



VMware Journey to Your Cloud

Proven, Pragmatic Path to Greater IT
and Business Agility

EXECUTIVE OVERVIEW

Strategically Navigate IT Transformation

Today's rapidly changing marketplace demands that businesses be more agile. With IT agility driving business agility, the urgency for IT organizations to increase efficiency and responsiveness while reducing costs has never been greater. To achieve business goals, IT leaders are looking for a new approach to transforming IT service delivery.

Cloud computing promises a more agile and efficient IT environment. It allows organizations to replace traditional costly and inefficient computing silos with dynamic IT infrastructure. Virtualization—the fundamental technology that enables cloud computing—removes the dependencies between software and the hardware that runs it. This decoupling turns underutilized infrastructure into an elastic, resilient, partitioned and secure pool of compute resources available to users on demand. The result is an architecture flexible enough to support a private, public or hybrid cloud model and enable self-service computing.

VMware®, the global leader in virtualization and cloud infrastructure, offers a unique approach to cloud computing and a proven path to IT as a service. The transformation to your cloud begins with virtualization and supports your journey to the right cloud model to match your business needs. Your cloud accelerates IT, driving greater IT and business agility.

Follow a Proven and Practical Roadmap

The VMware approach is informed by both practical experience and extensive qualitative and quantitative customer research, including the industry's first virtualization benchmark study. VMware research confirms that the journey from a legacy to a dynamic and agile IT environment cannot be achieved in a single step. The most successful organizations transform IT via a phased approach. To guide and assist your IT transformation, VMware delivers the VMware Journey—a proven and practical implementation roadmap designed to deliver benefits to your organization as IT evolves.

VMware is sharing its revolutionary research and methodology to help organizations understand, plan for and implement strategic IT projects in a way that is systematic, is sustainable over time, and maximizes value. With more than 250,000 customers and 25,000 partners, VMware understands that every organization approaches IT transformation with its own set of challenges and objectives. Whether or not your journey culminates in an enterprise hybrid cloud, following a pragmatic path to implementing virtualization with cloud computing capabilities will help ensure that the results you achieve along the way are aligned with your business goals.

While VMware has been tracking customer progress along the Journey over the past decade and a half, the latest VMware research reveals two distinct paths to achieving greater IT efficiency and business agility. Some organizations choose an incremental approach, steadily virtualizing larger portions of the IT environment while maintaining a focus on cost reduction and improved efficiency. Others take a more transformative approach, using virtualization as a foundation for cloud-scale operations that drive business agility and new ways of doing business. The latest VMware research shows that most organizations choose one of these two paths when they have virtualized about a quarter of their IT environments. They either continue along the path to nearly 100 percent virtualization and accelerate IT efficiency, or they go beyond virtualization alone and incorporate cloud-scale operations as part of their IT strategy, which amplifies the benefits of virtualization and drives business agility.

Accelerate and Amplify Business Value

Regardless of which path an enterprise selects, the VMware Journey aggregates adoption best-practices into a framework consisting of three distinct phases. This paper examines each of the phases and offers real-world customer examples that illustrate achieved value.

Comprehensive research with customers reveals that virtualization accelerates business value at each phase of the VMware Journey, with IT organizations steadily evolving to maximize efficiency, improve quality of service and simplify operations. Moreover, new data demonstrates that an early investment in cloud computing amplifies the benefits of virtualization as the foundation for cloud computing, reducing IT costs and increasing business agility while preserving IT governance. On both paths, ROI increases while IT operating expenses decrease.

The VMware Journey framework allows IT to assess its progress in achieving its operational goals, compared with peers and industry best practices. The framework extends beyond infrastructure virtualization to encompass applications and end-user computing. Specifically developed to help customers undertake the Journey in a predictable manner, the framework maximizes the value derived from virtualization and cloud computing while minimizing risk.

Build Competencies and Report on Improvements

In discussions about the VMware Journey, companies around the world describe four key elements—sponsorship, confidence, measurement and triggers—as fundamental to their success.

The Journey begins with the sponsorship of key projects by IT champions and relevant application owners. Core IT leaders build competencies and governance relating to the technologies they virtualize. For example, customers typically virtualize low-governance infrastructure workloads first. They progress to virtualizing business-critical production applications, building the confidence to virtualize their most important, externally facing, high-governance workloads. Along the way, they measure the results of each area virtualized and report the improvements.

VMware customer research shows that for organizations to begin or move along in the Journey, most teams need a precipitating business or IT trigger. Triggers ignite interest in starting or pursuing a virtualization or cloud initiative to meet a new business need. These triggers, in turn, move businesses closer to IT as a service.

Three-Phase Journey Delivers Value at Every Stage

The VMware Journey phases—IT Production, Business Production and IT as a service (see Figure 1)—are derived from VMware primary research with hundreds of customers. This framework provides adoption best practices to optimize IT transformation and reduce risks for all kinds of organizations.

