

# Scalable File Service Turbo

## FAQs

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# 1 SFS Turbo Concepts

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## 1.1 What Is SFS Turbo?

Scalable File Service Turbo (SFS Turbo) provides scalable, high-performance file storage. With SFS Turbo, you can enjoy shared file access spanning multiple ECSs. SFS Turbo supports NFSv3. You can seamlessly integrate existing applications and tools with SFS Turbo.

SFS Turbo provides an easy-to-use graphical user interface (GUI). On the GUI, users can create and configure file systems, saving effort in deploying, expanding, and optimizing file systems.

In addition, SFS Turbo provides high reliability and availability. SFS Turbo file systems can be elastically expanded, and perform better as their capacities grow. SFS Turbo is suitable for a wide range of scenarios, including enterprise office, high-performance websites, and software development.

## 1.2 What Access Protocols Does SFS Turbo Support?

SFS Turbo supports the standard NFSv3 protocol.

# 2 SFS Turbo Specifications

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## 2.1 What Is the Maximum Size of a File That Can Be Stored in an SFS Turbo File System?

For a 20 MB/s/TiB, 40 MB/s/TiB, 125 MB/s/TiB, 250 MB/s/TiB, 500 MB/s/TiB, or 1,000 MB/s/TiB file system, the maximum supported size of a file is 320 TB. For a Standard, Standard-Enhanced (discontinued), Performance, or Performance-Enhanced (discontinued) file system, the maximum supported size of a file is 16 TB.

## 2.2 How Many SFS Turbo File Systems Can I Create with One Account?

Only one SFS Turbo file system can be created at a time. To create more than 20 SFS Turbo file systems, increase the quota by clicking [Service Tickets](#) in the upper right corner of the console to submit a service ticket.

You can create a maximum of 20 SFS Turbo file systems with one account.

# 3 SFS Turbo Billing

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## 3.1 How Do I Purchase SFS Turbo?

SFS Turbo uses pay-per-use billing by default, which means that you are billed by the storage capacity you select during purchase and the duration of use. You can also buy a yearly or monthly package based on how much space you require and for how long you will use the resources. In case of arrears, you need to renew the resources within 15 days, or data in your file systems will be cleared.

### Pay-per-use

**Step 1** Sign up for an account.

1. Visit the [Huawei Cloud website](#).
2. In the upper right corner of the page, click **Sign Up**.
3. Complete the registration as instructed.

**Step 2** Top up your account.

1. Log in to the console.
2. Click **Top Up** and the top-up page is displayed.
3. Top up the account as prompted.
4. After the top-up is complete, close the dialog box and go back to the console homepage.

**Step 3** Use SFS Turbo.

1. Go to the SFS Turbo console.
2. Click **Create File System**.

#### NOTE

SFS Turbo file systems are billed by the storage capacity you select during purchase and the duration of use.

----End

## Yearly/Monthly Subscription

You can create a yearly/monthly SFS Turbo file system or change the file system billing mode from pay-per-use to yearly/monthly after creation.

**Method 1:** Buy a yearly/monthly file system by following the instructions in [Creating a File System](#) and set the billing mode to **Yearly/Monthly**.

**Method 2:** In the **Operation** column of a pay-per-use file system, click **Change to Yearly/Monthly** to change the billing mode to yearly/monthly.

## 3.2 How Do I Renew the Service?

Your account may be frozen or order be canceled if outstanding bills are not paid in time.

### Procedure

**Step 1** Log in to the console.

**Step 2** In the upper right corner of the page, choose **Billing & Costs > Renewal**.

**Step 3** On the **Renewals** page, click **Renew** in the **Operation** column for the desired resource.

**Step 4** Pay for the order as prompted.

#### NOTE

- After the payment, the system automatically pays the arrears.
- For more information about renewal, including auto-renewal, exporting the renewal list, and changing subscriptions, see [Renewal Management](#).
- For more information about orders, unsubscription, coupons, and consumption details, see the [Billing Center User Guide](#).

