

Alibaba Cloud Apsara File Storage NAS

Quick Start

Issue: 20190522

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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.
<code>Courier font</code>	It is used for commands.	Run the <code>cd / d C :/ windows</code> command to enter the Windows system folder.
<i>Italics</i>	It is used for parameters and variables.	<code>bae log list --instanceid Instance_ID</code>
[] or [a b]	It indicates that it is an optional value, and only one item can be selected.	<code>ipconfig [-all -t]</code>

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

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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.

Create File System

* Region :

China East 1 (Hangzhou) ▼

File systems and computing nodes in different regions are not connected.

* Storage Type :

Capacity-type ▼

* Protocol Type :

NFS (including NFSv3 and NFS) ▼

NFS is recommended in Linux and SMB is recommended in Windows

* Zone :

China East 1 Zone B ▼

File systems and computing nodes in different zones in the same region are connected.

Storage Package :

Default No Package ▼

Bind an unused storage package

OK

Cancel

The parameters are described as follows:

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



Note:

A file system or 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.

File System ID/Name	Storage Type	Protocol Type	Storage Capacity	Zone	Bound Storage Package	Number of Mount Points	Action
0c3714a1fa E-HPC_DefaultFS	SSD performance-type	NFS	188.26 MB	China East 1 Zone F	No	1	Add Mount Point Manage Delete

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

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

Add Mount Point

The mount point is the entry for the ECS server to visit the file system. The mount point types currently supported are classic network and VPC. Each mount point must be bound to a permission group.

The Linux client implements a default limitation on the number of concurrent requests to the NFS. In the event of poor performance, you can refer to [this document](#) to adjust the configuration.

File System ID :

0c3714a1fa

* Mount Point Type :

VPC

* VPC :

Select a VPC

[Go to the VPC console to create a VPC](#)

* VSwitch :

Select a VSwitch

* Permission Group :

Select the permission group

OK

Cancel

**Note:**

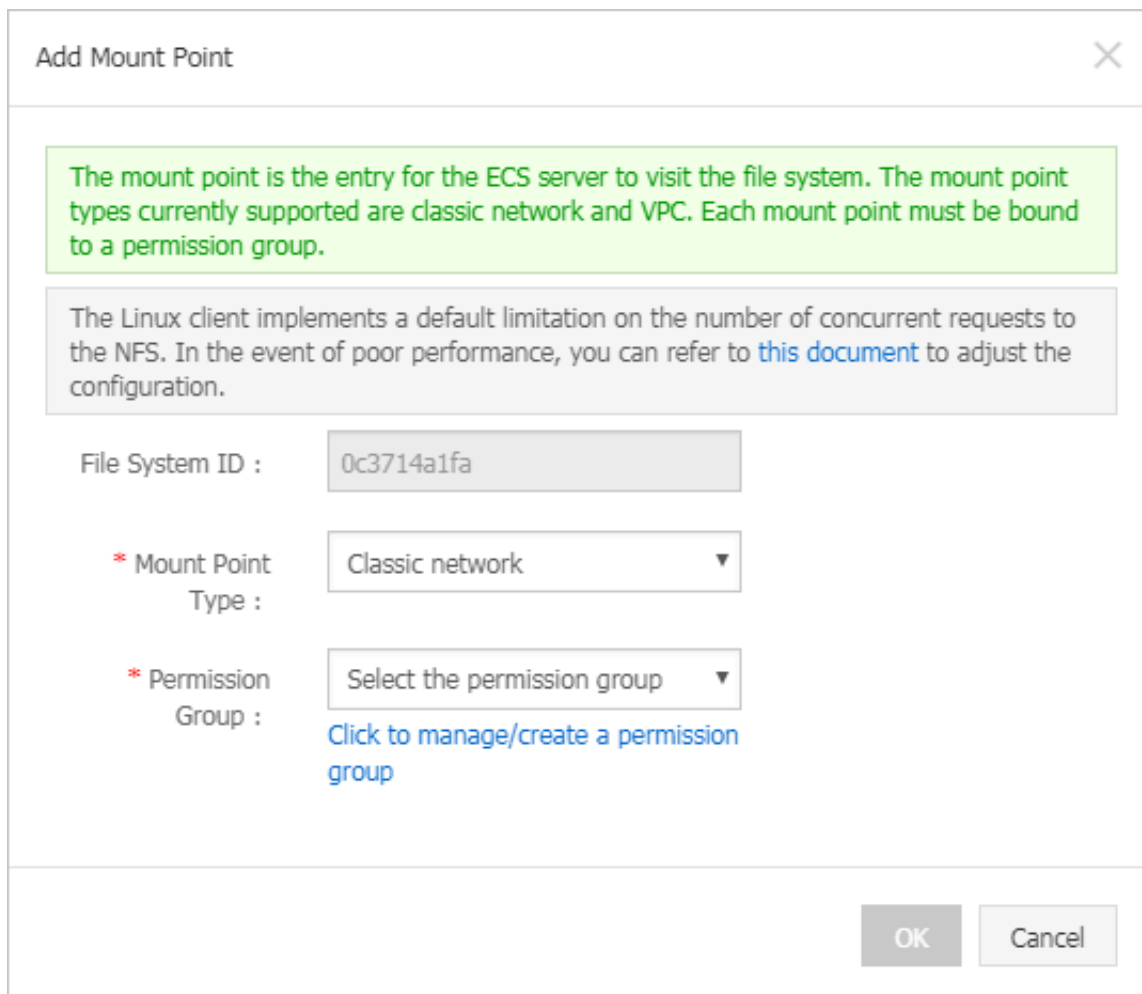
You can select VPC default permission group (allow all) to allow all IP addresses in the same VPC to access the file system through the mount point.

