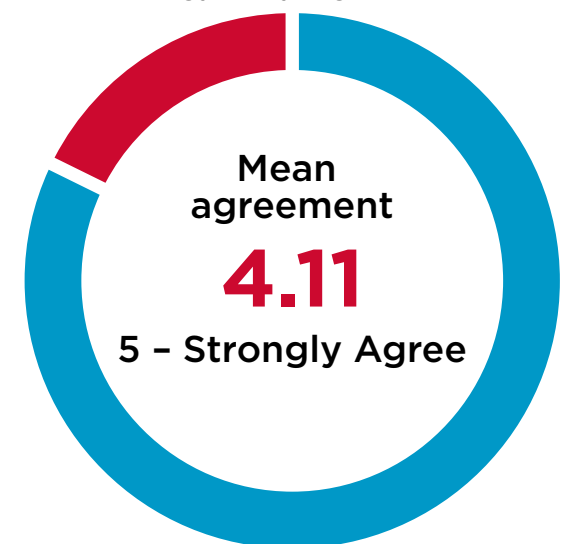
graduates to monitor workloads or even outsource the job. The solution provides a view directly into the workload environment, allowing employees or contractors to see the job scheduling and potential issues without needing to know how the automation and systems work or the technology behind them. CA Technologies customers have realized that with Automic Automation Intelligence, someone monitoring workloads often has a better understanding of the environment than a person who's been working on the system for years.

In addition, the solution provides granular analysis from large volumes of historical data. Many organizations don't have workload systems in place to integrate and store vast amounts of data. Most data is stored no longer than a few weeks, which limits historical insights. That's why Automic Automation Intelligence uses a separate repository that stores data for long periods of time in a model that makes more sense for analysis and reporting. Because the data retention period is longer, customers also use the solution to provide the necessary data for regular audits.

Does your organization have a centralized automation strategy?[1]

No 13%

Yes, via an Automation Center of Excellence 26%

Yes 61%

Automation is viewed as a strategy in my organization[1]

Mean agreement

4.11

5 – Strongly Agree

[1] "The Shifting Role of Workload Automation: WLA Expansion Creates a Foundation for Broader Business Process Automation and Digital Transformation" by Enterprise Management Associates, 2018

Besides alerting the business to workload problems, AI is intelligent enough to distinguish between outliers and normal behaviors. For instance, by analyzing data going back several years, the solution uncovers trends and patterns that may only happen once a quarter or annually. It can alert the business that every first Tuesday of every third month at 5:15 p.m., a certain job will run longer than usual because of quarterly reports. With this information, the business won't think there's a problem when that job runs long and will plan for it instead.

Typically, the more predictive and the more granular the information that a solution can provide, the more accurately the business can plan its job scheduling and not be caught off-guard by an event, even if it happens infrequently. For example, simply telling the business that a problem exists isn't particularly helpful. Automic Automation Intelligence predictively alerts the business when and where the problem will occur so it can be quickly and effectively resolved.

Intelligent Visualization Through a Single Pane of Glass

Not only does Automic Automation Intelligence simplify viewing complex workloads, but it also offers that view on a single screen. This is the only solution of its kind to provide a single-pane-of-glass view across multiple vendors and applications to see the entire workload, from start to finish. This cross-platform and cross-vendor capability enhances workload orchestration while allowing seamless scalability. Automic Automation Intelligence provides a single view of complex connections between platforms and systems and the way they communicate with each other. Without that visibility, if one component failed or a workload was delayed, the company would not know the full consequences on other platforms.

A failure could, for example, shut down a completely different but integrated system that could have major SLA implications. This could prevent a financial firm, for example, from filing the necessary reports to open their trading desks in the morning. Each minute the desks are closed could result in the loss of millions of dollars.

