WHITE PAPER

Workload Automation Emerges as Business Innovation Engine in the Era of Cloud, Big Data, and DevOps

Sponsored by: CA Technologies

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IDC OPINION

Businesses of all types are taking advantage of technology-driven innovation to create new categories of digital products, services, and online customer relationships. IDC's research shows that business decision makers are driving over 60% of spending on new technology projects as they strive to gain leadership by using cloud, Big Data, mobility, the Internet of Things (IoT), and DevOps strategies to differentiate and grow their businesses.

Applications and services are becoming more mobile and interactive as organizations seek to leverage Big Data and provide customers and employees with highly personalized, real-time experiences. Scalable and flexible workload automation solutions are critical to the success of these emerging applications and the business innovation they enable.

The CA Workload Automation portfolio is being used by many organizations to optimize and orchestrate complex workload and data flows across a wide range of legacy and modern platforms. Customers report that CA Workload Automation solutions have been critical enablers of mission-critical online business strategies and have helped improve business performance in a number of ways, such as:

- Improving mission-critical investment "readiness to trade" completion rates from 82% to 99.5% at a major financial services firm
- Supporting tripling of jobs processing requirements in a year
- Enabling new workers to gain work productivity almost immediately, with no need for specialized training classes

IDC expects sophisticated workload automation solutions will be critical to support the rapid transformation of applications and services in the emerging application economy. CA Technologies, a longtime market share leader in the workload management arena, offers customers an increasingly streamlined, integrated, and application-aware set of workload automation solutions designed to accommodate many existing and emerging data sources, business processes, and skill levels.

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IN THIS WHITE PAPER

This white paper discusses the forces that are reshaping today's enterprise workload automation requirements and strategies, including the impact of cloud, Big Data, mobility, IoT, and DevOps. This white paper also discusses how the CA Workload Automation portfolio is evolving to support the needs of these emerging workloads and today's online digital business strategies.

SITUATION OVERVIEW

Digital Transformation and Business Disruption Ahead

Enterprise business and IT leaders are currently grappling with how to best exploit a number of converging trends, including:

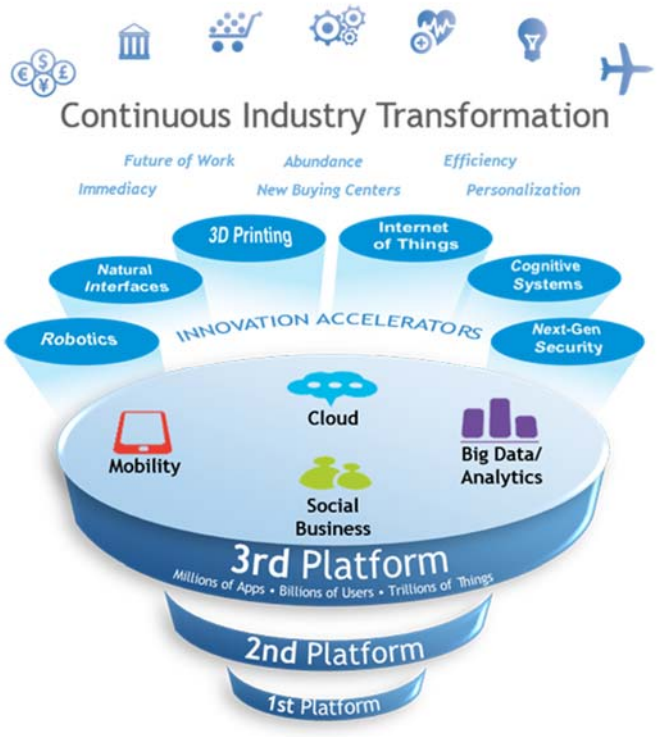
- **The rapid commercialization of data-intensive applications that rely on Big Data and rich media analytics technologies to collect, normalize, and analyze very large volumes of structured and unstructured data captured from a wide range of sources including enterprise databases, social media, Internet of Things tags, scanners, and smart meters as well as human-initiated transactions and queries.** IDC expects the market for Big Data technologies and services will reach over $41 billion by 2018. Rich media (video, audio, and image) analytics is expected to triple in 2015 alone. IDC estimates that at least 75% of applications being built for today's mobile, social, and cloud platforms are data intensive.
- **Pervasive connected computing enabled by the explosion of mobility and the Internet of Things.** IoT includes all manner of connected tags, sensors, and meters and is expected to encompass 30 billion autonomous things attached to the Internet, spewing out huge volumes of data exhaust, by 2020. Simultaneously, worldwide smartphone shipments will top 1.8 billion units in 2018 and wearables will reach over 39 million units by 2019.
- **Enterprise adoption of hybrid cloud architectures that blend reliance on public cloud services, in-house and hosted private clouds, and noncloud platforms to enable complex applications and business services.** IDC estimates that spending on public cloud services, including infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), and software-as-a-service (SaaS) offerings, will total more than $107 billion in 2017. Dynamic cloud-based systems of engagement will need to integrate with more static systems of record that continue to be supported by more traditional datacenter systems.
- **DevOps, the tight integration of development, test, and operations, which is being rapidly embraced by a wide range of organizations.** In 2015, IDC expects that over 60% of CIOs will use DevOps as their primary tool to manage the speed and sprawl of mobile and cloud applications. The pervasiveness of open source and GitHub makes a large repository of reusable code freely available, while open source configuration automation technologies paired with self-service cloud platforms enable application developers to stand up resources and develop, test, and release applications faster and more cost effectively than ever before.

