



aCloud
Virtual Storage Deployment Guides
Version 5.8.8R1



Change Log

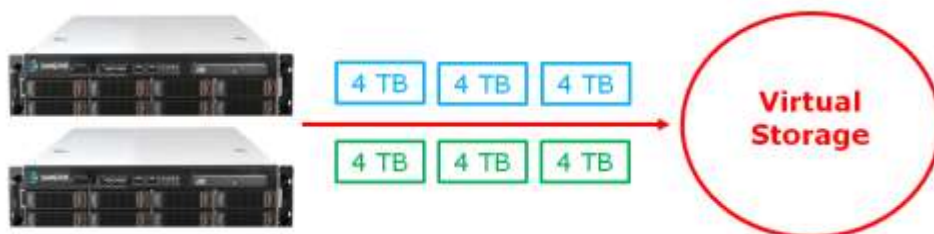
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Chapter 1 Background

Sangfor aCloud virtual storage is the pooling of physical storage from multiple nodes into what appears to be a single storage device that is managed from a central console. It provided data copies across node as well as data tiering and caching technology to ensure high availability and performance on customer production.

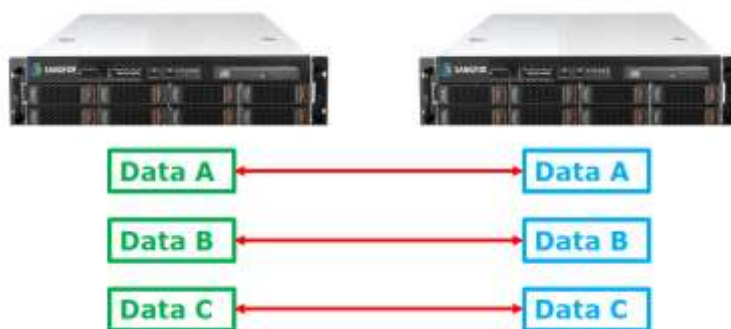


Definition of Virtual Storage

- Minimum 2 nodes to build Virtual Storage
- Integrate all the cluster nodes hard disks into one Virtual Storage
- Virtual Storage is based on Distributed File System
- Storage Virtualization requires aSAN license activated

Limitation of Virtual Storage

- Support 2 data copies only (aCloud 6.0.0)
- One virtual storage must have SSD cache disk (Not necessary for full SSD data disk deployment)
- Number of copies cannot be changed after initialization



There are 3 deployment mode of the aSAN network configuration.

Storage Deployment – Link Aggregation Disabled

The screenshot shows the 'Settings' window for 'Storage Deployment – Link Aggregation Disabled'. It is divided into two steps: '1 Deployment' and '2 Select Storage Network Interface'. Under 'Deployment Mode (for data communication among clustered nodes)', three radio buttons are present: 'Link aggregation disabled' (selected), 'Link aggregation with one switch', and 'Link aggregation with two switches'. A diagram on the left shows a 'Storage Area Network' with three server nodes connected to a central switch, which is connected to an Internet cloud. A red box highlights a note: 'If there are only two nodes, simply use a cable to connect one another, without using any switch.' The right side of the window lists 'Benefits' (Independent storage area network is higher in stability), 'Drawbacks' (Storage on the node will be inaccessible if one link fails), and 'Notes' (Storage area network (SAN) is used for data transmission across nodes. Please connect the objects with cables according to the diagram. The switch may be layer 2 switch, requiring no change be made.). At the bottom, there are 'Next' and 'Cancel' buttons.

