
Getting private cloud to play nicely

App compatibility and management integration

By Dale Vile, July 2012

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We were surprised at the strength of positive sentiment and relative lack of 'boo-sucks' type feedback from the 570 readers who participated in our recent Reg reader survey on private cloud. Quite a contrast to surveys on hosted cloud services, or even cloud computing in general. Whenever we run these, readers generally aren't shy about telling us how much they think all that public cloud stuff is over-egged by the vested interests, revolutionaries and religious types. Useful in some scenarios, perhaps, but not some kind of magic that will let you shut down all your servers and go lie on a beach (or join the dole queue) as some people would have you believe.

The reason that private cloud is generally being received more positively by IT pros is because despite the use of the 'C' word in its name, it's really just the natural consequence of a number of trends that have been unfolding in the datacentre computing world for a decade. In fact, our survey respondents made it clear that they while view private cloud as a natural next step from x86 server virtualisation, they don't think it necessarily has much to do with public cloud services at all.

But what, exactly, is private cloud?

For those reading this that are still a bit sketchy on what private cloud actually is, here is the way we defined it to respondents in the research study:

Private Cloud Definition

The basic idea of Private Cloud is to pool a bunch of servers and other resources (storage and networking) to create a general purpose platform upon which a variety of workload types can be run simultaneously. An important attribute of private cloud is the rapid allocation/de-allocation of resources to/from workloads, enabling a more dynamic approach to management.

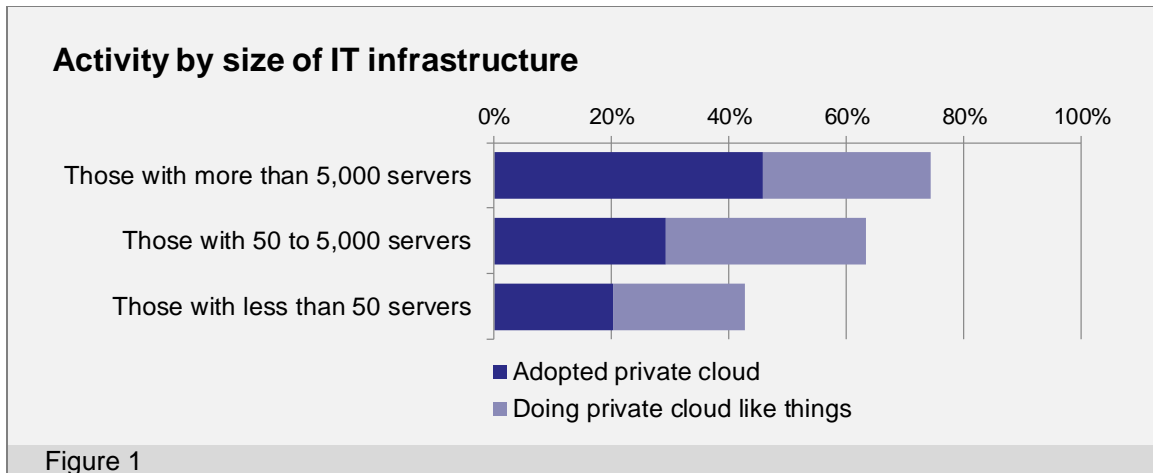
We also made it clear that private cloud (at least in our definition, which echoes that of most other sources), is about architecture (not services like public cloud) which would generally be applied in your own datacentre. We also pointed out, however, that a private cloud could be set up on dedicated infrastructure in a hosted colocation-style environment.

Some readers pointed out in comments on our definition that we had missed the fact that private cloud enables a self-service approach to IT delivery and a charge-back or show-back approach to IT related account and internal billing. Both fair points, but given the emotive nature of self-service and charge-back, we had deliberately left these out as we didn't want to send a message that these are pre-requisites for a private cloud installation; they are options for those who find them useful.

More important in terms of benefits are enhancements to flexibility, responsiveness, application availability and overall efficiency. These are confirmed by the research and if you want to know more about this, check out the main report from the research study (link provided at the end).

So is anyone actually using private cloud in the real world?

