Elastic Volume Service

Getting Started

Issue 01

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1 Buying and Preparing an EVS Disk for a Linux Server

Scenarios

You can use EVS disks as system disks or data disks. System disks are purchased together with servers, while data disks can be purchased together with servers or separately. If you have purchased data disks separately, you must attach and initialize them before they can be used.

This section describes how a non-shared data disk can be purchased on the EVS console, attached to a Linux server, and initialized on the server.

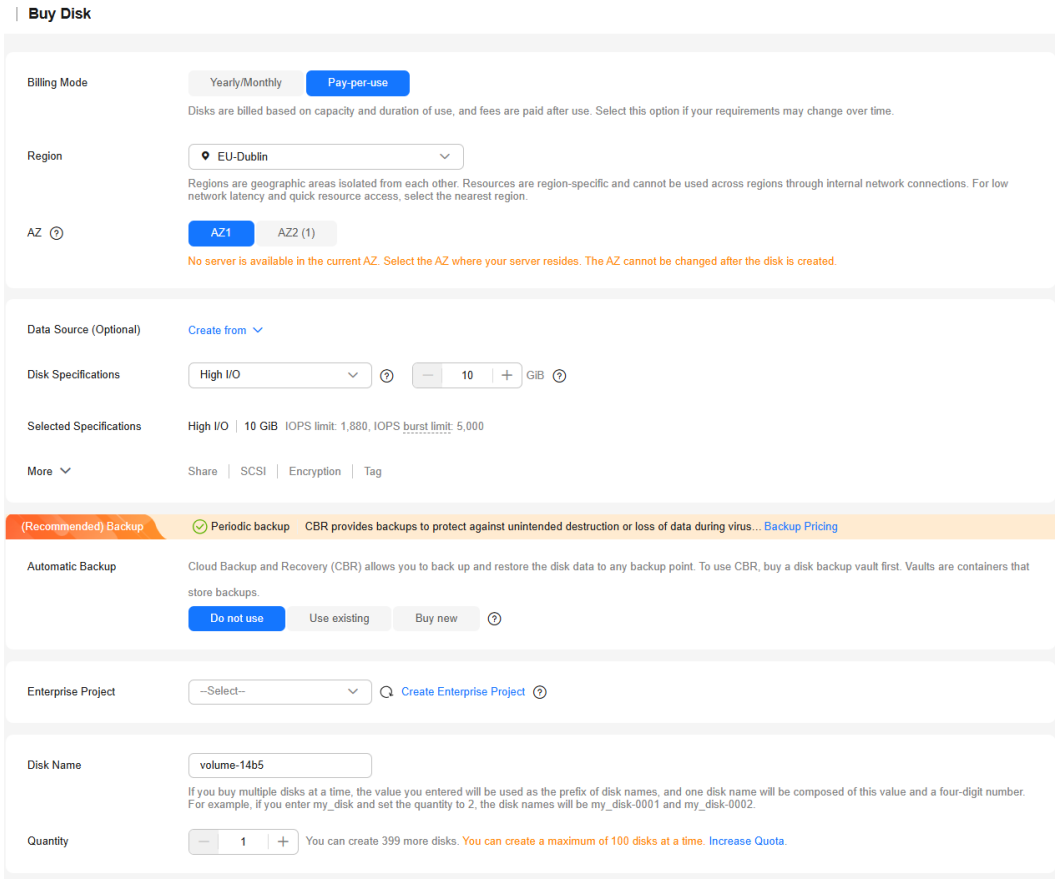
Operation Process

Procedure	Description
Step 1: Purchase an EVS Disk	Buy a data disk on the EVS console.
Step 2: Attach the EVS Disk	Attach the data disk to a Linux server.
Step 3: Initialize the EVS Disk	Initialize the data disk on the server.

Step 1: Purchase an EVS Disk

Step 1 Go to the **Buy Disk** page.

Step 2 Configure mandatory parameters based on the following table and retain the default settings for other parameters.



Parameter	Example Value	Description
Billing Mode	Pay-per-use	To learn more about EVS pricing, see **Billing**.
Region	CN South-Guangzhou	Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and quick resource access, select the nearest region.
AZ	AZ1	You can only attach EVS disks to servers in the same AZ. After a disk is purchased, its AZ cannot be changed.
Data Source	Do not configure it.	If you want to create an empty data disk, do not configure a data source.
Disk Type	Ultra-high I/O	To learn more about disk types, see **Disk Types and Performance**.
Capacity	100 GiB	Enter a disk capacity.
Automatic Backup	Do not use	Automatic backup allows you to back up the disk data to ensure your data security and integrity.

Parameter	Example Value	Description
More > Share	Do not selection this option.	A non-shared disk can only be attached to one server. The sharing attribute of a disk cannot be changed after the disk has been purchased.
More > SCSI	Select this option.	A SCSI disk allows the server OS to directly access the underlying storage media and send SCSI commands to the disk. The device type of a disk cannot be changed after the disk has been purchased.
More > Encryption	Select this option and use the default key.	EVS uses the industry-standard XTS-AES-256 cryptographic algorithm and keys to encrypt EVS disks. The encryption attribute of a disk cannot be changed after the disk has been purchased.
Enterprise Project	default	This parameter shows up only when you use an enterprise account to buy disks. It enables unified management of cloud resources by project.
Disk Name	volume-0001	Enter a disk name.
Quantity	1	The preset disk quantity is **1**, which means only one disk is created.

Step 3 Click **Next**.

Step 4 Go back to the disk list page. When the status of the **volume-0001** disk changes to **In-use**, the disk is successfully created.

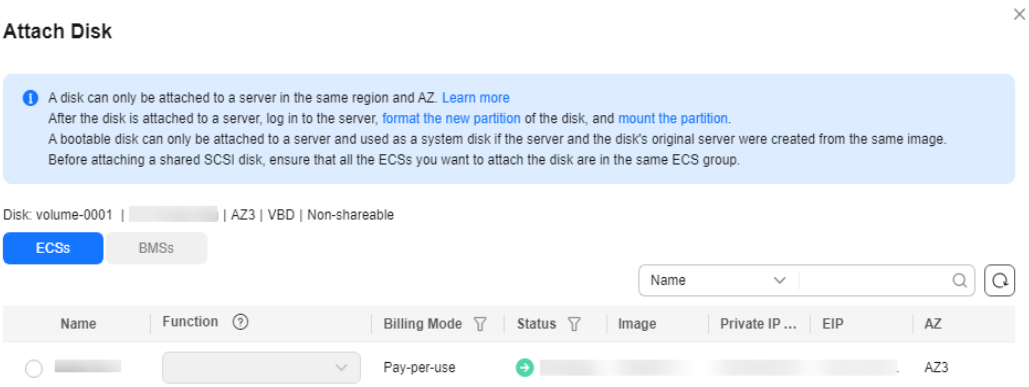
----End

Step 2: Attach the EVS Disk

EVS disks cannot be used alone. You need to attach them to cloud servers first.

