Scalable File Service

Quick Start

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1 Step 1: Make Preparations

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

- **Registering with HUAWEI CLOUD and Completing Real-Name Authentication**
- **Topping Up Your Account**
- **Creating an IAM User**

Registering with HUAWEI CLOUD and Completing Real-Name Authentication

If you already have a HUAWEI CLOUD account, skip this part. If you do not have a HUAWEI CLOUD account, perform the following operations to create an account:

1. Visit **www.huaweicloud.com/en-us/** and click **Register**.
2. On the displayed **Register** page, register an account as prompted. For details, see **Registering on the HUAWEI CLOUD Management Console.**

   After you have successfully registered, the system automatically redirects you to your personal information page.
3. Complete real-name authentication by following the instructions in **Real-Name Authentication**.

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.

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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, select **Users**.
4. On the **Users** page, click **Create User**.
5. Enter basic user information as prompted.
   - **Username**: Enter a username, for example, **sfs_admin**.
   - **Credential Type**: Select **Password**.

     NOTE

     - A password can be used to log in to the management console and enable development tools (such as APIs, the CLI, and SDKs) that can access cloud services through password authentication. This is the recommended option because the security administrator manages users.
     - Access keys are used to enable development tools (such as APIs, the CLI, and SDKs) that can access cloud services through key authentication.
   - In the **User Groups** area, select **admin** from the drop-down list. 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 Permissions**.
   - **Description**: Enter description of the user, for example, **SFS administrator**.
6. Click **Next**.
7. Select **Set now** for **Password Type**.

   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.
8. Select **Require user to set a new password upon first login** to ensure that the SFS administrator is forced to change the password on the first login. The **Require user to set a new password upon first login** option is selected by default. It is recommended that you retain the default setting to ensure that the password of the administrator account is set by the administrator, preventing password leakage.
9. Enter the email address, mobile number, password, and confirm password.
10. Click **OK**.

    After the user is created, the login link of the user is displayed above the list.

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2 Step 2: Create a File System

You can create a file system and mount it to multiple ECSs. Then the ECSs can share the file system. You can create two types of file systems: SFS Capacity-Oriented and SFS Turbo.

Prerequisites

1. Before creating a file system, ensure that a VPC is available.

   If no VPC is available, create a VPC by referring to **Creating a VPC** in the *VPC User Guide*.

2. Before creating a file system, ensure that an ECS is available and the ECS belongs to the created VPC.

   If no ECS is available, purchase an ECS by referring to **Purchasing an ECS** in the *Elastic Cloud Server Getting Started*.

Logging In to the Management Console

Step 1 Visit the HUAWEI CLOUD website at **www.huaweicloud.com/en-us/**.

Step 2 Register an account.

Before using SFS, you need to register a HUAWEI CLOUD account. This account can be used to access all HUAWEI CLOUD services, including SFS. If you have an account, start from **Step 3**.

1. In the upper right corner of the page, click **Register**.
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 **Log 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**. The SFS Console page is displayed.

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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 navigation pane, choose **SFS Capacity-Oriented**. In the upper right corner of the page, click **Create File System**.

Step 2 In the dialog box shown in **Figure 2-1**, set the parameters as described in **Table 2-1**.

Figure 2-1 Creating a file system

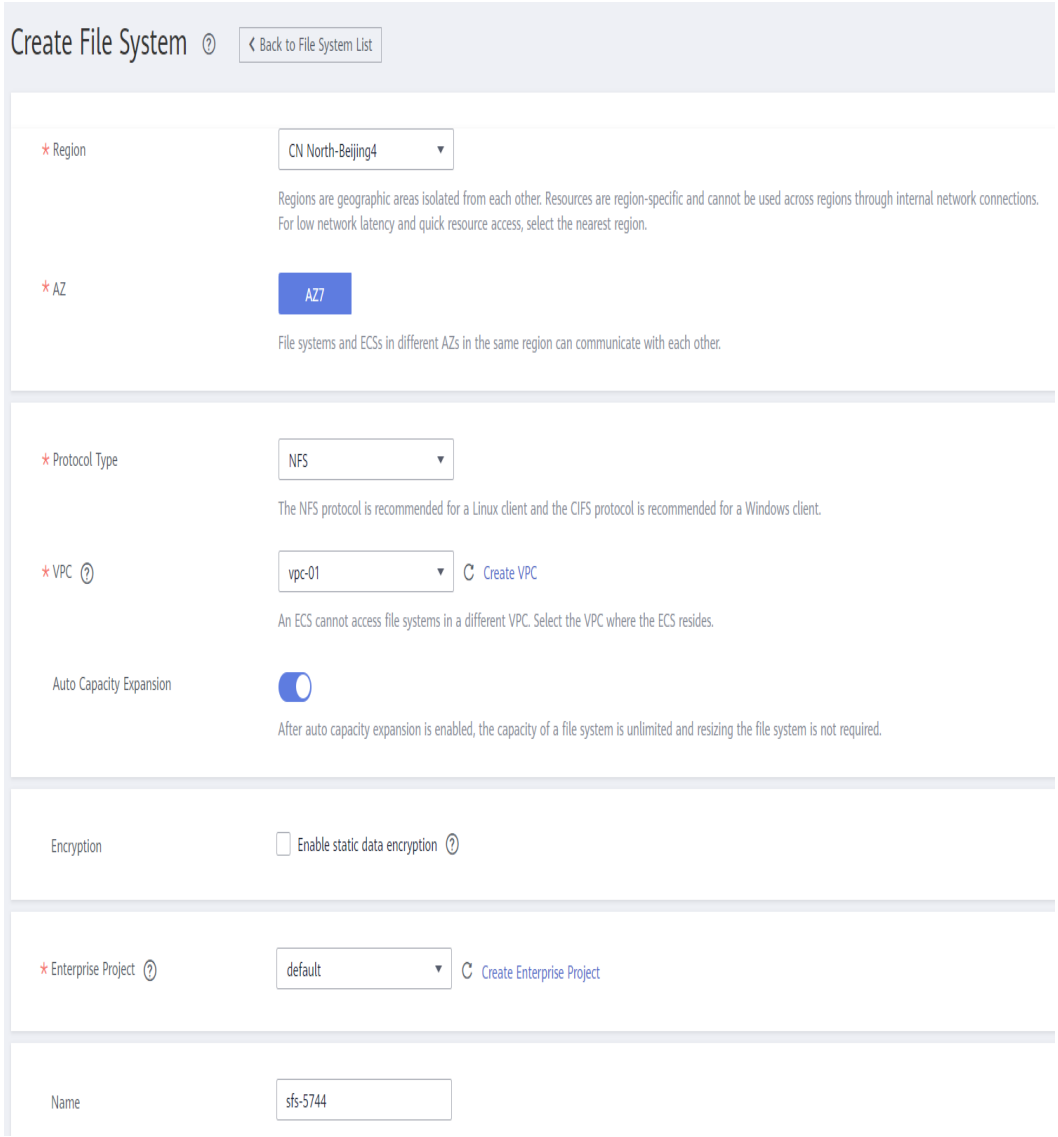

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Table 2-1 Parameter description