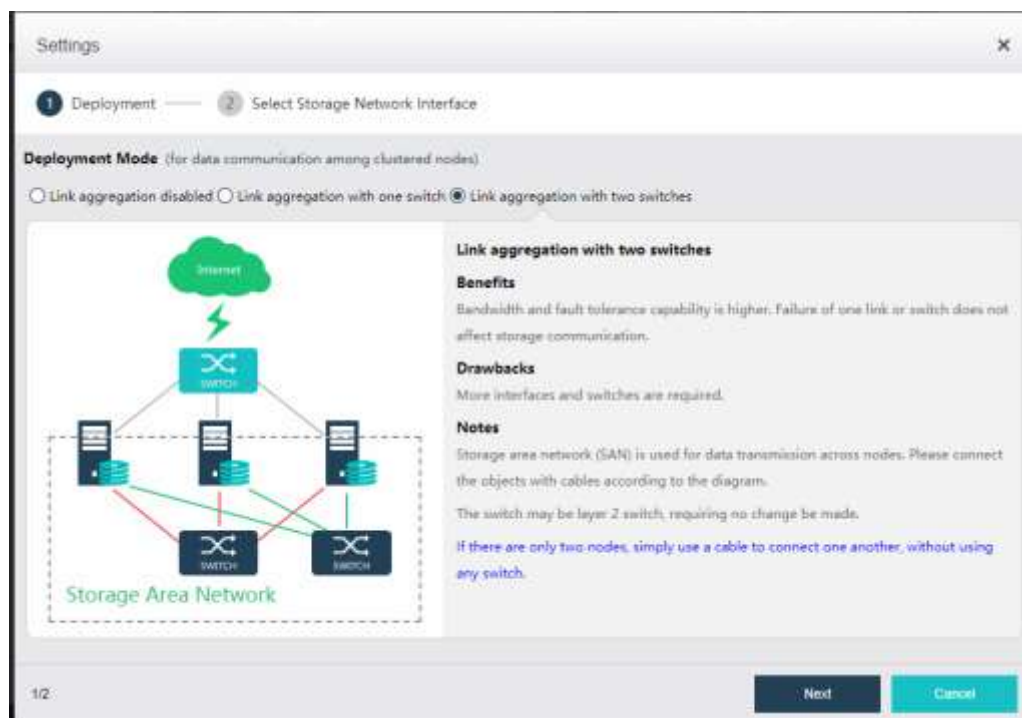
Storage Deployment – Link Aggregation with One Switch

- Increase high availability of the network condition, it does not affect when one of the interface failure

The screenshot shows the 'Settings' window for 'Storage Deployment – Link Aggregation with One Switch'. It is divided into two steps: '1 Deployment' and '2 Select Storage Network Interface'. Under 'Deployment Mode (for data communication among clustered nodes)', three radio buttons are present: 'Link aggregation disabled', 'Link aggregation with one switch' (selected), and 'Link aggregation with two switches'. A diagram on the left shows a 'Storage Area Network' with three server nodes connected to a central switch, which is connected to an Internet cloud. The right side of the window lists 'Benefits' (It improves fault tolerance capabilities of storage area network, because failure of one link will not exert any impacts on the virtual storage), 'Drawbacks' (Once switch fails, the virtual storage would get offline), and 'Notes' (Storage area network (SAN) is used for data transmission across nodes. Please connect the objects with cables according to the diagram. The switch may be layer 2 switch, requiring no change be made.). At the bottom, there are 'Next' and 'Cancel' buttons.

Storage Deployment – Link Aggregation with Two Switch

- Does not affect when switch or interface failure
- Recommend for 2 nodes interfaces direct connection



Types of disk usage in Sangfor Virtual Storage

Types of Disk – Cache Disk

- Must use SSD as Cache Disk
- Recommend SSD size with 256GB and above
- Recommend cache/data disk number ratio 1:3 (SSD: HDD)
- Recommend cache/data disk volume ratio 1:10 (Cannot lower than 1:20)
- Suggest to use 512GB SSD if each Data Disk is more than 2TB
- Used to speed up read and write data

Types of Disk – Data Disk

- Recommend to use HDD as Data Disk (Supports SSD, SAS & NVMe PCIe)
- HDD Enterprise Edition and >7200 RPM
- Form Virtual Storage with all Cluster Data Disks
- VM & Data will be stored in Virtual Storage

Types of Disk – Spare Disk

- A disk that are standby for use when a Data Disk fails



Chapter 2 Configuration guides

Setup Storage Network Interface

Go to Storage >Virtual storage >Advanced >Storage and click **Settings** to choose deployment.

Advanced

Data Balancing
Data Rebuilding
▶ **Storage Area Network**
VM Running Across Datastores
Intelligent Rate Restriction
In-memory Read Caching

ⓘ Independent storage area network is more efficient in data transmission and consistent in data sync. It requires each host to provide a separate interface as storage network interface.

Deployment Mode: Link aggregation with one switch Settings

Node Name	Physical Interface	Interface IP	Negotiated Rate	MTU	Status
192.168.20.36	eth3, eth4	10.251.51.2	1000Mb/s	1500	✓ Normal
192.168.20.37	eth3, eth4	10.251.51.1	1000Mb/s	1500	✓ Normal

IP Address: 192.168.20.1 Test Connectivity

OK Cancel

Settings [X]

1 Deployment — 2 Select Storage Network Interface

Deployment Mode (for data communication among clustered nodes)

Link aggregation disabled Link aggregation with one switch Link aggregation with two switches

Storage Area Network

Link aggregation disabled

Benefits
Independent storage area network is higher in stability.

