Cloud Strategy Brief

Evolving Objectives

Measuring the Value of Transformation

Virtualization and cloud solutions create a unique opportunity to transform IT from a cost center to a strategic value driver. However, infrastructure changes by themselves are not enough to transform the business value of technology. IT executives also need to shift focus from technology to business outcomes, and communicate more effectively with business managers.

Without these two additional changes, business managers may continue to view IT as a cost center and perceive the use of virtualization and cloud solutions primarily as cost cutting measures.

The IT Value Transformation Road Map presents a three-stage approach to using virtualization and cloud solutions to transform IT from a cost center to a strategic value driver. The roadmap includes five types of metrics that are used to guide transformation and help IT communicate value to business managers.

In the first stage, the metrics are used to establish a performance baseline and to improve IT spending transparency. At the second stage, the metrics help IT create a strong case for broad adoption of the shared-resource environment and enable IT to link spending to business outcomes. At the third stage, the metrics are used to communicate the business value of the IT-as-a-service computing model.

This paper and three associated strategy briefs are intended to help IT executives develop a transformation vision, determine current state, identify incremental changes, measure progress, and communicate results.

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About the Author

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About the IT Process Institute

The IT Process Institute is an independent research organization that exists to advance IT management science through independent research, benchmarking, and development of prescriptive guidance. Our vision is to identify practices that are proven to improve the performance of IT organizations. www.itpi.org

The IT Value Transformation Road Map

The IT Value Transformation Road Map is based on findings from three groundbreaking research studies. Each study reveals specific incremental changes common to organizations that have successfully made the transformation from cost center to driver of business value. The road map identifies specific objectives, competencies, and metrics at both the infrastructure level and the executive communications level.[1]

Infrastructure level changes leverage virtualization and cloud-based architectures to increase IT process efficiency and resource utilization. The resulting IT-as-a-service computing models enable IT to respond quickly to the changing needs of the business.

Executive communication level changes include increasing IT cost transparency and linking IT efforts and costs directly to business outcomes. By communicating the positive impact of IT spending on business results, IT executives can shift the focus of business executives from IT cost minimization to leveraging technology to gain competitive advantage.

Figure 1 shows the three stages of change in the IT Value Transformation Road Map. Each stage is catalytic in that it frees resources for efforts at the next stage. Each stage is ordered to address specific prerequisites. In addition, each stage is sustaining, so that new practices remain in place throughout the transformation.

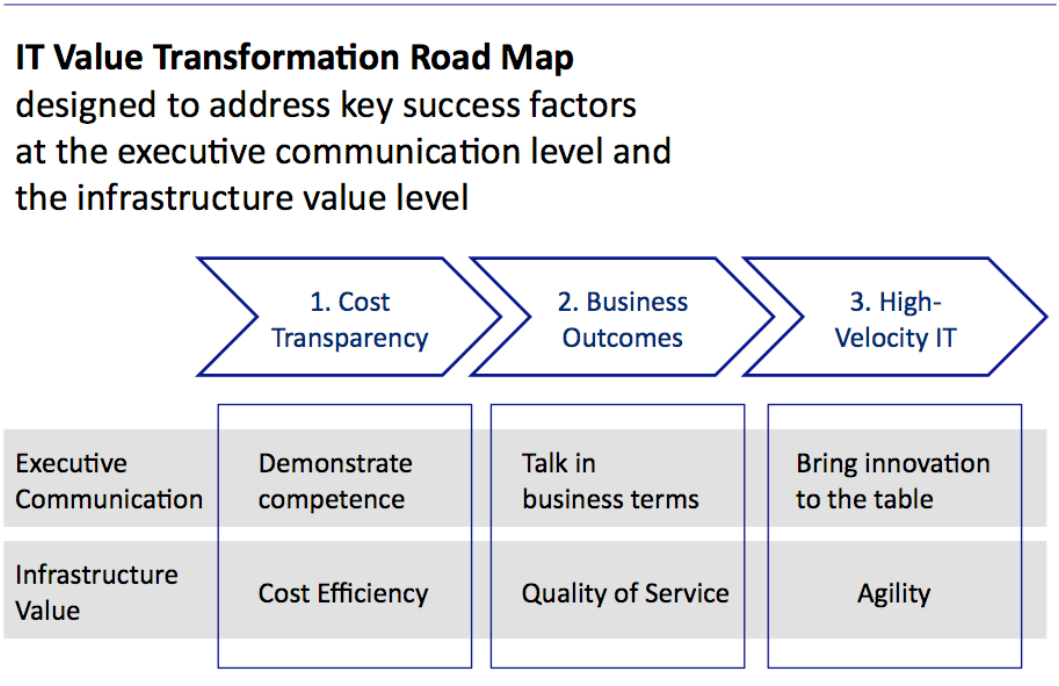

Figure 1. IT Value Transformation Road Map

Figure 2 summarizes the key elements of the road map presented in Strategy brief #1 "The IT Value Transformation Roadmap".

