DevOps, Continuous Delivery, and “Institutionalized Change”

Why IT Automation Drives the Digital Business

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Overview

Over the past ten years, rapid changes in both business and technology have forced virtually every company to evolve IT services in ways that are more consumer driven, mobile, and connected. The rise of the digital business, the growing expectations of technology-savvy consumers, and a changing digital economy are driving both development and operations organizations to seek faster, more efficient ways to deliver the software and applications that have become so critical to modern "business as usual."

As cloud computing, mobile devices, and online interactions replace on-premises data centers, desktop computers, and traditional brick-and-mortar commerce, new ways of generating revenue and heightened competition have created an environment of "institutionalized change." The business must be constantly evolving, which means that IT applications and services must constantly evolve as well.

Today, a key role of IT organizations is to deliver a framework for business evolution. Traditional development organizations have evolved to become modern software factories whose innovations are directly impacting bottom line revenue. They are delivering new features and code at accelerating intervals, then working with Operations and Application Support groups to streamline a never-ending flow of refinements to hardware, software, application code, and networks.

Modern IT practices, including Agile development, DevOps, and Continuous Delivery are a big part of this story. Such practices are designed to accelerate software delivery and ease the cross-stage transitions that occur throughout the software lifecycle. At the same time, they help transform the institutionalized change processes characteristic of so many businesses from ongoing chaos to controlled, predictable IT and business transformation.

Enterprise Management Associates (EMA) research keeps a constant finger on the pulse of IT departments as they adapt to these new realities. As IT increasingly takes center stage as a key enabler for digital evolution, IT leaders are being forced to rethink their automation strategies to ensure that software services meet the growing needs of both the business and the consumer.

In the spring of 2017, EMA conducted a survey on DevOps and Continuous Delivery practices in modern businesses designed to explore the organizational and tools-related challenges impacting today's IT practitioners. This EMA white paper highlights key findings from that study, focusing on the value proposition of automated products supporting business growth in a world of constant change.

Tooling the Continuous Delivery Lifecycle to Support the Digital Enterprise

Today's IT organizations are seeking new ways to optimize software development, testing, deployment, and production management by investing in the processes and automation necessary to facilitate delivery of software at scale. Agile practices enable new software features to be developed faster, in smaller increments, in an orchestrated manner, and with more frequent releases. Cross-functional DevOps teams working collaboratively, and Continuous Delivery practices geared towards accelerating delivery of new features maximize business agility while mitigating the impact of dynamically changing applications on production environments.

The value propositions of Agile, DevOps, and Continuous Delivery are often very tangible, and three key factors—integration, automation, and revenue growth—are beginning to emerge as top focus areas for IT initiatives supporting the digital business.

Integration

One key research finding concerns data sharing across tools supporting the software lifecycle. For Continuous Delivery to be successfully accelerated, each stage of the lifecycle must be optimized; the delivery chain is only as fast as its slowest link. EMA analysts see DevOps as the framework of collaborative processes operating across the lifecycle to accelerate each stage underlying Continuous Delivery.

With the rise of the cross-functional support practices characteristic of DevOps teams, Application Support organizations, and Infrastructure Services groups, many IT organizations are in the process of evolving from silo-based to cross-functional development and delivery practices. This, in turn, is driving new requirements for automation enhancing visibility of the tasks and artifacts underlying each stage of the lifecycle.

To illustrate, each of the product types shown in Figure 1 is specific to the work being done at specific stages of application delivery. Each product supports specific tasks or devices, creating data and metadata that can be extremely useful to downstream processes and support activities.

