A Forrester Consulting
Thought Leadership Paper
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Accelerate Your Virtualization And Cloud Journey

Automate Everywhere With Unified Management Tools To Deliver IT Resources At Cloud Speed

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Table Of Contents

Executive Summary 1

Virtualization Remains A Top IT Infrastructure Priority, As It Should 2

The Less Virtualized Face Different Challenges Than The Highly Virtualized 3

Regardless Of Virtualization Maturity, IT Leaders Must Automate More ... 5

Automating DevOps Processes Demands Additional Capabilities 7

Key Recommendations 10

Appendix A: Methodology 11

Appendix B: Demographics/Data 11

Appendix C: Endnotes 13

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Executive Summary

It is imperative that today's companies create compelling, differentiating customer experiences through software. While it may seem a road well-traveled in 2016, IT organizations are still aggressively virtualizing IT resources to deliver the on-demand, cloud-style responsiveness and agility their business customers and developers demand.

Most IT organizations still desire higher levels of virtualization than they have today, and 78% plan to grow their virtualized infrastructure in the next year. The challenges they face and capabilities they need to grow their virtualized infrastructure vary, depending on the level of maturity and automation of their virtualization efforts. And those organizations that are primarily accelerating virtualization and cloud to enable developers face unique challenges and have different priorities than those that do not. However, the path to cloud maturity is the same for all: Increase automation to virtualize faster and more effectively, and serve both internal and external customers.

In February 2016, VMware commissioned Forrester Consulting to evaluate current levels of virtualization maturity at US and European organizations and the challenges these organizations face at each level of maturity. In conducting in-depth online surveys with 210 US and European enterprise IT decision-makers responsible for virtualization at their organizations, Forrester found that the journey to greater virtualization and cloud is accelerated when companies focus on acquiring the right management tools, automating the entire IT operations life cycle, balancing cost savings with agility, prioritizing speed, establishing strong governance, and making developers as productive as possible.

Automation, enabled by powerful tools, is the fastest path to expanding virtualization and delivering resources at cloud speed.

KEY FINDINGS

Forrester's study yielded three key findings:

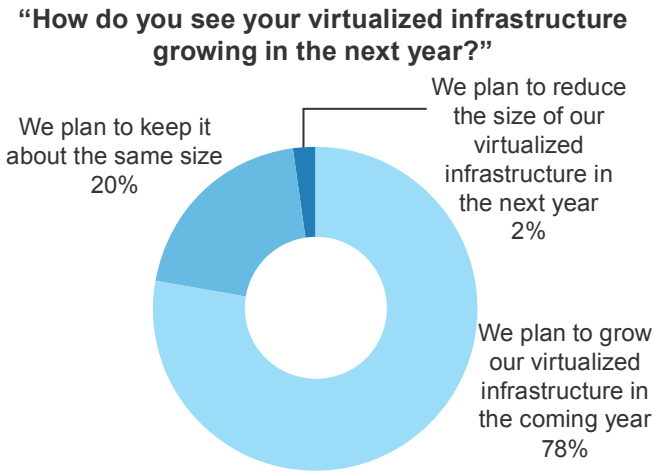
- **As companies virtualize more, lack of visibility and tool creep become the top challenges.** Companies just beginning their virtualization journey struggle with basic infrastructure capabilities such as visibility, capacity, and scale. As organizations virtualize more, they encounter more challenges with visibility, in part because of the number of tools needed to manage their infrastructure.
- **Only 24% of companies can provision infrastructure in hours — the rest take days or weeks.** Regardless of how virtualized an organization is, to become more efficient, it must automate. While many organizations believe they are automating today, less than a quarter are able to provision infrastructure environments effectively, indicating that most still have a ways to go to reach automation maturity.
- **Companies need unified, simple, and cost-efficient tools to deliver resources at cloud speed.** In today's business world, where digital experiences are key to customer experience, the primary drivers for expanded virtualization and cloud-based IT portfolios are application development speed, quality, and agility. To move toward greater DevOps efficiency, organizations need automation solutions that help them maintain vision and control while accelerating the development process.

Virtualization Remains A Top IT Infrastructure Priority, As It Should

Virtualizing physical workloads is the first step on the road to the agile, responsive infrastructure that companies need to meet today's rapidly changing business demands. Virtualized workloads are also the foundation for all cloud computing. Most companies recognize virtualization's proven benefits and are actively seeking to expand and broaden its use:

- **Most organizations have not virtualized as many workloads as they hope to.** We asked respondents to estimate the percentage of compute workloads they virtualize today and to tell us what percentage is their goal. Seventy-three percent of respondents want to virtualize more than half of their workloads, but only 29% have crossed that threshold today (see Figure 1). This means that most organizations today have a virtualization gap that they need to close.
- **Nearly 80% of companies plan to grow their virtualized infrastructure in 2016.** To close the gap between their current state and their goal, most organizations plan to expand their virtualized infrastructure in the next 12 months (see Figure 2).

