

Infosys® | CONSULTING



APPLICATION MODERNIZATION UNCOVERED

An Infosys Consulting Perspective

By Chris Leigh-Currill, Ross Oldbury and Ranjit Shenoy

Consulting@Infosys.com | InfosysConsultingInsights.com

INTRODUCTION

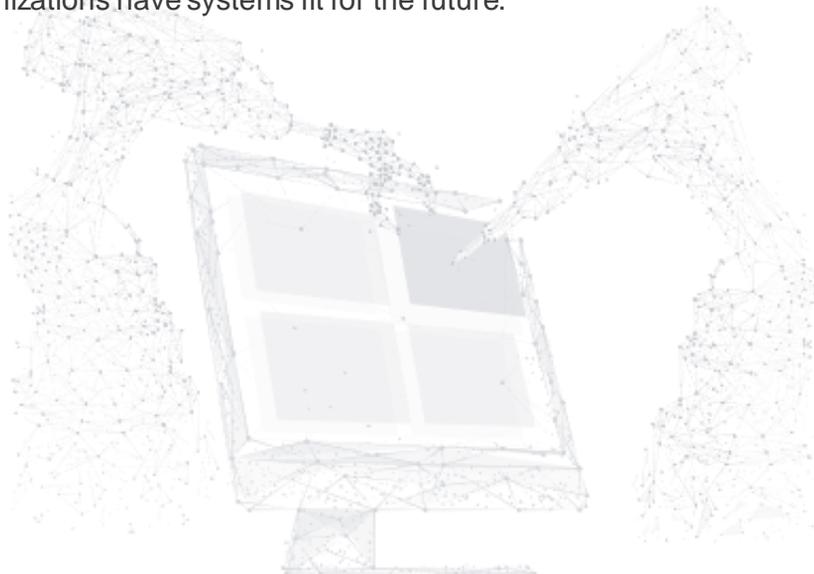
It is 18 years since AWS (Amazon Web Services) was officially launched. Over these 18 years, our view of cloud has changed tremendously. In the early days, the cloud paradigm was primarily focussed on developing API access to functionality, on scalable compute services which hosted data with the capability to modify and update that data.

This view of the cloud has evolved into one that saw the cloud as a set of compute components that support an application. The general focus of enterprises has been on moving as many applications as needed wholesale into the cloud. During this phase, a key benefit for organizations was avoiding the capital expenditure that would have otherwise been needed to replace vast amounts end of life hardware within their captive data centres, known as immutable infrastructure. An additional bonus was higher availability that the cloud offered, almost as a standard. Several organizations large, small, global, regional and across sectors started migrating applications into the cloud increasing cloud consumption. Employees within these firms had the opportunity to explore various facets of cloud and potentially using native capability that would otherwise be inaccessible to the wider enterprise.

Cloud consumption grew significantly during COVID. Organizations that were ahead of their peers in cloud adoption were able to use that competitive advantage while others rapidly enabled their cloud capabilities. As a result, the overall cloud adoption and capability within organizations in industries across the board have increased during the pandemic.

With this, the focus has shifted on how to maximize the advantage that organizations could gain from cloud features and functionality to meet modern business needs. More organizations are now looking to modernize their application estate alongside a wholesale migration. Essentially, the systems that were built during the on-premises paradigm to meet their business requirements are being modernized along their pathways to the cloud.

CIO's have a key role in this modernization by providing the leadership and capability to create applications for the future while working closely with key business stakeholders to ensure that these applications support processes from the past. CIO's also have a key role in encouraging the business to standardize, simplify, and revisit their processes to ensure that their organizations have systems fit for the future.



Seven migration strategies

The seven common migration strategies for transformation of applications to a cloud are listed below. These strategies build upon the 5 Rs that Gartner identified in 2011 and consist of the following:

- **Rehost (lift and shift):** Move an application to the cloud without making any changes to take advantage of cloud capabilities. For example, migrating your on-premises Oracle database to Oracle on an EC2 instance in the AWS cloud.
- **Refactor/re-architect:** Move an application and modify its architecture by taking full advantage of cloud-native features to improve agility, performance, and scalability. This typically involves porting the operating system and database. For example, migrating your on-premises Oracle database to the Amazon Aurora PostgreSQL-Compatible edition.
- **Replatform (lift and reshape):** Move an application to a supported OS in the cloud and introduce some optimization to take advantage of cloud capabilities. For example, migrating your Windows 2008 server with its apps to a Windows 2016 server hosted on Azure, making some small updates to the DLLs to enable the app to continue to work, while enabling the continued OS support. Please note, moving an unsupported OS to the cloud, like AIX or Solaris to Windows or RHEL is considered a major update, see re-architect.
- **Repurchase (drop and shop):** Switch to a different product, typically by moving from a traditional license to a SaaS model. For example, migrating your customer relationship management (CRM) system to Salesforce.com.
- **Relocate (hypervisor-level lift and shift):** Move infrastructure to the cloud without purchasing new hardware, rewriting applications, or modifying your existing operations. This migration scenario is specific to VMware Cloud on AWS, which supports virtual machine (VM) compatibility and workload portability between your on-premises environment and AWS. You can use the VMware Cloud Foundation technologies from your on-premises data centres when you migrate your infrastructure to VMware Cloud on AWS. For example, relocating the hypervisor hosting your Oracle database to VMware Cloud on AWS.
- **Retain (revisit):** Keep applications in your current environment. These might include applications that require major refactoring, and you want to postpone that work until a later time, and legacy applications that you want to retain, because they are due to be decommissioned in a few years.
- **Retire:** Decommission or remove applications that are no longer needed in your current environment as part of a transformation app move.

Common transformation themes

The most common migration transformation themes have been:

- **Rehost (lift and shift)** is the easiest method but will have the lowest return in benefits, where organizations start the cloud journey to move away from a fixed term OpEx model of data centres to an on-demand OpEx model, with more flexibility of HA & DR.
- **Relocate** has also been a common theme with most organizations in the early stages of their cloud journey. The key advantage being the ability to move the current estate without having to reskill the workforce (i.e., VMware to VMware in the cloud) while getting access to more guest VM systems without having to invest upfront in the hardware.
- **Replatform (lift and reshape)**, usually following an assessment into the Total Cost of Ownership (TCO) of that on-premises application and its components (operating system nearing an upgrade but the application needs rework to function on the new version or application components need expensive upgrades). This is also sometimes referred to as lift tinker and shift.

More recently, organizations are looking more closely into the benefits associated with the other R's. We will discuss these in two groups.

Refactor/Re-architect and Repurchase

These groups involve important decisions as well as considerable investment in transformation programs. For example, migrating from an on-premise ERP to a cloud SaaS solution involves a program of both technical and business (process change, end user training etc) which needs careful planning and execution. Rearchitecting existing applications provide the opportunity for creating applications that will support systems for the longer term. Hence, these provide opportunities for broader transformation of the systems in which these applications operate while gaining the true benefits of native cloud services like containers and functions.

Retain (revisit) and Retire

Many applications would have been created as point solutions in the past to address particular process points. Depending on how significant the process points are in the evolved business, applications can be managed to retirement along with process. Usually, the functionality can be migrated into applications that will be retained. Within the master inventory of applications, the list functionality provided by the applications that are marked for retirement becomes very significant information for those applications which will be Retained (revisit). Essentially, if this set of functionalities is relevant, it will need to be met in some way to support the business. This could be met by either investing in applications in the Retain (revisit) category or by adopting the composable applications approach.

Introducing Minimal Viable Refactoring

Minimal viable refactoring (MVR) is one of the newest approaches of using different migration methods from the 7R's for an application where you take only take key components of the application that refactored to give the biggest benefits in the cloud the shortest migration timeframe with the lowest modernization costs.