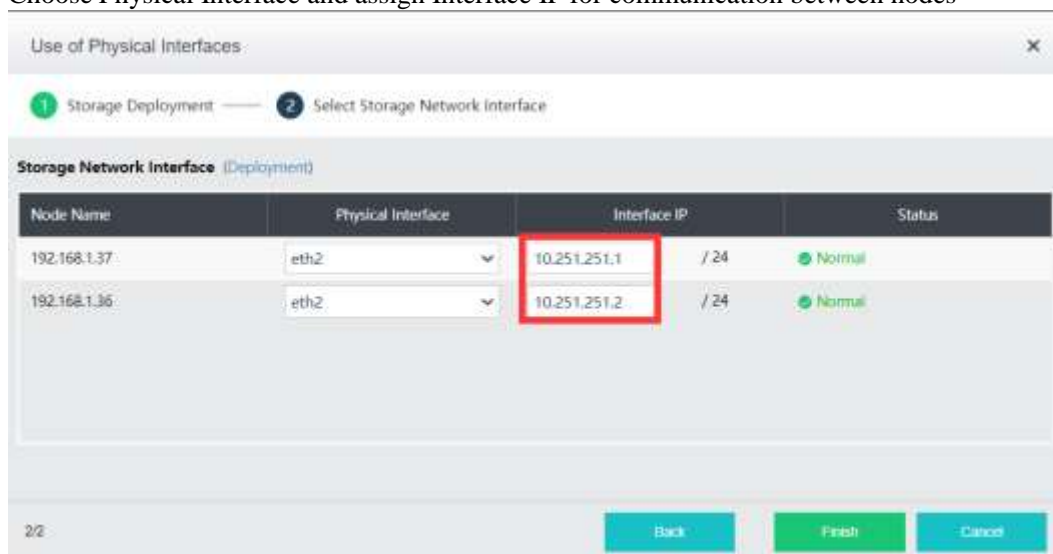
Drawbacks
Storage on the node will be inaccessible if one link fails.

Notes
Storage area network (SAN) is used for data transmission across nodes. Please connect the objects with cables according to the diagram.
The switch may be layer 2 switch, requiring no change be made.
If there are only two nodes, simply use a cable to connect one another, without using any switch.