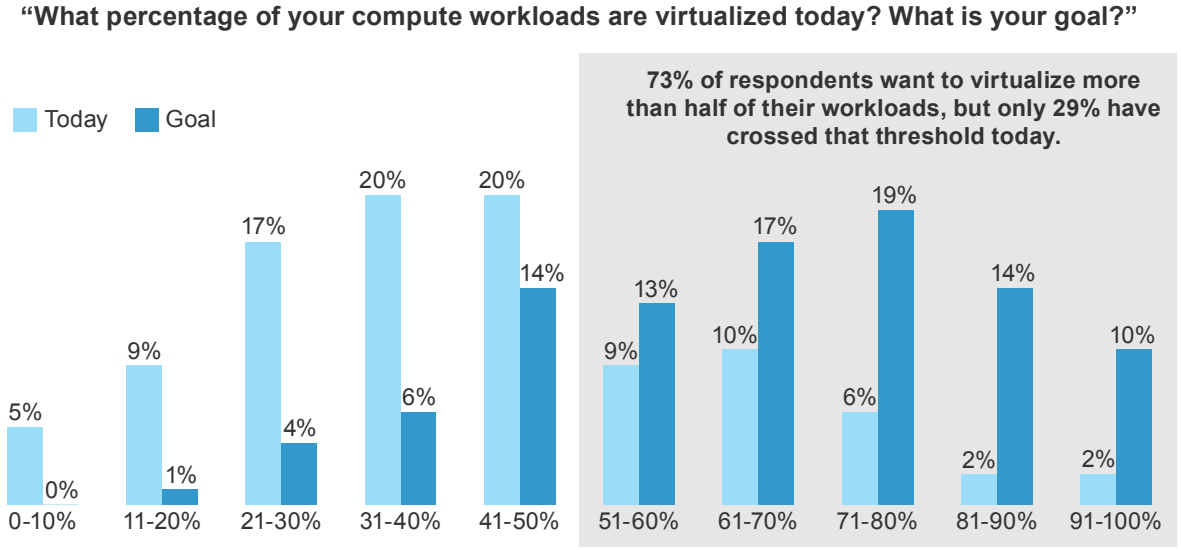
FIGURE 2
Virtualization Investment Continues To Grow



Base: 210 US and European IT decision-makers responsible for virtualization

Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

FIGURE 1
Most Organizations Desire A Higher Degree Of Virtualization Than They Have Today



Base: 210 US and European IT decision-makers responsible for virtualization

(percentages may not total 100 because of rounding)

Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

COMPANIES STRUGGLE TO BALANCE RISING IT COSTS WITH PERFORMANCE DEMANDS

Our study confirms that cost reduction continues to be the most important IT infrastructure objective. Respondents told us that they are most concerned about rising costs and the business demands that they reduce costs — but the business considers availability, speed, and support to be just as important. This creates tension, and it means that IT teams in the process of virtualizing more must explore ways to keep costs in check while also driving up performance and availability.[1]

AS ORGANIZATIONS MATURE IN VIRTUALIZATION AND AUTOMATION, CHALLENGES AND NEEDS SHIFT

To help resolve this tension, we asked respondents about their virtualization and automation priorities, challenges, and needs. We found that what's most important and what's most difficult depends on how virtualized and automated companies are already. To uncover these differences, we looked at how survey answers varied between highly and less virtualized companies and highly and less automated companies.

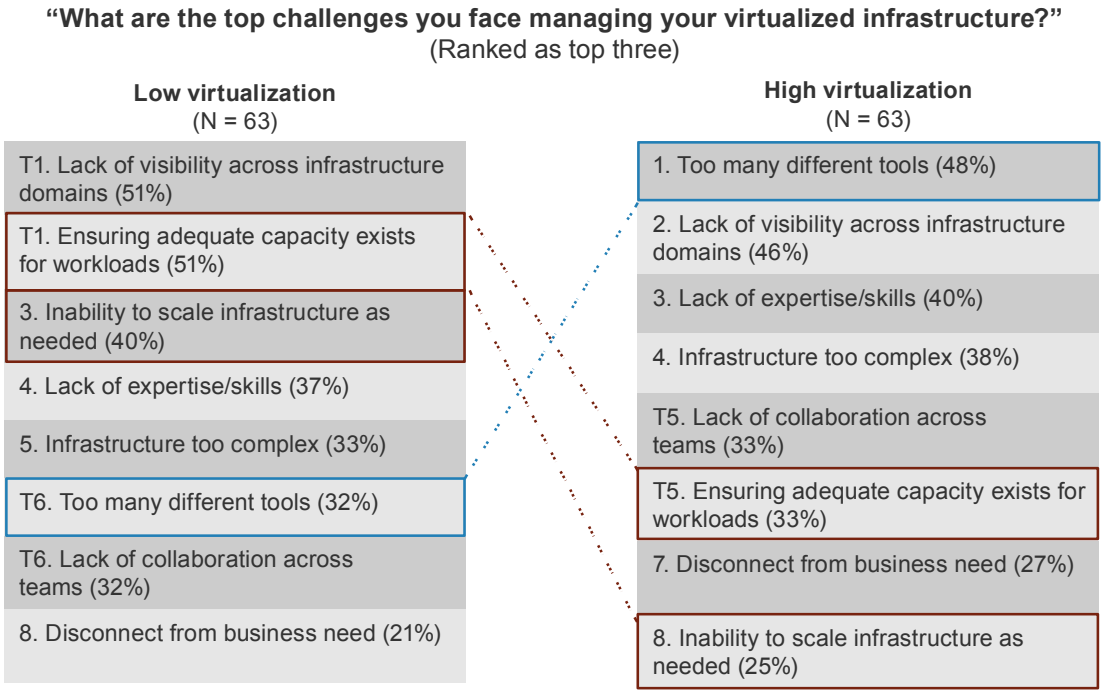
The Less Virtualized Face Different Challenges Than The Highly Virtualized

While virtualization's key benefits — lower capital expenses and increased IT agility and flexibility — are well-understood by most companies, achieving those benefits requires different tools and skills depending on how experienced any given company is with virtualization management.

