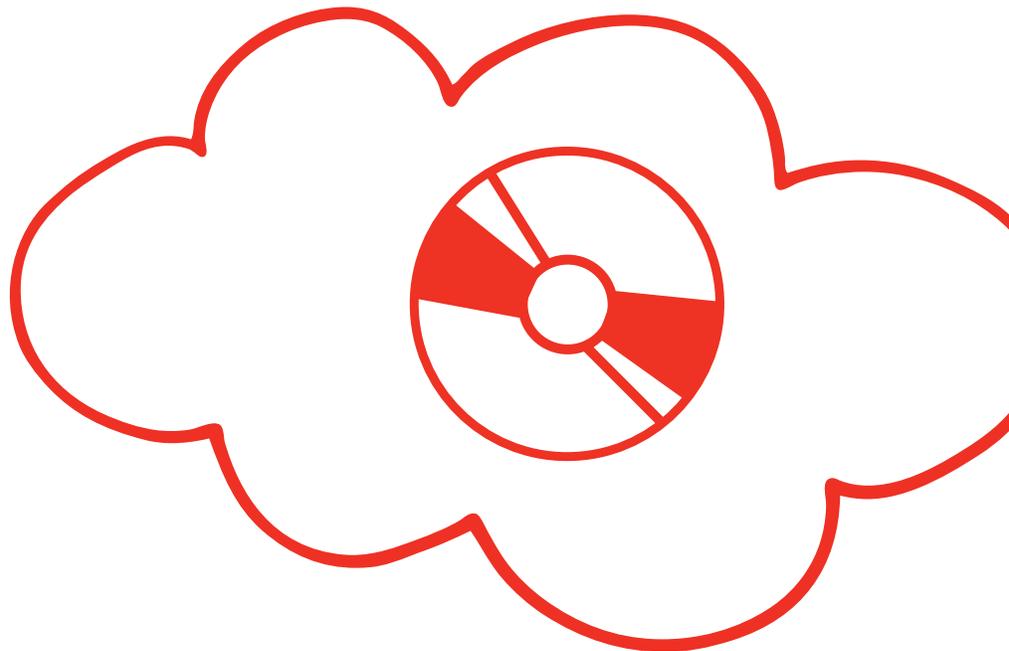


# DevOps and Beyond

The future of SaaS...and the competitive advantages for ISVs who get there first



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# Executive Summary:

## The Future of SaaS

Pure play software as a service (SaaS) companies have given internal software development teams quite a run in the last decade or so. Unburdened by investments in legacy systems that weigh on internal IT shops, independent software vendors (ISVs) with SaaS offerings have been able to leverage the cloud and focus on building applications that are cheaper, faster, more user friendly, and appeal directly to line of business leaders who, during the same years, have become increasingly frustrated with the production backlogs from their own IT departments. SaaS is hip. IT departments less so.

Goldman Sachs projects that global sales for SaaS will reach \$106 billion in 2016, a jump of 21 percent over projected 2015 sales.

Even as the SaaS market has grown by leaps and bounds, competition among ISVs in the SaaS market has become increasingly fierce.

The majority of new applications by independent software vendors today are already written to be delivered as a service in the cloud. Many ISVs, especially those with large, complex applications and a large customer base are still migrating traditional--written to be run on premise--applications to full-fledged SaaS apps written for the cloud. The trend to SaaS is irreversible.

Newer, more agile ISVs, meanwhile, armed with successively new disruptive technologies, and methodologies — and venture funding — are rushing to market with competing applications. Reports indicate that nine out of 10 new applications are launched in the SaaS model today.

Tucked into the success of the SaaS model is a new responsibility for ISVs. Traditionally, ISVs didn't have to concern themselves with operations. That was the customer's problem. In the SaaS model, ISVs have taken on responsibility for the operations required to deliver their applications as a service. They are able to provide more value, but this new responsibility exposes them to infrastructure issues outside their core competency as designers and developers. To make matters more interesting, ISVs are entering the world of operations just as IT is going through a major transition.

### **Web-scale IT**

A vision of the future universe of SaaS is now taking shape on the horizon. Gartner calls this new emerging reality “Web-scale IT” and defines it as “a system-oriented architectural pattern that enables the rapid and scalable development and delivery of Web-based IT services leveraging agile, lean and continuous principles.”

