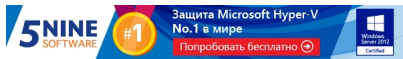Автор:
04.02.15 15:02 -

04/02/2015   **Реклама:**

Пост:

Как вы знаете , недавно компания VMware сняла эмбарго на освещение новых возможностей платформы виртуализации VMware vSphere 6.0, о которых мы писали вот тут
(и
тут
). На блогах, посвященных технологиям виртуализации, появилось много разных статей о новых возможностях продукта, и мы уже писали о
технологии непрерывной доступности VMware Fault Tolerance 6.0
.

Сегодня мы хотим рассказать об отказоустойчивых кластерах VMware Virtual SAN 6.0, для которых версия программного обеспечения продвинулась с 1.0 сразу до 6.0 (поэтому пользователи, все же, не должны заблуждаться насчет зрелости продукта - это его вторая версия).

Итак, что нового появилось в VMware Virtual SAN 6.0:

What's New in VMware Virtual SAN 6.0

All Flash Architecture

✓ Data persistence on SSD
✓ Intelligent caching and two-tier architecture

Enterprise Performance & Scale

✓ 100K IOPS/host (5x more)
✓ Scale to 64 nodes (2x more)
✓ 200 VMs/host (2x more)
✓ 62 TB max. virtual disk size

Enterprise Data Services

✓ New high performance VSAN snapshots & clones
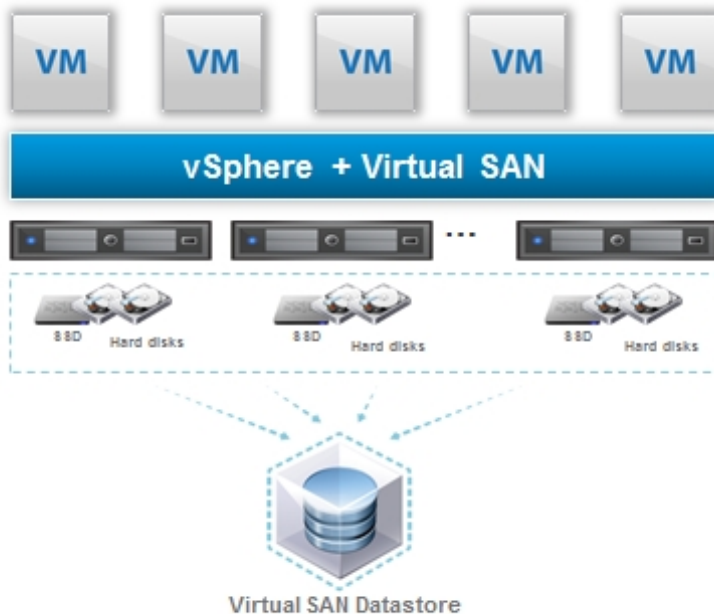✓ Rack awareness to tolerate rack failures

Expande Blade Sup

✓ Support for direct-a JBODs
✓ HW-based checksu encryption

VMware Virtual SAN : Hybrid

Radically Simple Hypervisor-Converged Storage Software

| VM | VM | VM | VM | VM |

vSphere + Virtual SAN

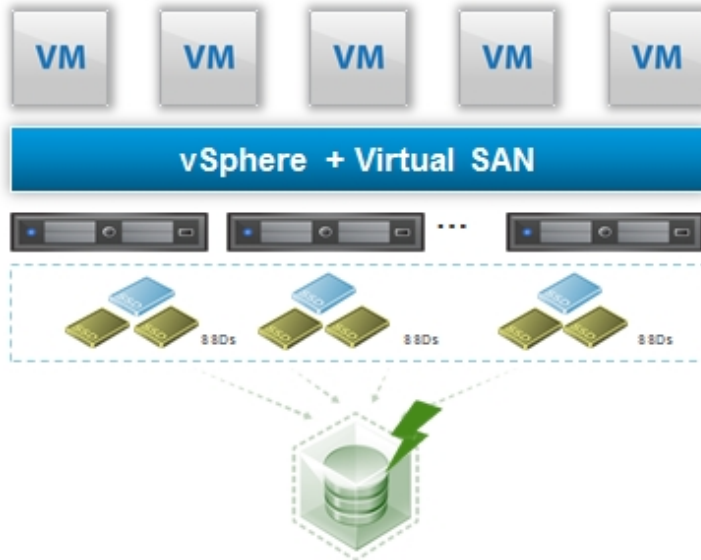88D Hard disks   88D Hard disks   88D Hard disks

Virtual SAN Datastore

Virtual SAN

• Software-defined storage built into vSph
• Runs on any standard x86 server
• Pools flash-based devices into a shared datastore
• Managed through per-VM storage polic
• Delivers High performance through flas acceleration
• 2x more IOPS with VSAN Hybrid
  • Up to 40K IOPS/host
• Highly resilient - zero data loss in the ev hardware failures
• Deeply integrated with the VMware sta