For our analysis, we first looked at organizations that have virtualized 30% or less of their compute loads ("low virtualization"). These companies:

› **Struggle with basic virtualization challenges.** Firms with low virtualization struggle with basic "blocking and tackling" — they don't have enough visibility into how the virtual infrastructure is performing, how much capacity remains, and how to safely scale it (see Figure 3). Over half of organizations lack visibility across infrastructure domains and are unable to ensure that adequate capacity exists for workloads, and 40% are unable to scale their infrastructure as needed.

FIGURE 3
Challenges Evolve As Companies Virtualize More Infrastructure



Base: 210 US and European IT decision-makers responsible for virtualization

Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

› **Need more help identifying and remediating performance capacity problems.** Less virtualized companies are most concerned with identifying performance problems before they happen and need tools to tell them how to rebalance workloads to maintain adequate performance (see Figure 4). They are most focused on solutions that help them find and fix problems before these problems have a business impact, and they want a unified virtualization management solution that can give them these answers quickly.

We then looked at the responses from companies that virtualized 50% or more of their compute workloads ("high virtualization"). These companies:

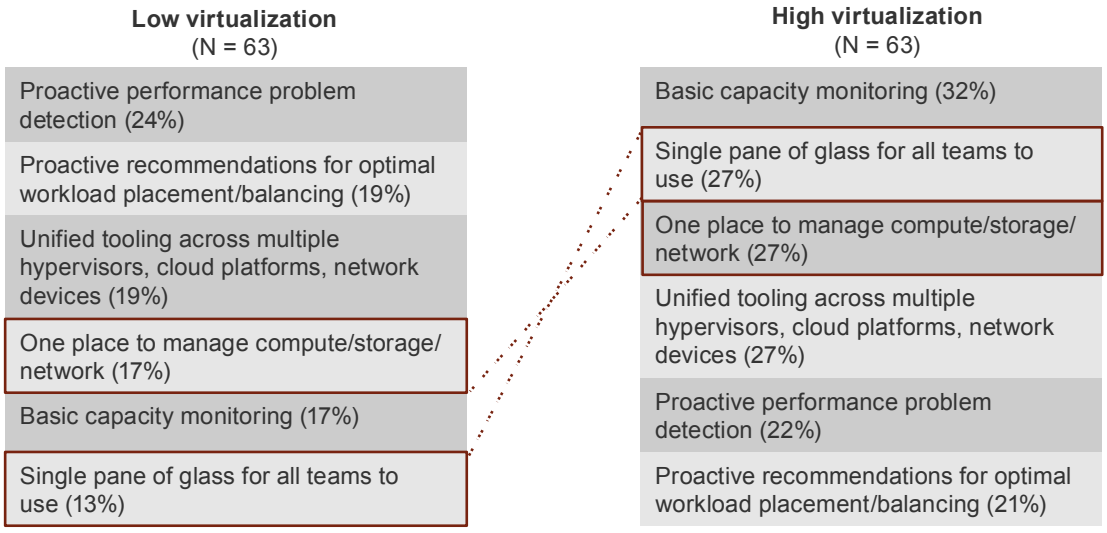
› **Struggle with too many tools in use by too many different teams.** Experienced teams that have virtualized more of their workloads reported a bigger problem with "tool sprawl." Almost one-third of high-virtualization organizations are using more than five tools to manage their virtualized infrastructure, compared with just 13% of those firms with low virtualization (see Figure 5). Indeed, only 6% of high-virtualization organizations use a single tool to manage their entire virtual infrastructure.

› **Struggle with a lack of visibility as well, but for different reasons.** The additional tools that high-virtualization organizations use mean that they, too, reported a lack of visibility into performance and capacity, but in their case the problem is too many tools. This added complexity actually *reduces* visibility. It makes sense that 48% of this cohort reported that they have "too many different tools."

› **Need a single, unified management solution that can serve multiple needs.** Those more experienced with virtualization place a much higher priority on solutions that provide a single pane of glass — a unified view of all aspects of capacity, availability, and performance — to reduce complexity and resolve problems faster. They also prefer having a single tool to manage not only their virtualized servers but also their virtualized storage and network resources.

FIGURE 4
As Orgs Virtualize, Critical Feature Needs Shift From Help With Basics To Reducing Complexity

