



Key differences between virtualization and cloud computing

If you have deployed virtualization in your organization, does that mean you have a private cloud? In this expert e-guide from SearchServerVirtualization.com, learn about the differences between virtualization and private cloud computing. Find out if you can have a private cloud without having a virtual environment. Plus, gain expert insight into the benefits of a public cloud and private cloud and which type of cloud is more attractive for more organizations at this time.

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Table of Contents

[Is virtualization cloud computing?](#)

[Public vs. private clouds: Our Advisory Board weighs in](#)

[Resources from Intel](#)



Is virtualization cloud computing?

By Mark Vaughn

So you have deployed virtualization, but do you have a private cloud?

Maybe.

What exactly is the difference between virtualization and private cloud computing? That is like asking, "What is the difference between blue and green?" When combined with yellow, the color blue makes the color green. Similarly, virtualization is simply one of the elements that makes cloud computing.*

To continue this analogue, cloud computing can happen *without* virtualization. Certain hardware, operating system and even application clusters can deliver cloud services. But these technologies can be complicated and costly, often requiring a lot of work to provide a limited set of features.

The more likely scenario is that a private cloud computing environment is built on a virtual infrastructure. Many organizations have deployed virtualization by creating virtual servers on top of their existing networking, storage and security stacks. But with private cloud computing, you need to think about and design these technologies in conjunction with one another.

In other words, you built previous virtual infrastructures on these stacks, but you need to build a private cloud *with* these stacks.

Virtualization as an element of cloud computing

Cloud computing is as much a methodology as it is a technology. You cannot plan any single element without considering the effect on the others. You also have to add in practices and policies that govern chargeback, monitoring, procurement and many other facets of your IT infrastructure.

For example, the ability to rapidly provision virtual machines does no good if it still takes six weeks to order and install a host server. Furthermore, procurement will always be a problem if chargeback is not recovering costs, and that requires resource and utilization monitoring. If your storage and compute resources have different provisioning schedules, they'll have to be documented and reconciled to properly forecast demand. I could go on, but your business requirements ultimately drive everything.

Private cloud computing does not center on virtualization or any one technology. It uses a set of technologies that have been aligned to be highly flexible and provide a wide range of services. This approach does not require virtualization, but virtualization does lend well to the core concepts of cloud computing.

Virtualization and cloud computing are also so closely connected because the major hypervisor vendors -- VMware, Microsoft and Citrix Systems -- are putting a lot of emphasis on the cloud. They have closely aligned their products with tools and complementary technologies that promote the adoption of private cloud computing.

Cloud computing is a rapidly evolving discipline, and one that will reshape org charts as fast as it will change data center layouts. It closely aligns with virtualization, but it takes many technologies to be successful.

Public vs. private clouds: Our Advisory Board weighs in

Private clouds are all the rage these days, as organizations look to move beyond consolidation and get more out of server virtualization technology.

Private clouds host and deliver applications and resources on demand from the data center. But private clouds are just one type of cloud computing. There are also public clouds, which are run externally by large service providers. This model offers some benefits over private clouds, but it also raises some security concerns.

The public vs. private clouds debate will be an important issue as cloud computing becomes more popular. For now, many organizations are dealing with the transition from traditional, virtual data centers to private clouds. Members of our Server Virtualization Advisory Board tackle this issue and debate public vs. private clouds as they answer this question: Are private clouds the data centers of the future?

Written by: Jack Kaiser, GreenPages Technology Solutions

The simple answer is yes, the private cloud model is starting to resonate with organizations designing (or redesigning) data centers. CIOs realize that pooled resources with a virtualization layer allows for greater flexibility and efficiency -- and should be more cost effective.

The term "private" means "internal" or "proprietary," and it makes people feel better than "public" or "shared" clouds, where security concerns slow down adoption. The ultimate goal is to move to the public cloud as much as possible, because there should be greater cost savings thanks to higher utilization levels. However, in reality, most people will keep many workloads internal (private) and federate workloads to service providers (public) only when it's a strong fit.

Enterprises are trying to find the right balance between the two types of clouds, and private clouds are a great first step on the journey to the public cloud.

Written by: Rob McShinsky, Dartmouth Hitchcock Medical Center

Fear of public clouds, justified or not, is a reality. Being that there are still significant cost savings in creating internally managed or private clouds using virtualization technologies, there is little incentive at this time to move to a public cloud that is still maturing.

On top of that, until regulators for certain industries like financial and medical institutions are able to set detailed, certifiable, guidelines to public cloud providers, I see more growth in private clouds. When these types of private infrastructures become the norm, and there are additional efficiencies and cost savings to be had in a mature public cloud, then I see the internal infrastructure of today moving outward.

You can expect to see blended, hybrid clouds for many years to come as organizations desensitize themselves from their fears. The housing of servers inside corporate data centers will be a hard habit to break, even if moving to the public cloud is the right decision.

Written by: Greg Shields, Concentrated Technology

Of the future? You can argue that, for most of us, private clouds are the data centers of the *present*.

The National Institute of Standards and Technologies (NIST) defines private clouds as "[a] cloud infrastructure [that] is owned or leased by a single organization and is operated solely for that organization." Essentially, all the niceties that you would expect out of a cloud provider are those you should expect to get with a private cloud. The only difference is that you're running it yourself, or someone is running it for you -- but only for you.

Private clouds are little more than a bit of marketing trickery to make you believe there's more there than there really is. A private cloud means "your virtual machines exist somewhere on the network." That network is "your LAN." And the resources used to create that cloud are "elastic," growing and shrinking to meet the demands of your virtual workloads.

If you're virtualized, you have these things today.

So, in the end, should you care about private clouds? Not really. With clustering, load balancing, Distributed Resource Scheduler, high availability, automated provisioning and all the management automation that you've already got in your virtual infrastructure, there's already a few puffy white ones in your data center.

Written by: Rick Vanover, Alliance Data

Private clouds are part of the data center of the future. I expect that in most situations, there will still be a desire to both fully manage and fully control select parts of the information technology footprint. This may mean that the most sensitive and critical systems are candidates for a private cloud.

It is pretty clear that we will only see more public cloud options develop. Public clouds may be an attractive option to offload certain tiers of infrastructure -- for cost, performance, access and security considerations. The key will be to bridge the gap between private and public clouds while maintaining distinct technical boundaries. Well-defined governance procedures will ensure that the right workloads exist in the right places.

Resources from Intel



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