# Elastic Volume Service

# Getting Started

**Issue** 03

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# 1 Quickly Buying an EVS Disk and Using It on a Linux Server

## Scenarios

EVS disks can be used 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 buy data disks separately, you must attach and initialize them before they can be used.

This section describes how to buy a non-shared data disk on the EVS console, attach it to a Linux server, and initialize it on the server. **Table 1-1** shows the example configuration.

**Table 1-1** Example configuration

| Item | Example Configuration |
|---|---|
| Cloud server | OS: CentOS 7.6 |
| EVS disk | Function: non-shared data disk<br>Capacity: 100 GiB |
| Initialization | • Partitioning tool: fdisk<br>• Device name: /dev/vdb<br>• File system format: ext4<br>• Mount points: /mnt/sdc and /mnt/sdd<br>• Partition 1: /dev/vdb1<br>  – Size: 40 GiB<br>  – Partition style: MBR<br>• Partition 2: /dev/vdb2<br>  – Size: 60 GiB<br>  – Partition style: MBR |

## Operation Process

| Procedure | Description |
|---|---|
| **Making Preparations** | ● Sign up for a HUAWEI ID, enable Huawei Cloud services, and top up your account.<br>● Buy a cloud server. |
| **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. |

## Making Preparations

1. Register with Huawei Cloud.
   - To sign up a HUAWEI ID and enable Huawei Cloud services, see **Registering a HUAWEI ID and Enabling Huawei Cloud Services**.
   - To complete real-name authentication, see **Individual Real-Name Authentication**.
2. Top up your account.
   - To learn more about EVS pricing, see **Billing**.
   - To top up an account, see **Topping Up an Account**.
3. Buy a cloud server.
   - For details about how to buy an ECS and use it, see **Purchasing and Using an ECS**.
   - For details about how to buy a BMS and use it, see **Purchasing and Using a BMS**.

## Step 1: Purchase an EVS Disk

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

**Step 2**  Configure mandatory parameters based on **Table 1-2** and retain the default settings for other parameters.

**Figure 1-1** Configuring parameters



**Table 1-2** Disk creation parameters

| Parameter | Example Value | Description |
|---|---|---|
| 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 created, its AZ cannot be changed. |
| | Later | • **Now**: If you select this option, you need to select a server to attach the disk. The billing mode of the disk will be the same as the selected server.<br>• **Later**: When no server is available, you can select this option to create the disk first and attach the disk after the purchase. |
| Billing Mode | Pay-per-use | For EVS pricing details, see **Billing**. |
| Data Source | Not configured | If you want to create an empty data disk, do not configure a data source. |

| Parameter | Example Value | Description |
|---|---|---|
| Disk Specifications | Disk type: Ultra-high I/O | To learn more about disk types, see **Disk Types and Performance**. |
| | Capacity: 100 (GiB) | You can only create data disks on the current page. The disk capacity ranges from 10 GiB to 32,768 GiB. |
| Disk Name | volume-0001 | ● If you create a single disk, the name you entered will be used as the disk name. The name can contain a maximum of 64 bytes.<br><br>● If you create multiple disks in a batch, the name you entered will be used as the prefix of disk names. An actual disk name will be composed of the name you entered and a four-digit number. The name can contain a maximum of 59 bytes. |
| Quantity | 1 | The preset disk quantity is **1**, which means only one disk is created. You can create a maximum of 100 disks at a time. |

**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.
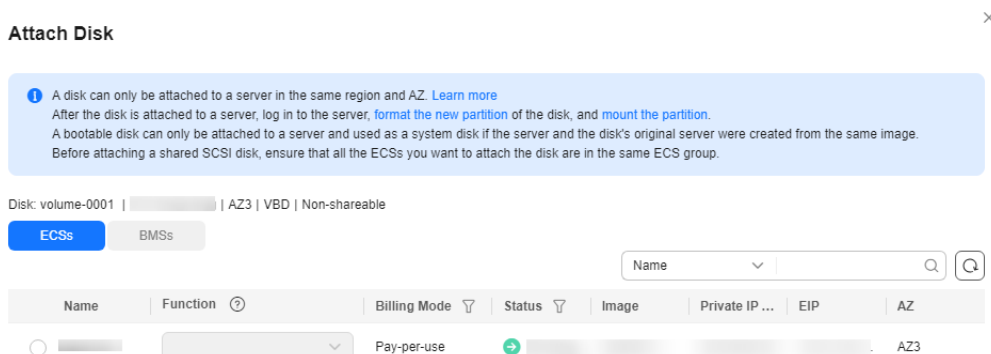
**----End**

## 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.

**Figure 1-2** Attach Disk

**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 and 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
   ```

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

   **fdisk /dev/vdb**

   **n**

   **p**
   ```
   [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
   ```

   Entering **p** for **Partition type** creates a primary partition, and entering **e** creates an extended partition.

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

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

   **n**

   **p**
   ```
   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
   ```

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
```

◻ NOTE

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

**Sector value = 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 = Sector value – 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 start sector of the **/dev/vdb** data disk is used.)

Last sector = Sector value – 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 + Sector value – 1 = 83886080 + (60 x 1073741824/512) – 1 = 209715199

**Step 2** 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**

```
[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 ~]#
```

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

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

**Step 3** 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
```

Run **parted /dev/vdb** and enter **p** to check that the file system format is ext4.

```
[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 4** 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 5** 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 does not affect the existing data on the server.