This strategy brief is focused on using metrics to achieve transformation objectives.

IT Value Transformation Road Map			
	Stage 1: Cost Transparency	**Stage 2: Business Outcomes**	**Stage 3: High-Velocity IT**
Transformation Objective	• Communicate IT results in business terms • Baseline cost, quality and agility	• Link IT efforts to business outcomes • Deploy shared resource model	• Drive game-changing competitive advantage • Deploy IT-as-a-service resource model
Key Metrics	• Capital expenses • Operational expenses • Service and cost visibility	• Availability • Service support • Application release speed • Percentage of resources running what is in place	• Time to capability • Scalability • Process consistency • Resource utilization
Infrastructure Value	• Cost efficiency and transparency	• Business application quality of service	• Agility and responsiveness
Competencies	• Establish virtualization foundation • Present unit cost information • Adopt business-centric communications	• Present cost information related to business outcomes • Virtualize business-critical applications • Allocate IT resources to support business process optimization	• Present game-changing IT innovation • Deploy private and hybrid cloud solutions • Allocate IT resources to identify game-changing innovation
IT Executive Communication Challenge	• Demonstrate that IT can effectively manage resources	• Shift communications to an external business perspective	• Identify and communicate game-changing innovation
Executive Level Transformation Story	• Better resource management	• Better service levels for business-critical applications	• Improved agility and ability to say "yes" to more opportunities • Anticipate high-value opportunities

Figure 2. IT Value Transformation Road Map summary table

Establishing Metrics to Guide and Communicate Transformation

Transforming IT's core value proposition requires implementing an ordered series of competencies at both the infrastructure and executive communication levels. Figure 2 shows a management-by-objective model that is used to link transformation objectives to implementation strategy and measurement targets.

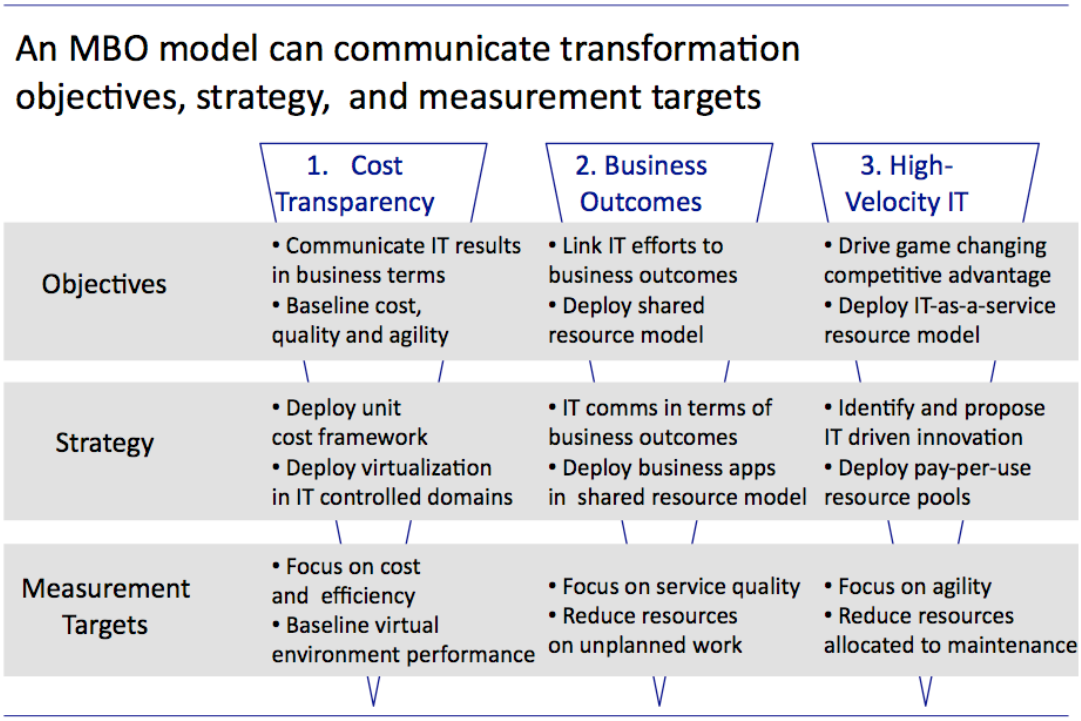

Figure 3. Model for cascading objectives, strategy, and measurement targets.

