Alibaba Cloud
Apsara File Storage NAS

Quick Start

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Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	Danger: Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	Warning: Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	Notice: Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	It is used for buttons, menus , page names, and other UI elements.	Click OK.
`Courier font`	It is used for commands.	Run the `cd /d C:/windows` command to enter the Windows system folder.
Italics	It is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	It indicates that it is a optional value, and only one item can be selected.	`ipconfig` *[-all|-t]*

Style	Description	Example
{} or {a|b}	It indicates that it is a required value, and only one item can be selected.	`swich {stand | slave}`

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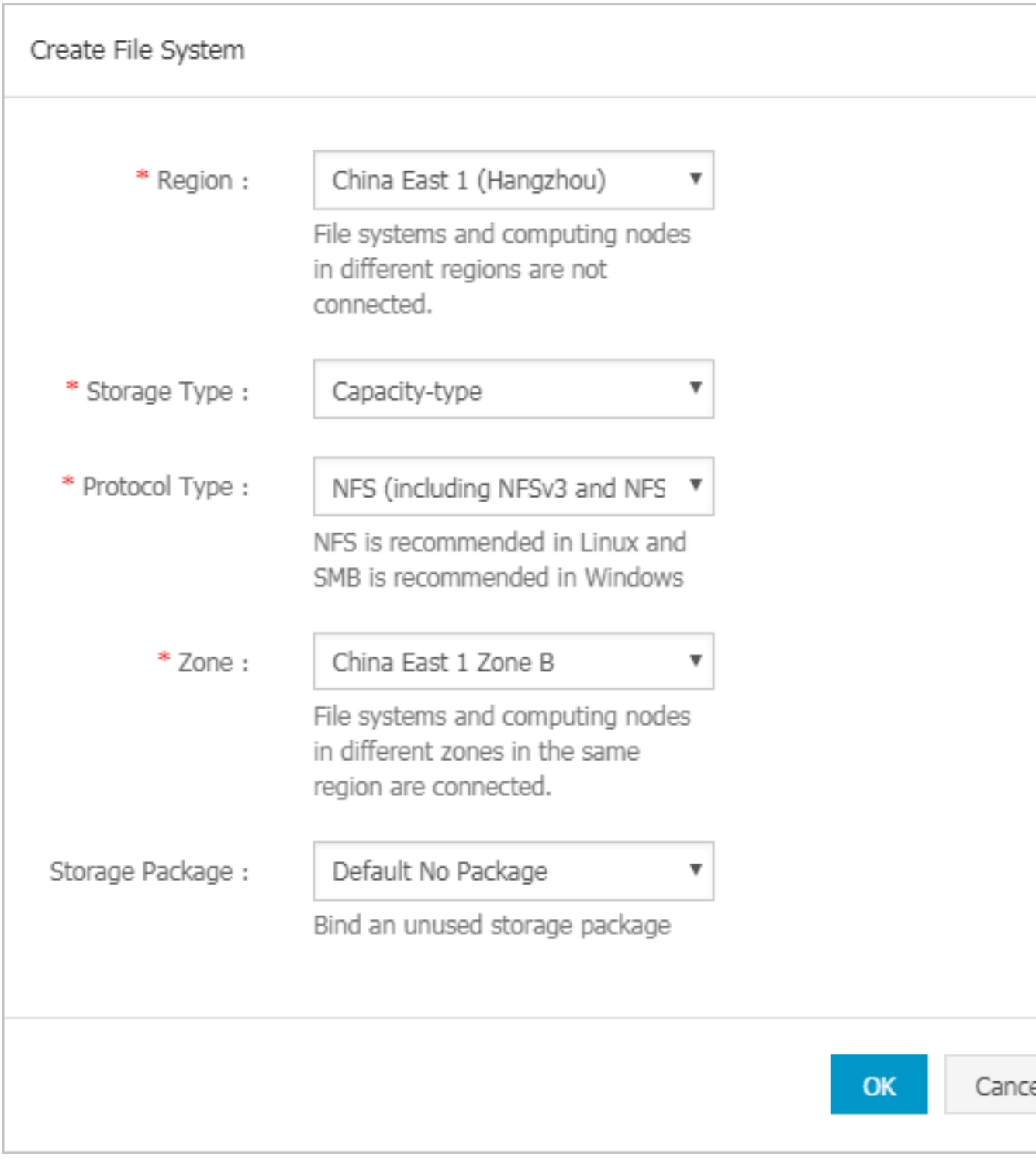
1 Create a file system

To create a file system in NAS, follow these steps:

1. Log on to the *NAS console*.
2. Click Create File System in the upper right corner.

> Note:
>
> - The maximum storage capacity of a file system is 1 PB for the SSD performance type and 10 PB for the capacity type. Fees are charged based on the actual usage .
> - Each account can create up to 10 file systems.

3. On the Create File System page, set the parameters.



The parameters are described as follows:

- Region: Select the region where you want to create the file system.

> **Note:**

A file system or computing node in a region cannot communicate with a file system or computing node in another region.

- Storage Type: You can select SSD performance-type or Capacity-type.
- Protocol Type: You can select NFS (including NFSv3 and NFSv4) or SMB (2.0 and later).

  The NFS protocol and SMB protocol apply to ECS instances in Linux and Windows separately for file sharing.
- Zone: You can view all zones in the selected region in the drop-down list.

  Note:

  - A file system or computing node in a zone can communicate with a file system or computing node in a different zone but of the same region.
  - To reduce cross-zone latency, we recommend that you select the zone of the ECS instance where you want to mount your file system.

4. Click OK.

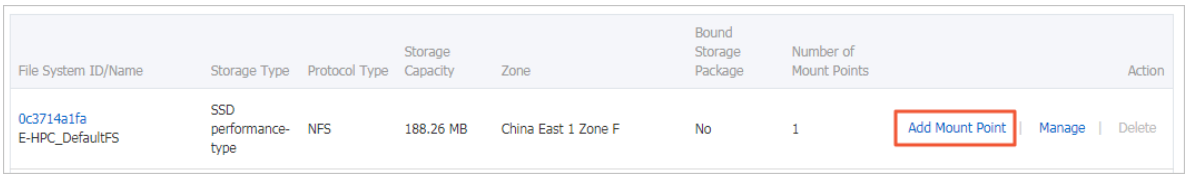
2 Add a mount point

After creating a file system, you must add a mount point for the file system before you can mount the file system on computing nodes (such as ECS instance, E-HPC, and Container Service).

NAS supports two types of mount points: VPC and Classic Network.

