

White paper

PaaS: A Real Alternative

rackspace



The problem with PaaS

If the problem with Infrastructure-as-a-Service (IaaS) is that it hands application architects a big bucket of parts and dares them to make something useful and cost-effective, then Platform-as-a-Service (PaaS) sounds like a great solution. So why aren't more customers using it? There are four key challenges that customers face when deciding whether and how to move their applications to PaaS.

The first is the difficulty of building a technically correct architecture. Microsoft® Azure® has dozens of services and components that you can use. For example, for your application, should you use Azure Service Fabric, Azure virtual machine scale sets, Azure hybrid connectivity, Azure virtual machines or Azure Functions? Does everyone on your team know all the nuanced differences between these offerings? When you consider the range of storage, compute, database, networking and security offerings in Azure, and the ways in which they can be combined, you start to get a sense of the difficulty of designing an optimized architecture. And that difficulty is magnified if you haven't successfully done it before.

The second problem is closely related: how do you ensure that the infrastructure and architecture you choose will scale appropriately? If you've designed a large-scale application to run on-premises, you know which server and network sizing are appropriate in your existing environment; but that sizing will change when you move to a new infrastructure — and predicting how it will change is no easy task.

Then there's security. Cloud providers love to talk about their security provisions, including in-depth certification audits, physical security measures, advanced monitoring and other things that you may not have in your existing environment. While

those measures are important, the security of your application also depends on your application design and implementation — the best “gates, guards and guns” measures can't adequately protect an application that isn't properly segregated from the public internet, for example. Relying on PaaS security means being able to trust the level of security knowledge and advice that your PaaS vendor provides.

The last problem with PaaS is particularly tricky. In your on-premises environment, you have all sorts of application-related services: identity management, analytics, data recovery, intrusion detection, and so on. These services are important, or you wouldn't have them deployed. So you need to ensure that you have corresponding services available for your PaaS environment. Where appropriate, you'll need to integrate these services with your existing on-premises services too so that you keep a complete view of the performance, security and operational condition of your entire application portfolio. And properly configuring and maintaining this type of hybrid connectivity is no small task.

These challenges are significant, and they've kept many customers from successfully deploying their applications on PaaS. It may even seem easier, in some cases, to build everything from scratch using IaaS components — even when that might not necessarily be the case. Thankfully, though, there's a better path to realizing the full value of PaaS.

Getting the best value from PaaS

If you want to maximize the value from deploying your applications and services on PaaS, there are five straightforward principles you can apply when evaluating and designing your solution. When you choose an experienced PaaS provider, you'll have help in doing these, which can dramatically cut your implementation cost and time.

Choose the right components

Choosing the optimal mix of services and components for your application is the foundational step for a successful project. For example, knowing the difference in performance and cost offered by Azure Cosmos DB versus Azure SQL is absolutely required when designing the database layer for your application: there can be a 10x cost differential between the two for similar workloads. Likewise, Azure offers many components that don't have on-premises equivalents, such as Azure Content Delivery Network (CDN) or Azure blob storage, that you may be able to use to improve your application performance, lower cost or add compelling features—but only if you understand when and where they are appropriate. Having the right partner on your side — such as the experienced team of application and Azure architects at Rackspace — drastically reduces the risk of error involved in this process.

Design for resilience and scale

The cloud offers compelling large-scale resilience, but only if you know how to take advantage of it. Designing solutions for resilience and scale with Azure availability zones is fundamentally and completely different than doing it yourself. You can effectively get superb resilience and performance from your application worldwide, but only if you know how to take advantage of geographic load balancing and DNS, background database replication, service clustering and all the other Azure availability features. It's possible to design incredibly reliable and performant applications in Azure; but you'll need deep knowledge and understanding of how to do so to make sure you don't introduce accidental dependencies or single points of failure. Rackspace specializes in delivering exactly this kind of knowledge and informed perspective to its customers.

Since the first PaaS offering was released back in 2005, PaaS-based solutions have become an increasingly popular option to help solve complex business challenges. The first real commercial PaaS offering was a set of JavaScript web application development tools — a literal application platform. But since then, the concept of PaaS has evolved to the point where complex line-of-business (LOB) applications can be hosted on large-scale public cloud platforms. Even so, however, the fundamental reasons why businesses are interested in PaaS haven't changed. A properly implemented and managed PaaS offering allows business stakeholders to manage the application, and its data, without having to worry about the security, availability, reliability or performance of the underlying infrastructure.

Delivering that level of PaaS service, however, requires you to select a PaaS vendor with the right experience, skill set and attitude. Rackspace supports you with best-in-class knowledge, architectural experience, speed and efficiency to get your projects across the finish line on-time and on-budget. Instead of building your own solution from scratch, you can take advantage of Rackspace's managed service offerings to get a single source for all your application implementation needs.