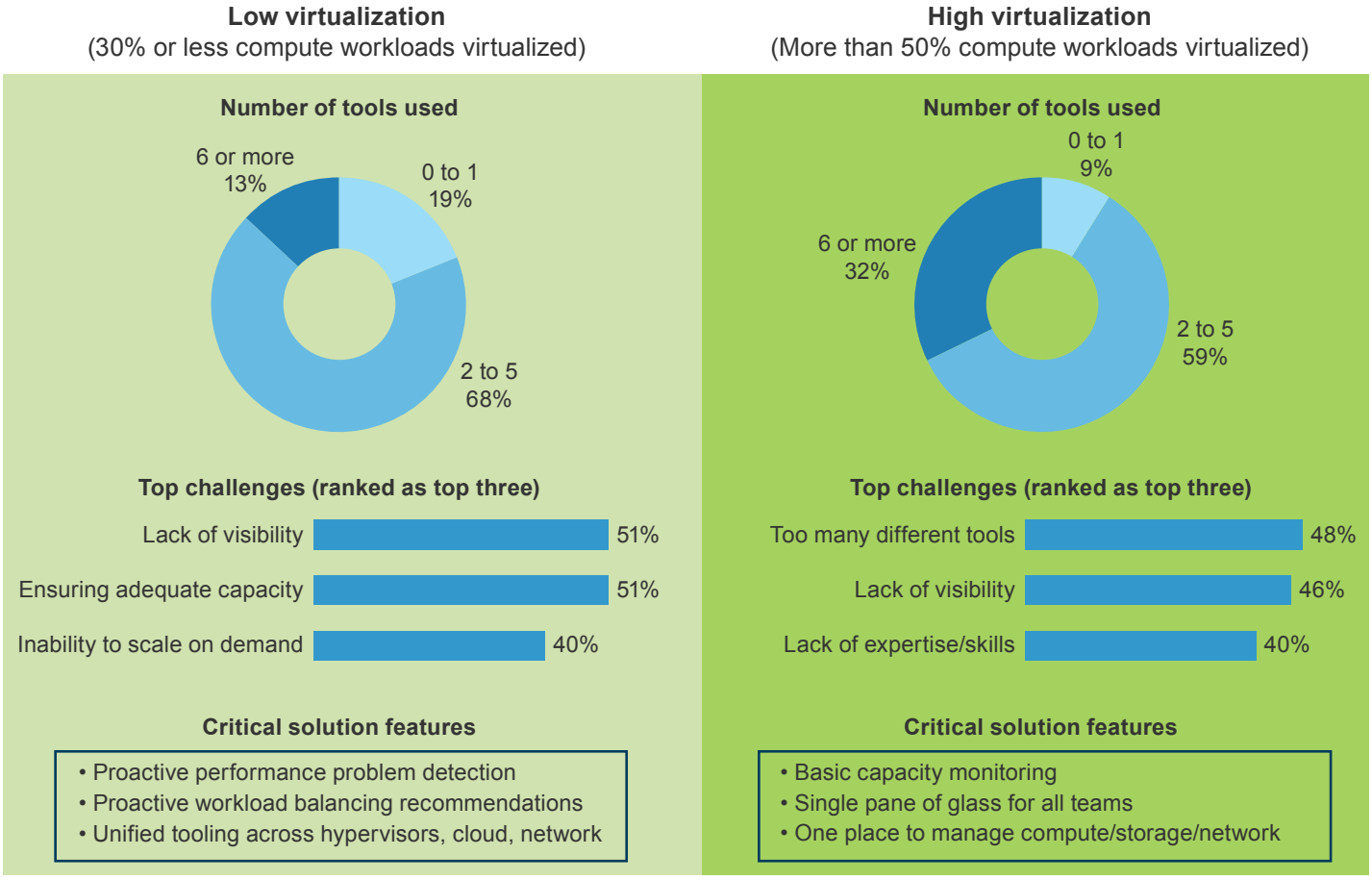
"How important are the following solution features to help you operate your virtualized infrastructure?"
(Ranked as critical)



Base: 210 US and European IT decision-makers responsible for virtualization

Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

FIGURE 5
Low Virtualization Versus High Virtualization Comparison



Base: 210 US and European IT decision-makers responsible for virtualization
Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

Regardless Of Virtualization Maturity, IT Leaders Must Automate More

For anyone expanding their use of virtualization, whether primarily to lower costs, increase agility, or lay the foundation for cloud computing — or, in most cases, to do all three at once — automation is critical. Today's highly dynamic, virtualized, and on-demand infrastructures demand much higher levels of automation than IT leaders have achieved in the past. There's no cloud in your future without a high degree of automation.

MOST COMPANIES VALUE SELF-SERVICE BUT FAIL TO DELIVER TRULY AUTOMATED PROVISIONING

Results from this study show that low-virtualization organizations see automation mainly as a cost lever today: They expect automation to drive down capital expenses by allowing them to virtualize more workloads and still manage them with a reasonable staff size. High-virtualization organizations, on the other hand, view the main benefit of automation as improving their internal customer experience.[2]

Regardless of whether companies see automation as a cost-saver or a customer experience driver, most IT decision-makers surveyed understand the importance of

automated self-service — it is a high or critical priority for 84% of organizations today.[3] And a majority of respondents said they are well on their way to automated infrastructure. However, provisioning times tell a different story. Forty-one percent of respondents said that it takes them weeks or longer to provision production-ready infrastructure to the business, and only 24% said they can provision in hours or faster (see Figure 6). Interestingly, there were no significant differences in provisioning times for low- and high-virtualization organizations — automation is a prime challenge, regardless of virtualization maturity.

POOR PROCESSES, LACK OF STANDARDIZATION, AND INADEQUATE TOOLS ARE THE CULPRITS

The main culprit behind the long provisioning times is the multiple handoffs that must take place between different IT teams to spin up virtualized/cloud infrastructure (see Figure 7). Nearly one-third of all respondents ranked this as the No. 1 challenge, and that ranking was consistent regardless of virtualization maturity or how fast IT can provision environments. Inefficient processes are made even more inefficient when companies don't have standardized environments or powerful automation tools.