Parameter	Description	Remarks
Region	This parameter is mandatory. Region of the tenant. Select the current 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 ECS.
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 ECS.
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** • 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 VPCs** for the SFS file system.	Click **View VPC** to view existing VPCs or create a new one.

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Parameter	Description	Remarks
Auto Capacity Expansion	Specifies whether the capacity of a file system is limited.	If this function is enabled, the capacity of the file system is not limited. Therefore, you do not need to adjust the capacity of the file system. If this function is disabled, you can set the capacity of the file system and resize the file system later as required. **NOTE** SFS file systems support resizing if the auto capacity expansion function is disabled. You can only enable the auto capacity expansion function when creating a file system. After the auto capacity expansion function is enabled, you cannot reset the maximum capacity. In addition, after the auto capacity expansion function is enabled, you cannot disable it. Exercise caution when you enable this function.
Maximum Capacity	When the auto capacity expansion function is disabled, the maximum capacity of a single file system needs to be configured. 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**.

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Parameter	Description	Remarks
Encryption	This parameter is optional. 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: • **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. 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. • **Agency Name** – 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	-

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Parameter	Description	Remarks
	SFSAccessKMS, KMS keys have been assigned to SFS Capacity-Oriented to encrypt or decrypt the file system. • **KMS key name** **NOTE** **KMS key name** is displayed only after the agency named **SFSAccessKMS** has been created. For details, see **Create Agency** above. **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. You can select one of the following keys: – **Default master key**: After the KMS access rights have been granted to SFS Capacity-Oriented, the system automatically creates a **Default master key** and names it **sfs/default**. – **Customer master keys (CMKs)**: Existing or newly created CMKs. For details, see **Creating a CMK** in the *Data Encryption Workshop User Guide*. **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**.	

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Parameter	Description	Remarks
Enterprise Project	This parameter is provided for enterprise users. When creating a file system, you can add the file system to an existing enterprise project. An enterprise project is a cloud resource management mode, in which cloud resources and members are centrally managed by project. The default project is **default**. Select an enterprise project from the drop-down list. **NOTE** **Enterprise** is available on the management console only if you have enabled the enterprise project, or your account is the primary account. To enable this function, contact your customer manager.	You can select only created enterprise projects. To create an enterprise project, click **Enterprise** in the upper right corner of the console page. For more information about enterprise projects, see ***Enterprise Management User Guide***.
Name	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**.	The value can contain only letters, digits, underscores (_), and hyphens (-). When creating a single file system, the value can contain a maximum of 255 characters. When creating file systems in batches, enter 1 to 251 characters.

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Parameter	Description	Remarks
Quantity	Number of file systems to be created.	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. 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.

Step 3 Click **Create Now** after the configuration is complete.

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 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 in the dialog box shown in **Figure 2-2**. **Table 2-2** describes the parameters.

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Figure 2-2 Creating an SFS Turbo file system

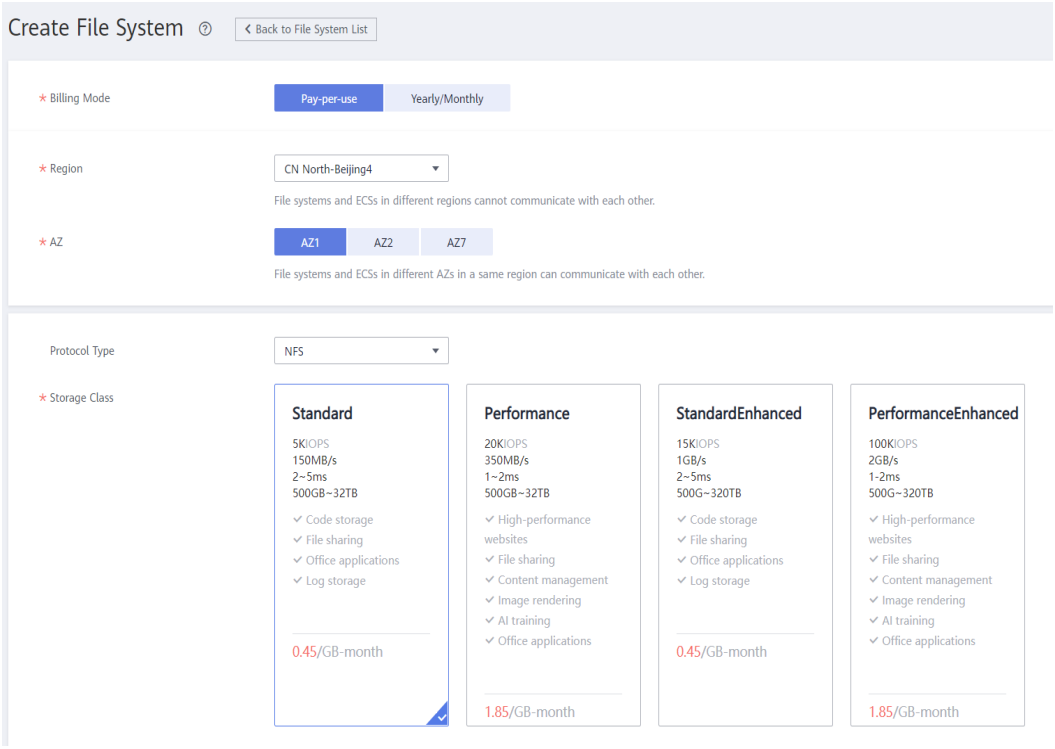

Table 2-2 Parameter description

Parameter	Description	Remarks
Billing Mode	This parameter is mandatory. Select a billing mode, **Yearly/ Monthly** or **Pay per use**. For details about the billing standard, see **Price Details**.	The default value is **Yearly/ Monthly**.
Region	This parameter is mandatory. Region of the tenant. Select the current 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 ECS.
AZ	This parameter is 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 ECS.
Protocol Type	This parameter is mandatory. SFS Turbo supports NFS for file system access.	The default value is **NFS**.

