

Scalable File Service

Quick Start

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1 Make Preparations

Before using SFS, you need to make the following preparations:

- [Registering a HUAWEI ID and Enabling Huawei Cloud Services](#)
- [Topping Up Your Account](#)
- [Creating an IAM User](#)

Registering a HUAWEI ID and Enabling Huawei Cloud Services

If you already have a HUAWEI ID, skip this part. To create a HUAWEI ID, do as follows:

1. Visit www.huaweicloud.com/intl/en-us/ and click **Sign Up**.
2. On the displayed page, register an account as prompted.

After you have successfully registered, the system automatically redirects you to your personal information page.

Topping Up Your Account

Ensure that your account has sufficient balance.

For details about the SFS price, see [Price Details](#).

For details about how to top up an account, see [Topping Up an Account](#).

Creating an IAM User

If you want to allow multiple users to manage your resources without sharing your password or private key, you can create users using IAM and grant permissions to the users. These users can use specified login links and their own accounts to access the public cloud and help you efficiently manage resources. You can also set account security policies to ensure the security of these accounts and reduce enterprise information security risks.

If you have registered with the public cloud but have not created an IAM user, you can create a user on the IAM console. For example, to create an SFS administrator, perform the following steps:

1. Enter your username and password to log in to the management console.

2. In the upper right corner of the page, hover the mouse over the username and select **Identity and Access Management**.
3. In the navigation pane on the left, choose **Users**.
4. On the **Users** page, click **Create User**.
5. Enter user information on the **Create User** page.
 - **Username**: Enter a username, for example, **sfs_admin**.
 - **Email Address**: Email address of the IAM user. This parameter is mandatory if the access type is specified as **Set by user**.
 - (Optional) **Mobile Number**: Mobile number of the IAM user.
 - (Optional) **Description**: Enter the description of the user, for example, **SFS administrator**.
6. Select **Management console access** for **Access Type** and **Set now** for **Password**. Enter a password and click **Next**.

 **NOTE**

An SFS administrator can log in to the management console and manage users. You are advised to select **Set now** for **Password Type** when you create an SFS administrator for your domain. If you create an SFS administrator for another user, you are advised to select **Set by user** for **Password Type** instead so that the user can set their own password.

7. (Optional) Add the user to the **admin** user group and click **Create**.
User group **admin** has all the operation permissions. If you want to grant fine-grained permissions to IAM users, see [Creating a User and Granting SFS Permissions](#).

The user is displayed in the user list. You can click the IAM user login link to log in to the console.

2 Configure a VPC Endpoint

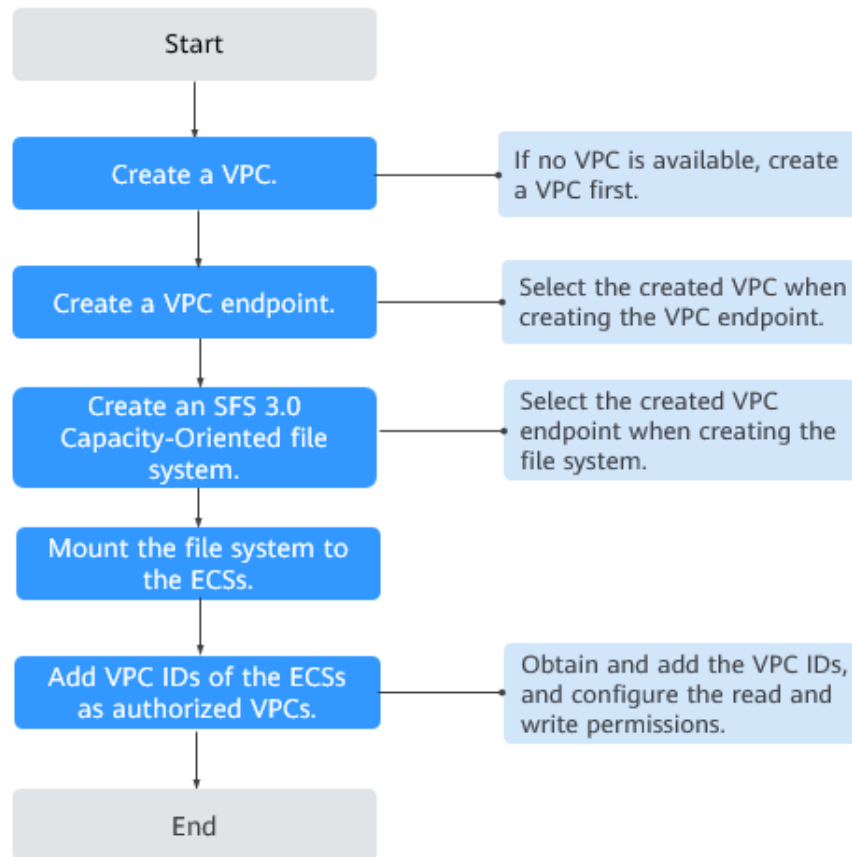
Context

VPC Endpoint (VPCEP) provides reliable channels to connect VPCs to SFS 3.0 Capacity-Oriented file systems. By configuring VPC endpoints, compute resources in VPCs can access SFS 3.0 Capacity-Oriented file systems.

Before mounting an SFS 3.0 Capacity-Oriented file system to a compute resource, you need to create a VPC endpoint in the region where the compute resource belongs. Currently, VPC endpoints can be created for SFS 3.0 Capacity-Oriented in the following regions: CN North-Beijing4, CN East-Shanghai1, and CN South-Guangzhou. In the regions beside those ones, SFS Capacity-Oriented and SFS Turbo are recommended.

VPC endpoints are not required for SFS Capacity-Oriented and SFS Turbo file systems.

Figure 2-1 Configuration process




Prerequisites

- Before creating an SFS 3.0 Capacity-Oriented file system, ensure that a VPC is available.
If no VPC is available, create one by referring to [Creating a VPC](#) in the *Virtual Private Cloud User Guide*.
- Before creating an SFS 3.0 Capacity-Oriented file system, ensure that ECSs are available and reside within the created VPC.
If no ECS is available, buy ECSs by referring to [Purchasing an ECS](#) and [Logging In to an ECS](#) in the *Elastic Cloud Server Getting Started*.

Procedure

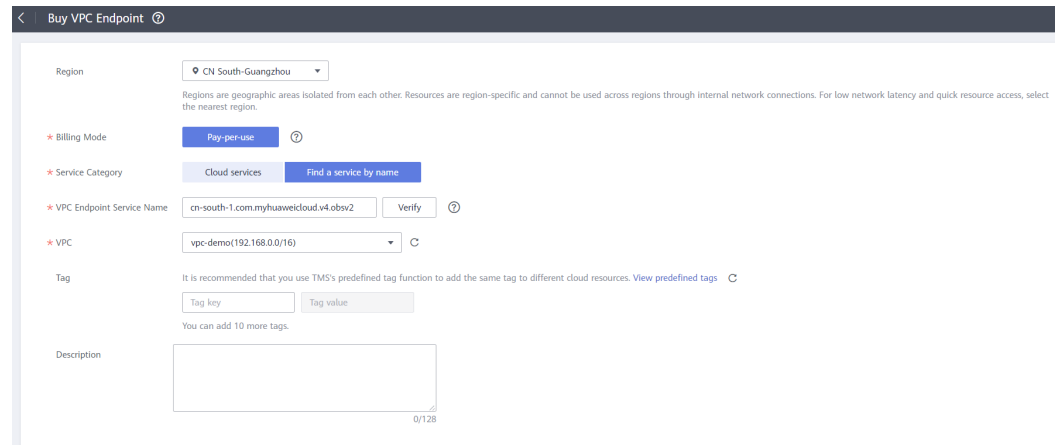
Step 1 Log in to the Huawei Cloud console.

- Log in to the management console.
- Click  in the upper left corner and select your desired region and project.
- Choose **Networking > VPC Endpoint > VPC Endpoints**.

Step 2 On the **VPC Endpoints** page, click **Buy VPC Endpoint**.

The **Buy VPC Endpoint** page is displayed.

Figure 2-2 Buy VPC Endpoint



Step 3 Set the parameters as prompted.

Table 2-1 Parameters for purchasing an endpoint

Parameter	Description
Region	Region where the VPC endpoint is located. Ensure that this region is the same as the one where the planned SFS 3.0 Capacity-Oriented file system resides. VPC EP supports SFS 3.0 Capacity-Oriented only in the CN North-Beijing4, CN East-Shanghai1, and CN South-Guangzhou regions.
Billing Mode	Pay-per-use is preselected by default, but you will not be billed for the endpoint purchased for SFS 3.0 Capacity-Oriented file systems.

Parameter	Description
Service Category	<p>Select Find a service by name.</p> <p>Enter a VPC endpoint service name based on the region selected.</p> <ul style="list-style-type: none"> • If the CN North-Beijing4 region is selected, enter cn-north-4.com.myhuaweicloud.v4.storage.lz13. • If the CN South-Guangzhou region (AZ1) is selected, enter cn-south-1.com.myhuaweicloud.v4.obsv2. • If the CN South-Guangzhou region (AZ6) is selected, enter cn-south-1.com.myhuaweicloud.v4.obsv2.storage.lz06. • If the CN East-Shanghai1 region is selected, enter cn-east-3.com.myhuaweicloud.v4.storage.lz07. <p>After entering the service name, click Verify.</p> <p>If Service name found is displayed, proceed with subsequent steps.</p> <p>If Service name not found is displayed, check whether the entered service name is correct. If the problem persists, submit a service ticket.</p>
VPC	VPC where the planned SFS 3.0 Capacity-Oriented file system and ECSs reside.
Tag	<p>Optional</p> <p>VPC endpoint tags. Each tag consists of a key and a value. You can add a maximum of 10 tags to one VPC endpoint. Tag keys and values must meet the requirements listed in Table 2-2.</p> <p>NOTE</p> <ul style="list-style-type: none"> • If a predefined tag has been created in TMS, you can select the corresponding tag key and value. For details about predefined tags, see Predefined Tag Overview.

[Table 2-2](#) describes the tag parameters.

Table 2-2 Tag parameter description

Parameter	Description	Example Value
Tag key	<p>Each tag has a unique key. You can customize the key or select the key of an existing tag created in TMS.</p> <p>A tag key:</p> <ul style="list-style-type: none"> • Can contain 1 to 36 Unicode characters. • Can contain only letters, digits, hyphens (-), and underscores (_). 	Key_0001

Parameter	Description	Example Value
Tag value	A tag value can be repetitive or left blank. A tag value: <ul style="list-style-type: none">• Can contain 0 to 43 Unicode characters.• Can contain only letters, digits, hyphens (-), and underscores (_).	Value_0001

Step 4 Click **Next**.

- If you do not need to modify the specifications, click **Submit**.
- If you need to modify the specifications, click **Previous**, modify the parameters as needed, and then click **Submit**.

Step 5 Go back to the VPC endpoint list and check whether the status of the VPC endpoint changes to **Accepted**. If so, the VPC endpoint has been connected to the VPC endpoint service.