A lack of automation has far-reaching consequences. The latency created by manual processes and handoffs in provisioning infrastructure causes critical delays, damages IT's relationship with the business, and increases the cost of software development, infrastructure management, and service delivery through repetitive work.[4]

LOOK FOR POWERFUL YET EASY-TO-USE AUTOMATION TOOLS TO DELIVER AT CLOUD SPEED

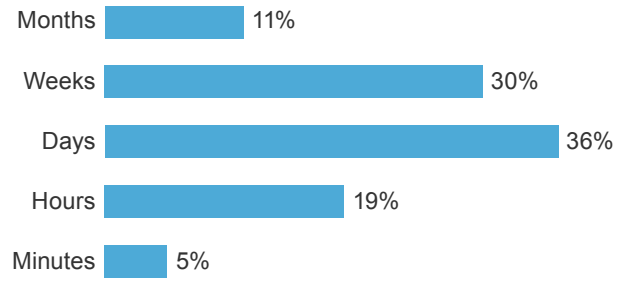
To manage virtual resources at cloud speed by driving down provisioning times and improving agility and performance, companies need a unified cross-domain automation platform that enforces standards and consistent processes. Survey results show that (see Figure 8):

- Highly virtualized infrastructure organizations need advanced automation for processes like resizing and policy-based placement.
- Low-virtualized infrastructure organizations are looking for an easy-to-use automation tool that provides strong visibility and insights into real-time costing and utilization metrics.

FIGURE 6

Forty-One Percent Of Orgs Take Weeks Or Months To Provision Production-Ready Infrastructure

"For on-premises provisioning, which unit of measurement best describes how long it takes you to provision production-ready infrastructure (compute, network, and storage) to the business today?"



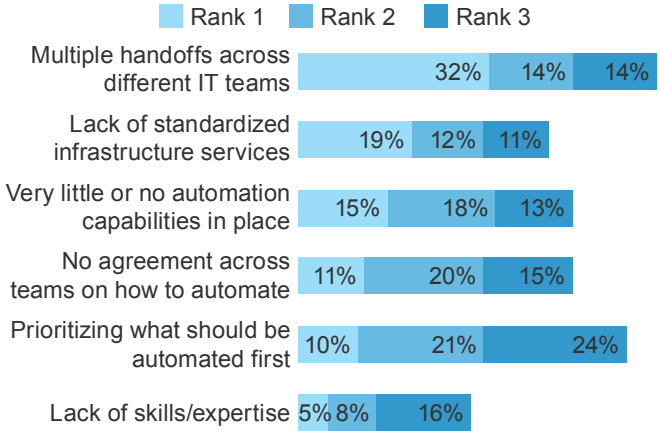
Base: 210 US and European IT decision-makers responsible for virtualization (percentages may not total 100 because of rounding)

Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

FIGURE 7

Handoffs Between IT Teams Prevent Infrastructure Automation Success

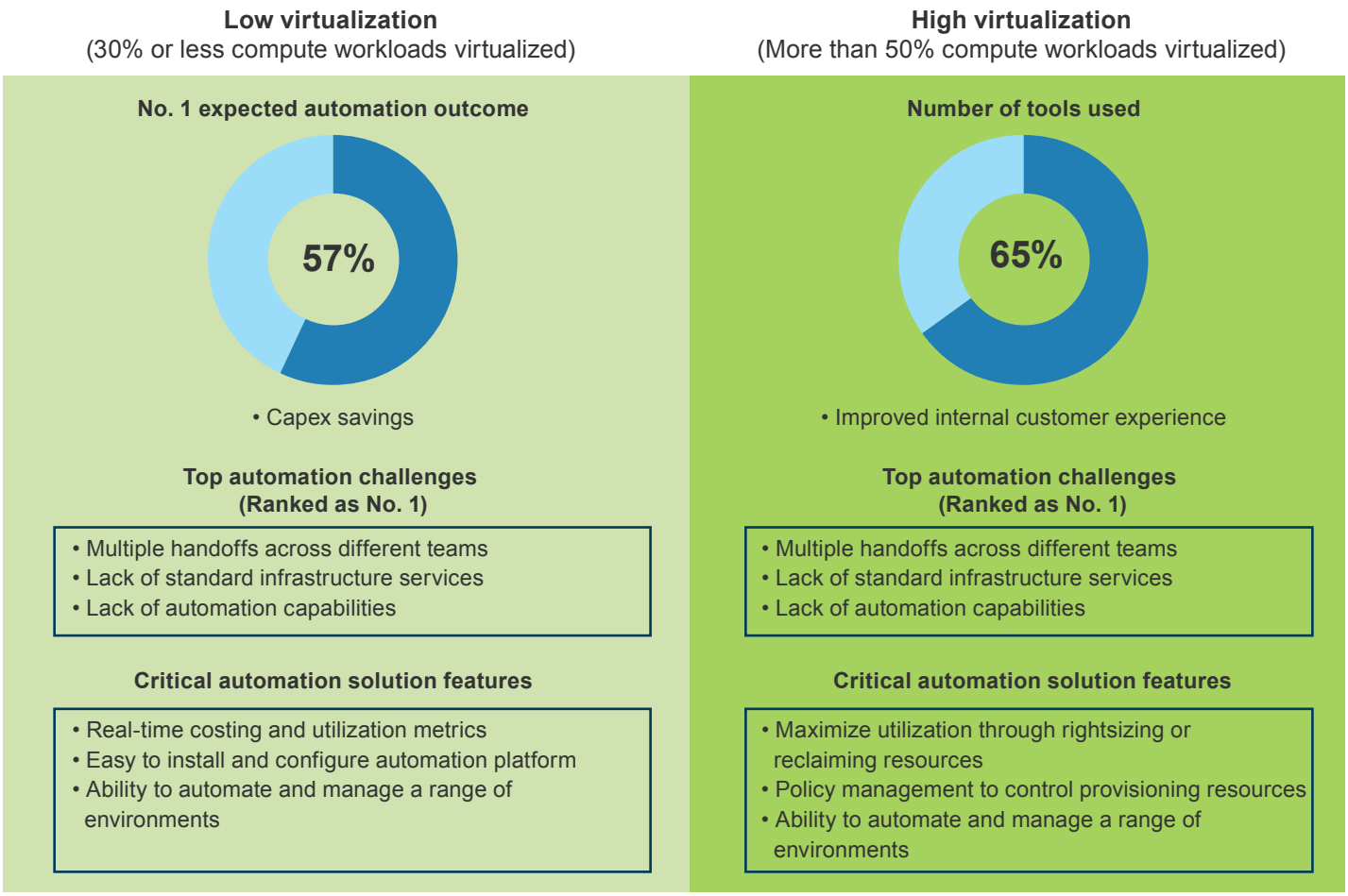
"What are the top overall challenges you face automating delivery of IT infrastructure today?"
(Rank top three)