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Parameter	Description	Remarks
Storage Class	This parameter is mandatory. Includes SFS Turbo Standard, SFS Turbo Standard – Enhanced, SFS Turbo Performance, and SFS Turbo Performance – Enhanced. For details about the features and application scenarios of each storage class, see **File System Types**.	The default value is **Standard**. **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.
Capacity (GB)	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.	Support scope: • SFS Turbo Standard: 500 GB to 32 TB • SFS Turbo Performance: 500 GB to 32 TB • SFS Turbo Standard - Enhanced and SFS Turbo Performance - Enhanced: 10 TB to 320 TB.
VPC	This parameter is mandatory. Select a VPC and its subnet. • VPC: An ECS cannot access file systems in a different VPC. Select the VPC to which the ECS 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. **NOTE** Upon creation, only one VPC can be added for each file system. Multi-VPC and cross-VPC file sharing can be implemented through VPC peering connection. For details about VPC peering connection, see **VPC Peering Connection**.	If no VPC is available, create one on the **VPC console**.

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Parameter	Description	Remarks
Security Group	This parameter is mandatory. 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. When creating an SFS Turbo file system, you can select only one security group. You are advised to use an independent security group for an SFS Turbo instance to isolate it from service nodes. 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, 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.	-

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Parameter	Description	Remarks
Encryption	This parameter is optional. 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: • **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 *Data Encryption Workshop User Guide*. • **KMS key ID** After you select a key name, the system automatically generates a key ID.	-

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Parameter	Description	Remarks
Tag	This parameter is optional. When creating a file system, you can bind tags to it. Tags are used to identify file system resources, and you can classify and search for file system resources by tag. Tags are composed of key-value pairs. ● Key: Mandatory if the file system is going to be tagged. A tag key can contain a maximum of 36 characters. ● Value: Optional if the file system is going to be tagged. It can be an empty character string. A tag value can contain a maximum of 43 characters. **NOTE** – You can add a maximum of 10 tags to one file system. – The tag keys of the same file system must be unique. – Except for tagging the file system during disk creation, you can also add, modify, or delete tags for existing file systems.	-

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Parameter	Description	Remarks
Cloud Backup and Recovery	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. The following options are provided , among which the default value is **Do not use**: • **Buy now**: 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**: 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 CBR is not	-

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Parameter	Description	Remarks
	required. If you still need to set backup protection after a file system is successfully purchased, log in to CBR Console, locate the target vault, and bind the file system to the vault.	
Name	This parameter is 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** after the configuration is complete.

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

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3 Step 3: Mount a File System

3.1 Mounting an NFS File System to ECSs (Linux)

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

CIFS file systems cannot be mounted to ECSs running Linux.

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

Operations on BMSs and containers (CCE and CCI) are the same as those on ECSs.

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**.

NOTE

If you log in to the ECS as a non-root user, see **Mounting a File System to a Linux ECS as a Non-root User**.

Step 2 Install the NFS client.

1. Run the following command to check whether the NFS software package is installed.
   - On CentOS, Red Hat, Oracle Enterprise Linux, SUSE, EulerOS, Fedora, or OpenSUSE:

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rpm -qa|grep nfs

- On 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 nothing is displayed, go to **Step 2.2**.

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

```
libnfsidmap
nfs-utils
```

- On SUSE or OpenSUSE:

```
nfsidmap
nfs-client
```

- On Debian or Ubuntu:

```
nfs-common
```

2. Run the following command to install the NFS software package.

   NOTE

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

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

     sudo yum -y install nfs-utils

   - On Debian or Ubuntu:

     sudo apt-get install nfs-common

   - On 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. You can 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*

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 the ECS running Linux using NFS v3 only.

Table 3-1 describes the variables.

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mount -t nfs -o vers=3,timeo=600,noresvport,nolock *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 3-1 Parameter description

Parameter	Description
vers	File system version. Currently, only NFSv3 is supported, 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**.
resvport/ noresvport	Whether the confidential source port is used for server connection. By default, **resvport** indicates that the confidential port is used, and **noresvport** indicates that the confidential port is not used. The kernel version is 2.6.28 or later. You are advised to set this parameter to **noresvport** so that a new TCP port can be used when the network is reconnected. This ensures that the connection is not interrupted when the network recovers from a fault.
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.
Mount point	The format for an SFS file system is *File system domain name*:/*Path*, for example, **example.com:/share-***xxx*. The format for an SFS Turbo file system is *File system IP address*:/, for example, **192.168.0.0:/**. See **Figure 3-1**. **NOTE** • *x* is a digit or letter. • If the mount point is too long to display completely, expand the column to view the full mount point. • Hover the mouse over the mount point to display the complete **mount** command.
Local path	Local path on the ECS, used to mount the file system, for example, **/local_path**.

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Figure 3-1 Mount point



For more mounting parameters for performance optimization during file system mounting, see **Table 3-2**. Use commas (,) to separate parameters. The following command is an example:

mount -t nfs -o vers=3,timeo=600,nolock,rsize=1048576,wsize=1048576,hard,retrans=3,noresvport,async,noatime,nodiratime *Mount point Local path*

Table 3-2 Parameters for file system mounting

Parameter	Description
rsize	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. You are advised to set this parameter to the maximum value **1048576**.
wsize	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. You are advised to set this parameter to the maximum value **1048576**.
soft/hard	**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. The default value is **hard**.
retrans	Number of retransmission times before the client returns an error. The default value is **3**.

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Parameter	Description
resvport/ noresvport	Whether the confidential source port is used for server connection. By default, **resvport** indicates that the confidential port is used, and **noresvport** indicates that the confidential port is not used. The kernel version is 2.6.28 or later. You are advised to set this parameter to **noresvport** so that a new TCP port can be used when the network is reconnected. This ensures that the connection is not interrupted when the network recovers from a fault.
sync/async	**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. 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**.
noatime	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.
nodiratime	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.

