Cloud-Enabling Applications: Migrating Enterprise Applications to the Public Cloud

451 Research reported in its Enterprise Cloud Survey that, “Despite [increased] cloud computing activity, 83% of respondents are facing significant roadblocks to deploying their cloud computing initiatives.”

In many cases, the problems encountered are due to the lack of a clear strategy for moving applications into the cloud. Any such strategy must recognize that businesses are reluctant to throw away their investments in applications that have been enhanced over a number of years to meet the specific needs of the business. Replacing existing applications with new applications built specifically for the cloud incurs significant risk.

For this reason, the introduction of new infrastructure technology typically involves a compromise between the new infrastructure and the old application, rather than wholesale replacement. For example, when services-oriented architecture (SOA) came along, many organizations implemented the new approach, but most of those kept their existing applications and found ways to make them look like services and connect to the SOA. Brad Schick, CTO of SkyTap, cites IBM’s (tongue-in-cheek) view that browsers are just the latest user interface for mainframe applications.

Another strategic concern that has dominated cloud thinking to date is security. There are two dimensions to this:

- Some types of sensitive data genuinely require the highest possible security for compliance, privacy or risk reasons – this will never change;
- In the early stages of implementing enterprise applications in the cloud, there is sensible caution about the claims of the vendors. No corporation wants to be a victim of some unforeseen combination of the cloud technology they choose and some weakness of their own enterprise application.

In addition to strategic considerations, there are practical considerations related to the investment required to migrate whole applications to the public cloud. Many existing public cloud implementations are designed primarily to attract and support new “Software as a Service” (SaaS) implementations, so performance, availability and durability characteristics are more likely to be optimized for that sort of service. Further, and perhaps as a consequence, the tools available for migrating existing applications are not very mature yet.

Why is it so hard to migrate existing enterprise applications to the cloud?

The hardware and software architectures of many enterprise applications are complex, or have become complex over time. One enterprise application may include some or all of the following components, which make migration to the cloud impossible, or at least very hard:

- Sensitive data (security or compliance)
- Part of the application is running on the mainframe
- Part of the application is running on specialized hardware
- Some of the source code in the application is legacy and not well understood by the current team
- Local connectivity to local partners e.g. for document printing/mailing
- No good reason to change – the software is stable and running on hardware that was paid for years ago
Which parts of enterprise applications make good candidates for cloud migration?

From the understanding that we can approach the cloud-enabling of applications piece-by-piece, and that such an approach might have value, the following services or components might be good starting points for the process:

- Those not meeting scaling needs
- Those with a quick payback from cloud migration due to their currently high running costs
- Newly opened opportunities that cannot be pursued with the current infrastructure
- Those benefitting from global reach with reduced latency to end user
- Those needing multi-site failover for DR
- Transient or batch-oriented workloads

What component characteristics make for a good cloud-enabling starting point?

Generally, the starting point for cloud-enabling an enterprise application should exhibit most of the following characteristics:

- Alignment with corporate security and compliance policies
- Self-contained and loosely coupled to other components
- Not sensitive to latency between remote services
- “Non-chatty” protocols with remote services
- Idempotent protocols with remote services
- Modest bandwidth needs between remote services

What challenges exist in cloud-enabling components?

Even with services or components that are suitable for cloud-enabling, the following characteristics of the application can lead to challenges:

- Federated authentication and authorization
- Poor quality code leading to inefficient cloud resource utilization and higher cost
- Deployment strategies
- Monitoring and alerting strategies
- Data placement (near or far from where it is being used)
- Data replication, caching and backup
- Potentially new inter-process communication mechanisms
- Cloud-scaling approach: manual or automatic

A few enterprise applications are easily moved to the cloud, private or public, but most face challenges that can appear insurmountable. Moving the right parts of your enterprise applications into the cloud is partly about prioritizing which parts to move and partly about having a well-defined, carefully managed process for implementing the move. DCG can help in both of these areas through our Application Cloud Readiness Review and our ADM Optimization Solutions.

Using advanced code analysis software, we can profile your software’s structure and identify risk factors for cloud migration, producing actionable recommendations for implementation, through the use of industry best practices in development, acquisitions or services.

Next steps
Contact Mike Harris at 610.644.2856 x22 to talk about how you can evaluate your applications to prepare for cloud migration.

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\(^2\) Readers seeking an excellent overview of the topic of moving enterprise applications to the cloud should review a [webinar](https://451research.com/report-short?entityId=78558) by Brad Schick, CTO of SkyTap which was the inspiration for this article.