IT Evolution: Operations Transformation in the Mobile-Cloud Era

Insights from the VMware 2013 Operations Transformation Benchmark Study

APRIL 2014
VMware sponsored the 2013 Operations Transformation Benchmark Study to help customers understand the need for change, identify the most common changes, and assess the potential business impact of operations transformation (see Appendix).¹ This research shows that companies multiply their return on technology investment by transforming operations. Further, the study revealed that the greater the degree of operational change, the greater the benefit.

¹ All numerical data cited in the remainder of this report is from the “VMware 2013 Operations Transformation Benchmark Study” unless otherwise indicated.
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In the mobile-cloud era, companies deploy new technology to increase agility and gain competitive advantage. But dynamic service delivery models strain operating capabilities optimized for more static environments. To help understand the operational changes required in the mobile-cloud era, VMware sponsored the VMware 2013 Operations Transformation Benchmark Study. The study was designed to help customers understand the need for change, identify changes that are common, and assess the potential business impact of operations transformation. This research shows that those companies that have successfully transformed operations multiply their return on technology investments. And, the greater the degree of change to IT operations, the greater the benefit.

The Mobile-Cloud Era

The IT industry is moving from the client-server era into the mobile-cloud era. Most IT organizations are now using cloud computing—either software as a service (SaaS) or infrastructure as a service (IaaS) in a public, private, or hybrid cloud—as a key part of a more dynamic IT service delivery strategy.

IT organizations adopt cloud computing to balance cost-efficiency with business responsiveness. Cost reduction has always been a priority for IT. What’s new in the mobile-cloud era is increased focus on IT agility and flexibility that better meets the changing needs of the business.

Competitive success in the mobile-cloud era requires that business be increasingly digitized, mobile application–based, and hyper-responsive to changing customer and competitive pressures. The use of new technology is a key requirement for enabling IT to exceed expectations and deliver at the speed of business (see Figure 1). Virtualization and automation are two of the critical factors for success in the mobile-cloud era; they are the hallmarks of the emerging software-defined enterprise.

Figure 1. IT at the Speed of Business in the Mobile-Cloud Era

VMware Customer Journey

VMware customers are on a journey. Many have already deployed new technology to realize dramatic improvements in IT responsiveness, efficiency, and overall IT capability. More dynamic service delivery models have enabled them to keep pace with business needs and deliver a fundamentally different kind of value to business leaders, customers, employees, and—ultimately—shareholders.

In each of the last four years, VMware surveyed 1,000 CIOs and IT decision makers to understand how they leverage virtualization and cloud computing to advance IT and business goals.

As shown in Figure 2, the 2013 findings indicate that 75 percent of VMware customers have moved past the IT production phase and are in either the business production phase or the IT-as-a-service (ITaaS) phase.¹

Figure 2. Moving Past the IT Production Phase

¹ Source: VMware 2013 Journey to IT as a Service Survey
New Operating Model

In the mobile-cloud era, physical and tiered architectures are giving way to virtualized and distributed systems. Operating practices developed to carefully control change to ensure performance, efficiency, and service quality in the client-server era can be a liability in the mobile-cloud era.

Organizations that deliver agility-related benefits in the mobile-cloud era rely more on automation. Automation strains the operational processes and best practices developed and optimized for the more manual, static client-server model. At the ITaaS stage, 17 percent of service requests include infrastructure resources, and almost two thirds of these requests are provisioned with partial or full automation (see Figure 3).

![Figure 3. More Service Requests, More Automated Provisioning](image)

In addition, new Web-scale and cloud-native applications use distributed architectures that are difficult to manage with traditional IT service management practices. In organizations that have deployed private or public cloud solutions at the ITaaS stage, 50 percent of applications are written or rewritten for cloud environments (see Figure 4).

![Figure 4. Applications Written or Refactored for the Cloud](image)

IT must adopt a new operating model to effectively use new mobile-cloud era technologies and ensure that business expectations are being met.
Successful Transformers

IT decision makers often intuitively understand the need for changes to operational capabilities in the mobile-cloud era. As they deploy powerful new technologies, they consider how roles will change and which new skills are required. And they recognize the need for changing organizational structure to support a service delivery orientation.