----End

3 Create a File System

You can create a file system and mount it to multiple servers. Then the servers can share this file system. You can create three types of file systems: SFS Capacity-Oriented, SFS Turbo, and SFS 3.0 Capacity-Oriented.

Prerequisites

1. Before creating an SFS Turbo, SFS Capacity Oriented, or SFS 3.0 Capacity Oriented file system, ensure that a VPC is available.
If no VPC is available, create one by referring to [Creating a VPC](#) in the *Virtual Private Cloud User Guide*.
2. Before creating an SFS Turbo, SFS Capacity Oriented, or SFS 3.0 Capacity Oriented file system, ensure that ECSs are available and are in the created VPC.
If no ECS is available, buy ECSs by referring to [Purchasing an ECS](#) and [Logging In to an ECS](#) in the *Elastic Cloud Server Getting Started*.
3. Creating SFS Turbo file systems depends on the following services: VPC, Billing Center, DSS, and ECS. For the roles or policies required, see the following:
 - The permissions of the **SFS Turbo FullAccess** policy already include the permissions of **VPC FullAccess**, which are required for creating file systems. So an IAM user assigned the **SFS Turbo Full Access** policy does not need to have the **VPC FullAccess** policy assigned explicitly.
 - To create yearly/monthly file systems, the **BSS Administrator** policy is required.
 - To create file systems in dedicated projects, the **DSS FullAccess** and **ECS FullAccess** policies are required.

Logging In to the Management Console

Step 1 Visit the Huawei Cloud website at www.huaweicloud.com/intl/en-us/.

Step 2 Register an account.

Before using SFS, you need to register a HUAWEI ID. This account can be used to access all Huawei Cloud services, including SFS. If you already have an account, start from [Step 3](#).

1. In the upper right corner of the page, click **Sign Up**.
2. Complete the registration as instructed.
After you have successfully registered, the system automatically redirects you to your personal information page.

Step 3 Log in to the management console.

1. In the upper right corner of the displayed page, click **Console**.
2. Enter the username and password as prompted, and click **Sign In**.

Step 4 After logging in to the management console, select the region where the service is located from the drop-down list in the upper left corner of the page.

Step 5 Choose **Storage > Scalable File Service** to go to the SFS console.

Step 6 It is recommended that you top up your account and subscribe to SFS so that the service can be used properly. For details about how to purchase SFS, see [How Do I Purchase SFS?](#)

----End

Creating an SFS Capacity-Oriented File System

Step 1 In the upper right corner of the page, click **Create File System**.

Step 2 Set the parameters as described in [Table 3-1](#) as shown in [Figure 3-1](#).

Figure 3-1 Creating a file system

The screenshot shows the 'Create File System' configuration page. At the top, there is a title 'Create File System' and a back button '< Back to File System List'. The form is organized into several sections:

- Region:** A dropdown menu is set to 'AP-Bangkok'. Below it, a note states: 'File systems and ECSs in different regions cannot communicate with each other.'
- AZ:** A blue button labeled 'AZ1' is selected. Below it, a note states: 'File systems and ECSs in different AZs in the same region can communicate with each other.'
- Protocol Type:** A dropdown menu is set to 'NFS'. Below it, a note states: 'The NFS protocol is recommended for a Linux client and the CIFS protocol is recommended for a Windows client.'
- VPC:** A dropdown menu is set to 'vpc-default'. To its right is a 'Create VPC' button. Below it, a note states: 'ECSs cannot access file systems that reside on different VPCs. Select the VPC where the ECSs reside.'
- Auto Capacity Expansion:** A toggle switch is turned on. Below it, a note states: 'After auto capacity expansion is enabled, the capacity of a file system is unlimited and resizing the file system is not required.'
- Name:** A text input field contains 'sfs-dd74'. Below it, a note states: 'If you create multiple SFS file systems at the same time, the system automatically populates an SFS name (editable) and adds an incremental number to the end of each SFS name. For example, if the first SFS's name is sfs-share-001, the second SFS's name will be sfs-share-002.'
- Quantity:** A numeric input field shows '1' with minus and plus buttons. Below it, a note states: 'You can create 30 more SFS file systems. If you need a higher quota, [Increase quota](#)'.

Table 3-1 Parameter description

Parameter	Description	Remarks
File System Type	Select SFS Capacity-Oriented or SFS Turbo .	Select SFS Capacity-Oriented .

Parameter	Description	Remarks
Region	Mandatory Region of the tenant. Select the region from the drop-down list in the upper left corner of the page.	You are advised to select the same region as that of the ECSs.
AZ	A geographical area with an independent network and an independent power supply.	You are advised to select the same AZ as that of the ECSs.
Protocol Type	SFS supports NFS (only the NFSv3 protocol currently) and CIFS for file system access. The NFS protocol is applicable to Linux ECSs, and the CIFS protocol is applicable to Windows ECSs.	Set this parameter based on site requirements.
VPC	An ECS cannot access file systems in a different VPC. Select the VPC to which the ECS belongs. NOTE <ul style="list-style-type: none"> By default, all ECSs in a VPC have the same rights. You can modify the VPC in the future. Upon creation, only one VPC can be added for each file system. After a file system is created, you can configure multiple VPCs by referring to Configuring Multi-VPC Access for the SFS file system. 	Click View VPC to view existing VPCs or create a new one.
Maximum Capacity	Maximum capacity of a single file system. When the used capacity of a file system reaches this value, no more data can be written to the file system. You need to expand the file system.	The value ranges from 1 GB to 512,000 GB .

Parameter	Description	Remarks
Encryption	<p>Optional</p> <p>This parameter specifies whether a file system is encrypted. You can create a file system that is encrypted or not, but you cannot change the encryption settings of an existing file system. If Encryption is selected, the following parameters will be displayed:</p> <ul style="list-style-type: none"> • Create Agency If the KMS access rights are not granted to SFS Capacity-Oriented, this button will be displayed. Otherwise, this button will not be displayed. <p>Click Create Agency to grant SFS Capacity-Oriented the permissions to access KMS. The system automatically creates an agency and names it SFSAccessKMS. When SFSAccessKMS is displayed for Agency Name, the KMS access rights have been granted to SFS Capacity-Oriented, and SFS Capacity-Oriented can obtain KMS keys for encrypting or decrypting the file system. After the rights are granted, follow-up operations do not need granting rights again.</p> <ul style="list-style-type: none"> • Agency Name <ul style="list-style-type: none"> - Agency: An agency is a trust relationship between two tenants or services. A tenant can create an agency to grant resource access rights to another tenant or service. - SFSAccessKMS: If Agency Name is SFSAccessKMS, SFS Capacity-Oriented is granted the KMS access rights to use custom keys to encrypt or decrypt file systems. • KMS key name <p>NOTE KMS key name is displayed only after the agency named SFSAccessKMS has been created. For details, see Create Agency above.</p> <p>KMS key name is the identifier of the key, and you can use KMS key name to specify the KMS key that is</p>	-

Parameter	Description	Remarks
	<p>to be used for encryption. You can select one of the following keys:</p> <ul style="list-style-type: none"> - Default key: After the KMS access rights have been granted to SFS Capacity-Oriented, the system automatically creates a default key and names it sfs/default. - Custom key: Existing or newly created custom keys. For details, see Creating a Custom Key in the <i>Data Encryption Workshop User Guide</i>. <p>NOTE Before you use the encryption function, the KMS access rights must be granted to SFS Capacity-Oriented. If you have the right to grant the permission, grant SFS the permissions to access KMS directly. Otherwise, you need to contact the system administrator to obtain the "Security Administrator" rights first. For details, see File System Encryption.</p>	
Name	<p>User-defined name of the file system. If you create more than one file system, a name suffix is added to each file system name automatically. For example, if you set the name to sfs-name for two new file systems, the two file system names will be sfs-name-001 and sfs-name-002.</p>	<p>The name can contain only letters, digits, underscores (_), and hyphens (-). When creating one file system, enter a maximum of 255 characters. When creating multiple file systems, enter 1 to 251 characters.</p>

Parameter	Description	Remarks
Quantity	Number of file systems to be created	<p>Each cloud account can have a total of 512,000 GB for its file systems. Each cloud account can create a maximum of 10 file systems, one by one or in a batch.</p> <p>If the quantity or total capacity of the file systems you are creating exceeds the upper limit, click Increase quota to apply for a higher quota.</p>

Step 3 Click **Create Now**.

Step 4 Confirm the file system information and click **Submit**.

Step 5 Go back to the file system list.

If the status of the created file system is **Available**, the file system is created successfully. If the status is **Creation failed**, contact the administrator.

----End

Creating an SFS 3.0 Capacity-Oriented File System

Step 1 In the upper right corner of the page, click **Create File System**.

Step 2 Set the parameters as described in [Table 3-2](#) and shown in [Figure 3-2](#).

Figure 3-2 Creating a file system

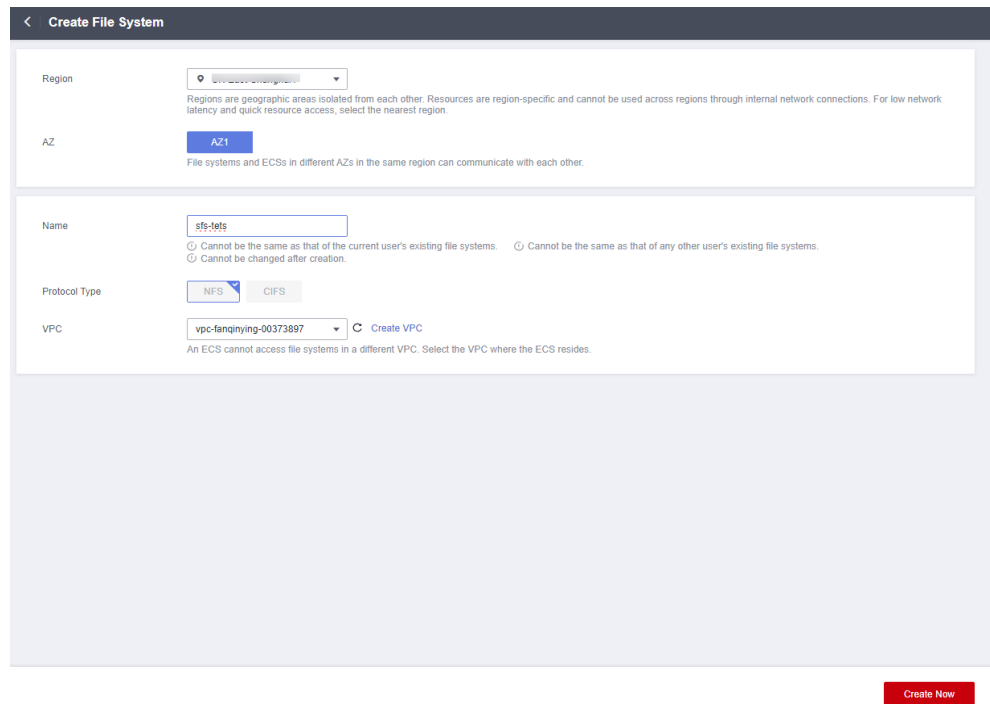


Table 3-2 Parameter description

Parameter	Description	Remarks
Region	Mandatory Region of the tenant. Select the region from the drop-down list in the upper left corner of the page.	Select the region where the ECSs and VPC endpoint reside.
AZ	A geographical area with an independent network and an independent power supply.	You are advised to select the same AZ as that of the ECSs.
Name	User-defined name of the file system. It cannot be the same as that of an existing SFS 3.0 Capacity-Oriented file system, including one created by the current user or any other user. And it cannot be changed after the file system is created. If an SFS 3.0 Capacity-Oriented file system is deleted, you can create an SFS 3.0 file system with the same name as the deleted one 30 minutes after that file system has been deleted.	The name can contain only letters, digits, underscores (_), and hyphens (-). When creating one file system, enter a maximum of 255 characters. When creating multiple file systems, enter 1 to 251 characters.

