Building
Tomorrow's Enterprise

View Point

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Infrastructure Optimization

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Infrastructure Optimization is part of the Infosys Catalytic IT Solution Suite

Business change has become a challenging constant and the ability of IT, especially IT infrastructure, to cope with it is continually called to question.

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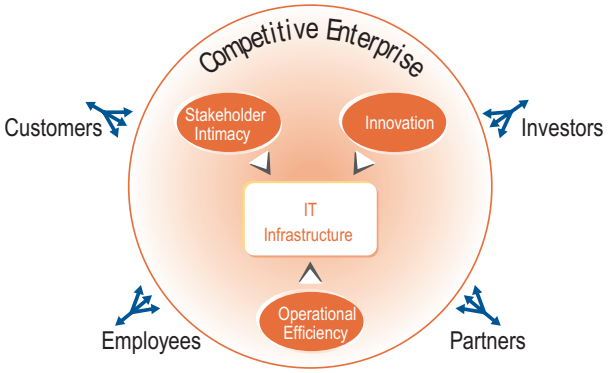
An organization must obtain the best inputs and align technology imperatives with business imperatives. Therefore, business-IT alignment has become a top priority for most CIOs, be it to comply with Sarbanes-Oxley regulations, enable faster time to market or increase customer intelligence. All the critical applications that create value rely on IT infrastructure.

Today, IT infrastructure is a bottleneck for change. This Infosys Viewpoint demonstrates this challenge and shows how companies can transform their current IT infrastructure into a catalyst for the organization and be prepared for where IT infrastructure is headed.

- What are the key challenges before IT infrastructure organizations?
- How can IT infrastructure be a catalyst, and not a bottleneck to change?
- How to be prepared for the longer term?
- What can be done in the near term?

Infosys believes that an organization's goals – like stakeholder intimacy, innovation and operational efficiency – help it retain its competitive edge. To stay competitive, the enterprise undergoes constant change, which must be supported with appropriate IT infrastructure changes.



IT Infrastructure: a bottleneck

When a business organization wants to adapt to change and align itself to business requirements, IT infrastructure often poses a bottleneck. This may be due to several constraints – e.g. software and hardware incompatibility, best-effort service delivery, long time-to-market, and high costs.

IT infrastructure can present a bottleneck from the following perspectives:

Cost – More expensive/unpredictable than the business expects. Reasons could be technology changes, expensive upgrades, etc

- Heterogeneous environment: IT infrastructure today typically consists of non-standardized hardware and software platforms, multiple operating systems, redundant applications, etc. Infrastructure architectures are complex and operate in silos. With complexity and heterogeneity come fixed and recurring costs for licensing, maintenance, skilled staff, support, etc.
- Operational efficiency: Automation, effective utilization of resources and service-centric management are some of the routes to build operational efficiency. Proactive monitoring and management is either absent or works in silos. Service

Service Quality – Service as understood by business is inconsistent, slow to deploy, difficult to track and not well reported.

- Service value: While costs are high, service does not meet the ever-growing needs of business services. Hence, business is often unable to see value and puts the IT budget under pressure.
- SLA: Service level agreements (SLAs) with business/customers are usually unavailable and, if available, they are weak and not service-oriented.
- Deliver increased availability: Infrastructure environment changes being reactive, high availability is not planned into the environment. As the business requirement turns 24x7x365, it becomes challenging to deliver matching service availability, disaster recovery and business continuity services.

Compliance and security – Businesses require quick compliance with required regulatory requirements; at the same time they must have complete control over security concerns.

- Compliance: The need to archive, manage, retrieve and audit information for compliance with various regulations has put organizations under serious pressure to change processes and improve transparency. Currently, the IT infrastructure is unable to provide the required information due to the lack of the right systems and processes. With regulations like Sarbanes-Oxley HIPAA, BS 7799, the Patriot Act and Basel II for financial services, and a trend towards holistic compliance, IT infrastructure has some tough implementation challenges ahead that must balance legal requirements, industry acceptance and cost.
- Security, data access, privacy and confidentiality: Security breaches cause service disruptions that directly impact the business. Most of the current solutions are mere reactions to security breaches and serve no better than patches on wounds. Competitive enterprise needs have given rise to communication and collaboration both within and across organizations. The need for effective Integration between suppliers and customers/users has intensified. Hence the need for timely access to information and distribution with appropriate authentication and authorization to ensure privacy has become a challenge

Speed – Often, it takes time to meet the needs of the business change; sometimes the change has to be postponed because IT is not ready for it.

