

CLOUD TRANSFORMATION

ACCELERATING THE JOURNEY

Network services, applications and data analytics are all part of the digital transformation redefining businesses globally. This digitalization is prompting companies to shift the role of IT from a cost and control function to a strategic enabler and an internal service and innovation provider. Using the cloud as part of this process improves business agility and positions companies for a successful digital transformation.

INTRODUCTION

The cloud transformation journey is challenging. For it to be successful, careful planning and execution, along with significant technical, organizational and operational changes, are all required. Additional factors include tight budgets, the need to scale solutions exponentially, and increasing complexity in terms of security and regulations.

Organizations with investments in business-critical applications, data centers, platforms or networks may be resistant to cloud transformation. After all, staying with these legacy investments can reduce transformation costs, but it can also compromise agility, as well as scale and distribution, when the desired outcome is delivery of end-to-end digital services.

Given the complexity of the current business landscape, which includes both legacy and modern infrastructure, cloud architectures, evolving best practices and business models, together with increasing market demands, companies should adopt a well-planned, structured approach to cloud transformation. The key aspects for success are outlined in this paper.

UNDERSTANDING THE TRANSFORMATION JOURNEY

Creating change within organizations takes time, planning, hard work and patience. Cloud transformation is no different.

In a traditional IT environment, where staff operate according to a predefined plan, Ericsson estimates that maintaining established technology capability typically accounts for 70 percent of an organization's operating budget. Today, business management teams are applying pressure to technology providers to reduce costs and achieve more. Service management is restrictive, and ever-increasing security risks make change harder. Time to market is slow, and pressure on profitability of legacy services compounds the need for cost reduction. The ratio of service scaling does not align with profit scaling, while operational costs keep pace.

Cloud business models are service-driven, and aim at creating higher-value, differentiated digital services quickly. In Ericsson's view, infrastructure here is seen as a programmable, automated asset. Business value is increasingly derived from software and data. Infrastructure is a service rather than an expensive constraint. Time to market is rapid, with shorter development cycles in place to respond to customer needs quickly and to gauge customer satisfaction rapidly. Successful services can quickly scale without being held back by legacy constraints.

Gartner introduced the concept of different organizational modes in "Best Practices for Planning a Cloud Infrastructure-as-a-Service Strategy — Bimodal IT, Not Hybrid Infrastructure," Gartner, December 2015.

	Mode 1: traditional	Mode 2: agile
Leadership	IT operations/procurement	Enterprise architect
Priority	Cost reduction	Developer productivity
Viewpoint	Efficient infrastructure	Infrastructure as code
Expectations	Low-cost commodity	Highly differentiated
Use cases	Lift and shift: dev/test	New apps: digital business
Scale	Static or predictable	Dynamics: web-scale
Management	ITIL	DevOps
Tools	Extend existing tools	Adopt cloud-native tools

Figure 1: Bimodal strategy for cloud infrastructure.

In addition, Gartner's 2015 CIO survey found that: "In EMEA, 39 percent of the surveyed CIOs are on the bimodal journey, and 27 percent are planning to undertake it in the next three years."

(Gartner Press Release, Gartner CIO Survey Shows Digital Business Means Platform Business, November 9, 2015, <http://www.gartner.com/newsroom/id/3164421>)

THE CHALLENGE WITHIN

Cloud transformation often starts with a virtualization technology focus within an existing Mode 1 organizational and operating structure. The risk with this approach is that without organizational and operational evolution, only limited cloud benefits will be achieved.

ERICSSON'S VIEW ON MODE EVOLUTION

Traditional Mode 1 companies are in a double bind: not only must they transform business and IT processes, they must also do so under intense competitive pressure – because their markets are being eroded by progressive Mode 2 companies. Terms such as “shadow IT” have emerged, reflecting abandonment of internal technology capabilities due to growing business pressure to enter new markets quickly.