Parameter	Description	Remarks
Protocol Type	SFS 3.0 Capacity-Oriented supports NFS (NFSv3 only) for file system access.	-
VPC	Select the IAM project to which the target VPC belongs and then select the target VPC. Select the VPC where the ECSs and VPC endpoint reside. An ECS cannot access a file system belonged to a different VPC. Select the VPC where your ECSs reside. You can add VPCs later on the file system details page.	-

Step 3 Click **Create Now**.

Step 4 Confirm the file system information and click **Submit**.

Step 5 Go back to the file system list.

If the file system is displayed in the list, it is successfully created. If the file system status is **Creation failed**, [submit a service ticket](#).

Figure 3-3 SFS 3.0 Capacity-Oriented successfully created

Name	Region	Available Zone	Protocol Type	Used Capacity	Mount Point	Operation
example-filesystem	CN South-Guangzhou	AZ1	NFS	0 Byte	tsfs.sfs.cn-south-1.my.huaweicloud.com/example-filesystem	Delete

----End

Creating an SFS Turbo File System

Step 1 In the navigation pane, choose **SFS Turbo**. In the upper right corner of the page, click **Create File System**.

Step 2 Set the parameters. [Table 3-3](#) describes the parameters.

Figure 3-4 Creating an SFS Turbo file system

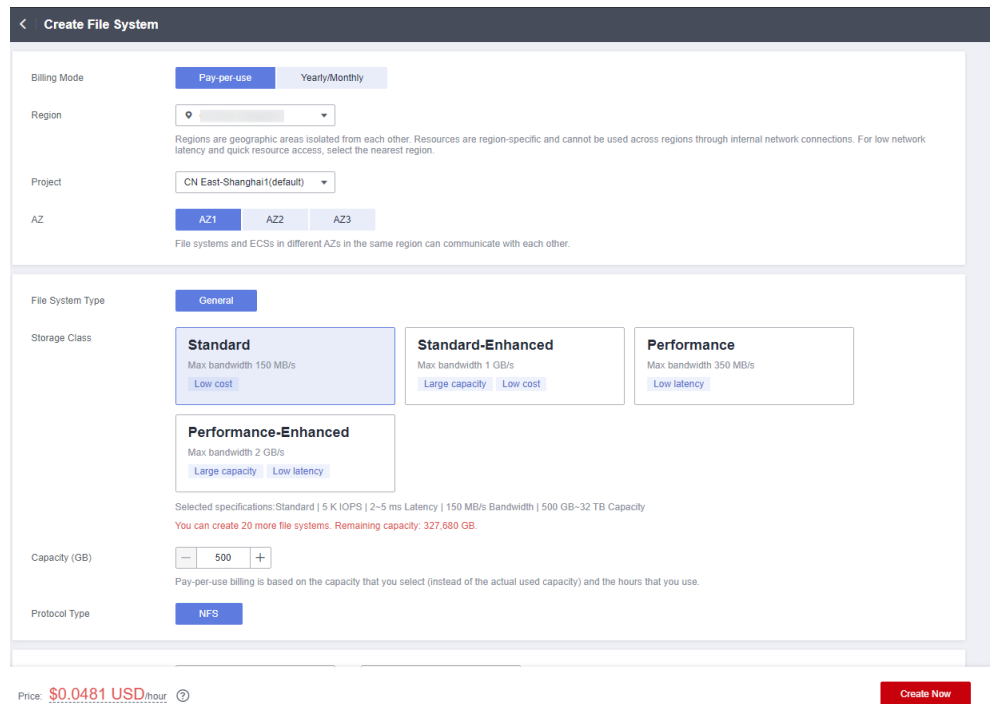


Table 3-3 Parameter description

Parameter	Description	Remarks
Billing Mode	Mandatory Select a billing mode, Yearly/Monthly or Pay per use . For details about the billing standard, see Price Details .	-
Region	Mandatory Region of the tenant. Select the region from the drop-down list in the upper left corner of the page.	You are advised to select the same region as that of the servers.
AZ	Mandatory A geographical area with an independent network and an independent power supply.	You are advised to select the same AZ as that of the servers.
Protocol Type	Mandatory SFS Turbo supports NFS for file system access.	The default value is NFS .

Parameter	Description	Remarks
Storage Class	<p>Mandatory</p> <p>Includes SFS Turbo Standard and SFS Turbo Performance. For more information, see File System Types.</p>	<p>Select Standard.</p> <p>NOTE Once a file system is created, its storage class cannot be changed. If you want to change the storage class, you need to create another file system. Therefore, you are advised to plan the storage class carefully in advance.</p>
Capacity	<p>Maximum capacity of a single file system. When the used capacity of a file system reaches this value, no more data can be written to the file system. You need to expand the file system. The capacity of an SFS Turbo file system cannot be decreased. Set an appropriate file system capacity based on your service needs.</p>	<p>Supported scope:</p> <ul style="list-style-type: none"> • SFS Turbo Standard: 500 GB to 32 TB • SFS Turbo Performance: 500 GB to 32 TB
VPC	<p>Mandatory</p> <p>Select a VPC and its subnet.</p> <ul style="list-style-type: none"> • VPC: A server cannot access file systems in a different VPC. Select the VPC to which the server belongs. • Subnet: A subnet is an IP address range in a VPC. In a VPC, a subnet segment must be unique. A subnet provides dedicated network resources that are logically isolated from other networks, improving network security. <p>NOTE Upon creation, only one VPC can be added for each file system. Multi-VPC file sharing can be implemented through VPC peering connection. For details about VPC peering connection, see VPC Peering Connection.</p>	-

Parameter	Description	Remarks
Security Group	<p>Mandatory</p> <p>A security group is a virtual firewall that provides secure network access control policies for file systems. You can define different access rules for a security group to protect the file systems that are added to this security group.</p> <p>When creating an SFS Turbo file system, you can select only one security group.</p> <p>You are advised to use an independent security group for an SFS Turbo file system to isolate it from service nodes.</p> <p>The security group rule configuration affects the normal access and use of SFS Turbo. For details about how to configure a security group rule, see Adding a Security Group Rule. After an SFS Turbo file system is created, the system automatically enables the security group port required by the NFS protocol in the SFS Turbo file system. This ensures that the SFS Turbo file system can be accessed by your ECS and prevents file system mounting failures. The inbound ports required by the NFS protocol are ports 111, 445, 2049, 2051, 2052, and 20048. If you need to change the enabled ports, choose Access Control > Security Groups of the VPC console and locate the target security group.</p>	-

Parameter	Description	Remarks
Encryption	<p>Optional</p> <p>This parameter specifies whether a file system is encrypted. You can create a file system that is encrypted or not, but you cannot change the encryption settings of an existing file system. If Encryption is selected, the following parameters will be displayed:</p> <ul style="list-style-type: none"> • KMS key name KMS key name is the identifier of the key, and you can use KMS key name to specify the KMS key that is to be used for encryption. Select an existing key from the drop-down list, or click View KMS List to create a new key. For details, see Creating a CMK in the <i>Data Encryption Workshop User Guide</i>. • KMS key ID After you select a key name, the system automatically generates a key ID. 	-

Parameter	Description	Remarks
Cloud Backup and Recovery	<p>CBR provides backup protection for SFS Turbo and allows you to use backup data to create an SFS Turbo file system. After you set Cloud Backup and Recovery, the system binds the SFS Turbo file system to the cloud backup vault and associates the file system with the selected backup policy to periodically back up the file system.</p> <p>The following options are available, among which the default value is Do not use:</p> <ul style="list-style-type: none"> ● Buy now: <ol style="list-style-type: none"> 1. Set the name of the cloud backup vault, which is a character string consisting of 1 to 64 characters, including letters, digits, underscores (_), and hyphens (-), for example, vault-f61e. The default naming rule is vault_XXXX. 2. Enter the vault capacity, which is required for backing up the SFS Turbo file system. The vault capacity cannot be less than the size of the file system. Its value ranges from the total size of the associated file systems to 10,485,760 in the unit of GB. 3. Select a backup policy from the drop-down list, or log in to the CBR console and configure a desired one. ● Use existing vault: <ol style="list-style-type: none"> 1. Select an existing cloud backup vault from the drop-down list. 2. Select a backup policy from the drop-down list, or log in to the CBR console and configure a desired one. ● Do not use: Skip this configuration if backup is not 	-

Parameter	Description	Remarks
	required. If you need backup protection after a file system has been purchased, log in to CBR Console, locate the desired vault, and associate the file system to the vault.	
Name	Mandatory User-defined name of the file system.	The value can contain only letters, digits, and hyphens (-). The name of the created file system must contain more than four characters and less than or equal to 64 characters.

Step 3 Click **Create Now**.

Step 4 Confirm the file system information and click **Submit**.

Step 5 Complete the creation and go back to the file system list.

If the status of the created file system is **Available**, the file system is created successfully. If the status is **Creation failed**, contact the administrator.

----End

4 Mount a File System

4.1 Mounting an NFS File System to ECSs (Linux)

After creating a file system, you need to mount the file system to servers so that they can share the file system.

CIFS file systems cannot be mounted to Linux servers.

An SFS Capacity-Oriented file system can use either NFS or CIFS. It cannot use both protocols.

In this section, ECSs are used as example servers. Operations on BMSs and containers (CCE) are the same as those on ECSs.

To use SFS Turbo as the storage backend for CCE, see [Storage](#) or [Storage \(FlexVolume\)](#). Then complete the deployment on the CCE console.

SFS 3.0 Capacity-Oriented file systems cannot be mounted to 32-bit Linux servers.

Prerequisites

- You have checked the type of the operating system on each ECS. Different operating systems use different commands to install the NFS client.
- You have created a file system and have obtained the mount point of the file system.
- At least one ECS that belongs to the same VPC as the file system exists.
- The IP address of the DNS server for resolving the domain names of the file systems has been configured on the ECS. SFS Turbo file systems do not require domain name resolution.

Procedure

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

Step 2 Install the NFS client.

1. **Install the NFS client.**

- a. Run the following command to check whether the NFS software package is installed.