Web-scale IT encompasses the architectures, practices and processes being used today by large cloud services providers, including the adoption of industrial data centers, Web-oriented architectures, programmable management, agile processes, collaborative styles and a learning culture. With Web-scale IT, firms shift away from traditional scale-up architectures and toward scale-out architectures that leverage low-cost, open-source hardware and software. The capabilities of Web-scale organizations go beyond scale in terms of sheer size to also include scale as it pertains to speed and agility. Web-scale IT comes very close to realizing the goal of delivering IT as a utility.

Today only large, global enterprises and cloud service providers like Google, Amazon, Microsoft Azure, Facebook and Netflix can claim to have accomplished Web-scale capabilities. Gartner projects that a Web-scale IT architectural approach will be in place at 50 percent of global enterprises by 2017, up from 10 percent in 2013.

### **An unbounded marketplace**

For ISVs, the attraction of Web-scale IT is the promise of a basically unbounded marketplace. Web-scale IT provides the framework and capabilities to open the flood gates for the consumption of IT that is potentially global, local and personal at the same time.

The vision of Web-scale IT is compelling. Leveraging it, much less accomplishing it, however, is a very complex undertaking. That being said, there are tremendous competitive advantages for the ISVs that figure out how to effectively align themselves with and participate in the Web-scale IT trend ahead of their competitors.

The race of ISVs to Web-scale IT is clearly on. That Web-scale IT is still in a formative stage adds dynamic, multi-dimensional hurdles to be overcome.

### **Prerequisites for success**

To stay ahead of their competition in the years ahead, ISVs need to be actively checking off accomplishments on a lengthy list of capabilities that are the prerequisites for success in the emerging marketplace.

It goes without saying that you need to constantly produce new applications that target the needs of specific sets of users in different verticals and market segments, and you need to master the Kanban, scrum and flow of agile development, but ISVs also need to accomplish:

- **DevOps** — so your development and operations teams can accomplish continuous delivery of software
- **ITSM** — so your procedures and processes align your technology with your business objectives
- **Automation** — so you can build efficiencies into your processes and, among other functions, ensure that all hand-offs between developers and operations are consistent and reliable
- **Infrastructure monitoring and management** — so you have visibility into your distributed infrastructure and can manage your test dev and production environments as well as your customers' cloud containers
- **Security monitoring and management** — so you can monitor threat activity effectively, respond appropriately and learn how to better defend against threats in the future.
- **Interoperability** — so your applications can be integrated with other applications/modules, i.e., data analytics, on multiple cloud and on-premises infrastructures.
- **Portability** — so your applications can run on more than one cloud platform, freeing you to pursue the best prices and features regardless of platform requirements [Reality check: Portability is, frankly, a very complex and long-term undertaking.]

The tools and processes to deliver these capabilities are “evolving” at best. There is also a lot of noise in the market as companies hype new products that don't work as well as their marketing would indicate. Then, of course, there are different toolsets for different technology stacks and codebases (e.g. .NET vs. Java).

It's a lot to accomplish while at the same time producing killer apps with imminent scalability, global scope, and innovative features that excite your customers and deflate your competition.

### **The rabbit hole of self-discovery**

This white paper looks at the adventures, challenges and opportunities that ISVs can expect to encounter on the road ahead. There will be bumps along the way, partly because much of the journey involves rooting around in your own stuff.

Preparing your organization for the future of SaaS leads you inevitably down the rabbit hole of self-discovery. You need to know why things work the way they do in your organization—not just the technology but the people, the culture and processes as well. You need to examine all the assumptions you've made about the interdependencies across your infrastructure. You need to stand eyeball to eyeball with everything about your IT environment that keeps you up at night trying not to think about.

And, when you have become intimately familiar with every detail of the way things are, then you have to define—in exact detail—everything you want to accomplish in the future. Want to reduce time to market for new applications? What does that mean, exactly? Want to integrate your applications more deeply into your customers' environments? How do you plan to do that...exactly.

**The good news is:** If you can define what you want your IT to be able to accomplish in enough detail, you can have it.

# The Road Ahead: Staying Ahead of the Competition

The largest cloud providers today define the playing field for the race of ISVs toward the Web-scale winners' circle. The global scope of their cloud offerings combined with very aggressive pricing and a rapidly evolving set of management and automation tools has made Amazon, Azure Google and SoftLayer the preferred testing ground for the next generation of SaaS. They have become Cloud, spelled with a capital C.