It is hard to imagine that any Mode 1 company would not wish to operate in a Mode 2 way, and yet few have been successful in implementing bimodal capabilities. This failure is in part due to the challenge of evolving existing internal capabilities, and to a lack of clarity and visibility on what to do, when to do it and how to do it. The Mode 2 model needs top-down support and a strong mandate. And both Mode 1 and Mode 2 models are dependent on the necessary competencies and skill sets being available.

Depending on the business sector, it may be more effective for established brands to create a Mode 2 capability inside their well-established Mode 1 shell. This is certainly more aggressive, but carries less risk because the newly-created shadow organization and operations can be designed on a “green field” basis without any legacy constraints. The highest-risk approach is to attempt evolution of existing organizations and operations and use them as incubators for new services delivered in an agile way.

ORGANIZATIONAL MATURITY

In order to fully optimize the cloud business model, the ability of an organization to manage itself and third parties should evolve through the following three stages of maturity.

Stage 1: Service management, enterprise architecture, and technology and operations managed in-house

Stage 2: Service management, enterprise architecture, technology and some operations managed in-house, but with some platforms outsourced to a third party under a managed services contract

Stage 3: Service Integration and Management (SIAM) capable of managing end-to-end services that are delivered by third parties or internal service providers. Enterprise architecture evolved to support public, private and hybrid operating models. Technology and operations are service- rather than silo-focused.

The evolution must address many dimensions of the target operating model, including:

- > service strategy (portfolio, brokerage)
- > service operations (organization, people and process)
- > service performance (service levels, KPIs and cost)
- > partnerships and alliances.

Stage 3 organizations drive the competitive service agenda and then benchmark the cost of the services. This, in turn, puts pressure on the internal technology provider to deliver services in a competitive way. Internal competitive positioning is not just about the price; it also encompasses key cloud service expectations such as agility, flexibility and service assurance that are aligned to the service requirements.

THE TRANSFORMATION APPROACH

A DISRUPTIVE CLOUD JOURNEY

The private cloud journey typically starts with a technology focus, perhaps driven by virtualization. Experience has shown that technology is relatively easy to implement compared with the changes often needed to an organization's people and processes. While technology innovation may deliver some virtualization benefits, organizational and operational transformation are key to achieving cloud benefits. The key factors for success follow.

TARGET ITERATIVE IMPROVEMENT CYCLES

The goal of the transformation journey should be to enable the organization to manage a continuously improving operational and economic environment for the business. The cycle must be business-focused and data-driven. Since technology and businesses are always evolving, the journey is a continuous, iterative process. Through this process, it is possible for an organization to use a public, private or hybrid cloud approach, or even its own infrastructure as appropriate. It will be possible to determine whether legacy investments should be combined with newer infrastructure or retired. Such an approach can help ensure that a business's infrastructure and operations never become out of step with its current and future requirements.

Ericsson has defined this as the digital industrial cycle, with five recurring steps:

Standardize: Drive standard services, rather than competing technologies and capabilities that only meet the needs of some and not most.

Combine: Ensure that services meet the needs of the business, and as a result are highly utilized rather than offered in a silo.

Abstract: Ensure that services have open interfaces so they may be managed and consumed by systems rather than people.

Automate: Deliver well-utilized services as efficiently as possible by investing in automation.

Govern: Manage the service costs and benefits that drive change; manage the assurance and risks that impact business.



Figure 2: The industrialization cycle for the digital business.

FROM SILOS TO SERVICES

One of the key outcomes of the transformation to a digital business should be to establish service layers within the organization. These layers should cut across silos and be open to inspection in terms of service level, performance and cost. Services need to be reusable to provide the highest value. Reuse contributes to agility by allowing projects to avoid the cost and time involved in building new services.

The goal is to drive a development and operations (DevOps) culture that relies on underlying capabilities that are consumed as a service. The closer the DevOps team to the user, the better. Using the cloud to provide as-a-service capabilities allows businesses to break down legacy silos and to abstract software and data complexity to simplify the IT environment.