NOTE

You are advised to use the default values for the parameters without use 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 is mounted successfully.

```
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 supported maximum size of a file to be written is 240 TB.

----End

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3.2 Mounting an NFS File System to ECSs (Windows)

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

This section uses Windows Server 2012 as an example 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.

Operations on BMSs and containers (CCE and CCI) 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.

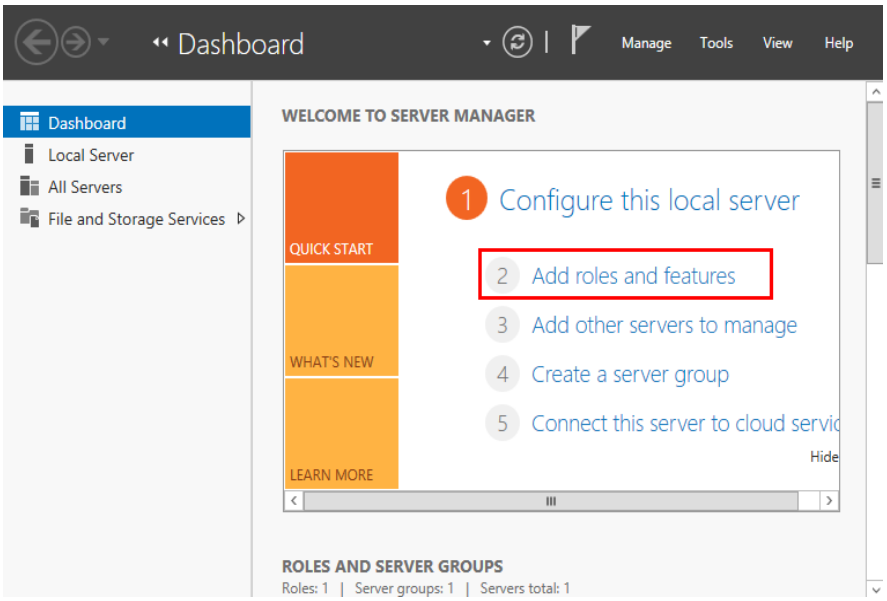
Procedure

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 3-2**.

Figure 3-2 Server Manager



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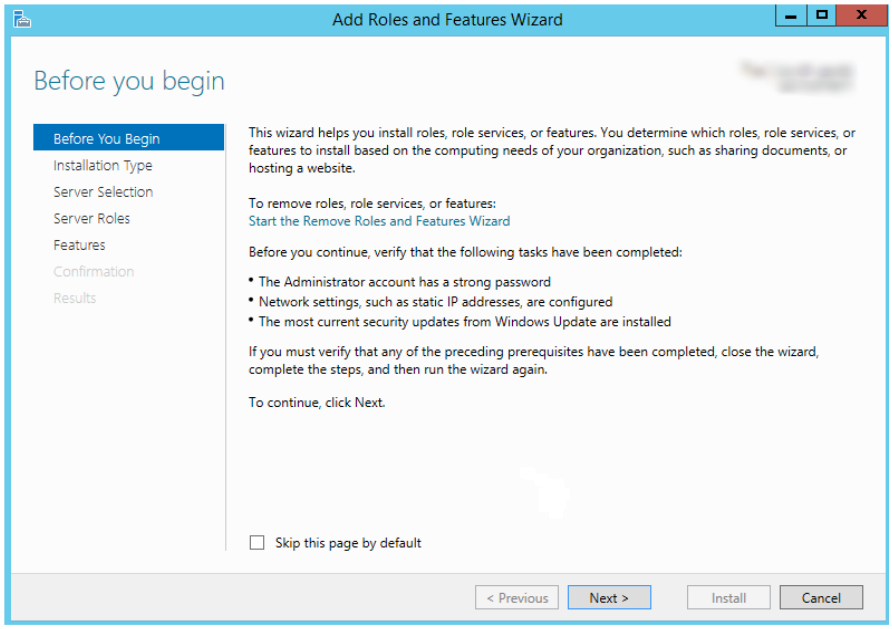
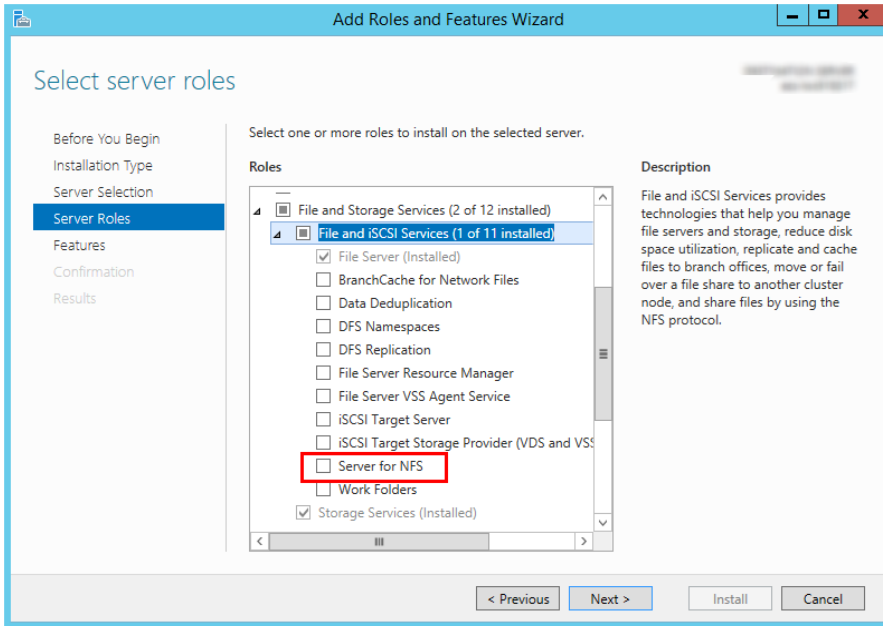
2. Click **Add Roles and Features**. See **Figure 3-3**.

Figure 3-3 Wizard for adding roles and features



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

Figure 3-4 Selecting the server for NFS



4. Click **Next**. In the **Features** page, select **Client for NFS** and click **Next**, as shown in **Figure 3-5**. 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.

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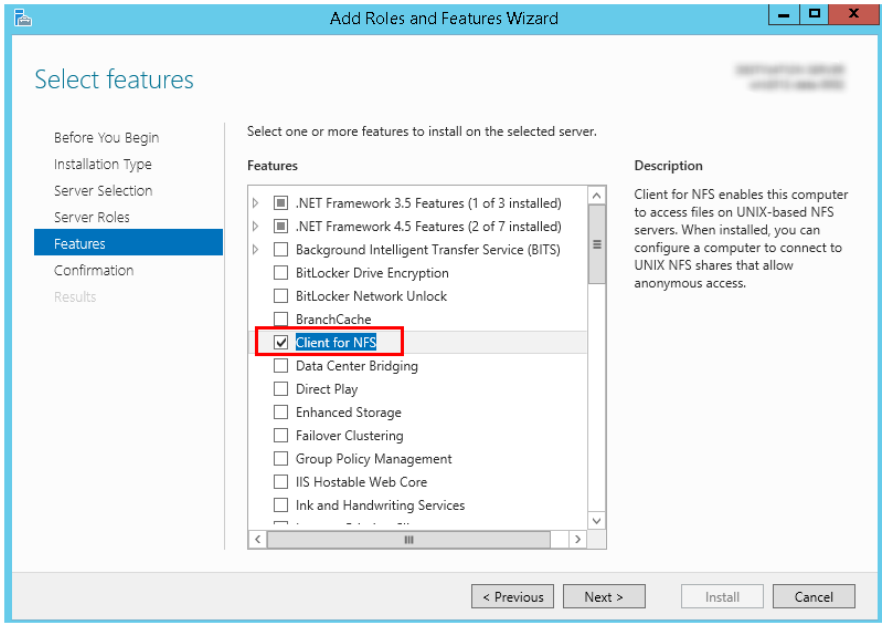
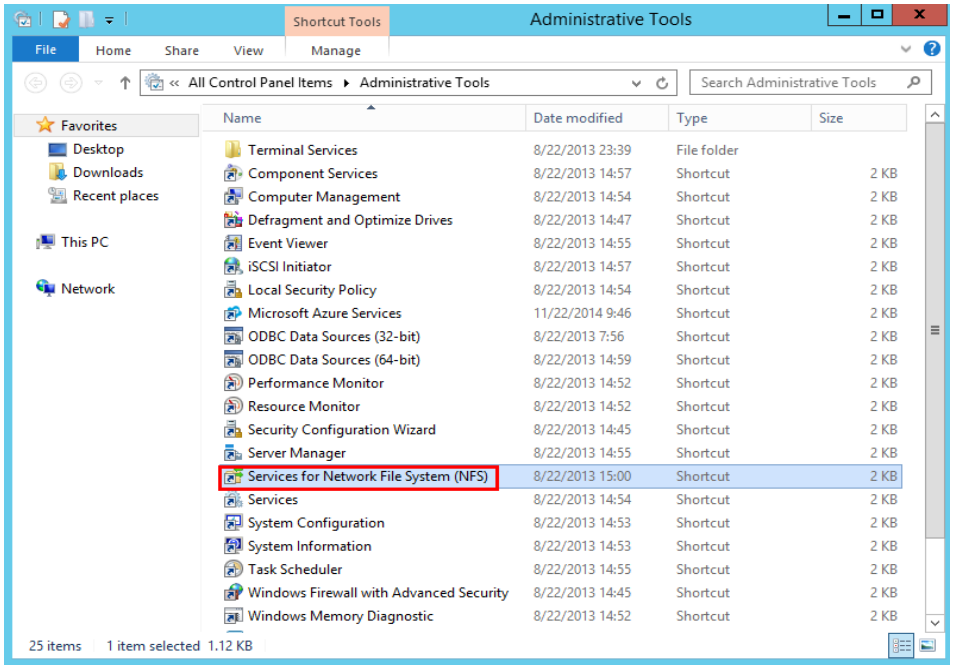
Figure 3-5 Selecting the NFS client



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 3-6**.

Figure 3-6 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 3-7** and **Figure 3-8**.

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Figure 3-7 Services for NFS

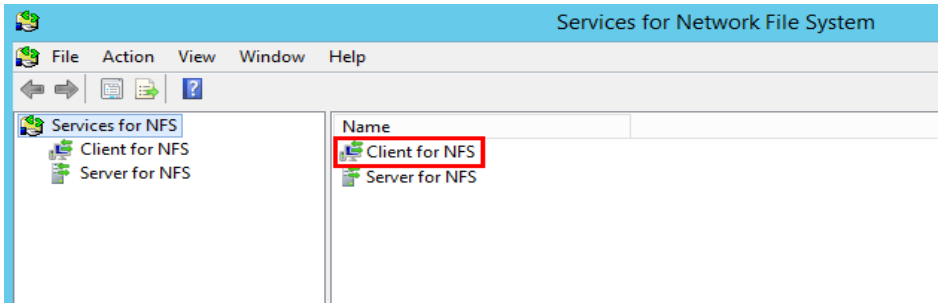
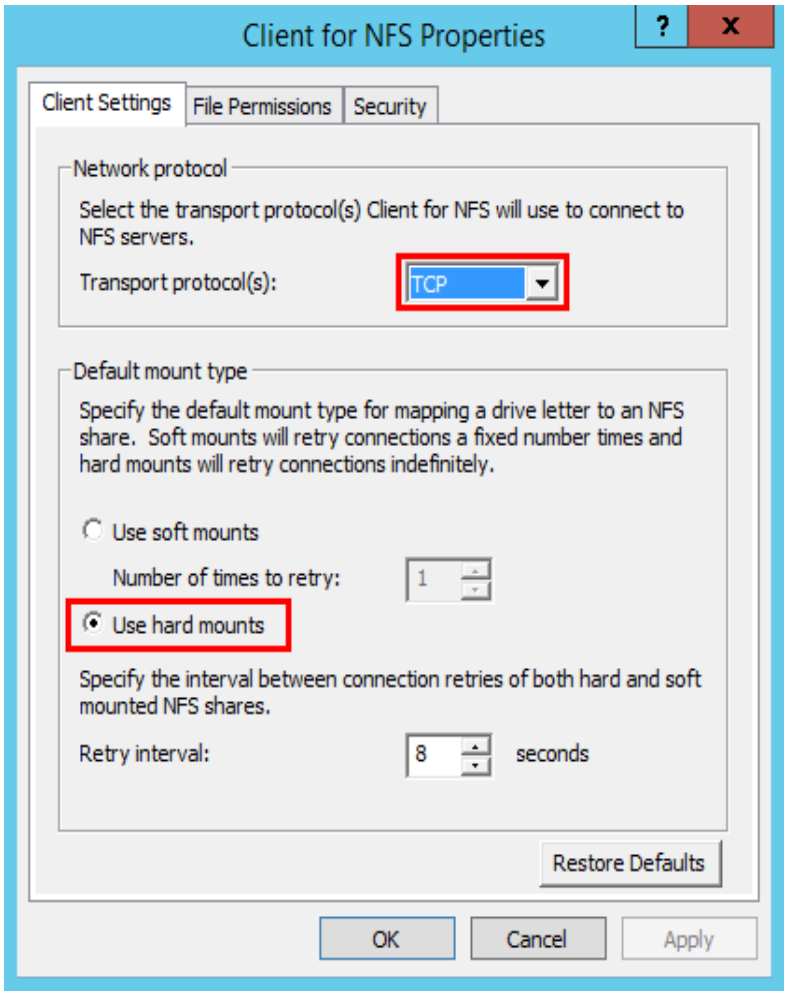


Figure 3-8 Client for NFS properties