The study included 404 IT organizations globally, roughly divided between VMware and non-VMware customers of various sizes in various industries (see Appendix).

A subset of 178 companies successfully deployed at least three cloud use cases and indicated they had already transformed IT operations. Those companies are referred to as successful transformers. Many more companies that have reached the ITaaS phase of the customer journey have already deployed a new operating model (see Figure 5).

![Figure 5. Percentage of Successful Transformers in Each Journey Phase](image)

Companies in the ITaaS phase are almost twice as likely to have already transformed IT operations.
Top Five Cloud Use Cases

What are successful transformers doing with mobile-cloud-era technology?

Mobile-cloud era service delivery models often include self-service, on-demand provisioning of standardized services. Pooled resources are shared by multiple tenants in either private or public cloud infrastructures. And more automation is used for deployment, ongoing monitoring and management, movement of application stacks, and scaling underlying compute, network, and storage resources as part of a software-defined data center.

The study shows that successful transformers had already adopted a wide range of uses for new mobile-cloud era capabilities. The most common uses, as shown in Figure 6, include a mix of basic IT operations—backup (83 percent) and DevOps self-service provisioning of resources (75 percent) or application stacks (55 percent)—as well as the mobile-cloud era touchstones of mobile application deployment (72 percent) and big data processing (66 percent).

Successful transformers have already adopted a wide range of uses for new capabilities including DevOps, mobile applications, and big data.
Top Five Capabilities Forcing Change

Which new capabilities are forcing change?
Traditional data center best practices and run-book procedures are typically not designed for dynamic service delivery, scale, and speed. Traditional IT operations are geared to controlling change. In the client-server era, change—to applications, middleware, and infrastructure—was the leading cause of service outage. To ensure service quality, changes were carefully tested and vetted through an extensive approval process before being allowed in production.

By contrast, mobile-cloud era operations are geared toward dynamic and flexible response. This creates a tension between traditional change processes, review boards, and ticketing systems, and the need to get things done faster with more self-service and policy-based automation.

Traditional enterprise applications tend to have static, multitier topologies. To ensure adequate performance, resources are often scaled vertically, with more compute, memory, storage, and network bandwidth allocated to a single instance of an application.

In contrast, mobile-cloud era applications are often componentized, distributed through a service-oriented architecture, and designed to use the horizontal scaling capabilities offered in most cloud environments. Additional instances of an application stack are often automatically deployed during periods of heavy usage.

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Significant Impact</th>
<th>Some Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Native</td>
<td>51%</td>
<td>37%</td>
</tr>
<tr>
<td>Automation</td>
<td>56%</td>
<td>30%</td>
</tr>
<tr>
<td>Horizontal/Vertical</td>
<td>42%</td>
<td>41%</td>
</tr>
<tr>
<td>Hybrid Environments</td>
<td>36%</td>
<td>43%</td>
</tr>
<tr>
<td>Service Orientations</td>
<td>42%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Figure 7. Top Five Factors Forcing Operational Change

New mobile-cloud era capabilities are forcing changes to IT operations.
Transformation Strategy

What general strategy do successful transformers follow to update operations?

Understanding the need for a new operating model is not the same as implementing a successful change strategy. Many IT organizations have a significant investment in their people, processes, and technology. Two general strategies can guide transformation for mobile-cloud-era operations:

- **Evolutionary** – Build on or extend the existing operating model.
- **Revolutionary** – Develop net new capabilities not anchored to a legacy approach.

As shown in Figure 8, two thirds of successful transformers took the evolutionary approach. They modified or extended existing capabilities. This is an effective approach for companies seeking to leverage investments in current IT service management capabilities. Of those companies, 53 percent cited the International Organization for Standardization (ISO) standards as the basis for their operations extension, and 37 percent cited the IT Infrastructure Library (ITIL).

