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Maximizing Cloud Potential Through Application Modernization

Taking full advantage of cloud and other powerful technologies requires loosening the shackles of legacy applications and systems.

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Introduction

Digital business strategies typically hinge on creating efficient, agile, and scalable products and services that optimize cloud technologies to share assets and access services on demand. Organizations pursuing these strategies are targeting automated solutions that can leverage data and artificial intelligence (AI) to drive business outcomes and mitigate risk. But many are struggling with portfolios of legacy applications that must be modernized to take advantage of cloud and other powerful emerging technologies. This technology dossier examines the imperatives driving application modernization and the migration strategies necessary to create a streamlined framework for executing successful digital business outcomes.

Increasing focus on modernization

Businesses that need to modernize key applications likely suffer from the constraints of monolithic architecture. Product releases, innovation, and time-to-market efforts are bottlenecked by manual release cycles or lack of automation.

Moving to a modern, streamlined application framework is essential for supporting new digital processes and requirements, integrating new technologies, and executing on business needs quickly with lower costs, improved scalability, and better manageability.

Modernization of application and legacy systems ranked third among top initiatives driving IT investment in 2022, according to this year's State of the CIO research, up from eighth in 2021. That's a clear indicator that IT leaders view modernization as a strategic opportunity for the cloud to help shift their organizations to a more efficient and flexible application environment.

Enterprise application portfolios have grown over time. They're often individually acquired to address specific issues and involve customizations and tools that collectively foster complexity and inefficiencies. Moving to a modern, streamlined application framework is essential for supporting new digital processes and requirements, integrating new technologies, and executing on business needs quickly with lower costs, improved scalability, and better manageability.

That's why almost all companies are actively pursuing application modernization. The modernization effort goes hand in hand with digital transformation, as organizations seek to deliver better customer experiences, improve security and compliance, and increase automation.

However, many customers are finding that embracing cloud technologies can involve great complexity. Some are struggling to break down applications into multiple microservices, distributing them with container technology, and orchestrating them across distributed cloud environments. The other major challenge is determining where to start and what not to do.

Businesses often lack the technical resources, time, or knowledge to build and execute a migration strategy effectively. They tend to be hampered by legacy IT, overwhelmed by security implications, or lacking the expertise.

Customizing modernization efforts

Application modernization aims to ensure organizations can adapt to future business needs quickly and with less disruption than past technology-enabled initiatives. This approach meets the modern business demands for agility, flexibility, and scalability to leverage the value of the cloud, along with other advances in mobile devices, artificial intelligence, and big data analytics.

Some typical use cases for application modernization include:

- **Moving to or scaling SaaS-based solutions —** Many businesses are at the crossroads of moving their offerings to SaaS-based solutions and scaling them across geographies and verticals. This requires a modernized approach, and legacy models won't make it.
- **Refactoring for increased reliability or flexibility —** At its core, modernization is about building components that scale and can be replaced as new solutions emerge. An agile modern approach to applications also allows experimentation with things like A/B testing and customer impact assessment with a quicker turnaround.
- **ERP —** A modernized ERP environment can scale to meet new business needs. Moving to a more connected framework and greater use of the cloud to streamline connections enables an organization to dig deeper into data, spot opportunities for cost and efficiency gains, and improve both partner and customer relationships.
- **CRM —** Customer information is often obscured in siloed data repositories and data sources. Tying together these data sources within an omnichannel framework enables marketing, sales, and support teams to access deeper insights about customers.
- **Managed data services —** Some IT departments are so focused on keeping the lights on that they lack the time to extract intelligence from their data and cannot devote sufficient resources to innovation. Organizations can free up resources for data-driven decisions that grow the business. They can modernize applications and take advantage of a managed service provider (MSP) with dedicated resources to handle the more routine maintenance tasks.

What to modernize

Most organizations have a mix of long-running applications and plans for building new ones. Start your analysis by combining application discovery tooling and stakeholder interviews. The business process usually dictates which workloads or apps to migrate.

When determining which applications to modernize, consider:

- **Does a monolithic architecture** hinder your business and development?
- **What is the overall technical debt?** This is an opportunity to re-evaluate and modernize critical applications.
- **Are manual releases** creating unwanted bottlenecks?
- **Does the central operations team** create a DevOps wall?
- **Is your governance** and security reactive?

