# Nutanix Performance Acceleration

Nutanix Xtreme Computing Platform employs a variety of advanced technologies to drive the highest possible performance for a wide range of virtualized workloads.

Data Locality

- Data is re-localized when a VM migrates to another hosts (e.g., live migration or vMotion)
- Re-localization is performed as a background job so that cluster performance is unaffected

- Each VM and its associated data reside on the same physical node to reduce storage I/O latency and minimize network overhead
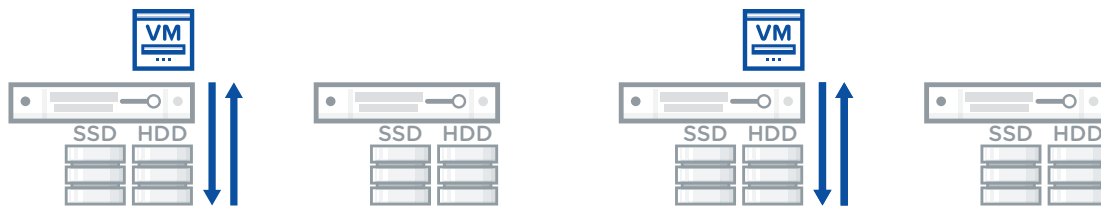
Balancing

- Data is automatically balanced uniformly across all nodes
- Redistribution is based on utilization to eliminate hotspots and resource bottlenecks

- Mixed node clusters are supported, including those with storage-heavy nodes
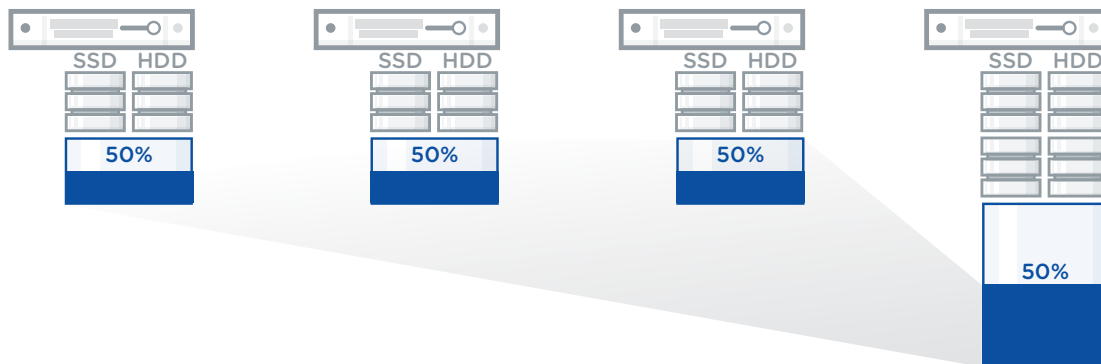
Intelligent Data Tiering

- Frequently requested data (i.e. 'hot' data) promoted into SSD tier for fastest performance, with cold data in HDD tier for maximum efficiency

- All SSD and HDD resources are available for all VMs across the cluster
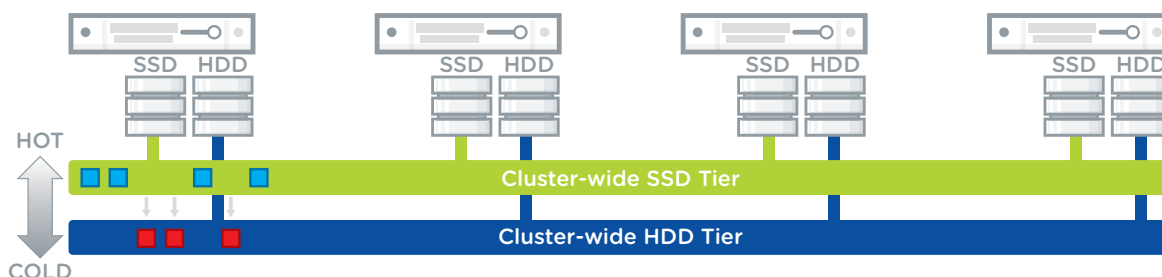
VM Flash Mode

- Keep working data for administrator-targeted VMs in the SSD tier for fastest performance

- Mix IOPS-sensitive and regular workloads in the same cluster

- Consistent and fast storage performance for applications such as databases
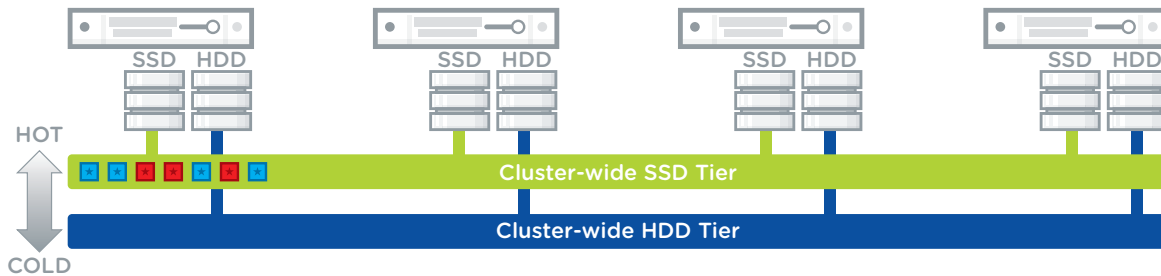
Shadow Clones

- Improved performance for multi-reader scenarios (multiple VMs read a single data source)

- Distributed caching of immutable vDisk data across multiple nodes

- Perfect for speeding VDI end user performance, where many linked clones forward read requests to a central master (e.g., Citrix MCS Master VM, VMware View replica disks)

- Up to 50% improvement in boot times during VDI boot storms
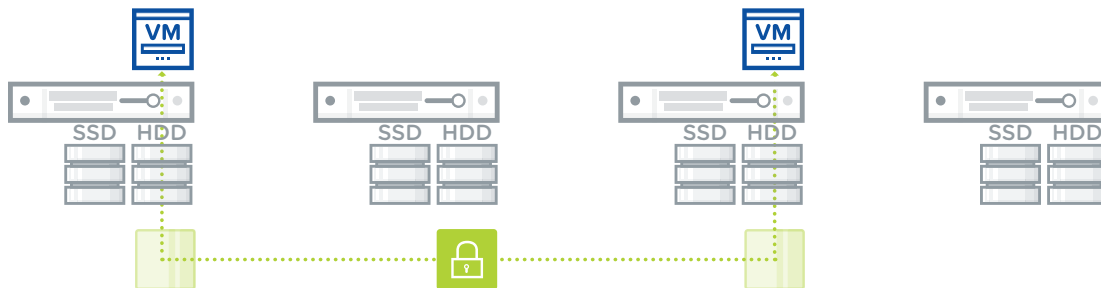
Snapshots and Clones at VM Granularity

- Application-consistent snapshots at VM granularity

- Restore existing VMs from snapshots in seconds

- Per-VM snapshots and clones in seconds with redirect-on-write technology