Автор:
04.02.15 15:02 -

VMware Virtual SAN : All-Flash

Extremely High Performance with Predictability

NEW in 6.0

Virtual SAN All-Flash

- Flash-based devices used for caching well as persistence
- Cost-effective all-flash 2-tier model:
  - Cache is 100% write: using write-intensiv higher grade flash-based devices
  - Persistent storage: can leverage lower co intensive flash-based devices
- Very high IOPS: up to 100K[1] IOPS/H
- Consistent performance with sub-millisecond latencies

(1) All performance numbers are subject to final benchmarking results. Please refer to guidance published at GA

Virtual SAN All-Flash Datastore

Отличия между данными архитектурами:

VMware Virtual SAN 6.0 – Ready for Enterprise-Class Applicat

	Virtual SAN 5.5	Virtual SAN 6.0 Hybrid	Virtual SAN 6.0 All-Flash	
Hosts per Cluster	32	64	64	
VMs per Host	100	200	200	
IOPS per Host	20K	40K	90K	
Snapshot depth per VM	2	32	32	
Virtual Disk size	2TB	62TB	62TB	
VMs/Cluster	3200	6400	6400	
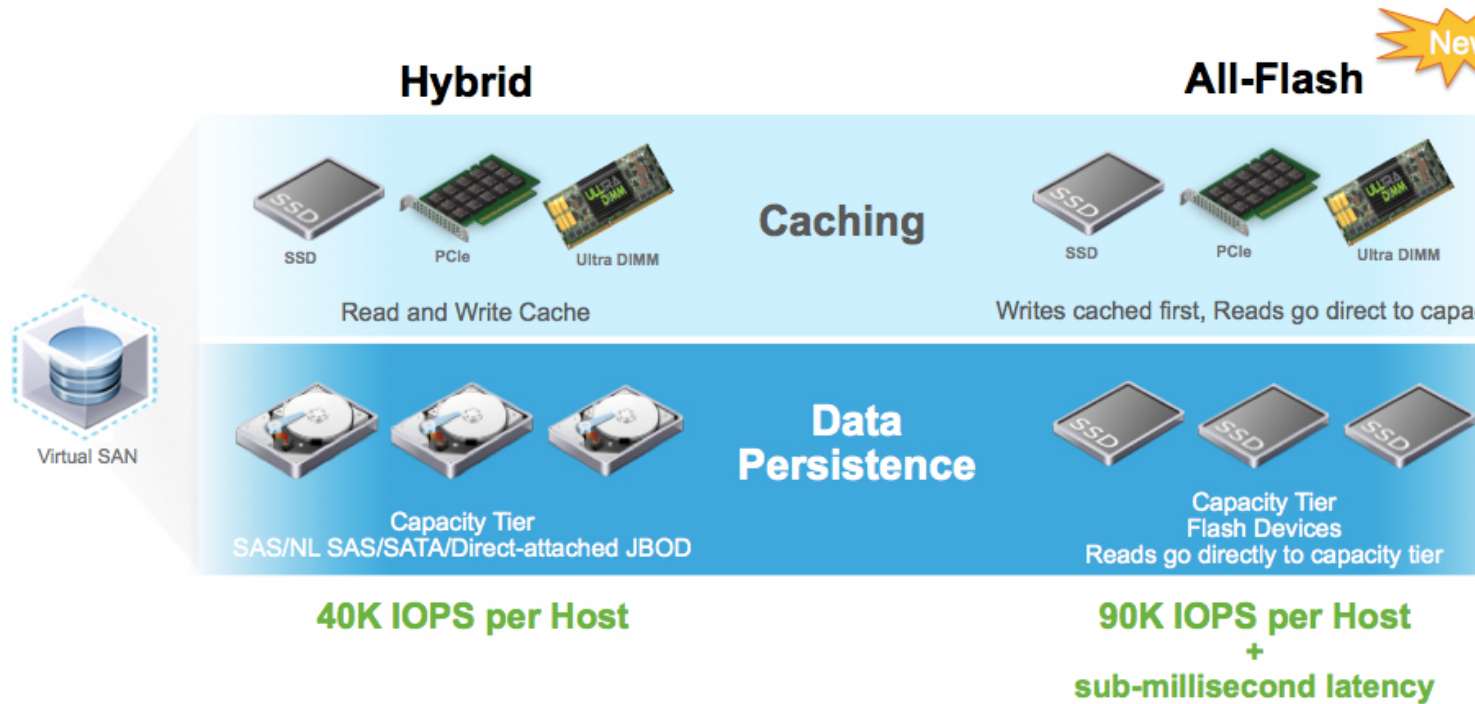
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VMware Virtual SAN