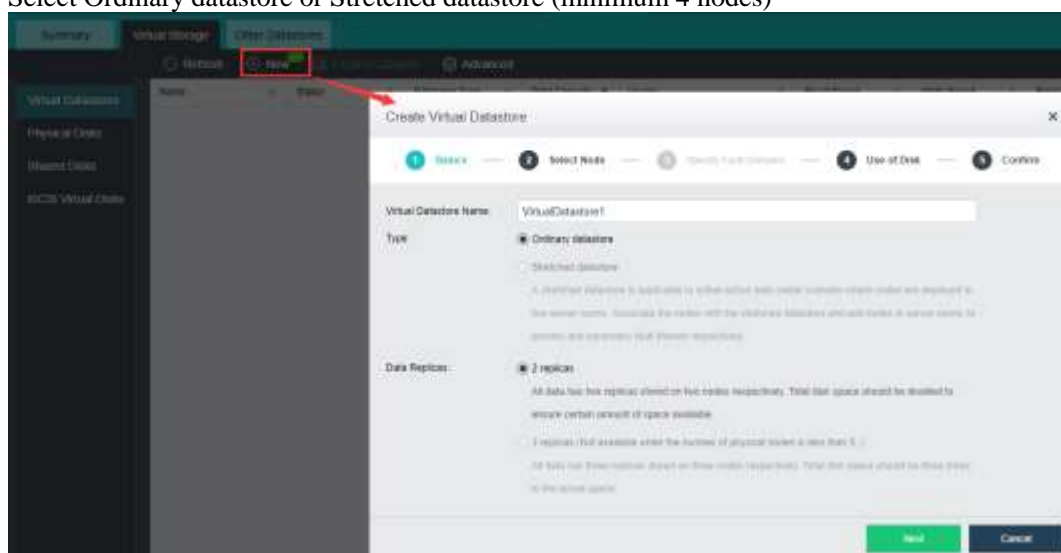
1/2 Next Cancel

Select Storage Network Interface

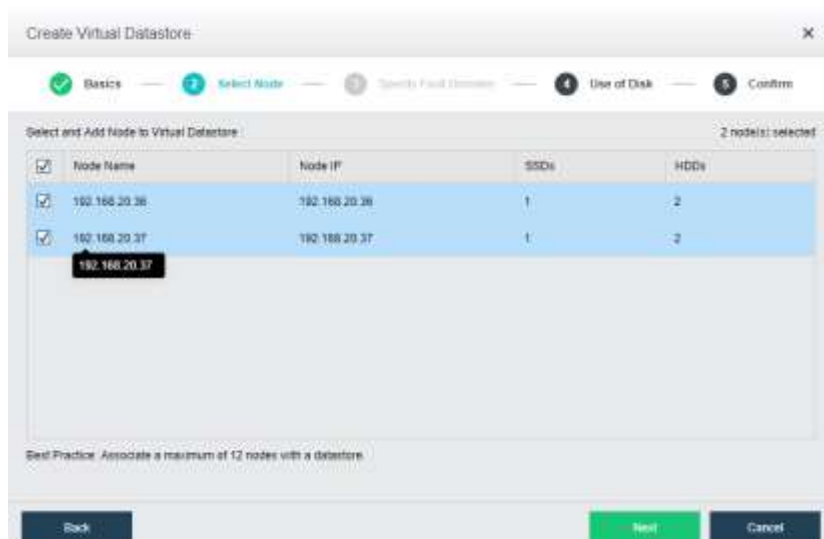
1. Choose Physical Interface and assign Interface IP for communication between nodes



2. Click “New > Create Virtual Datastore” after complete setup Storage Network Interface
3. Select Ordinary datastore or Stretched datastore (minimum 4 nodes)

