A Guide to Cloud-Enabling Your Software

WE ALL KNOW THAT CLOUD COMPUTING IS EXPLODING AND WE HAVE THE ANALYST NUMBERS TO PROVE IT. Indeed, the most interesting data points in a recent Gigaom (gigaom.com) survey are the number of instances currently running within enterprises. The survey results suggest a pattern of public cloud acceptance and adoption, with more than 50 percent of enterprises surveyed running between one and 50 public cloud instances on a typical day, another 32 percent running more than 51, and 4 percent—cloud "super users"—running more than 1,000 cloud instances in any given day. What's most interesting about the survey results is that the number of instances reflecting the true use of the cloud is rather impressive relative to what we've seen in the past. Enterprises are putting more systems and applications into production on public clouds, and thus spinning up more instances to support an increasing processing and storage load.

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That said, most existing independent software vendors (ISVs) don't have a true cloud offering (typically, an application, API, or data, but it could be any type of service offered by a cloud service provider). Indeed, they've been struggling in a market where software solutions that are delivered using the public cloud model have a clear leg up on those that don't. Therefore, ISVs have been working to create cloud-based versions of their software. However, finding the right path to getting to the cloud can be difficult.

However, not all ISVs should be in the cloud, or it might not be economical for them to move. About 25 percent of existing ISVs have software that doesn't have a platform analog in a public cloud. Thus, they have to build their own cloud, which is hugely expensive, or they have to wait for a public cloud service equivalent to appear on the market. An example is ISVs based on mainframe platforms.

These ISVs face some tough choices. First, does the cost of migration justify the value delivered? Second, will they be able to deliver a working system that will meet the needs of their existing user base? Finally, can they capture a new market with their cloud offering, and how big will that market be?

What's an ISV to Do?

How can ISVs take advantage of the changing market? The kneejerk reaction is to push their offerings to the cloud, no matter if they should be there or not. Indeed, 10 years ago when the software-as-a-service (SaaS) explosion occurred, many ISVs declared themselves SaaS providers. Although some did okay within the shifting tides of software consumption, many didn't, and many actually went away.

The patterns of SaaS enablement were almost humorous. Some ISVs would provide a dedicated server for each user on their SaaS cloud. This means that when they sold a cloud service, they would have someone go to the datacenter and install a new server in a rack. Or, better yet, assign a server from a pool of servers already installed.

This primitive and expensive approach to multitenancy was meant to be just a stopgap until they could get a true cloud service into the market. However, users figured out the approach quickly, and many of those ISVs lost credibility in the emerging cloud market.

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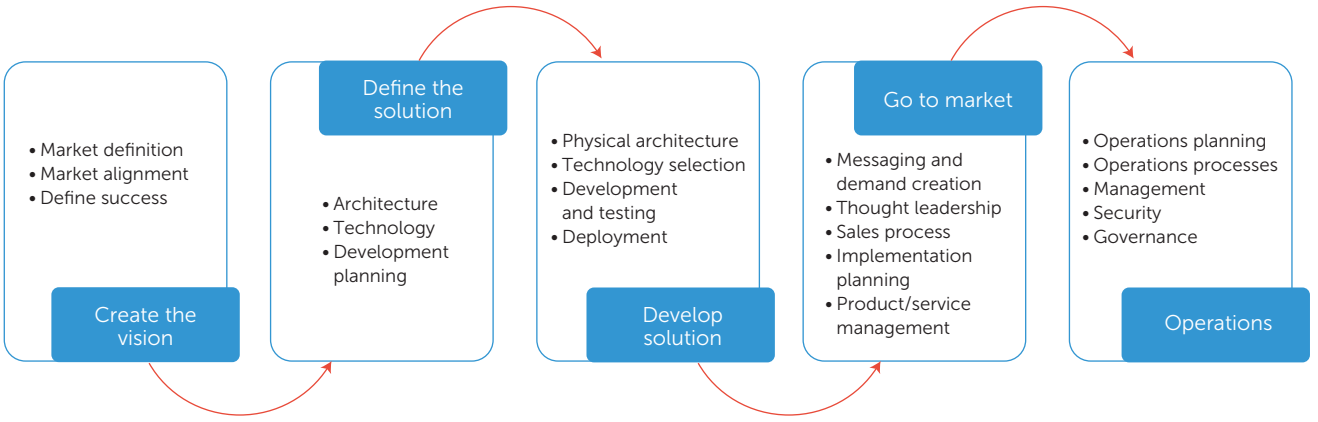

FIGURE 1. Changing approaches to application development and deployment. (Source: Cloud Technology Partners)

Today we have thousands of ISVs that haven't made the journey to the cloud yet. Or, they might have attempted the journey in the past, but failed quickly. These still-thriving businesses, many of which were waiting to see if the cloud would fade away, are now faced with the fact that cloud computing is here to stay, and they need to find a way to adapt. Otherwise, they'll watch the market go away.