High Density Direct Attached Storage

VM **VM** **VM** **VM** **VM**

vSphere + Virtual SAN

Blade Servers

HDDAS
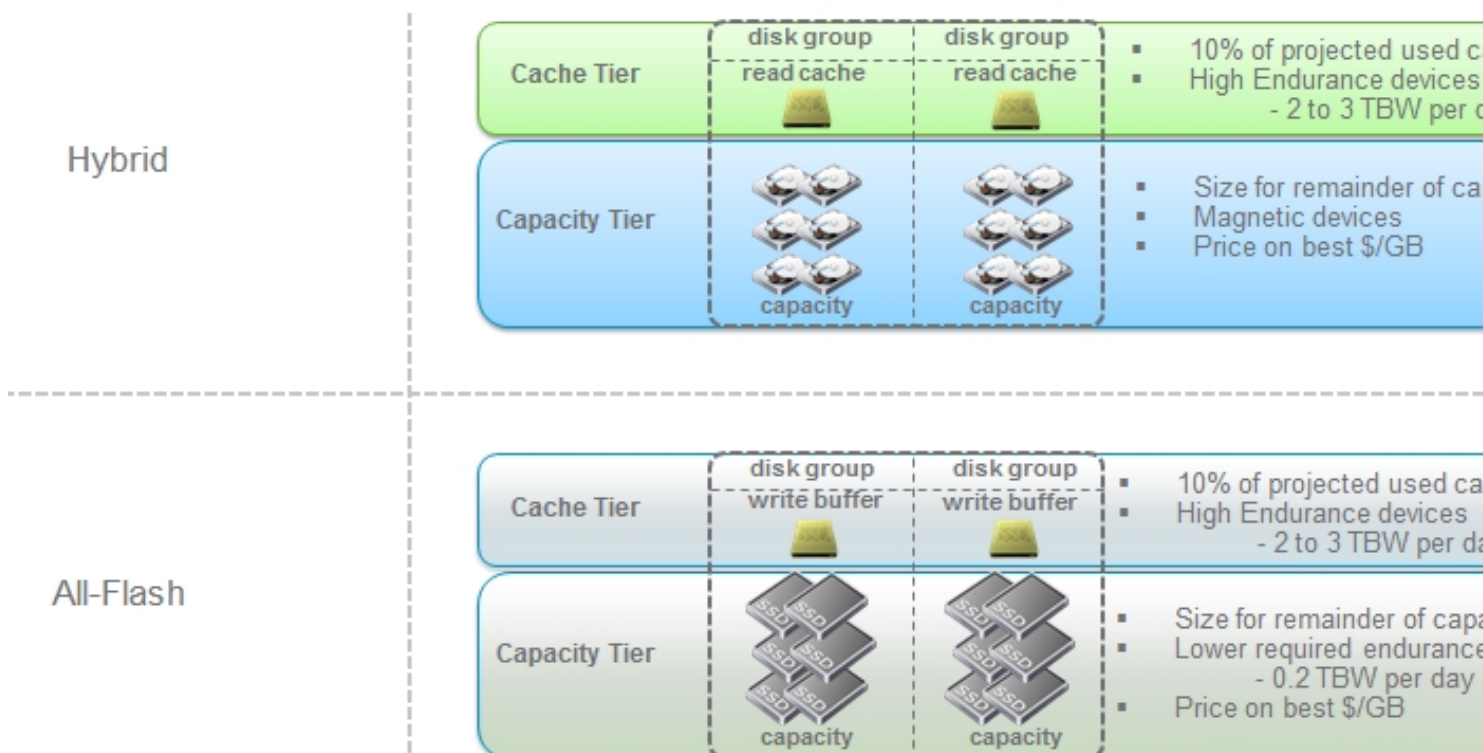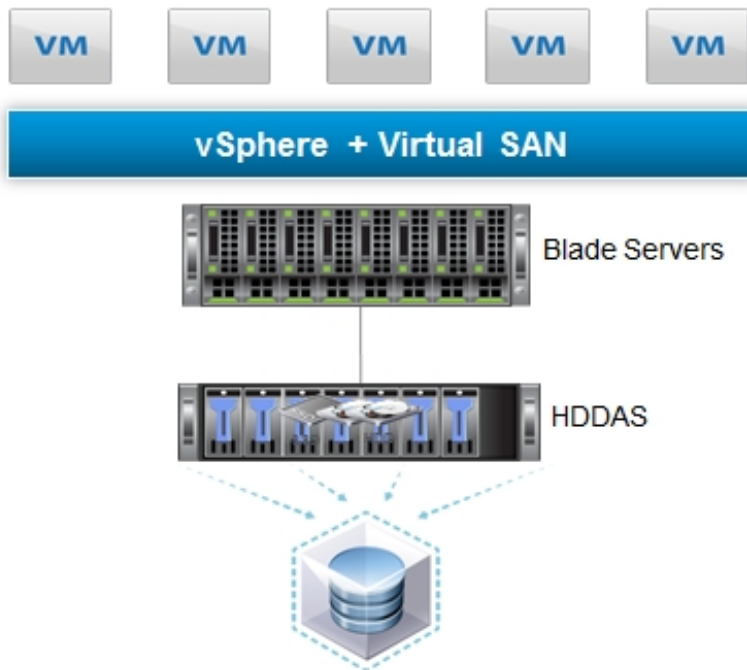
- Manage disks in enclosures – helps enable bl environment
- Flash acceleration provided on the server or i subsystem
- Data services delivered via the VSAN Data S and platform capabilities
- Direct attached and disks (flash devices, and magnetic devices) are Supports combination attached disks and high density attached disk (SSDs and HDDs) per disk group.