The term "Cloud", however, masks very significant differences between the dominant cloud providers. Each major cloud provider has best practices, processes, toolsets and virtualization software to optimize their specific cloud infrastructure. In the process, their clouds become unique. What works on one will not work on the other. Those who were around in the 1980s and '90s for the "Balkanization of Unix" into an assortment of incompatible operating systems ending in UX will recognize the pattern.

Theoretically, it is possible for an ISV today to move between different cloud platforms, but the level of complexity that has to be mastered to accomplish it is daunting. Azure and Amazon, for example, both have services that can auto scale. They each have automation tools you can script to scale up a machine and make it bigger or smaller. They each have automation tools to monitor network load so, if you are seeing more traffic in the U.S. vs. Europe, you can spin up another machine in the U.S. Amazon's Elastic Beanstalk automates configuring servers, databases, load balancers, firewalls and networks and handles the provisioning, scaling and management of your application stack.

You can do it all, but to take full advantage of all the features at leading cloud providers, you have to make a commitment to their cloud.

It is possible to leverage their clouds without tying your app to their services, but it's more complicated to accomplish. Not all the tools you need are available, and some of the tools that are available are less than robust. There's a lot of making-things-up-as-you-go required.

## **Untamed complexity**

Just as it did in the early days of networking, all the as-yet untamed complexity is spawning whole new skillsets and types of organizations that, over time, will make Web-scale IT accessible. In the meantime, ISVs are having to divert a lot of their attention from launching new apps to putting out fires and developing new processes.

The cost of the learning curve can be significant. Cloud capacity can seem cheap compared to building your own IT infrastructure, but it can quickly become very expensive if you don't know what to look for. Some report that the major cloud providers make a sizable chunk of their revenue from new customers spinning up more systems than they need and neglecting to spin them down. It takes time and experience to know how to configure and tune systems so you are only paying for what you actually need.

### **Total transformation**

To succeed in this still forming reality is going to require nothing short of a total transformation of your development and operations practices, processes and people in line with the principles of DevOps, hailed by many as the holy grail of continuous development.

DevOps is essentially the integration of developers and IT operations talent on the same team across the full lifecycle of an application from design through development, testing and production. The concept is not new. Many of the basic principles were developed in the 1980s by lean manufacturers streamlining their assembly lines.

The results of a well implemented DevOps model for delivery of new applications can be dramatic. According to an annual survey by Puppet Labs, high-performing IT teams employing DevOps principles are able to deploy code 30 times more frequently than their peers, and 200 times faster (measured in the time required to go from “code committed” to code successfully running in production). Puppet also reports that high-performing IT teams achieve far better stability than lower-performing peers, with 60 percent fewer failed deployments and a mean time to recover (MTTR) that’s 168 times faster.

### **Long and winding road**

Progressive ISVs have already taken up DevOps as their new mantra, but many of them find that realizing the full potential of DevOps is a long path with many twists and turns. It requires no less than the systematic re-engineering of development and operations with all the technical, procedural, cultural and personal upheavals those changes can entail.

At the most basic level, developers and IT operations are like opposing forces of nature—i.e., the like poles of two powerful magnets. When brought into proximity, they tend to repel each other, sometimes forcefully.

Developers are champions of creativity. They celebrate thinking outside the box. They want all their Legos spilled out on the floor all the time.

Operations people, on the other hand, are champions of control. They celebrate the box. A well designed box provides structure, order, reliability, stability, predictability. Operations people want all their Legos kept in neat stacks.

Expecting developers and operations people to play well together has led to disappointments in the ROI from DevOps programs by many ISVs. The principles of DevOps are sound, but it is not easy to accomplish.

The popular novel, *The Phoenix Project*, dramatizes the trials and tribulations of developers and operations people climbing the DevOps learning curve. The technology involved is complex, but it’s the people, processes, tools and culture that drive the storyline toward conflict, and, eventually—hopefully—toward resolution.

### **Balancing power**

Automation holds the promise of allowing the incessant balancing of power between developers and operations required by the DevOps model to happen so routinely as to appear effortless. Being able to automatically deploy, update, and repair IT infrastructures according to approved and consistently applied procedures is a key capability. Without functioning automation and orchestration procedures on the back end, all the innovation on the front end with agile, cloud-enabled applications is like trying to implement a state of the art command center supported by a bunch of frantic IT guys in the back room running on ever-accelerating treadmills.

## **Catch 22**

ISVs that attempt to maintain production schedules and implement DevOps and automation at the same time should expect to run into one of the perennial proverbs of IT, if not life: Before you can do anything, you have to do something else.

