Dedicated Distributed Storage Service

FAQs

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Contents

1 What Are the Risks of Not Expanding the Storage Pool Capacity?

In the process of using a DSS storage pool, when the ratio of **Used Capacity (GB)** to **Total Available Capacity (GB)** exceeds 75%, the system will remind you to expand the capacity. If the utilization stays high all the time, the DSS storage pool will be write protected, increasing the possibility of service interruption. It is recommended that you expand the capacity when the storage utilization reaches 75% to ensure that there is enough space available on the disk.

2 How Many Statuses Does a Storage Pool Have?

A storage pool has several statuses. **Table 2-1** lists the meaning of each status and the operations for each status.

Table 2-1 Storage pool status

Status	Description	Allowed Operation
Deploying	The storage pool is being deployed.	-
Available	The storage pool is successfully created, and you can create disks in the storage pool.	Creating disks
Expanding	The storage pool capacity is being expanded and cannot be used.	-

3 How Many Statuses Does a Disk Have?

A disk has several statuses. **Table 3-1** lists the meaning of each status and the operations for each status.

Table 3-1 Disk status description

Status	Description	Allowed Operation
In-use	The disk is attached to a server and in use.	• Detaching • Creating backups **NOTE** If a shared disk is in the **In-use** state, the disk can be attached.
Available	The disk is successfully created and has not been attached to any server.	• Attaching • Expanding • Deleting
Creating	The disk is being created.	None
Attaching	The disk is being attached to a server.	None
Detaching	The disk is being detached from a server.	None
Deleting	The disk is being deleted.	None
Expanding	The capacity of the disk is being expanded.	None
Uploading	Data on the disk is being uploaded to an image. This status occurs when you create an image from a server.	None
Downloading	Data is being downloaded from an image to the disk. This status occurs when you create a server.	None
Error	An error occurs when you try to create a disk.	Deleting

Status	Description	Allowed Operation
Deletion failed	An error occurs when you try to delete a disk.	No operations can be performed.
Expansion failed	An error occurs when you try to expand the capacity of a disk.	Deleting

NOTE

If a DSS disk status is **Error**, **Deletion failed**, or **Expansion failed**, you can rectify the error by following the steps provided in **What Should I Do If an Error Occurs on My DSS Disk?**

4 Troubleshooting and Impacts on the DSS Usage

- Case one

  If server or disk failures cause a disk being removed from the storage pool, the total available capacity becomes smaller. After the fault is rectified, the total available capacity can be restored to the original value.

- Case two

  If a server or disk is faulty, and no disk is removed from the storage pool, the storage pool is degraded, which does not affect the use of the storage pool. After the fault is rectified, the storage pool becomes normal.

  NOTE

  Storage pool degradation refers to that the number of data copies for some data in a storage pool is reduced from three copies to two copies and cannot be automatically restored without manual troubleshooting.

- Case three

  If a server or disk is faulty, your services may be interrupted. For example, if the used capacity is 98% and a disk is removed due to server or disk failures, the total available capacity decreases. As a result, the proportion of the used capacity to the total available capacity reaches nearly 100%. The write protection is enabled for the storage pool, and your services are interrupted.

5 Can I Attach a Disk to Multiple Servers?

A non-shared disk can be attached to one server only.

A shared disk can be attached to a maximum of 16 servers.

NOTE

Shared disks are a type of DSS disks and can be attached to multiple servers.

6 Will Data in the DSS Disk Be Lost When the DSS Disk Is Detached?

Not necessarily.

To prevent data loss when you detach a DSS disk, perform the following operations:

1. Stop the ECS to which the to-be-detached DSS disk has been attached.
2. After the ECS has been stopped, detach the DSS disk.

7 What Should I Do If an Error Occurs on My DSS Disk?

If an error occurs, the disk may show one of the states listed in **Table 7-1**. Take the following measures to handle the exceptions.