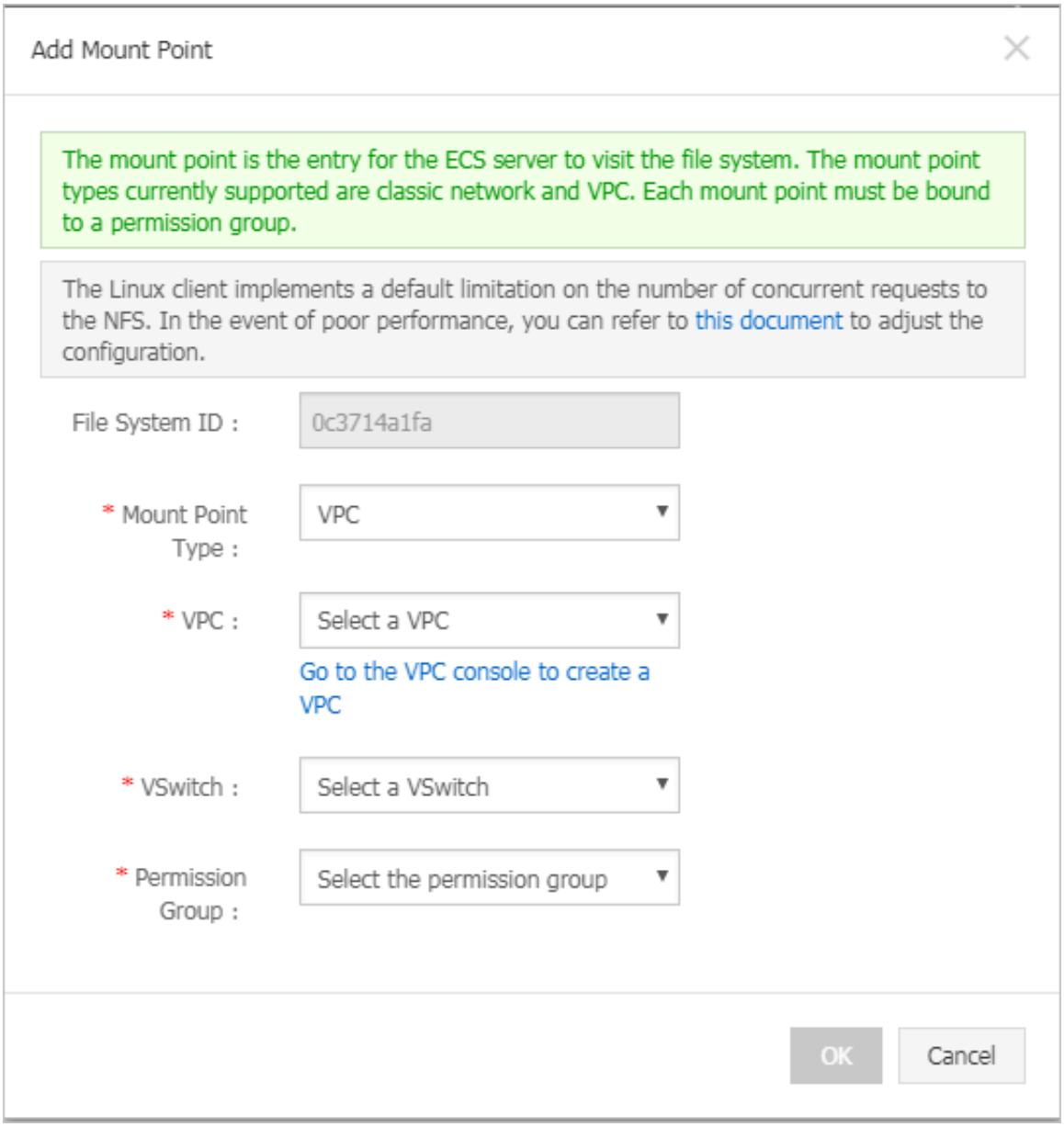
Add a mount point in a VPC

1. Log on to the *NAS console*.
2. Click Add Mount Point on the right of the file system to which you want to add a mount point.



3. In the Add Mount Point dialog box, select VPC for Mount Point Type.

4. Select the corresponding VPC, VSwitch, and Permission Group.



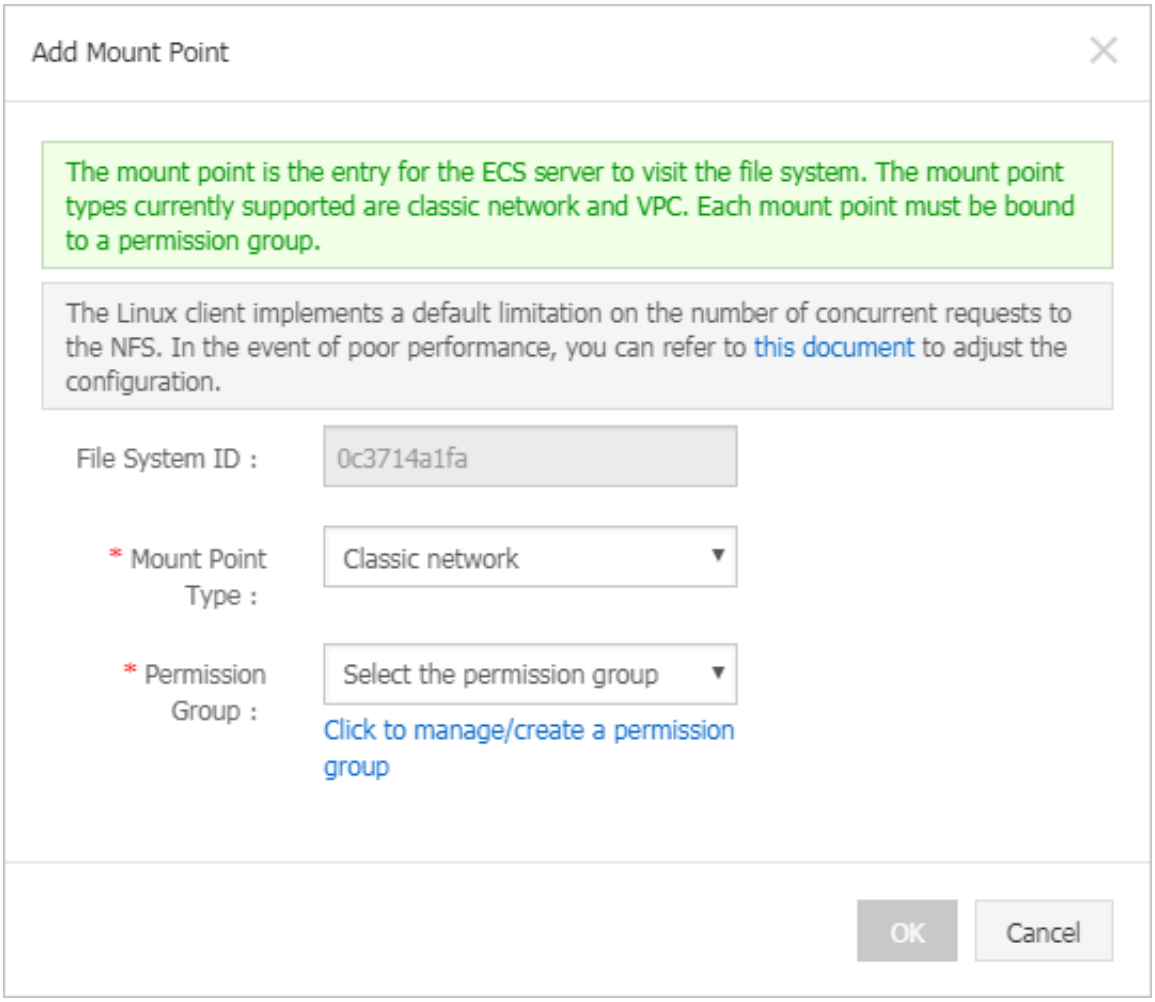
Note:
You can select VPC default permission group (allow all) to allow all IP addresses in the same VPC to access the file system through the mount point.

