



Where Cloud Fits

Determining which applications are a good fit for your private cloud initiative

Introduction

As enterprises head down the path of establishing private clouds in greater and greater number, one of the most commonly asked questions is “what types of applications are best for my cloud?” Additional questions typically follow, such as how best to scope a private cloud pilot project and how to assess an application portfolio for cloud-readiness, as well as which application types should stay out of the cloud.

The executives and practitioners asking these questions are typically looking for insight into how best to kick off their cloud initiative, as well as where to focus to ensure the greatest return on their cloud computing investment over time.

There are a number of important factors to consider in assessing an application portfolio for cloud readiness, and we won’t attempt to address them all in this short note. Instead, we will identify a number of non-functional and functional characteristics that in our experience are positive indications that an application should be considered for inclusion in your cloud initiative.

Non-Functional Characteristics

In determining which applications are good fits for your private cloud, one of the first things to think about are their various non-functional requirements.

The following is a list of factors worth considering. Most of these are commonly known, even clichéd, while others are counter-intuitive. While these won’t ever tell you the whole story, they can often provide great indications of which applications, and in turn which business users, stand the most to gain from your cloud initiative.

- **Scalability** – Perhaps one of the clichés on the list, but true nonetheless. A requirement for large scale is a great indication that an application should be deployed in a cloud, because it is typically much less expensive to host large-scale applications on commodity infrastructures, as compared to the “big iron” that would otherwise be required to get the job done. Appistry has collected some tremendous ROI data to support this.
- **Variable Load** – Applications with variable load, for example due to sporadic or seasonal demand, are also great candidates for your cloud. Cloud computing can make the operation of applications under variable load conditions much more efficient and cost-effective to operate for several reasons. When many applications whose variability is not correlated share the same infrastructure, the aggregate load tends to average out – thus, an application experiencing peak

demand can use resources that would otherwise be left idle by an application experiencing a lull. And for periods when correlated demand out-strips the cloud's resources, clouds can enable bursting onto 3rd party resources, e.g. "cloud bursting."

- **Volatility** – While volatility is used in some contexts to mean variable load, we're using it here to represent a very different idea. In this case, we're talking about cases where the applications themselves change a lot, as opposed to the load presented to the applications. The classic example here is the pre-production environment, in which updates to the applications themselves are constantly being redeployed for testing. Here, the automation provided by cloud management products is critical, and can be extended all the way through to self-service where appropriate.
- **Reliability** – This is perhaps one of the counter-intuitive indications mentioned above. It turns out that applications and systems that require high degrees of availability and reliability can be very well served in private cloud environments for much the same reasons as presented for scalability above... Utilizing the software-based fault-tolerance capabilities of modern cloud middleware running in a highly-distributed manner across commodity hardware can yield a much more cost-effective result than is possible with traditional hardware-based approaches. In addition, spanning your private cloud across data centers helps to ensure disaster recovery (DR) and continuity of operations (COOP).
- **CPU Intensity** – Cloud environments are ideal for running CPU-intensive workloads, especially when one or more of the other functional and non-functional indicators are present.
- **I/O Intensity** – Another counter-intuitive one. Because applications running in cloud environments tend to be highly distributed, data access and processing can often be done in a highly distributed or parallelized manner, relieving I/O bottlenecks.
- **Time-Bound** – Time bound applications, those counted on to provide results within a fixed timespan, can greatly benefit from being deployed to your cloud. The ability to scale to meet a given workload coupled with the software-based reliability discussed above, can be employed together to ensure a high degree of predictability for these applications, even in spite of software or hardware failures.

Functional Characteristics

While many different types of applications can be good fits for cloud deployment, our experience has pointed to a number of use-cases that we see often enough to consider patterns.

Applications or systems fitting one of these profiles often exhibit one or more of the non-functional requirements described above, so the two are not totally independent.

- **Multi-Application Web Farms** – Many organizations, as part of a "shared services," "hosted services," or similar initiative, seek to deliver a highly automated environment for delivering Web applications across the enterprise. Since many organizations have hundreds or even thousands of simple (e.g. CRUD) web applications, making the hosting environment for even just these more automated and efficient can yield significant savings. This can be true even

automation and self-service is applied only to the test and development environment, with production deployment being handled via traditional means.

- **Batch Applications** – Many enterprises run a variety of batch-style applications on a regular basis, for purposes such as ETL, reporting and analysis. Because these applications can often be run in off hours, they are perfect candidates for deployment on a shared infrastructure like a private cloud. In addition, many organizations are under pressure to reduce the time-to-results for certain types of analytical applications. The scalable and elastic nature of a cloud can enable this easily.
- **CEP or Queue Processing** – Complex event processing (CEP) applications, or applications for processing and routing data between queues can be great candidates for your cloud. These types of applications typically involve taking data off of ingress queues, processing or transforming this data, then placing it in an outgoing queuing mechanism for further work or forwarding straight to an end user for action. In our experience, moving this processing into the cloud helps to off-load the message queues and enables them to be processed more quickly than before, avoiding backups at the queue, and staving off an expensive upgrade of the queuing infrastructure.
- **Service-Oriented Applications** – Your private cloud can be the perfect deployment environment for your SOA services, enabling them to readily scale as they are reused and incorporated into downstream composite applications, or accessed by internal or external users.
- **Transactional Applications** – When deployed in a cloud environment, your transactional applications can process as many transactions just as fast if not faster than a mainframe for a fraction of the cost of this method, with the added ability to scale up and down on demand.

Conclusion

Using the characteristics presented here as a guide, you should be able to readily identify a number of candidate applications for launching your enterprises' private cloud pilot or initiative.

Given the breadth of application types and usage characteristics for which cloud is not only appropriate but a **better** choice than traditional deployment, there is little reason to wait to start down the path towards cloud.