Base: 210 US and European IT decision-makers responsible for virtualization ("we have no challenges" responses excluded)

Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

FIGURE 8
Low Virtualization Versus High Virtualization Automation Comparison



Base: 210 US and European IT decision-makers responsible for virtualization
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Automating DevOps Processes Demands Additional Capabilities

The desire to virtualize and automate IT service delivery is most often driven by the need for companies to create compelling, differentiating customer experiences through software. Application development speed, quality, and agility are primary drivers for expanded virtualization and cloud-based IT portfolios.

Our research uncovered that companies that have a strong application development focus and use more than 40% of their infrastructure to support software development face different challenges than those that use less than 40% of their infrastructure for application development. Those with more of an application development focus are further along the path to IT management that combines development activities with IT operations processes (DevOps).

First, though, we found a similarity: Both groups called out too many errors when configuring and deploying environments (see Figure 9). Regardless of DevOps maturity, it's clear that companies must reduce configuration and deployment errors to successfully build an efficient DevOps culture.

FOCUS FIRST ON SPEED, AND THEN ON ENVIRONMENT CONSISTENCY

Organizations less focused on DevOps today, however, are much more concerned about the basic developer experience — getting fully configured environments into the hands of developers as quickly as possible. These companies need speed more than anything else. Developers are waiting too long. On the other hand, organizations with a greater DevOps focus are much more concerned about inconsistent configurations across the various development, test, QA, and production environments their development teams rely on.