DevOps plays its role in the dynamic and agile creation of software. It also enables software to be operated efficiently, embracing the end-to-end management life cycle. An organization with a large-scale infrastructure that does not change regularly will use DevOps to automate that infrastructure and ensure that it supports consumer innovation, rather than inhibiting it. Figure 3 highlights service layers cutting across both platform and organizational silos.

HYPERSCALE FOR THE FUTURE

In order to deliver according to their respective business models, large public cloud providers have driven high levels of automation and scale into their technology layers. Competition among

cloud providers has driven rapid service scaling without scaling underlying operating costs. This cost ratio is a key driver for operating efficiency given the growth patterns in the industry, and achieving a healthy scale-to-cost ratio is referred to as hyperscaling.

Large public cloud service providers have already achieved hyperscale, and have become the first businesses operating at real-time petabyte scale. By implementing service-focused, highly automated strategies, cloud providers achieved agility and speed at a much lower price point. Organizations with private investments that fail to address the issues of operating efficiency today will exacerbate the looming infrastructure challenge tomorrow, making scale, agility and cost-effectiveness even harder to address in the future.

For organizations restructuring internal services, the cloud migration approach chosen is dependent on the planned journey and implementation timeline. Services and applications must be abstracted from high-value technology silos, and services must be designed in an application-centric manner. Applications must also be designed with lower technology expectations in mind, achieving service excellence rather than technology excellence.

For operations, the critical test is to achieve the balance between products and people required for delivering a service. Heterogeneous and variable processes and procedures are expensive to automate with a product. If operating scale is directly proportional to the workforce, the economic model will fail. The solution is to abstract and standardize processes, and to automate repetitive processes.

At the start of the hyperscale journey, the focus may be on the infrastructure layer. Technology and service standards need to be simple and allow platforms to meet the needs of the majority rather than the select few. To achieve the benefits of cloud, organizations need to keep pushing the cloud service layer ever closer to the business, and to ensure that internal services offer private cloud services comparable to the competitive public ones.

A MATURITY-LED SERVICE TRANSFORMATION

It is essential to establish the target cloud operating model in combination with an effective capability and maturity-driven transformation approach. Cloud is not just a platform evolution; it is a new way of working across the business that should positively impact all aspects of the organization, along with the user experience.

Evolving the service management and integration layer enables the organization to choose and manage a blend of public and private services to meet business needs.

Adopting the cloud operating model should focus on achieving a clearly defined set of capabilities. These capabilities offer a definitive state of maturity that aligns processes, people and technology. Once the foundation organization is in place, an agile improvement cycle should be adopted that drives services to be standardized, abstracted, automated and benchmarked through higher levels of maturity.

As with any change, a strong business case and plan are needed, but the success of the plan is to establish agreed levels of capability tied to agreed maturity levels. These maturity levels become definitive and are used to tie together dependencies from multiple stakeholders and suppliers. Capabilities depend on a blend of technology, process and people.

The Ericsson private cloud journey maturity milestones are as follows:

1. **Virtual-ready** – infrastructure platform capability exists in order to abstract software and hardware assets.
2. **Cloud-ready** – platform operational capability exists in order to manage the life cycle of the

