Storage Challenges for VMware View – Desktop Virtualization

"Storage design is one of the concerning issues when moving to Desktop Virtualization."

Here in this article we will talk about various aspects of the storage challenges that today many of our enterprise faces and we will scrutinize those carefully here one by one. I have categorized these into three broader domain.

1. Choice of Storage
2. IOPS Consideration
3. Non-Tiered and Tiered Storage Modeling

1. Choice of Storage
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Here we have two choices in our hand SAN or DAS. Most of the enterprise deployment went through the SAN, but that does not totally kill the option for DAS.

SAN is reliable and robust. It also allows DRS, SDRS, HA and vMotion. SAN Maintenance window is also small. But can we ignore the TCO of SAN, no of course not. Also in terms of managing a SAN require special skill set.

Comparatively DAS is totally inexpensive. We have seen that in DAS, IO Bottlenecks are also very rare. Managing DAS is pretty easy and we need just one admin to manage this.

But, unfortunately DAS comes with some challenges too, that is, it does not allow for DRS, SDRS, HA and vMotion. Also maintenance time for DAS is huge.

2. IOPS Consideration
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We have segregated this into further line items.

1. Application location
2. Provisioning methodology
3. Persistence of the VM
4. Poor design

Method of VM Provisioning: Fully Provisioned vs. Linked Clone

VM Persistence: How Long Will It Live?

Non-persistent models are simple

- • Can destroy at log off
- • Centralized patch and scan
- • Data growth is slow if at all

- • Single locale for many services

Non-persistent contains a predictable image that is universal

- • No surprise applications
- • Same IO footprint per VM
- • User data, some app data and temp data are off the SAN

Persistent models are tough

- • They grow and grow
- • There is no simple change mechanism
- • IO is ugly

Persistent can be very unpredictable

- • As VMs diverge, IO footprints can become different
- • Users can frequently insert apps that may not be optimized
- • More data means you are
  - • Further into the disks
  - • More fragmented and random

Poor Design:

Always follow best practices, follow best practices, follow best practices

- Common design issues
  - • Transferring a desktop image to a VM
  - • Scheduling concurrent scans and services that spin disks
  - • Leaving services on that aren’t needed
  - • Failing to optimize applications
  - • Leaving user data on the same storage as the image/VM/clone

3. Non-Tiered and Tiered Storage Modeling
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Challenges for Non-Tiered Approach:

- • It keeps all data in one location
- • It also keeps all IO in one location
- • Generally only advisable for fully provisioned VMs

Advantages for Tiered Approach: It takes advantage of VMware View Capabilities

- • Shared master image on SSD means nearly all reads are done from SSD
- • IO is segmented to multiple filesystems
- • VAAI integration helps with things like deployments, recompose
- • Boot storms are trivial with properly sized SSD farm
- • Everything still stays within the enclosure
- • All layers can be replicated and backed up independently

I hope I was able to touch base with all the different challenges that we generally face while moving our Desktop environment to Virtual.