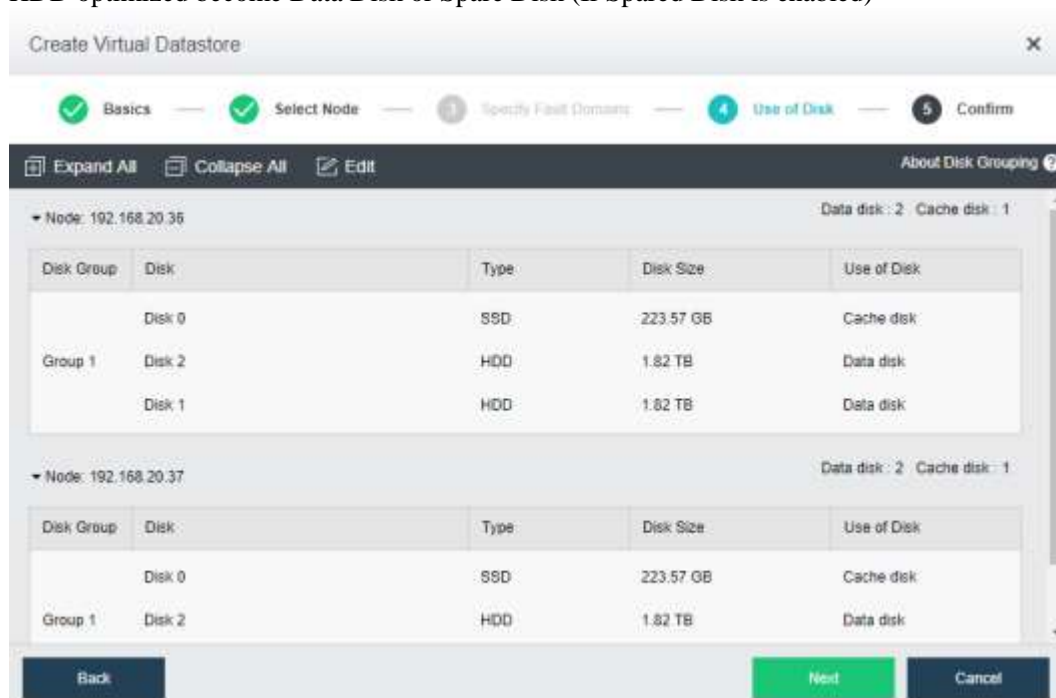


4. Select nodes to join Virtual Datastore



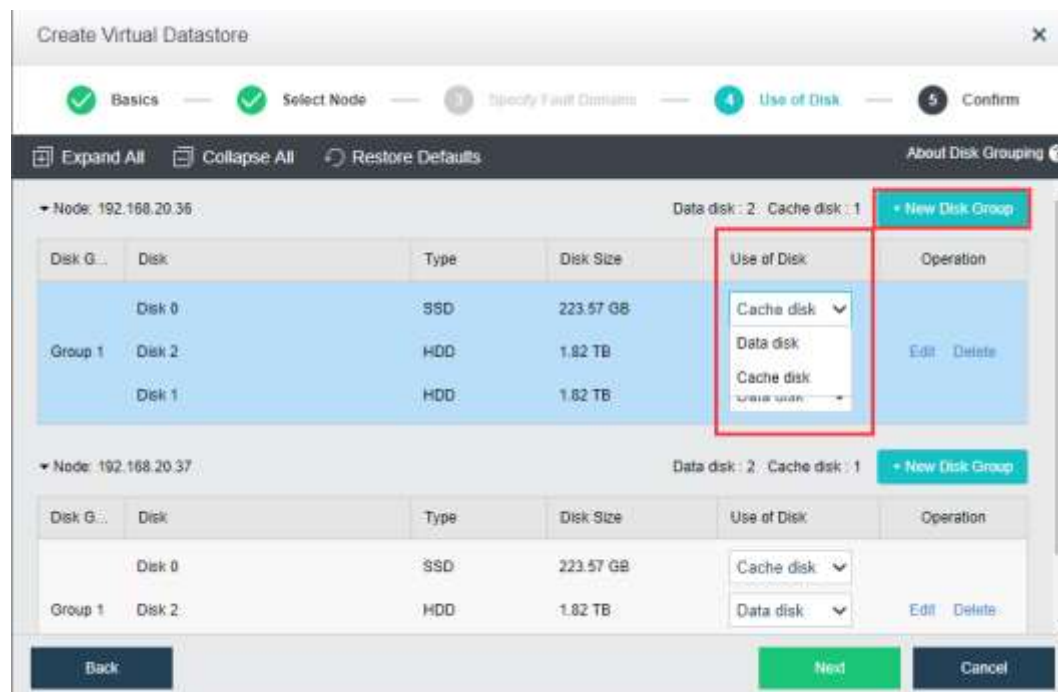
5. Configure disk usage

- SSD optimized to become Cache Disk
- HDD optimized become Data Disk or Spare Disk (If Spared Disk is enabled)

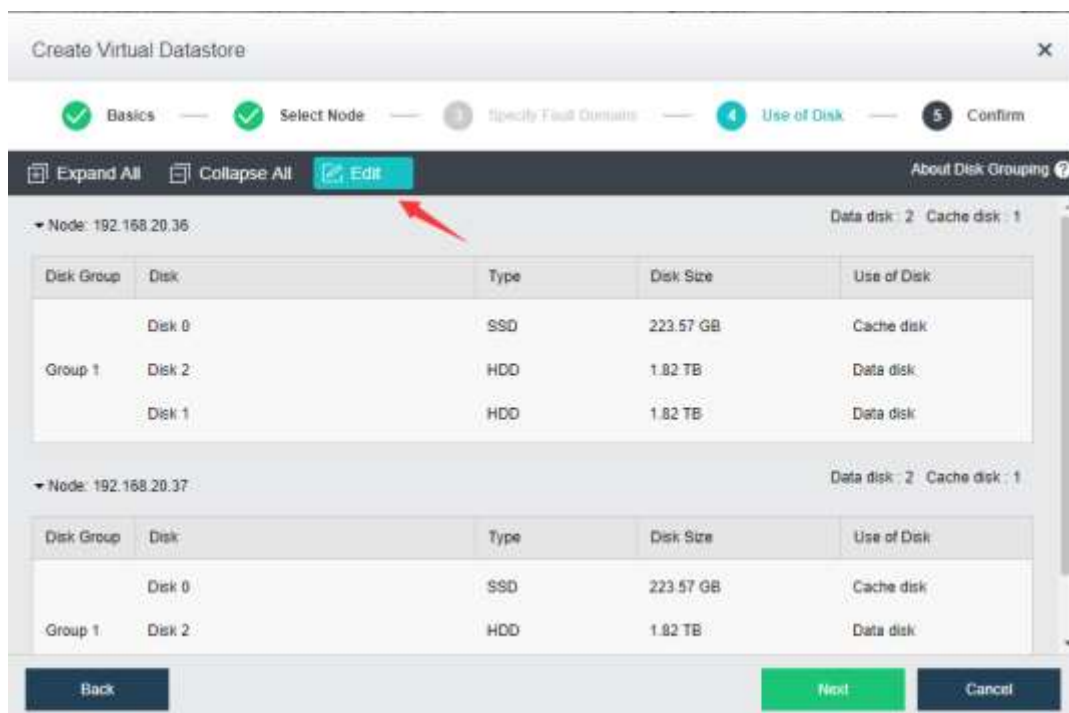


6. Modify optimized disk grouping (Optional)

Click on edit to modify system recommended disk grouping.



