

# Alibaba Cloud

## Network Attached Storage Product Introduction

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# Document conventions

Style	Description	Example
 <b>Danger</b>	A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 <b>Danger:</b> Resetting will result in the loss of user configuration data.
 <b>Warning</b>	A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 <b>Warning:</b> Restarting will cause business interruption. About 10 minutes are required to restart an instance.
 <b>Notice</b>	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	 <b>Notice:</b> If the weight is set to 0, the server no longer receives new requests.
 <b>Note</b>	A note indicates supplemental instructions, best practices, tips, and other content.	 <b>Note:</b> You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click <b>Settings&gt; Network&gt; Set network type</b> .
<b>Bold</b>	<b>Bold</b> formatting is used for buttons, menus, page names, and other UI elements.	Click <b>OK</b> .
<b>Courier font</b>	Courier font is used for commands	Run the <code>cd /d C:/window</code> command to enter the Windows system folder.
<i>Italic</i>	Italic formatting is used for parameters and variables.	<code>bae log list --instanceid</code> <i>Instance_ID</i>
[ ] or [a b]	This format is used for an optional value, where only one item can be selected.	<code>ipconfig [-all -t]</code>
{ } or {a b}	This format is used for a required value, where only one item can be selected.	<code>switch {active stand}</code>

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# 1. What is Apsara File Storage NAS?

NAS is a cloud service that provides file storage for compute nodes. These compute nodes include Elastic Compute Service (ECS) instances, E-HPC nodes, and Alibaba Cloud Container Service for Kubernetes (ACK) nodes.

NAS is a distributed file system that provides several benefits. These benefits include shared access, scalability, high availability, and high performance. Based on POSIX file APIs, NAS is compatible with native operating systems. This ensures data consistency and exclusive locks during shared access.

NAS provides scalable file systems and allows simultaneous access to a file system from multiple ECS instances. Storage capacity automatically scales up or down when you add or remove files. NAS provides integrated data sources for workloads and applications that run on multiple ECS instances or servers.

NAS supports a broad spectrum of scenarios. For more information, see [Scenarios](#).

NAS provides data storage of multiple types, such as NAS Capacity, NAS Performance, and NAS Extreme. For more information, see [Storage types](#).

## Benefits

NAS provides multiple benefits, such as low costs, security, usability, reliability, and high performance.

- Low costs
  - An NAS file system can be mounted on multiple compute nodes at the same time while still allowing access from these nodes. This reduces a large number of data copies and synchronization costs.
  - The performance of an NAS file system increases with storage capacity. This eliminates the need for upfront investment in high-end file storage devices and reduces hardware costs.
  - NAS allows you to pay only for the storage space that you consume without the need to configure storage in advance. No minimum consumption or extra configuration cost exists. For more information, see [Billing](#).
  - NAS features high availability, which allows you to reduce a large number of data security risks and maintenance costs.

- Ease of use

You can create a file system by a few clicks without the need to deploy and maintain the file system.

- Security

NAS provides access control based on Resource Access Management (RAM), and access isolation based on Virtual Private Cloud (VPC) networks. NAS supports encryption in transit and encryption at rest to prevent data interception and tampering.

- High reliability

NAS provides multiple replicas for each piece of data that is stored in a file system. These replicas reside in devices that are isolated across different fault domains for geo-redundancy. NAS provides data reliability of 99.999999999% (eleven nines). This reduces a large number of data security risks.

- **High Performance**

NAS provides a distributed file system whose performance scales linearly with capacity. Compared with traditional data storage solutions, NAS provides a high level of storage performance.

- **Compatibility**

- NAS supports standard protocols, such as NFS and SMB. NAS provides data consistency and file locking based on POSIX file APIs.
- After the contents of a file are changed in an NAS file system, you can view the result in real time.

## Related features

The following table lists NAS features.

Scenario	Feature	Related topic
Create a file system	Before you use NAS, you must create a file system.	<a href="#">Create a file system</a>
Manage file systems	You can view the details of a file system or delete a file system.	<a href="#">Manage file systems</a>
Add mount targets	To mount a file system, you must add a mount target to the file system.	<a href="#">Create a mount target</a>
Manage mount targets	You can enable, disable, or remove a mount target. You can also modify the permission group of a mount target.	<a href="#">Manage mount targets</a>
Mount a file system	Before you use a file system, you must mount the file system on a compute node.	<a href="#">Mount a file system</a>
Control user access	You can authorize a RAM user to manage NAS and control user access by using permission groups.	<ul style="list-style-type: none"> <li>• <a href="#">Use RAM to manage users' access to resources</a></li> <li>• <a href="#">Create a custom policy</a></li> <li>• <a href="#">Manage permission groups</a></li> </ul>
Use the NAS API	NAS provides a number of API operations that allow you to perform various operations on a file system.	<a href="#">API overview</a>