Table 7-1 Solutions for disk errors

Error Status	Handling Suggestion
Error	Delete the disk in the **Error** state and create another one.
Deletion failed	Contact customer service.
Expansion failed	Customer service personnel will contact you and help you handle this error. Do not perform any operations on the disk before they contact you. If you require that the error be handled as soon as possible, contact customer service.

8 How Can I Test DSS Disk Performance?

Precautions

In the DSS disk performance test, if the start cylinder number is not 4-KB aligned, the DSS disk performance will be greatly affected. Ensure that the start cylinder number is 4-KB aligned before you start the test.

Windows

The method for testing a DSS disk varies depending on the in-use server OS. This part uses Windows 7 Professional 64-bit as the example OS to describe how to test the DSS disk performance. For other Windows OSs, see the corresponding OS documents.

Install performance measurement tool Iometer before the test.

1. Log in to the server.
2. Press **win+R** to open the **Run** window. Enter **msinfo32** and click **OK**

   The system information window is displayed.
3. Choose **components** > **storage** > **disks**. In the right pane, view the partition offset value.
   - If 4096 can be divided by the parameter value, the partition is 4-KB aligned. Go to **4**.
   - If 4096 cannot be divided by the parameter value, the partition is not 4-KB aligned. If you need to continue to perform the test, ensure the 4-KB alignment for the partition.

   NOTICE

   Data losses will occur when you delete the partition and select another start cylinder number for the 4-KB alignment. Exercise caution when perform such an operation.
4. Use Iometer to test the DSS disk performance. For details, see the Iometer product document.
5. When the disk IOPS and throughput are tested, the parameter configurations for Iometer and fio are the same. For details, see **Table 8-1**.

Linux

When you use an old version Linux OS, for example CentOS 6.5, and run **fdisk** to create partitions, the default start cylinder number is not 4-KB aligned, which will greatly affect the test performance. For that reason, if such an OS is used, you are advised to select a new start cylinder number that is 4-KB aligned when creating partitions.

The method for testing a DSS disk varies depending on the in-use server OS. This section uses CentOS 7.2 64-bit as the example OS to describe how to test the disk performance. For other Linux OSs, see the corresponding OS documents.

Install performance measurement tool fio before the test.

1. Log in to the server and switch to user **root**.
2. Before you start the test, run the following command to check whether the start cylinder number is 4-KB aligned:

   fdisk -lu

   Information similar to the following is displayed:

```
[root@ecs-centos sdc]# fdisk -lu

Disk /dev/xvda: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x7db77aa5

   Device Boot      Start         End      Blocks   Id  System
/dev/xvda1   *        2048    20968919    10483436   83  Linux

Disk /dev/xvdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes


Disk /dev/xvdc: 53.7 GB, 53687091200 bytes, 104857600 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x3cf3265c

   Device Boot      Start         End      Blocks   Id  System
/dev/xvdc1            2048    41943039    20970496   83  Linux
```

   - If the start cylinder number can be divided by 8, the partition is 4-KB aligned. Go to **3** to start the test.
   - If the start cylinder number can be divided by 8, the partition is not 4-KB aligned. If you need to continue to perform the test, select another start cylinder number to ensure the 4-KB alignment for the partition.

NOTICE

Data losses will occur when you delete the partition and select another start cylinder number for the 4-KB alignment. Exercise caution when perform such an operation.