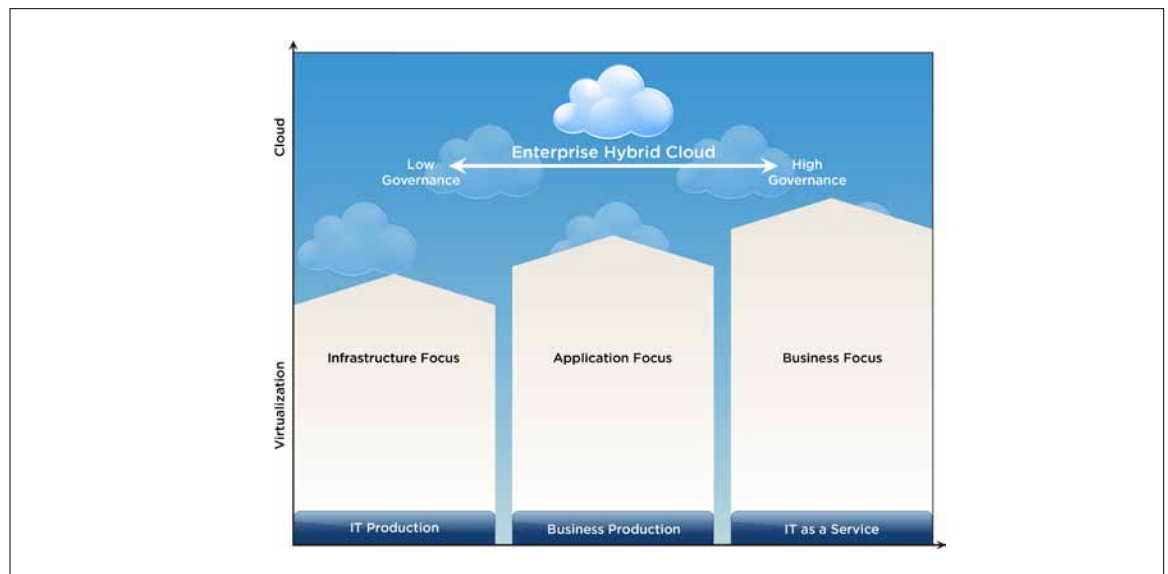


Figure 1. VMware offers a pragmatic, three-phase Journey to IT as a service.

IT Production. Most customers report that they begin the Journey by virtualizing infrastructure, including development and test environments. Typically, sponsorship for this phase is from within the IT organization with the primary goal of enhancing infrastructure efficiency. Some common triggers can be the need to reduce server sprawl, costs and power consumption in the datacenter, upgrade aging systems, increase utilization or streamline administration. In this phase, organizations get significant savings in operational and maintenance costs. By virtualizing IT-owned workloads with relatively uncomplicated governance models, IT organizations gain the confidence to virtualize more sophisticated workloads in later phases.

Business Production. As confidence, sponsorship and the value from virtualization grow, IT shifts its focus to virtualizing mission-critical, multitier applications in production environments. Sponsorship in this phase shifts to owners of business with the goal of improving quality of service. Some common triggers can be the need to deploy new business systems, automate disaster recovery, or improve security and reliability of desktops. This new focus increases the availability of all workloads and improves service-level agreements (SLAs) to the business, while further improving efficiency and simplifying operations.

IT as a service. In the final phase, IT leverages its virtualization success with applications to drive pervasive changes to outbound IT service levels, including high-governance workloads. Sponsorship in this phase expands to the CIO or another senior executive. Some common triggers can be the need to quickly anticipate and responds to changing market conditions or regulatory challenges, scale to manage cyclical demand and capture new revenue streams, streamline processes or provide cost transparency. In this phase, IT innovations help drive revenue growth, enhance the customer experience, and minimize business and compliance risk. This focus on the business fosters better communication and partnership between IT and lines of business, and results in greater overall business agility.

In any one of the three phases, organizations can begin to move select workloads to the cloud and increase the percentage of virtualized workloads in the datacenter.

Customers Report IT Operational Efficiencies and Cost Benefits

To complement its primary customer research, VMware conducted the industry’s first year-over-year, quantitative customer benchmark study of virtualization benefits. The study features operational, efficiency and agility metrics by industry, geographical area and company size. As organizations undergo IT transformation, the customer benchmark study enables them to compare how successfully they are moving from their current state to their desired state.

Results of the benchmark study reveal a direct correlation—throughout the stages of the VMware Journey—between IT operational efficiencies and financial benefits, including return on virtualization investment and the maturity of virtualization and cloud adoption.