VMware Virtual SAN

High Density Direct Attached Storage

VM **VM** **VM** **VM** **VM**

vSphere + Virtual SAN

Blade Servers
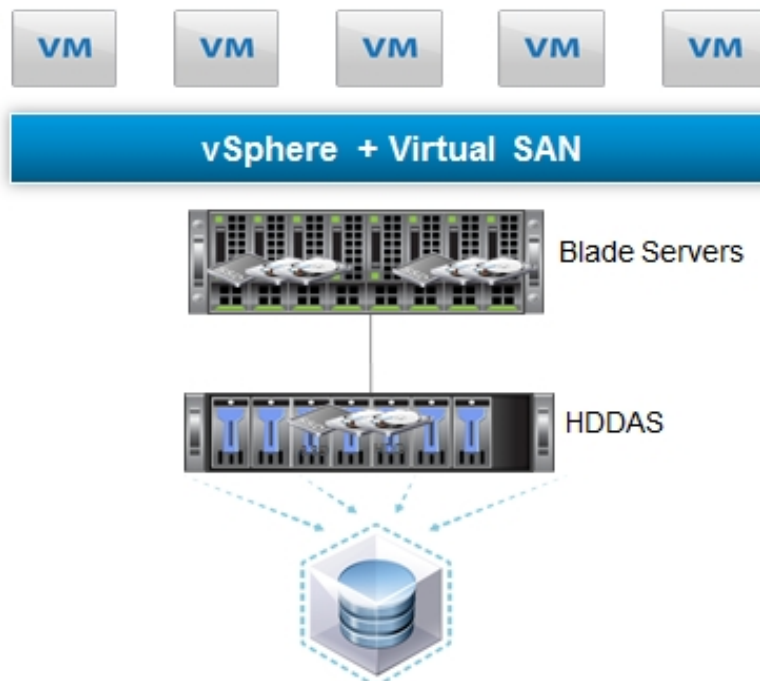
HDDAS

- Users are expected to configure the HDDAS such that each disk is only seen by one host
- VSAN protects against misconfigured HDDA disk is seen by more than 1 host).
- The owner of a disk group can be explicitly c by unmounting and restamping the disk grou the new owner.
  - If a host who own a disk group crashes, ma stamping can be done on another host.
- Supported HDDASs will be tightly controlled HCL (exact list TBD).
  - Applies to HDDASs and controllers.

New On-Disk Format

- Virtual SAN 6.0 introduces a new on-disk format.

- The new on-disk format enables:
  - Higher performance characteristics
  - Efficient and scalable high performance snapshots and clones
  - Online migration to new (RVC only)
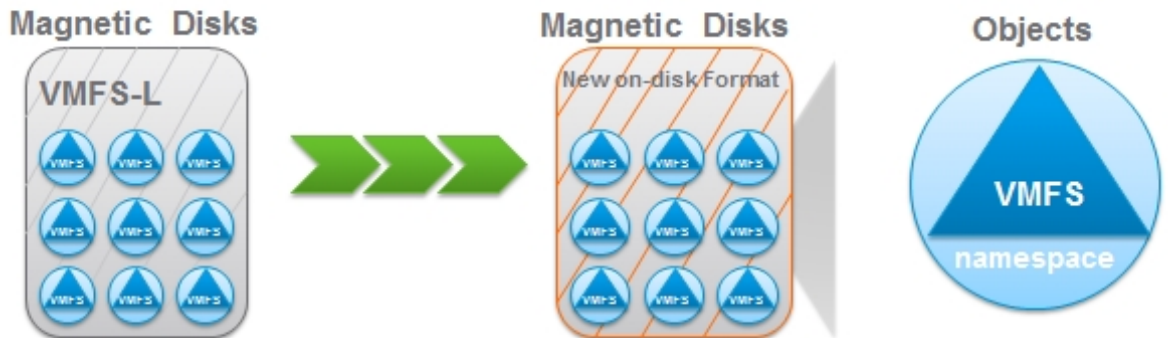
- The object store will continue to mount the volumes from all hosts in a cluster and presents them as a single shared datastore.

- The upgrade to the new on-disk format is optional; the on-disk format for Virtual SAN 5.5 will continue to be su

Fault Domains

- Fault Domains provide the ability to group multiple hosts within a cluster and define failur domains.