- Effective integration of next generation technologies: As business changes each day with the emergence of new markets and changing customer preferences, IT infrastructure has to embrace next-generation technologies effectively. Adapting to such newer technologies becomes a challenge due to service disruptions, higher costs, higher effort and difficult transformation.

Infosys advocates a rethink on managing IT infrastructure and taking a proactive approach to address issues. Infosys believes that an enterprise's current IT infrastructure can evolve from being a bottleneck to a catalyst for enabling competitiveness and supporting change.

Catalytic IT – The Role of Infrastructure

The Infosys Catalytic IT concept emphasizes the need for service-oriented management of IT infrastructure. It looks beyond equipment such as servers, storage devices and desktops, networks, operating systems and middleware. For instance, an online banking service uses a web-based application and infrastructure services like database, network, storage, processing, security and access point services.

Business users require the service to be available in a secure and quick fashion and are not concerned about the technology or the backend infrastructure components that deliver the service. Hence the need for service-oriented infrastructure management, rather than device-oriented infrastructure management.

Infosys distinguishes the following as the key layers in IT infrastructure in today's IT environment:

1. Physical and OS layer

2. Technology and application services layer

3. Sevice management and process layer

Catalytic IT recommends that infrastructure management aligns completely and dynamically to business goals by moving from technology-based thinking to business service-based thinking.

The Physical and OS layer – Physical components include servers, storage devices, networking equipment, desktops, mobile devices, and the operating system on top of the devices.

Technology and application services layer – Basic business services like directory services, Messaging, file/ print and web services have been considered as part of this layer.

Service management and process layer – The service management layer ensures that the services that business requires are supported and delivered in the long term with proper planning and implementation approaches.

What the future holds

Infosys sees each of these layers becoming increasingly rich and technically advanced. For example, in the physical and OS layer, we have breakthroughs in 64-bit computing, solid-state storage, mobile computing, wireless networks, etc.

The need for effective utilization has created the Virtualization layer, which consists of software that combines multiple OS-driven devices into larger systems.

As applications increasingly become more data-intensive, the need to store and retrieve data effectively makes storage a key component. As we move towards real-time IT, consolidation and virtualization of storage becomes increasingly critical.

The "need-based" delivery of IT resources in response to the peaks and valleys of performance demands will lead to the delivery of self healing solutions using technology and automation. Applications, hardware, and the operating system will need to perform and manage their own behavior, as well as allow management by other layers.

With advancement in collaboration services, infrastructure will offer workspaces by integrating applications, instant communications across the organization for meetings, idea sharing, training presentations, etc. Infrastructure services will also be customized for organizations depending on industry requirements.

In network communications, the trend is clearly toward convergence of data, voice and video. Next is the evolution toward Ubiquitous Access, which will form the basis for a whole new set of applications. Interoperability and connectivity between mobile devices and the infrastructure services will happen seamlessly.

