Designing a cloud migration strategy

What to consider, plan and execute for a successful cloudification initiative

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Introduction

Cloud is positioned to be the dominant technology for the next decade. For many enterprises, adopting cloud is essential to ensuring their long-term health and ability to compete and succeed. But cloud adoption is far from a trivial endeavor, and many cloud adoption projects have failed to deliver the hoped for benefits. There are many reasons for these disappointments but it is clear that a fundamental for success is careful and clear definition of the cloud strategy. With the right strategy, the organization will be well-positioned to address the technical, business and cultural challenges of migration.

In this paper, we will provide key insights on how to develop this strategy.

Defining strategic business vision & goals

As much as technologists want to have fun with new, exciting technologies, the migration must be focused around business needs. For this reason, the most important prerequisites when developing a cloud migration strategy are exploring the strategic needs of the business and articulating them as a business vision.

The vision and goals will form the basis for the way many detailed decisions are made along the way. A cloud migration is a non-trivial endeavor that will transform how the enterprise delivers technical solutions and the enterprise should have an idea of what it intends to accomplish.

Choosing the leadership

Who should actually lead this strategic undertaking? Should it be IT, because of their technical knowledge? Business, because this is the team that drives revenue? Finance, because they hold the purse strings?

There are considerations in favor and against each approach.

Cloud migration is not just about business and technology; it is equally about people, processes and culture. According to Harvard Business School Professor Dr. John Kotter, the key to effecting such complex change is having a "guiding coalition", comprising of individuals within the organization who are the "social leaders of the change initiatives."

Such a guiding coalition should serve as the steering committee for ensuring that the expertise of all involved groups is pooled together and that their interests are addressed.

Migration assessments

In preparation for the migration, it is critical to understand your current status and assets. This is achieved by performing various assessments.

Application assessment

To determine which apps to prioritize for migration, you'll need to perform an assessment of your entire application portfolio. Essentially, this will involve the creation of an assessment rubric or checklist for scoring the applications in areas such as complexity, business importance and risk.

The findings of this assessment will help determine the optimal application migration strategy.

Skills assessment

Identify the skills that team members currently have and don't have, and use this as the basis for a gap analysis. Then, create a framework for closing the gap. Where it makes sense in terms of internal training resources, cost and time – then training and expanding cloud know-how is a great way to empower existing personnel.

Additional assessments in areas such as technology, infrastructure and architecture will help complete the initial picture of where you stand today as a starting point for your migration journey.

Picking the cloud migration path

The possible paths to migration are typically broken down into six options known as the 6 Rs:

Rehost

AKA "lift and shift" – migrating apps to the cloud as-is with only minimum essential modifications

Re-Platform

AKA "lift, tinker and shift" – migrating after making a few modifications, though not in the core architecture (yielding limited benefits)

Repurchase

A new product or service (often SaaS)

Refractor

Or rearchitect the application as cloud-native in order to add new features and scale for improved agility

Retire

Or 'turning off' IT assets that don't impact productivity and which – in time, may be permanently retired

Retain

Or 'keep as-is.'

Another important R is **Relocate**, which is similar to rehost. If the organization has already embraced a container orchestration technology (especially Kubernetes), the workloads can easily be relocated to a cloud provider's managed container orchestration offering.

Decomposing and how to use the 6Rs

As a part of the assessment of which path to take, you'll want to decompose your applications to understand the technology used, IT impacts and the different domains of which they are part. This decomposition informs on the nature of your portfolio migration: which R or migration method should be applied to each application, and the complexity and risk involved in those movements.