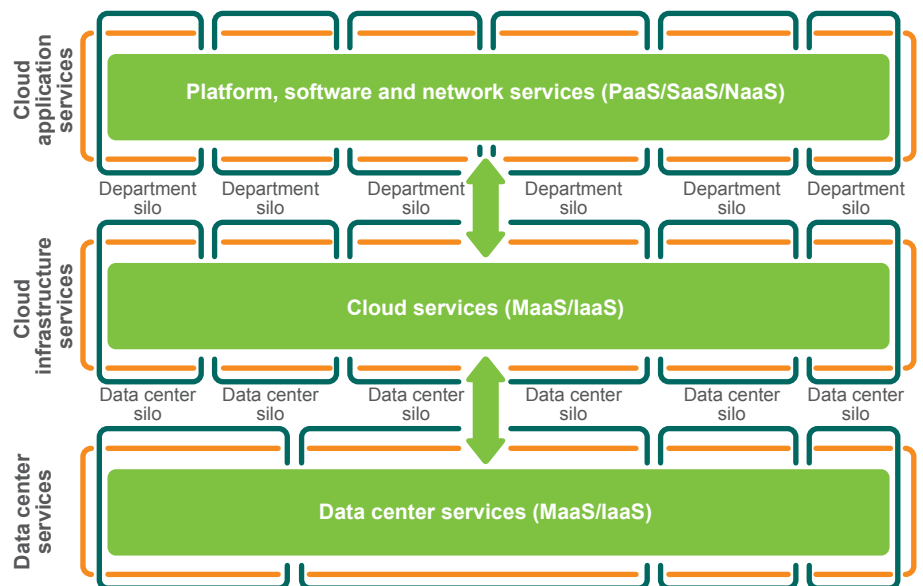


Figure 3: Service layers and organizational silos.

cloud platform. Service operation capability exists (DevOps), which leverages the underlying platform to develop and deploy software assets.

3. **Cloud-enabled** – application maturity of existing applications has evolved, and the DevOps team has orchestrated and automated the application life cycle to achieve full cloud benefits.
4. **Converged** – the organization is able to manage multiple public and private capabilities, addressing different markets in a joined-up service management umbrella that facilitates Mode 2 expectations.

TRANSFORMATIONAL TECHNOLOGIES

Many organizations have an investment in physical infrastructure on which they depend in order to offer consumer services. This infrastructure may include hardware, buildings, cables in the ground or radio towers. Digital agility and physical infrastructure are often at odds with each other.

Achieving digital agility requires some degree of service and technology evolution in order to minimize the restrictive nature of infrastructure. Key concepts to consider are:

- > Software-defined data centers with racked and ready hardware capacity that can be turned on and paid for when needed.
- > Software-defined hardware platforms that can be provisioned to meet the needs of many from a common standard that fosters high levels of automation, assurance, scaling and tightly managed benchmarked prices for compute and storage capacity.
- > Software-defined networks that can enable end-to-end connectivity without restrictions on the management of physical networks.
- > Open platform and container technologies that avoid lock-in and foster multi-vendor optimization.
- > Cloud management and orchestration technologies that are fit for an agile way of working, balancing governance rather than overly restrictive controls.
- > Operational and business support systems that energize DevOps rather than restricting them.

TRANSFORMATION BROKERAGE AND DECISIONS

Mode 1 organizations must recognize that one aspect of transformation success is the ability to identify the most appropriate cloud services to build or buy. There are only public or private clouds; it is the organization that operates in a hybrid fashion by building private capability when it needs to, and public when it can.

This decision process is also very challenging; a variety of technical, security, operational issues, as well as certain risks and costs must be assessed. It is also a moving target, since the cost of service and transformation change, and scaling and mobility are similarly variable.

With so many stakeholders involved, a formal process is needed. This should be viewed as an ongoing process of constantly assessing the alignment of applications to support public or private cloud services. It is common for this process to be executed in bulk, and timed to the selection of a public cloud provider or the buildout of a private platform. Bulk transformation is often driven by the economic incentives to close down legacy platforms and associated costs.

TRANSFORMATION ECONOMICS

Organizations that can buy and manage public cloud services may move directly to enjoy the full benefits of the cloud. This is because they simply buy, design or deploy applications aligned to the cloud model in one step. For the private cloud user, the journey is usually different, as it often starts with virtualization – the potential trap being that this may lead to a server-centric approach. A server-centric approach then requires more transformation to achieve cloud benefits where an application-centric model is much more prevalent. A server-centric approach also inhibits turning the infrastructure layer into a commodity, as it relies too much on individual high-value servers, which in turn need expensive capabilities to protect them.