Step 1 In the disk list, find the **volume-0001** disk and click **Attach** in the **Operation** column.

Step 2 Attach the **volume-0001** disk to your desired server. Ensure that the server and disk are in the same AZ.



Step 3 Click **OK** to go back to the disk list page. When the status of the **volume-0001** disk changes to **In-use**, the disk is successfully attached.

----End

Step 3: Initialize the EVS Disk

After attaching the **volume-0001** disk, you need to initialize it before it can be used. The following example uses fdisk to format the disk into two primary MBR partitions, with one 40 GiB and the other 60 GiB.

Step 1 Log in to the server.

For how to log in to an ECS, see **Logging In to an ECS**.

For how to log in to a BMS, see **Logging In to a BMS**.

Step 2 Create two primary partitions, **/dev/vdb1** and **/dev/vdb2** for data disk **/dev/vdb**.

1. Check that the capacity of the **/dev/vdb** data disk is 100 GiB.

   lsblk

   ```
   [root@ecs-centos76 ~]# lsblk
   NAME   MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
   vda    253:0    0  40G  0 disk
   ├─vda1 253:1    0   1G  0 part /boot
   └─vda2 253:2    0  39G  0 part /
   vdb    253:16   0  100G 0 disk
   ```

   NOTE

   In the command output, disk **/dev/vda** is partitioned, but disk **/dev/vdb** is not.

2. Create the first primary partition **/dev/vdb1**.

   fdisk /dev/vdb

   n

   p

   1

   NOTE

   - Entering **p** for **Partition type** creates a primary partition, and entering **e** creates an extended partition.
   - Value **1** is the primary partition number.

   ```
   [root@ecs-test-0001 ~]# fdisk /dev/vdb
   Welcome to fdisk (util-linux 2.23.2).
   ```



```
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x38717fc1.

Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p): p
Partition number (1-4, default 1): 1
```

3. Set **First sector** to **2048** and **Last sector** to **83886079** for partition **/dev/vdb1** (40 GiB).

   NOTE

   First and last sectors of the partitions in this example are calculated as follows:

   Value of sectors = Capacity/512 bytes, 1 GiB = 1073741824 bytes

   - **First sector (2048-209715199, default 2048)** shows the sector value range of the **/dev/vdb** data disk (100 GiB).

     First sector = 2048

     Last sector = Value of sectors – 1 = (100 x 1073741824/512) – 1 = 209715200 – 1=209715199

   - For the first partition **/dev/vdb1** (40 GiB) of the **/dev/vdb** data disk:

     First sector = 2048 (The first sector of the **/dev/vdb** data disk is used.)

     Last sector = Value of sectors – 1 = (40 x 1073741824/512) – 1 = 83886079

   - For the second partition **/dev/vdb2** (60 GiB) of the **/dev/vdb** data disk:

     First sector = Last sector of **/dev/vdb1** + 1 = 83886079 + 1 = 83886080

     Last sector = First sector + Value of sectors – 1 = 83886080 + (60 x 1073741824/512) – 1 = 209715199

   ```
   First sector (2048-209715199, default 2048): 2048
   Last sector, +sectors or +size{K,M,G} (2048-209715199, default 209715199):83886079
   Partition 1 of type Linux and of size 40 GB is set
   ```

4. Create the second primary partition **/dev/vdb2**.

   n

   p

   2

   ```
   Command (m for help): n
   Partition type:
      p   primary (0 primary, 0 extended, 4 free)
      e   extended
   Select (default p): p
   Partition number (1-4, default 2): 2
   ```

5. Set the **First sector** to **83886080** and **Last sector** to **209715199** for partition **/dev/vdb2**.

   ```
   First sector (83886080-209715199, default 83886080): 83886080
   Last sector, +sectors or +size{K,M,G} (83886080-209715199, default 209715199):209715199
   Partition 2 of type Linux and of size 60 GB is set
   ```

Step 3 Check the sizes and partition styles of the new partitions.

1. Check whether the partitioning is successful.

   p

   ```
   Command (m for help): p
   ```



```
Disk /dev/vdb: 107.4 GB, 107374182400 bytes, 209715200 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x994727e5

   Device Boot      Start         End      Blocks   Id  System
/dev/vdb1            2048    83886079    41942016   83  Linux
/dev/vdb2        83886080   209715199    62914560   83  Linux

Command (m for help):
```

NOTE

In case that you want to discard the changes made before, you can exit fdisk by entering **q** and press **Enter**. Then, re-create the partitions by referring to step 1.

2. Write the changes to the partition table and synchronize the new partition table to the OS.

   w

   partprobe

   NOTE

   If error message **-bash: partprobe: command not found** is returned, the system cannot identify the command. In this case, run **yum install -y parted** to install the command. Then run the command again.

3. Confirm that the partition style is MBR.

   parted /dev/vdb

   p

   NOTE

   If **Partition Table: msdos** is returned, the partition style is MBR.

```
[root@ecs-test-0001 ~]# parted /dev/vdb
GNU Parted 3.1
Using /dev/vdb
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) p
Model: Virtio Block Device (virtblk)
Disk /dev/vdb: 107GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
 1      1049kB  42.9GB  42.9GB  primary
 2      42.9GB  107GB   64.4GB  primary

(parted) q
[root@ecs-test-0001 ~]#
```

4. Enter **q** and press **Enter** to exit parted.

Step 4 Create ext4 file systems for partitions **/dev/vdb1** (40 GiB) and **/dev/vdb2** (60 GiB).

mkfs -t ext4 /dev/vdb1

mkfs -t ext4 /dev/vdb2

NOTE

It takes some time to create file systems. Do not exit before the system returns the following information:

```
[root@ecs-test-0001 ~]# mkfs -t ext4 /dev/vdb1
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
2621440 inodes, 10485504 blocks
524275 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2157969408
320 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
```

Check whether the file system format is ext4.

parted /dev/vdb

p

```
[root@ecs-test-0001 ~]# parted /dev/vdb
GNU Parted 3.1
Using /dev/vdb
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) p
Model: Virtio Block Device (virtblk)
Disk /dev/vdb: 107GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
 1      1049kB  42.9GB  42.9GB  primary  ext4
 2      42.9GB  107GB   64.4GB  primary  ext4

(parted) q
[root@ecs-test-0001 ~]#
```

Enter **q** and press **Enter** to exit parted.

Step 5 Create directories (mount points) and mount the new partitions on the created mount points.

mkdir -p /mnt/sdc

mkdir -p /mnt/sdd

mount /dev/vdb1 /mnt/sdc

mount /dev/vdb2 /mnt/sdd

lsblk

View the mount results.


```
[root@ecs-test-0001 ~]# lsblk
NAME   MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
vda    253:0    0  40G  0 disk
├vda1 253:1    0  40G  0 part /
vdb    253:16   0 100G  0 disk
├vdb1 253:17   0  40G  0 part /mnt/sdc
├vdb2 253:18   0  60G  0 part /mnt/sdd
```

You should now see that partitions **/dev/vdb1** and **/dev/vdb2** are mounted on **/mnt/sdc** and **/mnt/sdd**.