Effective metrics guide successful transformation in two ways:

- Focus transformation efforts on specific measurable outcomes.
- Effectively communicate progress, and results.

Metrics can be presented in different ways to tailor communication to different audiences, such as IT management and staff, business funders of IT, application owners, and the executive team. The IT Value Transformation Road Map defines five categories of metrics to guide transformation:

- Cost efficiency metrics
- Service quality metrics
- Agility metrics
- Landscape metrics
- Transformation value metrics

Metrics for Stage 1: Cost transparency

Figure 4 shows the objectives, strategy, and measurement targets for Stage 1. In this stage, IT develops virtualization competencies and deploys virtualization technology in areas directly controlled by IT. The recommended metrics capture cost and service quality improvements that result from the consolidation of virtual servers. The cost and service quality improvement metrics provide the basis for the business case for moving business applications into virtual environments in the next stage (Stage 2).

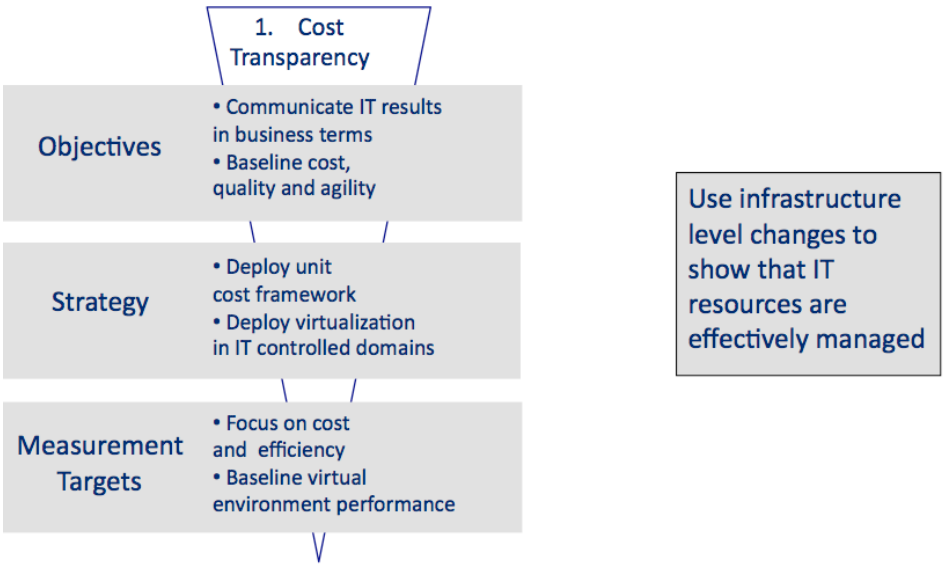

Figure 4. Stage 1 Objectives, strategies and metrics

The executive communication objective at this stage is to improve the cost transparency of IT spending and to communicate, in terms meaningful to business executives. Business oriented communication helps demonstrate that IT resources are being effectively managed. Unit level costing allows business executives to compare the costs of various IT service options.

Cost efficiency metrics

- **Capital expenditure avoidance**—Summarize hardware purchase avoidance savings from current consolidation efforts and planned future upgrade cycles.
- **Physical operational expense reduction**—Calculate reduction in cost of data center space, power, and cooling as a direct result of smaller consolidated server footprint.
- **System utilization rate**—Measure and summarize the increase in average physical server capacity utilization due to virtualization.[2]
- **Servers to system administrators ratio**—Calculate the number of physical and virtual servers supported by each server system administrators.[3]

Service quality metrics

- **Availability**—Use standard metrics for system or application availability for both virtual and physical server environments.[4]
- **Planned maintenance hours**—Measure the amount of planned maintenance downtime for virtual and physical environments. [5]
- **Mean time to repair (MTTR)**—Measure the mean time to repair for different classes of service outages (i.e. small, medium, large) for both virtual and physical server environments.[6]

Agility metrics

- **Release speed**—Measure the average time needed to deploy new servers and applications in both physical and virtual environments.[7]
- **Release effort**—Estimate the man hours required to deploy new servers and applications in both physical and virtual environments.[8]
- **Change success rate**—Measure the success rate of application and infrastructure changes in both physical and virtual environments. [9]

Landscape metrics

- **Scope of servers virtualized**—Track and set targets for the number and percentage of servers that have been virtualized.