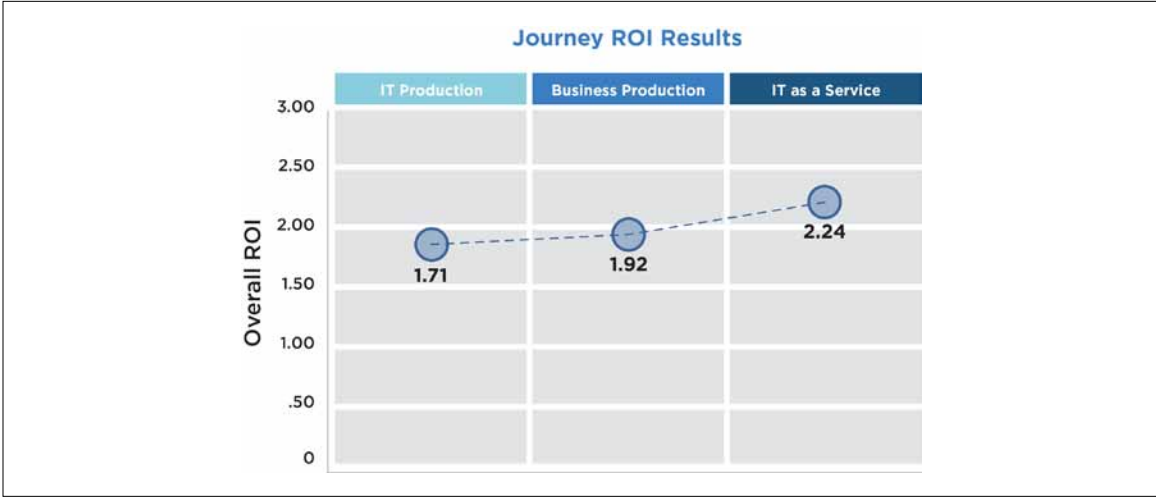


Figure 2. ROI as a function of VMware Journey stage shows an increase in ROI as organizations move through the Journey. Data based on research conducted June-August 2011.

Two Valuable Paths to Achieving Results

Recent VMware research reveals that customers journeying toward their IT goals choose one of two paths by the time the organization is 20–25 percent virtualized:

Path 1: A step-wise approach to virtualization – Driven by the natural rate of technology refreshes—in which an ever-increasing percentage of x86 server workloads are virtualized—this path enables IT teams to dramatically improve datacenter efficiency and increase the reliability, quality of service and overall manageability of operations. This path accelerates the Journey because enterprises gain the confidence to virtualize all types of workloads.

Path 2: A focus on cloud-scale operations and agility – With its focus on amplifying enterprise value from existing virtualization and new cloud computing capabilities, this path enables IT to improve agility and responsiveness to the business. In this path, customers apply their efficiency gains to operate differently and achieve greater value.

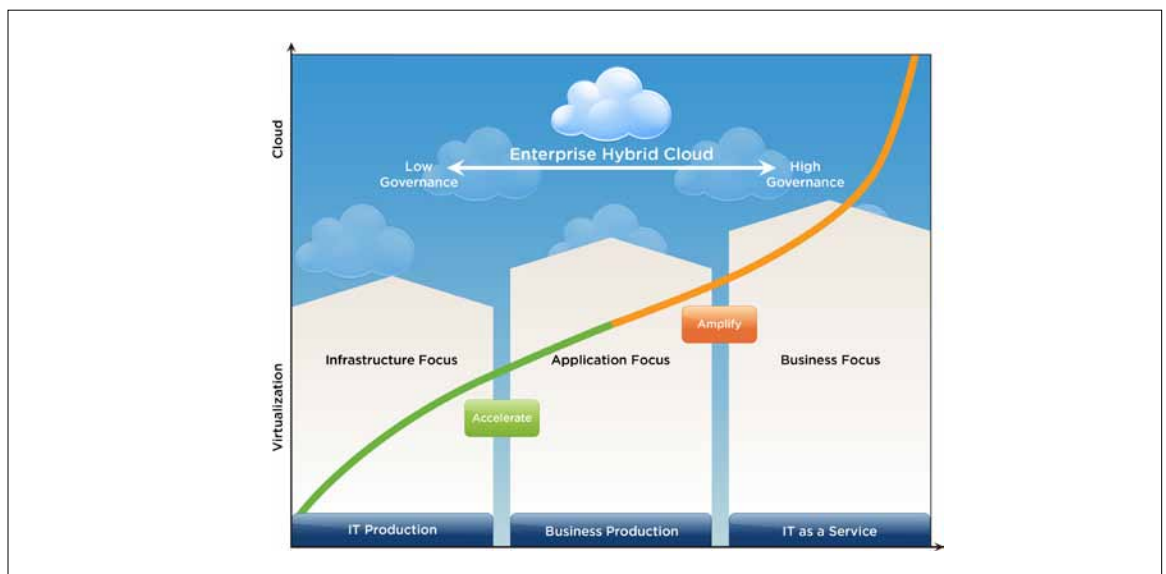


Figure 3. VMware customers choose a path that accelerates or amplifies value.