Moving from legacy systems can be challenging, especially when an organization relies heavily on customizations. Modernizing these systems requires strategic planning, remediation, migration, and configuration. Organizations should prepare for a comprehensive approach that:

- **Aligns** to business outcomes
- **Assesses** in detail the current applications and their fit in the current IT environment
- **Evaluates** gaps and vulnerabilities of existing applications
- **Develops** a customized, process-led modernization strategy
- **Creates** a framework that continually, consistently connects to value

Application modernization options

After prioritizing applications to modernize, the organization can chart a future using one of four migration options, based on the characteristics and challenges of the existing software:

1. Re-host – Often referred to as "lift-and-shift," the operating system and application are lifted from their existing source into a cloud platform. This can be the quickest, least disruptive approach, but it is not cloud-native. Unless it is a stepping stone to further optimization, it does not adapt well to the cloud but might be the only reasonable choice.

2. Re-platform – This is an extension of lift and shift that can start leveraging managed services through a cloud platform such as Google Cloud. For example, a database running on a server can be re-platformed into Google Cloud's Cloud SQL. Likewise, a self-managed Kubernetes can move to Google Kubernetes Engine (GKE). Google Cloud offers solutions such as Google Cloud VMware Engine and Bare Metal Solution, as well as managed services for SQL Server designed specifically to bridge the legacy-to-cloud path without having to rewrite code.

3. Refactor – Although this entails more time and significant changes to the application, it can allow your organization to take advantage of the cloud's inherent cost savings and scalability with minimal effort. With serverless refactoring, organizations can leverage a fully managed infrastructure that scales, has high availability, and provides consumption-based pricing. You can modernize your legacy applications safely and quickly into containers with Google Cloud. GKE features automated code refactoring tools with advanced application discovery and insight capabilities and prescriptive guidance from Rackspace and Google experts.

4. Rebuild — Like creating new applications, this provides an opportunity to start fresh with the fewest constraints by creating a fully modernized, cloud-native solution. This is typically the longest, costliest type of migration. However, because it's built in the cloud for the cloud, integrating modern technologies such as containers, service meshes, microservices, immutable infrastructure, and declarative APIs is easier. Google Cloud's end-to-end platform can accelerate developer productivity, simplify operations, and build security and compliance into your software delivery process.

How Rackspace and Google Cloud help accelerate modernization

Rackspace Technology is a leader in multicloud solutions, providing unbiased expertise on all major cloud platforms and leading industry partnerships. Meanwhile, Google Cloud empowers you to quickly build new apps and modernize existing ones to increase agility and reap the benefits of the multicloud. It offers a consistent platform and data analysis for your deployments no matter where they reside, along with a service-centric view of all your environments. Google Cloud's application modernization solutions help you innovate faster while lowering costs by offering a consistent development and operations experience and industry-leading tools and guidance. Together, Rackspace Technology and Google Cloud are helping companies around the world solve their most important challenges with deep expertise and solutions for the next generation of cloud technology.

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For customers who need to re-host or re-platform, Rackspace can assist with a combination of application discovery tooling and stakeholder discussions to help plan the migration. Stratozone, provided by Google Cloud, is typically used, and the Google Cloud Rapid Assessment and Migration program provides additional support. Tools such as Migrate to Virtual Machines can facilitate the actual migration. Storage Transfer Service migrates data, with Transfer Appliance for large amounts. Google Cloud's Database Migration Service helps move supported databases. Options such as AlloyDB for Postgress blend traditional interfaces with advanced backends.

For customers who aim to be more cloud-native and to refactor or rebuild their applications, an assessment determines refactoring needs, with an emphasis on repeatable cloud environments that adhere to best practices for account organization, networking, security, logging, and monitoring. Google Cloud provides a variety of services on all these fronts.

For running applications, you can choose across the spectrum, from a platform-as-a-service in App Engine to highly advanced virtual machines in Compute Engine. You also can use container-based services like Google Kubernetes Engine (GKE) and serverless options such as Kubernetes Applications and Cloud Run.

From a developer and automation-tooling standpoint, you have Cloud Build, Google Cloud Deploy, Cloud Tasks, and many more. To embrace modern data, database services range from the traditional Cloud SQL to the modern Cloud Spanner, Firestore to the scale-ready Big Query.