Step 6 Use the partition UUIDs to configure auto mount at startup.

NOTE

- Mounts become invalid after a system reboot. You can configure auto mount at startup by adding information of the new partition into the **/etc/fstab** file.
- You are advised not to use device names to identify disks in the **/etc/fstab** file because device names are assigned dynamically and may change (for example, from **/dev/vdb1** to **/dev/vdb2**) after a stop or start. This can even prevent your server from booting up.
- UUIDs are the unique character strings for identifying partitions in Linux.
- This operation will not affect the existing data on the ECS.

1. Query the partition UUIDs.

   blkid /dev/vdb1

   blkid /dev/vdb2

   ```
   [root@ecs-test-0001 ~]# blkid /dev/vdb1
   /dev/vdb1: UUID="0b3040e2-1367-4abb-841d-ddb0b92693df" TYPE="ext4"
   /dev/vdb2: UUID="0d6769k2-1745-9dsf-453d-hgd0b34267dj" TYPE="ext4"
   ```

   The UUIDs of partitions **/dev/vdb1** and **/dev/vdb2** are **0b3040e2-1367-4abb-841d-ddb0b92693df** and **0d6769k2-1745-9dsf-453d-hgd0b34267dj**.

2. Configure auto mount at startup.

   vi /etc/fstab

   Press **i** to enter the editing mode, move the cursor to the end of the file, press **Enter**, and add the following content:

   ```
   UUID=0b3040e2-1367-4abb-841d-ddb0b92693df   /mnt/sdc    ext4   defaults    0   2
   UUID=0d6769k2-1745-9dsf-453d-hgd0b34267dj   /mnt/sdd    ext4   defaults    0   2
   ```

   Press **Esc**, enter **:wq**, and press **Enter** to save the settings and exit the vi editor.

Table 1-1 Parameter description

Example Value	Description
UUID=0b3040e2-1367-4abb-841d-ddb0b92693df	The UUID of the partition.
/mnt/sdc	The mount point of the partition.
ext4	The file system format of the partition.
defaults	The partition mount option. Normally, this parameter is set to **defaults**.

Example Value	Description
0	– The Linux dump backup option. ▪ **0**: Linux dump backup is not used. Usually, dump backup is not used, and you can set this parameter to **0**. ▪ **1**: Linux dump backup is used.
2	– The fsck option, which means whether to use fsck to check the disk during startup. ▪ **2**: The check starts from the partitions whose mount points are non-root directories. **/** is the root directory. ▪ **1**: The check starts from the partitions whose mount points are root directories. ▪ **0**: The fsck option is not used.

Step 7 Verify that auto mount takes effect.

umount /dev/vdb1

umount /dev/vdb2

mount -a

The system reloads all the content in the **/etc/fstab** file.

Query file system mounting information.

mount | grep /mnt/sdc

mount | grep /mnt/sdd

If information similar to the following is displayed, auto mount has taken effect:

```
root@ecs-test-0001 ~]# mount | grep /mnt/sdc
/dev/vdb1 on /mnt/sdc type ext4 (rw,relatime,data=ordered)
root@ecs-test-0001 ~]# mount | grep /mnt/sdd
/dev/vdb2 on /mnt/sdd type ext4 (rw,relatime,data=ordered)
```

----End

You can use the disk after it is initialized.

2 Buying and Preparing an EVS Disk for a Windows Server

Scenarios

You can use EVS disks as system disks or data disks. System disks are purchased together with servers, while data disks can be purchased together with servers or separately. If you have purchased data disks separately, you must attach and initialize them before they can be used.

This section describes how a non-shared data disk can be purchased on the EVS console, attached to a Windows server, and initialized on the server.

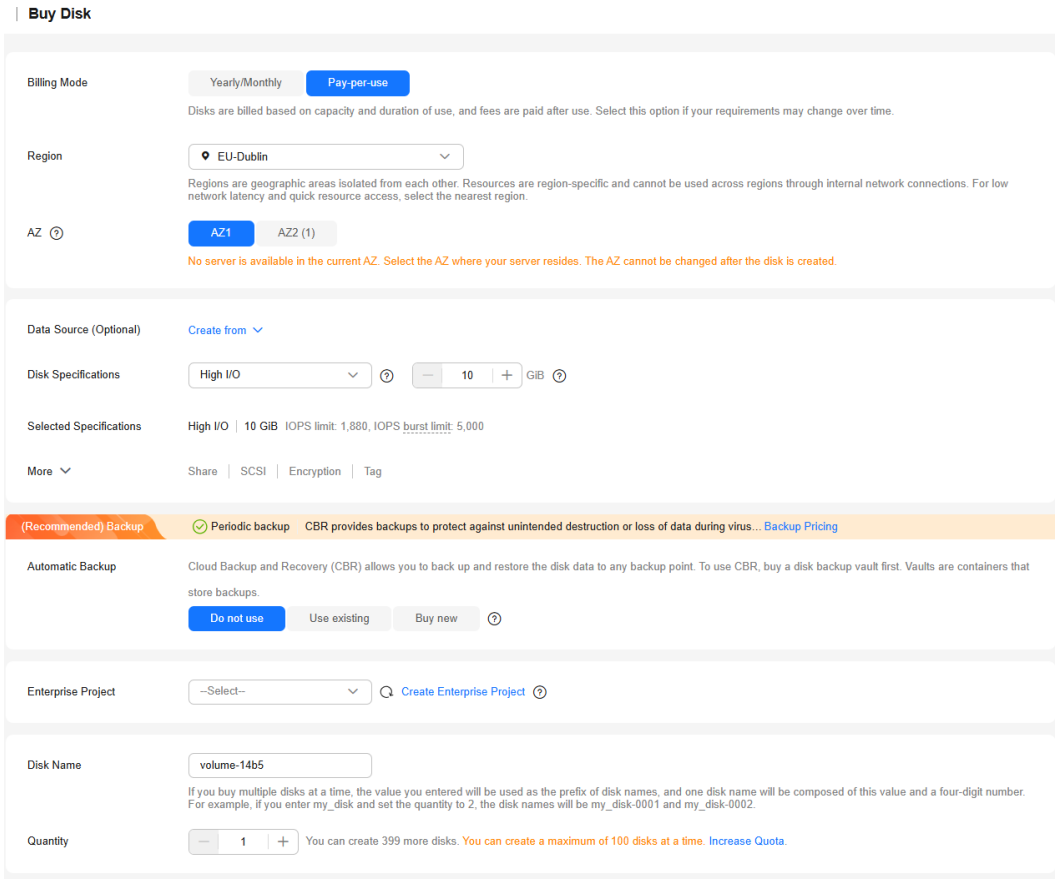
Operation Process

Procedure	Description
Step 1: Purchase an EVS Disk	Buy a data disk on the EVS console.
Step 2: Attach the EVS Disk	Attach the data disk to a Windows server.
Step 3: Initialize the EVS Disk	Initialize the data disk on the server.