Several key issues are driving the need to migrate to the cloud.

First, there's pressure on ISVs to meet the SaaS requirement. Although budgets are coming back, slightly, chief information officers (CIOs) are being asked to do much more with much less. Thus, the notion of paying another hundred thousand to many millions of dollars in software license costs is, to many enterprises, out of the question. As one CIO stated, "We want Salesforce.com versions of everything."

In addition, there's a movement away from capital expenditures. Although the value of cloud computing around operations expenses versus capital expenditures is well known, it's being pounded home with the number of enterprise datacenter projects that are now awaiting funding. Management in those companies are now questioning the need to build or rent more datacenter space, and are pushing back on CIOs who are looking for cloud-based applications to replace many local applications.

Finally, we're seeing the demise of the cloud computing "Chicken Littles." A Gigaom study on cloud adoption rates found that 80 percent of enterprises surveyed had migrated at least some of their non-mission-critical assets to the cloud, with 5 percent claiming to be "all in." This level of maturity indicates that we've moved from the experimental and skeptical state to acceptance of cloud computing as a sound direction. Those who pushed back on cloud computing because of security and reliability issues haven't seen these issues arise as real concerns, and most enterprises are well into their second or third implementations.

Thus, not only is the market asking ISVs to redo their software as cloud services, but their existing customers are doing the same.

Most ISVs have been looking at cloud enablement over the years, and perhaps have even invested in some pilot projects, only to balk at the cost and the risks around building a true cloud-based offering. Some ISVs never got beyond single-tenancy offerings, which were just too costly to put into production (as noted earlier).

As Figure 1 illustrates, approaches to application development and deployment are changing around the use of cloud computing. In the "old world," traditional architectures and approaches to application development and deployment had limitations, such as the inability to leverage distributed platforms because the application was too tightly coupled with the database. The "new world" offers more advantages, but only after an organization has dedicated a significant amount into careful planning, architecture, and technology selection.

It's important to note that this is perhaps more important than the move to the cloud itself. The ability to build automated processes, such as self-healing, into cloud-based application offerings and the use of DevOps is where the ISVs will see value. Additionally, they'll see value in the ability to scale up and scale back in direct proportion to the revenue generated, as well as moving to more modern development approaches based on use, services, or APIs.

Why to Cloud

ISVs have to do some work on the front end to determine the actual value of moving. They need to figure out whether

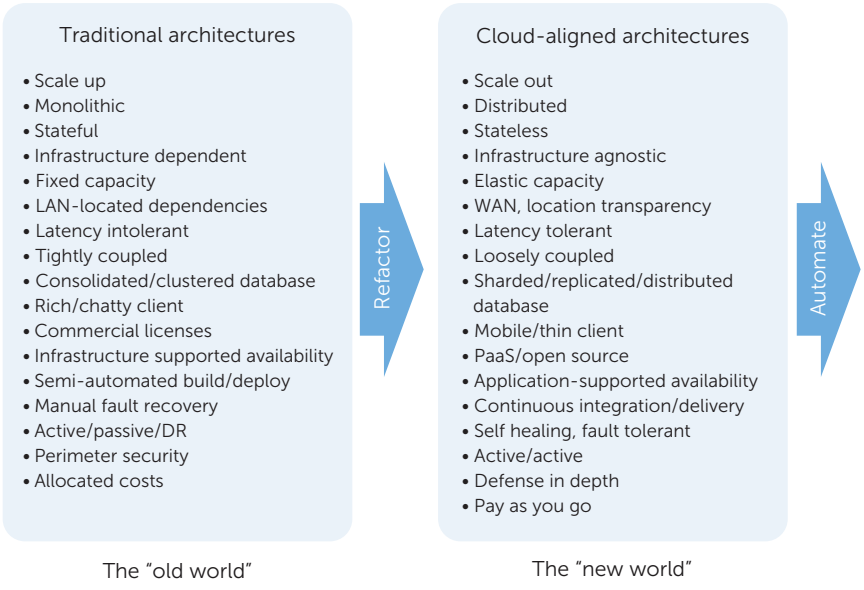

FIGURE 2. An example cloud-enablement process, from initial vision to operation. (Source: Cloud Technology Partners)

they'll benefit from migrating to the cloud before they toss money at the issue. For various reasons, not every software system should exist in the cloud. However, most should, and that should at least send ISVs to do some quick research as to the potential value that a cloud-based offering can bring, or perhaps how to avoid bankruptcy-by-cloud.