Almost a third of successful transformers used a more revolutionary approach. They developed a “fit for purpose” IT operations model not anchored to legacy capabilities. This is an effective approach for organizations that set up new capabilities separate from other data center resources and governance models. They can integrate a new operating model and capabilities into the existing model after new capabilities are optimized.

![Figure 8. Approach to Operations Transformation](image)

By a two-to-one margin, successful transformers are extending or modifying existing operations models in the mobile-cloud era.
How Operational Maturity Affects Attitudes About Transformation

Who thinks operations transformation is mandatory?
VMware asked successful transformers to gauge what their operational maturity was before they implemented mobile-cloud era changes. Then we asked how important operations transformation was to the success of their cloud-era technology deployment. Surprisingly, those with the highest operational maturity believe that transformation was mandatory for supporting successful new technology deployments.

As shown in Figure 9, of those that consider themselves “World-Class” IT shops, 60 percent believed that transforming IT operations for the mobile-cloud era is mandatory. Only 25 percent of “High Achievers” and 10 percent of “Average Maturity” shops believed that transformation was mandatory.

These results suggest that organizations that have fine-tuned their service delivery capabilities recognize that change is not optional. They validate that operations must adapt and reoptimize in a new environment to effectively use powerful new technology.

![Figure 9. Believe that Operational Transformation Is Mandatory](image)

Overall, companies with the highest operational maturity believed that operations transformation was mandatory.
More Change Delivering More ROI

**Is there a diminishing return on operational transformation?**

VMware asked successful transformers to estimate their overall ROI stemming from IT operations transformation efforts:

- Companies reporting 5 or fewer operational changes (out of 25 possible choices, detailed in the next section) reported an impressive 120 percent ROI from their efforts.
- In the range of 6 to 10 operational changes, returns jumped to 150 percent.
- Companies reporting from 11 to 15 changes saw returns climb to 220 percent.
- Companies that made 16 or more operational changes saw an astounding 310 percent return on operations transformation investment. That is almost a threefold improvement over peers with 5 or fewer operational changes.

Unlike efforts to improve process maturity by following programs such as the Capability Maturity Model Index (CMMI)—which often exhibits diminishing returns on additional maturity improvements—operational transformation in the mobile-cloud era doesn’t appear to have a point of diminishing returns (see Figure 10).

![Figure 10. Increasing ROI from Greater Operational Change](image)

Clearly, the message for those considering IT operations changes in the mobile-cloud era is twofold: Change is necessary, and more change is better.
Analysis of Five Key Areas of Change

One of the primary purposes of the VMware 2013 Operations Transformation Benchmark Study was to determine which types of operational change are common. VMware asked 25 questions about various changes in five key areas:

- **People** - New IT roles and skills
- **Financial management** - Cost transparency and funding models
- **Process** - Automation and standardization
- **Organization** - Breaking down functional silos and changing structures
- **Governance** - Policies and control of new technology and capabilities

The following key findings are based on analysis of specific operational changes in these areas.
Top 10 Changes

The 10 most common changes that are part of operational transformation are shown in Figure 11.

<table>
<thead>
<tr>
<th>Change Description</th>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified existing roles</td>
<td>People</td>
<td>53%</td>
</tr>
<tr>
<td>Combined existing roles into new role</td>
<td>People</td>
<td>43%</td>
</tr>
<tr>
<td>Increased transparency of IT prices</td>
<td>Financial Management</td>
<td>38%</td>
</tr>
<tr>
<td>BUs agreed to standard services</td>
<td>Governance</td>
<td>38%</td>
</tr>
<tr>
<td>Standardize configurations and processes</td>
<td>Process</td>
<td>35%</td>
</tr>
<tr>
<td>Proactive management of changing conditions</td>
<td>Process</td>
<td>34%</td>
</tr>
<tr>
<td>Certify new service before adding to catalog</td>
<td>Process</td>
<td>33%</td>
</tr>
<tr>
<td>Created a single core cloud team</td>
<td>Organization Structure</td>
<td>33%</td>
</tr>
<tr>
<td>Priced to enable comparison with external service</td>
<td>Financial Management</td>
<td>33%</td>
</tr>
<tr>
<td>Cost-plus usage based pricing</td>
<td>Financial Management</td>
<td>32%</td>
</tr>
</tbody>
</table>

Average number of transformation points = 6.2

Key findings:

- **The most common changes were to roles** - 53 percent indicated they had modified existing roles, and 43 percent indicated they had combined existing roles.