As shown in Figure 1, when taken together, these innovations represent a new chapter in technology innovation — one that IDC refers to as the 3rd Platform. In comparison with the earlier 1st Platform mainframe era and the 2nd Platform client/server era, the 3rd Platform era is characterized by its ability to innovate and change rapidly; harness large, diverse data sets; and engage customers, partners, and consumers anywhere, any time. In the earlier 1st and 2nd Platform eras, applications

changed slowly, workload processing intervals and data volumes were predictable, and it was acceptable to rely on a small, highly trained team of expensive specialists to design, implement, and manage workload scheduling solutions to move data from one application or database to the next.

FIGURE 1

The 3rd Platform: Powering Continuous Industry Transformation



Source: IDC, 2015

IDC expects that by 2018, business cycle time acceleration and competitive pressures created by 3rd Platform innovation will disrupt as many as one-third of the incumbent leaders in a wide range of industries. To remain competitive, IT and business leaders will need to invest in the 3rd Platform technologies that enable innovation and in supporting technologies to help scale, power, and automate the enabling infrastructure, database, and workload management resources.

FUTURE OUTLOOK

Workload Automation Emerges as a Critical Enabler of Business Innovation

IDC expects that as the percentage of enterprise workloads deployed into 3rd Platform environments increases, demand for modern workload automation solutions will also grow. A major growth area for workload automation will center on coordinating the management of high-performance, data-intensive, cloud-scale workloads, including Big Data, and clustered applications across distributed systems.

Intuitive self-service interfaces and advanced scheduling design tools will enable business analysts and workload management generalists to take on complex scheduling and event-driven workload management planning activities that once required deep knowledge of arcane vendor-specific tools and workflows. Managed and SaaS-based workload automation services will offer access to sophisticated services on demand via pay-as-you-go subscription models.

In 2015, IDC expects increasing numbers of modern enterprise IT and business teams will turn to workload automation to address a number of important operational challenges presented by the rise of 3rd Platform technologies, including:

- Managing the import, normalization, and merger of data sets from a wide variety of sources and formats
- Sequencing the data collection, analysis, and reporting tasks efficiently
- Spreading workloads effectively across n-tier architectures, heterogeneous compute resources, and global enterprise datacenter networks
- Predictively detecting and remediating failed processes and disrupted workflows in near real time
- Automatically applying policies about when and where data can reside and how processes can be executed

Modern workload automation solutions have moved beyond the calendar- and time-specific limitations of legacy job scheduling solutions. Most solutions now support event- and policy-driven workload automation, resource scaling, auto-recovery, and enterprisewide federation of data and process flows.

As applications and services become more digitized, mobile, and interactive, the complexity of everyday transactions, workflows, and application architectures explodes. A single online purchase may invoke queries, transactions, and data exchanges across a dozen or more legacy and modern systems. Scalable and flexible workload automation solutions are critical to the success of these emerging applications.

Key Attributes of Effective Workload Automation in Modern Application Environments

While traditional workload management solutions relied on time-based scheduling to move data and integrate workloads, today's emerging everything-as-a-service application economy requires workload automation solutions that can:

- Respond dynamically to unpredictable, on-demand changes in human and machine to machine–driven interactions and workload volumes
- Support rapid application upgrades and changes driven by the adoption of DevOps strategies and automated, continuous releases
- Accommodate a wide variety of large-scale data sources and formats, including Big Data technologies and integrations with legacy in-house and third-party databases
- Anticipate, predict, and accommodate support for fluctuating workload requirements while maintaining business service-level agreements (SLAs)
- Reduce overall cost of operations by enabling IT generalists to take full advantage of sophisticated workload management capabilities via easy-to-use self-service interfaces, templates, and design tools

In evaluating a possible workload automation solution, business and IT stakeholders should collaboratively develop a checklist of evaluation criteria and look for solutions that can not only satisfy current requirements but also extend and expand as needed in the future.

