



Integrating Private and Public Clouds to Form Hybrid Clouds

FAQ

What are the biggest benefits of hybrid cloud computing?

What are the challenges associated with management of hybrid clouds, and how are organizations attempting to overcome those challenges?

What approaches should IT organizations consider when planning for security solutions in a hybrid cloud?

What's involved in actually integrating public and private clouds into a hybrid cloud architecture?

What are the key capabilities and skill sets an organization should look for when evaluating and selecting a provider of hybrid cloud services?

With the viability and importance of cloud computing now widely accepted by IT and business leaders alike, the focus of planning, discussion and implementation has shifted to the best approaches for using cloud computing to achieve the all-important business goals of agility, flexibility and efficiency. From an architectural standpoint, most organizations have embraced some combination of public and private clouds — sometimes in isolation, other times in concert. But increasingly, large and small organizations alike are taking steps toward the next wave of cloud architecture: hybrid clouds.

Numerous signs confirm the imminent boom in hybrid cloud computing. For example, research conducted earlier this year by TechTarget indicated that 37 percent of IT respondents in North America and 35 percent in EMEA nations have either already adopted or plan to adopt hybrid clouds in the coming year. Also, market research firm Enterprise Management Associates noted that companies it surveyed were 70 percent more interested in hybrid cloud solutions than pure-play private or public clouds.

IT leaders who have already investigated or adopted hybrid clouds are excited about their many benefits, particularly the architectural flexibility it gives them to combine the security and control of private clouds with the relatively low cost and on-demand scalability of public clouds. But organizations need to understand and plan for the inevitable challenges of cloud-to-cloud integration of data, applications and services, as well as how to account for important trends such as support for consumer-class mobile devices, governance policies and multilayered security.

Finally, IT and business executives must understand the vital importance of selecting the right partner in planning, designing, deploying and managing hybrid cloud platforms. Time, attention and diligence are essential in order to ensure that a potential hybrid cloud partner brings the requisite skills, platform integration and experience in technology, business processes and project management — or else organizations run the risk of dealing with a morass of issues that impinge their ability to fully exploit the potential of hybrid clouds.

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What are the biggest benefits of hybrid cloud computing?

For many IT decision-makers, hybrid cloud computing is truly the best of both worlds, combining the control, security and performance of private clouds with the cost efficiency and on-demand scalability of public clouds. Hybrid clouds allow organizations to share and move workloads from private to public clouds — or vice versa — as demands require. Additionally, hybrid clouds give IT organizations the flexibility of locating noncritical applications in a hybrid architecture when a private cloud's resources are constrained by spikes in demand. Finally, a concept known as “bursting” lets IT move workloads from the private cloud to the hybrid cloud on demand in order to avoid having to make immediate hardware investments in their private cloud. The bottom line: Hybrid clouds provide access to extra resources when the private cloud hits a wall on utilization, and they allow the tiering of computing requirements between private and public clouds.

What are the challenges associated with management of hybrid clouds, and how are organizations attempting to overcome those challenges?

Managing hybrid clouds is a significant challenge that requires good pre-deployment planning. Managing such functions and policies as configuration, installations, access control, budgeting and reporting can be difficult in hybrid clouds designed to span the capabilities and diverse architectures of private and public clouds. Since hybrid clouds typically encompass contracts with several public cloud providers as well

as a private cloud, administrators must ensure the ongoing management of computing, networking and storage resources across several domains. Successfully navigating this management complexity requires both smart pre-deployment planning to define what needs to be managed in the first place and versatile, flexible, cross-platform management tools to handle the unique requirements of hybrid clouds.

Such management tools can either be “single pane of glass” solutions that handle multiple functions or dedicated tools for specialized functions such as security, job management, automation and configuration management. Automated tools, in particular, are extremely important in overcoming inherent cross-cloud compatibility problems without a lot of manual intervention.

What approaches should IT organizations consider when planning for security solutions in a hybrid cloud?

For obvious reasons, security remains a major concern for companies operating in cloud computing environments. IT executives face an important challenge in determining how to transfer data to public clouds and then bring it back to the private cloud in a secure manner, without exposing the private cloud to security breaches, malware and other threats. One important requirement is having a highly secure virtual private network to allow for “clean” sharing of data to and from the public and private clouds. Encryption, such as public-key infrastructure, is another essential security element in a hybrid environment, as well as the use of highly standardized and well-supported application programming interfaces. Endpoint security also is likely to be a key capability to include, since more and more cloud-based services are initiated by mobile users with consumer-class devices such as netbooks, tablets and smartphones.

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Before the integration actually takes place, every IT organization should take a few essential steps. First, the organization needs to have a full understanding of the infrastructure used by the cloud services provider and how the two environments can seamlessly coexist. Additionally, IT teams should have a good understanding of their network bandwidth and performance requirements to ensure sufficient network resources to support users in the hybrid environment without performance downgrades. Ultimately, the closer the public cloud stack (hardware, software, hypervisor, OS) reflects the IT organization's private cloud stack, the tighter and more seamless the integration.

From a business perspective, it's important to have partnerships between the in-house IT team and external providers of the public and private cloud services. Such partnerships enable the delivery of data, applications and service in a reliable and secure manner, in alignment with the organization's business goals and priorities. IT teams also need to consider tools that actually enable the cloud-to-cloud integration essential in creating hybrid clouds. For instance, Dell offers a cloud-based integration tool called Dell Boomi to deliver enterprise-class integration much faster and less expensively than traditional cloud integration products and appliances. The Dell Boomi appli-

cation doesn't require custom coding and uses a sophisticated suggestion engine that automatically offers common data field mapping options.

What are the key capabilities and skill sets an organization should look for when evaluating and selecting a provider of hybrid cloud services?

Without question, IT organizations need to seek out potential partners with both deep technical skills in infrastructure categories such as servers, storage and networking, as well as trusted relationships with top-tier virtualization hypervisor suppliers and public cloud providers. Also, potential partners need to have a successful track record in actually building and managing heterogeneous hybrid cloud architectures across a range of services, including consulting, systems design, reference architectures, integration, systems/network monitoring and management, and service-level agreement management. Finally, the hybrid cloud partner must demonstrate flexibility in configuring its service delivery to meet the unique situation of each customer, ranging from technical consulting with in-house teams to end-to-end system design, deployment and management.

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