

A Hurwitz & Associates Thought Leadership Paper

How hybrid cloud services solve five critical challenges for CTOs



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Insight to Action

IT leaders face the challenges of operating in an increasingly dynamic world. These leaders are increasingly orchestrating a blend of on-premise, private cloud and public cloud infrastructures to deliver the responsive, secure, reliable and high-performance services that business leaders demand from them. Not everything can be easily controlled or guaranteed in this brave new world, so IT leaders are drawing on their experience to bolster the hybrid cloud with tried-and-tested technologies that provide proven security, flexibility and cost efficiency—including IBM® Power Systems™.

Hybrid cloud: the engine of growth

The debate is over. Hybrid cloud services—seamlessly blending on-premise infrastructure with cloud infrastructure—are firmly established as the engine of growth and transformation for companies across the globe. In a world where mobile and social technologies are putting customers front and center, the most innovative and disruptive companies are using hybrid cloud technology to out-compete their rivals in the critical arena of customer experience.

As enterprises gear up to the demands of a “waitless world” in which consumers, co-workers and partners expect instant information and services, successful IT leaders are in a unique position to act as the enablement partner for new business capabilities. On one hand, these IT leaders understand what it takes to deliver the necessary IT service levels to the business. And on the other hand, they understand how to support the business requirement for rapid adaptation as new opportunities emerge for revenue generation and expansion of market share.

Hybrid clouds emerged partly because business units were frustrated with the slow pace of change enabled by traditional IT organizations. By integrating low-cost, easy-to-implement public cloud services with existing internal systems, business leaders saw that they could react more rapidly to changes in their markets and in customer expectations. However, as they looked to do more, the business units soon recognized that they would need to re-engage their internal IT departments for expert support in resolving concerns around scalability, security and service levels in the hybrid cloud.

Working closely with their business counterparts, IT leaders are now tasked with finding the right balance between protecting the company's intellectual property and implementing new technology at the right price and at the right level of scalability. These IT leaders agree with business leaders that hybrid cloud is the best approach to establish and maintain a balanced infrastructure, and they understand that—far from representing a threat—hybrid cloud is the perfect opportunity for the internal IT organization to stay relevant and add even more value to the business. Finally, IT leaders recognize that the hybrid cloud will build on existing IT investments in systems of record while introducing new systems of engagement and systems of insight for a more dynamic world.

Five key findings from a CTO Roundtable

To show how relationships between IT leaders and business leaders are changing, IBM partnered with Hurwitz & Associates to conduct a CTO Roundtable discussion. The eight companies that participated represent a cross-section of large and small businesses across both public and private sectors, as well as cloud service providers and brokers. While each participant had a unique mix of business needs to satisfy, it was clear that there were several universal requirements for a successful hybrid cloud environment. The roundtable discussion highlighted the following five key issues and concerns for CTOs, exploring how IT leaders are using hybrid cloud technologies to address them:

1. Responding rapidly to changing business demands
2. Delivering on the required service level agreements (SLAs)
3. Securing data and intellectual property (IP) at every level
4. Controlling costs in the delivery of IT services
5. Simplifying the management and orchestration of IT assets

Rapid response to changing business demands

Technological advances over the past decades—from the web to new social, mobile, big data and cloud technologies—have driven ever-faster cycles of change in business. We have all seen the advent of a so-called “waitless world” in which stakeholders at every level—from colleagues to consumers—expect information and services instantly and at the touch of a screen. To deliver these capabilities, and to constantly adapt them to new requirements, business leaders demand that systems of record be designed to operate seamlessly and securely with systems of engagement and systems of insight.

According to roundtable participant Dana French, owner of Site Ox: “One of the drawbacks of standard IT is being flexible enough to meet changing customer needs while being rigid enough and consistent enough to be automated in a cloud environment.”

To meet these challenges and keep up with changes in the business, IT leaders have turned to the hybrid cloud. The hybrid cloud enables seamless integration of data and business services across deployment models that include mobile, web and enterprise. With the hybrid cloud service model—which includes the best of on-premise infrastructure and private and public clouds—businesses can achieve the necessary flexibility to compete in a dynamic global market.