5. Click OK.

Add a mount point in a classic network

1. Log on to the *NAS console*.
2. Click Add Mount Point on the right of the file system to which you want to add a mount point .

3. In the Add Mount Point dialog box, select Classic network for Mount Point Type, and select the permission group in the Permission Group drop-down box.



Note:

- Currently, only ECS instances can use mount points in classic networks.
- For a classic network mount point, no default permission group is provided. When using this for the first time, you must go to the Permission Group page to create a permission group in a classic network, and add rules for the permission group. For more information, see *Use permission groups*.
- When adding a mount point in a classic network for the first time, you are requested to authorize NAS through RAM to access the query interface of your ECS instance. Follow the instructions to complete the authorization, then try creating the mount point in the classic network again. For more information, see *Why do I need RAM permissions to create a mount point in a classic network*.

4. Click OK.

After adding a VPC or classic network mount point for a file system, hover your mouse over the mount address of the file system to view the mount command.

3 Mount a file system

3.1 Considerations before mounting a file system

After adding a mount point, you can mount computing resources to a file system through the mount point.

Prerequisites

When mounting an ECS instance to a file system through a mount point, you must note the following limits:

- If the mount point type is VPC, you can mount an ECS instance to the file system only when the instance and the mount point are in the same VPC. In addition, the IP address authorized by a rule of the permission group bound to the mount point must match the VPC IP address of the ECS instance.
- If the mount point type is Classic network, you can mount an ECS instance to the file system only when the instance and the mount point belong to the same account . In addition, the IP address authorized by a rule of the permission group bound to the mount point must match the intranet IP address of the ECS instance.

> Note:
> A NAS file system can be mounted to an ECS instance in another region.Use Cloud Enterprise Network（CEN） to establish a network across regions before you mount the file system.

Mounting methods

- NAS supports NFS and SMB file systems. For the mounting methods of the two file systems, see *Mount an NFS file system in Linux* and *Mount an SMB file system*.

3.2 Mount a NFS file system

3.2.1 Install an NFS client in Linux

To mount a NAS NFS file system to an ECS instance in Linux, you must install an NFS client.

Procedure

1. Log on to the ECS instance with the public DNS name and the user name of the ECS instance.
2. Run either of the following commands to install an NFS client:
   - If you use the CentOS system, run the following command:

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

   - If you use the Ubuntu or Debian system, run the following command:

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

3. Run the following command to view the number of NFS requests that are initiated simultaneously:

   ```
   cat /proc/sys/sunrpc/tcp_slot_table_entries
   ```

   Note:

   The number of NFS requests that are initiated simultaneously is controlled by the NFS client in Linux. If the parameter is set to a small value, the I/O performance of the system reduces. The maximum value of the parameter is 256 in the default kernel. For better I/O performance, you can run the following commands as the root user to set the parameter to a larger value:

   ```
   echo "options sunrpc tcp_slot_table_entries = 128" >> /
   etc/modprobe.d/sunrpc.conf
   echo "options sunrpc tcp_max_slot_table_entries = 128"
   >> /etc/modprobe.d/sunrpc.conf
   sysctl -w sunrpc.tcp_slot_table_entries = 128
   ```

   After modifying the parameter, restart the system.

3.2.2 Mount an NFS file system in Linux

After installing an NFS client in Linux, you can mount an NFS file system to an ECS instance.

When you mount a NAS NFS file system to an ECS instance, you can use the DNS name of the file system or the target to which you want to mount the file system. The DNS name of the file system is automatically resolved to the IP address of the mount target in the available zone of the mounted ECS instance.

Mounting command

You can run either of the following commands to mount an NFS file system.

- To mount an NFSv4 file system, run the following command:

```
sudo mount -t nfs -o vers=4.0,rsize=1048576,
wsize=1048576,hard,timeo=600,retrans=2,noresvport
  file-system-id.region.nas.aliyuncs.com:/
mount-point
```

> **Note:**
> The value of the *vers* parameter varies with the client version. If an error occurs when you use `vers=4.0` in the command, use `vers=4`.

- To mount an NFSv3 file system, run the following command:

```
sudo mount -t nfs -o vers=3,nolock,proto=tcp,
rsize=1048576,wsize=1048576,hard,timeo=600,retrans
=2,noresvport file-system-id.region.nas.
aliyuncs.com:/ mount-point
```

Parameter description

The following table describes the parameters used in the mounting command.

Parameter	Description
Domain name of the mount point	Indicates the domain name of the mount point, which consists of information such as *file-system-id*,*region* and *nas.aliyuncs.com*. This parameter is automatically generated when you *Create a file system* and does not need to be set manually.
mount-point	Indicates the mount point of the NAS file system, which can be the root directory "/" or any sub-directory in the NAS file system.
vers	Indicates the file system version. Only NFSv3 and NFSv4 are supported.

You can specify multiple options when mounting a NAS file system. The options are separated by commas in the command. The following table describes the options.

Option	Description
rsize	Specifies the size of data blocks. Data is read by blocks between the client and the file system deployed in the cloud. Recommended value: 1048576
wsize	Specifies the size of data blocks. Data is written by blocks between the client and the file system deployed in the cloud. Recommended value: 1048576
hard	Specifies whether the data transmission stops and waits for a temporarily unavailable file system to be recovered when you use the local application of a file stored in the file system. We recommended that you enable the hard parameter.
timeo	Specifies the time (in 0.1 second) that the NFS client waits for the response before resending a request to the NAS file system deployed in the cloud. Recommended value: 600
retrans	Specifies the number of times that the NFS client resends requests. Recommended value: 2
noresvport	Specifies that a new TCP port is used for network reconnection to ensure that the connection between the file system and the ECS instance will not be ended during network failure recovery. We recommend that you enable the noresvport parameter.

Note:

You must note the following points when configuring the mounting parameters:

- If you have to modify the values of I/O parameters (rsize and wsize), we recommend that you set the parameters to the maximum value (1048576) to prevent performance degradation.
- If you have to modify the value of the time-out parameter (timeo), we recommend that you set the parameter to a value not less than 150. The unit of the timeo

parameter is 0.1 second. Therefore, the value 150 indicates that the actual time-out period is 15 seconds.

- We recommend that you enable the hard option. If you do not enable the hard option, set the timeo parameter to a value not less than 150.
- For other mounting options, use their respective default values. For example, do not modify the read or write buffer size or disable the attribute buffer because these operations result in performance degradation.