Unfortunately, online surveys (including Reg reader studies) are generally useless for trying to figure out the absolute level of market penetration or adoption of an emerging idea or technology. This is because of 'self-selection' skew, which basically means that those who are more 'into' the topic are more likely to respond and are therefore over-represented. We can, however, legitimately investigate where early adopter activity is taking place in relative terms, and with private cloud, it's those with larger IT infrastructures that are latching onto it the most at the moment (Figure 1).



This focus at the higher end is understandable. The problems addressed by private cloud are more acute in large-scale IT infrastructures. Big IT departments also tend to have more experience with virtualisation, which, as we have said is a natural springboard for private cloud activity. That said, there is clear evidence from the survey that successful adoption is taking place within small and mid-scale environments, so private cloud is clearly not just for the big guys.

But it's not all sweetness and light. Despite the positive sentiment to private cloud, respondents in our study were very realistic about adoption practicalities. Just like any new technology or approach, understanding what's involved in terms of migration and coexistence is important. Private cloud only provides a platform and operating environment, which counts for very little unless you can deploy and operate applications on it successfully.

Application compatibility: The good, the bad and ugly

Most of the emphasis in the private cloud arena is on building flexible pools of x86 server resources. It's certainly possible to build other flavours of private clouds, e.g. based on Power or SPARC architectures, but most of the problems with application and server sprawl that private cloud can help with are found in the x86 Windows and Linux world.

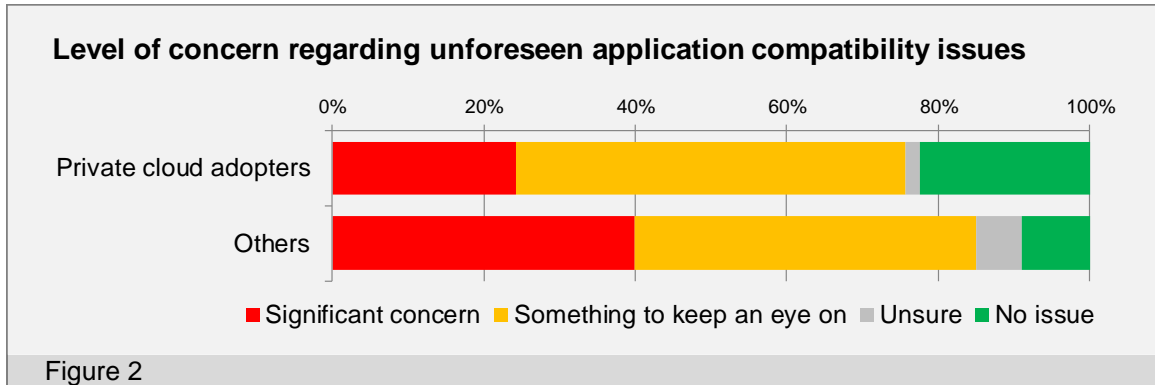
From an application compatibility perspective, small footprint software that's already been proven to be virtualisation friendly (i.e. can run with no issues on a hypervisor-hosted operating system) is likely to run on a private cloud with little or no problem. Some of the respondents in our study, for example, highlighted how straightforward things can be, as in these comments:

"I have worked with this stuff day-to-day, and it's very rare that an application needs anything special to work on a 'private cloud'."

"I have not come across any x86 based app that will not run perfectly in our private cloud."

We have no doubt that it really is this easy in a lot of cases, particularly if you work in an environment where virtualisation is normal, a good level of discipline exists with regard to application design and selection, and you don't have a lot of legacy kicking around.

However, quite a few respondents, including many of those with private cloud experience, have concerns about application compatibility or say you really need to keep an eye open for problems in this area (Figure 2).



Here are some of the comments relating to the sorts of things that underpin the urging of caution:

"Apps absolutely must be capable of clustered functionality. None of this 'won't write to centralised storage/single access database/etc.'"

"I'm amazed at how many software products are going back to dongles to limit their installations. This really sucks when trying to virtualize them."

"Old software that requires a physical box with crazy hardware requirements, while barely being able to run under load will just have to go the way of the dinosaurs."