The Journey includes three distinct phases and two paths to approach them, yet achieving goals is an ongoing process. It is a continuum of adding capabilities and attaining incremental results at different phases as the business and IT evolve. Some initiatives demonstrate that an enterprise can benefit from capabilities in more than one phase at a time during its journey. Also, an organization can have virtualization projects in more than one phase at a time and can take advantage of the capabilities of cloud computing in any phase of the Journey.

IT Production

Businesses typically begin to implement virtualization for one reason: to reduce the server footprint in a datacenter. In this first phase, IT most often deploys VMware virtualization for server consolidation to reduce costs and physical resources. The decision to virtualize IT-owned applications and low-governance workloads (e.g., Microsoft Internet Information Services, Microsoft SQL Server, some development and test applications, and some small database applications) is likely to be made by an IT manager asked to address a specific challenge relating to cost, power, cooling or space.

The IT manager is aiming to simply create compute-network-storage resource pools and provision IT-owned applications on VMware virtual servers to increase cost efficiency by reducing capital expenses. By leveraging resource pooling and elastic capacity, the organization not only achieves the desired cost savings but also increases utilization and reduces IT complexity.

Case Study 1:

Energy Company Reduces Costs

A large energy company began its virtualization journey by converting physical servers to virtual servers as part of an upgrade of its Windows servers. Its motivation was to reduce hardware costs and power consumption in its California datacenter. In the IT Production phase, the company achieved 40 percent virtualization across two datacenters housing approximately 2,500 servers, lowering capital expenses and datacenter administrative costs.

	BUSINESS/IT TRIGGERS	CAPABILITIES	VALUE
Phase 1 IT Production	Reduce hardware costs and power consumption	Grew server workloads without buying more servers	Lowered capital expenses and datacenter costs
	Reduce datacenter administration costs	Improved server-to-administrator ratio from 50:1 to 80:1	Maintained flat administrator headcount as server count grew
	Perform Windows Server migration	Reduced migration time and server requirements (no server hardware upgrade required)	Lowered capital expenses, as well as rework and testing time
	Address rapid unexpected server growth	Provisioning new physical servers with standard configurations improved from 4 weeks to 2-3 days on virtual servers	Improved datacenter agility

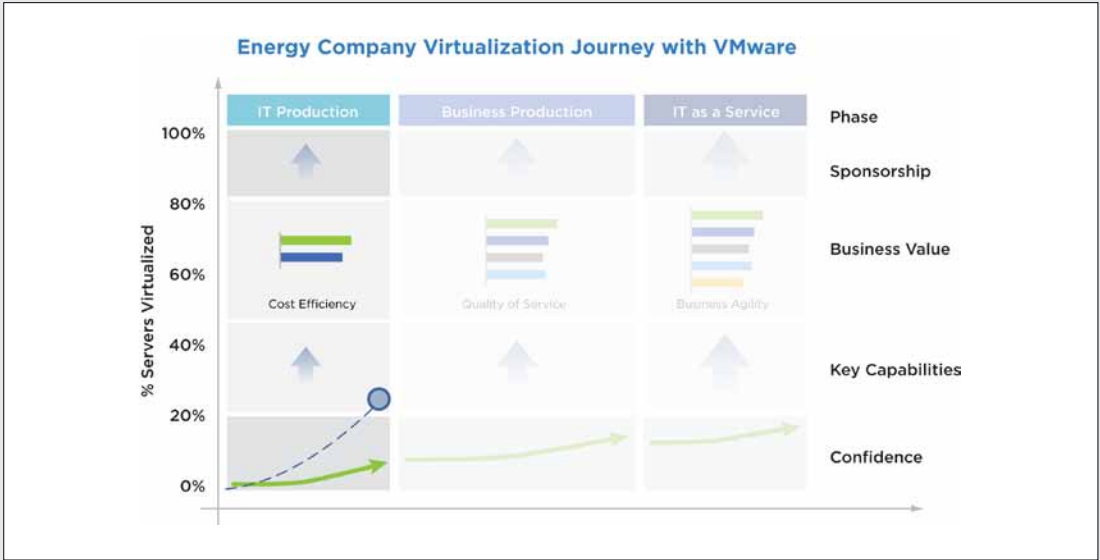


Figure 4. Energy Company Summary of the IT Production Phase

Transitioning to Business Production

Although it might be tempting to stop at the IT Production phase—after virtualizing approximately 30 percent of applications and dramatically reducing capital costs—VMware research shows that companies that continue their journey achieve even better results. They report that they improved application time to market in the Business Production phase by 22 percent and experienced even greater cost reductions, including decreased cost and complexity of high availability.

The latest VMware research also reveals that the path customers choose at this critical juncture dramatically affects how quickly they achieve benefits. Customers that continue to virtualize mission-critical workloads—building on the valuable foundation of increased IT efficiency—and invest earlier in cloud computing report breakthrough results. These early cloud adopters reduced operational and capital expenses—and improved agility—about six times faster than their counterparts that continually virtualized increasing percentages of workloads and incorporated cloud computing later in their IT transformation journey.