Lief Morin, President of Key Information Systems, said: “Today, the new workloads are analytics. But no one knows what the next big thing will be. So the challenge is to make sure that the architecture is flexible enough to meet requirements both today and tomorrow.” Bob Venable, Director of IT for Enterprise Systems at BlueCross BlueShield of Tennessee, agreed that in order to scale for the future, “we must have predictability to support new levels of performance that the business demands.”

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The overall goal for IT leaders is to be able to meet the expectations of business executives and to provide hybrid cloud services that scale based on almost any level of service that the business demands. Increasingly, this will mean seamlessly orchestrating a heterogeneous set of computing platforms running anywhere from on premise to the public cloud, and including not only Intel but also IBM Power Systems technologies. As Morin explained, “Where Power really shines is in its ability to do massive scale-up, delivering significant density at extremely high performance, in a reliable physical platform. These are qualities that make a difference for our clients.”

When the IT organization does its job right, users within the business remain unaware of the complexity of the underlying technology infrastructure, and can focus entirely on using the new capabilities at their fingertips.



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– Lief Morin, President of Key Information Systems



Delivering on required SLAs

The roundtable participants agreed that their primary job is to provide optimal service levels to their clients. To achieve this objective, IT leaders must rely on trusted service providers. “We think of the hybrid cloud as a set of services that has to provide the business with the equivalent of a consistent dial tone,” said Venable.

Nick Roberson, Director of IT Infrastructure at Tyson Foods, agreed: “IT has an obligation to maintain the integrity of the hybrid cloud.” Morin added: “Cloud service providers must guarantee performance and security...failure is not an option.”

Several roundtable participants highlighted the complexity of ensuring availability for systems that span multiple platforms both inside and outside of the enterprise. However, business leaders demand a reliable provider for all of their IT services, including software as a service (SaaS) assets. This requirement to create a coherent, secure and predictable environment has brought the pain of “shadow IT” into view for IT leaders. To be successful, IT has to demonstrate to the business that they can stitch together to deliver on business objectives.

French commented: “Customers are not looking for compute services. They’re looking to fulfill a business function, so it doesn’t really matter where those things occur. What matters is the business function and the SLA.”

Jac Fagundo, CTO of the Internal Services Department for Los Angeles County, added: “Before, you were only talking about SLAs in your own data center. Now, you need to guarantee SLAs from the device to the Internet. We’ve got hundreds and hundreds of applications, so when you make a change, we have to figure out how to propagate that within or even outside the perimeter.”

The roundtable participants accepted that some elements in hybrid cloud delivery will remain hard to control. For example, how can the internal IT function guarantee the reliability of data connections between a remote worker and a remote cloud service? To ensure the highest levels of availability in the areas they do have control over, IT leaders are keen to preserve the value of their existing infrastructure investments as they move services out to the cloud. Based on years of experience in running heterogeneous infrastructure both on premise and in private clouds, these IT leaders are choosing to work with hybrid cloud providers that combine Intel architecture systems with the Power Systems servers that they have long trusted to run their mission-critical applications.

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Director of IT for Enterprise Systems

Securing data and intellectual property at every level

With a hybrid cloud approach, companies can deploy their workloads faster while maintaining the integrity of data, the security of data and the insights from that data. The need to constantly transform business models to meet changing requirements comes with the need to deliver security at every level. Within the organizations represented at the roundtable, data is distributed across data centers and a variety of cloud services. Morin said: "You know you'll have data in different locations. These are challenges that cloud can and must solve, and do it in a secured, governable, repeatable way."

IT leaders are faced with meeting privacy requirements for industries such as healthcare and financial services, adhering to strict data protection guidelines. Jimi Inge, Head of Cloud Services at Tieto Sweden AB, said: "Security is the biggest challenge in hybrid cloud. We take the legal responsibility for our customers and therefore need to make sure that everything is secure behind the scenes."