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.



Add Mount Point

The mount point is the entry for the ECS server to visit the file system. The mount point types currently supported are classic network and VPC. Each mount point must be bound to a permission group.

The Linux client implements a default limitation on the number of concurrent requests to the NFS. In the event of poor performance, you can refer to [this document](#) to adjust the configuration.

File System ID : 0c3714a1fa

* Mount Point Type : Classic network

* Permission Group : Select the permission group

[Click to manage/create a permission group](#)

OK Cancel

**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.

挂载点			如何挂载文件系统 添加挂载点			
挂载点类型	VPC	交换机	权限组	状态	操作	
专有网络	vpc-bp17ds2z80d2e46iathc4	vsw-bp1r9zp6nbcrrwa	VPC默认权限组 (全部允许)	可用	修改权限组	激活 禁用 删除
经典网络	-	-	group1	可用	修改权限组	激活 禁用 删除

V3 Mount:
 sudo mount -t nfs -o vers=3,nolock,proto=tcp
 100.100.100.100: /mnt
V4 Mount:
 sudo mount -t nfs -o vers=4.0 100.100.100.100:
 nga0.cn-hangzhou.nas.aliyuncs.com: /mnt

3 Mount a file system

3.1 Considerations before mounting a file system

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

Prerequisites

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

- If the mount point type is VPC, you can mount a file system to an ECS instance 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 a file system to an ECS instance 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 nfs4 -o vers = 4 . 0 , rsize = 1048576 ,
wsize = 1048576 , hard , timeo = 600 , retrans = 2 , noresvport
file - system - id - xxxx . region . nas . aliyuncs . com :/ /
mount - point
```

If you fail to mount the file system, run the following command:

```
sudo mount -t nfs4 rsize = 1048576 , wsize = 1048576 , hard
, timeo = 600 , retrans = 2 , noresvport file - system - id -
xxxx . 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 - xxxx . 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 <code>file-system-id</code> , <code>region</code> and <code>nas.aliyuncs.com</code> . 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 <code>/</code> 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
wsiz	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 recommend 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 (rsiz and wsiz), 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