The most obvious decomposition is understanding the technologies used for each application. For example, if 70% of your applications are of the same technology (e.g. Java WARs), you have a path to identify commonalities across the enterprise. Indeed, technology helps determine how migrations could be grouped together in waves and which movements to the cloud are easiest to pull off without complete refactoring.
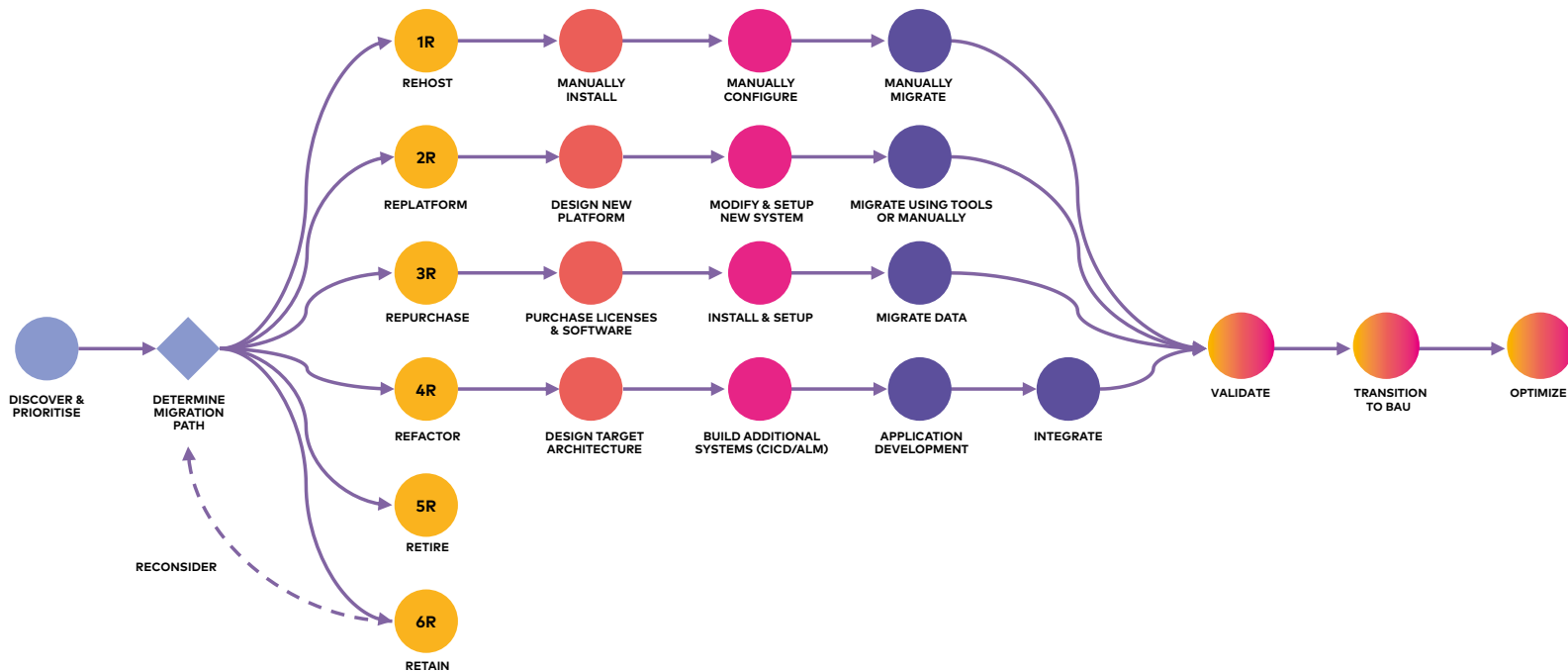
Measuring complexity

Score the complexity of the individual applications for migration, where the scoring is tied to your organization's capability and skill set for making the cloud move.

Importance and risk

Rate how important each application is to the enterprise. The very first applications migrated will be, to an extent, a proof of concept, but your aim is to drive impactful transformation. So, among the early migrated applications, there should be at least one that has inherent enterprise-wide visibility and importance.

Selecting a cloud provider

Each cloud provider offers different global footprints and capabilities. The application assessment informs which capabilities your applications will need from cloud providers during the migration, but it does not inform future needs.

Your provider selection process should focus on the true uniqueness of each provider and how they mesh with your current applications and future tech endeavors.

As more and more organizations are looking to become multi-cloud enterprises, your selected cloud provider should be able to support the migration to such an environment.

Enlisting talent

Choosing the right partners and talent for a cloud migration is clearly very important to the success of the migration. Talent here means cloud talent. The options are – train, hire or going with a system integrator though in practice, for large scale projects like service provider migrations, a system integrator is almost always involved. Make sure the SI has the requisite cloud-specific and vertical-specific experience and expertise.

Data governance and security

Data governance and security are top-tier items in your cloud migration strategy.

Data governance

Broadly speaking, data governance defines who can take what action, upon what data, in which situations and with which methods.

When establishing a framework for data governance, one of the first areas for evaluation is your current regulatory compliance framework and how it impacts decisions about where certain data should sit.

Another area to explore is data classification. Do you have granular data classifications concerning your data? When you start using the public cloud, you will move or generate data in the cloud to be used by applications elsewhere. This means data should be within your logical boundaries but may transit beyond your physical boundaries. Mapping out and defining data classifications will help SecOps professionals identify when data transits should and should not be allowed.

Security

When defining your security strategy as part of your cloud migration, there are many domains to consider:

Expanded identity and access management

Cloud migration is a good opportunity to expand Single Sign-On (SSO) and the usage of temporary access tokens for greater security and control. Such an approach ensures that passwords will never be stored outside of the corporate IAM solution. Even in cases where dedicated identities are needed for a cloud provider's administrative functions, those instances should allow for multi-factor authentication.

Automated anomaly detection

When augmenting your security organization and processes, you should do so by leveraging solutions that provide anomaly detection. Anomaly detection solutions attempt to identify rare, outlier events against the established norm. These machine learning-based solutions also create a subtle but powerful mitigation against new and emerging threats.