View mounting information

After the mounting succeeds, you can run the following command to view the mounted file system:

```
mount  - l
```

You can also run the following command to view the capacity information about the mounted file system:

```
df  - h
```

3.3 Mount an SMB file system

You can mount a NAS SMB file system to an ECS instance in Windows.

Prerequisites

Before mounting an SMB file system to an ECS instance, ensure that the following two Windows system services are enabled:

- Workstation
- TCP/IP NetBIOS Helper

Mounting command

You can run a command in the following format to mount an SMB file system:

```
net  use  < target  mounting  drive > \\< domain  name  of  the
  mount  point >\ myshare
```

Parameter description

- Target mounting drive: Indicates the target drive to which you want to mount the SMB file system in the current Windows system. A space must be added between " use" and "\\".

- Domain name of the mount point: Indicates the domain name of the mount point , which is automatically generated when you create the mount point of the file system.
- myshare: Indicates the fixed SMB share name, which cannot be changed.

Example

If you want to mount an SMB file system to drive Z, run the following command:

```
C :\> net use z : \\ file - system - id - xxxx . region . nas .
aliyuncs . com \ myshare
```

View mounting information

After mounting the SMB file system, you can run the following command in the Windows command-line tools to view the mounted file system.

```
net use
```

3.4 Mount a file system automatically

3.4.1 Configure automatic mounting in Windows

You can create a mounting script in the Windows operating system and then create a scheduled task, so that a NAS file system can be automatically mounted.

Procedure

1. Create a script named *nas_auto . bat* in Windows and add the following mounting command to it. Then, save the script to the disk where you want to mount the file system.
   - To mount an SMB file system, add the following command to the script:

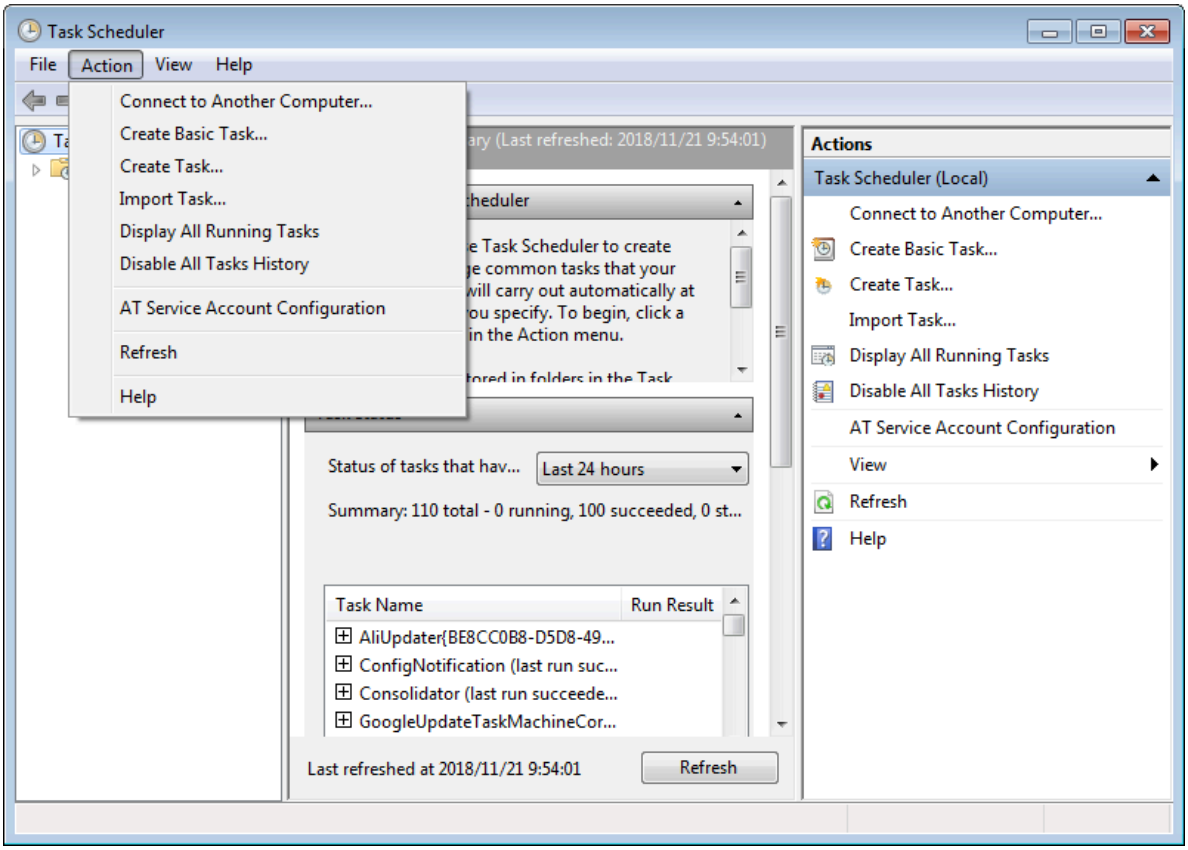
     ```
     net use Z : \\ fid - xxxx . cn - shanghai . nas . aliyuncs .
     com \ myshare
     ```

     Note:

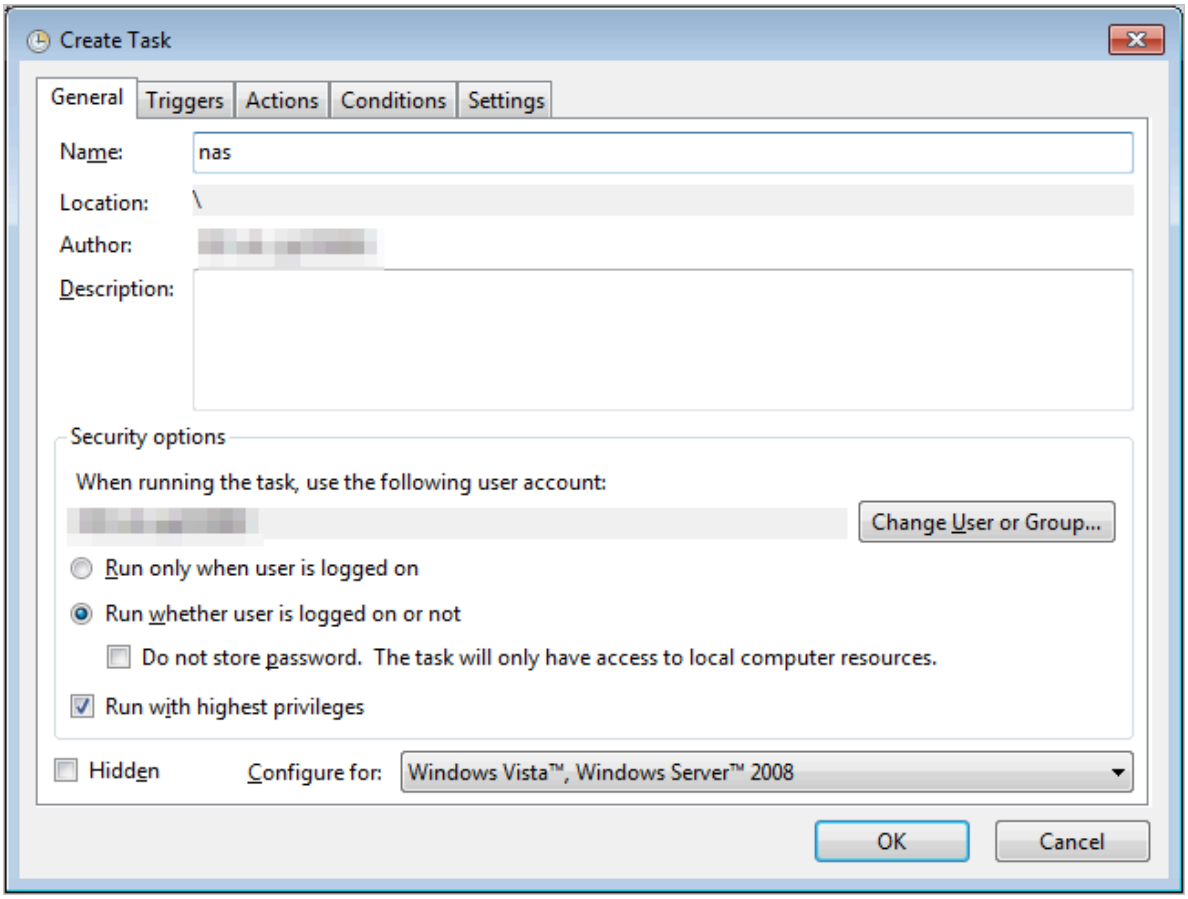
     Change the drive letter (Z:) and the domain name of the mount point (fid-xxxx.cn-shanghai.nas.aliyuncs.com) to actual values.