----End

## 3.3 How Do I Check If My Account Is in Arrears?

You can view the outstanding amount on the **Billing Center** page. If your account is in arrears, the system processes resources and fees in SFS Turbo according to the retention period rules. For more information, see [Resource Suspension and Release](#). To prevent service suspension and resource release, repay arrears or top up in time.

### Procedure

**Step 1** Log in to the console.

**Step 2** In the upper right corner of the page, click **Billing & Costs** to go to the Billing Center.

**Step 3** On the **Overview** page, view the outstanding amount of the current account.



**Step 4** Top up your account to pay arrears if any.

----End

 **NOTE**

- For details about how to repay the outstanding amount, see [Making Repayments](#).
- For more information about orders, unsubscription, coupons, and consumption details, see the [Billing Center User Guide](#).

# 4 SFS Turbo Mount

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## 4.1 What Can I Do If Data of My SFS Turbo File System Is Not the Same When Accessed from Two Client Servers?

### Symptom

A file system was mounted to two servers. There was a delay in synchronizing files from one server to another. However, there was no delay when files were uploaded to a server.

### Fault Diagnosis

Add **noac**, **lookupcache=none** to the mount command.

The **noac** option disables file attribute caching and forces write synchronization. By default, an NFS client's file attribute information is cached using the **ac** option to improve performance, and the client checks file attribute information periodically and updates it if there are any changes. Within the cache validity period, the client does not check whether file attribute information on the server is changed. By default, the value of this option is **ac**. Set it to **noac**.

The **lookupcache** option is related to directory entry caching, and the value can be **all**, **none**, **pos**, or **positive**. With **lookupcache=none**, the client neither trust the positive nor negative lookup results. In this way, lookup caching is disabled.

### Solution

- Step 1** Unmount the file system if it has been mounted. For details, see [Unmounting a File System](#).
- Step 2** Prepare for the mount by referring to [Mounting an NFS File System to ECSs](#).
- Step 3** Mount the file system.

```
mount -t nfs -o vers=3,timeo=600,noac,lookupcache=none,noresvport,nolock,tcp <Shared path> <Local path>
```

```
----End
```

## 4.2 Can I Mount an SFS Turbo File System Across Regions?

For a general SFS Turbo file system, cross-region access is supported if the file system is mounted by IP address and communication between VPCs is established using Cloud Connect connections.

## 4.3 Can I Mount an SFS Turbo File System Across Accounts?

Yes, but not recommended.

In scenarios that have moderate reliability and latency requirements, you can mount an SFS Turbo file system across accounts based on VPC peering connections. For details about VPC peering connection and usage instructions, see [VPC Peering Connection](#).

## 4.4 How Many Cloud Servers Can I Mount an SFS Turbo File System To?

You can mount an SFS Turbo 20 MB/s/TiB, 40 MB/s/TiB, 125 MB/s/TiB, 250 MB/s/TiB, 500 MB/s/TiB, or 1,000 MB/s/TiB file system to a maximum of 3,000 servers.

You can mount an SFS Turbo Standard, Standard-Enhanced (discontinued), Performance, or Performance-Enhanced (discontinued) file system to a maximum of 500 servers.

## 4.5 How Do I Mount a File System to a Linux ECS as a Non-root User

### Scenarios

By default, a Linux ECS allows only the **root** user to use the **mount** command to mount file systems, but you can grant the permissions of user **root** to other users. Such users can then use the **mount** command to mount file systems.

The following describes how to grant a non-root user the root permissions and how to mount a file system to a Linux ECS using that non-root user. EulerOS is used in this example.

### Mounting a File System as a Non-root User

**Step 1** Log in to the ECS as user **root**.

**Step 2** Assign the root permissions to a non-root user.

1. Run **chmod 777 /etc/sudoers** to make the **sudoers** file editable.
2. Use the **which** command to view the **mount** and **umount** command paths.