STAGE	LEAD ROLES	PARTICIPANTS	TOOLS
DESIGN	• Development • LOB Stakeholders	• Operations	• ALM • Requirements Management • Modeling • Project Management
DEVELOP	• Development	• LOB Stakeholders • Operations	• IDEs • Debug • Repository • Error Scan • Build Automation
TEST	• Development/QA • Operations	• LOB Stakeholders	• Test Management • Test Data Management • API Test • Integration Test (Service Virtualization)
DEPLOY/RELEASE	• Development/QA • Operations	• LOB Stakeholders	• Process Orchestration • Configuration Management • Release Automation
MANAGE	• Operations	• Development • LOB Stakeholders	• Run Book Automation • Systems Management • Application Management • Performance/Availability Mgt • User Experience Management • Service Desk/Trouble Ticket
ASSESS	• LOB Stakeholders	• Development • Operations	• Service Level Management

Figure 1. Examples of tools supporting each lifecycle stage

Tools integrations offer a way for the metrics and logs created by disparate tools to be used across the software lifecycle. This provides a basis for cross-functional collaboration, as well as the monitoring, reporting and analytics capabilities that have become so important to end-to-end service delivery and production support.

In short, integration is one of the primary means of information sharing that is so essential for the collaborative activities characteristic of modern IT organizations. It is also a key function of Release Automation solutions such as CA Automic Release Automation, which automates and orchestrates the process of moving software across lifecycle stages. Data and metrics become essential elements supporting the modern software factory, as data and metadata generated by one stage of the lifecycle can be used to dynamically control subsequent automation processes.

Figure 2 reinforces the importance of integration as foundational to digital business. Of the top four application delivery–related practices and capabilities identified by survey respondents as "most important to the digital business", DevOps and Continuous Delivery were ranked as numbers one and three, respectively, while numbers two and four were both integration-related. Automation integrations, geared towards sharing data across lifecycle stages, and integrations supporting data sharing between production management tools were both ranked in the top four.