Transformation value metrics

- **Percentage of budget on new projects**—Estimate the portion of total IT capital and operating expenditure used to support new business-driven initiatives.
- **Percentage of planned work—**Estimate the portion of overall IT effort spent on planned work as compared to unplanned work.
- **Infrastructure cost per server—**Develop a model to calculate the annual IT infrastructure cost per server. Include IT administration, hardware, associated storage, and software license costs for operating system and middleware. An alternate more detailed unit cost metric is cost per application user or cost per CPU second. [10] [11]

Metrics for Stage 2: Business Outcomes

Figure 4 shows the objectives, strategy, and measurement targets for Stage 2. Linking IT efforts to business outcomes is critical step toward shifting focus from cost reduction to business value creation.

The infrastructure objective is to extend the virtualization footprint as far as feasible to gain maximum value from the shared resource model. Use cost efficiency and service quality improvements measured at Stage 1 to create a compelling case for moving business applications into a virtual server environment. The wide use of the shared resource model at this stage provides the foundation for the IT-as-a-service model used in Stage 3. Repurpose resources freed through efficiency gains to directly support business outcome improvement efforts.

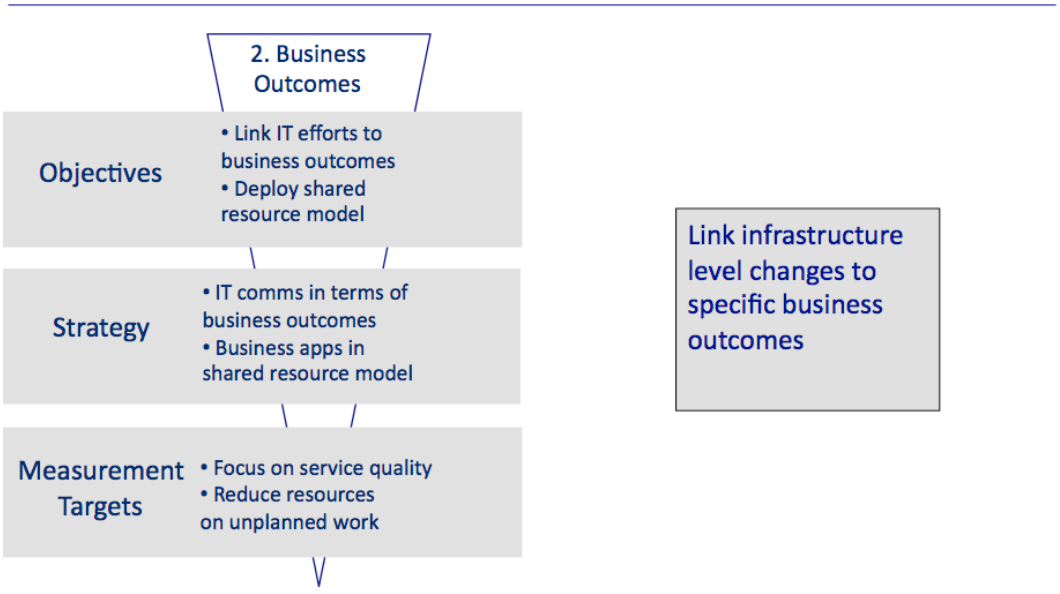

Figure 5. Stage 2 Objectives, strategies and metrics

Cost efficiency metrics

It's important to continue to track all four efficiency metrics for the IT-controlled systems virtualized at Stage 1 and also to track these metrics for business applications virtualized at stage 2. This permits IT executives to compare capital and operating spending, system utilization ratio, and server-to-system administrator ratio for Stage 1 versus Stage 2. This comparison helps tie virtualization-driven results directly to specific business outcomes. These improvements should be presented in business terms to business managers and application owners. The comparison validates the improvement due to IT value transformation efforts, helping boost business executives' confidence in IT.