**Figure 4-1** Viewing command paths

```

[root@ecs-os-45df ~]#
[root@ecs-os-45df ~]#
[root@ecs-os-45df ~]#
[root@ecs-os-45df ~]# which mount
/usr/bin/mount
[root@ecs-os-45df ~]# which umount
/usr/bin/umount
[root@ecs-os-45df ~]#

```

3. Run **vi /etc/sudoers** to edit the **sudoers** file.
4. Add a user under **root**. In this example, user **mike** is added.

**Figure 4-2** Adding a user

```

# Defaults    env_keep += "HOME"

Defaults    secure_path = /usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin

## Next comes the main part: which users can run what software on
## which machines (the sudoers file can be shared between multiple
## systems).
## Syntax:
##
##      user    MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)        ALL
mike    ALL=(ALL)        NOPASSWD: /usr/bin/mount
mike    ALL=(ALL)        NOPASSWD: /usr/bin/umount

## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, DRIVERS

## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)        ALL

## Same thing without a password
# %wheel    ALL=(ALL)        NOPASSWD: ALL

## Allows members of the users group to mount and unmount the
## cdrom as root
# %users   ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom

## Allows members of the users group to shutdown this system
# %users   localhost=/sbin/shutdown -h now

## Read drop-in files from /etc/sudoers.d (the # here does not mean a comment)

```

5. Press **Esc**, enter **:wq**, and press **Enter** to save and exit.
6. Run **chmod 440 /etc/sudoers** to make the **sudoers** file read-only.

**Step 3** Log in to the ECS as user **mike**.

**Step 4** Mount the file system. For details about the mount parameters, see [Table 4-1](#).

**sudo mount -t nfs -o vers=3,timeo=600,noresvport,nolock <Shared path>  
<Local path>**

**Table 4-1** Parameters required for mounting file systems

Parameter	Description
<Shared path>	The format is <File system IP address>:/, for example, <b>192.168.0.0:/</b> . <b>NOTE</b> Variable x is a digit or letter. If the shared path is too long to display completely, you can adjust the column width.
<Local path>	A local directory on the ECS used to mount the file system, for example, <b>/local_path</b> .

**Step 5** View the mounted file system.

**mount -l**

If the command output contains the following information, the file system has been mounted:

```
example.com:/share-xxx on /local_path type nfs (rw,vers=3,timeo=600,nolock,addr=)
```

----End

## 4.6 What Can I Do If Mounting a Subdirectory of a File System Failed?

### Symptom

If a subdirectory is not created before mounting, the mount will fail. In [Figure 4-3](#), the root directory did not have the **subdir** subdirectory, so the mount failed. In this case, error message "Permission denied" was reported.

**Figure 4-3** Mounting without a subdirectory

```
[root@ecs-eos-0891 workstation]# mount -t nfs -o nolock,vers=3 -vvv
mount.nfs: timeout set for Sun Oct 24 20:44:13 2021
mount.nfs: trying text-based options 'nolock,vers=3,addr=...'
mount.nfs: prog 100003, trying vers=3, prot=6
mount.nfs: trying prog 100003 vers 3 prot TCP port 2049
mount.nfs: prog 100005, trying vers=3, prot=17
mount.nfs: trying prog 100005 vers 3 prot UDP port 20048
mount.nfs: mount(2): Permission denied
mount.nfs: access denied by server while mounting /subdir
```

### Solution

To troubleshoot this issue, mount the root directory, create a subdirectory, and then mount the subdirectory.