Raj Singh, Founder and CEO of GoMoment, added: "Security is essential when handling customer data in the cloud."

This is also a major challenge in terms of costs, as Jauder Ho, Cloud Services CTO, NTT DATA, explained: "Working with a car manufacturer, we have had to establish multiple sites because of all the data restrictions in different geographies. It's multiple times more expensive, because you're designing technology around legal constraints. Additionally, it is no longer sufficient to rely on perimeter security. We now need to ensure that security is pervasive throughout the environment for both in-flight and at-rest data." It is not surprising that securing data is a top concern for IT leaders, especially since the use of smartphones and other mobile devices has exploded. When individual departments use public cloud services, IT may not have insight into what applications are being used and what level of security is provided to protect data in that environment.

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While IT leaders have accepted the integration of public cloud services with on-premise and private cloud infrastructure, many have had to educate the business on how to avoid risks. “We have to be able to coordinate services between public and private cloud services,” said Fagundo. “If the public cloud-based applications change configuration details, this can have a critical impact on the security of the hybrid environment. So I have to make sure that the patches are in sync between our systems.”

In a hybrid cloud environment, IT has the responsibility to ensure that both public and private services meet security requirements. Here again, Power Systems can play an important role, whether on premise, in a private cloud or on the public cloud. Venable commented: “The first question customers ask is, ‘Does it run on Power?’ And I think we must be doing something right. It’s not just the platform; it’s the ecosystem, it’s the patch management, it’s the security.”

Controlling costs in the delivery of IT services

IT leaders must balance the need for capacity and performance with restrictions on capital expenditure. This is frequently a key driver for the adoption of public cloud services, which businesses can engage on a usage-based operational expense model. However, business units often make decisions to use public cloud services without regard to how these expenses will impact total costs and revenues.

“Users in our organization are looking at SaaS applications because they appear to be easier and less expensive,” said Inge. However, there is also an expectation that the IT function will take responsibility for ensuring security and reliability across the hybrid environment. When companies implement a hybrid cloud environment, it is critical that they gain an end-to-end view of all of the services. This capability comes at a cost that is often overlooked when businesses go outside of IT for services.

Increasingly, the leaders participating in the roundtable have found that their IT services are being productized. Once these services become profit centers, there is a need to control costs; and all participants agreed that they cannot rely on a public service where it is difficult to negotiate price or service levels. Many participants are now looking to partner with cloud service providers that

can provide them with predictable pricing and the type of SLAs they require. According to Fagundo, “The departments we support can buy services from us, or they can go outside for services.” He understands that to be successful, he must offer services that are more consistent and less expensive than those available from third-party providers.

Morin added: “It’s about designing an infrastructure, not just within but also outside of the data center and integrated with other cloud services, so that it meets SLA guidelines and maintains a consistent cost structure over the course of time.”

Roberson pointed his view of workload optimization. “We have a large Power Systems-based cloud infrastructure in our data center today that we have been able to optimize for our mission-critical workloads. When I look for cloud services, I demand the same level of security and cost optimization that Power has always provided for us.”

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Simplifying the management and orchestration of IT assets

Roundtable participants agreed that one of the greatest challenges for IT leaders is seamlessly managing a hybrid cloud infrastructure as though it were a single environment with a single service level. As Morin explained: “It is our responsibility to make sure the hybrid cloud functions all the time. And not just for the wonderful new scale-out applications, but also for some of the old scale-up applications that are dependent on a single system. We need to have different multi-tenant platforms that are seamlessly interconnected and offer automated provisioning, all while keeping costs down.” Fagundo echoed this sentiment, saying: “We have to be able to provide seamless integration between our public and private cloud services.”

“ We have to be able to provide seamless integration between our public and private cloud services. ”

– Jac Fagundo, CTO of the Internal Services Department for Los Angeles County



In essence, a hybrid cloud is a virtual data center. While organizations are good at controlling their own data center services, they naturally have less control over what happens in a public cloud service.