Step 1: Purchase an EVS Disk

Step 1 Go to the **Buy Disk** page.

Step 2 Configure mandatory parameters based on the following table and retain the default settings for other parameters.



Parameter	Example Value	Description
Billing Mode	Pay-per-use	To learn more about EVS pricing, see **Billing**.
Region	CN South-Guangzhou	Resources are region-specific and cannot be used across regions through internal network connections. For low network latency and quick resource access, select the nearest region.
AZ	AZ1	You can only attach EVS disks to servers in the same AZ. After a disk is purchased, its AZ cannot be changed.
Data Source	Do not configure it.	If you want to create an empty data disk, do not configure a data source.
Disk Type	Ultra-high I/O	To learn more about disk types, see **Disk Types and Performance**.
Capacity	100 GiB	Enter a disk capacity.
Automatic Backup	Do not use	Automatic backup allows you to back up the disk data to ensure your data security and integrity.

Parameter	Example Value	Description
More > Share	Do not selection this option.	A non-shared disk can only be attached to one server. The sharing attribute of a disk cannot be changed after the disk has been purchased.
More > SCSI	Select this option.	A SCSI disk allows the server OS to directly access the underlying storage media and send SCSI commands to the disk. The device type of a disk cannot be changed after the disk has been purchased.
More > Encryption	Select this option and use the default key.	EVS uses the industry-standard XTS-AES-256 cryptographic algorithm and keys to encrypt EVS disks. The encryption attribute of a disk cannot be changed after the disk has been purchased.
Enterprise Project	default	This parameter shows up only when you use an enterprise account to buy disks. It enables unified management of cloud resources by project.
Disk Name	volume-0001	Enter a disk name.
Quantity	1	The preset disk quantity is **1**, which means only one disk is created.

Step 3 Click **Next**.

Step 4 Go back to the disk list page. When the status of the **volume-0001** disk changes to **In-use**, the disk is successfully created.

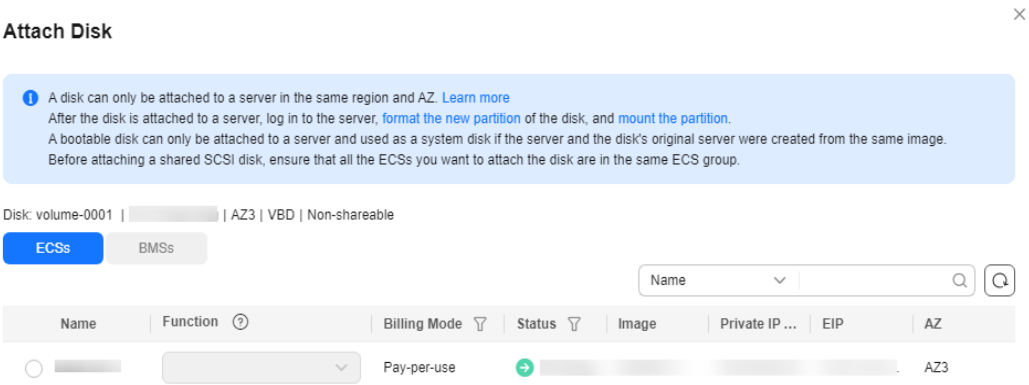
----End

Step 2: Attach the EVS Disk

EVS disks cannot be used alone. You need to attach them to cloud servers first. In the following example, the **volume-0001** disk is attached.

Step 1 In the disk list, find the **volume-0001** disk and click **Attach** in the **Operation** column.

Step 2 Attach the **volume-0001** disk to your desired server. Ensure that the server and disk are in the same AZ.



Step 3 Click **OK** to go back to the disk list page. When the status of the **volume-0001** disk changes to **In-use**, the disk is successfully attached.

----End

Step 3: Initialize the EVS Disk

After attaching the **volume-0001** disk, you need to initialize it before it can be used. In the following example, the disk is formatted into a 100 GiB GPT partition with the NTFS file system.

Step 1 Log in to the server.

For how to log in to an ECS, see **Logging In to an ECS**.

For how to log in to a BMS, see **Logging In to a BMS**.

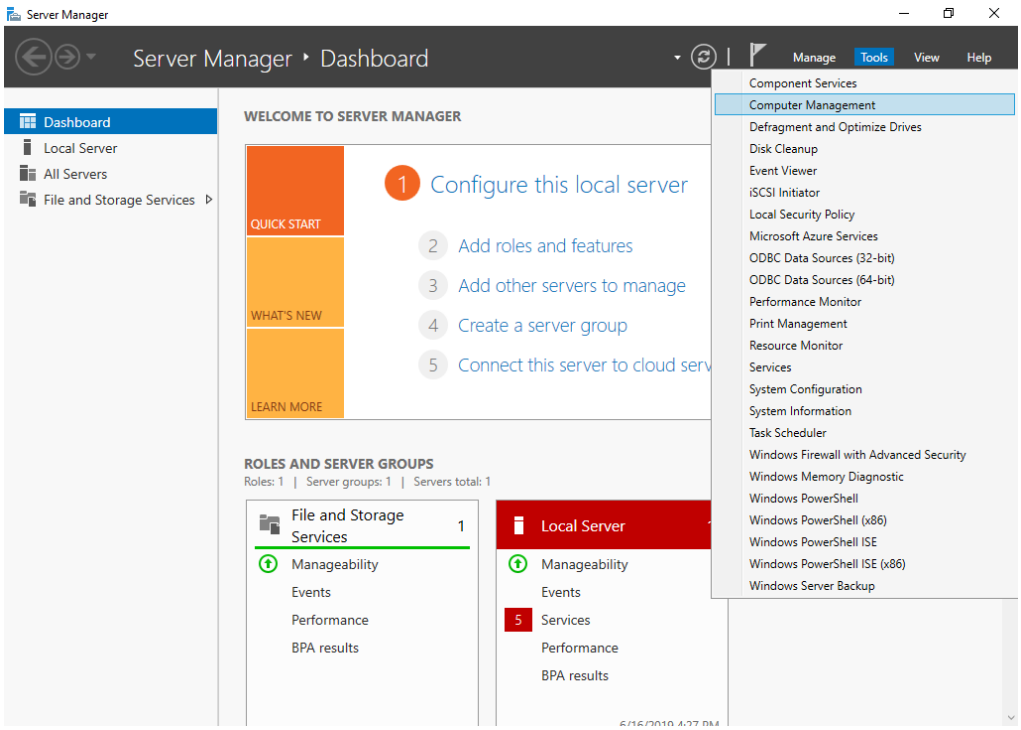
Step 2 On the desktop of the server, click the start icon in the lower left corner.