- In CentOS, Red Hat, Oracle Enterprise Linux, SUSE, EulerOS, Fedora, or OpenSUSE:

```
rpm -qa|grep nfs
```

- In Debian or Ubuntu:

```
dpkg -l nfs-common
```

If a command output similar to the following is displayed, the NFS software package has been installed and you can go to [Step 3](#). If no such command output is displayed, go to [b](#).

- In CentOS, Red Hat, EulerOS, Fedora, or Oracle Enterprise Linux:

```
libnfsidmap  
nfs-utils
```

- In SUSE or OpenSUSE:

```
nfsidmap  
nfs-client
```

- In Debian or Ubuntu:

```
nfs-common
```

- b. Run the following command to install the NFS software package.

 **NOTE**

The following commands require that ECSs be connected to the Internet. Or, the installation will fail.

- In CentOS, Red Hat, EulerOS, Fedora, or Oracle Enterprise Linux:

```
sudo yum -y install nfs-utils
```

- In Debian or Ubuntu:

```
sudo apt-get install nfs-common
```

- In SUSE or OpenSUSE:

```
zypper install nfs-client
```

Step 3 Run the following command to check whether the domain name in the file system mount point can be resolved. SFS Turbo file systems do not require domain name resolution. Skip this step and directly mount the file system.

```
nslookup File system domain name
```

 **NOTE**

- A file system domain name is just a part of the mount point, for example, **sfs-nas1.xxxx.com**. You can obtain a file system domain name from the mount point of a file system. In this step, you are not supposed to enter the entire mount point but only the domain name.
- If the **nslookup** command cannot be used, install the **bind-utils** software package by running the **yum install bind-utils** command.
- If the domain name can be resolved, go to [Step 4](#).
- If the domain name cannot be resolved, configure the DNS server IP address and then mount the file system. For details, see [Configuring DNS](#).

Step 4 Run the following command to create a local path for mounting the file system:

```
mkdir Local path
```

 **NOTE**

If there is any resource, such as a disk, already mounted on the local path, create a new path. (NFS clients do not refuse repeated mounts. If there are repeated mounts, information of the last successful mount is displayed.)

Step 5 Run the following command to mount the file system to the ECS that belongs to the same VPC as the file system. Currently, the file system can be mounted to Linux ECSs using NFSv3 only.

Table 4-1 describes the variables.

To mount an SFS Capacity-Oriented file system, run the following command:
mount -t nfs -o vers=3,timeo=600,noresvport,nolock *Mount point Local path*

To mount an SFS Turbo file system, run the following command: **mount -t nfs -o vers=3,timeo=600,noresvport,nolock,tcp *Mount point Local path***

To mount an SFS 3.0 Capacity-Oriented file system, run the following command:
mount -t nfs -o vers=3,timeo=600,noresvport,nolock,proto=tcp *Mount point Local path*

NOTICE

After an ECS where file systems have been mounted restarts, it loses the file system mount information. You can configure automatic mount in the **fstab** file to ensure that an ECS automatically mounts file systems when it restarts. For details, see [Mounting a File System Automatically](#).

Table 4-1 Parameter description

Parameter	Description
vers	File system version. Only NFSv3 is supported currently, so the value is fixed to 3 .
timeo	Waiting time before the NFS client retransmits a request. The unit is 0.1 second. The recommended value is 600 .
noresvport	Whether the NFS client uses a new TCP port when a network connection is re-established. It is strongly recommended you use the noresvport option, which ensures that your file system maintains uninterrupted availability after a network reconnection or recovery.
lock/nolock	Whether to lock files on the server using the NLM protocol. If nolock is selected, the lock is valid for applications on one host. For applications on another host, the lock is invalid. The recommended value is nolock . If this parameter is not specified, lock is selected by default. In this case, other servers cannot write data to the file system.

Parameter	Description
proto	Protocol used by NFS clients to send requests to the server. Both UDP and TCP protocols can be used. UDP is currently not supported by SFS 3.0 Capacity-Oriented file systems. If you are using SFS 3.0, set this parameter to tcp , that is, proto=tcp .
<i>Mount point</i>	The format for an SFS Capacity-Oriented file system is <i>File system domain name:/Path</i> , for example, example.com:/share-xxx . The format for an SFS Turbo file system is <i>File system IP address/</i> , for example, 192.168.0.0/ . The format for an SFS 3.0 Capacity-Oriented file system is <i>File system domain name:/File system name</i> , for example, example.com:/xxx . See Figure 4-1 . NOTE <ul style="list-style-type: none"> • <i>x</i> is a digit or letter. • If the mount point is too long to display completely, you can adjust the column width. • Hover the mouse over the mount point to display the complete mount command.
<i>Local path</i>	Local path on the ECS, used to mount the file system, for example, /local_path .

Figure 4-1 Mount point

Name	AZ	Status	Share Pr...	Available C...	Maximum Capa...	Encrypted	Enterprise...	Shared Path
sfs-name-001	AZ1	Available	NFS	20.00	20.00	No	default	sfs-nas01-192.168.0.0:/share-396876e8

For more mounting parameters for performance optimization during file system mounting, see [Table 4-2](#). Use commas (,) to separate parameters. The following command is an example:

```
mount -t nfs -o vers=3,timeo=600,nolock,rsize=1048576,wsiz=1048576,hard,retrans=3,tc,nonr espport,ro,async,noatime,nodiratime Mount point Local path
```

Table 4-2 Parameters for file system mounting

Parameter	Description
rsize	<p>Maximum number of bytes that can be read from the server each time. The actual data is less than or equal to the value of this parameter. The value of rsize must be a positive integer that is a multiple of 1024. If the entered value is smaller than 1024, the value is automatically set to 4096. If the entered value is greater than 1048576, the value is automatically set to 1048576. By default, the setting is performed after the negotiation between the server and the client.</p> <p>You are advised to set this parameter to the maximum value 1048576.</p>
wsize	<p>Maximum number of bytes that can be written to the server each time. The actual data is less than or equal to the value of this parameter. The value of wsize must be a positive integer that is a multiple of 1024. If the entered value is smaller than 1024, the value is automatically set to 4096. If the entered value is greater than 1048576, the value is automatically set to 1048576. By default, the setting is performed after the negotiation between the server and the client.</p> <p>You are advised to set this parameter to the maximum value 1048576.</p>
soft/hard	<p>soft indicates that a file system is mounted in soft mount mode. In this mode, if an NFS request times out, the client returns an error to the invoking program. hard indicates that a file system is mounted in hard mount mode. In this mode, if the NFS request times out, the client continues to request until the request is successful.</p> <p>The default value is hard.</p>
retrans	<p>Number of retransmission times before the client returns an error.</p>
tcp/udp	<p>Sets both the protocol used by NFS clients and that used for mounting to TCP or UDP.</p> <p>The UDP protocol is not used by the mount command. If the default command is used to mount an SFS Turbo file system, you may notice a delay of several seconds. To change the mounting command to TCP, set mountproto=tcp.</p> <p>To set the protocol used by NFS clients to TCP, set proto=tcp.</p> <p>To set both protocols at a time, simply set tcp or udp.</p>

Parameter	Description
ro/rw	<ul style="list-style-type: none"> ● ro: indicates that the file system is mounted as read-only. ● rw: indicates that the file system is mounted as read/write. <p>The default value is rw. If this parameter is not specified, the file system will be mounted as read/write.</p>
noresvport	<p>Whether the NFS client uses a new TCP port when a network connection is re-established.</p> <p>It is strongly recommended you use the noresvport option, which ensures that your file system maintains uninterrupted availability after a network reconnection or recovery.</p>
sync/async	<p>sync indicates that data is written to the server immediately. async indicates that data is first written to the cache before being written to the server.</p> <p>Synchronous write requires that an NFS server returns a success message only after all data is written to the server, which brings long latency. The recommended value is async.</p>
noatime	<p>If you do not need to record the file access time, set this parameter. This prevents overheads caused by access time modification during frequent access.</p>
nodiratime	<p>If you do not need to record the directory access time, set this parameter. This prevents overheads caused by access time modification during frequent access.</p>

 **NOTE**

You are advised to use the default values for the parameters without usage recommendations.

Step 6 Run the following command to view the mounted file system:

mount -l

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

```
Mount point on /local_path type nfs (rw,vers=3,timeo=600,nolock,addr=)
```

Step 7 After the file system is mounted successfully, access the file system on the ECSs to read or write data.

If the mounting fails or times out, rectify the fault by referring to [Troubleshooting](#).

 **NOTE**

The maximum size of a file that can be written to an SFS Capacity-Oriented file system is 240 TB.

The maximum size of a file that can be written to an SFS Turbo file system is 32 TB, and that for an SFS Turbo Enhanced file system is 320 TB.

----End

4.2 Mounting an NFS File System to ECSs (Windows)

After creating a file system, you need to mount the file system to servers so that they can share the file system.

This section uses Windows Server 2012 as the example OS to describe how to mount an NFS file system. For other versions, perform the steps based on the actual situation.

An SFS Capacity-Oriented file system can support either the NFS or CIFS protocol.

In this section, ECSs are used as example servers. Operations on BMSs and containers (CCE) are the same as those on ECSs.

Prerequisites

- You have created a file system and have obtained the mount point of the file system.
- At least one ECS that belongs to the same VPC as the file system exists.
- The IP address of the DNS server for resolving the domain names of the file systems has been configured on the ECS. For details, see [Configuring DNS](#).

Limitations and Constraints

You are advised to use CIFS file systems in Windows OS.

SFS Turbo file systems cannot be mounted to Windows ECSs.

SFS 3.0 Capacity-Oriented file systems cannot be mounted to Windows ECSs.

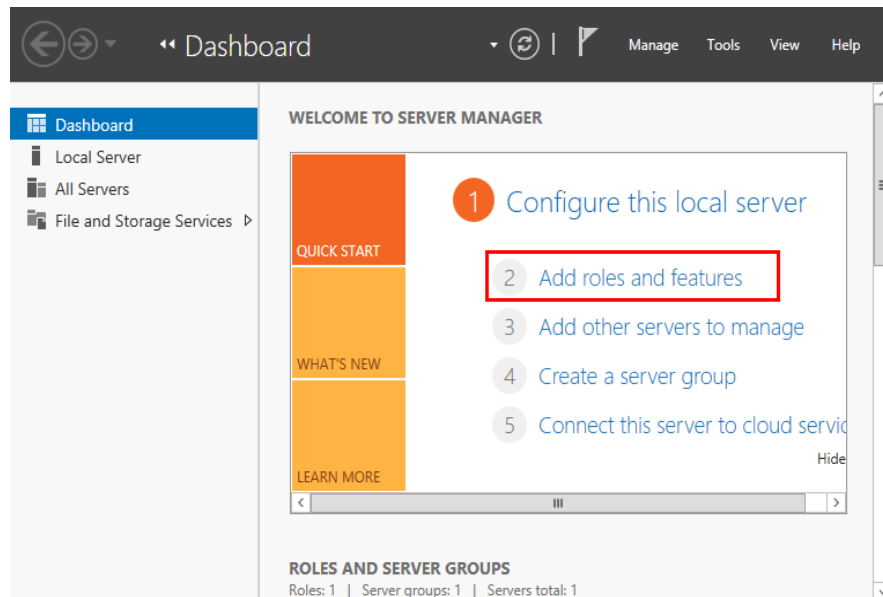
Procedure

Step 1 Go to the ECS console and log in to the ECS running Windows Server 2012.