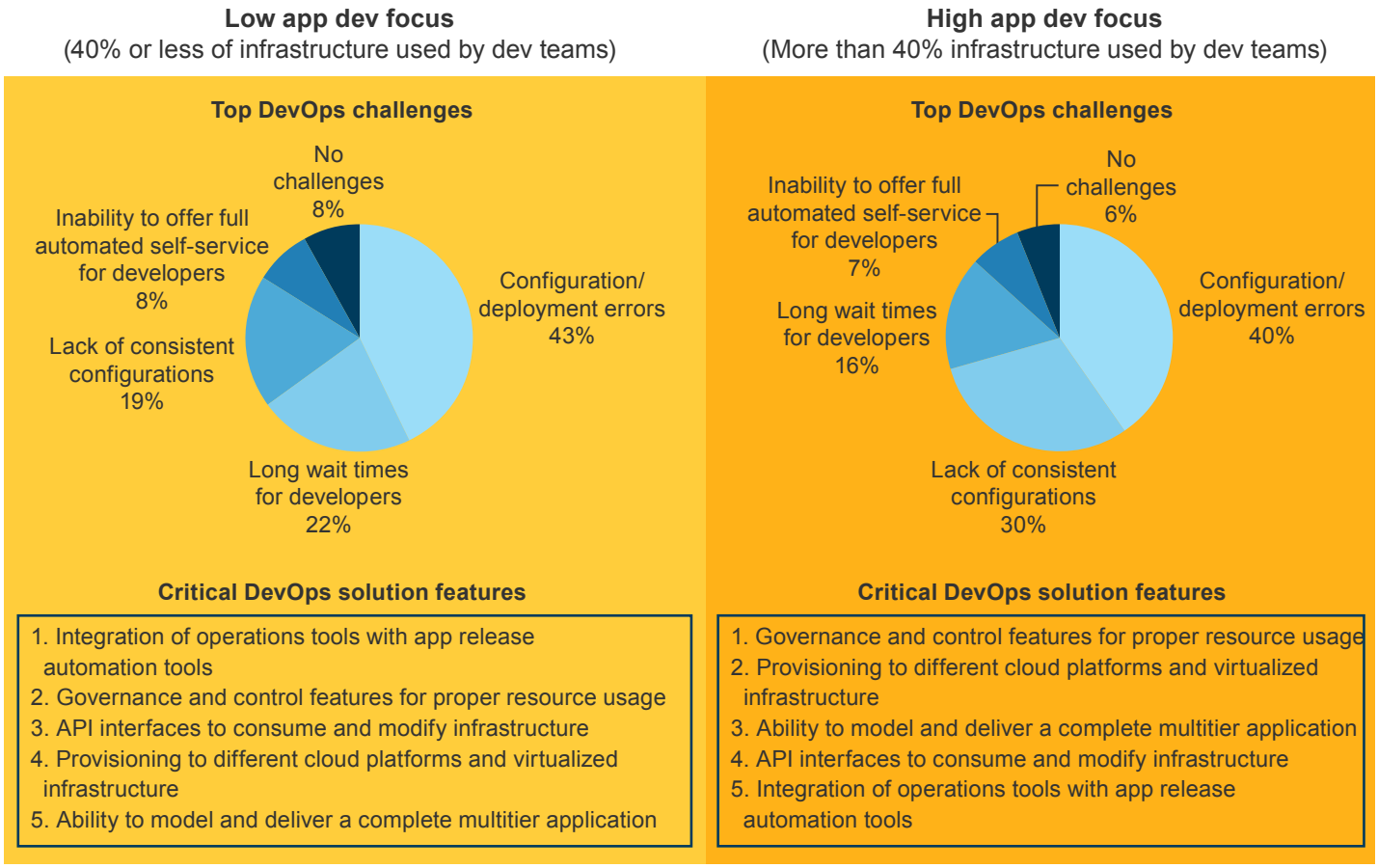
LOOK FOR MULTIPLATFORM DEVOPS AUTOMATION TOOLS WITH STRONG GOVERNANCE FEATURES

Automation tools designed to simplify and accelerate application development should prioritize strong governance and control features to ensure proper usage of resources across the software delivery life cycle. Regardless of their DevOps focus, respondents need a DevOps automation solution that helps them maintain oversight and control without slowing down the development process.

In addition, all respondents called out the need for multiplatform support, so that IT teams don't constrain their developers' use to any one cloud service or virtualization platform. They expect their infrastructure operations tools to be tightly integrated with their developers' application release automation tools (true DevOps integrations), and they expect fully exposed APIs to help developers consume infrastructure programmatically. Rounding out their top-five needs is the ability to model and deliver multitiered applications.

Today's modern applications are composite, multiplatform, and multitiered, and IT teams fully recognize that they need DevOps tools that recognize this reality.

FIGURE 9
DevOps Challenges And Features



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Key Recommendations

Today's leading digital enterprises recognize the need for virtualized and cloud infrastructure speed and agility to deliver compelling customer experiences. Technology managers are aggressively expanding virtualization to deliver cloud technology resources on demand to their business consumers and software developers. To accelerate your virtualization and cloud journey, you must virtualize more, automate more, and accelerate software development. Forester's in-depth survey of virtualization managers about their virtualization and cloud journeys yielded several important recommendations:

- **Cost reduction is important, but not as important as business agility.** The business demands both cost savings *and* agility of the IT organization. To deliver both, expand your use of virtualization and cloud with management tools that help you deliver resources on demand, solve problems faster, and maximize utilization.
- **Expanding virtualization requires unified, simple, cost-efficient, and proactive management tools.** Virtualization alone reduces capex; virtualization and cloud plus advanced management and automation reduces capex and opex. Look for tools that get everyone on the same page faster, reduce the number of tools you need, and proactively solve problems before they hurt the business.
- **Automation is key to saving money and driving up efficiency, agility, and developer productivity.** In the cloud era, automation is not "nice to have" — it is essential. Only by automating all aspects of IT service delivery, from provisioning to capacity management to developer operations, can you achieve true cloud operations.
- **You must automate to deliver an on-demand, agile cloud infrastructure.** Automation reduces errors, enforces standardized configurations, and improves collaboration across teams. These are all required to increase your virtualization and cloud maturity, as our survey confirmed.
- **DevOps automation should be your ultimate cloud automation goal.** Your virtualization and cloud journey success will be measured by how well your company delivers compelling experiences for your customers. These experiences will be delivered through better software, created by your application development teams.

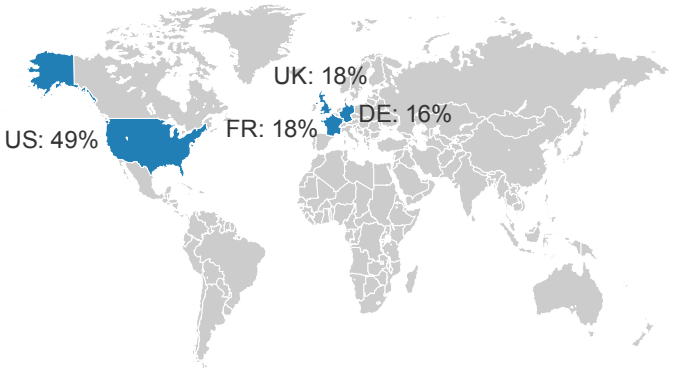
Appendix A: Methodology

In this study, Forrester conducted an online survey of 210 enterprise organizations in the US, the UK, France, and Germany to evaluate the current state of virtualization and automation and the differing challenges and solutions needed at various levels of virtualization and automation maturity. Survey participants included IT decision-makers in infrastructure and operations, application development, enterprise architecture, and the office of the CIO. Participants were responsible for selecting, deploying, and managing virtualization technologies at their organization. The study began in February 2016 and was completed in March 2016.