The **Windows Server** window is displayed.

Step 3 Click **Server Manager**.

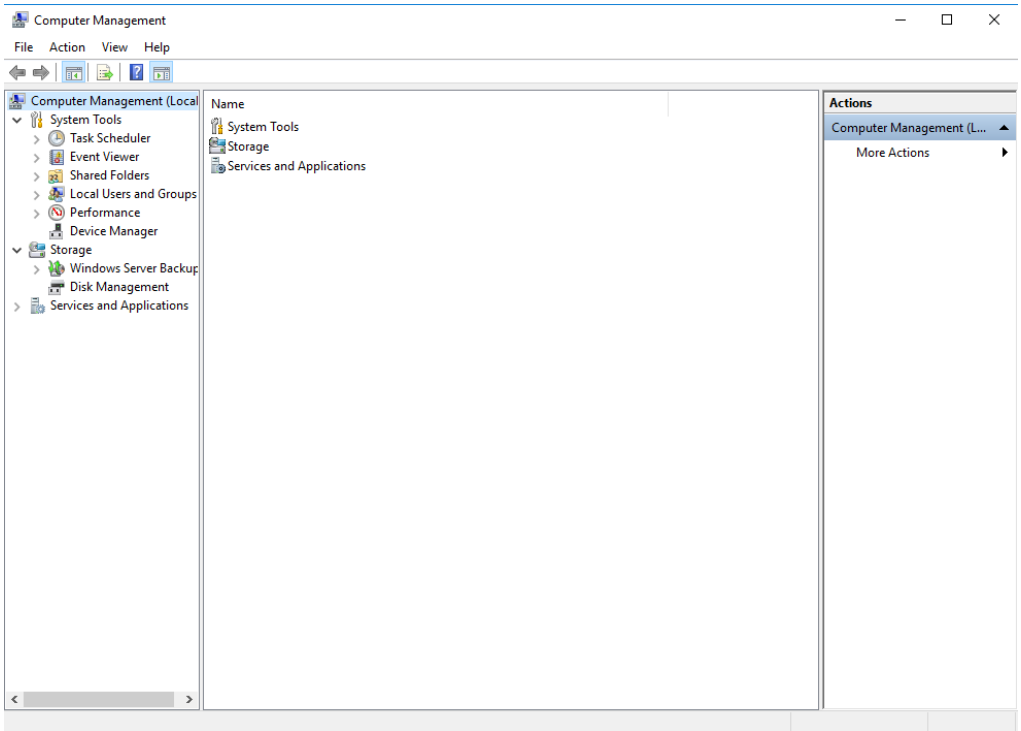
The **Server Manager** window is displayed.

Figure 2-1 Server Manager



Step 4 In the upper right corner, choose **Tools** > **Computer Management**.

Figure 2-2 Computer Management



Step 5 Choose **Storage** > **Disk Management**.

Disks are displayed in the right pane. If there is a disk that is not initialized, the system will prompt you with the **Initialize Disk** dialog box.

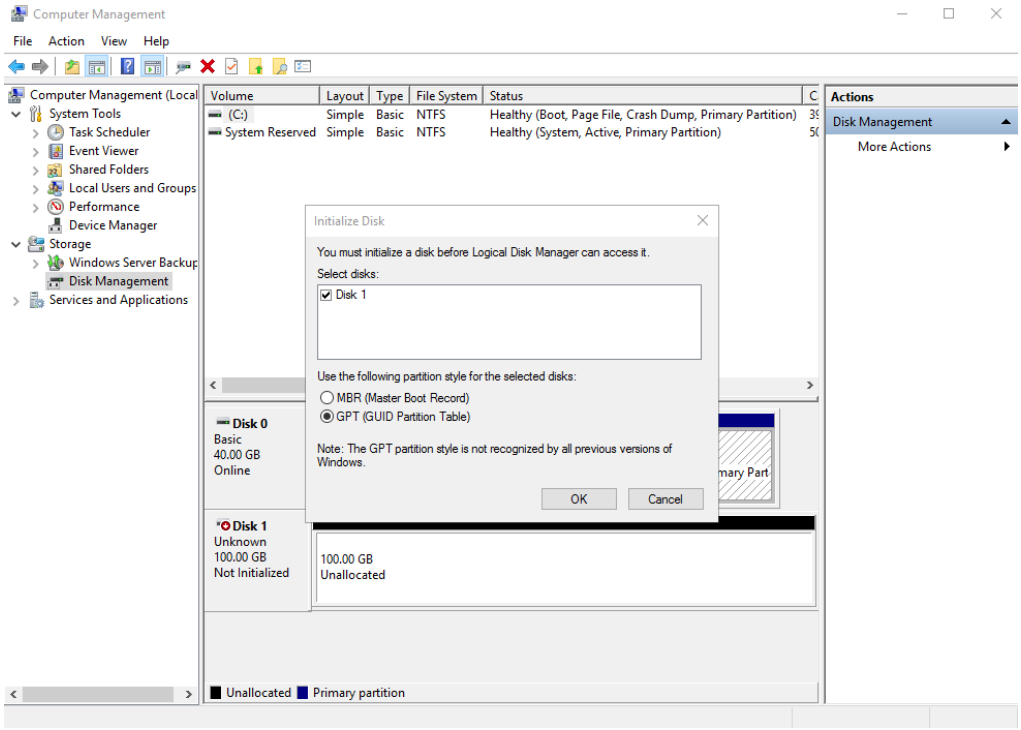
In the **Initialize Disk** dialog box, the to-be-initialized disk is selected. Select a partition style and click **OK**. In this example, **GPT (GUID Partition Table)** is selected.

NOTICE

The maximum disk size supported by MBR is 2 TiB, and that supported by GPT is 18 EiB. Because an EVS data disk currently supports up to 32 TiB, use GPT if your disk size is greater than 2 TiB.