Figure 4-4 Mounting a subdirectory

```
[root@ecs-eos-0891 workstation]# mount -t nfs -o nolock,vers=3 [redacted].82:/mnt/sfsturbo -vvv
mount.nfs: timeout set for Sun Oct 24 20:47:26 2021
mount.nfs: trying text-based options 'nolock,vers=3,addr=[redacted].82' Mount the root directory.
mount.nfs: prog 100003, trying vers=3, prot=6
mount.nfs: trying [redacted].82 prog 100003 vers 3 prot TCP port 2049
mount.nfs: prog 100005, trying vers=3, prot=17
mount.nfs: trying [redacted].82 prog 100005 vers 3 prot UDP port 20048
[root@ecs-eos-0891 workstation]# mkdir /mnt/sfsturbo/subdir Create a subdirectory.
[root@ecs-eos-0891 workstation]# umount /mnt/sfsturbo
[root@ecs-eos-0891 workstation]# mount -t nfs -o nolock,vers=3 [redacted].82:/subdir /mnt/sfsturbo -vvv
mount.nfs: timeout set for Sun Oct 24 20:47:50 2021
mount.nfs: trying text-based options 'nolock,vers=3,addr=[redacted].82' Mount the subdirectory.
mount.nfs: prog 100003, trying vers=3, prot=6
mount.nfs: trying [redacted].82 prog 100003 vers 3 prot TCP port 2049
mount.nfs: prog 100005, trying vers=3, prot=17
mount.nfs: trying [redacted].82 prog 100005 vers 3 prot UDP port 20048
[root@ecs-eos-0891 workstation]#
```

# 5 SFS Turbo Access

---

## 5.1 Can I Mount an SFS Turbo File System Across VPCs?

Yes, but not recommended. Cross-VPC access may deteriorate the file system performance by more than 50%. So you are advised to plan your file system and services in the same VPC.

In scenarios that have moderate reliability and latency requirements, you can connect two or more VPCs in the same region using VPC peering connections as if they are in the same VPC. In this way, cloud servers in these VPCs can share the same file system. For details about VPC peering connection, see [VPC Peering Connection](#).

## 5.2 How Do I Access an SFS Turbo File System from a Client Server?

To access a file system from a Linux server, run the **mount** command on the server to mount the file system. Then, you can share the files and directories in the file system.

To access a file system from a Linux server, install the NFS client on the server and run the **mount** command to mount the file system. Then, you can share the files and directories in the file system.

You are advised not to mount SFS Turbo file systems to Windows servers.

## 5.3 Can I Directly Access SFS Turbo from On Premises?

SFS Turbo supports on-premises access through IDC private lines or other methods. After network communication is established, you can access an SFS Turbo file system from on premises.

# 6 SFS Turbo Capacity Expansion

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## 6.1 Can I Expand the SFS Turbo File System Capacity If I Start to Run Out of Space?

SFS Turbo file systems support online capacity expansion. During an expansion, mounting the file system may fail. This is because the connection used for mounting may experience an I/O delay about 30 seconds (max. 3 minutes).



# 7 SFS Turbo Deletion

## 7.1 How Do I Delete .nfs Files?

### NFS .nfs Files

The .nfs files are temporary files in NFS. If you try to delete a file, and the file is still open, a .nfs file will appear. The .nfs files are used by NFS clients to manage the deletion of open files in the file system. If one process deletes a file while another process still has it open, the client will rename the file to .nfsxxx. If the last open to this file is closed, the client will automatically delete the file. If the client crashes before the file is cleared, the file will be left in the file system.

### Clearing .nfs Files

The .nfs files need to be cleared. You can run the **rm -f** command to delete them. The file system will not be affected by the deletion. If an error is reported when you delete a .nfs file, do as follows:

**Figure 7-1** Deletion error

```
$ rm -f .nfs000000001f0df8c0000XXXX
rm: cannot remove `smkit/SM_DOMAIN/.nfs000000001f0df8c0000XXXX': Device or resource busy
```

Run the **lsof** command to obtain the ID of the process that has the file open.

**Figure 7-2** Viewing the process ID

```
$ lsof .nfs000000001f0df8c0000XXXX
COMMAND  PID  USER  FD  TYPE  DEVICE  SIZE/OFF  NODE NAME
java     25887 <UID> mem  REG  0,22   98117 32545366 .nfs000000001f09a56000XXXX
```

If the process can be stopped, run the **kill -9 *Process ID*** command to stop the process and then delete the file.