Service quality metrics

The availability, planned maintenance hours, and MTTR metrics should continue to be tracked for systems virtualized at Stage 1 and also for the business applications virtualized at Stage 2. New metrics should be added at this stage that highlight the quality of service improvements to virtualized business applications, These new metrics include:

- **Scope of business systems under failover control**—Track the net gain (number and percentage) of business applications under failover control.
- **Scope of business systems under disaster recovery control**—Track the net gain (number and percentage) of business applications under disaster recovery control.
- **Scope of systems that use standard configurations**—Track the percentage of systems that match standard configuration server images.[12]

Agility metrics

It's important to continue to track the release speed, release effort, and change success rate for IT-controlled systems virtualized at Stage 1, and for business applications virtualized at stage 2. IT should add a new agility metric at this stage:

- **Release predictability**—Track the variance of quoted release time to actual release time. Accurate release estimates build confidence that IT can meet commitments and accurately gauge the time to capability of new business-critical functions.

Landscape metrics

It's also important to track the scope of virtualized servers. That requires the addition of a new metric:

- **Scope of applications in shared resource model**—The number and percentage of business applications in a virtual, consolidated, shared failover, and disaster recovery environment.

Transformation value metrics

Continue to track the budget for new projects, planned work, and unit cost metrics. Also, add a new metric that measures improved IT value tied to business outcomes:

- **Business outcome improvements**—Identify and quantify the improvements in specific business outcomes that are linked to IT improvements. Communicate the improvements related to improved business process performance, cost reductions, or revenue impact stated in business outcome terms.

Metrics for Stage 3: High-Velocity IT

Figure 6 shows the objectives, strategy, and measurement targets for Stage 3. In this high-velocity IT stage, computing resources are deployed temporarily or are scaled on demand. Resources may be deployed using a private cloud or a hybrid cloud model with high levels of process automation. Metrics that highlight additional cost savings and accelerated time to capability are used to demonstrate business value at this stage.

The executive communication objective at this stage is to identify and propose new sources of IT-enabled value to the organization. The strategy is to use freed resources to identify and propose game changing uses of technology. Metrics at this stage should be shifted to enable an application portfolio management approach. In this approach, cost efficiency, service quality, and agility metrics are tracked for groups of systems that have similar deployment models. Improvements should be tied to profit and loss impact.

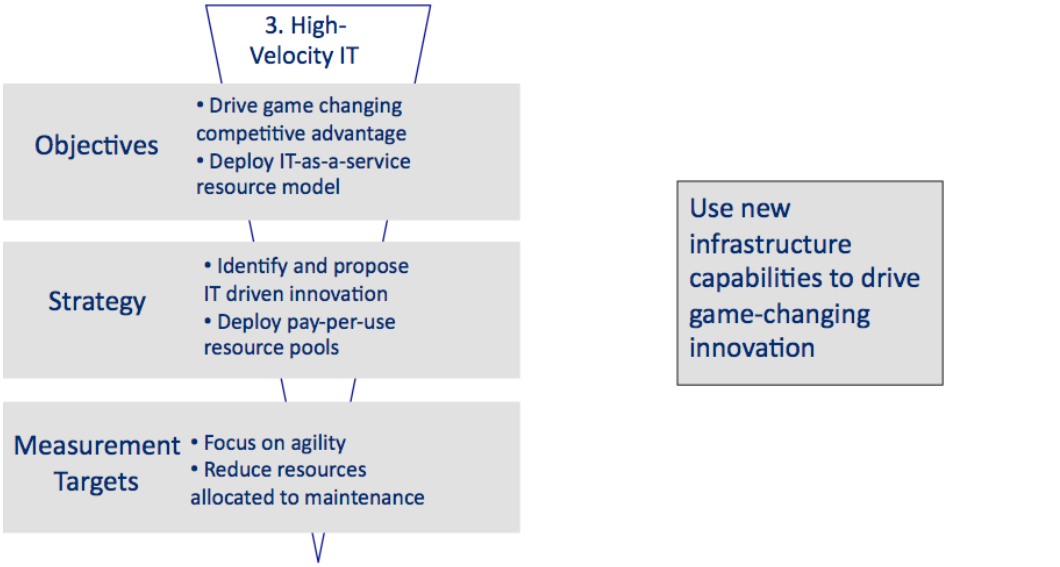

Figure 6. Stage 3 Objectives, strategies and metrics

At this stage, IT executives have earned a place at the executive table based on improved business confidence. Freed resources should be allocated to research and identify game-changing innovation, and bring to the table specific ideas that directly impact revenue and competitive position.