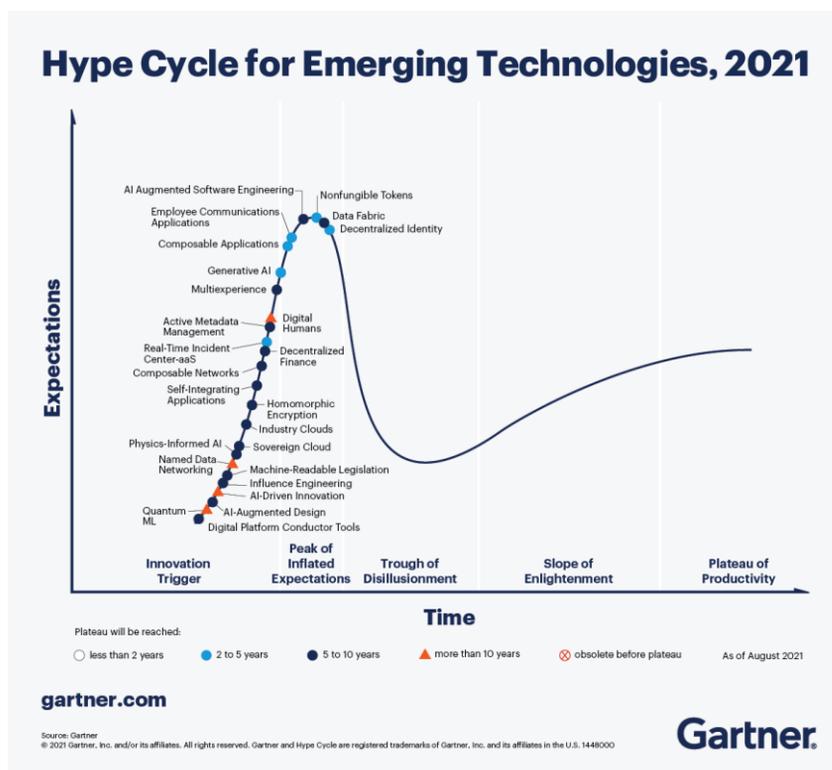
An example of this would be taking a front-end app with a database, where the front-end web app is moved into a new OS (Replatform), while the database on MS-SQL is moved (Refactored) to an AWS RDS Aurora database.

Composable applications

MVR ends up creating what is known as composable applications.

The Gartner Hype Cycle has identified composable applications having been adopted by many enterprises to apply to various sections of their application landscape.

By adopting the composable applications approach, the cloud becomes a commodity and enables organizations to leverage the best functionality from a broad estate. This is particularly valuable for organizations which have revenue generating applications which are either niche or proprietary. The wider business can benefit from these fairly quickly within the composable enterprise.



How do you know that it works?

A key concern on composed applications is assuring that they work to meet the business need consistently. Hence, quality assurance processes become critical to the organization. Quality assurance processes which ensure business outcomes become extremely valuable. Having robust test plans to ensure functionality can be thoroughly tested needs to be created alongside the design of the future state. Quality assurance plans need to encapsulate business knowledge and expertise and need continuous revisions and investment to keep them current. Automated execution of these quality assurance plans become an essential aspect within a composable enterprise.

Where should you start?

We suggest the below steps to your application modernization program:

- Reimagine your business and align your next gen cloud architecture strategy to your business architecture.
- Identify the systems (application and process groups) that would support the future state of your business.
- Adopt an approach of composable applications (MVR) to enable the future state of your systems.
- List your applications and assign one of the 7 R's using the T.I.M.E method to identify the transformation types.
- Pay special attention to two groups that could drive the highest benefits from your investment:
 - “Refactor” and “Re-architect” and “Repurchase”
 - “Retain (revisit)” and “Retire”
- Assess opportunities for adopting a composable applications (MVR) approach.
- Ensure that robust quality assurance process and execution is in place.

Conclusion

There are many risks and challenges in modernizing your application portfolio, especially applications within these which are core to the business. However, many of these will need to be tackled and the earlier you start thinking about the need and approach, the more time you will have to plan your modernization journey and to address as many risks and challenges as possible.

We have over 10,000 Cloud Certified professionals, specialist vertical teams who bring domain expertise and our vast technical teams with skills in a broad range of on-premise technology to help in your application modernization journey.

Infosys ranks highly in the latest HFS Top 10: Application Modernization Services, 2022 report. We bring deep expertise to your organisation to help you reimagine the future of your application portfolio, to design your modernization journey and execute the same for you.