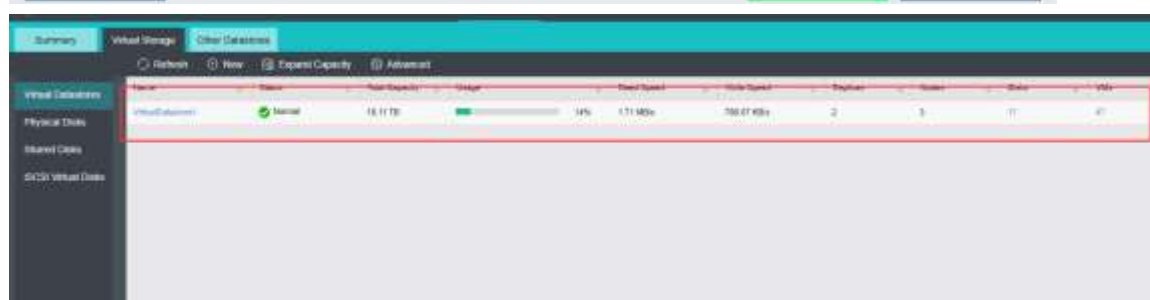
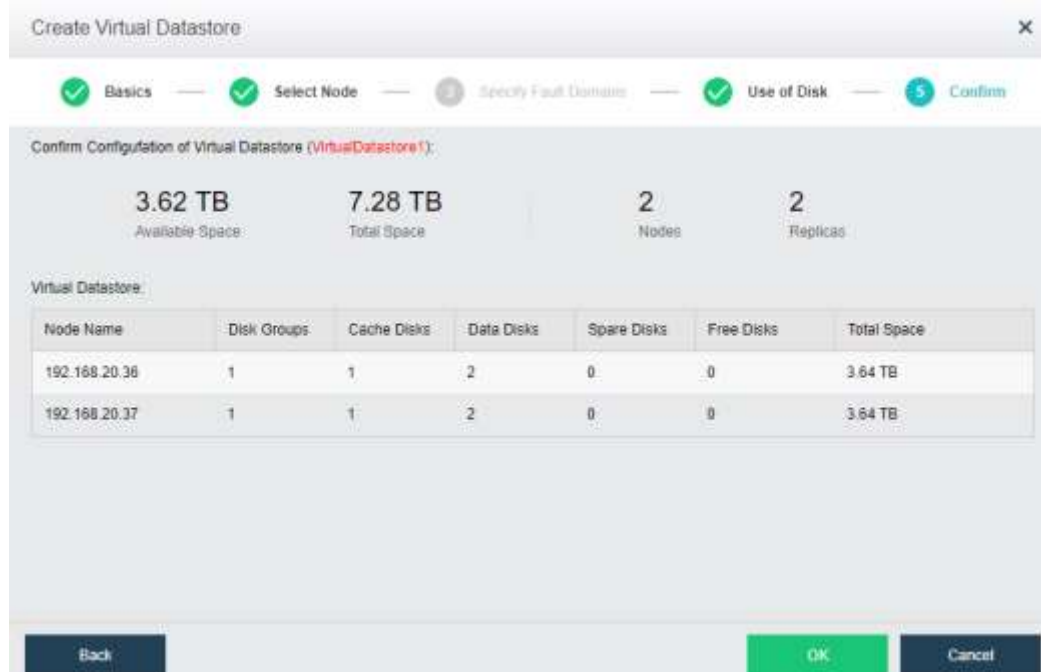
Select the use of disk based on available disk.



If the use of disk recognize as “free”, precede delete disk group and add new disk group again

Note: A virtual storage can have one or more disk group, used to optimize cache disk and data disk ratio volume.

7. Review virtual storage summary and enter admin password to confirm the operation



Data Disk Available Storage Calculation

2 Copies Virtual Storage

Total Data Disk / 2 * 85% = Available Storage

24TB / 2 * 85% = Around 10.2TB

Successfully Initialized Virtual Storage

Chapter 3 Precaution

1. If aCloud host is aServer hardware, it must be use hard disk/SSD purchased from Sangfor representative. It is not allowed to add third party disks to form virtual storage.
2. Volume of cache disk cannot lower than 5% ratio of total volume data disk in a disk group



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