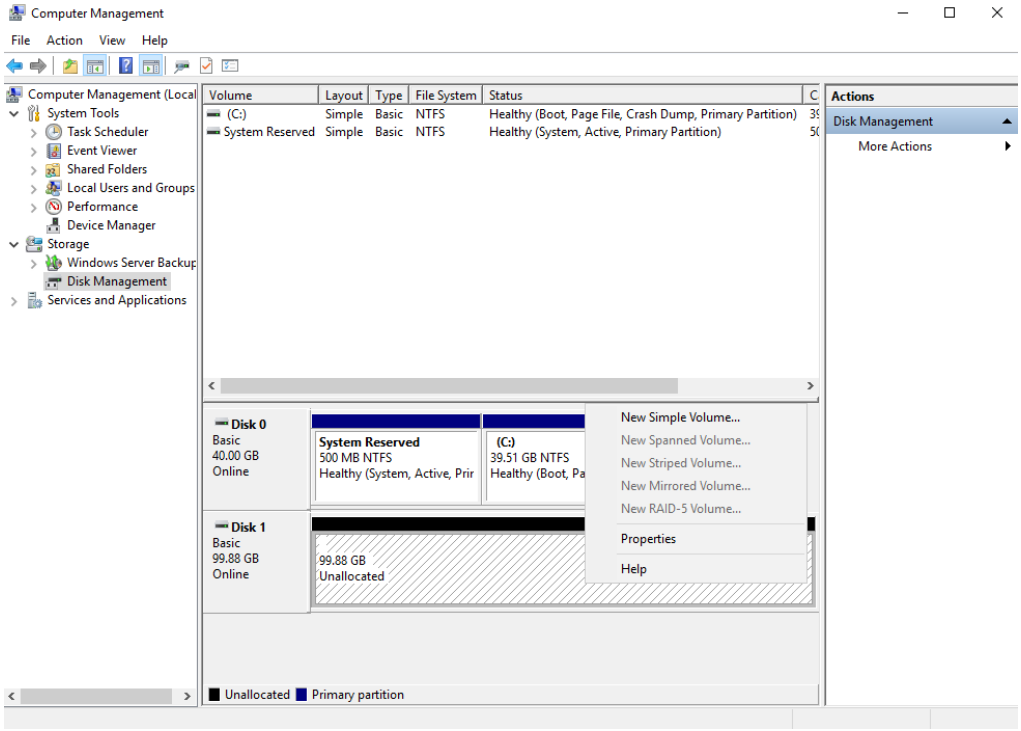
If the partition style of an in-use disk is changed, all data on the disk will be lost, so take care to select an appropriate partition style when initializing the disk. If you must change the partition style to GPT, it is recommended that you back up the disk data before the change.

Figure 2-3 Disk list



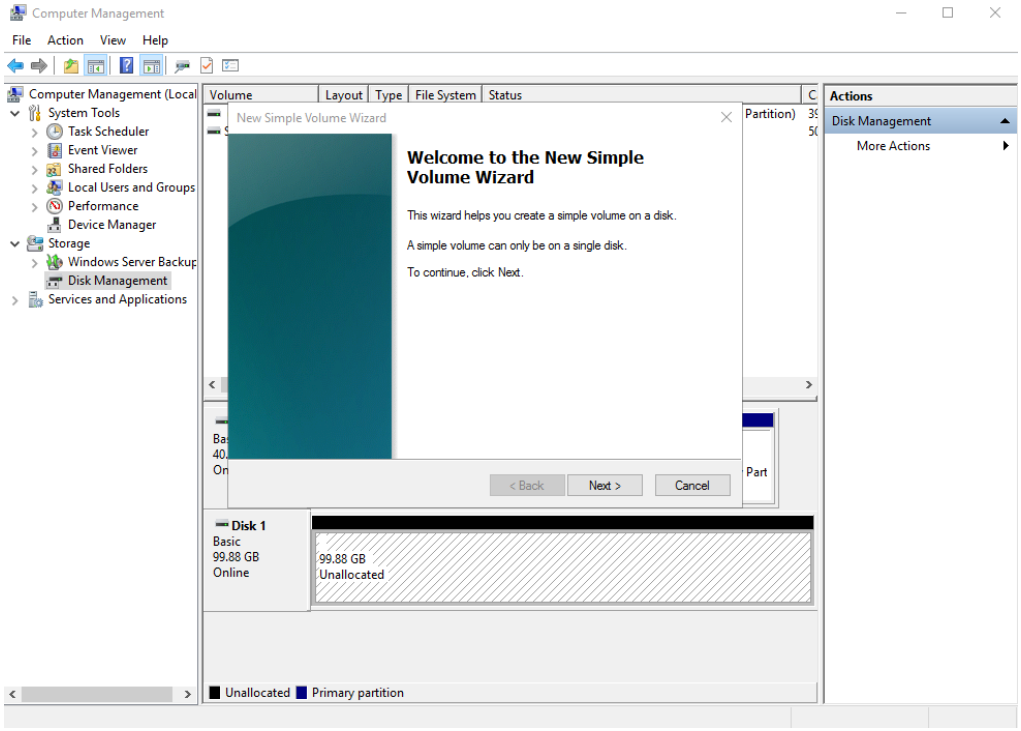
Step 6 In the **Unallocated** area of **Disk 1**, right-click the blank area and choose **New Simple Volume**.

Figure 2-4 Computer Management



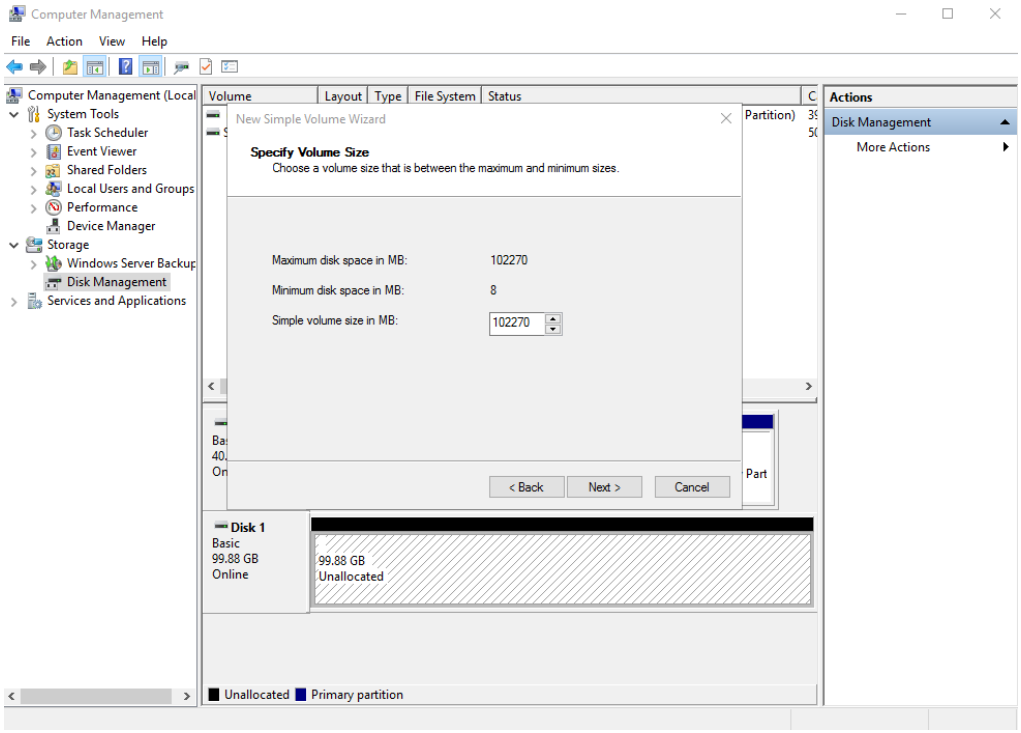
The **New Simple Volume Wizard** window is displayed.