Step 2 Install the NFS client.

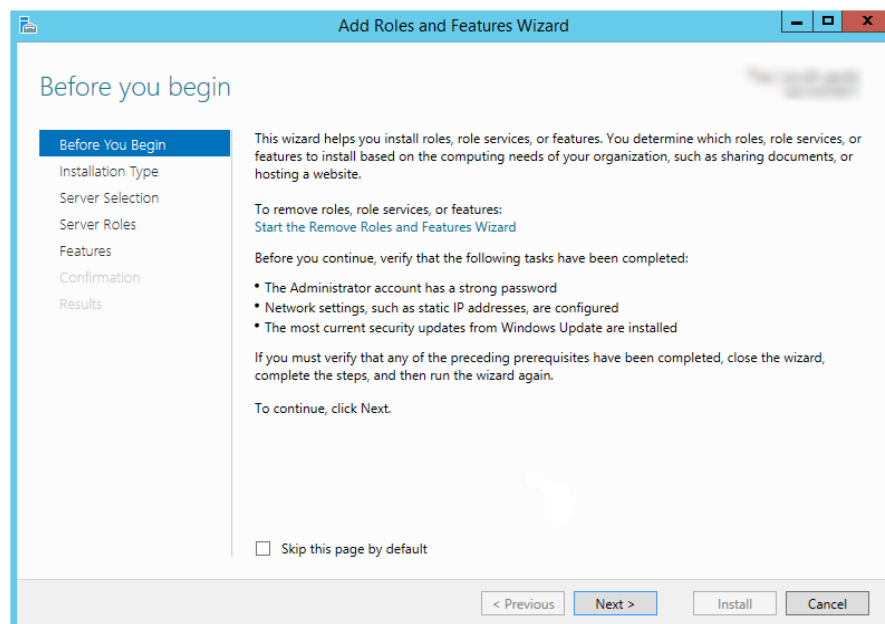
1. Click **Server Manager** in the lower left corner. The **Server Manager** window is displayed, as shown in [Figure 4-2](#).

Figure 4-2 Server Manager



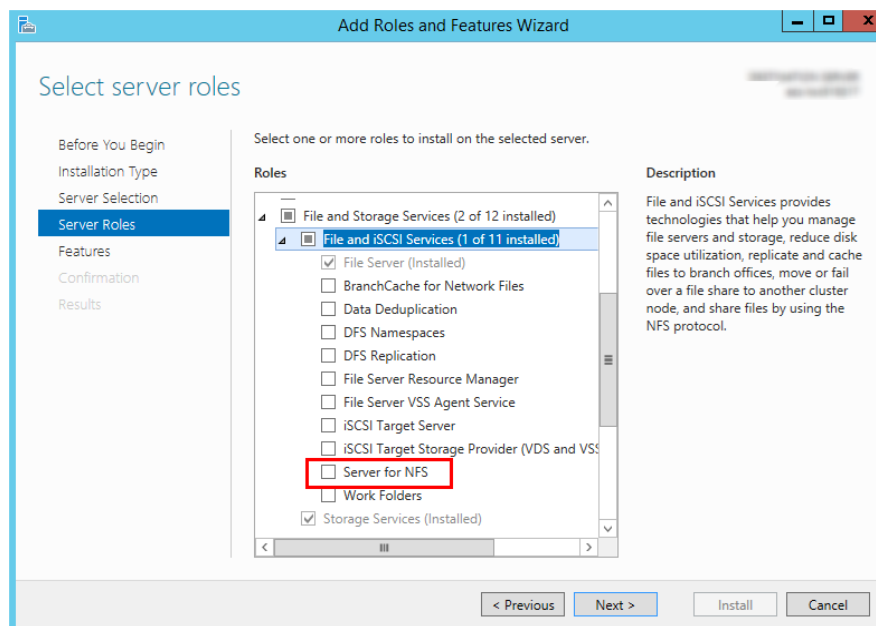
2. Click **Add Roles and Features**. See [Figure 4-3](#).

Figure 4-3 Wizard for adding roles and features



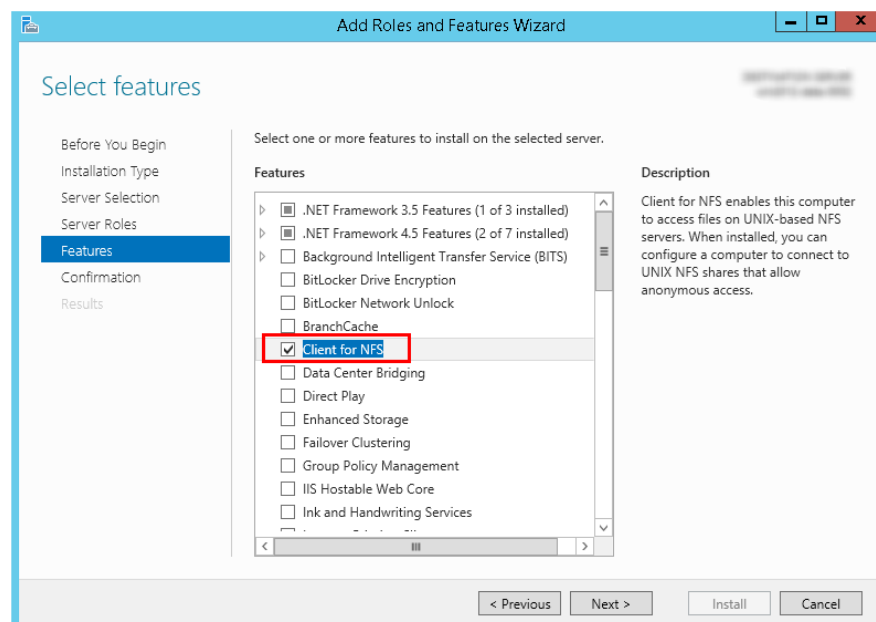
3. Click **Next** as prompted. On the **Server Roles** page, select **Server for NFS**, as shown in [Figure 4-4](#).

Figure 4-4 Selecting the server for NFS



4. Click **Next**. In the **Features** page, select **Client for NFS** and click **Next**, as shown in **Figure 4-5**. Confirm the settings and then click **Install**. If you install the NFS client for the first time, after the installation is complete, restart the client and log in to the ECS again as prompted.

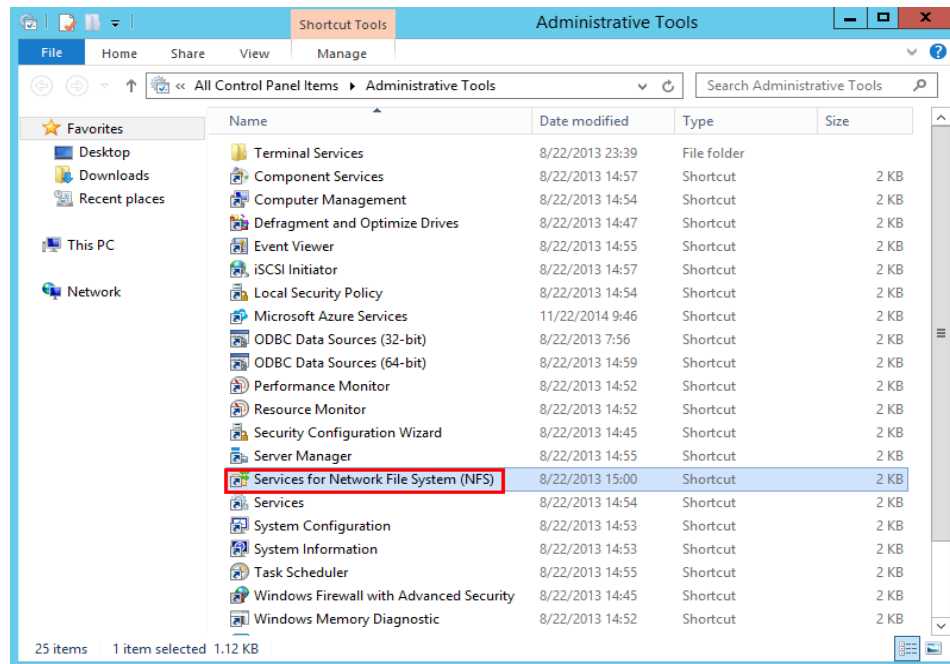
Figure 4-5 Selecting the NFS client



Step 3 Modify the NFS transfer protocol.

1. Choose **Control Panel > System and Security > Administrative Tools > Services for Network File System (NFS)**, as shown in **Figure 4-6**.

Figure 4-6 Administrative tools



2. Right-click **Client for NFS**, choose **Properties**, change the transport protocol to **TCP**, and select **Use hard mounts**, as shown in [Figure 4-7](#) and [Figure 4-8](#).

Figure 4-7 Services for NFS

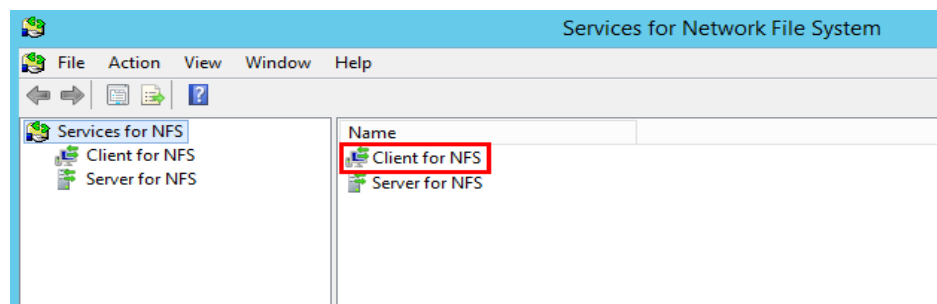
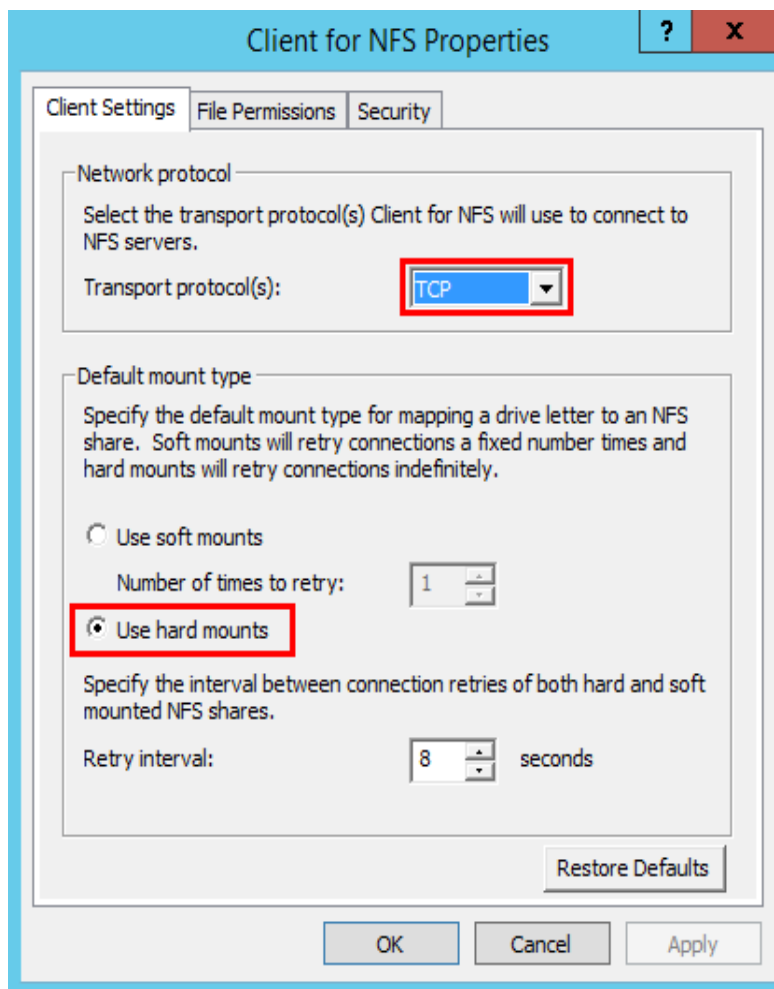