ISVs should consider the following advantages of cloud adoption:

- competitive advantage,
- ability to rapidly adapt to new market opportunities,
- speed and agility to deliver new functionality and features,
- dynamic global scalability,
- opportunity to capture the long-tail of market (cost of delivering application on traditional infrastructure is too high for small and medium-sized businesses),
- lower total cost of ownership (to avoid low utilization of over-provisioned existing infrastructure), and
- faster customer onboarding.

Benefits to ISV customers include

- more flexible pricing and delivery models,
- configurable services (one size does not fit all), and
- lower maintenance effort and cost.

ISVs moving to SaaS solutions, or perhaps just a selection of cloud services or APIs, must do a great deal of work to create competitive public cloud-based offerings. They must be able to deal with tenancy issues as well as provide Web-scale features, such as

- usage-based accounting,
- client management,
- data integration and migration solutions, and
- cloud native performance.

The path to get to these "cloudy" features can be rather simple for software systems that have been well designed, maintained, and implemented. However, ISVs that have been around more than a few years are typically dealing with older legacy code and databases, or layer upon layer of code on top of code that was supposed to be fixed, but never was. Thus, getting to the cloud could require a great deal of rewriting and re-architecting, perhaps leading to more risk and cost than any value cloud enablement could bring.

Thus, the core question in the conference rooms of most older software players isn't if they can cloud-enable their systems—they certainly can with enough money. The question is whether there will be value once they take the risk and spend the money to move their software to the cloud, providing a true SaaS solution with all of the features the industry, and their customers, will expect.

How to Cloud

After dealing with "should we cloud," it's time to address "how we cloud." Figure 2 depicts one approach to cloud enablement, working from the initial vision of the cloud solution to its operation. This includes defining the target market for the SaaS cloud, which leads to the core requirements. From there, ISVs need to define any changes to the architecture and enabling technology, then move to development, testing, and deployment, typically leveraging agile and DevOps best practices and technologies. Next, they need to go to market, defining all aspects of operations around the new cloud service or services.

As a general rule, organizations will spend about 10 to 20 percent of their yearly software revenue on moving a software system to a cloud-based solution. Thus, if a company makes $0.5 billion, it'll spend about $50 to $100 million on the refactoring, re-architecture, and redevelopment to get to the right cloud offering. Of course, the normal consulting answer of "it depends" comes to mind

in that some ISVs will find they need much more time and money to cloud-enable their software, whereas some that have done a better job on architecture and coding can move rapidly to the cloud, perhaps in less than six months.

Therefore, you should do some sound self-assessment and planning. These tasks typically include determining the "as is" state of your software, such as how things were coded and the overall architecture. If you find limiting issues (for example, the database is too tightly coupled to the application), you need to correct them, which will take more time and money.

Another task is to create a logical "to be" architecture that maps to a "to be" physical architecture. This means that you've thought through how to update the application, if needed, and have determined how to map the application to the new physical cloud platform. Items often overlooked include security, governance, and database efficiency. These need to be addressed in terms of the solution and enabling technologies employed.

Finally, make sure to build a DevOps process including tools. The ability to continuously improve the cloud-based solution using DevOps approaches and technologies will provide more value to your users and your business. There should be well-automated development, testing, and deployment.

IF YOU'RE AN ISV THAT HASN'T MOVED TO THE CLOUD OR PERHAPS MOVED TO THE CLOUD AND FAILED, YOU UNDERSTAND THE IMPORTANCE OF GETTING YOUR CLOUD IMPLEMENTATION AND DEPLOYMENT RIGHT—THE FIRST TIME. To be successful, you need to determine where you are and where to begin, as well as the architectural paths you need to take, the processes you need to change, the development practices you should augment, and finally, how to make your software operationally successful in the cloud.

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