Security by default

When in the cloud, you can implement a cloud-enabled Infrastructure as Code (IaC) framework that enables you to configure security by default. This means that you can use the control plane and API to configure resources in your IaaS.

The configuration can be captured in static files and those files can be versioned. This provides the opportunity to define security elements in that configuration and track configuration drift that could lead to unsecure conditions.

Network security

Many enterprises have properly configured TLS at the edges but not always internally. Using the cloud will often result in extending the logical boundaries of the enterprise beyond the physical boundaries, and so pursuing a robust TLS throughout the enterprise is preferred.

These elements together, enable an organization to achieve a zero-trust network environment.
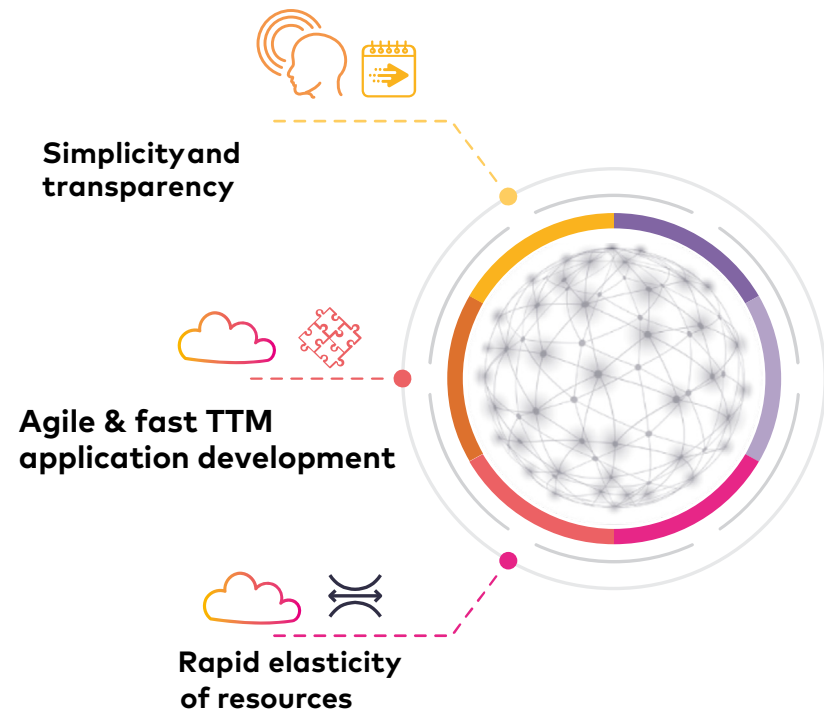
Communicating the migration to the organization

One of the most important tasks of the guiding coalition is to determine how they will communicate the cloud migration throughout the enterprise.

Effective internal communication can be the make or break of a migration. When the people who are running the day-to-day are left to guess what the cloud migration means to them, the migration is at risk.

However, when the whole workforce understands what these changes mean for them, and what is needed to drive the migration forward, it is much easier to rally them behind the journey so they can actively contribute to its success.

Tell them what to expect:

Simplicity and transparency

Agile & fast TTM application development

Rapid elasticity of resources

Workshops, roadmaps & action plans

Workshops are a great platform for getting people in a room to discuss, brainstorm and decide. One of the first agenda items for your cloud migration workshops is identifying the strategic business vision and goals for the migration. Other workshop sessions could be around assessing applications, determining existing cloud capabilities, domain modeling and determining what the security and data governance implications are with using the public cloud.

The main outcomes from a workshop should be the creation of an action plan and roadmap (whether for the overall migration or its constituent parts). The action plan can be around specific domains such as people-enablement activities (e.g. training and communication), as well as raw technical activities like network configurations. The roadmap should be composed of items in the action plan, mapped to estimated start and end dates.

Metrics for course correction

Once the migration has begun, it becomes vital to track metrics, as these provide the first signs of when things are not going according to plan.

There are several metrics an organization can use but what you measure should largely depend on the value you are trying to achieve.

For example, if part of your migration requires a cloud-native application refactor, you should implement a repeatable software delivery process with continuous delivery, which will allow you to deliver features faster and take advantage of all the agility the cloud has to offer. The relevant metric in this case will be "deployment frequency," which describes the rate your organization deploys code changes into production.

Conclusion

A cloud migration is a strategic initiative that can bring many different benefits to the service provider. But it is a major undertaking that requires cooperating leadership, clarity of vision, meticulous planning, technological knowhow, organizational change, organizational support, upskilling, partnering and much more. This paper has just skimmed the surface of some key challenges.

If you'd like to learn about how Amdocs Cloud Services can help you with your cloud migration, we invite you to reach out to **Michael.Isaacs@amdocs.com**

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