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:**

For SFS Turbo file systems: **mount -o nolock -o casesensitive=yes** *IP address*! **X:**

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NOTE

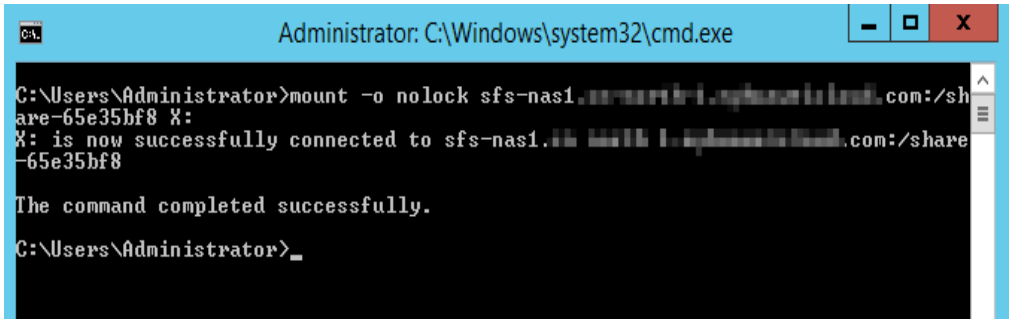
- Drive letter of the free disk: A disk that is not in use, such as disk E or X.
- The mount point of an SFS Turbo file system is the root directory. **Ensure that an English exclamation mark (!) is added to the mount point**, for example, **127.0.0.1:/!**.
- **casesensitive=yes** indicates that file names are case sensitive during file search. If this parameter is not added, the performance of creating files in a large directory will deteriorate.

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 3-9**. If the information shown in **Figure 3-10** is displayed, the mounting is successful.

Figure 3-9 Mount point



Figure 3-10 Running the command



Step 6 After the file system is mounted successfully, you can view the mounted file system on the **This PC** page, as shown in **Figure 3-11**.

If the mounting fails or times out, rectify the fault by referring to **Troubleshooting**.

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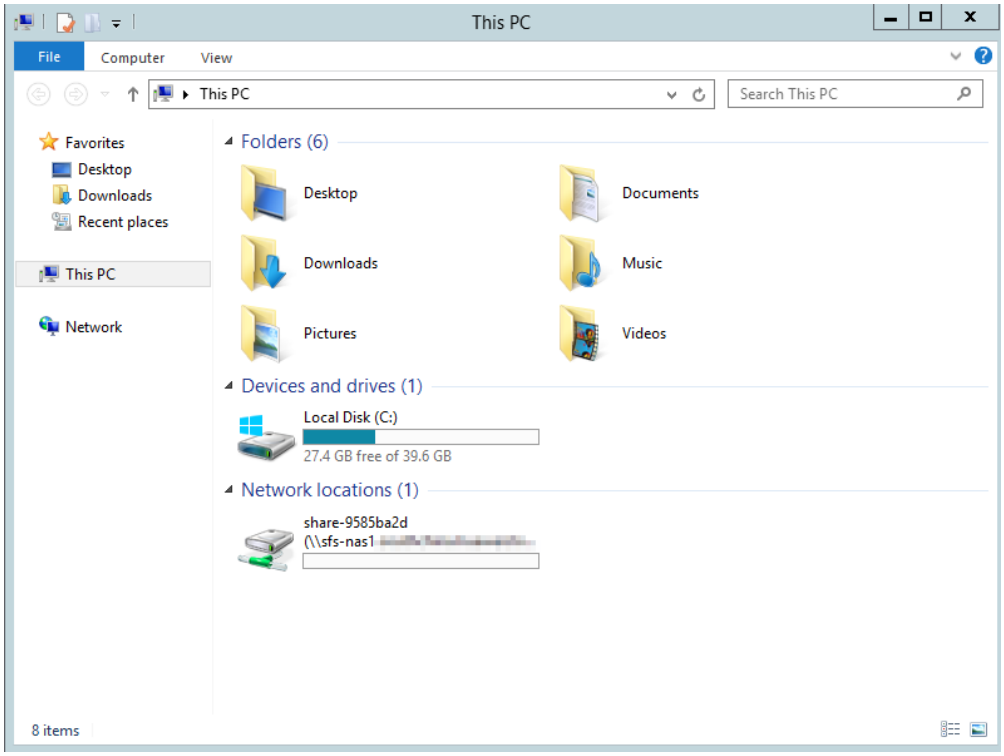
Figure 3-11 Successful mounting



----End

Troubleshooting

If a file system is mounted to an ECS running Linux and an ECS running Windows, on the ECS running Windows, data cannot be written to the files created on the ECS running Linux. To address this problem, you need to modify the registry and change both values of UID and GID of the Windows user accessing NFS to **0**. 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 3-12**.

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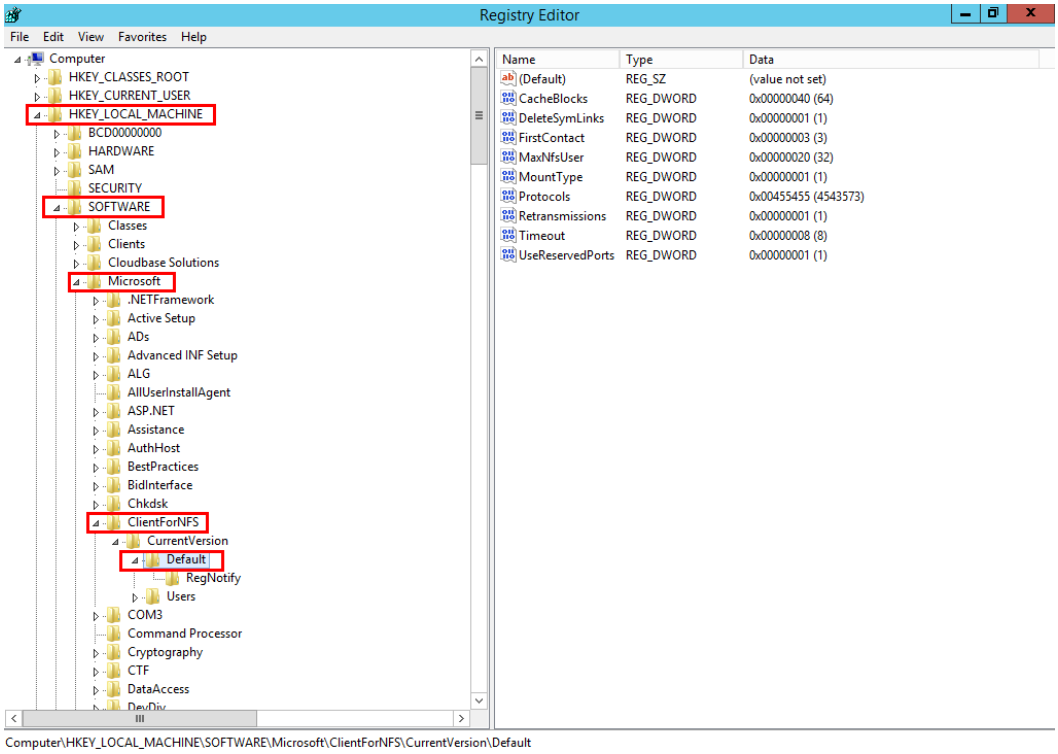
Figure 3-12 Entering the directory