HFS Top 10 Rankings Application Modernization Services, 2022



Rank	Overall HFS Top 10 position	Execution					Innovation				OneOffice alignment	Voice of the customer
		Breadth and depth of capabilities	Scale and growth	Talent and delivery	Partner ecosystem	Overall execution	Strategy and vision	Technology innovation	Change agents	Overall innovation		
#1	Cognizant	Cognizant	accenture	Infosys	tcs	Infosys	accenture	Capgemini	Infosys	Infosys	Cognizant	EY
#2	Infosys	accenture	Cognizant	Cognizant	Infosys	Cognizant	Cognizant	IBM	Cognizant	accenture	Infosys	Cognizant
#3	accenture	Infosys	IBM	Capgemini	accenture	accenture	Infosys	HCL	HCL	Cognizant	IBM	IBM
#4	IBM	IBM	Infosys	accenture	Cognizant	tcs	IBM	accenture	accenture	IBM	EY	tcs
#5	EY	tcs	wipro	tcs	Capgemini	Capgemini	EY	Infosys	Capgemini	Capgemini	accenture	Capgemini
#6	tcs	Capgemini	tcs	IBM	HCL	IBM	Capgemini	Cognizant	IBM	HCL	tcs	wipro
#7	Capgemini	wipro	HCL	wipro	IBM	wipro	HCL	EY	LTI	EY	Capgemini	accenture
#8	wipro	Tech Mahindra	Capgemini	HCL	wipro	HCL	tcs	wipro	wipro	wipro	wipro	Infosys
#9	HCL	HCL	EY	Tech Mahindra	Tech Mahindra	Tech Mahindra	wipro	tcs	tcs	tcs	HCL	HCL
#10	LTI	EY	Tech Mahindra	LTI	EY	EY	LTI	LTI	EY	LTI	Tech Mahindra	LTI

Notes:
 * The report "HFS Top 10: Application Modernization Services" includes firms having application modernization revenues of more than \$1 billion, global delivery, and diverse clients. They include (in alphabetical order): Accenture, Capgemini, Cognizant, EY, HCL, IBM, Infosys, LTI, TCS, Tech Mahindra, and Wipro.
 ** In the comparison report, Serviceable challenges have application modernization revenues of less than \$500 million and may not offer global service delivery. However, these firms offer specialized value to enterprises and typically have adoption outcomes or digital-based pricing models as common practice. Companies assessed in this report include (in alphabetical order): Microsoft, Oracle, SAP, Salesforce, ServiceNow, VMware, and Zentao. These providers are the focus of this report.

Meet the experts



Chris Leigh-Currill

Partner – CIO Advisory

chris.leigh@infosysconsulting.com



Ross Oldbury

Associate Partner – CIO Advisory

ross.oldbury@infosysconsulting.com



Ranjit Shenoy

Senior Principal – CIO Advisory

ranjit.shenoy@infosysconsulting.com

References

1. HFS Top 10: Application Modernization Services, 2022. February 8, 2022, <https://www.hfsresearch.com/research/hfs-top-10-application-modernization-services-2022/>
2. Gartner Hype Cycle for Emerging Technologies 2021
3. Amazon Web Services Public Blogs - <https://docs.aws.amazon.com/prescriptive-guidance/latest/migration-retiring-applications/aggloss.html>
4. Gartner Composable Applications from Gartner Research <https://www.gartner.com/en/doc/465932future-of-applications-delivering-the-composable-enterprise>
5. Cloud As An M&A Accelerator: Three Decisions That Can Create Value Faster <https://www.forbes.com/sites/forbestechcouncil/2022/03/14/cloud-as-an-ma-accelerator-three-decisions-that-can-create-value-faster/?sh=6d47919ef985>

Infosys[®] | CONSULTING

consulting@Infosys.com
InfosysConsultingInsights.com

LinkedIn: [/company/infosysconsulting](https://www.linkedin.com/company/infosysconsulting)
Twitter: [@infosysconstng](https://twitter.com/infosysconstng)

About Infosys Consulting

Infosys Consulting is a global management consulting firm helping some of the world's most recognizable brands transform and innovate. Our consultants are industry experts that lead complex change agendas driven by disruptive technology. With offices in 20 countries and backed by the power of the global Infosys brand, our teams help the C-suite navigate today's digital landscape to win market share and create shareholder value for lasting competitive advantage. To see our ideas in action, or to join a new type of consulting firm, visit us at www.InfosysConsultingInsights.com.

For more information, contact consulting@infosys.com

© 2022 Infosys Limited, Bengaluru, India. All Rights Reserved. Infosys believes the information in this document is accurate as of its publication date; such information is subject to change without notice. Infosys acknowledges the proprietary rights of other companies to the trademarks, product names, and other such intellectual property rights mentioned in this document. Except as expressly permitted, neither this document nor any part of it may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, printed, photocopied, recorded or otherwise, without the prior permission of Infosys Limited and/or any named intellectual property rights holders under this document.