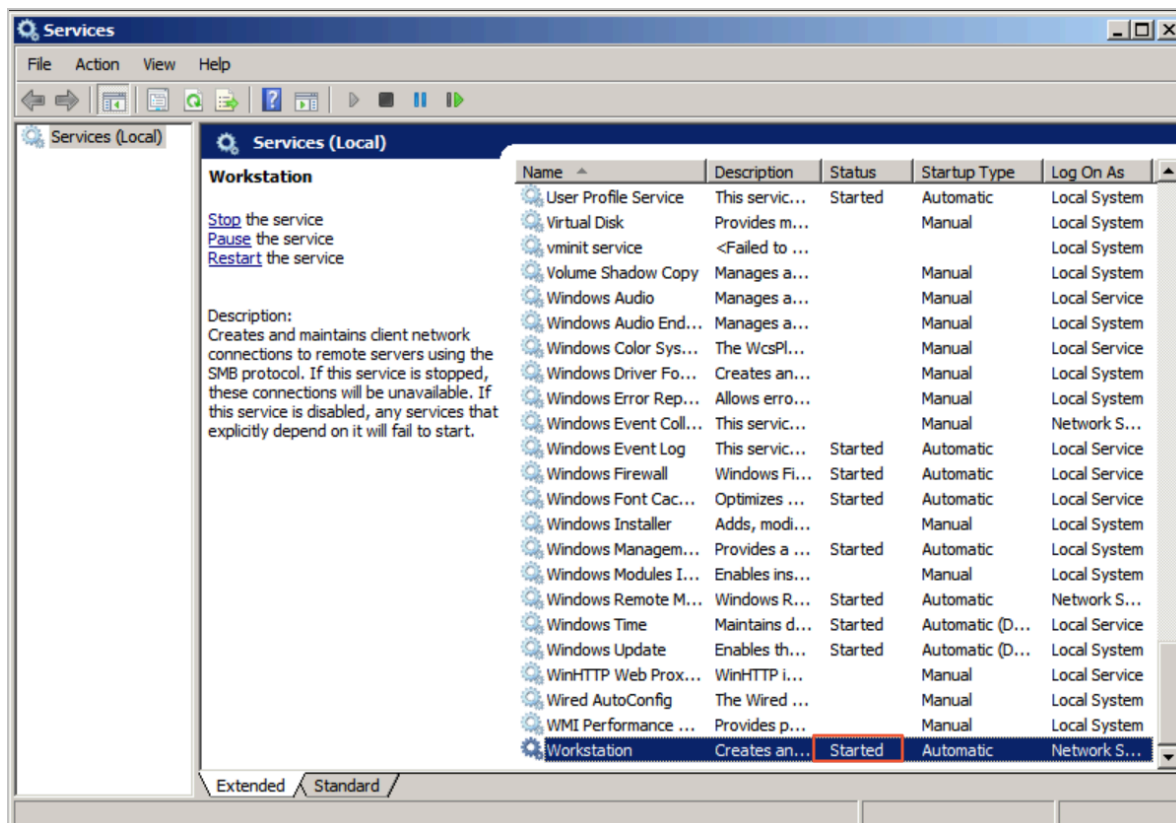
You can mount an SMB file system on an ECS instance that runs Windows.

Prerequisites

Before mounting an SMB file system on an ECS instance that runs Windows, ensure that the following services are started in Windows:

- Workstation

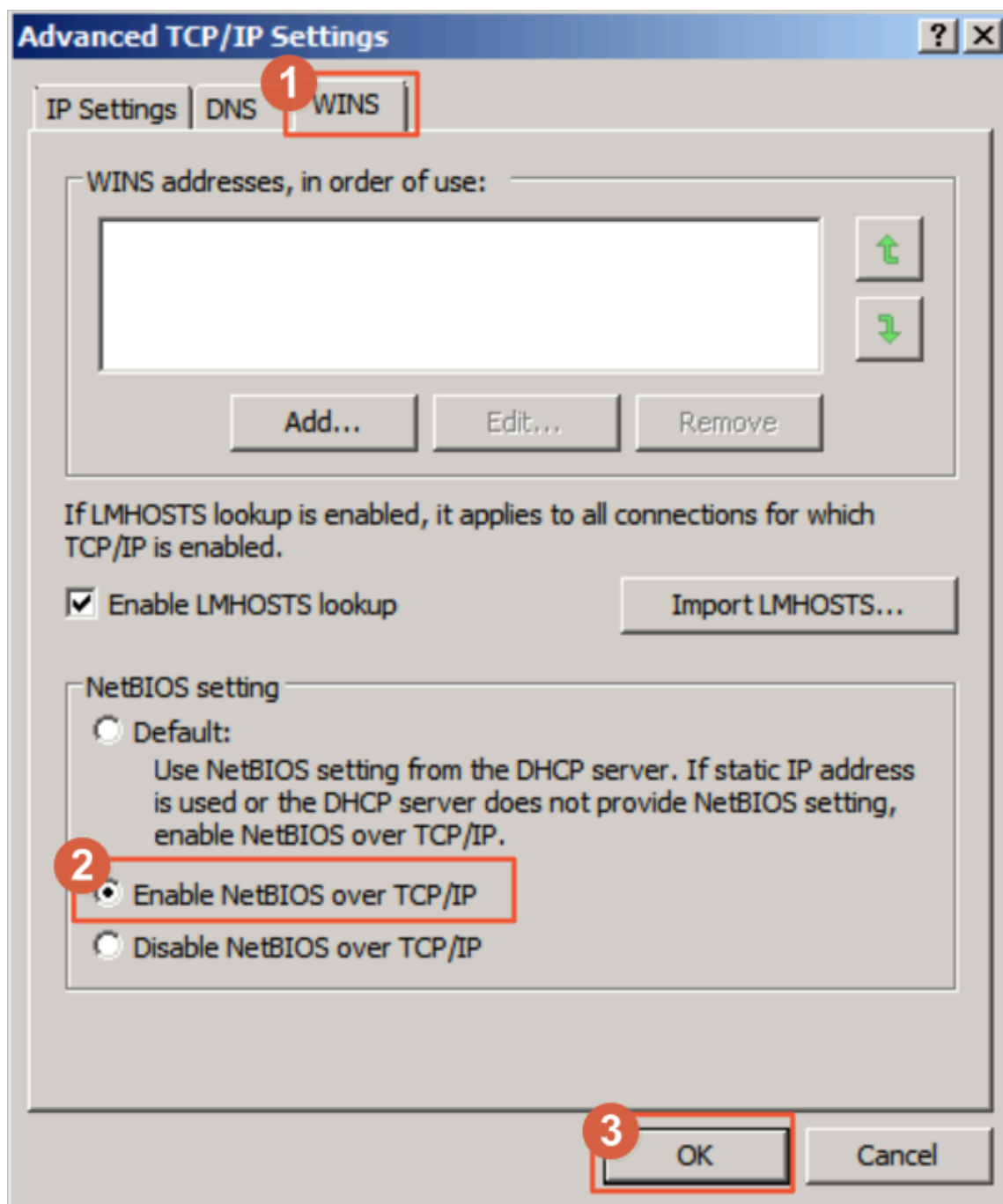
Choose All Programs > Accessories > Run, or press **Win + R** and enter **services** . **msc** to open the Services console. Locate the Workstation service and check the status. The Workstation service is started by default.