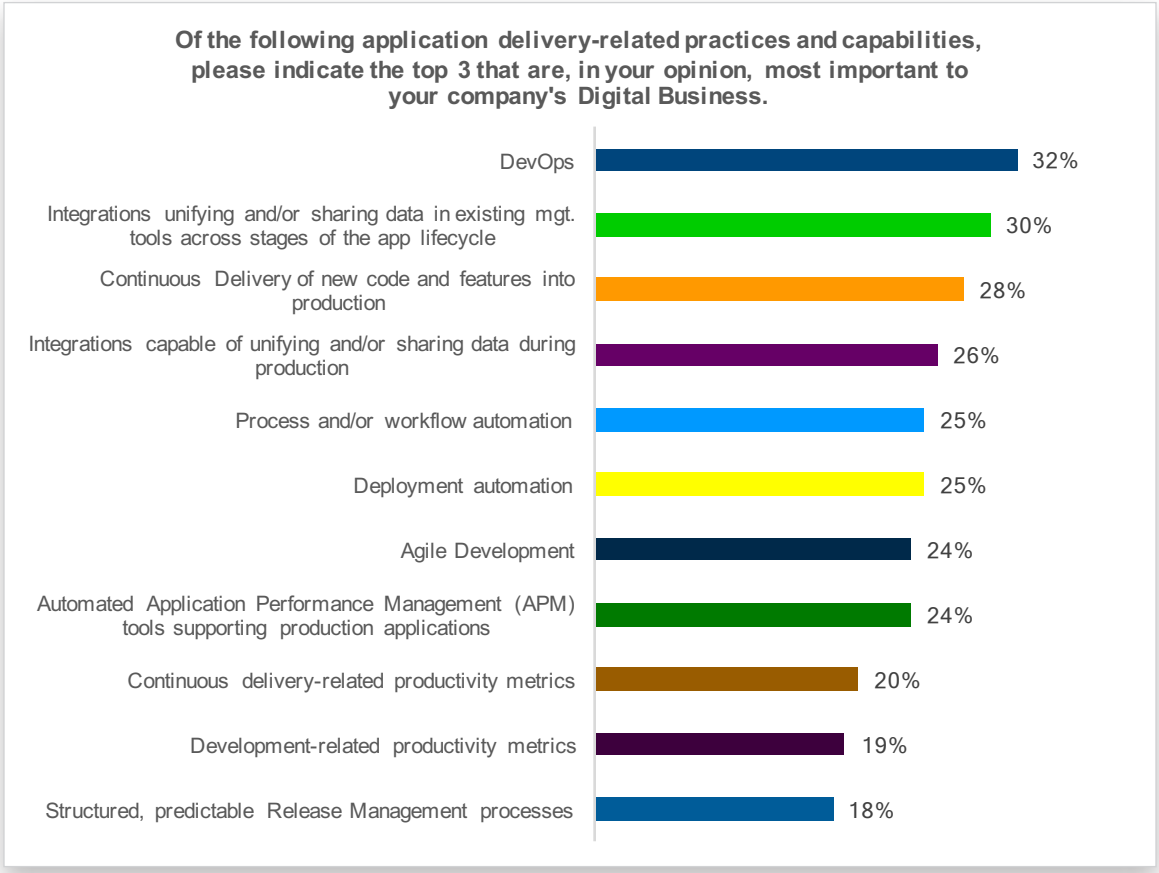

Figure 2. Integrations across tools and lifecycle stages are gaining importance as keystones of automated DevOps and Continuous Delivery.

Automation

Automation, encompassing tools as well as features such as integration, orchestration, and analytics, is an essential element supporting software delivery. As Figure 3 shows, 87% of survey respondents identified automation as being "critical" or "very important" to accelerating the Continuous Delivery process.

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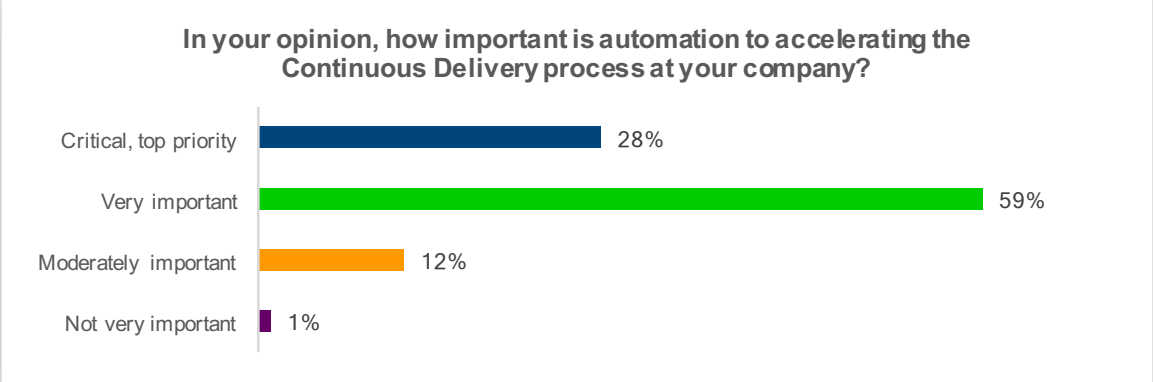

Figure 3. Automation is a primary pillar for accelerating Continuous Delivery.

At the same time, it is clear that IT organizations as a whole are still in the midst of evolving their practices and tools portfolios to support more cross-functional, cross-lifecycle ways of working. As Figure 4 illustrates, these same respondents reported relatively low levels of automation within their own organizations:

- 63% indicated that less than 50% of their company's end-to-end Continuous Delivery process is automated.
- Only 6% had automated 90% or more of the process.

EMA expects automation investments to significantly accelerate as businesses increasingly recognize the value proposition of automation in supporting business agility and freeing up IT organizations to provide critical differentiation.