3. Run commands and use fio to test the disk performance:
   - To test random write IOPS, run **fio -direct=***1* **-iodepth=***128* **-rw=***randwrite* **-ioengine=***libaio* **-bs=***8k* **-size=***10G* **-numjobs=***1* **-runtime=***600* **-group_reporting -filename=***/dev/[device]* **-name=***Rand_Write_IOPS_Test*.
   - To test random read IOPS, run **fio -direct=***1* **-iodepth=***128* **-rw=***randread* **-ioengine=***libaio* **-bs=***8k* **-size=***10G* **-numjobs=***1* **-runtime=***600* **-group_reporting -filename=***/dev/[device]* **-name=***Rand_Read_IOPS_Test*.
   - To test write throughput, run **fio -direct=***1* **-iodepth=***32* **-rw=***write* **-ioengine=***libaio* **-bs=***1024k* **-size=***10G* **-numjobs=***1* **-runtime=***600* **-group_reporting -filename=***/dev/[device]* **-name=***Write_BandWidth_Test*.
   - To test read throughput, run **fio -direct=***1* **-iodepth=***32* **-rw=***read* **-ioengine=***libaio* **-bs=***1024k* **-size=***10G* **-numjobs=***1* **-runtime=***600* **-group_reporting -filename=***/dev/[device]* **-name=***Read_BandWidth_Test*.
   - **Table 8-1** lists the fio test parameters.

Table 8-1 Parameter description

Parameter	Description
direct	Defines whether direct I/O is used. The values are as follows: • If the value is set to **0**, buffered I/O is used. • If the value is set to **1**, direct I/O is used.
iodepth	Defines the I/O queue depth. The default value is **1**. The defined queue depth refers to the queue depth of each thread. That said, when multiple threads are tested, the parameter defines the queue depth of each thread. Total fio concurrent I/Os = iodepth x numjobs
rw	Defines the test read/write policy. The parameter value can be as follows: • Random read: **randread** • Random write: **randwrite** • Sequential read: **read** • Sequential write: **write** • Mixed random read/write: **randrw0**

Parameter	Description
ioengine	Defines how fio delivers the I/O request (synchronously or asynchronously). ● Synchronous I/O: Only one I/O request is delivered at a time, and the response is returned after the kernel has processed the request. That said, the single-thread I/O queue depth is always less than 1, and multi-thread concurrent processing can be used to handle such issues. Normally, 16 to 32 concurrent working threads fully occupy the I/O queue depth. ● Asynchronous I/O: Multiple I/O requests are delivered using libaio at a time. Wait for the process to complete and reduce the interaction times to improve efficiency.
bs	Defines the I/O block size. The unit can be KB, Kb, MB, and Mb, and the default value is 4 KB.
size	Defines the amount of data processed by the test I/Os. If parameters, such as **runtime**, are not specified, the test ends until fio has processed all the specified data amount. The value can be a number with a unit or percentage. A number with a unit indicates the read/write data amount, for example **size=10G**, indicating a 10-GB read/write data amount. A percentage indicates the ratio of read/write data amount to the capacity of total files, for example **size=20%**, indicating the read/write data amount takes 20% of the total file space.
numjobs	Defines the number of concurrent threads.
runtime	Defines the test time. If this parameter is not specified, the test ends until the specified data amount is processed by the block size defined using parameter **size**.
group_reporting	Defines the test result display mode. The parameter value displays the statistics on a single thread instead of that on all jobs.
filename	Defines the name of the test file or device. ● If a file is specified, the performance of the file system is tested. Example: **-filename=/opt/fiotest/fiotest.txt** ● If a device name is specified, the performance of the raw disk is tested. Example: **-filename=/dev/vdb1** **NOTICE** If the test is performed on a disk already has partitions and file systems created as well as data on it, user parameter **filename** to specify a file so that the original file system is not damaged and the data is not overwritten.

Parameter	Description
name	Defines the test task name.

9 What Are the Restrictions When I Attach a DSS Disk to an ECS?

- The DSS disk and the target ECS must be located in the same AZ.
- For a non-shared disk, the DSS disk must be in **Available** state.

  For a shared disk, the target ECS must be in the **In-use** or **Available** state.
- The target ECS must be in **Running** or **Stopped** state.
- A frozen DSS disk cannot be attached to an ECS.
- A SCSI DSS disk cannot be used as an ECS system disk.
- For ECSs charged in yearly/monthly mode:

  If you detach the system disk purchased when you buy an ECS and want to continue using it as a system disk, you can only attach it to an ECS that has the same specifications as those of the original ECS. If you want to use it as a data disk, you can attach it to any ECS.