PaaS vs. IaaS

Companies that sell cloud computing services have blurred the lines between IaaS and PaaS offerings. As such, potential customers often find it hard to distinguish between the two because they're used to thinking of the cloud vendor as the platform.

The primary difference between PaaS and IaaS is that an IaaS solution such as Microsoft Azure public cloud essentially gives you a big box of parts, from which you can assemble your own platform from the ground up. As a result, an IaaS-based approach gives you a lot of flexibility, from the amount of

RAM and CPU in the virtual machines (VMs) that host your application, to the precise configuration of your load balancers and firewalls. Essentially, you get the same level of control as with an on-premises data center.

However, the DIY flexibility of IaaS brings with it significant complexity — as well as a much greater chance of making design or implementation mistakes that compromise the service quality or security of the delivered application. A certain amount of complexity is unavoidable when building a multi-tier application: you need certificates, load balancers, databases and a host of other components, each of which requires provisioning, management and monitoring. Every excess component or service in your application design adds an avoidable cost and an increase in your security attack surface. For capacity, consider the case of a web-based application set up to use VM autoscaling. Scaling up and down is controlled by the average CPU utilization across the VMs in the fleet. If you set that number too high, you'll choke off application performance — so the natural tendency is to overprovision by setting the CPU trigger value lower than it really needs to be. The difference is that you're now paying per-minute for those excess CPU cycles.

On the other hand, PaaS solutions abstract away much of this complexity, offering a nice balance between freedom and control. Your PaaS vendor handles the details of provisioning and the management of infrastructure components, and a skilled vendor will also be able to help you design the correctly sized and secured infrastructure to best host your application. So you still get a robust platform to host your application, with a mix of the familiar technologies you already use in your existing hosting environment — plus all the best Azure-based services (if you were to use Microsoft's PaaS solution, for example).



Cut the fluff, not the capability

Your business-critical application may be the star, but every star requires a supporting cast. When you move your most important applications to PaaS, you still need to monitor, secure and support the infrastructure hosting your application. In an on-premises environment, you may have a dedicated team of engineers on-call to fix problems with hardware, software or networking that impact application reliability and availability. You'll need the same in your PaaS environment, with the additional requirement that the team needs worldwide reach and a strong understanding of the nuances of Azure design and deployment. That type of talent is expensive and scarce. Rackspace offers you its worldwide team of dedicated professionals to monitor, secure and support your PaaS infrastructure so that you can turn your efforts to what's most important.

Focus on your business, not the application

Business applications are a means to an end: accomplishing business objectives. That means your internal staff should be empowered to focus on the core needs that the application is designed to support. If your team must spend its time with mundane maintenance or continual firefighting, that lowers your ability to plan and execute the work you need to do to meet your business goals. Shifting the routine burdens of infrastructure design and maintenance to a trusted PaaS partner such as Rackspace allows you to concentrate your team's efforts on the things that will most affect your business: the application and its users.

Cover the whole lifecycle

When you deploy something on-premises, there's an entire lifecycle to your deployment. You have to select the right platform, go through the purchasing and procurement process (which is itself often a

long, drawn-out ordeal), install it, deploy on it and then maintain it throughout its useful life — fixing it if it breaks, and then eventually repurposing it or disposing of it. None of these activities are optional. And yet, none of them add value to the application or to your team: they're just table stakes. Moving to a properly designed PaaS model removes almost all of these tasks from your to-do list so that you can direct your energy at the things that do add value.

Conclusion

Like every other cloud technology, vendors and the press have hyped the benefits of PaaS so that it can be difficult to objectively tell whether a PaaS deployment will bring you enough benefits to justify its implementation. The challenges around specifying, designing and building a PaaS environment to support your most important business applications are best addressed by working with an experienced, trusted PaaS provider such as Rackspace instead of trying to learn as you go. Rackspace can help lower your cost and risk and help ensure a faster time-to-value for even the most complex projects.

About Rackspace

At Rackspace, we accelerate the value of the cloud during every phase of digital transformation. By managing apps, data, security and multiple clouds, we are the best choice to help customers get to the cloud, innovate with new technologies and maximize their IT investments. As a recognized Gartner Magic Quadrant leader, we are uniquely positioned to close the gap between the complex reality of today and the promise of tomorrow. Passionate about customer success, we provide unbiased expertise, based on proven results, across all the leading technologies. And across every interaction worldwide, we deliver Fanatical Experience™. Rackspace has been honored by Fortune, Forbes, Glassdoor and others as one of the best places to work.

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