- Virtual SAN Fault Domains ensures replicas of VM data is spread across the defined failure

- Fault domains provide the ability to tolerate:
  - Rack failures
  - Storage controller
  - Network failures
  - Power failure
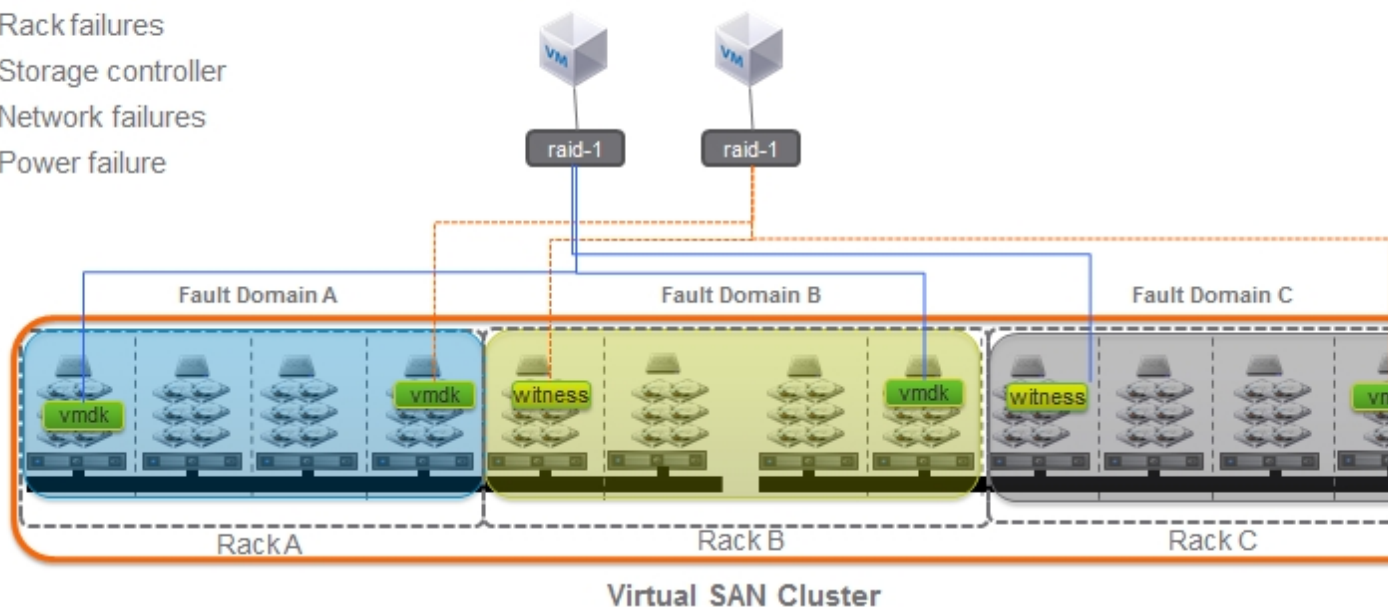
Fault Domains

■ In Virtual SAN 5.5 assumed different hosts have independent failure behavior.

   ■ For FTT=n, VSAN creates (n+1) replicas on (n+1) unique hosts

■ Failure protection example in Virtual SAN 5.5

   ■ Four racks with two hosts each

   ■ FTT=2 to protect against one rack failure requires 3 replicas
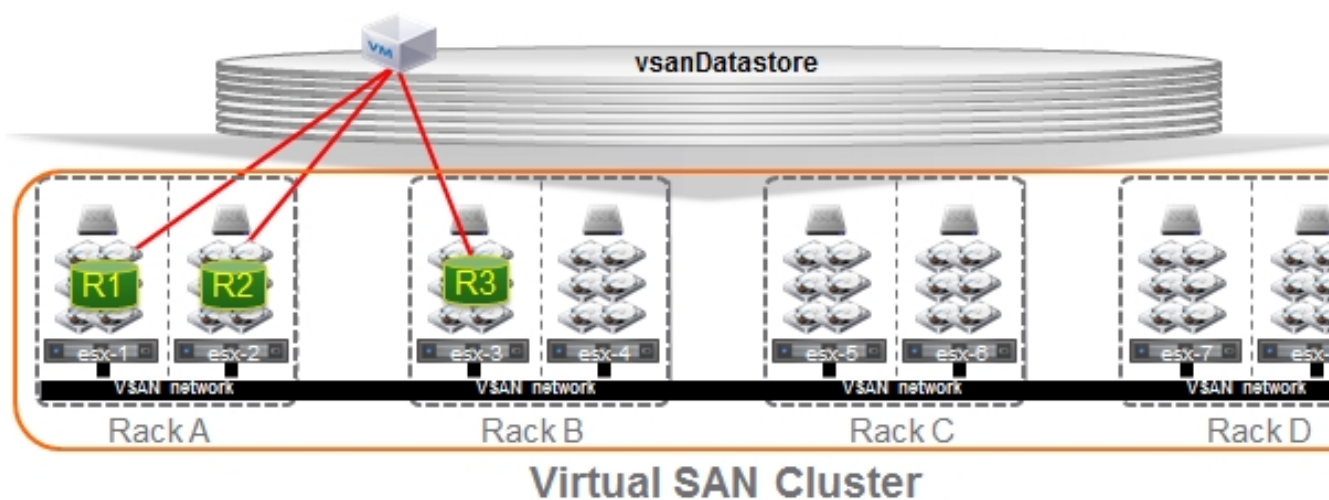
Теперь речь пойдет об инфраструктуре хранения на уровне хостов, а на уровне Fault Domains (в

Fault Domains

- An example of VSAN 6.0 utilizing new fault domain feature with four racks with two hosts each