- TCP/IP NetBIOS Helper

Use the following steps to start the TCP/IP NetBIOS Helper service:

1. Open Network and Sharing Center and click the active network connection.
2. Click Properties to open the Local Area Network Properties dialog box. Double-click Internet Protocol Version 4 (TCP/IPv4) to open the Internet Protocol Version 4 (TCP/IPv4) Properties dialog box, and then click Advanced.
3. In the Advanced TCP/IP Settings dialog box, choose WINS > Enable NetBIOS over TCP/IP.



Mount a file system using a command

You can run the following command to mount an SMB file system.

```
net use < the target mount drive > \\< the mount address  
of a mount point > \ myshare
```

- The target mount drive indicates the mount drive of the target Windows instance. In this command, you must add a space before \\ and another space before <the target mount drive>.



Note:

Ensure that the name of the target mount drive is unique on the target instance.

- When you create a mount point for a file system, a mount address is generated. You must enter the mount address to mount the file system.

For more information, see [Add a mount point](#).

- myshare: indicates the name of an SMB share. However, this name cannot be changed.



Note:

When a network connection is established between NAS and the Windows instance, you can mount an SMB file system on the instance. For more information, see [Precautions before mounting a file system](#).

Examples

For example, to mount an SMB file system on drive Z, you can run the following command.

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

View mount information

After mounting an SMB file system, you can run the following command in Windows command prompt 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.

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



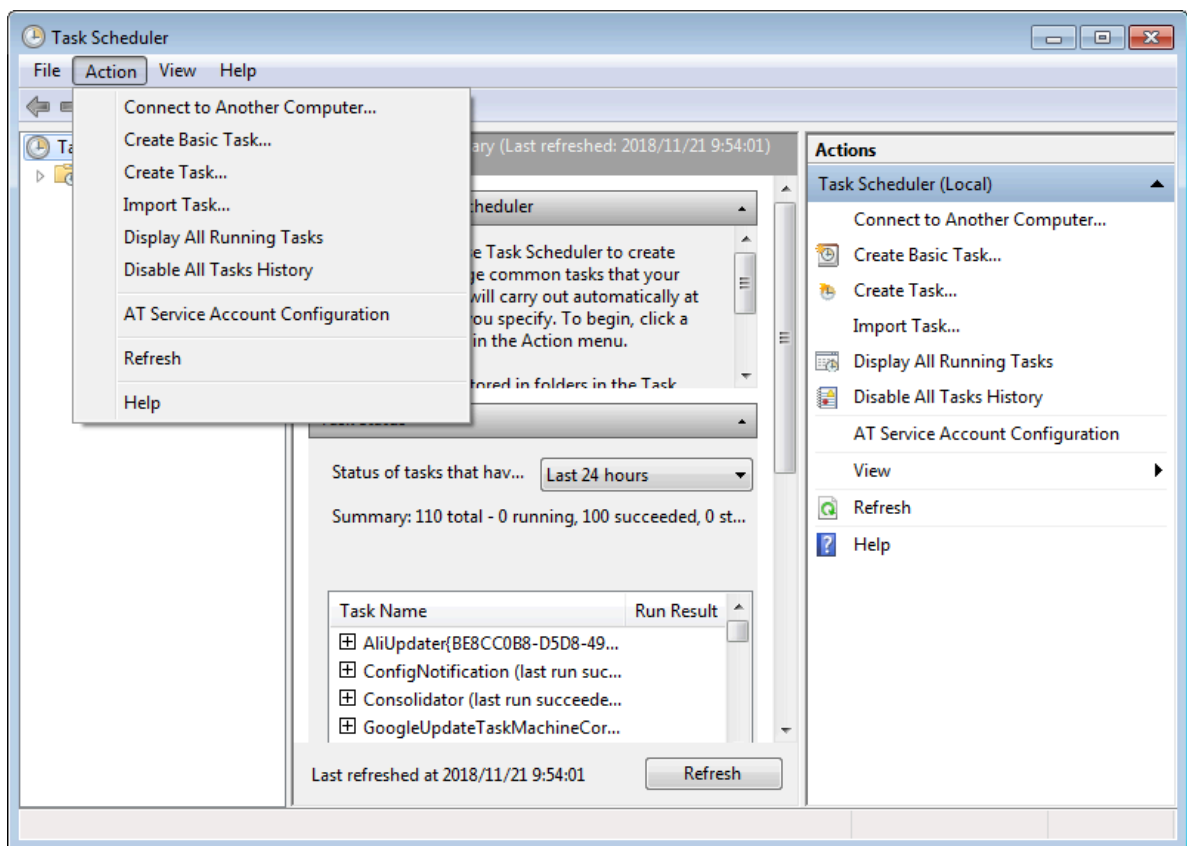
Note:

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.

The screenshot shows the 'Create Task' dialog box with the 'General' tab selected. The 'Name' field contains 'nas'. The 'Location' field contains '\'. The 'Author' field is empty. The 'Description' field is empty. Under 'Security options', the text 'When running the task, use the following user account:' is followed by a blurred user account name and a 'Change User or Group...' button. The radio button 'Run whether user is logged on or not' is selected. The checkbox 'Do not store password. The task will only have access to local computer resources.' is unchecked. The checkbox 'Run with highest privileges' is checked. At the bottom, the 'Hidden' checkbox is unchecked, and the 'Configure for:' dropdown menu is set to 'Windows Vista™, Windows Server™ 2008'. The 'OK' and 'Cancel' buttons are at the bottom right.

Create Task

General Triggers Actions Conditions Settings

Name: nas

Location: \

Author:

Description:

Security options

When running the task, use the following user account:

Change User or Group...

☐ Run only when user is logged on

☒ Run whether user is logged on or not

☐ Do not store password. The task will only have access to local computer resources.

☒ Run with highest privileges

☐ Hidden

Configure for: Windows Vista™, Windows Server™ 2008

OK Cancel

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.

New Trigger

Begin the task: At log on

Settings

☒ Any user

☐ Specific user: HZ\wb-yjp354868 Change User...