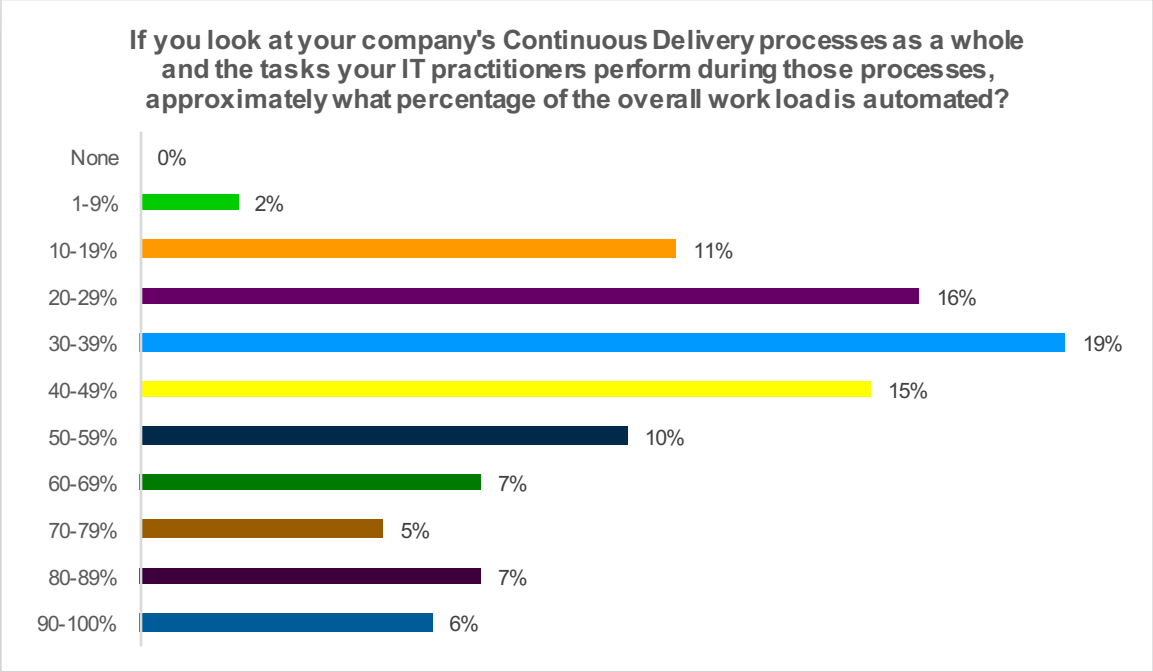

Figure 4. Respondents reported relatively low levels of automation supporting end-to-end Continuous Delivery.

Revenue Growth

Figure 5 (also taken from the EMA's recent DevOps study[1]) illustrates the value proposition of Continuous Delivery as a revenue driver. As similar EMA studies conducted over the past five years have borne out, accelerated delivery of code releases frequently translates to exceptional revenue growth. The 2017 study found that companies increasing code delivery frequency by 25% or more were 62% MORE likely to see revenue growth of 25% or more than companies whose frequency increased by an amount less than 25%, remained the same, or decreased.

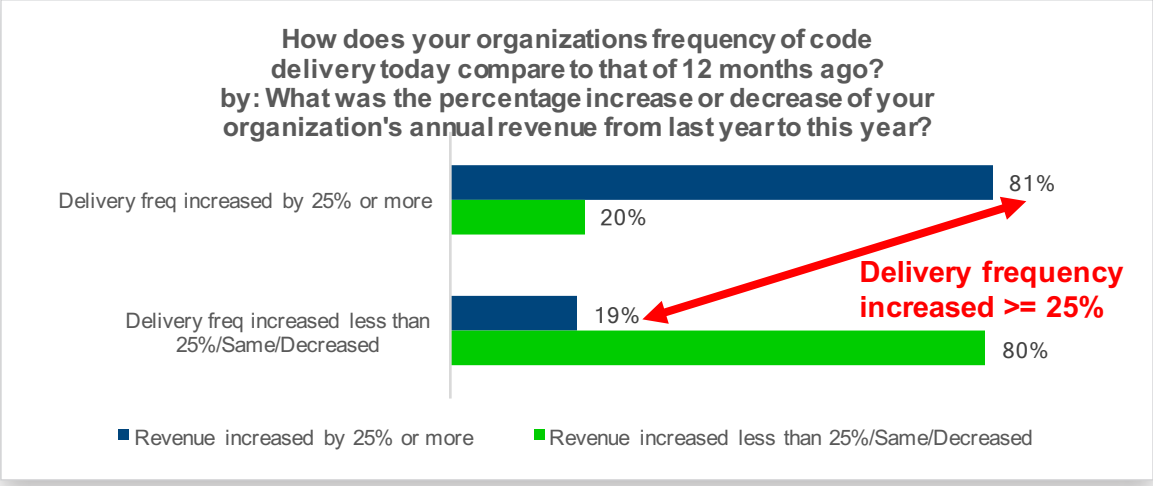

Figure 5. Accelerated code delivery frequency is correlated with increased revenue growth.