  - Four defined fault domains

    - **FD1** = esx-1, esx-2   **FD3** = esx-5, esx-6

    - **FD2** = esx-3, esx-4   **FD4** = esx-7, esx-8

  - FTT=1 to protect against one rack failure requires only 2 replicas
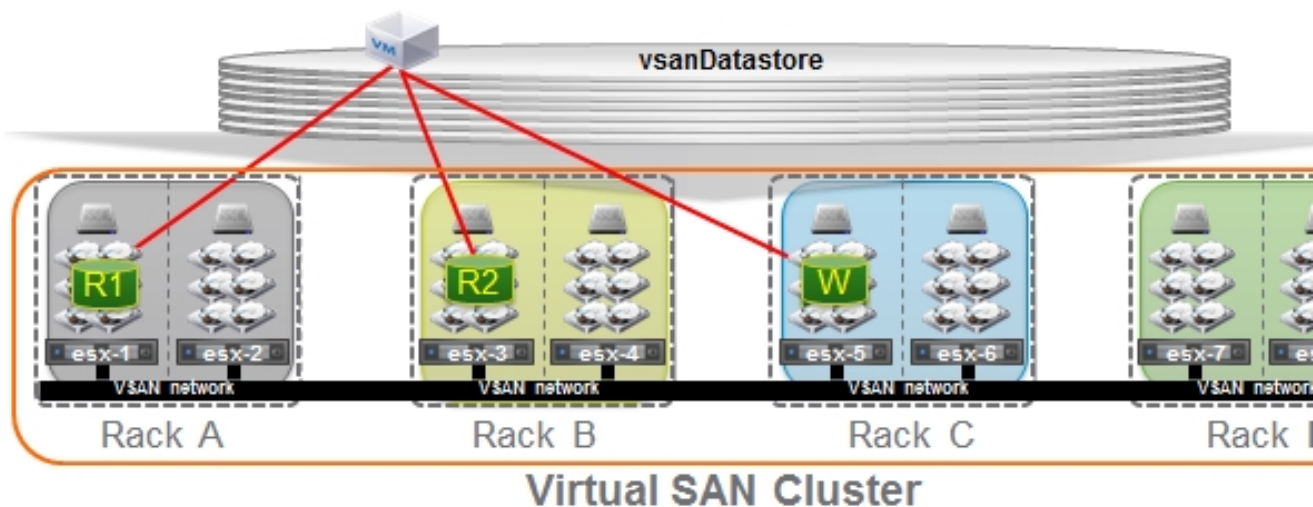
6. Новый механизм работы дисков (Service Ability Functions)

Disks Serviceability

Virtual SAN 6.0 introduces a new disk serviceability feature to easily map the location of magnetic disks and flash based devices from the vSphere Web Client.

www.thin.kiev.ua - Что нового в VMware Virtual SAN 6.0 из состава vSphere 6.0.

Автор:
04.02.15 15:02 -

Network

- 1Gb / 10Gb supported
  - 10Gb shared with NIOC for QoS will support most environments
  - If 1GB then recommend dedicated links for Virtual SAN
  - **Layer 3** network configuration supported in 6.0
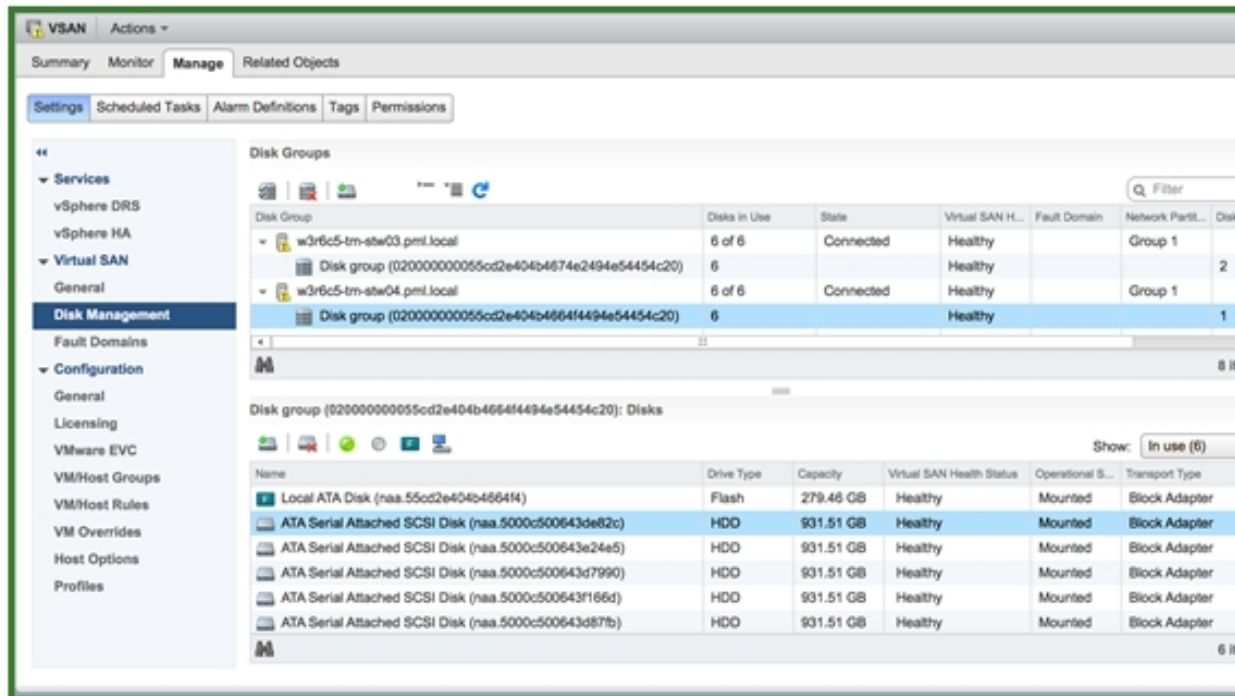
- Jumbo Frames will provide nominal performance increase
  - Enable for greenfield deployments
  - Enable in large deployments to reduce CPU overhead