Measuring benefits should not be limited to the cloud platform. It is not easy to quantify agility, but depending on the market sector, tangible user service innovation should be aligned to the time and cost of delivery.

Having identified the target capabilities, the business case must be built on firm analysis of the total cost of transformation. Each capability has a cost-benefit profile, and time and risk factors will influence when funding is needed and benefits may be realized. Vendors and supplier dependencies must be part of the planning, as delays in benefits once costs have been incurred

can have an adverse impact on the business case.

Ericsson has defined models that optimize cloud investments against transformation scope as follows:

Effectiveness: Establishing a capability model that identifies key maturity milestones related to the transformation cycle. This maturity will be aligned to both technology and operational capability.

Scale: Driving service utilization and optimization to ensure that investments are aligned to high-priority and high-utilization services.

Some transformation aspects are more forward-thinking as new capabilities are created. Agile transformation plays its part in operations, while other changes require more formal and structured inspection of existing assets. Regardless of the starting position, the cloud transformation must harness an appropriate amount of investment to achieve a certain level of cloud capability to operate at a certain level of scale. Unbalanced investment is expensive.

Telco cloud scale

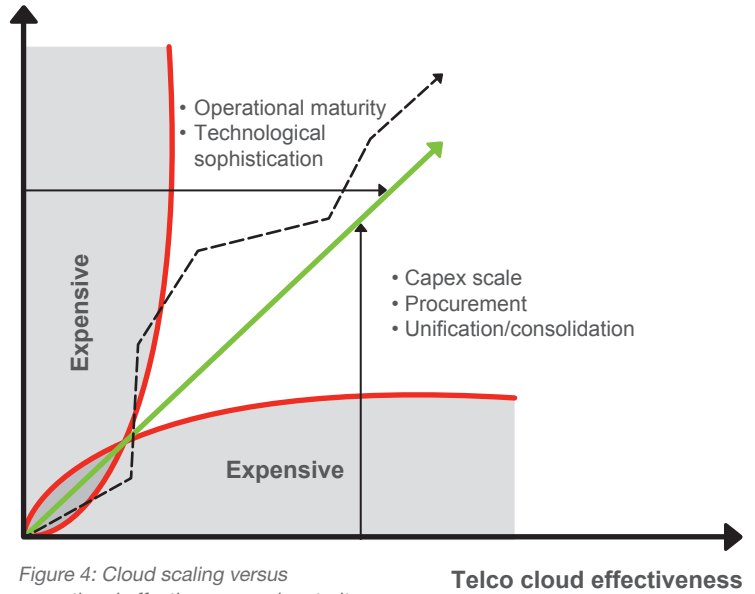


Figure 4: Cloud scaling versus operational effectiveness and maturity.

CONCLUSION

In the Networked Society, margin and budget pressure make the timing of cloud investment and associated capability dependencies critical. Delays to expected benefits or failed investments compound the pressure, because the cloud transformation gap widens and the scale of the problem increases over time.

It is essential to establish a capability-driven operating strategy that is aligned with maturity and backed by economic and business goals. The strategy should address the considerations for a bimodal organizational evolution. Understanding existing capabilities and comparing them to expected outcomes will drive the transformation plan, which must also be effectively risk-managed.

Defining an organization's cloud transformation strategy is a dependency. Success in execution puts great pressure on the technology and business teams that own the delivery of the plan.

Cloud transformation services should be sourced appropriately. Openness among vendors and technologies remains more of a vision than a reality, and for this reason, cloud transformation initiatives typically require the services of a prime systems integrator to help shoulder the expected commercial, technical and project risks.

GLOSSARY

DevOps	development and operations
IaaS	infrastructure as a service
ITIL	IT Infrastructure Library
MaaS	metal as a service
NaaS	networking as a service
PaaS	platform as a service
SaaS	software as a service
SIAM	Service Integration and Management