As a services provider, Rackspace has the knowledge, resources, and commitment to ensure your application modernization initiative achieves maximum performance with a portfolio that covers the full implementation and operations lifecycle:

- **Advisory services**, including workshops and assessments to identify scope, costs, and return on investment
- **Transformation services** to address specific needs
- **Managed service**s to ensure service level objectives (SLOs) and governance to achieve required security and compliance
- **Continuous optimization** and achievement of business value as cloud technology continues to evolve

Rackspace and Google provide a variety of services to help with with application modernization. Take your first step toward application modernization on Google Cloud by speaking to one of our cloud experts and engaging with us in an application modernization workshop. Please visit our website for more information, and reach out to us via the contact us page.

Making application modernization pragmatic and useful

Ask anyone to define application modernization, and you'll hear many different answers. Here's a generalization of what we all agree on: Application modernization makes existing applications and data sets that run businesses more useful, productive, and attractive to those who use them, especially customers.

The ability to enhance the customer experience drives more business.

Some see application modernization as "putting lipstick on a pig," but that's not the purpose at all. Application modernization should not be about making applications *appear* modern; the applications should look and *be* modern. Click here to read more.

Application modernization makes existing applications and data sets that run businesses more useful, productive, and attractive... My advice to friends, colleagues, and clients: You really want to do this once. Don't get something wrong the first time and then have to fix it down the line.

— David Linthicum, InfoWorld

How a cloud-first enterprise application strategy boosts speed and scale for your business

Against a backdrop of disruptive global events and fast-moving technology change, a cloud-first approach to enterprise applications is increasingly critical.

That's the consensus from members of CIO.com's community of IT experts who weighed in on how a cloud-first approach to enterprise applications allows an organization to scale its business.

With a cloud-first approach, businesses can sidestep the high costs of on-premises deployment, installation, maintenance, and IT infrastructure upgrades with an option that scales capacity up or down based on need.

Cloud-first applications support a manageable OpEx cost model, metered like a utility, as opposed to requiring significant upfront capital investments in infrastructure and software licenses.

Another upside to the cloud-first enterprise application model is standardization and lower complexity for internal IT operations, says Helen Yu (@YuHelenYu), founder and CEO of Tigon Advisory Corp.

"It also brings your products and services closer to more customers with faster time to value, flexibility, and better adaptation to their ever-changing needs," she adds. Click here to read more.

What is Kubernetes? Your next application platform

Kubernetes is a popular open-source platform for container orchestration — that is, for managing applications built out of multiple, largely self-contained runtimes called containers.

Containers have become increasingly popular since the Docker containerization project launched in 2013, but large, distributed containerized applications can become increasingly difficult to coordinate.

By making containerized applications dramatically easier to manage at scale, Kubernetes has become a key part of the container revolution.

Containers support VM-like separation of concerns but with far less overhead and much greater flexibility. As a result, containers have reshaped the way people think about developing, deploying, and maintaining software. Click here to read more.

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Seven secrets of successful digital transformations

Organizations that continued full speed ahead with their digital transformation initiatives during the COVID-19 pandemic are able to ruminate on what went right and what they would have done differently, with the benefit of hindsight.

Some of what they've gleaned comes as no surprise: A successful digital transformation requires executive buy-in, constant communication with business units, and of course, financial commitment. A newly released report from Deloitte supports that, noting that a straightforward, compelling "north star" narrative is critical to success for 38% of executive respondents. A leader also must devote time and energy to drive a transformation forward. When a chief transformation officer contributed an additional 15% of their time, the probability of success improved by approximately 16%, according to the study. Click here to read more.

Three application modernization mistakes to avoid

Application modernization makes existing applications and data sets that run businesses more useful, productive, and attractive. As stated earlier, some see application modernization as "putting lipstick on a pig," but it should not just make applications appear modern: It should make them look and be modern.

To that end, I see several mistakes being made that will have to be fixed at some point. My advice to friends, colleagues, and clients: You really want to do this once. Don't get something wrong the first time and then have to fix it down the line.

The trouble is, most people don't believe they will have to fix things in the future, and they make honest mistakes. They don't understand the underlying value of app modernization and how it can be focused incorrectly.

Here are my top three application modernization mistakes in terms of applications that are migrating to the cloud or being modernized once there. Read more from Infoworld's David Linthicum.