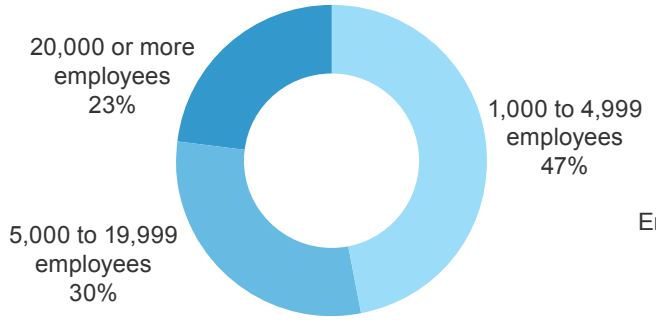
Appendix B: Demographics/Data

FIGURE 10
Survey Firmographics

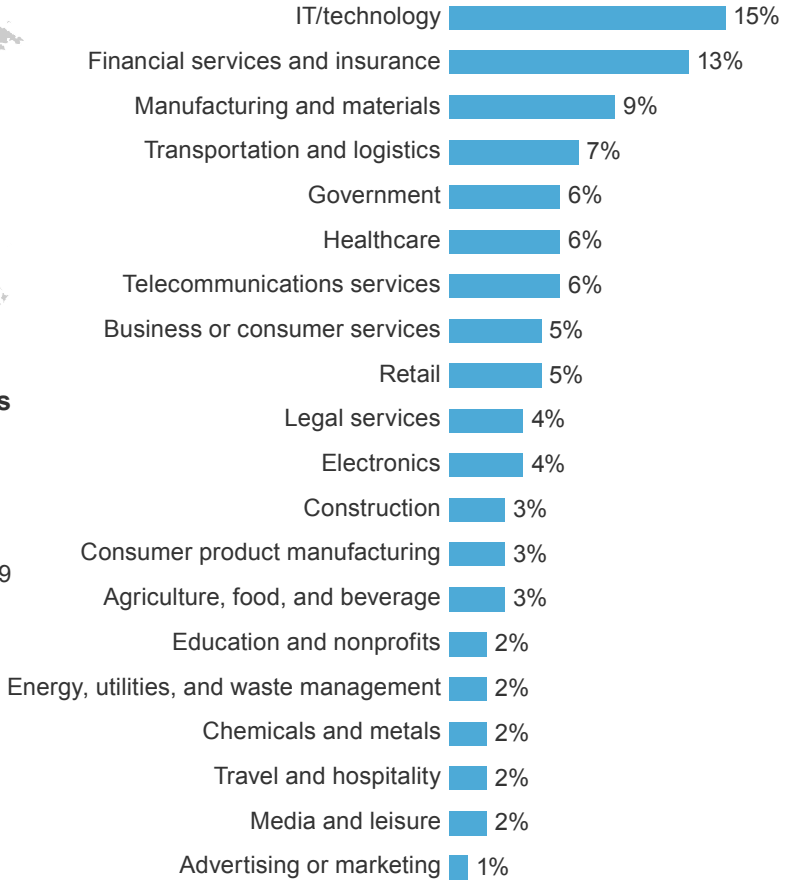
"In which country are you located?"



"Using your best estimate, how many employees work for your firm/organization worldwide?"



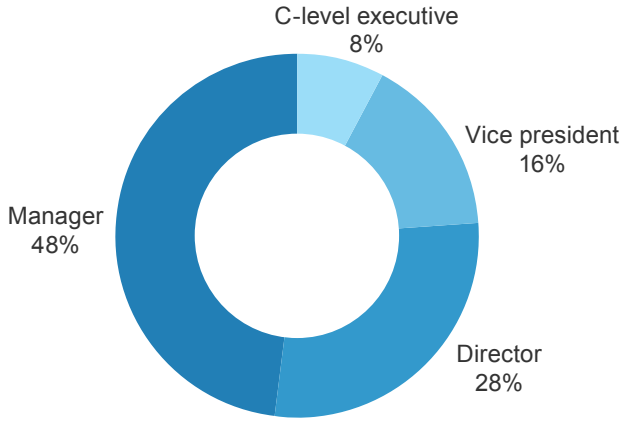
"Which of the following best describes the industry to which your company belongs?"



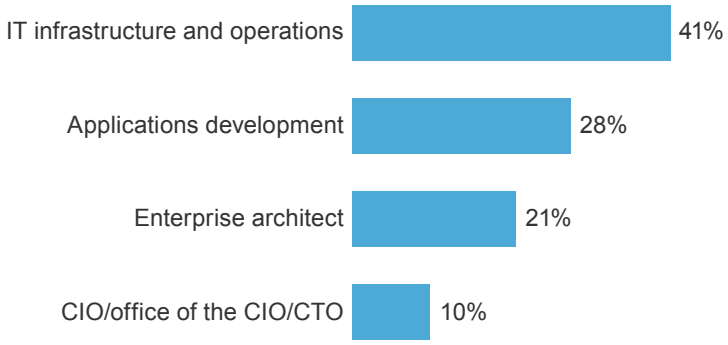
Base: 210 US and European IT decision-makers responsible for virtualization
(percentages may not total 100 because of rounding)
Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

FIGURE 11
Survey Demographics

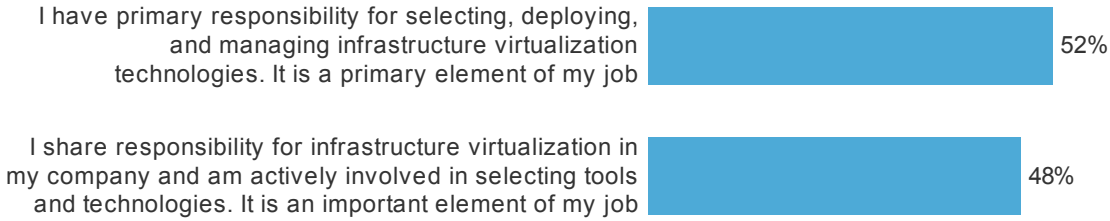
"Which title best describes your position at your organization?"



"Which of the following most closely describes your job function in IT?"



"Please indicate your level of responsibility for infrastructure virtualization in your company:"



Base: 210 US and European IT decision-makers responsible for virtualization
Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016

Appendix C: Endnotes

[1] Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016.

[2] Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016.

[3] Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016.

[4] Source: A commissioned study conducted by Forrester Consulting on behalf of VMware, March 2016.