VDI Storage Considerations

Desktop management at any scale is a tedious job. Imaging, reimaging, and troubleshooting desktop systems consume valuable IT resources, and keep employees from being productive. Securing the information generated on desktops, tablets, and smartphones is no simple job either. For these reasons, many IT organizations are deploying virtual desktop infrastructure (VDI).

With VDI, desktops are virtualized on a hypervisor or virtualization platform, and reside on the server in a datacenter. End users aren’t dependent on a single physical device at the office, and can access their centralized desktop image via a multitude of devices, making them more productive. With desktops now stored in the datacenter, businesses are protected from espionage via lost or stolen devices. While managed by hypervisors on servers, the actual desktops and user data are stored on shared storage systems that require both consistent and peak performance to deliver positive end-user experience.

It is generally acknowledged that flash storage is the best storage medium to address VDI requirements, due to its low latency/high IOPS characteristics. All-flash arrays and hybrid arrays are two key solutions considered for VDI shared storage. While all-flash arrays are able to serve all read and write requests from flash, they are not in budget for many IT organizations. Hybrid arrays combine either flash memory or SSDs with high capacity disk drives, making them a cost effective alternative to all-flash arrays, in many cases.

Due to the unique storage requirements of VDI, there are several considerations that should be recognized prior to purchasing a shared storage solution for VDI.

- **Performance**: High I/O performance and low latency are key to a successful VDI user experience. Nothing stalls VDI adoption faster than user frustration caused by slow desktop boot-ups and application response time being slower than physical desktops. It is important to note that VDI is generally characterized as write heavy.

- **Predictable User Experience**: Virtual desktop users will expect the same, if not better, user experience as they have with their physical desktops. For a storage system, this means that performance must remain consistent, even during boot storm, virus scans, and other updates. If virtual desktops are hosted on the same storage system as other applications, resource contention must not affect user experience.

- **Cost**: Flash storage can solve the performance requirements of VDI, but cost can put the project out of reach. Hybrid flash arrays can be an affordable alternative. Many hybrids promise high capacity and performance, most sacrifice capacity for performance by consuming HDD trays with SSDs. A better solution would provide both guaranteed performance and maximum capacity

- **Flexible Scalability**: Confidence that your storage system can scale to meet VDI demands is reassuring. Being able to scale performance and capacity independently allows your storage system to grow in the dimension needed without having to incur unnecessary costs. Furthermore, the ability to scale performance without swapping out controllers or needing to add flash as capacity is scaled makes scaling less cumbersome and less costly.

- **Storage Sprawl**: While not an obvious consideration, the ability to run VDI alongside other applications would be a desirable capability for most companies, especially mid-sized or small-to-medium enterprises, since it reduces the costs and management complexity associated with storage sprawl across the organization.

- **Validated With Your VDI Platform Of Choice**: Having documentation that the storage is validated with your VDI platform of choice and what results should be expected takes risks and unknowns out of the VDI deployment.
Why Choose Fusion-io Control Hybrid Storage for VDI

- **Flash-first Hybrid Architecture:** VDI workloads can be very write-heavy. Most hybrid arrays use flash for read cache, but write requests are serviced by disk (disk-first hybrids). ioControl utilizes a flash-first data path, where every write request is serviced by flash resulting in faster response times for desktop users.

- **Predictable Performance with QoS:** Unlike other hybrids, ioControl allows you to provision and manage flash performance with Quality of Service (QoS). ioControl QoS is a policy based management mechanism that allows you to prioritize workloads by business importance.

- **More Performance, Less Waste:** ioControl Hybrid Storage was architected to maximize both performance and capacity at a reasonable cost. Flash is integrated into the CPU bus via PCIe, it runs at microsecond speeds with no need to traverse a RAID controller like other hybrids. Fusion ioMemory flash consumes zero drive bays; no capacity is sacrificed for performance.

- **Grow On Your Terms:** ioControl allows you to scale performance online by adding Fusion ioMemory flash into the system, doubling system performance, without consuming drive bays. If capacity is required, up to three disk shelves can be added to every ioControl hybrid. Additionally, ioControl allows you to scale performance to the host, via Fusion-io server-side read cache, to address ultra-low latency requirements.

- **More Consolidation, Less Footprint:** Storage arrays are often a dedicated resource for VDI workloads to prevent resource contention with other applications. With flash-first performance and QoS policies, ioControl allows you to confidently support multiple applications, while isolating VDI workloads from other applications. This eliminates contention, while reducing storage sprawl and administration and maintenance costs.

- **Validated with Citrix XenDesktop and VMware Horizon View:** ioControl is validated with the Citrix VDI Capacity Program for XenDesktop and the VMware Horizon View Fast Track Program. White papers, reference architectures, and case studies of ioControl deployed with Citrix XenDesktop and VMware Horizon View are available.

*Figure 1. ioControl supports VDI alongside other applications*
Justify VDI with flash that fits

_Fusion-io offers three ioControl n5 appliances capable of supporting 300 to 2,000 virtual desktops per appliance. ioControl is also part of the Fusion-io portfolio of flash solutions for VDI along with ioMemory for stateless desktop deployments and ioVDI software, the first virtual desktop-aware solution that leverages server-side flash._

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