- Virtual SAN supports both VSS & VDS
  - NetIOC requires VDS

- Network bandwidth performance has more impact on host evacuation, reb times than on workload performance

Performance Snapshots and Clones

- Virtual SAN 6.0 new on-disk format introduces a new VMDK type
  - Virtual SAN 5.5 snapshots were based on vmfsSparse (redo logs)

- vsanSparse based snapshots are expected to deliver performance comparable to native SAN snapshots.
  - vsanSparse takes advantage of the new on-disk format writing and extended caching capabilities to deliver efficient performance.

- All disks in a vsanSparse disk-chain need to be vsanSparse (except base disk).
  - Cannot create linked clones of a VM with vsanSparse snapshots on a non-vsan datastore.
  - If a VM has existing redo log based snapshots, it will continue to get redo log based snapshots until the user consolidates and deletes all current snapshots.
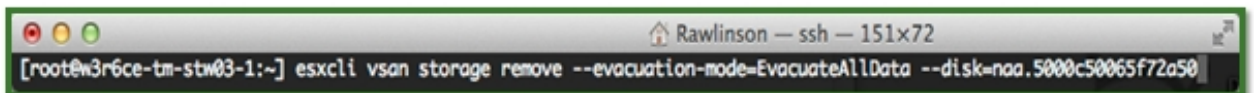
New on-disk format

snapshots

cl

Автор:
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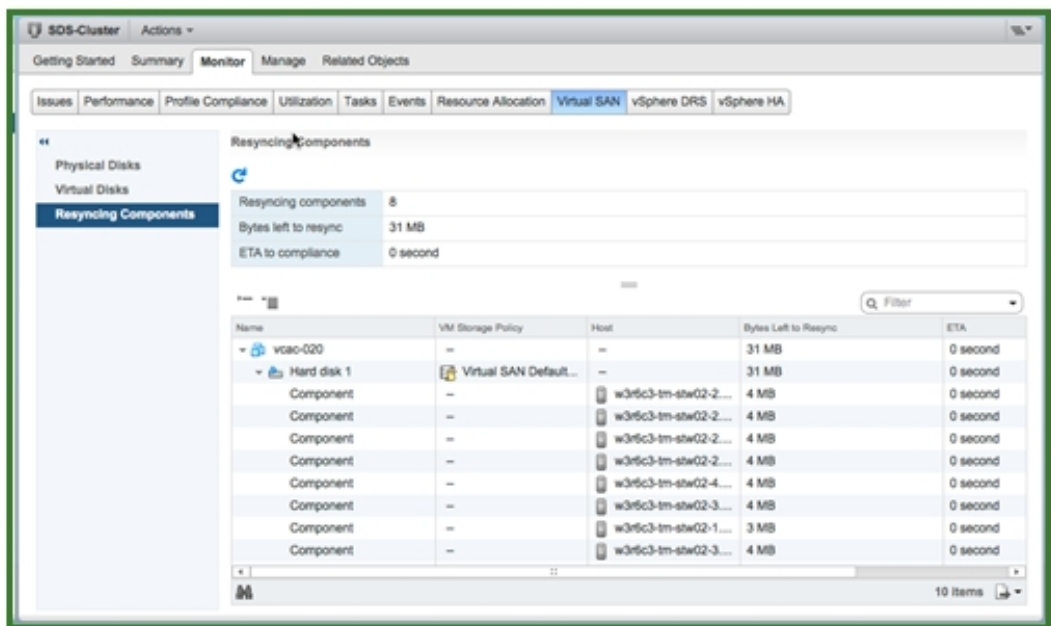
Disk/Disk Group Evacuation

- In Virtual SAN 5.5 in order to remove a disk/disk group without data lost, hosts were placed in maintenance mode with the full data evacuation mode from all disk/disk groups.

- Virtual SAN 6.0 Introduces the support and ability to evacuate data from individual disk/disk gro before removing a disk/disk group from the Virtual SAN.

- Supported in the UI, esxcli and RVC.