- **Three of the top 10 are financial changes** - 38 percent increased price transparency, 33 percent enabled better price comparison, and 32 percent priced services on a per-use basis.

- **Three of the top 10 are process changes** - 35 percent standardized process and configurations; 34 percent proactively monitor for changing conditions; 33 percent certify new services before adding them to a service catalog.
Converged Roles

In a traditional IT operations model, IT roles were functionally defined and focused in a single area of expertise. However, it is clear that IT roles are shifting and skills are converging in the mobile-cloud era.

Key findings (see Figure 12):

- Only 9 percent of survey respondents indicated they had created net new roles; 53 percent indicated they had modified existing roles; and 43 percent had combined existing roles.
- Of those surveyed, 75 percent believe that IT professionals must assume combined responsibilities in compute, storage, and network administration as virtualized network, storage, and compute management functions converge on the hypervisor.
- About a third of respondents agreed that operations roles have become more “abstracted,” reflecting the more integrated, less fragmented approach of the virtualized data center. And 28 percent indicated that their IT operations roles require more programming skills related to scripting and other command-line functions.

![Figure 12. Shifting and Converging Roles](image)

In the mobile-cloud era, network, storage, and server virtualization tools are converging, and IT professionals’ skills are changing as they shift their roles to focus more on system-level orchestration.
Financial Transparency

Business leaders often view traditional IT pricing and funding models as opaque, arbitrary, and inequitable. And few understand how incremental IT spending is related to business outcome objectives. In the mobile-cloud era, increased price transparency and usage-based pricing give business and IT managers more information to support better decisions.

Key findings (see Figure 13):

- Increased transparency of IT pricing was the third most common operations change. Almost 40 percent of successful transformers had increased transparency of prices to line-of-business managers.
- A full third of successful transformers were able to price services for effective comparison to external service providers. Effective comparison helps line-of-business managers make better decisions, and it enables IT to adopt a service broker model.
- Usage-based pricing helps link IT value to business outcome objectives. Almost third of successful transformers had adopted a usage-based model with a cost-plus pricing scheme.

![Figure 13. Changes Increasing Financial Transparency](image)

IT organizations have increased pricing transparency to help business and IT managers improve decision making.
Standardized Processes

Increased use of process automation enables more agility and operational efficiency in the mobile-cloud era. However, it is difficult to automate management processes that affect nonstandard systems. Furthermore, processes with many exceptions (so-called corner cases) are difficult to automate. Successful transformers are automating a wide range of IT processes. Process standardization and new service certification is a prerequisite for high degrees of automation.

Key findings (see Figure 14):

• The most common process change made by 35 percent of successful transformers was to standardize configurations and processes to enable more use of automation.

• Process control remains a focus in the mobile-cloud era. In previous operating models, change control was a strategy for reducing service outages. In the mobile-cloud era, 34 percent of successful transformers proactively manage dynamic and changing conditions as part of a more dynamic and automated management environment.

• A third of successful transformers had adopted the process of certifying services before adding a self-service, on-demand option to their catalogs. In the old model, provisioning work occurred after a service request. In the mobile-cloud era, the manual work happens before service is added to the catalog to enable automated provisioning.

Figure 14. Common Process Changes

Process standardization and new service certification are common changes that are considered a prerequisite for high degrees of automation.
Modified Organizational Structures

In traditional operating models, experts worked in silos of functional expertise. In the mobile-cloud era, IT professionals are breaking down silos and working together in ways in which they haven’t had to in the past. Organizational changes were common in companies undertaking operational transformation.