Step 3 Right-click the blank area and choose **New** > **QWORD Value** from the shortcut menu. Set **AnonymousUid** and **AnonymousGid** to **0**. **Figure 3-13** shows a successful operation.

Figure 3-13 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	0x00455455 (4543573)
Retransmissions	REG_DWORD	0x00000001 (1)
Timeout	REG_DWORD	0x00000008 (8)
UseReservedPorts	REG_DWORD	0x00000001 (1)
AnonymousUid	REG_QWORD	0x00000000 (0)
AnonymousGid	REG_QWORD	0x00000000 (0)

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

----End

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3.3 Mounting a CIFS File System to ECSs (Windows)

After creating a file system, you need to mount the file system to ECSs so that ECSs 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 ECS. 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 ECSs running Linux.

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 3-14**.

Table 3-3 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-***xxxxxxxx*, where *x* is a digit or letter.

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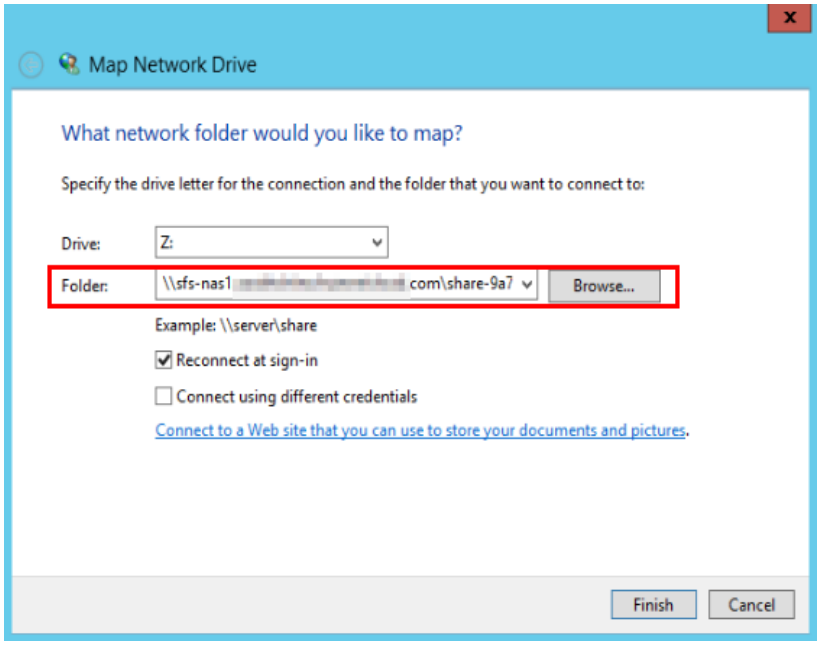
Figure 3-14 Entering the mount point



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

3.4 Mounting a File System Automatically

To prevent mounting information loss after a restart of the ECS where a file system is mounted, you can configure the ECS and make the file system be mounted automatically after the ECS restarts.

Restrictions

Due to different mechanisms for managing startup items (service startup sequence), some ECSs running CentOS may not support the following automatic mounting schemes. In this case, manually mount the file system.

Procedure (Linux)

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

Step 2 Run the **vi /etc/fstab** command to edit the **/etc/fstab** file.

At the end of the file, add the file system information, for example:

```
Mount point /local_path nfs vers=3,timeo=600,nolock 0 0
```

Replace *Mount point* and */local_path* with actual values. You can obtain the mount point from the **Mount Address** column of the file system. Each record in

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the **/etc/fstab** file corresponds to a mount. Each record has six fields, as described in **Field Description**.

NOTICE

For optimal system performance, configure file system information based on the previous example configuration. If needed, you can customize part of mount parameters. However, the customization may affect system performance.

Step 3 Press **Esc**, input **:wq**, and press **Enter** to save and exit.

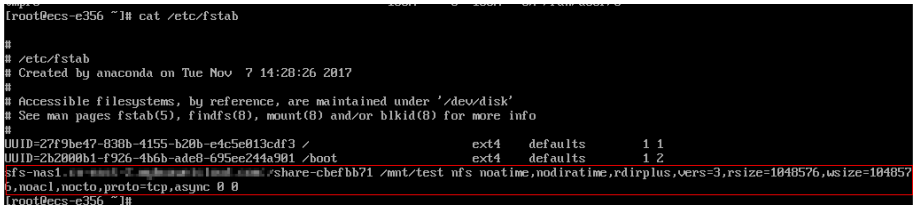
After the preceding configurations are complete, the system reads mounting information from the **/etc/fstab** file to automatically mount the file system when the ECS restarts.

Step 4 (Optional) Run the following command to view the updated content of the **/etc/fstab** file:

cat /etc/fstab

Figure 3-15 shows the updated file content.

Figure 3-15 Updated file content



----End

Field Description

Table 1 describes the mount fields.

Table 3-4 Field description

Field	Description
Mount point	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)**.
/local_path	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**.

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Field	Description
vers=3,timeo=600,nolock	Mount options, used to set mount parameters. Use commas (,) to separate between multiple options. • **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. • **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. • **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
```