Many small-footprint applications of the kind you would want to deploy on a flexible shared resource are developed internally, e.g. to meet tactical needs within specific departments or workgroups. This raises the question whether development practices need to change to ensure that custom applications are built with cloud readiness in mind, and some respondents did indeed think developers might need to smarten up their act:

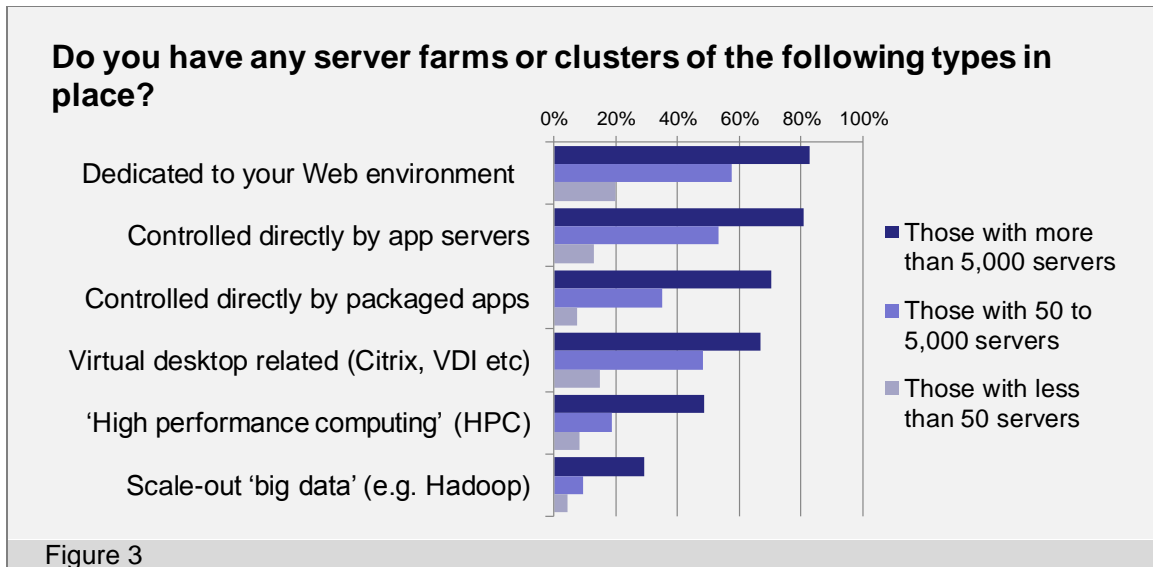
"Not only will apps need to change but capabilities of developers will require a shift change. Current popularly used development practices do not scale into the cloud."

"Most of our biz apps are kinda small and naively architected. For cloud deployment, web apps need to ensure they're data-less on the server, with persistence provided by backend DB/NAS so that we can scale them. Many of our devs don't 'get it.'"

This brings into focus that old chestnut of the frequently encountered disjoint between development and operations. Particularly with run-of-the mill tactical apps, developers should really not be making decisions that constrain the freedom of operations staff to deploy and redeploy between different hardware and platform environments as needs dictate.

What about the big stuff?

In larger environments in particular, a private cloud is hardly going to be the first time anyone has deployed a multi-server architecture to underpin an application. Various forms of specialist farms and clusters have been used for years to support more demanding requirements (Figure 3).



A question that will increasingly arise over time is therefore which of these applications are legitimate targets for migration into a private cloud environment. Your first reaction might be to ask “Why would you even think about migrating them?”, on the basis that many of these apps are business critical, and if they are all running fine you’d be best to leave well alone.

The answer is operational efficiency. Firstly, it’s about reducing the level of fragmentation and disjoint that currently exists, with each specialist platform requiring a separate set of dedicated tools, skills and procedures. Our research consistently throws this up as a massive killer of productivity within IT and an ongoing frustration for IT professionals, which gets in the way of driving service level improvements. Secondly, the broader the pool of resources across which sharing takes place, the greater the level of utilisation and overall efficiency.

While migration might be desirable from an operational effectiveness and efficiency perspective, however, we then come back to the basic question of whether specific multi-server applications will operate successfully in a private cloud environment, and there are some important considerations here, as highlighted by our respondents:

“Distributed processing has been very lightly touched by cloud computing and most applications are not ready for it, much as most applications are poorly prepared for multiple server cores. There is a great deal of room for improvement in the area of parallel and concurrent processing in software development.”