Advanced settings

☐ Delay task for: 15 minutes

☐ Repeat task every: 1 hour for a duration of: 1 day

☐ Stop all running tasks at end of repetition duration

☐ Stop task if it runs longer than: 3 days

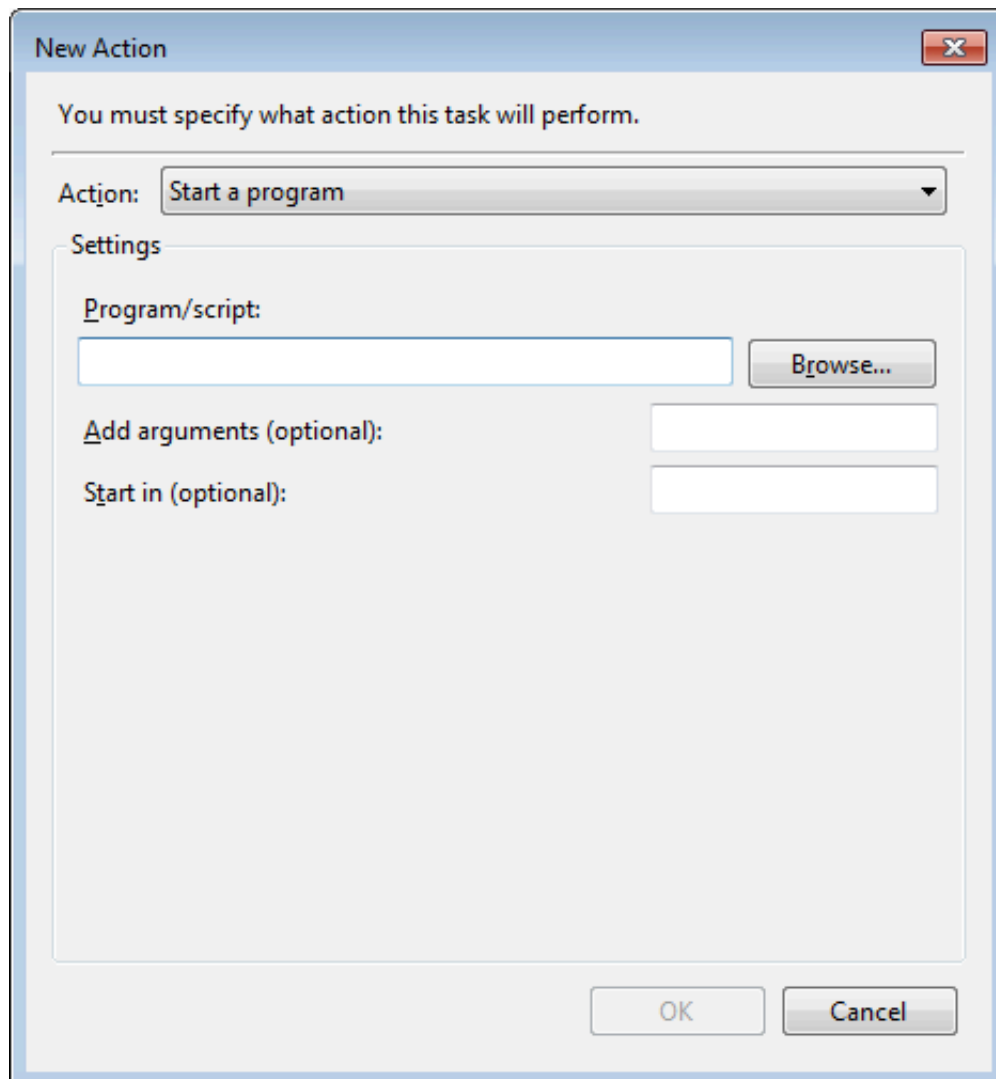
☐ Activate: 2018/11/21 10:14:56 ☐ Synchronize across time zones