With VMware, IT leaders optimize their IT transformation approach based on the unique needs of their business. When they focus earlier on cloud-scale operations and agility, they leverage cloud computing as a strategic hedge against the slower results netted by the step-wise path.

By investing in cloud computing at approximately 20-25 percent virtualized, enterprises amplify the value already gained from their existing virtual infrastructure, enabling more investment in innovation. Although enterprises that invest in cloud computing later will still reap its benefits, they will experience an opportunity cost to delaying the investment.

The transition from IT Production to Business Production on both paths is critical to enabling on-demand service delivery. With this in mind, VMware customers reveal ways to accelerate the transition to Business Production:

- Choose the right sponsor from among your stakeholders—someone willing to push against cultural resistance to change.
- Develop the right technical experience with the application environment so that the person or team with that experience can inform and educate others.
- Measure and report the business value of virtualization to justify the investment in advancing new initiatives.
- Understand the IT project pipeline and required resources, so that virtualization and other projects, such as upgrades, continue simultaneously.

Business Production

In the second phase—Business Production—IT begins to successfully virtualize business-critical applications (e.g., supply-chain management and finance applications, and servers supporting applications such as SAP and PeopleSoft) with permission and buy-in from application owners. The focus in this stage is on delivering the highest service levels across applications. IT teams do this by implementing VMware management capabilities—such as disaster recovery and high availability—that enable the on-demand, dynamic allocation and management of resources, guaranteeing capacity when and where it is needed. Toward the end of this phase, organizations also begin to implement and monitor application-specific governance and compliance policies using VMware management solutions.

In the Business Production stage, typically 60-70 percent of the overall environment is virtualized. This allows IT to provide higher quality of service through better SLAs for business-critical, or Tier 1, applications. These SLA improvements come from reduced maintenance downtime, faster response to the business, and VMware high-availability and management solutions.

According to VMware research, IT efficiency gains achieved by increasing the percentage of virtualized assets alone are less pronounced in the Business Production phase, and IT agility becomes more important. However, at approximately 50 percent virtualized, the efficiency and agility curves intersect, and their values become equal. At this point, organizations that want to achieve additional efficiency gains and new agility gains must incorporate cloud computing into their IT strategies. Organizations that implement cloud computing as part of the Business Production phase amplify their gains, with agility significantly rising.