- Check box in the "Remove disk/disk group" UI screen.

Remove Disk

Disk "ATA Serial Attached SCSI Disk (naa.5000c500644fe3... about to be removed from the disk group "020000000055cd2e404b4db33b494e54454c20".

⚠ Unless the data on the disk(s) is evacuated first, removing t disk(s) might result in disrupting working VMs.

☑ Evacuate data ⓘ

Remove disk?

[Yes]   [No]

```
● ● ●                          ⌂ Rawlinson — ssh — 151×72
[root@w3r6ce-tm-stw03-1:~] esxcli vsan storage remove --evacuation-mode=EvacuateAllData --disk=naa.5000c50065f72a50
```

Resynchronization Status

- Virtual SAN might need to move data around in the background: change policy, host long term/permanent component loss, user triggered reconfig, maintenance mode, et

- UI Resync Dashboard shows the VMs and objects that are resyncing and remaining to sync

| Name	VM Storage Policy	Host	Bytes Left to Resync	ETA
▼ 🔲 vcac-020	–	–	31 MB	0 second
▼ 📁 Hard disk 1	🔲 Virtual SAN Default...	–	31 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-2...	4 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-2...	4 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-2...	4 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-2...	4 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-4...	4 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-3...	4 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-1...	3 MB	0 second
Component	–	🔲 w3r6c3-tm-stw02-3...	4 MB	0 second

Resyncing Components

Resyncing components: 8
Bytes left to resync: 31 MB
ETA to compliance: 0 second

10 items

www.thin.kiev.ua - Что нового в VMware Virtual SAN 6.0 из состава vSphere 6.0.

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04.02.15 15:02 -

File Services with NexentaConnect

- NexentaConnect complements VMware Virtual SAN simplified operating and storage consumption models by:
  - Adding file services (SMB, NFS) on top of Virtual SAN
  - Provide similar ease of management capabilities
  - Leveraging Storage Policy Based Management (SPBM) and underlying storage technologies

- NexentaConnect is used for storing files while VSAN is for virtual machine storage

- Offers vSphere Administrators flexibility and benefits such as
  - Abstracted pool of files services
  - High performance NFS and SMB network shares
  - Live monitoring capabilities
  - Disaster Recovery planning capabilities

vSphere + Virtual SAN

SSD   Hard disks   SSD   Hard disks   SSD

Virtual SAN
Clustered Datastore
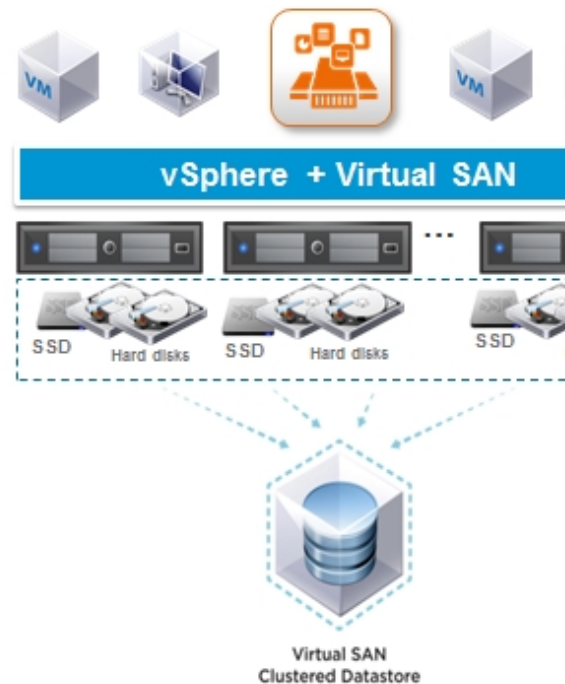
Полномасштабная поддержка командлетов PowerCLI льно, теперь же командлеты

PowerCLI

- PowerCLI 6.0 delivers a set of Virtual SAN related cmdlets (no longer a fling) for manag Virtual SAN.
  - Some of the existing cmdlets were altered to work with Virtual SAN.

- Here is some of the new **cmdlets:**

  - Export-SpbmStoragePolicy
  - Get-SpbmCapability
  - Get-SpbmCompatibleStorage
  - Get-SpbmEntityConfiguration
  - Get-SpbmStoragePolicy
  - Get-VSANDisk
  - Get-VsanDiskGroup
  - Import-SpbmStoragePolicy
  - New-SpbmRule

  - New-SpbmRuleSet
  - New-SpbmStoragePolicy
  - New-VsanDisk
  - New-VsanDiskGroup
  - Remove-SpbmStoragePolicy
  - Remove-VsanDisk
  - Remove-VsanDiskGroup
  - Set-SpbmEntityConfiguration
  - Set-SpbmStoragePolicy

Службы мониторинга жизнедеятельности (VSAN Health Services)

Virtual SAN Health

Virtual SAN Health Services: is designed deliver troubleshooting and health reports vSphere Administrators about Virtual SAN 6.0 subsystems and their dependencies su

– Cluster Health
– Network Health
– Data Health
– Limits Health
– Physical Disk Health