To be successful, IT leaders need to trust their public cloud services partners so that they can maintain a positive customer experience in the hybrid cloud. They also need excellent visibility, as Ho explained: “You have to understand how the various applications work within the hybrid cloud, and you need to have an architected and operationally sophisticated way to operate the entire computing environment.”

Roundtable participants noted that automation plays a key role in the reliable and responsive delivery of hybrid cloud services. French commented: “Once we receive an order, we have an orchestration service that determines and computes where best to fulfill those services and then distributes or allocates those resources wherever the compute services best fulfill the asset.” For the Power Systems platform, where virtualization, multi-tenancy and micro-partitioning have long been standard approaches, the ability to create this kind of highly responsive orchestration environment pre-dates the hybrid cloud.

Are all infrastructures equal in the cloud?

On the one hand, the roundtable participants made the general point that the cloud is more about computing services than specific architectures. French said, “Whether computing services are internal to us, or in a remote data center, or in a customer’s data center or on Amazon—it’s just cloud computing services. Similarly, Singh commented: “We see everything from a service-oriented viewpoint. As long as the service is up, we don’t really care what hardware it runs on.”

“Power Systems is more than just chipset innovation and storage interconnects – it’s the whole Power architecture. It’s the security of the operating environments that are being deployed there, and it’s all routed in open innovation. You can have it on-prem, off-prem, full hybrid.”

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On the other hand, participants noted that one platform in particular is highly suited to the delivery of the most critical cloud-based services. All had implemented IBM Power Systems as an integral part of their hybrid cloud strategy. As French put it: “The cloud is a much bigger picture than just deploying Wintel environments. And it’s going to be an even bigger picture in the future. If you’re only considering Intel for your cloud, you’re making a mistake. The IBM POWER8® systems, with the ability to do big endian and little endian on the same piece of hardware, are very disruptive.”

Morin added: “Power Systems is more than just chipset innovation and storage interconnects – it’s the whole Power architecture. It’s the security of the operating environments that are being deployed there, and it’s all routed in open innovation. You can have it on-prem, off-prem, full hybrid.”

In addition, participants spoke of the cost benefits of being able to use the on-demand capacity of IBM POWER8 technology either in their own data centers or in a public data center, like SoftLayer®. These participants indicated that they require security and performance in the hybrid environment to win and maintain the trust of their clients. All felt strongly that being supported by a scalable and predictable infrastructure is key, enabling these leaders to bring in new capacity at known costs.

Conclusion

The IT leaders who participated in the roundtable agreed that there is enormous pressure from the business to put IT services to work as engines of revenue and profitability. As businesses continue to evolve and change, business leaders are faced with an increasing number of requests for new and innovative services. At the same time, the technology leaders are figuring out how to create a supportive infrastructure that will help their organizations comply with regulations and keep their data secure.

Accomplishing all of this requires IT to move faster than ever, brokering a complex blend of internal and external IT services into a seamless platform for delivering business services. The hybrid cloud is therefore becoming the foundation for how companies large and small are leveraging IT services to move their businesses forward.

The CTO Roundtable revealed five imperatives around the use of hybrid clouds. If you adhere to the following constructs, you will be ready to lead your company into the era of hybrid cloud computing:

- 1** Business models are changing rapidly. It is critical to create an environment that can provide a consistent customer experience even as it adapts to meet new requirements.
- 2** When managing a hybrid environment, it is imperative that the IT organization be able to deliver the required service levels across all services—both internal and external.
- 3** The security of your company's data and intellectual property is paramount. In a hybrid environment, security must be managed even for services that reside in the public cloud.
- 4** Controlling costs is imperative as hybrid cloud services become central to maintaining the right customer experience. Cloud services are developing into revenue-generating products, and costs need to be predictable.
- 5** As the hybrid cloud is a combination of distributed services, there needs to be a streamlined way to make these services act as a unified environment. Achieving seamless management will ensure that customers have a consistent and predictable experience.



About Hurwitz & Associates

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