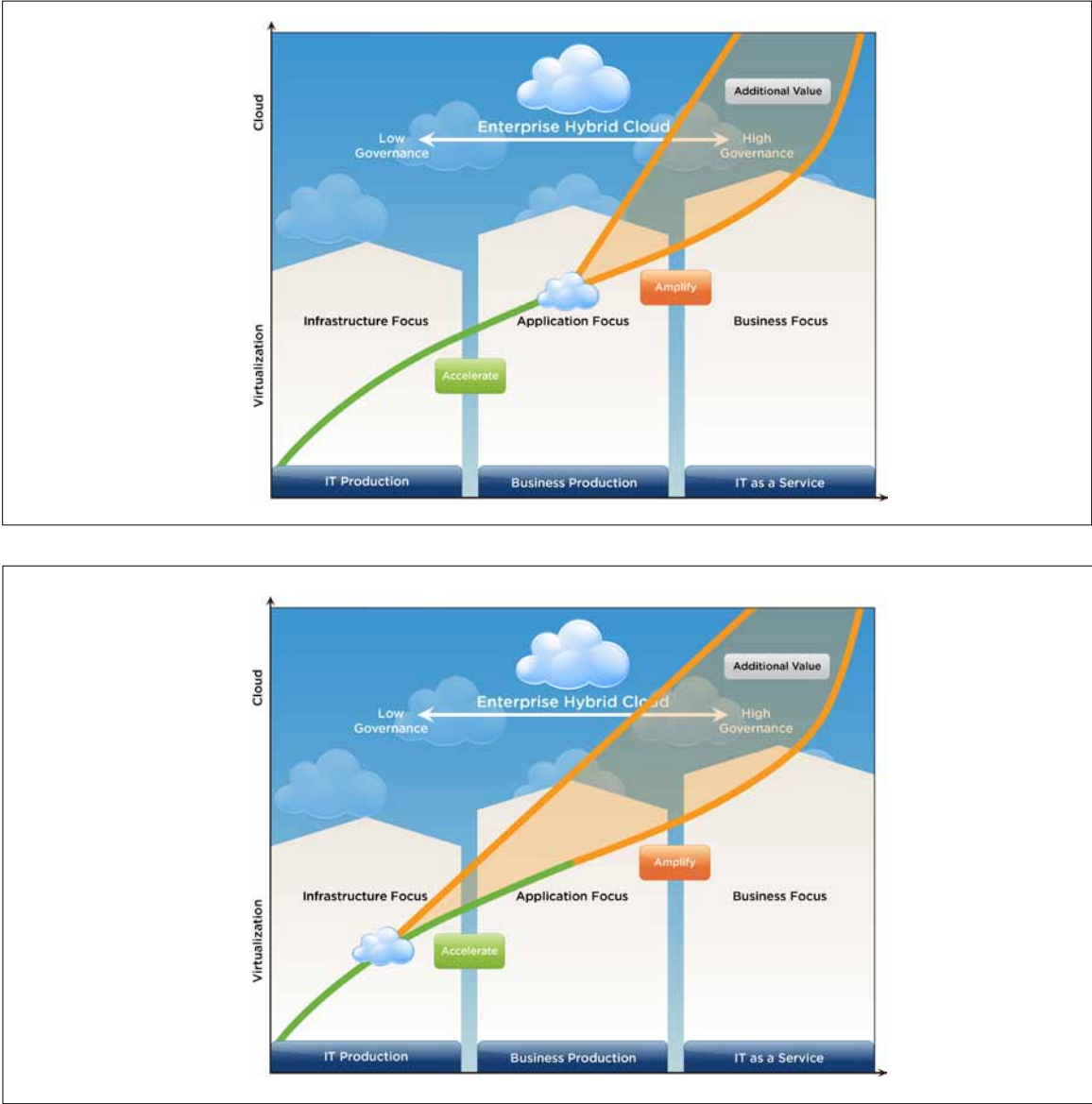


Figure 5. The difference between the shaded area in top and bottom diagrams represents the opportunity cost of delaying the investment in cloud computing.

However, there is an opportunity cost to waiting until this inflexion point to move to cloud. Research reveals that adopting cloud computing earlier in the Journey is more beneficial. Customers that incorporated cloud as part of their strategies in the IT Production phase saw even bigger efficiency and agility gains. Beginning sooner allowed these organizations to experiment with a cloud computing approach and better prepare for introducing it across the IT environment. As a result, VMware now recommends that organizations begin earlier—as soon as they are 20 percent virtualized—to understand and plan for incorporating cloud computing into their overall IT strategy. For example, enterprises can start in the IT Production phase by moving test and development workloads to a private, public or hybrid cloud environment.

Case Study 2:

Health Services Company Increases Quality of Service

The VMware Journey for a large health services company was triggered in 2006 by the need for a server hardware refresh and the desire to avoid the cost of buying replacement servers. By 2008, the company had made VMware the standard for its Windows environment and virtualized many noncritical applications. Executives then mandated a *virtualization first* policy, which required that every application be considered for virtualization. In 2009, the company embarked on a major project to virtualize a mission-critical business application—SAP Customer Relationship Management (CRM). Implemented in just three months and leveraging VMware virtualization, the new CRM system improved service levels and eliminated planned downtime for critical applications.

	BUSINESS/IT TRIGGERS	CAPABILITIES	VALUE
Phase 1 IT Production	Running out of space in the datacenter	Reduced the number of racks in the datacenter, freeing up space and reducing power and cooling consumption.	Saved valuable space and server costs
	Need to replace hardware running Windows/NT applications	Moved Windows/NT applications to virtual machines to run on newer, faster hardware. No longer need to find new device drivers or update applications.	Did not replace old NT applications, but they run faster
	Need to replace/refresh old hardware	Reduced hardware by 15:1 ratio. Run old NT applications on newer, faster hardware without requiring new device drivers.	Reduced spending on new hardware
Phase 2 Business Production	Need to deploy new SAP CRM system	Developed applications faster and provisioned resources to deploy them quickly	Implemented new CRM system in 3 months; quicker than bid by outside service firm
	Require better availability for applications	Provided better high availability without paying for expensive, complicated clustering solutions that required redundant hardware	Improved service levels and eliminated planned downtime for critical applications