☐ Expire: 2019/11/21 10:14:56 ☐ Synchronize across time zones

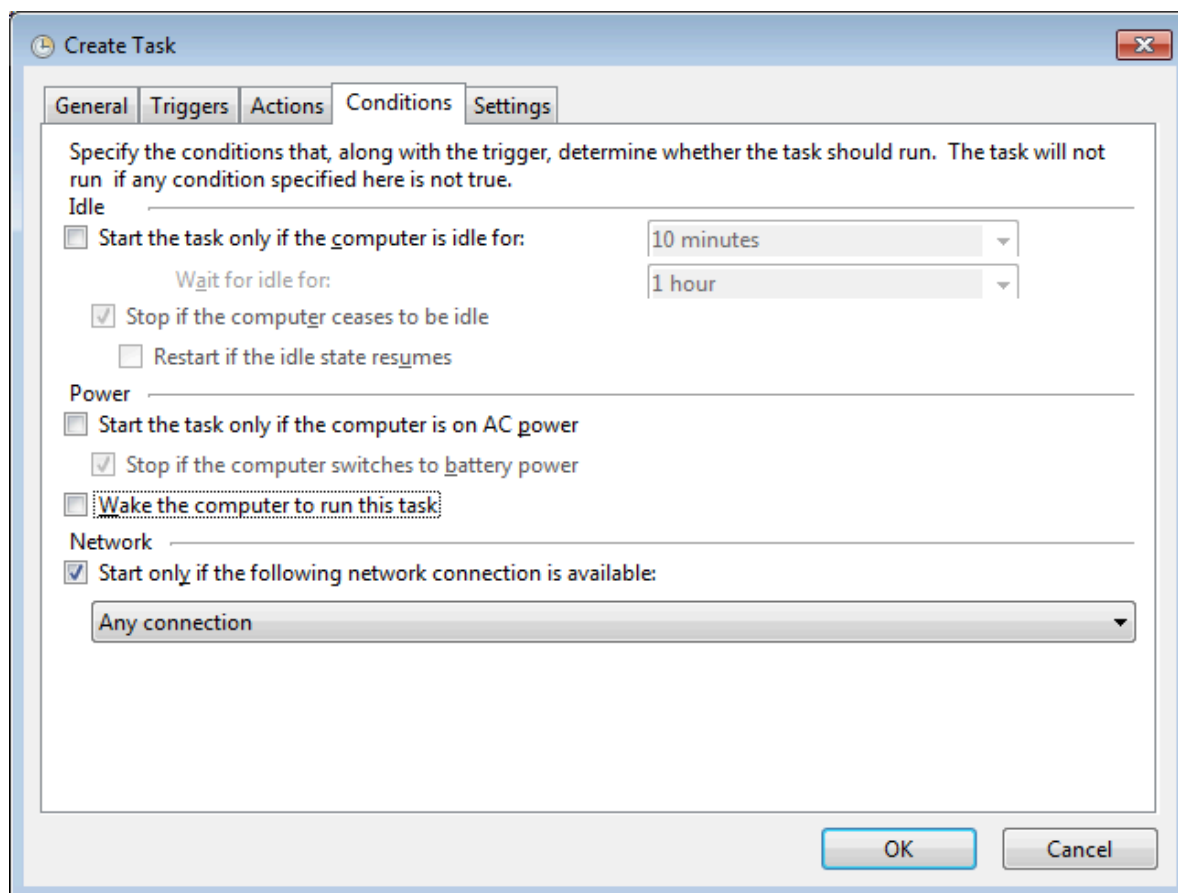
☒ Enabled

OK Cancel

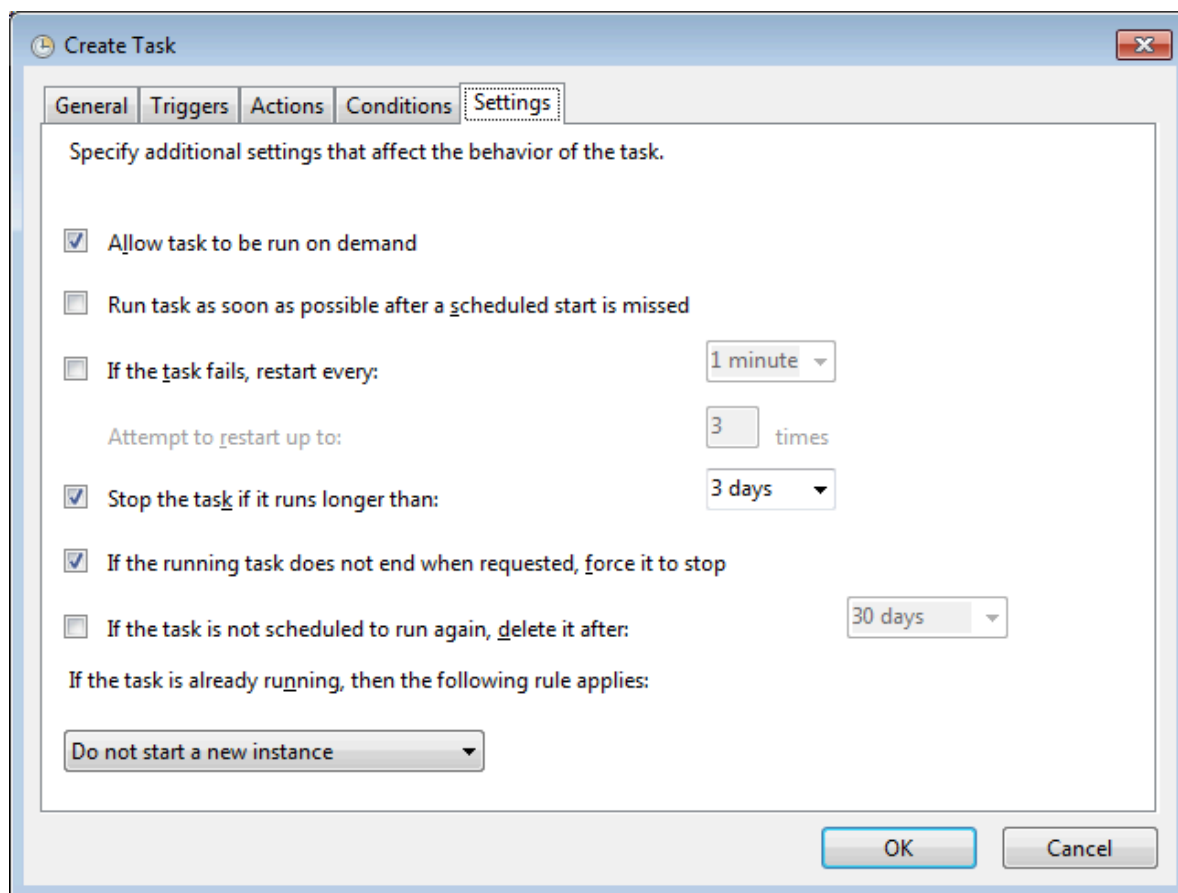
6. On the Actions tab, click New. Then, select Start a program for Actions, and then select the created `nas_auto . bat` script in Program/script. After that, click OK.