Figure 4-8 Client for NFS properties



Step 4 Check that the IP address of the DNS server for resolving the domain names of the file systems has been configured on the ECS before mounting the file system. For details, see [Configuring DNS](#). SFS Turbo file systems do not require domain name resolution.

Step 5 Run the following command in the Command Prompt of the Windows Server 2012 (X is the drive letter of the free disk). Select the ECS that belongs to the same VPC as the file system to mount the file system.

For SFS Capacity-Oriented file systems: **mount -o nolock mount point X:**

NOTE

- Free drive letter of the disk: A drive letter that is not in use, such as drive letter E or X.


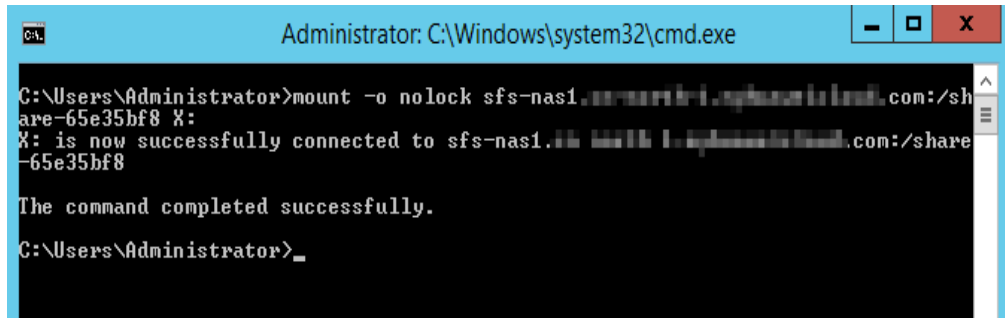
You can move the cursor to the mount point and click  next to the mount point to copy the mount point. For details, see [Figure 4-9](#). If the information shown in [Figure 4-10](#) is displayed, the mounting is successful.

Figure 4-9 Mount point

Name	AZ	Status	Share Pr...	Available C...	Maximum Capa...	Encrypted	Enterprise...	Shared Path
sfs-name-001	AZ1	Available	NFS	20.00	20.00	No	default	sfs-nas01.../share-396876e8

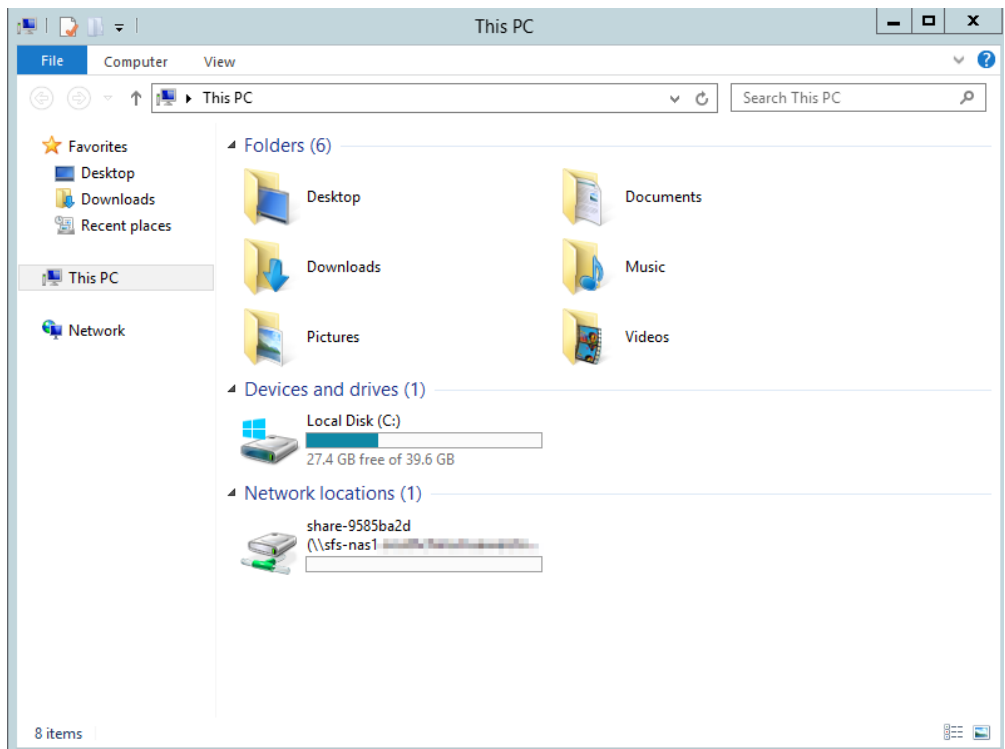
Figure 4-10 Running the command



Step 6 After the file system is mounted successfully, you can view the mounted file system on the **This PC** window, as shown in [Figure 4-11](#).

If the mounting fails or times out, rectify the fault by referring to [Troubleshooting](#).

Figure 4-11 Successful mounting



NOTE

To distinguish different file systems mounted on an ECS, you can rename file systems by right-clicking a file system and choose **Rename**.

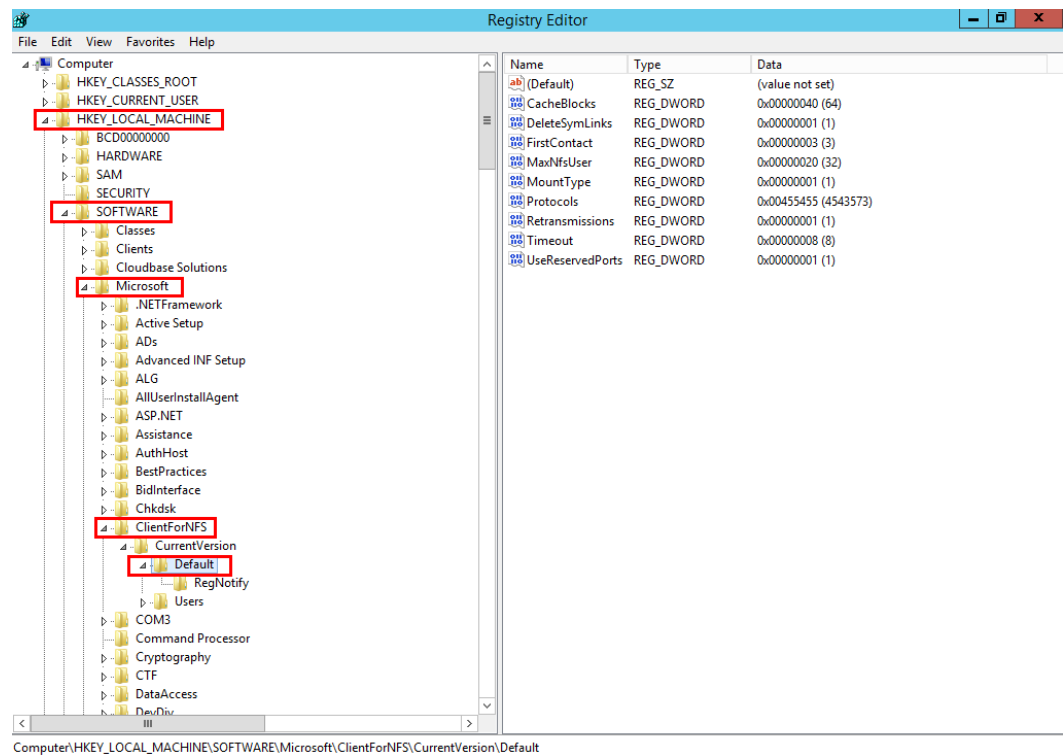
----End

Troubleshooting

If a file system is mounted to a Linux ECS and a Windows ECS, on the Windows ECS, data cannot be written to the files created by the Linux ECS. To address this problem, modify the registry and change both UID and GID values to **0** for NFS accesses from Windows. This section uses Windows Server 2012 as an example. Do as follows:

- Step 1** Choose **Start > Run** and enter **regedit** to open the registry.
- Step 2** Enter the **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\ClientForNFS\CurrentVersion\Default** directory. See [Figure 4-12](#).

Figure 4-12 Entering the directory



- Step 3** Right-click the blank area and choose **New > DWORD Value** from the shortcut menu. Set **AnonymousUid** and **AnonymousGid** to **0**. [Figure 4-13](#) shows a successful operation.

Figure 4-13 Adding values

Name	Type	Data
(Default)	REG_SZ	(value not set)
CacheBlocks	REG_DWORD	0x00000040 (64)
DeleteSymLinks	REG_DWORD	0x00000001 (1)
FirstContact	REG_DWORD	0x00000003 (3)
MaxNfsUser	REG_DWORD	0x00000020 (32)
MountType	REG_DWORD	0x00000001 (1)
Protocols	REG_DWORD	0x00cfff (13630719)
Retransmissions	REG_DWORD	0x00000001 (1)
Timeout	REG_DWORD	0x00000008 (8)
UseReservedPorts	REG_DWORD	0x00000001 (1)
AnonymousUid	REG_DWORD	0x00000000 (0)
AnonymousGid	REG_DWORD	0x00000000 (0)

Step 4 After modifying the registry, restart the server for the modification to take effect.

----End

4.3 Mounting a CIFS File System to ECSs (Windows)

After creating a file system, you need to mount the file system to ECSs so that they can share the file system.

This section uses Windows Server 2012 as an example to describe how to mount a CIFS file system.

An SFS Capacity-Oriented file system can support either the NFS or CIFS protocol.