Figure 2-5 New Simple Volume Wizard



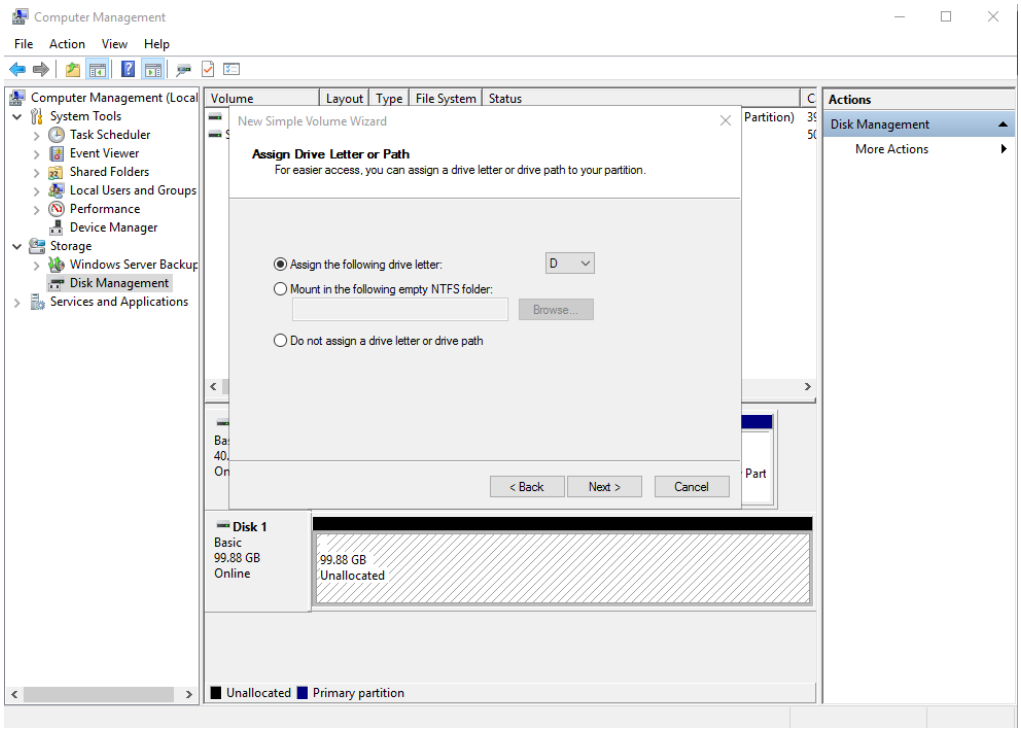
Step 7 Click **Next** to go to the **Specify Volume Size** page.

Figure 2-6 Specify Volume Size



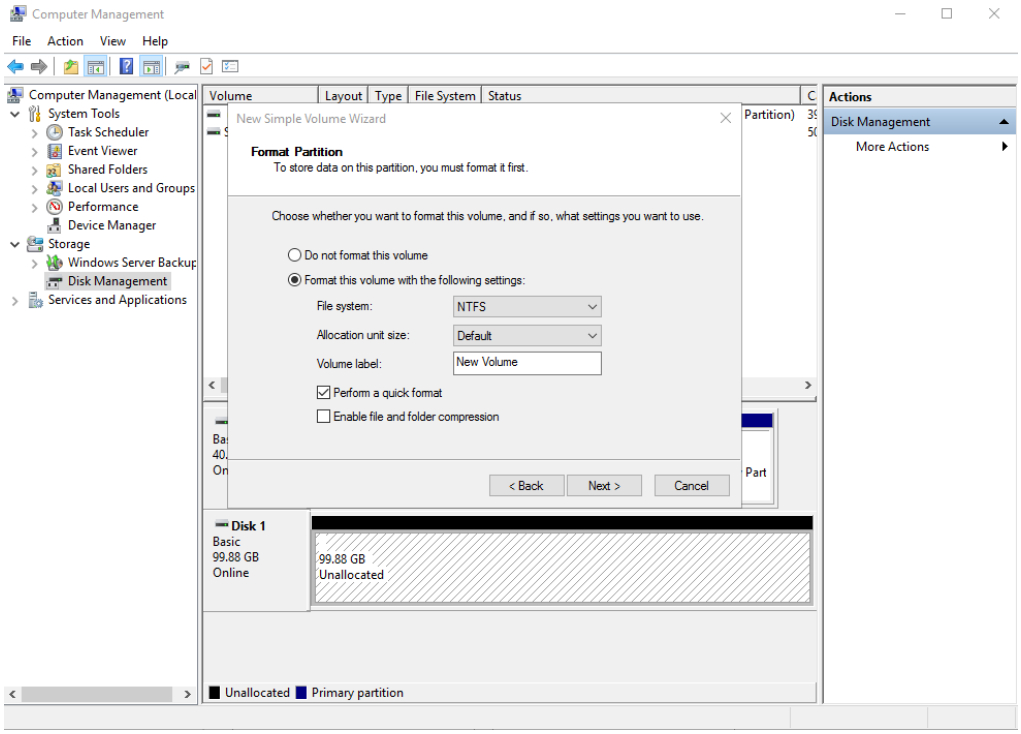
Step 8 Specify the volume size and click **Next**. The system selects the maximum volume size by default. You can specify the volume size as required. In this example, the default setting is used.

Figure 2-7 Assign Drive Letter or Path



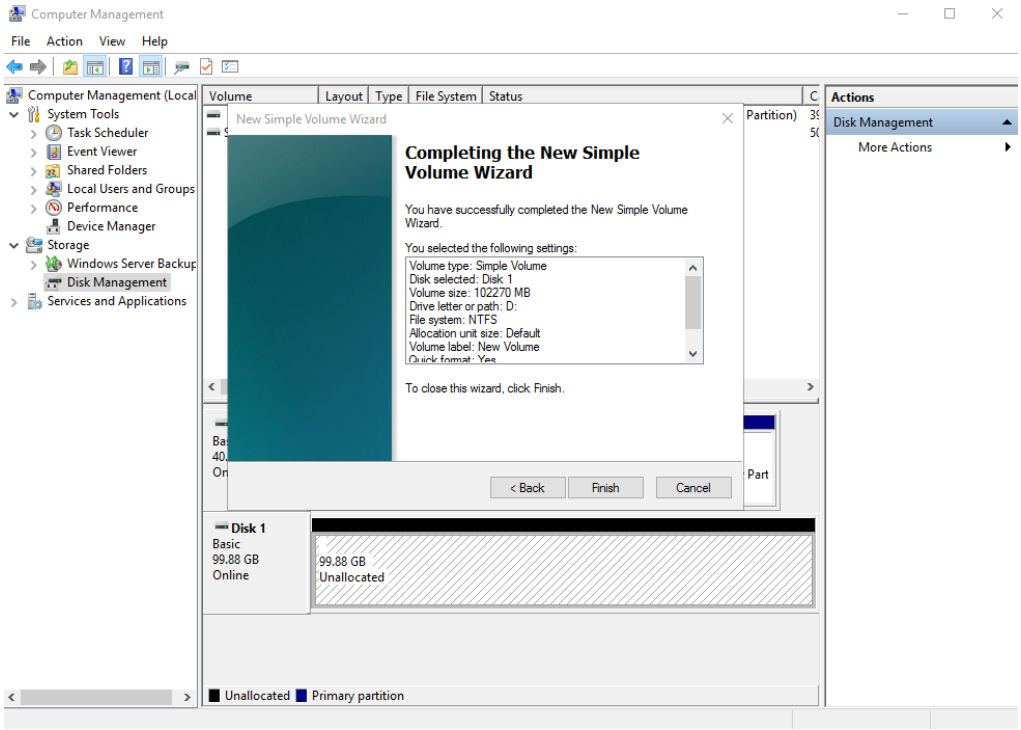
Step 9 Assign a drive letter or path to your partition and click **Next**. The system assigns drive letter D by default. In this example, the default setting is used.