For example, content of a file system's **auto_mount.bat** script can be **mount -o nolock sfs.nas1.xxx.com/share-xxx X:**

NOTE

After the script is created, you are advised to manually run the script in the Command Prompt interface to ensure that the script can be executed successfully.

The **.bat** script cannot be stored in the same path as the **.vbs** file in **Step 2**.

Step 3 Create a .txt file whose name is ***XXX*.vbs** and **Save Type** is **All Files**, and save the file to the directory **C:\Users\Administrator\AppData\Roaming\Microsoft**

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\Windows\Start Menu\Programs\Startup. The file contains the following content:

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

Step 4 After the task is created, you can restart the ECS and check whether the configuration is successful.

----End

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4 Step 4: 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.

Linux OS

Step 1 Log in to the ECS.

Step 2 Run the following command:

umount *Local path*

Local path: Local path used to mount the file system on the ECS, 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. Otherwise, the unmounting will fail.

----End

Windows OS

Step 1 Log in to the ECS.

Step 2 Right-click the file system to be unmounted and choose **Disconnect**.

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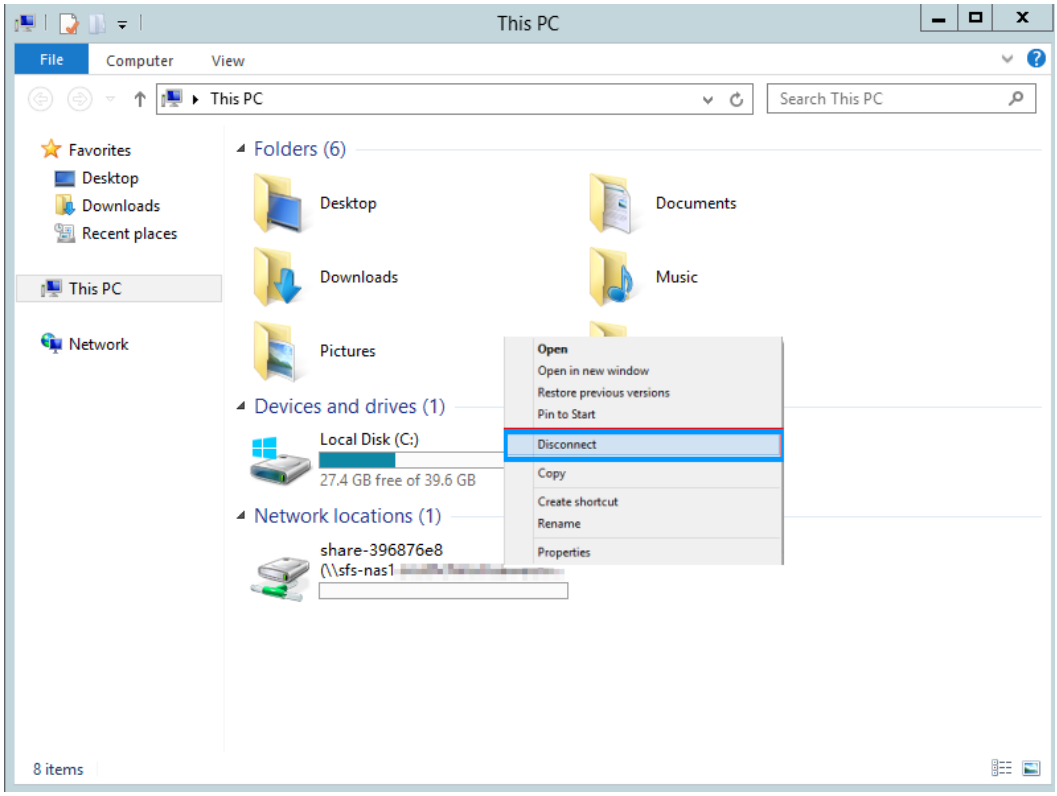
Figure 4-1 Unmounting



Step 3 If the mounted file system does not exist in the network location anymore, the file system is successfully unmounted.

----End

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5 Change History

Release Date	What's New
2020-09-14	This issue is the eleventh official release. Updated the following content: Changed "SFS file system" to "SFS Capacity-Oriented file system."
2020-01-09	This issue is the tenth official release. Updated the following content: Added the description that SFS Turbo file systems cannot be mounted to ECSs running Windows.
2019-06-20	This issue is the ninth official release. Updated the following content: • Modified the description of the storage class in section "Creating a File System."
2019-05-30	This issue is the eighth official release. Updated the following content: • Added section "Unmounting a File System."
2019-04-30	This issue is the seventh official release. Updated the following content: • Adjusted the structure of the document.

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Release Date	What's New
2019-03-30	This issue is the sixth official release. Updated the following content: ● 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." ● Added the SFS Turbo Bandwidth-Oriented file system and the description in section "Creating a File System." ● Added section "Mounting a File System Automatically."
2019-03-01	This issue is the fifth official release. Updated the following content: ● Added enterprise project parameters and descriptions in section "Creating a File System."
2019-01-30	This issue is the fourth official release. Updated the following content: ● Adjusted the structure of the document. ● Added the **Charging Mode** parameter to section "Creating an SFS Turbo File System." ● Added the description of mounting parameters for performance optimization in section "Mounting an NFS File System to ECSs (Linux)."
2018-12-07	This issue is the third official release. Updated the following content: ● Added the support for the CIFS protocol and related descriptions. ● Added description about the auto capacity expansion function in section "Creating a File System."
2018-11-02	This issue is the second official release. Updated the following content: ● Added the description of the SFS Turbo file system. ● Added the description of file systems that support encryption. ● Added the description of managing file system's VPCs. ● Added the description of mounting a file system to a Windows OS.
2018-05-25	This issue is the first official release.

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