Prerequisites

- You have created a file system and have obtained the mount point of the file system.
- At least one ECS that belongs to the same VPC as the file system exists.
- The IP address of the DNS server for resolving the domain names of the file systems has been configured on the ECSs. For details, see [Configuring DNS](#).
- You need to mount the file system as user **Administrator**. You cannot switch to another user to mount the file system.

Limitations and Constraints

CIFS file systems cannot be mounted to Linux ECSs.

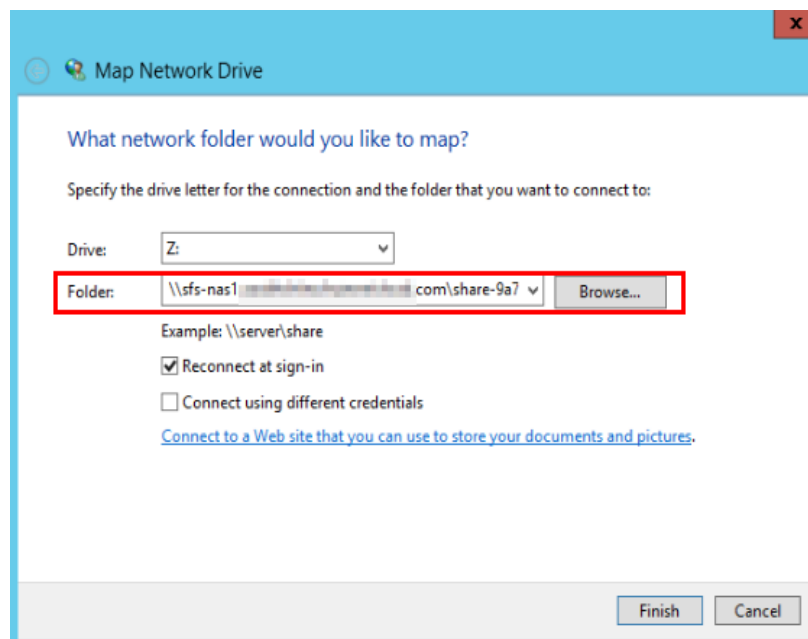
Procedure

- Step 1** Go to the ECS console and log in to the ECS running Windows Server 2012.
- Step 2** Click **Start**, right-click **Computer**, and choose **Map network drive**.
- Step 3** In the dialog box that is displayed, enter the mount point of the file system, specifically, `\\File system domain name\Path`. See [Figure 4-14](#).

Table 4-3 Variable description

Variable	Description
File system domain name	Obtain the file system domain name from the file system mount point. For details about how to obtain the file system domain name, see Viewing a File System .
Path	The format is share-xxxxxxx , where <i>x</i> is a digit or letter.

Figure 4-14 Entering the mount point



Step 4 Click **Finish**.

Step 5 After the file system is mounted successfully, you can view the mounted file system on the **This PC** page.

If the mounting fails or times out, rectify the fault by referring to [Troubleshooting](#).

-----End

4.4 Mounting a File System Automatically

File system mounting information may be lost after a server is restarted. You can configure automatic mounting for the server to avoid the mounting information loss.

Restrictions

Because the service startup sequences in different operating systems vary, some servers running CentOS may not support the following automatic mounting schemes. In this case, manually mount the file system.

Table 4-4 Field description

Field	Description
<i>Mount point</i>	Mount object, that is, the mount point of the file system to be mounted. Set this parameter to the mount point in the mount command that is used in Mounting an NFS File System to ECSs (Linux) .
<i>/local_path</i>	Mount point, that is, the directory created on the ECS for mounting the file system. Set this parameter to the local path in the mount command that is used in Mounting an NFS File System to ECSs (Linux) .
nfs	Mount type, that is, file system or partition type. Set it to nfs .
vers=3,timeo=600,nolock	Mount options, used to set mount parameters. Use commas (,) to separate between multiple options. <ul style="list-style-type: none"> • vers: file system version. The value 3 indicates NFSv3. • timeo: waiting time before the NFS client retransmits a request. The unit is 0.1 second. The recommended value is 600. • nolock: specifies whether to lock files on the server using the NLM protocol.
0	Choose whether to back up file systems using the dump command. <ul style="list-style-type: none"> • 0: not to back up file systems • An integer larger than 0: to back up file systems. A file system with a smaller integer is checked earlier than that with a larger integer.
0	Choose whether to check file systems using the fsck command when the ECS is starting and specify the sequence for checking file systems. <ul style="list-style-type: none"> • 0: to check file systems • By default, this field is set to 1 for the root directory partition. Other partitions start from 2, and a partition with a smaller integer is checked earlier than that with a larger integer.

Procedure (Windows)

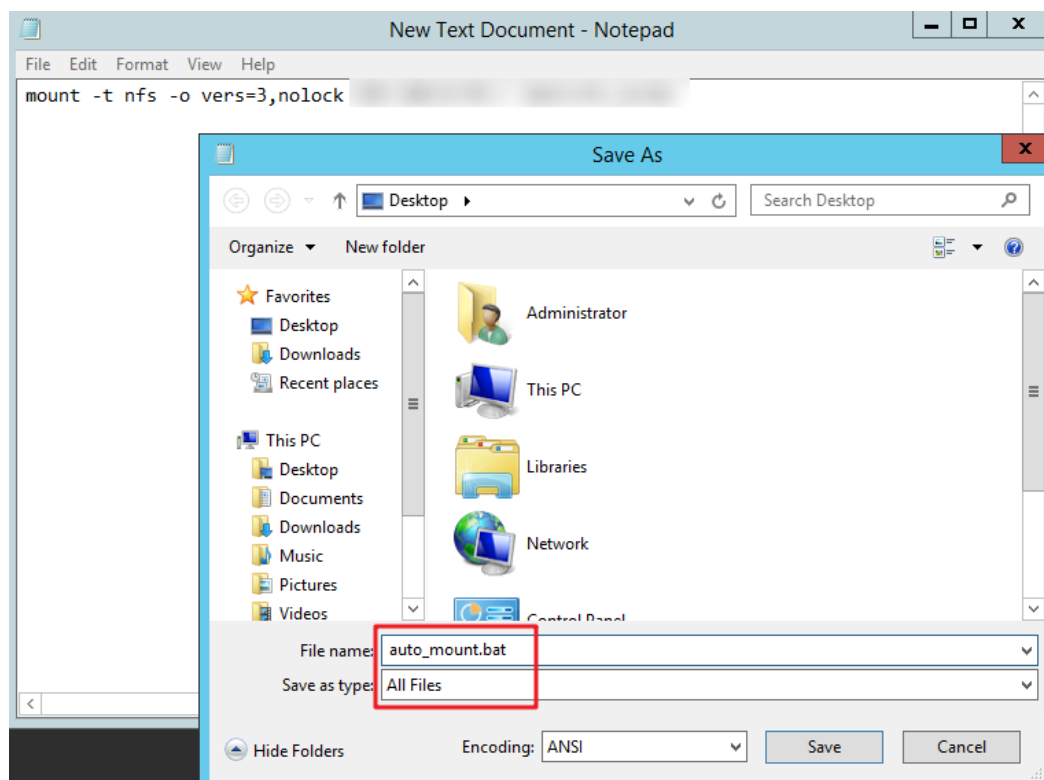
Ensure that an NFS client has been installed on the target server before mounting. This section uses Windows Server 2012 as an example to describe how to mount a file system.

Step 1 Log in to the ECS.

Step 2 Before mounting the file system, create a script named **auto_mount.bat**, save the script to a local host, and record the save path. The script contains the following content:

```
mount -o nolock mount point corresponding drive letter
```

Figure 4-16 Saving the script



For example, the **auto_mount.bat** script of a file system contains the following content:

For SFS Capacity-Oriented file systems: **mount -o nolock *mount point X***:

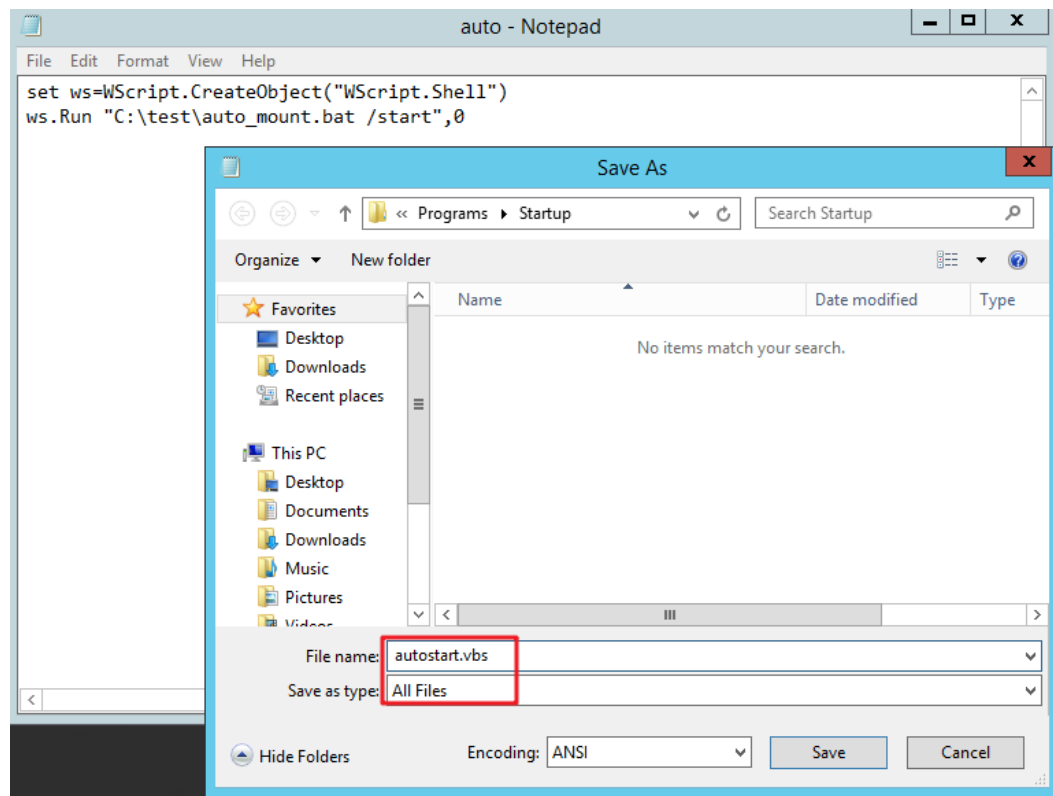
NOTE

- You can copy the mount command of the file system from the console.
- After the script is created, manually run the script in the Command Prompt to ensure that the script can be executed successfully. If you can view the file system in **This PC** after the script execution, the script can be executed properly.
- This .bat script cannot be stored in the same path in **Step 3** that stores the .vbs file. In this example, the .bat script is stored in **C:\test**.