Figure 2-8 Format Partition



Step 10 Specify format settings and click **Next**. The system selects the NTFS file system by default. You can specify a file system format as required. In this example, the default setting is used.

Figure 2-9 Completing the New Simple Volume Wizard



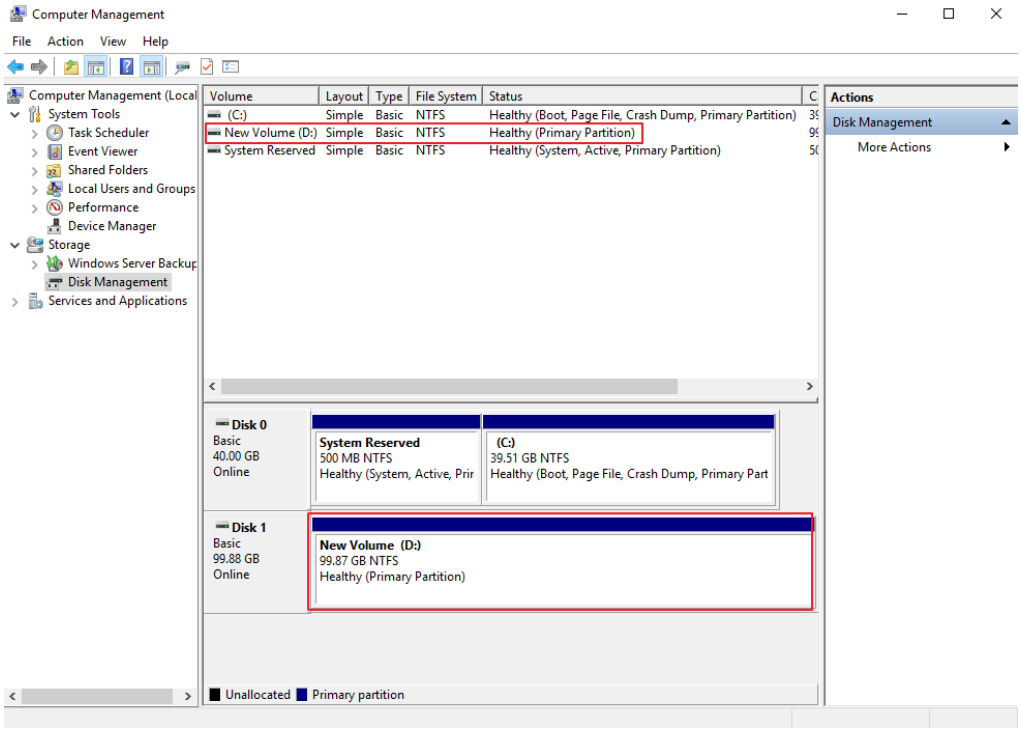
NOTICE

The partition sizes supported by file systems vary. Choose an appropriate file system format based on your service requirements.

Step 11 Click **Finish**.

Wait for the initialization to complete. When the volume status changes to **Healthy**, the initialization has succeeded.

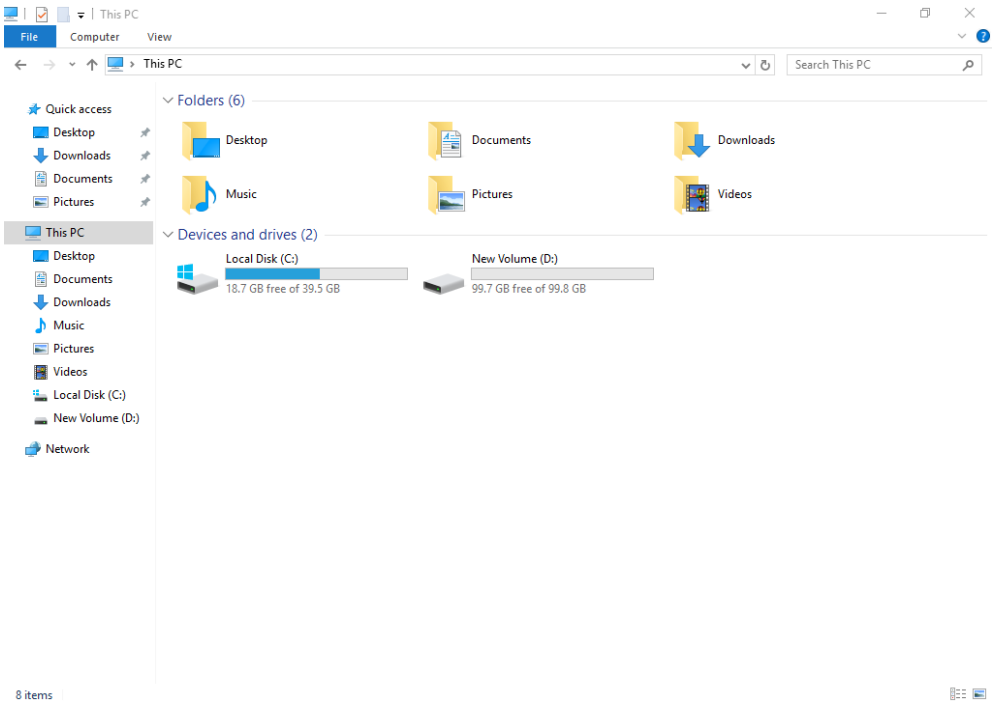
Figure 2-10 Disk initialized



Step 12 After the volume is created, click  on the task bar and check whether a new volume appears in the File Explorer. In this example, New Volume (D:) is the new volume.

If New Volume (D:) appears, the disk is successfully initialized and no further action is required.

Figure 2-11 File Explorer



----End

You can use the disk after it is initialized.