  If you detach the non-shared data disk purchased when you create an ECS and want to attach it again, you can only attach it to the original ECS as a data disk.

10 What Should I Take Into Consideration When Detaching a Disk from a Server?

Scenarios

A disk attached to an ECS can function as a system disk or data disk.

- Disks mounted on **/dev/sda** or **/dev/vda** function as system disks. Currently, system disks must be detached offline. In this case, you must stop the ECS before detaching a system disk.
- Disks mounted on other mount points functions as data disks. In addition to offline detachment, a data disk can also be detached online if the server OS supports online detachment. In this case, you do not need to stop the running ECS.

This FAQ describes how to detach a disk from a running ECS.

Constraints

- The disk to be detached must be mounted on a mount point other than **/dev/sda** or **/dev/vda**.

  Disks mounted on **/dev/sda** or **/dev/vda** are system disks and cannot be detached from running ECSs.
- Before detaching a disk from a running Windows ECS, make sure that VMTools have been installed on the ECS and that the tools are running properly.
- Before detaching a disk from a running Windows ECS, ensure that no program is reading data from or writing data to the disk. Otherwise, data will be lost.
- SCSI disks cannot be detached from running Windows ECSs.
- Before detaching a disk from a running Linux ECS, you must log in to the ECS and run the **umount** command to cancel the association between the disk and the file system. In addition, ensure that no program is reading data from or writing data to the disk. Otherwise, the disk will fail to be detached.
- The disk is not locked.

  A locked disk cannot be detached.

OSs Supporting Disk Detachment from a Running ECS

OSs supporting disk detachment from a running ECS include two parts:

- For the first part, see **Formats and OSs Supported for External Image Files**.
- For the second part, see **Table 10-1**.

Table 10-1 OSs supporting disk detachment from a running ECS

OS	Version
CentOS	7.3 64bit
	7.2 64bit
	6.8 64bit
	6.7 64bit
Debian	8.6.0 64bit
	8.5.0 64bit
Fedora	25 64bit
	24 64bit
SUSE	SUSE Linux Enterprise Server 12 SP2 64bit
	SUSE Linux Enterprise Server 12 SP1 64bit
	SUSE Linux Enterprise Server 11 SP4 64bit
	SUSE Linux Enterprise Server 12 64bit
OpenSUSE	42.2 64bit
	42.1 64bit
Oracle Linux Server release	7.3 64bit
	7.2 64bit
	6.8 64bit
	6.7 64bit
Ubuntu Server	16.04 64bit
	14.04 64bit
	14.04.4 64bit
Windows (SCSI disks cannot be detached from a running ECS.)	Windows Server 2008 R2 Enterprise 64bit
	Windows Server 2012 R2 Standard 64bit
	Windows Server 2016 R2 Standard 64bit
Redhat Linux Enterprise	7.3 64bit

OS	Version
	6.8 64bit

NOTE

Online detachment is not supported by the ECSs running OSs not listed in the preceding table. For such ECSs, stop the ECSs before detaching disks from them to prevent any possible problems from occurring.

11 Why My Disk Cannot Be Attached to a Server?

If your disk cannot be attached, verify that your disk meets the following conditions:

- The disk is in the **Available** state if it is a non-shared disk.
- The disk is in the **Available** or **In-use** state if it is a shared disk, and the maximum number of servers that the disk can be attached to is not reached.
- The disk is not added to any replication pair in SDRS. If it has been added to a replication pair, delete the replication pair and try again.
- The disk is not frozen.
- The disk is not locked by any service.

12 Can the Disk Space Usage Be Reduced If I Delete Files on a Server?

No.

When you delete a file, the system adds a deletion label to the header of the file. This does not reduce the disk space usage.