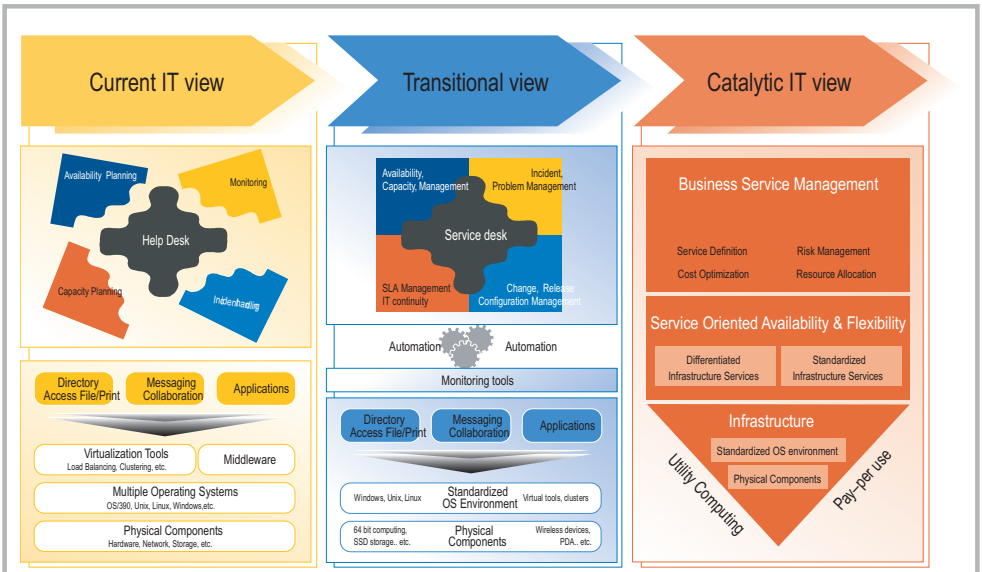


Figure 1: Evolution from Current IT View to Catalytic IT View

There is a need to effectively embrace these advancements to deliver business oriented services.

Infosys' future view for organizations is of a long-term movement toward two sets of services:

Differentiated infrastructure services – Sets of services that provide competitive advantage and differentiation from the competition, integrated tightly with a unique business model. These are difficult for the competition to imitate/ copy. Here is where organizations will expend energy to invest and differentiate themselves.

Standardized infrastructure services – Largely standardized, even commoditized services that are a bare minimum requirement to operate an integrated e-business. A genuine "variable cost-only" model will be possible for such services.

However, before a move to this model in the long-term, organizations must be prepared to move to an intermediate state of process readiness and standardization.

Some problems that need to be addressed in the intermediate term include:

Service layer preparedness – Typically, the service management layer is not effectively implemented and integrated with the infrastructure components. For example, proactive capacity and availability planning and SLA are mostly not in place. Service support management is partially in place, but do not add value to business.

Infosys believes that the use of enterprise-specific best practices based on ITIL/MOF/ISO/Six Sigma fosters optimal use of IT resources. With best practices supported by SLAs, IT can deliver complex services with measured costs. Over time, this helps the enterprise develop dynamism in the infrastructure organization and improves response time to anticipated business change.

Looking ahead, Infosys believes that implementing ITSM (IT service Management) based on ITIL (IT Infrastructure library) best practices is an urgent need to prepare for the long term. While it is essential for an organization's IT services to support core business activities, it is vital for these IT services to facilitate change as businesses evolve. Change management is integral to the ITSM concept and therefore increasingly important for infrastructure to be a catalyst for change.

Automated best practices - Many tasks like monitoring, deployment, capacity planning, release and asset management can be automated for efficient management and rapid deployment. This pushes efficiency into the infrastructure organization. Self healing of hardware and software has to be built into the environment through automation.

Automation of Business Service Management (BSM) – Today, ITSM focuses on delivering IT services for the business, but the impact of IT service disruptions remains separated from the business impact caused by the disruption of services. BSM helps identify and prioritize the services that deserve IT resources based on business needs. BSM tools make IT fully serve the business. To prepare for the next wave, it is important to align to this philosophy and develop strategies to cater to business services from an IT infrastructure perspective.

Governance

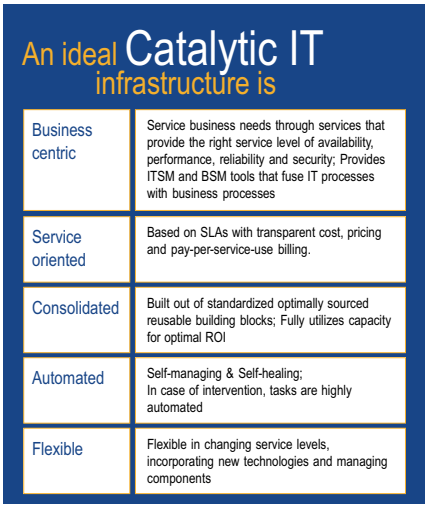
As modular sourcing and preference for best-of-breed vendors gain ground, governance becomes critical and success is determined by the strength of the interfacing models that are built for management. These models, combined with infrastructure dashboards, yield deep insight and management control.