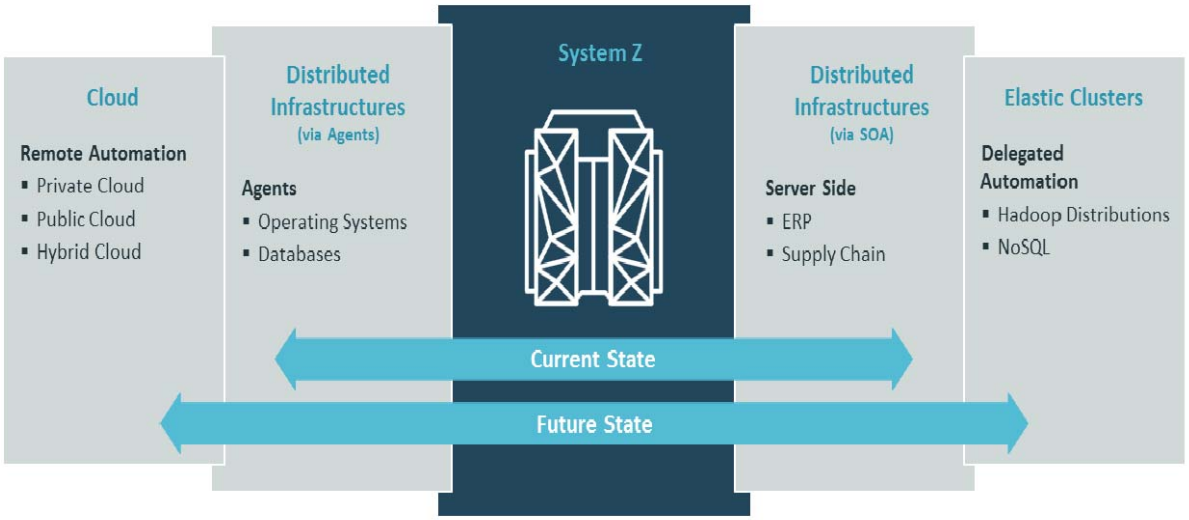
Considering CA Workload Automation

CA Technologies has long supported a range of different workload management solutions, each targeted at the needs of specific workloads or platforms. In response to the increasing impacts of cloud, mobility, Big Data, and IoT, CA Technologies has taken a number of steps to better integrate, simplify, and automate its portfolio to provide current and new customers with a unified and efficient operational experience, regardless of whether the organization needs to implement traditional batch scheduling, exception-based event-driven automation, dynamic multiplatform workload orchestration, or proactive, predictive role-based SLA management.

CA Technologies' goal is to offer a holistic approach that allows customers to evolve their workload management strategies at their own pace and put them in position to fully exploit the opportunities created by the application economy (see Figure 2).

FIGURE 2

CA Workload Automation Evolution



Source: CA Technologies, 2015

Over the past several years, CA Technologies has added a number of important capabilities to the portfolio that collectively address many of the issues discussed previously. Specifically, CA Technologies has made efforts to support rapid changes in the scale and scope of workloads, improved user productivity, and enabled more predictive service-level management. Proof points include:

- Ongoing development of and support for a large library of connectors and plug-ins (aka agents) supporting integrations with many major ERP systems, databases, and Web services

(The company has prioritized support for SAP, Oracle, and Microsoft environments in particular.)

- Expanding availability of predictive analytics to improve service-level management and critical path monitoring, alerting, and reporting
- Introduction of an intuitive, graphical role-based user interface, including self-service capabilities and mobile access, that can be used by IT, application developers, and business generalists as well as workload automation specialists
- Increasing range of multiplatform support across mainframe, Unix, Windows, and Linux architectures as well as most networking technologies
- An expanding number of migration utilities that help organizations more rapidly deploy, upgrade, and manage workloads across traditional, virtual, and cloud resources

The next major step in the CA Workload Automation road map introduces a number of prepackaged Advanced Integrations for a number of leading ERP and Big Data platforms. Unlike traditional plug-ins, Advanced Integrations are shipped as part of the native software code and are fully embedded in the third-party vendor's product. In the case of SAP, CA Technologies currently offers an Advanced Integration with SAP Solution Manager and SAP Business Warehouse. This allows SAP administrators to work with CA Workload Automation within SAP Solution Manager and SAP Business Warehouse, eliminating the need to manually import jobs, streamlining business process flows, and improving IT staff productivity. Future plans include support for SAP's full suite of business applications.

Because of customer demand, CA Technologies will soon be introducing Advanced Integrations for Hadoop-based Big Data environments. The availability of these integrations will be timely because many CA Technologies customers are planning Big Data initiatives that may result in significant workload growth. In the longer term, CA Technologies expects to continue to expand plug-in and advanced integration support for a broader range of ERP, cloud, and SaaS workloads.