## 7.2 How Can I Improve the Copy and Delete Efficiency with an SFS Turbo File System?

Common Linux commands, such as **cp**, **rm**, and **tar**, are executed sequentially. You can run commands concurrently to take the concurrency advantage of cloud file systems and improve efficiency.

# 8 SFS Turbo Migration

---

## 8.1 How Can I Migrate Data Between SFS Turbo and OBS?

### Background

Huawei Cloud OBS is a stable, secure, efficient, and easy-to-use cloud storage service. With REST APIs, OBS is able to store any amount and form of unstructured data.

Huawei Cloud SFS Turbo is a high-performance NAS file storage service that can provide shared access from multiple ECSs, containers, and BMSs on the Huawei Cloud.

### How to Migrate

SFS Turbo file systems need to be mounted to ECSs, containers, or BMSs. Data migration between SFS Turbo and OBS is actually the data migration between servers/containers and OBS. Server or container data is stored in the mounted SFS file systems.

So, you can log in to a server or container and use OBS tools, APIs, or SDKs to migrate data. For example, if you want to migrate data from SFS Turbo to OBS, use the OBS upload function on the server or container to upload data to OBS. If you want to migrate data from OBS to SFS Turbo, use the OBS download function on the server or container to download data to the SFS Turbo file system mounted on the server or container. Read and write permissions are required.

As listed in [Table 8-1](#), OBS provides various methods for data migration. Select a suitable migration method according to your OS and actual needs, and migrate data by referring to the upload and download sections in the manual.

 NOTE

The supported OSs, data volume, and operation complexity vary according to the migration methods. obsutil is recommended.

To reduce costs, it is recommended that you configure the intranet DNS and migrate data over the Huawei Cloud intranet. For details, see [Accessing OBS over Intranet](#).

**Table 8-1** Data migration tools provided by OBS

Tool	Supported OS (Refer to Each Tool Guide for Supported Versions)	Document
OBS Console	Windows	<a href="#">User Guide</a>
OBS Browser+	Windows	<a href="#">OBS Browser+ Tool Guide</a>
obsutil (Recommended)	Windows/Linux	<a href="#">obsutil Tool Guide</a>
SDK	All	<a href="#">SDK Reference</a>
API	All	<a href="#">API Reference</a>

## 8.2 How Do I Deploy SFS Turbo on CCE?

Complete the deployment on the CCE console based on your services by referring to [Storage](#) or [Storage \(FlexVolume\)](#).

## 8.3 Can I Migrate Data in My SFS Turbo File System to Another Region?

Yes, you can migrate data in your file system across regions. For details, see [Data Migration](#).

## 8.4 How Can I Migrate Data Between SFS Turbo and EVS?

Mount an SFS Turbo file system and attach an EVS disk to the same ECS, and then manually replicate data between the file system and disk.

# 9 SFS Turbo Performance

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## 9.1 How Do I Make the Most Out of My SFS Turbo File System?

An SFS Turbo file system provides multiple IP addresses for mounting. Each IP address can be used by multiple clients. For the specific IP addresses, see the **Alternative Shared Path** field on the file system details page on the console.

If NFS or SMB is used for file system access, each client can only establish the network connection with one server. If you mount the file system using domain name, a random domain name server IP address is assigned. This may result in uneven distribution of network connections between clients and servers, and the distributed cluster capability of the servers cannot be fully used.

When there are not too many clients and you want to maximize the file system performance, you can use different IP addresses when mounting the file system on different clients. In this way, the network connections between clients and servers are evenly distributed, server resources are used more efficiently, and the file system performance can be fully used.

# 10 Others

## 10.1 Does the Security Group of a VPC Affect the Use of SFS Turbo?

A security group is a collection of access control rules for cloud servers that have the same security protection requirements and are mutually trusted in a VPC. After a security group is created, you can create different access rules for the security group to protect the cloud servers that are added to this security group. The default security group rule allows all outgoing data packets. Cloud servers in a security group can access each other without the need to add rules. The system creates a security group for each cloud account by default. You can also create custom security groups by yourself.