In this case, the potential of automation cannot be fully realized until it is informed and supported by an effective IT service management strategy (ITSM) that encompasses your entire IT environment, as well as business objectives, and corporate policy.

Expect disparaging comments from your developers when you mention ITSM. To most developers ITSM stands for bureaucratic interference, cramping their creativity and resulting in unacceptable delays caused by those “operations people” on the other side of the proverbial wall.

In fact, operations people are often not that thrilled with ITSM either. To many of them, ITSM is the long-term, all-encompassing project penciled in on their calendar that keeps getting pushed into the future by all the short-term crises that continually intrude on their schedules. ITSM is to operations what the boulder was to Sisyphus. Knowing that many of the short term crises that operations faces could be avoided with an effective ITSM strategy infuses the acronym with a sense of insecurity about their own effectiveness.

## **Outside help**

To spare themselves from re-inventing wheels that have already been designed, tested and implemented by someone else, more ISVs today are turning to third party partners who already have the technology, people and processes they require and can work as an extension of their internal team.

It is a still commonly held misconception that “virtualization” is synonymous with “cloud.” In fact, a true cloud service is elastic, metered, and features self service capabilities, with fully automated resource orchestration.

Virtualization vendors, service hosts, and traditional management vendors are now building cloud management platforms (CMPs) that provide the capabilities required to distinguish a cloud from mere consolidation and resource abstraction. CMPs are a level above multi-cloud environments and use an integrated set of tools and capabilities to provide automation. CMPs hold the promise of being able to manage a mix of cloud services, but the market in CMP offerings is still in its early days.

In the meantime, ISVs and others are turning to managed services providers to monitor and manage private, public and hybrid cloud environments.

One of the advantages of working with a top tier managed services provider is that organizations get an automatic boost to their level of ITSM maturity during the onboarding process. When your IT environment (conventional infrastructure or cloud) is on-boarded into their monitoring and service management systems it takes on the level of maturity of their ITSM platform and processes, complete with incident, problem and change management as well as a service catalog and a configuration management database (CMDB).

By the end of the onboarding process—typically two to eight weeks—MSPs can use the CMDB they have built from your data to provide you visibility and management across the full scope of your IT infrastructure, including on-premise data centers, private, public and hybrid clouds. Whether your infrastructure is physical or virtual, it still has to be managed.

The trend toward microservices architecture—by which an application is developed as a suite of small services that can be deployed and managed automatically—does not eliminate the need for a stable infrastructure for applications made up of microservices to run efficiently and reliably.

Riding another trend, top tier MSPs are quickly developing new services to manage DevOps “reference architectures” as effectively as they manage conventional infrastructures.

A few top tier MSPs also offer managed security services that monitor threat activity, and help keep your customer data protected and your name off the growing list of hacked organizations in the daily news.

### **Interconnectedness**

ISVs and the rapidly evolving SaaS market have been a powerful force driving acceptance of cloud computing and, along with it, the consumption of IT as a service. In the process, the rigid frameworks that once defined an organization have been dismantled and replaced by a new, sometimes disconcerting interconnectedness.

The ready availability, cost and feature-rich usability of SaaS has caused thousands of organizations to reach outside the inertia of their own corporate structure to acquire capabilities from third parties for less than they could build them for themselves. As SaaS applications continue to take on more complex and critical services, they validate the efficiencies that are possible within our expanding interconnected digital universe. This is the road to Web-scale IT.

A key challenge for ISVs on this road, however, is going to be their willingness to embrace the interconnectedness of the world they have helped to define and, in turn, reach beyond the frameworks of their own organizations to acquire capabilities for less than they could build them for themselves.

Many new wheels will need to be invented on the road to Web-scale IT and a globally unbounded marketplace. Many extremely useful wheels —technologies, processes and skills — however, are already available.

As has happened with all the other major paradigm shifts in IT, the swirling complexity associated with Web-scale IT has spawned whole new types of products and services for which there was no need until recently. These include: cloud brokers, DevOps-capable managed services providers, scads of automation tool makers, as well as consultants with expertise in new solutions and functions that are emerging almost spontaneously as the market evolves. It is a churning ecology in which finding trusted allies who can provide skills and perspective is key to survival.

In the race to stay ahead of their competition, no ISV should assume it can win entirely through its own efforts and creativity. An interconnected world is an interdependent world. The winners are going to be the ones who are willing to eat their own dog food and consume the resources they need wherever they find them, internally or externally. ISVs, after all, are expecting no less of their own customers.



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