     For details about the mounting command, see *Mount an SMB file system* .
2. In the Control Panel of Windows, select Administrative Tools, and then select Schedule tasks.

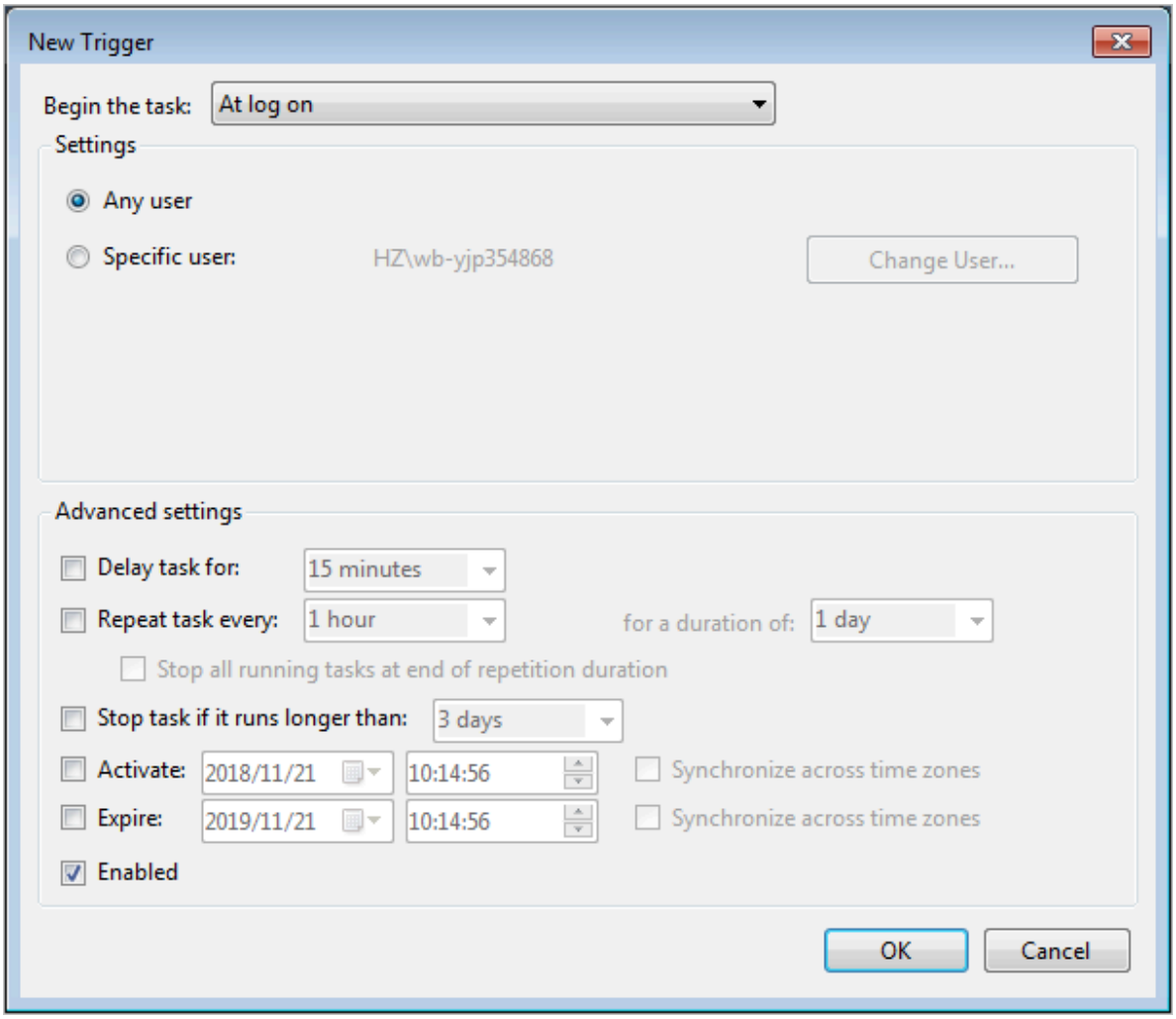
3. In Task Scheduler, select Action > Create Task.