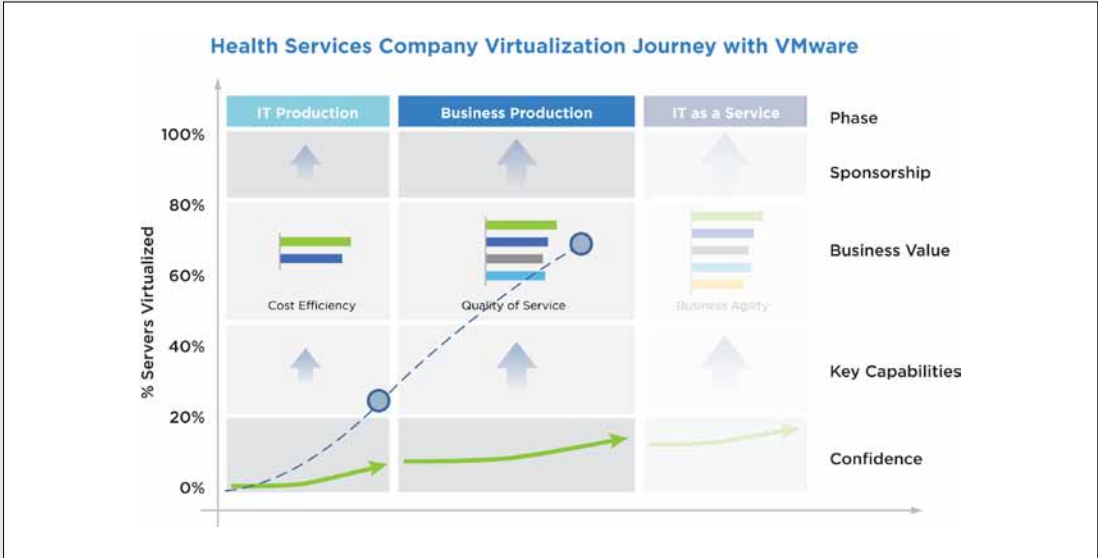


Figure 6. Health Services Company Summary of the IT Production and Business Production Phases

Transitioning to IT as a service

During the Business Production phase, organizations virtualize their business-critical applications—building the internal experience and skill sets necessary to effectively transition to a more virtualized datacenter and a cloud computing approach. In the process, IT leaders prove to the organization that virtualization is a better way to update aging systems, handle upgrades and move to cloud computing.

VMware customers report that mapping a parallel path can be effective in driving organizations beyond Business Production to enable IT as a service. Customers reveal two distinct types of organizations that excel at moving from Business Production to IT as a service:

- **IT organizations with close-knit and efficient IT communications and governance teams in place** – These organizations typically plan, discuss, pilot and execute to the highest percentages of virtualization possible in 18 months or fewer because of their regular and consistent communications both inside of IT and across the various stakeholder groups. These teams demonstrate superior levels of information sharing, hold informal and formal brown-bag meetings, and regularly report progress to all affected parties.
- **IT organizations leveraging the public cloud** – These organizations take advantage of public-cloud efficiencies for certain projects and allow the experience of going to the public cloud to inform internal IT teams. These organizations essentially transfer relevant knowledge from their external cloud service providers to internal teams by opportunistically glean information and technical skills in the process of going offsite for temporary development and testing projects.

VMware customer research shows that enterprises that want to continue to increase returns on their IT investments move to cloud computing at this critical point. The research reveals that if an enterprise is 50 percent virtualized or more and has not invested in a cloud approach, that organization is leaving significant value untapped. With cloud computing, enterprises have an opportunity to amplify current returns from their VMware virtualization and cloud infrastructure investment.

IT as a service

The final phase of the Journey is IT as a service. At this stage, all or nearly all target x86 workloads are virtualized to enable on-demand services to the business. Cloud computing and its benefits are well understood, and cloud is strategically used to increase business benefits and reach business goals. IT organizations enter this stage when VMware virtualization has become the standard—when VMware virtualization is running all applications, VMware advanced management techniques and self-service tools are managing and monitoring virtual infrastructure, and IT has changed its processes and organization to make the best use of virtual datacenters and cloud computing.

Sponsorship for IT and business partnership in the third phase expands from IT management and application owners to the CIO or another executive who has implemented a *virtualization first* policy for allocating resources to the business. Now, IT has the authority and capabilities to virtualize any application, automate SLA management, incorporate cloud computing capabilities and react quickly to business needs. At this stage, business agility becomes the primary business value that IT delivers. In turn, IT becomes a business partner instead of a caretaker of brittle legacy systems and physical servers.

Case Study 3:

Telecommunications Firm Increases Agility

Shrinking datacenter space and increasing hardware spend triggered one large telecommunications firm to begin its journey in 2002. During the IT Production phase, which lasted for approximately two years, its initial projects gained some visibility at the CIO level. By the time the Business Production phase (which began in 2004) ended in 2008, the firm had increased its level of virtualization. Within its Windows environment, the firm went from 20 to greater than 80 percent virtualized. The Business Production phase was characterized by a series of projects and consolidation initiatives. These efforts incrementally drove up the confidence and sponsorship levels, ultimately leading to IT as a service, which is now the norm.