Workload problems are not confined in silos. That's why understanding the entire end-to-end environment is essential. For example, a large bank was using a mainframe system to run 1 million jobs per night, but it also had a tightly connected distributed system. Jobs running on the mainframe triggered jobs on the distributed system and vice versa. The bank had no way to see across all processes or have traceability from beginning to end to know how one problem could potentially disrupt hundreds of thousands of jobs. By implementing Automic Automation Intelligence, the bank gained that

How Does Automic Automation Intelligence Benefit Businesses?

Automic Automation Intelligence complements job scheduling products by enabling and advancing automation through predictive analytics. The solution offers several benefits:

- Provides advanced warning of problems across systems, regardless of vendor
- Delivers insights into cross-vendor, cross-platform dependencies
- Supports any job scheduling program to prevent workload stoppages
- Identifies the root cause of issues within workload environments
- Simplifies data views with easy-to-read dashboards
- Notifies companies of issues by using real-time alerting and notifications
- Enhances automated workload processes to use fewer computing resources and reduce costs
- Collects and analyzes workload data for intelligence and to optimize workloads
- Simulates changes to the environment prior to new implementations to identify problems

visibility. This enabled the bank to make informed decisions about the order and processing of workloads to avert potential problems. Visualizing workloads in real time also improves decision making. Automic Automation Intelligence intuitive dashboards and data views make real-time visualization and understanding complex workloads incredibly easy. This helps businesses quickly understand the entire environment and know what action is needed to address any problems before they interrupt workload processes.

Understand and Monitor Complex Relationships

Increased growth and constant change are challenging today's businesses to better predict outcomes. To overcome this barrier, companies must improve the efficiency of their workloads and have a single view across their systems. This extends to homegrown job scheduling programs that interact with computer networks, like a mainframe.

A multinational investment bank found out firsthand the importance of having a cross-vendor, cross-platform solution. The bank has a complex workload environment, running large volumes of critical jobs nightly. While most of these jobs run on a mainframe, about 40,000 per night run on a homegrown distributed solution. The two systems have processing and dependency relationships. Tracing workloads and predicting disruptions requires the ability to see these intricate connections.

CA Technologies implemented its workload analytics solution and a REST API that provided visibility into the job scheduling and the ability to model relationships between jobs and between platforms. This allows the bank to clearly see critical paths between the distributed solution and the mainframe, across all platforms and applications. Gaining a holistic view of the entire workload environment, and benefiting from the workload solution's predictive capabilities, lets the bank know how a problem on its homegrown solution could cause the mainframe to miss or delay its jobs.

Having a single solution warn of problems across the entire environment eliminates the need for multiple solutions to monitor the workloads, which would require multiple product licenses. It also eliminates the need for employees to become proficient in different vendor technologies.

Differentiating Capabilities Reduce Risks

With Automic Automation Intelligence, companies are better positioned for future growth through an enhanced workload environment that offers agility, efficiency and productivity. The solution makes workloads easy to understand, from beginning to end, along with providing visibility into their relationships with other workloads. Job schedulers don't need to worry about the complexity of the environment. In fact, when schedulers start using the solution, they often don't realize they're looking at different systems because the solution provides a unified view. Businesses no longer need employees spending their time staring at multiple computer screens to monitor workloads. Instead, they can focus on more strategic solutions, which helps grow the business and make better use of its resources.

For more information, visit
broadcom.com/ enterprise-automation

Ease the Burden on Managers

Automic Automation Intelligence helps DevOps, operations and business managers across the organization:

Lower costs. Automic Automation Intelligence helps design and automate workloads to use fewer computing resources and lower costs while providing real-time intelligence.

Compatible with any vendor's products. Single-pane-of-glass functionality delivers workload integration for visualizing, predicting and optimizing job streams that span different workload vendors and applications. The only cross-vendor and cross-platform solution on the market is intentionally designed to be vendor agnostic.

Reporting for non-tech users. Automic Automation Intelligence provides management reporting that is logical and understandable to individuals in nontechnical roles, giving visibility into batch service performance. Workload intelligence allows the successful management of complex workloads, both now and in the future.

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