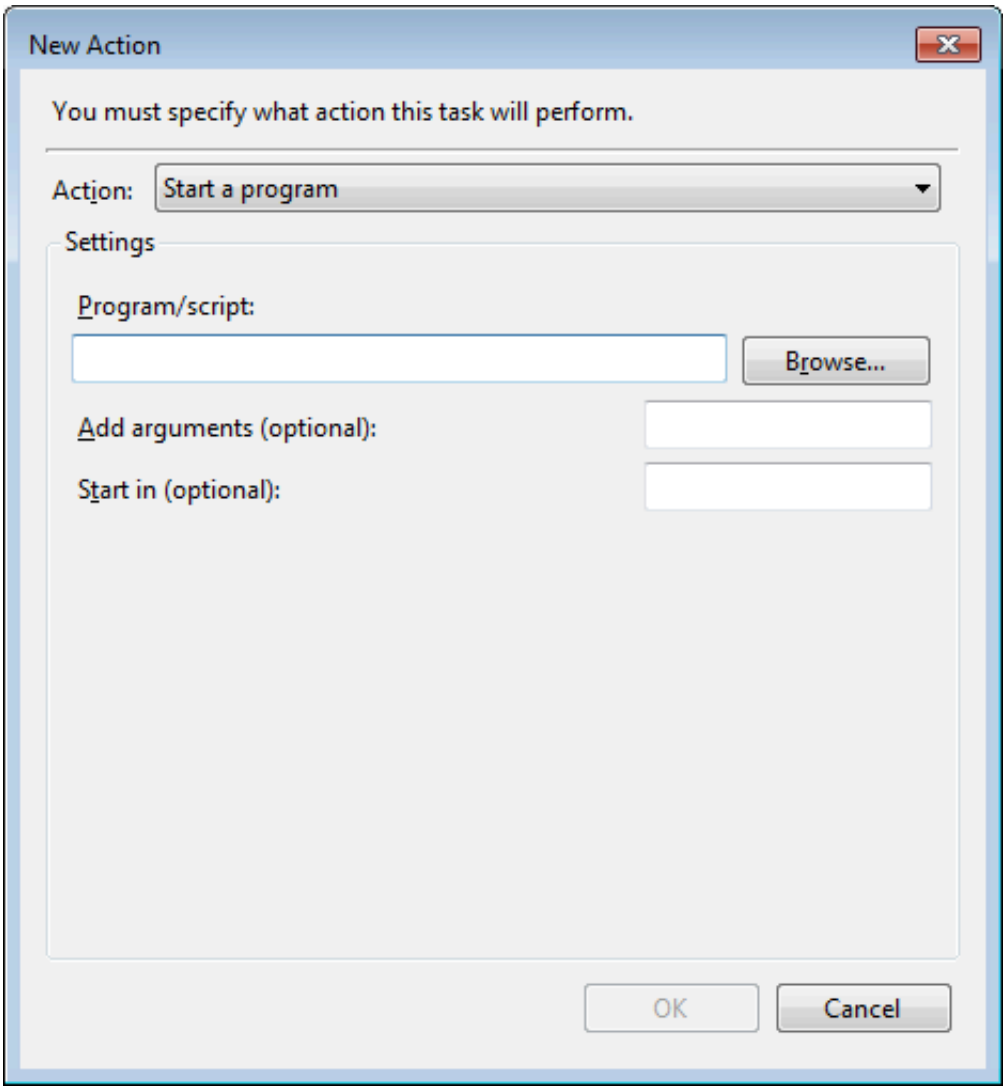
4. On the General tab, enter the Name of the scheduled task, and then select Run whether user is logged on or not and Run with the highest privileges.



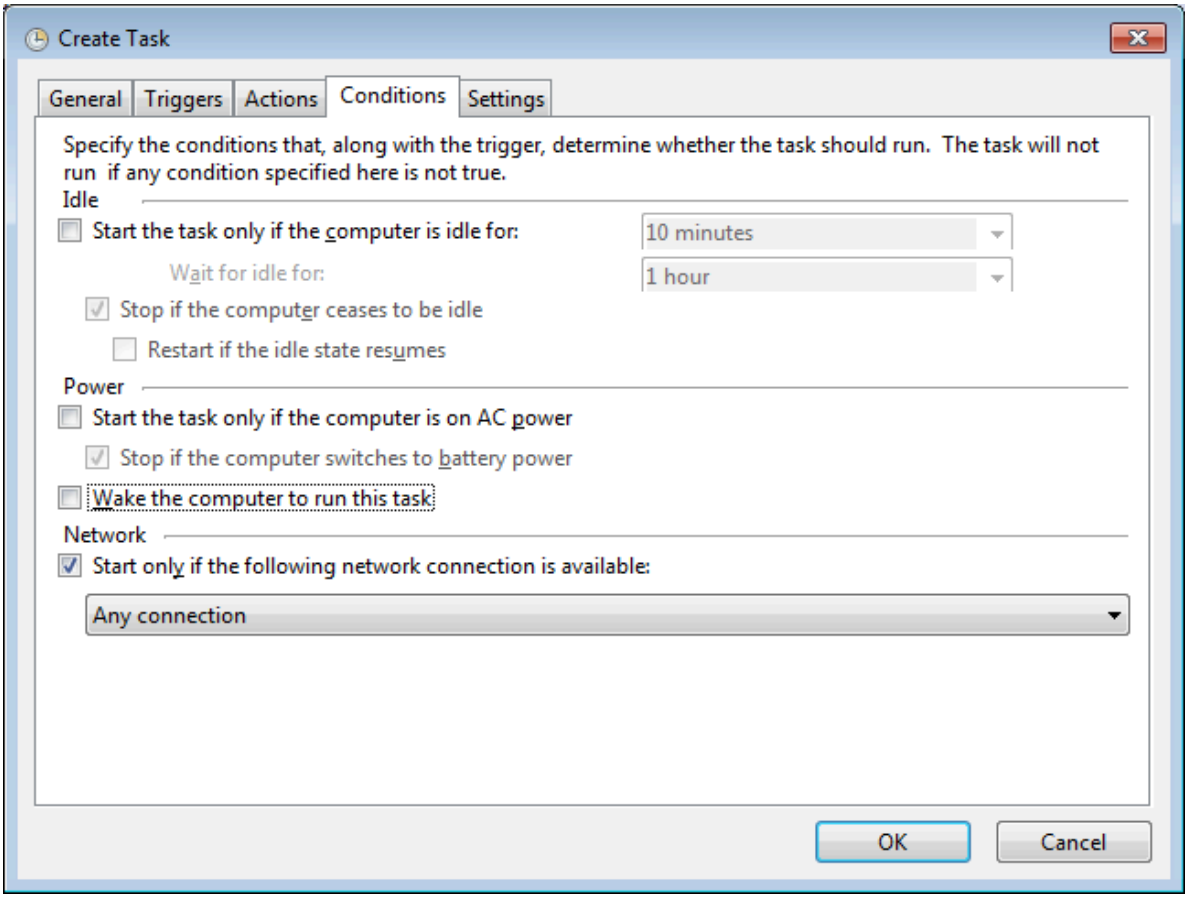
5. On the Triggers tab, click New. Then, select At log on for Begin the task, and select Enabled in Advanced settings. After that, click OK.