CA Technologies' ability to rapidly develop and roll out an increasing number of sophisticated integrations in a timely and cost-effective manner is due in large part to the firm's decision to adopt 3rd Platform DevOps best practices internally. Having moved from waterfall to agile development methodologies, CA Technologies now engages more than 50 customers in sprint reviews. CA Technologies credits agile development with enabling it to develop and release important innovations faster than ever and to better engage directly with customers. Customers report that they are seeing the benefits of CA Technologies' ongoing investments.

Investment Firm Relies on CA Workload Automation to Meet Critical Trading Deadlines

One of the world's oldest investment firms, headquartered in the United States, has relied on CA Workload Automation since 2006. The company's two major U.S. datacenters support more than 500 Windows Servers and 200 Linux servers. The system is managed by six to seven dedicated administrators and is also used by about 25 designers with part-time responsibility for building automation processes, in addition to other development and test responsibilities. Over the past decade, the company's workload management requirements have skyrocketed while processing windows have been shrinking. The current CA Workload Automation implementation orchestrates more than 5,000 jobs a day.

The CA Workload Automation solution was initially deployed to help the company roll out a number of new worldwide customer account management services that helped triple mission-critical workload processing requirements in just one year. The system's top priority is the nightly processing of customer trade data and related investment transaction clearing. These processes require collection and transmission of data between the company's seven trading systems and the outside custodian bank that settles trades after the market closes.

Customer account information needs to be updated and accessible in time for overnight market trading. As the number of transactions increased, the existing time-based Unix Cron and Windows NT schedulers could not support the level of synchronization and troubleshooting required to ensure that all trades were processed between the close of the market at 4:15 p.m. ET and the opening of after-hours systems at 8:30 p.m. ET. Failed jobs would not be flagged until late in the workflow, and the company was hitting its "readiness to trade" deadlines only 82% of the time.

Recognizing that the company's data processing requirements were going to continue to increase and become more time sensitive in the future, the company sought a more real-time, event-driven, automated workload management solution that would support both Windows and Linux platforms and allow both dedicated administrators and application developers to quickly learn the tool. After an exhaustive evaluation of several alternatives, the decision-making team selected CA Workload Automation, due in large part to its ease of use and proven support for Windows and Linux environments.

The company credits CA Workload Automation with increasing the "readiness to trade" completion rate to 99.5% while significantly improving staff productivity. CA Technologies' intuitive user interface has been particularly helpful in getting new users up to speed quickly without needing to send them to specialized training classes.

The investment company is counting on CA Workload Automation to help implement its next-generation trade processing system, which is expected to come online in the next two to three years. The new system will cut after-hours processing times in half, with the goal of having trading information fully updated and live in a customer's account no later than 6:30 p.m. ET – a full two hours earlier than previously. The new system relies on Big Data SQL database technology and is expected to result in a major increase in the volume of data processed daily. CA Technologies' commitment to support Big Data for SQL databases and ongoing improvements to system stability and usability have convinced the investment company to stay with CA Technologies as it undertakes this critical transition.

CHALLENGES/OPPORTUNITIES

While the majority of enterprise-class businesses are diligently working to take full advantage of 3rd Platform technologies, each organization makes unique decisions about where and how to invest. For many organizations, customer-facing Web and mobile systems of engagement evolve much more rapidly than back-end databases and application servers. Other organizations prioritize investments in Big Data technologies to extract critical new business insights for volumes of disparate customers and competitor data streams.

As a result, almost all enterprise-scale organizations are struggling to determine which existing systems management and automation solutions make the most sense for their organization going forward. Workload management and automation technologies are not always top of mind when it comes to crafting business and IT strategies for the application economy. Like most vendors in this

market, CA Technologies must balance the cost of supporting the needs of its legacy 1st and 2nd Platform customers with that of investing in solutions that will enable the 3rd Platform to succeed.

If CA Technologies is able to effectively educate its customers about the benefits of workload automation in the 3rd Platform era, the company will have the opportunity to create a new set of long-term strategic relationships that directly benefit its customers' business strategies and budgets.

CONCLUSION

The combined impact of cloud, mobile, Big Data, IoT, and DevOps on worldwide enterprise digital business strategies cannot be underestimated. For many organizations, particularly those that must stitch together data and workloads from multiple internal and third-party systems, workload automation will be an important enabler of dynamic workflows and business processes. IT operations, applications developers, and business analysts will need to collaborate closely in developing a workload automation strategy for the application economy.

Decision makers should look for solutions that are scalable and intuitive and support tight integrations with mission-critical ERP and Big Data platforms as well as emerging cloud services and infrastructure. CA Technologies is investing to extend and evolve its workload automation portfolio to address many of these 3rd Platform requirements and should be considered in any serious evaluation of enterprise workload automation solutions.

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