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



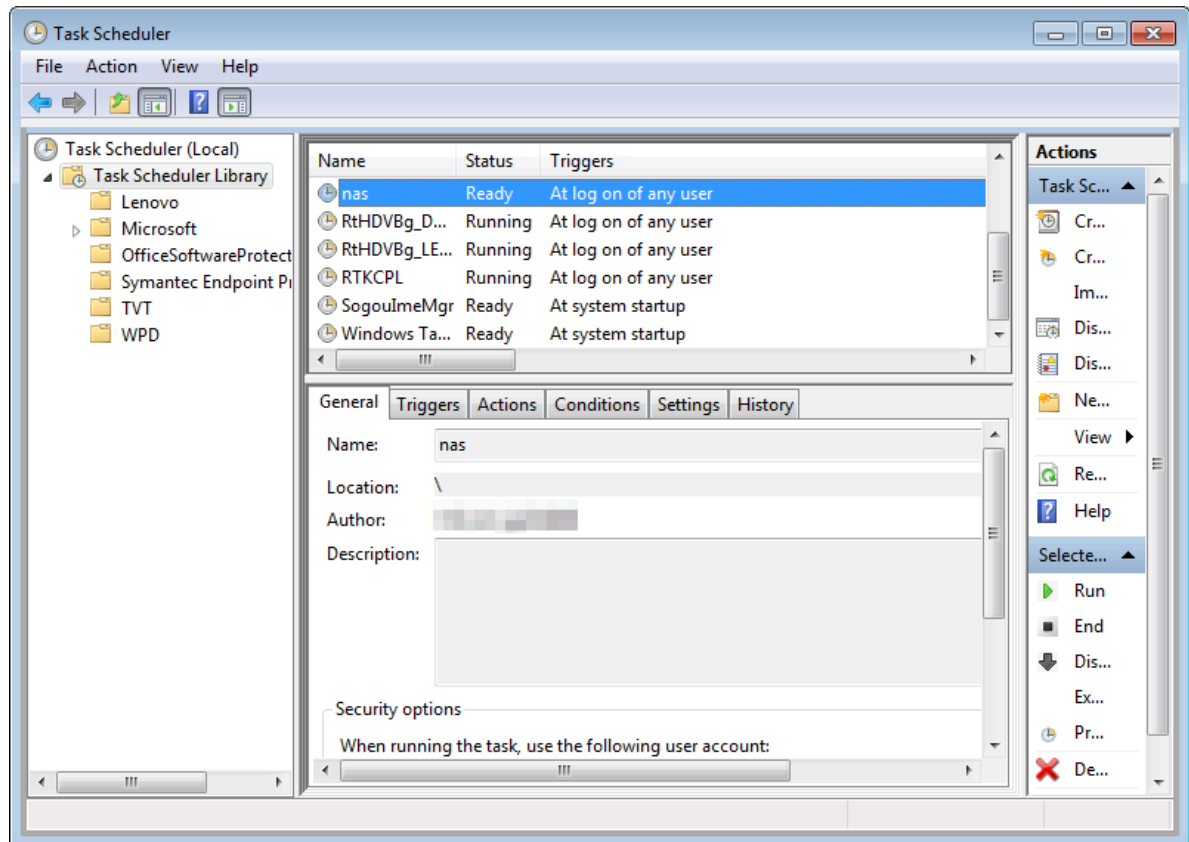
8. On the Settings tab, select If the running task does not end when requested, force it to stop, and then select Do not start a new instance for If the task is already running, then the following rule applies.



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
<code>_netdev</code>	Prevents a file system from mounting on an ECS instance before a network connection is established.
0(the first zero after <code>noresvport</code>)	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 <code>noresvport</code>)	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.

```
[Unit]
Description=RPCbind Server Activation Socket

[Socket]
ListenStream=/var/run/rpcbind.sock

# RPC netconfig can't handle ipv6/ipv4 dual sockets
#BindIPv6only=ipv6-only
ListenStream=0.0.0.0:111
ListenDatagram=0.0.0.0:111
#ListenStream=[::]:111
#ListenDatagram=[::]:111

[Install]
WantedBy=sockets.target
```

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 ,
nresvport , _netdev    0    0
```

```
#
# /etc/fstab
# Created by anaconda on Fri Feb 15 09:22:39 2019
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
UUID=ed95c595-4813-480e-992b-85b1347842e8 /          ext4    defaults        1 1
::share /tmp/benchmark nfs     vers=3,proto=tcp,nresvport,_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 unmount 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	Microsoft	Windows	Network	\\ name \ IPC \$
OK	Microsoft	Windows	Network	\\ name2 \ folder

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.