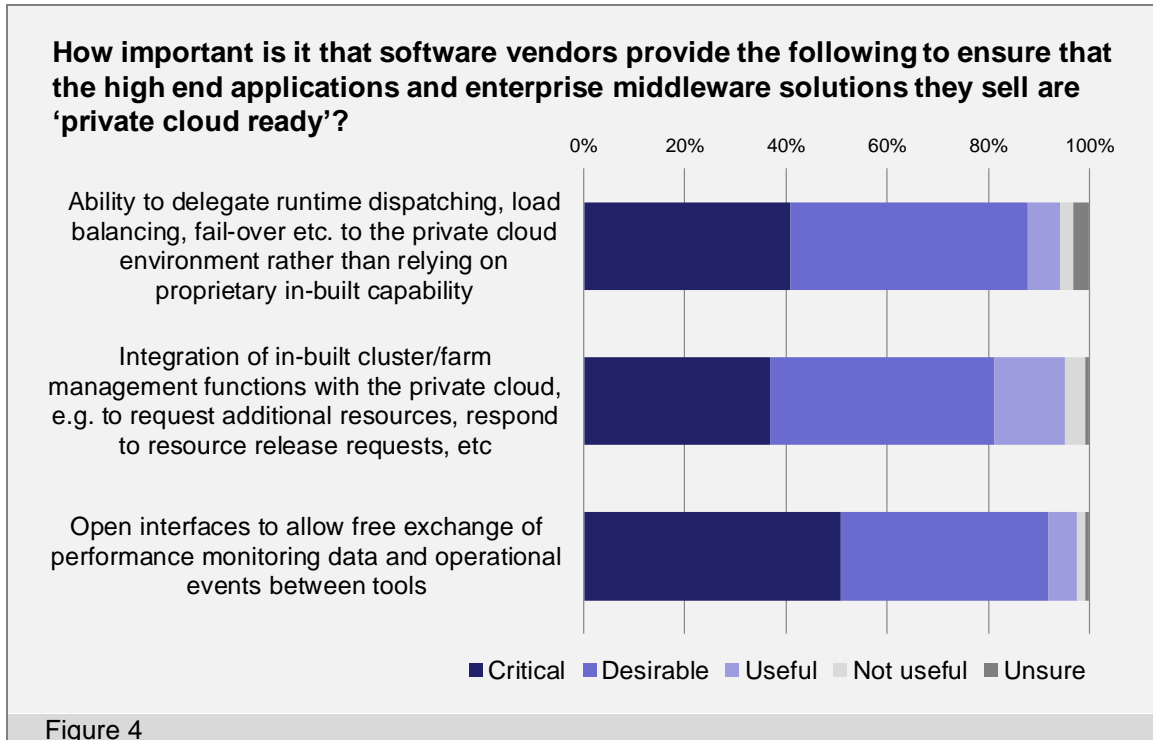
“Application architecture is critical here. Most existing apps would require significant work to migrate to public cloud offerings as they exist today. Less work (but still some) is required for private cloud. If no remediation is done, apps will not be able to leverage scale-out, clustering, etc. It will be no better than just server virtualisation.”

“The big problem for us is multi-threaded vs multi-processing, e.g. with big analysis applications.”

“We’re at the ‘new services must be virtualised’ stage already. Private cloud implies ‘All services must be redundant and scalable’ also.”

Migration versus integration

In practice, it is unlikely to be an all or nothing situation with regard to migration of specialist farm or cluster based applications. With one application, for example, it might be the case that the proprietary runtime and management platform is done away with altogether and all of its functions fulfilled by a private cloud. You might then have situations in which runtime execution remains dealt with through a dedicated specialist control layer, but with the management layer integrating with the private cloud to coordinate the provisioning and release of resources between environments. Either way, there is a good case for integration to allow coordinated monitoring and event management (Figure 4).



With this in mind, views of how some of this will pan out are already forming in the minds of those with experience of both private cloud and the different types of specialist farms and clusters (Figure 5):

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