Step 3 Create a .txt file whose name is **XXX.vbs** and save the file to the directory **C:\Users\Administrator\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup**. The file contains the following content:

```
set ws=WScript.CreateObject("WScript.Shell")
ws.Run "Local path and script name of the auto_mount.bat script /start", 0
```

Figure 4-17 Creating .vbs file



NOTE

In this example, the local path of the **auto_mount.bat** script is **C:\test**. Therefore, the content in the .vbs file is as follows:

```
set ws=WScript.CreateObject("WScript.Shell")  
ws.Run "C:\test\auto_mount.bat /start",0
```

Step 4 After the task is created, you can restart the ECS and check whether the configuration is successful. After the configuration is successful, the file system automatically appears in **This PC**.

----End

5 Unmount a File System

If a file system is no longer used and needs to be deleted, you are advised to unmount the file system and then delete it.

Prerequisites

Before unmounting a file system, stop the process and read/write operations.

Linux OS

Step 1 Log in to the ECS.

Step 2 Run the following command:

```
umount Local path
```

Local path: An ECS local directory where the file system is mounted, for example, /**local_path**.

NOTE

Before running the **umount** command, stop all read and write operations related to the file system and exit from the local path. Or, the unmounting will fail.

----End

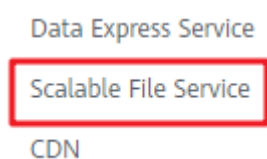
6 Example: Mounting an NFS File System to ECSs

- A Scalable File Service (SFS) file system can be created and mounted to multiple servers. This allows for shared access to the same file system from multiple servers.
- Before creating a file system, make that a VPC and ECSs are available, and the ECSs are in this VPC. If the ECSs are not in this VPC, communication between SFS Turbo and the ECSs can be established using VPC peering connections.
- This guide describes how to establish the shared file storage for a company using SFS.

Step 1: Log In to the Console

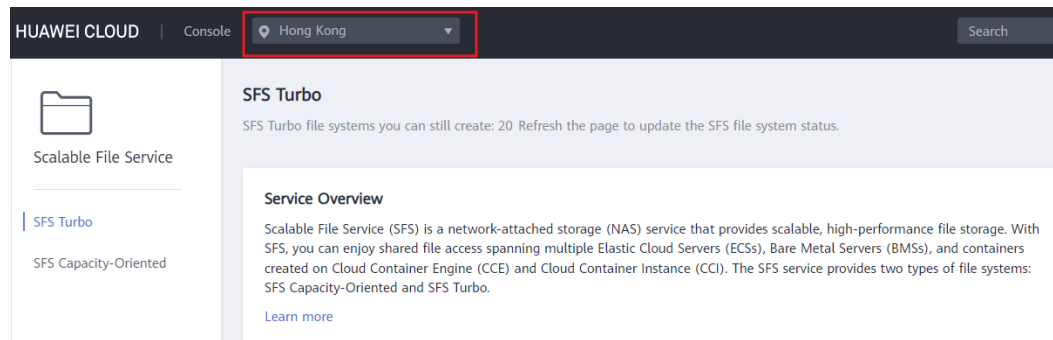
Step 1 Log in to the [Huawei Cloud console](#). In the service list, click **Scalable File Service** under **Storage**.

Figure 6-1 Logging in to the SFS console



Step 2 Select the region where the ECSs are deployed. A file system can be mounted to an ECS only when they are in the same region and VPC. In this example, select **CN-Hong Kong**.

Figure 6-2 Selecting a region



----End

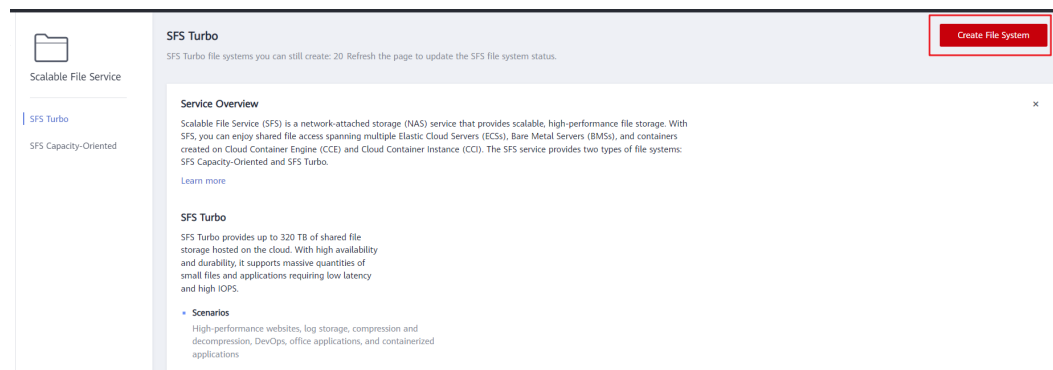
NOTE

1. This company has purchased ECSs in the **CN-Hong Kong** region.
2. All the company's ECSs are in the **vpc-3114** VPC.
3. For the detailed creation procedure, see [Create a File System](#).

Step 2: Create a File System

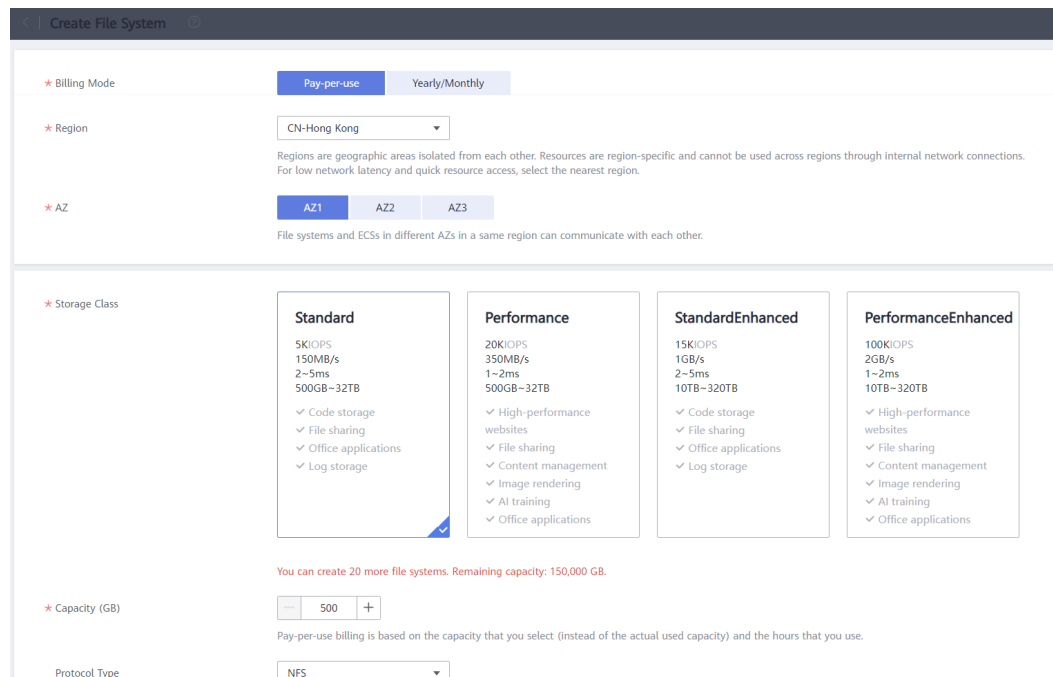
Step 1 Click **Create File System**.

Figure 6-3 Creating a file system



Step 2 On the displayed page, configure file system parameters and click **Create Now**.

Figure 6-4 Configuring parameters



----End

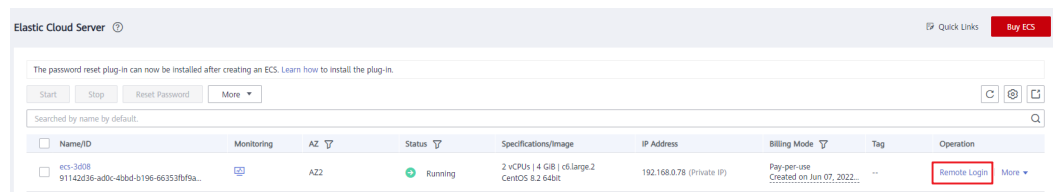
NOTE

1. You are advised to select the same AZ as the ECSs.
2. You can view existing VPCs or create a new VPC.
3. For the detailed creation procedure, see [Create a File System](#).

Step 3: Mount the File System

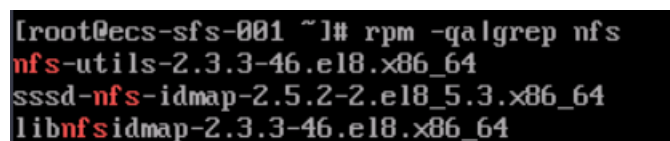
Step 1 Log in to an ECS. You can log in to an ECS using the console or a remote access tool (such as PuTTY).

Figure 6-5 Logging in to an ECS



Step 2 Run `rpm -qa|grep nfs` to check whether the NFS client is installed on the ECS.

Figure 6-6 Checking whether the NFS client is installed



Step 3 Run `mkdir Local path` to create a local path. Then run `mount -t nfs -o vers=3,timeo=600,noresvport,nolock,tcp Mount point Local path` to mount the

file system. Run **mount -l** to check whether the file system is successfully mounted.

Figure 6-7 Mounting the file system

```
[root@ecs-sfs-001 ~]# mkdir /mnt/sfs_turbo
[root@ecs-sfs-001 ~]# mount -t nfs -o vers=3,nolock <IP>:/ /mnt/sfs_turbo
[ 1451.992058] FS-Cache: Loaded
[ 1452.021489] FS-Cache: Netfs 'nfs' registered for caching
[root@ecs-sfs-001 ~]# mount -l
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devtmpfs on /dev type devtmpfs (rw,nosuid,size=1834604k,nr_inodes=458651,mode=755)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev)
```

----End

 NOTE

1. You can copy the shared path from the file system details page on the console.
2. If information similar to "*IP address* on */local_path* type nfs (rw,vers=3,timeo=600,nolock,addr=)" is returned, the file system is mounted successfully.
3. For details about the creation procedure, see [Mounting an NFS File System to ECSs \(Linux\)](#).

7 Change History

Released On	Description
2023-12-20	This issue is the sixth official release. Updated the following content: Added descriptions about SFS 3.0 Capacity-Oriented file systems.
2023-07-27	This issue is the fifth official release. Added descriptions about using SFS Turbo as the storage backend of CCE.
2023-03-22	This issue is the fourth official release. Updated the following content: Optimized Example: Mounting an NFS File System to ECSs .
2019-05-30	This issue is the third official release. Updated the following content: <ul style="list-style-type: none"> Added the description of the SFS Turbo file system.
2019-02-15	This issue is the second official release. Updated the following content: <ul style="list-style-type: none"> Simplified the document outline. Changed section "Mounting a File System to ECSs" to "Mounting an NFS File System to ECSs (Linux)". Added the description of mounting parameters for performance optimization in section "Mounting an NFS File System to ECSs (Linux)." Deleted sections "Process", "Registering with HUAWEI CLOUD", and "Enabling SFS." Added the description of logging in to the management console in section "Creating a File System."
2018-11-15	This issue is the first official release.