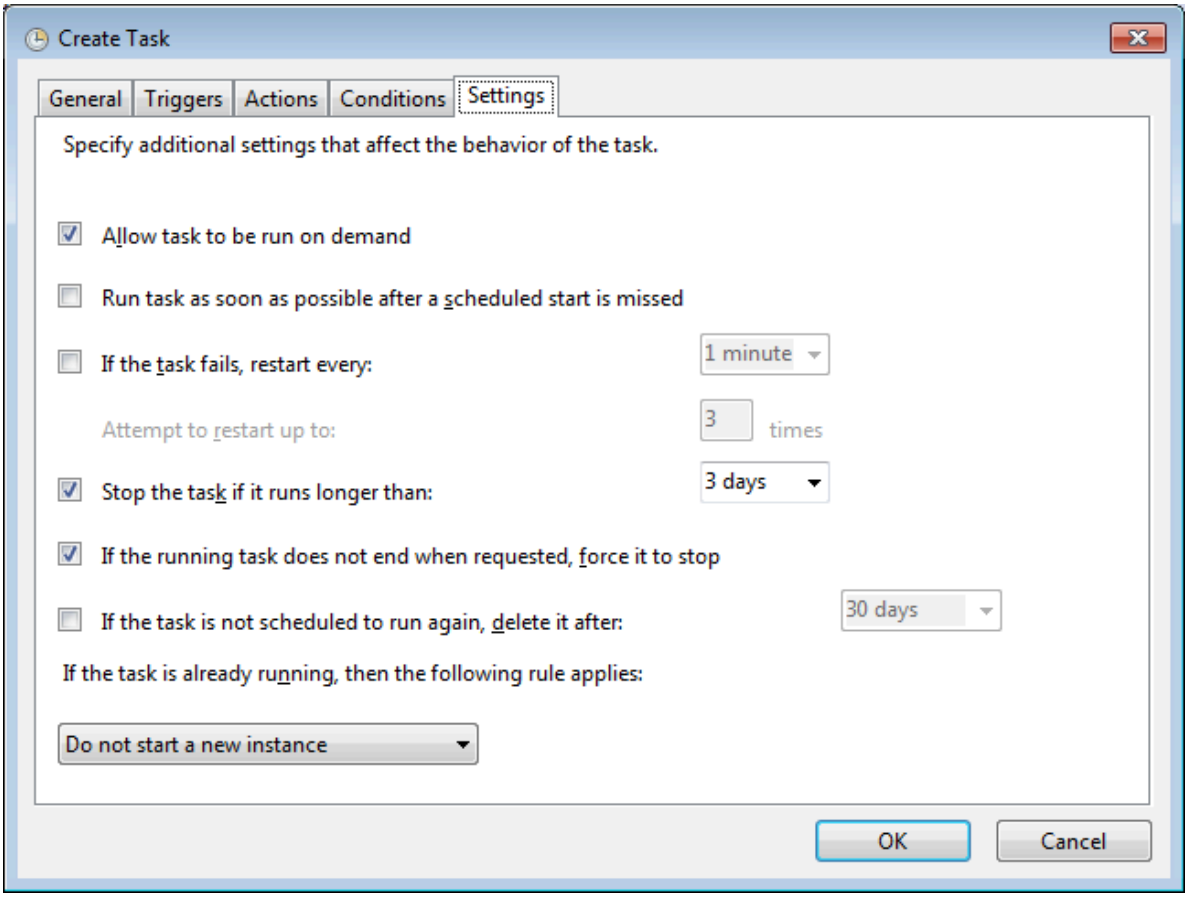
6. On the Actions tab, click New. Then, selectStart a program for Actions, and then select the created `nas_auto.bat` script in Program/script. After that, click OK.



7. On the Conditions tab, select Start only if the following network connection is available, and then select Any connection.



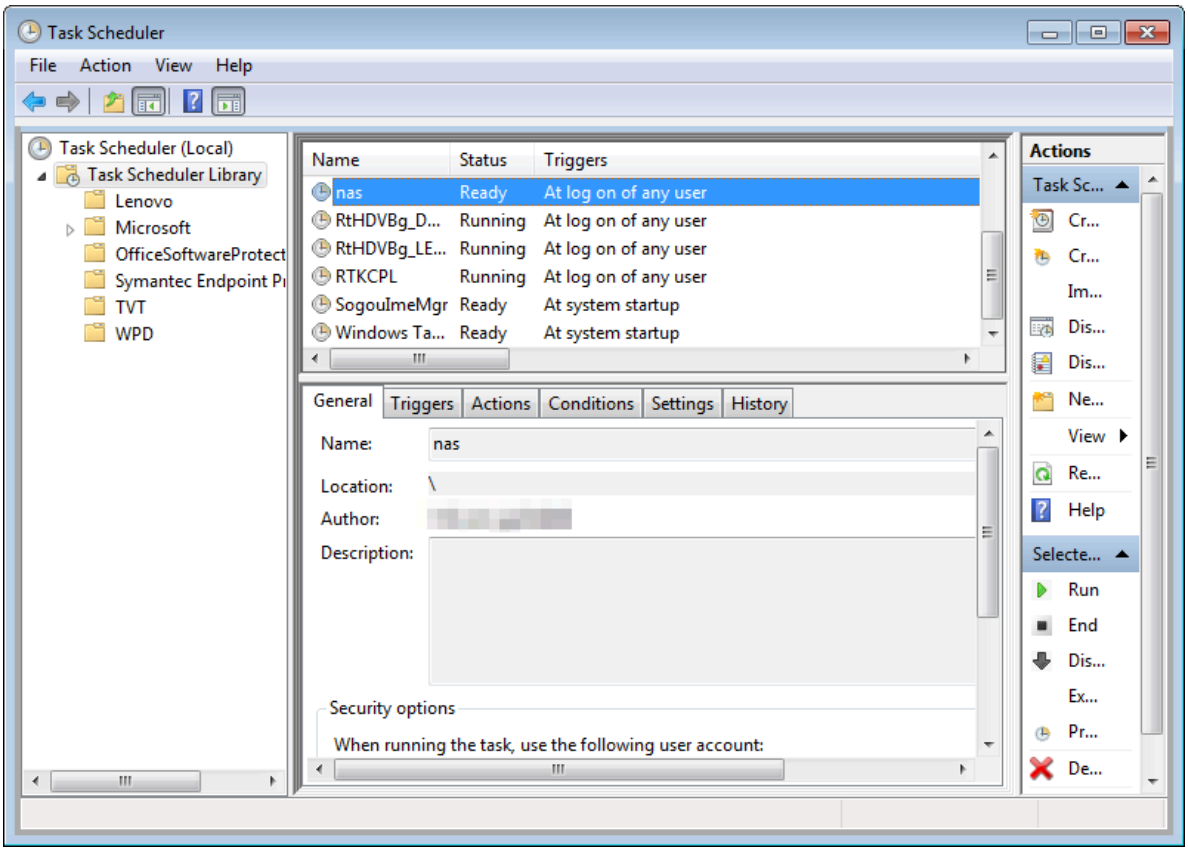
8. On the Settings tab, select If the running task does not end when requested, force it to stop, and then select Do not start a new instance for If the task is already running, then the following rule applies.



9. Click OK.

10.Restart the server to check whether the task is successfully created.

If the system displays the following information, the scheduled task can be normally executed:



3.4.2 Mount a file system on an ECS instance that runs Linux

You can modify either one of the following configuration files on an ECS instance to automatically mount a NAS file system when the instance is restarted.

To enable a file system to be mounted automatically on an ECS instance that runs Linux, you can modify either the `/etc/fstab` file or the `/etc/rc.local` file.