[1] EMA, "DevOps/Continuous Delivery Tooling: Launchpad for the Digital Enterprise," 2017. Available for download at www.emausa.com.

Both IT and business leaders grasp the vital relationships between software and the successful digital business:

- 93% of survey respondents indicated that a smoothly functioning Continuous Delivery process is either "critical" or "very important" to their company's bottom-line revenue.
- 87% said that automation is either "critical" or "very important" to accelerating software delivery throughout the lifecycle.

Release Automation

Modern Release Automation solutions, the most powerful and sophisticated workload and software deployment engines in history, are enabling IT organizations to harness the power of change while minimizing adverse impact to production environments, IT budgets, and business as usual.

Building on the findings from this study, repeated interviews and research findings have demonstrated the value proposition of Release Automation products as accelerators for code delivery. CA Automic Release Automation provides the integrations, automation, and accompanying revenue benefits uncovered by this survey.

Release Automation solutions are designed to orchestrate, control, and deploy software releases across the lifecycle. Supporting the modern software factory with a host of features designed to streamline cross-stage lifecycle transitions and eliminate repetitive manual tasks, these products are used by customers to orchestrate provisioning and deployment tasks to ensure standardized releases and positive outcomes.

In a recent interview, EMA analysts interviewed a CA customer who had fully automated the end-to-end delivery chain to facilitate a cookie-cutter approach to software delivery. Orchestrated workstreams automatically trigger software testing as an intrinsic part of the software lifecycle, once code is committed and marked as final. If the software passes all automated tests, it is then automatically deployed to production. This has enabled IT specialists to deploy literally thousands of releases per year with very little adverse production impact. A standardized approach, data sharing across tools and lifecycle stages, and a manifest-driven approach to artifact delivery ensures software is delivered fully tested and with correct configurations—and on time, every time.

The benefits of the solution include:

- Wide-ranging integration capabilities which ensure that information contained in development-related repositories, testing tools, etc., can be shared with relevant processes and stakeholders across the lifecycle.
- Consistent configurations and provisioning as software moves across stages eliminates manual errors.
- Developers can deploy development and test environments with a few simple keystrokes, maximizing time spent on coding versus operational tasks.
- Sophisticated orchestration capabilities ensure that testing and signoffs become part of a pre-defined workstream, enabling a "software factory" approach to software development.
- Releases are predictable with fewer unpleasant surprises; Operations groups spend time on delivering high-quality services and working on new projects versus day-to-day firefighting.
- Improved software quality also improves customer satisfaction.

- There are fewer gating factors—such as production failures—limiting the speed at which software can be deployed.
- A highly scalable delivery platform helps ensure Continuous Delivery processes support future business growth.
- Comprehensive audit and reporting capabilities improve compliance and visibility.
- End-to-end tracking of the release process allows DevOps and Application Support teams to pinpoint bottlenecks and optimize deployment flows.

EMA Perspective

EMA's 2017 study on DevOps, Continuous Delivery, and Agile practices uncovered important findings supporting the idea that high productivity in delivering software releases equates, in many cases, with outsized revenue growth. It also found strong links between software and digital business and between revenue growth and the quality of the interactions between Development and Operations.

A prior study, conducted 18 months ago with primarily Operations focused IT groups, found that "Deployment/Release Automation supporting Continuous Delivery" topped a wish list of more than ten potential enterprise management product types as the most-wanted solution. IT practitioners are recognizing that without automation supporting well-developed software delivery practices, it's possible to deliver either speed or quality. However, with well-chosen automation, IT organizations have a far higher chance of delivering on both.

Automating personnel-intensive tasks (such as manipulating test data, building test environments, executing quality assurance tests, and configuring infrastructure) minimizes the possibility for human error inherent in multistep processes. It also supports "build once, run many" scenarios in which automated processes can be controlled by standardized tools with repositories, policies, templates, and similar organizational assets designed to promote and enforce predictable outcomes.

Fortunately, today's IT consumers can benefit from products such as CA Automic Release Automation that can deliver a documented, provable value proposition. In an era where business success or failure can depend on the speed of software delivery, the value proposition of such products can dramatically outweigh investment costs.

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

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