Governance becomes increasingly important for three reasons: First, it helps to understand and manage the complexity of the organization better by making it transparent and traceable. Second, governance yields higher productivity as the key ingredients for success are understood and repeated. Third, the business environment simply demands it — regulations like Sarbanes-Oxley or HIPAA, as well as stakeholders, demand transparency.

The way forward

Determine the needs for current and future Infrastructure services:

- Determine real business needs and design matching infrastructure services
- Get stakeholders to forecast demand for business services, and thus understand the implications for the infrastructure
- Take forecasts into account when designing and maintaining the infrastructure service



Consider the following to prepare better for the long term:

Identify Differentiated services: Know what aspect of your IT infrastructure will lead to differentiated service for business. Will a business service help your organization's business differentiate and sell more? Invest strategically in services that add differentiation and competitive advantage – e.g. infrastructure services that enable you to deliver fastest response to your business's end customers, or services that provide an always-on functionality.

Create a standard operating environment: This dramatically reduces support and maintenance efforts. The result is higher effectiveness, lower risk, and significant cost reduction.

Assess, define and implement ITSM/BSM: Implement ITIL best practices as applicable to the enterprise; automate and implement the right tools for effective management and business-oriented service delivery.

Information lifecycle management (ILM): Develop service delivery processes for the entire lifecycle and establish a strong system of controls and accountability for document and records management. Seek help from best-of-breed vendors in the development of ILM and related IT strategy.

Evaluate variable pay models: Look for genuine pricing pegged to devices, computing power or variables like calls, users, or transactions to differentiate between hype and reality. Be careful about hardware, computing power, software, and services that come in a bundled package with no visibility of the individual components.

Use offshore for process and quality leverage: Reduce the TCO for operations by intelligently utilizing offshoring and outsourcing opportunities. The resulting cost savings can be used for new projects that enhance the business.

Establish partnerships: Establish parterniships and alliances with IT service providers and technology leaders to leverage the expertise - e.g to implement ITSM best practices, security, compliance, technology integration and consolidation.

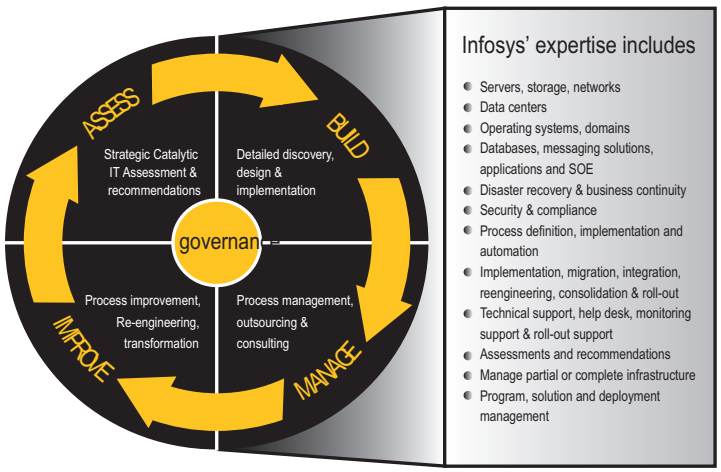


Figure 2: Infosys' Approach & Services

Migrate away from 'Burning Platforms': Burning platforms are defined as technologies that are at the end of their lifecycle, and therefore unfit for the governing architecture. Alternatively, the vendor may have discontinued support. By moving away from such platforms, we achieve standardization, ease of integration, and improved response to change. In addition, such migration also leads to economic benefits of license fee rationalization.

Define and implement an enterprise-wide security policy: An enterprise-wide security policy definition identifies critical information assets and determines appropriate protection and access levels.

How Infosys can help

Designing and Managing IT infrastructure successfully requires an assess-build-manage-improve approach. Infosys draws on wide expertise to assess clients' needs and recommends actions. Infosys designs and implements recommendations and has deep experience in design, reengineering and management.

Through its unique Global Delivery Model, Infosys delivers reliable solutions on time and on budget, which is a simple and powerful proposition for Infrastructure VPs and CIOs.

About the Authors

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