Key findings:

• One third of successful transformers had created a single cross-functional cloud team. Another 30 percent had created multiple cross-functional cloud teams.

• Thirty percent of respondents had created a new customer-facing team, and 25 percent had also deployed a new cloud infrastructure team.

• Almost a third had pulled existing staff from other functional groups into their customer-facing or infrastructure-operations teams.

The organizational changes of successful transformers comprise a new, layered model for the mobile-cloud era, as shown in Figure 15.

In the new operating model, successful transformers are changing organizational structures to facilitate cross-functional automation that isn’t possible with experts working in functional silos.
Policy-Based Governance

Traditionally, IT used approval workflows and control frameworks to ensure that only appropriate actions were taken. Successful transformers have shifted governance to standardized, automated, policy-based provisioning that delivers what’s needed at the right time in a controlled yet agile way.

Key findings (see Figure 16):

- Getting various business units to agree to standard service definitions is one of the most common of all operational changes, with 38 percent of successful transformers having made this change. Service standardization in exchange for speed and lower cost is a tradeoff most IT service consumers seem willing to make.
- Replacing manual approval workflow with a policy-based approval approach is key for enabling self-service, on-demand provisioning. Policy-based approval of requests initiated from a self-service portal was implemented by 31 percent of successful transformers.
- Even though the industry is in the early stages of the mobile-cloud era, 25 percent of successful transformers adopted a “cloud first” deployment policy to drive adoption of new service delivery models that benefit from scale economies.

Policy-guided automation is a key success factor for increasing agility while maintaining control in the mobile-cloud era.
Summary

The decision to deploy technology and mobile-cloud era use cases requires an investment in more than software. The new technologies that enable greater agility and responsiveness—and that result in more dynamic service delivery capabilities—also require changes to IT operations.

Changing IT roles and skills, increasing financial transparency, standardizing service offerings, breaking down functional silos, and deploying policy-based automation are among the most common changes made in response to new mobile-cloud era capabilities.

The study shows that IT organizations that have successfully deployed cloud use cases and also transformed their IT operating model have multiplied their return on technology investment. Those with the highest operational maturity view transformation as mandatory, either modifying their existing operational framework or developing a new “fit for purpose” model not linked to legacy service management practices. And there does not appear to be diminishing return on those change efforts.

The mobile-cloud era is still in its early stages. But organizations that have successfully transformed their IT operations demonstrate the results and benefits of their change efforts.
Appendix: VMware 2013 Operations Transformation Benchmark Study

VMware sponsored the VMware 2013 Operations Transformation Benchmark Study. The primary research study was conducted by the independent research firm Management Insight Technologies. The blind survey (participants did not know who sponsored the research) included responses from IT professionals from companies of various sizes, in multiple locations, and in multiple industries.

Data was collected via a 25-minute Web survey. Responses included 404 IT organizations globally, roughly divided between VMware and non-VMware customers. A subset of 178 companies, referred to as successful transformers, indicated they had deployed at least three cloud use cases and described the degree of IT operations transformation in their organization as “significant.”

The research assessed 25 possible operational changes in five categories—people, financial management, processes, organization, and governance. The companies citing the best returns on their technology investment, and reporting the highest degrees of IT agility and innovation, all had one thing in common beyond technology: they had managed operations transformation to a greater degree than their peers.

In the survey population,

- Half the respondents were from North America; the other half were in English-speaking EMEA regions.
- The size of companies participating ranged from
  - Small = 0 to 1,000 employees (19 percent)
  - Mid-sized = 1,000 to 5,000 employees (20 percent)
  - Large = More than 5,000 employees (61 percent)
- Respondents included
  - VP and executive (20 percent)
  - Director and manager level (60 percent)
  - Individual contributor (20 percent)

Key findings:

- More than a quarter of respondents indicated they govern IT based on a “cloud-first” policy.
- Companies making 16 or more changes achieved ROI from operations transformation efforts nearly three times higher than companies that made fewer than 5 changes.
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