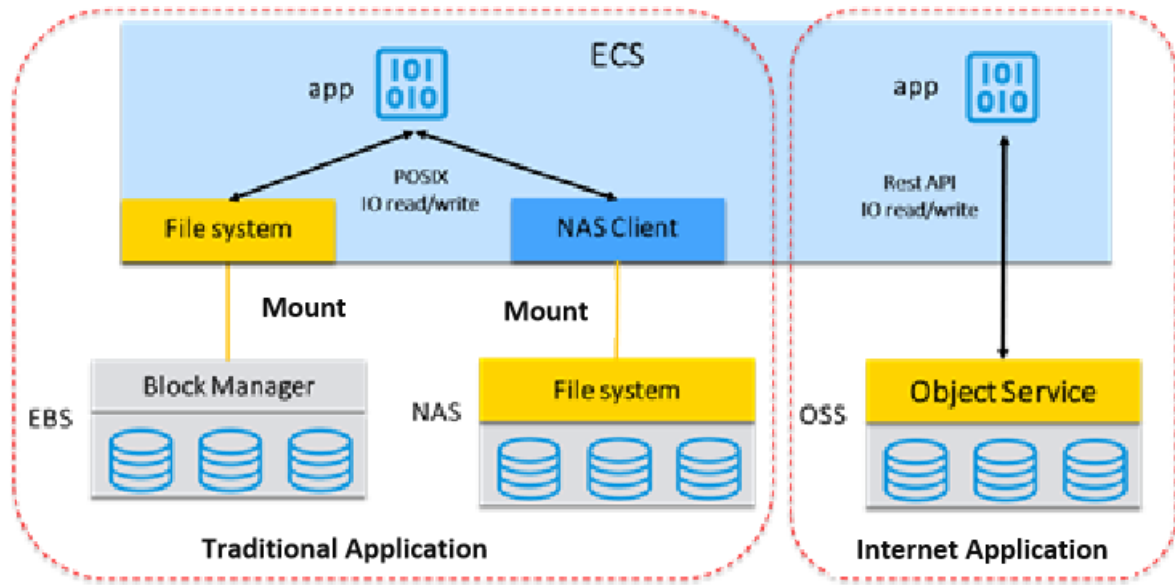
## Billing methods

For more information about NAS billing methods, see [Pricing](#).

## 2.Application scenarios for NAS, OSS, and EBS

This topic describes the differences between Apsara File Storage NAS, Object Storage Service (OSS), and Block Storage (EBS) to help you understand when to choose Apsara File Storage NAS.

Apsara File Storage NAS provides simple, scalable, elastic, and shared file storage. You can combine this service with Elastic Compute Service (ECS) to construct your business system. You need to consider multiple factors when you deploy your applications and choose among Apsara File Storage NAS, OSS, and EBS for your applications. To help you make an informed selection, the following describes the differences between the three services.



### Differences between Apsara File Storage NAS and OSS

The major difference between Apsara File Storage NAS and OSS is that you can access an Apsara File Storage NAS file system in the same way as you access a local file system without modifying an application. Apsara File Storage NAS provides high throughput and high IOPS, and supports random read/write operations and online modification of files.

Compared with the directory tree hierarchy of Apsara File Storage NAS, OSS adopts a different storage structure where objects are stored in flat files and are accessed through RESTful APIs. OSS does not support random read/write operations. It is mainly applicable to the upload, download, and distribution of massive volumes of data over the Internet.

### Differences between Apsara File Storage NAS and EBS

The major difference between Apsara File Storage NAS and EBS is that Apsara File Storage NAS provides high throughput and supports simultaneous access by thousands of ECS instances.

EBS devices are bare disks. After an EBS device is attached to an ECS instance, you must format the file system of the device into a file system such as ext3, ext4, or NTFS before accessing the files stored on the device. EBS is applicable to I/O-intensive applications that require high performance and low latency, such as Online Transactional Processing (OLTP) and NoSQL databases. However, the storage capacity of an EBS device is 32 TB and is unscalable. It must work with cluster management software such as Oracle Real Application Clusters (Oracle RAC) and Windows Server Failover Clustering (WSFC) to provide shared access. Therefore, each EBS device usually provides high-performance and low-latency storage service for only one ECS instance.

Storage service	Latency	Throughput	Access mode
Apsara File Storage NAS	Low latency, in milliseconds	Hundreds of Gbps	Thousands of ECS instances perform concurrent random read/write operations on an Apsara File Storage NAS file system through POSIX.
OSS	Relatively low latency, in tens of milliseconds	Hundreds of Gbps	Millions of clients access and perform concurrent append operations on an OSS bucket on the web.
EBS	Ultra-low latency, in microseconds	Tens of Gbps	A single ECS instance performs random read/write operations on a block storage device through POSIX.



## 3.Features

NAS provides a wide variety of features, such as scalable capacity, shared access, support for several standard protocols, security and compliance, encryption, flexible access modes, data transmission, and data backup.

### Scalable capacity

The capacity of a file system is scalable. With an increasing or decreasing number of files, the capacity of the file system can be scaled up or down.

### Shared access

Multiple computational instances share access to the same data source in a file system and use file locks to ensure data consistency.

### Support for several standard protocols

Provides standard Network File System (NFS) and Server Message Block (SMB) protocols and supports mainstream Linux and Windows operating systems.

### Security and compliance

Access control mechanisms, such as RAM authentication, VPC isolation, and security groups, ensure data security.

- For more information about access control by using permission groups, see [Manage the access permissions of a file system](#).
- For more information about authorization for RAM users, see [Manage the access permissions of file system resources](#).

### Encryption

Encrypted data transmission prevents user data from being intercepted or sniffed during transmission.

### Flexible access modes

Supports multiple access modes. You can access NAS from various networks, such as VPCs, on-premises IDCs, and dedicated networks.

### Data transmission

Supports synchronous or asynchronous data transmission between NAS file systems or between NAS and OSS by using Data Transmission Service (DTS).

### Data backup

Multiple copies of data can be generated by using flexible backup policies. These data backups are used to restore corrupted data.

## 4.Storage type