For an SFS Turbo file system, the system automatically enables the security group ports required by NFS after the file system is created. This ensures that the SFS Turbo file system can be successfully mounted to your servers. The inbound ports required by NFS are ports 111, 2049, 2051, 2052, and 20048. If you need to change the enabled ports, go to the VPC console, choose **Access Control > Security Groups**, locate the target security group, and change the ports. You are advised to use an independent security group for an SFS Turbo file system to isolate it from service nodes.

### Example Configuration

- Inbound rule

Direction	Protocol	Port Range	Source IP Address		Description
Inbound	TCP and UDP	111	IP Addresses	0.0.0.0/0 (All IP addresses are allowed. It can be modified.)	One port corresponds to one access rule. You need to add rules for the ports one by one.

- Outbound rule

Direction	Protocol	Port Range	Source IP Address		Description
Outbound	TCP and UDP	111	IP Addresses	0.0.0.0/0 (All IP addresses are allowed. It can be modified.)	One port corresponds to one access rule. You need to add rules for the ports one by one.

 NOTE

Enter an IP address range using a mask. For example, enter **192.168.1.0/24**, and do not enter **192.168.1.0-192.168.1.255**. If the source IP address is 0.0.0.0, all IP addresses are allowed. For more information, see [Security Groups and Security Group Rules](#).

A bidirectional access rule must be configured for port 111. You can configure the frontend service IP address range of SFS Turbo as the inbound rule. Run **ping <File system domain name or IP address>** or **dig <File system domain name or IP address>** to obtain the IP address range.

For ports 2049, 2051, 2052, and 20048, outbound rules need to be added, which are the same as the outbound rule of port 111.

If NFS is used, add inbound rules for the following ports: 111 (TCP and UDP), 2049 (TCP and UDP), 2051 (TCP), 2052 (TCP), 20048 (UDP and TCP). If UDP is not enabled on port 2049 and 20048, mounting the file system may take a long time. You can use the **-o tcp** option in the **mount** command to avoid this issue.

## 10.2 What Resources Does SFS Turbo Occupy?

To ensure that file systems can be used properly, SFS Turbo occupies the following resources:

- When an SFS Turbo file system is created or expanded, multiple private IP addresses and virtual IP addresses are created in the subnet you specified.
- When an SFS Turbo file system is created, the inbound rules for ports 111, 2049, 2051, 2052, and 20048 are created in the security group you selected. The source IP address defaults to 0.0.0.0/0 in all rules. You can change the IP address as required.

Writing data to a file system consumes the running memory of the server, but does not occupy the server's disk space. The file system uses independent space.

## 10.3 How Do I Check Whether an SFS Turbo File System Is Available on a Linux Server?

Log in to the server as user **root** and run **showmount -e <File system domain name or IP address>**. If the following information is returned, the SFS Turbo file system is available.

```
Export list for <File system domain name or IP address>  
/*
```

Or

```
Export list for <File system domain name or IP address>  
/ <IP addresses of all the clients that can access the SFS Turbo file system>
```

## 10.4 Can I Upgrade an SFS Turbo File System from the Standard Type to the Performance Type?

No. The type of an existing SFS Turbo file system cannot be changed.

If you want an SFS Turbo file system of another type, delete or unsubscribe from the current file system and buy a new one with your desired type. If you still need data in your old file system, buy a new file system and migrate data to the new file system. After the data has been migrated, delete or unsubscribe from the old file system.

## 10.5 Does SFS Turbo File Systems Support Multi-AZ Deployment?

1. A single file system can only be created in one AZ, but can be mounted to and accessed from any AZ.
2. A file system does not support cross-AZ data redundancy. If the AZ is unavailable, the file system becomes unavailable accordingly.