Checklist: Best Practices in Enterprise Cloud Migration

Moving applications to the cloud is challenging, especially for large organizations with an extensive array of applications and integrations, stringent security, compliance rules, and teams worldwide. A lack of sufficient cloud migration expertise in the team could lead to challenges, such as:

- choosing an inappropriate cloud provider
- exceeding the budget
- encountering numerous technical issues

We've accomplished numerous successful cloud migration projects for major financial corporations in the U.S. This article shares the essential best practices and insights from these experiences.

If you are looking for an in-depth analysis of your situation, need consultancy or help with implementation, contact us.

Invest in cloud provider research

- When researching and selecting cloud providers, it's essential to consider their compatibility with your company's technology stack. For instance, .Net applications often perform more optimally with Microsoft Azure or AWS. Errors made during this stage can be costly. Migrating to a different cloud provider after an initial move can be daunting and may incur up to 50% of the original migration costs.

- While certain cloud providers offer high levels of automation, it's important to weigh whether the convenience justifies the cost. Sometimes, opting for simpler features and allocating specific tasks to an engineer is less expensive. For instance, we initially considered Oracle OMCS on one of our projects, believing it would streamline patching and routine maintenance. Yet, upon evaluating the expenses, we found that

utilizing Oracle OCI and employing a dedicated engineer for patching duties was a better cost-effective strategy.

Ensure your apps and network are ready

- While migrating your apps and integrations to the cloud, ensure that all of them support the required level of encryption. It's important to note that even widely used solutions might struggle with this requirement. For instance, we encountered a situation where Amazon Aurora's MYSQL DB solution didn't support encryption across all regional locations, leading to a security concern.

- Sometimes, specific databases must remain on-premise due to data protection regulations or other reasons. Your cloud applications need to communicate with them seamlessly. To facilitate this interaction, adequate network bandwidth planning is crucial. A case in point: we observed significant performance problems in a scenario where the network gateway connecting the cloud and on-premise systems was improperly set up.

Embrace cloud features, don't reinvent the wheel

- A widely recognized advantage of cloud computing is auto-scaling, which allows you to adjust your resources according to the current workload. But it's essential that your application architecture is sufficiently modular to facilitate this. For instance, we encountered a situation where a legacy finance backend wasn't adequately divided into microservices before migrating to the cloud. This lack of granularity hindered the effectiveness of auto-scaling for that application.

- The cloud offers numerous ready-to-use services that you might have manually configured on-premise, such as RDS or Kubernetes. It's worth considering these pre-configured cloud services instead of setting up everything from scratch as you would have done in an on-premise environment.

Have a detailed project and testing plan

- When developing your migration plan, remember it's crucial to include all environments, not just the Production environment. For example, we had a situation where a client overlooked the migration of their Dev and QA environments. This oversight led to the project manager requesting extra funding and extending the project timeline once the issue came to light.

- A common oversight in project planning is the need to redirect integrations like batch processes, APIs, and MQs as applications are migrated to the cloud one after another.

- Thorough testing is essential to ensure that your cloud migration is free of any new issues:

a. Begin with functional testing, paying particular attention to integration and end-to-end scenarios. Existing automated tests created for on-premise systems can often be adapted for use in the cloud, providing the same level of coverage. For instance, in one of our projects, we effectively utilized over 10,000 automated test cases during cloud migration.
b. Performance testing is also crucial. Performance issues may still arise despite the cloud's higher computing power than on-premise systems. We've encountered and resolved numerous performance challenges during cloud migrations, particularly those related to integrations with applications or databases remaining on-premise.
c. Involving the business team in User Acceptance Testing is essential. It can reveal specific issues in complex, end-to-end scenarios that were unclear to the quality assurance team.

Be prepared for failures and have a recovery strategy

- Migrations can be unpredictable, so it's essential to have a backup strategy for each step of your move to the cloud. Implementing incremental data migration can facilitate a smoother rollback should any problems arise. Even after fully transitioning to the cloud, you might encounter significant issues requiring restoration. Therefore, it's critical to ensure that your backup procedures are also effectively transferred to the cloud environment.

- A key advantage of cloud computing is the ability to recover from failures quickly. Your applications must be prepared for such events. Extensive testing across all clusters—databases, application servers, APIs, and MQs—is necessary. We recommend aiming for an SLA of a 6-second recovery time to ensure optimal resilience.

Plan post-migration maintenance activities

- While migrating, don't forget about monitoring tools. To maintain consistency in your monitoring strategy, we recommend continuing with the same tools you've been using on-premise.

- After migrating your apps to the cloud, your production traffic and usage patterns may evolve. It's important to regularly adjust your cloud computing resources to handle increased traffic or reduce costs in areas with decreased traffic. We advise continuously monitoring your cloud usage to balance operational costs and performance optimally. Additionally, it's wise to review and adjust your scalability budget annually in response to changes in traffic patterns.

- A common issue with our clients is the need for more expertise in cloud-based application administration. We strongly recommend training your team to manage cloud resources and services effectively to address this.

Are you just planning migration to the cloud? Are you in the middle of the migration and facing challenges?

Contact Allied Testing now and get a free analysis of your cloud migration case!

We'll provide our recommendations and advise how we can help further.