Modify the /etc/fstab file (recommended)

After you connect to an ECS instance for the first time, add the following command to the `/etc/fstab` file.

```
fid-xxxx.cn-hangzhou.nas.aliyuncs.com:/ /mnt    nfs4
vers=4.0,rsize=1048576,wsize=1048576,hard,timeo=600
,retrans=2,_netdev,noresvport   0   0
```

The parameters used in the command are described as follows:

Parameter	Description
_netdev	Prevents a file system from mounting on an ECS instance before a network connection is established.
0(the first zero after noresvport)	Non-zero values indicate that a file system must be backed up by dump. For a NAS file system, the value of the parameter is 0.
0 (the second zero after noresvport)	This value indicates the order in which fsck checks available file systems when an ECS instance is started. For a NAS file system, the value of the parameter is 0. It indicates that fsck is not allowed to run when an instance is started.

Modify the /etc/rc.local file

After you connect to an ECS instance for the first time, add the following command to the `/etc/rc.local` file.

Take an NFSv4 file system as an example. Add the following command.

```
sudo mount -t nfs -o vers=4.0,rsize=1048576,wsize
=1048576,hard,timeo=600,retrans=2,_netdev,noresvport
fid-xxxx.cn-hangzhou.nas.aliyuncs.com:/ /mnt
```

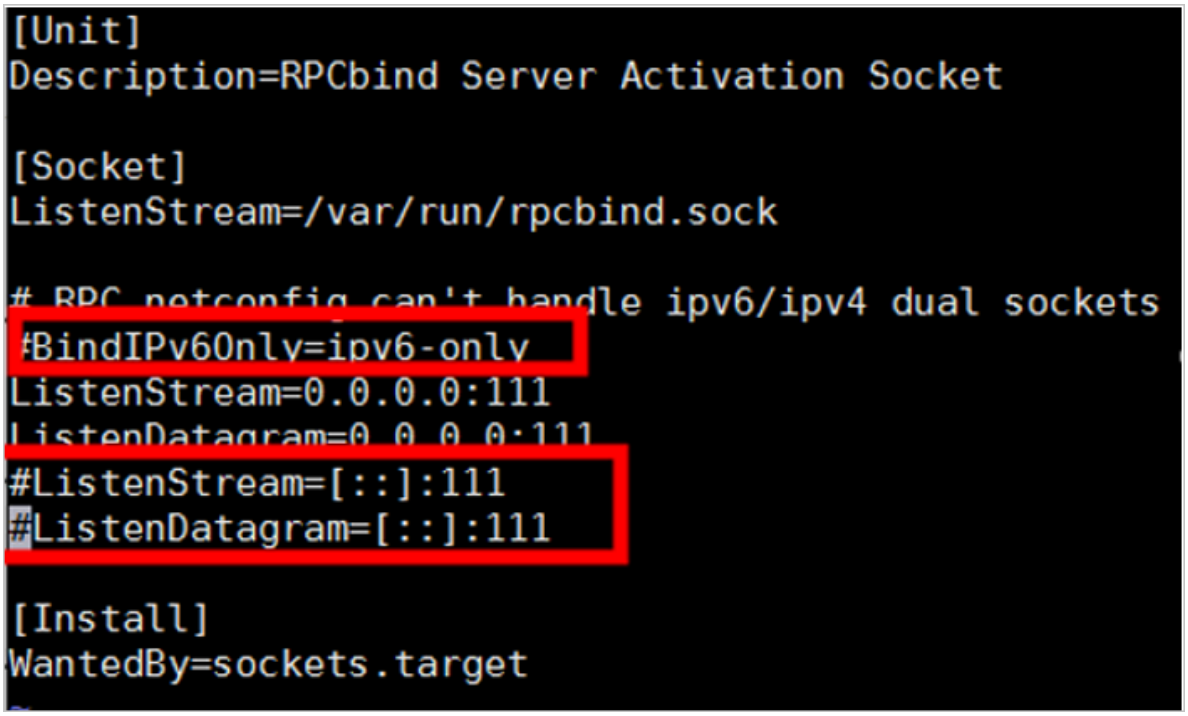
Note:

- In this command, `fid-xxxx.cn-hangzhou.nas.aliyuncs.com` is the domain name of the mount point. For more information about the mount command, see *Mount an NFS file system in Linux*.
- Before you modify the `/etc/rc.local` file, ensure that you have the execute permission to run the`/etc/rc.local` file and the `/etc/rc.d/rc.local` file.

Mount a NAS Extreme file system on an ECS instance

1. Modify the `/etc/systemd/system/sockets.target.wants/rpcbind.socket` file, move IPv6-related `rpcbind` parameters to comments.

Otherwise, the rpcbind service fails to automatically start up. The details are shown in the following figure.



2. After you connect to an ECS instance for the first time, add the following command to the */ etc / fstab* file.

```
xxxx :/ share  / tmp / benchmark     nfs   vers = 3 , proto = tcp ,
noresvport , _netdev   0   0
```

4 Unmount a file system

4.1 Unmount a file system in Linux

To delete a file system, you must unmount it from all ECS instances that have the file system mounted.

Procedure

1. Run the following command in each of the ECS instances:

```
umount < directory where the file system is mounted >
```

Note:

We recommend that you do not specify any other umount options or modify their default value.

2. Run the df command in the ECS instance to check whether the NAS file system is successfully unmounted.

   The df command is used to query the storage usage of and statistical information about a file system mounted to the current ECS instance. If the information about a NAS file system that you unmount is not displayed in the command output, the file system is successfully unmounted.

   - View the mounting status of a NAS file system

```
$ df - T
 Filesystem Type 1K - blocks Used Available Use
 % Mounted on
/ dev / vda1 ext4 41151808 5658860 33379516 15
 % /
 devtmpfs devtmpfs 8122760 0 8122760 0 % / dev
 tmpfs tmpfs 8133492 0 8133492 0 % / dev / shm
 tmpfs tmpfs 8133492 552 8132940 1 % / run
 tmpfs tmpfs 8133492 0 8133492 0 % / sys / fs /
 cgroup
```

```
fid - xxxx . cn - hangzhou . nas . aliyuncs . com :/
nfs4   1099511627  776   2498679808   1097012947  968   1
% / mnt
```

- Unmount the file system

```
$  umount  / mnt
```

4.2 Unmount a file system from an ECS instance that runs Windows

This section describes how to unmount a NAS file system whose protocol type is SMB from an ECS instance that runs Windows.

Procedure

1. Open the command prompt, enter the `NET USE` command to view all of the available network connections

   Example:

```
Status                    Local         Remote                Network
-------------------------------------------------------------------------------
OK                                      \\ name \ IPC $
Microsoft   Windows   Network
OK                                      \\ name2 \ folder
Microsoft   Windows   Network
```

2. You can use the `net use \\ name / delete` command or the `net use \\ name2 \ folder / delete` command to unmount a specific file system.

   Note:

   - You can use the `net use * / delete` command to manually unmount all of the available file systems in Windows.
   - You can use the `Net use */ delete / y` command to automatically unmount all of the file systems in Windows.

3. Open the command prompt, enter the `NET USE` command to verify that all of the available file systems are unmounted.