Cost Efficiency metrics

In this stage, all four efficiency metrics should be tracked for physical, shared-resource, and IT-as-a-service deployment models:

- **Capital and operating expenditure avoidance**—Estimate these metrics for each deployment model.
- **System utilization rate and server-to-system administrator ratios**—Track these metrics as applicable. (These metrics may not be applicable for externally deployed resources.)

Service quality metrics

Track service quality metrics for each deployment model:

- **Availability and mean time to repair metrics**
- **Scope of business systems under failover and disaster recovery control**
- **Scope of systems that use standard configurations**—Track these metrics for applications deployed with external cloud resources. (The value of using standardized configurations increases with higher levels of automation.)

Agility metrics

Track agility metrics for each deployment model:

- **Release speed, release effort, and release predictability**—For shared-resource and IT-as-a-service models, releases may be subcategorized into small, medium, and large to improve transparency and predictability of time to capability.
- **Change success rate**

It's necessary to add new agility metrics for the IT-as-a-service resource model:

- **Set de-provision date –** Track the number and percentage of servers provisioned with a de-provision date.
- **Self-service deployment**—Track the number and percentage of servers deployed using a self-service request mechanism. This metric could also be considered an efficiency metric associated with central IT resource savings.

The combination of the de-provision date and self-service metrics helps IT executives track a behavioral shift in which resources are available when requested and returned when not needed. This approach helps prevent system hoarding as well as over-provisioning of resources.

Landscape metrics

Continue to track the overall number and percentage of virtualized servers. It is recommended to track the number and percentage of applications in various deployment models separately to show the overall application portfolio. An application portfolio view provides a more business-oriented framework for executive communications than a server portfolio view.

Separate the landscape metrics for each deployment model including:

- **Physical**—The number and percentage of applications deployed in a traditional dedicated physical server environment.
- **Virtual shared resource**—The number and percentage of applications deployed in a virtual, consolidated, shared failover, and disaster recovery environment.
- **Virtual/cloud dynamic**—The number and percentage of applications deployed in an environment in which resources are rented or scalable on demand.

Each deployment model has a unique value proposition to the business. As a result, the other sets of metrics should now be segmented and tracked separately for each deployment model.

Transformation value metrics

Continue to gather metrics that track improvements in the amount of budget for new projects, planned work, and cost per application user. Also quantify improvements to specific business process outcomes linked to Stage 3 efforts.

As IT repurposes freed resources to researching and identifying game changing innovation, a more formal approach to quantifying cost and impact of those efforts can be linked to formal business reporting:

- **P&L impact of IT innovation**—Use a formal reporting structure to capture the cost and impact of IT innovation, including impact on revenue, gross margin, operating expense, and working capital. These metrics can be tracked by IT project, summarized by deployment model, and summarized by year.

Summary

The effective use of evolving objectives, strategies and metrics can guide efforts across the three stages of the IT Value Transformation Road Map. A balanced and evolving set of metrics help IT executive communicate objectives and measure progress. Metrics also help IT executives link IT efforts to business results, and demonstrate the strategic value of IT.

Transformation Metrics: Summary Table

The following set of metrics as seen in Figure 3 helps guide a virtualization- and cloud-based IT value transformation. These metrics are a foundation and can be adapted to suit specific organizations.

	Stage 1	Stage 2	Stage 3
Cost efficiency metrics			
Hardware capital expenditure avoidance	x	x	x
Operational expenditure saves space, power, cooling	x	x	x
System utilization rate	x	x	x
Ratio of server per system administrator	x	x	x
Service quality metrics			
Availability	x	x	x
Planned maintenance hours	x	x	x
Mean time to repair (MTTR)	x	x	x
Scope of business systems under failover control (percentage and number)		x	x
Scope of business systems under disaster recovery control		x	x
Percentage of virtualized business systems that use standard configurations		x	x
Agility metrics			
Release speed—calendar hours	x	x	x
Release effort—man hours	x	x	x
Change success rate—function as designed, not break, on time, per plan	x	x	x
Release predictability—variance to commit		x	x
Set de-provision date			x
Self service deployment			x
Landscape metrics			
Scope of servers virtualized	x	x	x
Scope of applications in shared-resource environment		x	x
Scope of applications in dynamic/cloud environment			x
Transformation value metrics			
Percentage of total capital and operating expenditure budget allocated to new projects (as compared to maintaining systems already in place)	x	x	x
Percentage of overall IT effort that is planned versus unplanned work	x	x	x
Infrastructure unit cost per server – including IT admin, hardware, storage, operating system, middleware and application license costs.	x	x	x
Business outcome improvements – tied to IT driven improvements		x	x
P&L impact of IT innovation			x