	BUSINESS/IT TRIGGERS	CAPABILITIES	VALUE
Phase 1 IT Production	Running out of space in the datacenter	Consolidated servers by up to 30:1 and controlled server sprawl	Saved valuable space and server costs
	Need to replace/refresh old hardware	Virtualized and consolidated full racks of old Compaq systems that were consuming a lot of power down to 2 boxes	Saved space and reduced power, cooling and other operational costs
Phase 2 Business Production	Need to handle a large number of new projects	Developed applications faster and provisioned resources to deploy them quickly	Gained faster time to market and improved competitive advantage
	Planning a new datacenter launch	Guaranteed tiered service levels. Used VMware vMotion™ to improve workload and resource mobility.	Improved service levels and eliminated planned downtime for critical applications
Phase 3 IT as a service	Want to improve service levels for production applications	Improved availability and ability to guarantee specific resources (CPU and memory) for specific applications	Improved service levels for mission-critical applications and built future capacity in the datacenter
	Want to operationalize virtualization within the datacenter	Provided clear workload prioritization combined with predefined provisioning process and complete virtual-machine lifecycle management	Streamlined operations and increased agility

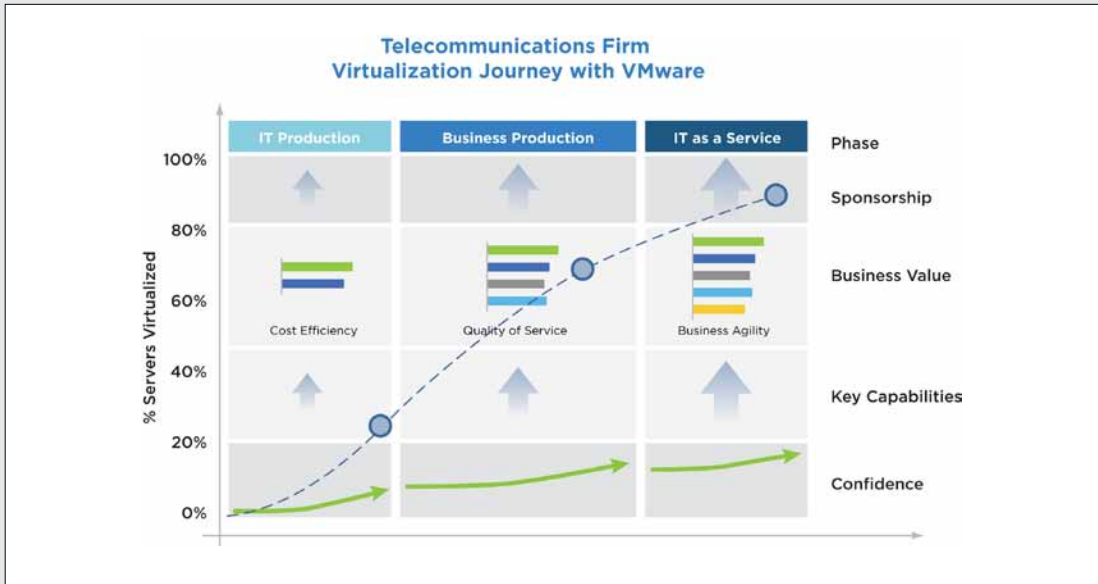


Figure 7. Telecommunications Firm Summary of the IT Production, Business Production and IT as a service Phases

Right Path to Your Cloud

Throughout the Journey, IT leaders are challenged to prevent the unintentional leaking of enterprise workloads to commodity clouds in an insecure, ungoverned manner. For enterprises that follow the more aggressive cloud-scale path to IT as a service, VMware amplifies value with cloud computing by reducing IT costs, increasing business agility and preserving IT governance.

The VMware approach ensures flexibility and interoperability for your cloud—the right cloud model to match your business needs. As enterprises move through the Journey phases, they can move selected workloads within their datacenter clouds or to one of the many VMware vCloud® enabled public clouds in the VMware partner ecosystem. Enterprises that can deploy workloads in the best environment for their business needs increase agility without compromising security, reliability or governance.

When your enterprise invests in cloud computing early on its Journey, you amplify the benefits of virtualization as the foundation for your cloud.

Experience the Journey with VMware

Achieving greater business agility requires a new approach to IT service delivery. Only VMware has the expertise and extensive customer research to deliver a proven-value Journey that enables IT as a service and your cloud. Organizations experience significant benefits along each path and during each phase of the Journey, rather than having to wait until all phases are complete.

When following the Journey, VMware customers report that virtualization has helped them to achieve operational, business and financial benefits. Moreover, customers that choose to implement virtualization with cloud computing capabilities sooner in their IT transformation report achieving high value—lower costs and greater agility—six times faster than enterprises that wait.

In addition to reducing capital and operating expenses, customers report that their

- Number of new projects increased by 21 percent.
- Application time to market improved by 22 percent.
- Rework and testing improved by 26 percent.
- Server incidents were reduced by 27 percent.
- System downtime was reduced by 26 percent.

Additional insight about these statistics is available in the “VMware Business and Financial Benefits of Virtualization” white paper.

Whether your enterprise is dabbling in virtualization or your CIO has made a commitment to it with a *virtualization first* policy, you have taken the first steps on the Journey to your cloud and enabling on-demand services. VMware has the solutions and expertise to guide you through the Journey and map a successful path forward. With VMware, greater business and IT agility is expected and achievable.

To learn more about the VMware Journey, contact VMware or visit the VMware Web site at <http://www.vmware.com/go/journey>.