Figure 7. Summary of metrics by transformation stage

Endnotes

[1] Key findings from three multiple primary research studies suggests a common pattern of activity at firms where IT executives have led the transformation of IT from cost center to strategic value driver.

> Richard Hunter and George Westerman, *The Real Business of IT: How CIOs Create and Communicate Value* (Boston, MA: Harvard Business Press, 2009), xvi. This book highlights findings from a wide range of studies conducted by Gartner and MIT, including extensive interviews, surveys, and roundtables. "The path to success for these CIOs is not only clear, but astonishingly common—not in the sense of ordinary but in the sense that it is shared."
>
> Kurt Milne, "Strategic Alignment Performance Study," IT Process Institute, September 2008. This ITPI study of 269 IT organizations identified specific practices that optimize IT business integration that differ based on the organization's overall value delivered to the business.
>
> Vittorio Viarengo, "Virtualization Journey Stages," *Virtualization Journey*, www.journeytocloud.com. This study based on detailed interviews of IT executives at over 50 VMware customers found a common pattern of adoption of how organizations implement and expand their use of VMware products.

[2] "Business Value of Virtualization: Realizing Benefits of Integrated Solutions," IDC,2008. Organizations that widely adopt virtualization (over 25% of servers virtualized) can achieve 40% to 60% or higher capacity utilization.
[3] Ibid. 5. The average number of servers per administrator increases from 17 in non-virtualized datacenters, to 30 in datacenters with broad virtualization adoption. IDC research suggests the ratio can improve 75% or more with top performers reaching 300+ servers per administrator.
[4] "Reducing Operational Expense (OpEx) with Virtualization and Virtual Systems Management," EMA November 2009, p. 3. The use of server virtualization increases application uptime. Average uptime for virtual environments is 99.5% (219 minutes downtime per month) as compared to 99.3% (306 minutes downtime per month) for applications deployed in dedicated physical server environment.
[5] Kurt Milne, "Server virtualization maturity study," IT Process Institute, 2009. Virtualization can reduce the impact of planned maintenance by moving applications to other servers. Organizations aggressively deploying virtualization in production average 6.4 hours planned downtime per week, as compared to 8 hours for those organizations not using virtualization.
[6] Ibid. 3. Virtualization enables support organizations to restore systems to known good state faster than the average repair time. EMA study indicates average MTTR is 67% lower for virtual servers, reducing average MTTR 161 minutes per outage.
[7] "Reducing Operational Expense (OpEx) with Virtualization and Virtual Systems Management," EMA November 2009, p. 5. New virtual machines can be deployed 24 times faster on average than physical servers, and 240 times faster in best case scenarios. New applications can be deployed 2 times faster on average than on physical servers
[8] Ibid. 5. Conservative salary estimate suggests potential savings of $2,000 per deployment.
[9] Kurt Milne, "Server virtualization maturity study," IT Process Institute, 2009. The percentage of changes that met functional objectives, were completed during planned time, and actions exactly followed build instruction is 16% higher for organizations aggressively deploying virtualization in the production environment as compared to organizations not using virtualization in production..
[10] "Business Value of Virtualization: Realizing Benefits of Integrated Solutions," IDC, 2008, pg 6. The annual cost per user can be reduced from an average annual cost of $65 per user in an non-virtualized environment, to $22 per user in environments where virtualization is broadly deployed.
[11] "Using the chargeback system to demonstrating virtualization benefits," searchvirtualization.techtarget.com, January 01, 2008.
[12] Kurt Milne, "Change configuration and release performance study," IT Process Institute, Oct 2007. Standardized configuration practices had the third highest impact on overall performance, predicting almost 25% of performance variation across 349 IT organizations studied.