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 1-3** 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**. |
| 0 | – The Linux dump backup option.<br><br>• **0**: Linux dump backup is not used. Usually, dump backup is not used, and you can set this parameter to **0**.<br><br>• **1**: Linux dump backup is used. |
| 2 | – The fsck option, which means whether to use fsck to check the disk during startup.<br><br>• **2**: The check starts from the partitions whose mount points are non-root directories. **/** is the root directory.<br><br>• **1**: The check starts from the partitions whose mount points are root directories.<br><br>• **0**: The fsck option is not used. |

**Step 6** 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**

After initializing the disk, go back to the disk list page. After the disk status changes to In-use, you can use the disk.

# 2 Quickly Buying an EVS Disk and Using It on a Windows Server

## Scenarios

EVS disks can be used 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 buy data disks separately, you must attach and initialize them before they can be used.

This section describes how to buy a non-shared data disk on the EVS console, attach it to a Windows server, and initialize it on the server. **Table 2-1** shows the example configuration.

**Table 2-1** Example configuration

| Item | Example Configuration |
|---|---|
| Cloud server | OS: Windows Server 2019 Standard 64-bit |
| EVS disk | Function: non-shared data disk<br>Capacity: 100 GiB |
| Initialization | ● Disk name: Disk 1<br>● After the initialization:<br>  – Partition name: New volume (D:)<br>  – Partition style: GPT<br>  – File system format: NTFS |

## Operation Process

| Procedure | Description |
|---|---|
| **Making Preparations** | Sign up for a HUAWEI ID, enable Huawei Cloud services, and top up your account. |

| 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. |

## Making Preparations

1. Register with Huawei Cloud.

   – To sign up a HUAWEI ID and enable Huawei Cloud services, see **Registering a HUAWEI ID and Enabling Huawei Cloud Services**.

   – To complete real-name authentication, see **Individual Real-Name Authentication**.

2. Top up your account.

   a. To learn more about EVS pricing, see **Billing**.

   b. To top up an account, see **Topping Up an Account**.

   c. Buy a cloud server.

      ▪ For details about how to buy an ECS and use it, see **Purchasing and Using an ECS**.

      ▪ For details about how to buy a BMS and use it, see **Purchasing and Using a BMS**.

3. Buy a cloud server.

   – For details about how to buy an ECS and use it, see **Purchasing and Using an ECS**.

   – For details about how to buy a BMS and use it, see **Purchasing and Using a BMS**.

## Step 1: Purchase an EVS Disk

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

**Step 2** Configure mandatory parameters based on **Table 2-2** and retain the default settings for other parameters.

**Figure** 2-1 Configuring parameters



**Table** 2-2 Disk creation parameters

| Parameter | Example Value | Description |
|---|---|---|
| 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 created, its AZ cannot be changed. |
| | Later | • **Now**: If you select this option, you need to select a server to attach the disk. The billing mode of the disk will be the same as the selected server.<br>• **Later**: When no server is available, you can select this option to create the disk first and attach the disk after the purchase. |
| Billing Mode | Pay-per-use | For EVS pricing details, see **Billing**. |
| Data Source | Not configured | If you want to create an empty data disk, do not configure a data source. |

| Parameter | Example Value | Description |
|---|---|---|
| Disk Specifications | Disk type: Ultra-high I/O | To learn more about disk types, see **Disk Types and Performance**. |
| | Capacity: 100 (GiB) | You can only create data disks on the current page. The disk capacity ranges from 10 GiB to 32,768 GiB. |
| Disk Name | volume-0001 | • If you create a single disk, the name you entered will be used as the disk name.<br>The name can contain a maximum of 64 bytes.<br>• If you create multiple disks in a batch, the name you entered will be used as the prefix of disk names. An actual disk name will be composed of the name you entered and a four-digit number.<br>The name can contain a maximum of 59 bytes. |
| Quantity | 1 | The preset disk quantity is **1**, which means only one disk is created. You can create a maximum of 100 disks at a time. |

**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 to an ECS running Windows Server 2019.

**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.

**Figure 2-2** Attach Disk
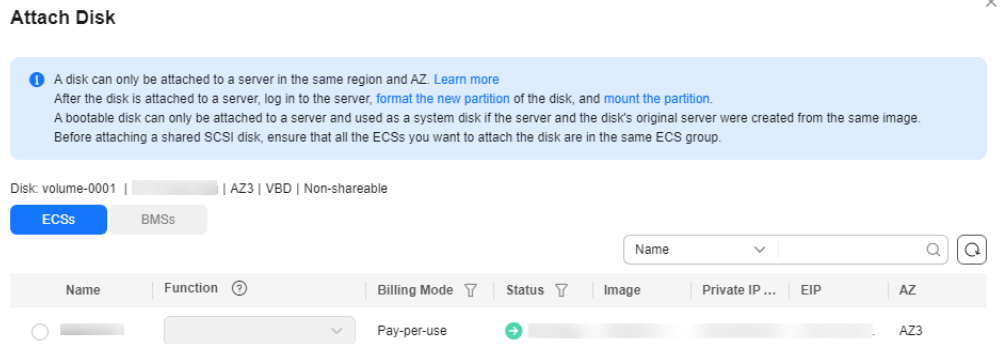


**Step 3**   Click **OK** to go back to the disk list page. When the status of the **volume-0001** disk changes to **In-use**, the disk is successfully attached.

**----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.
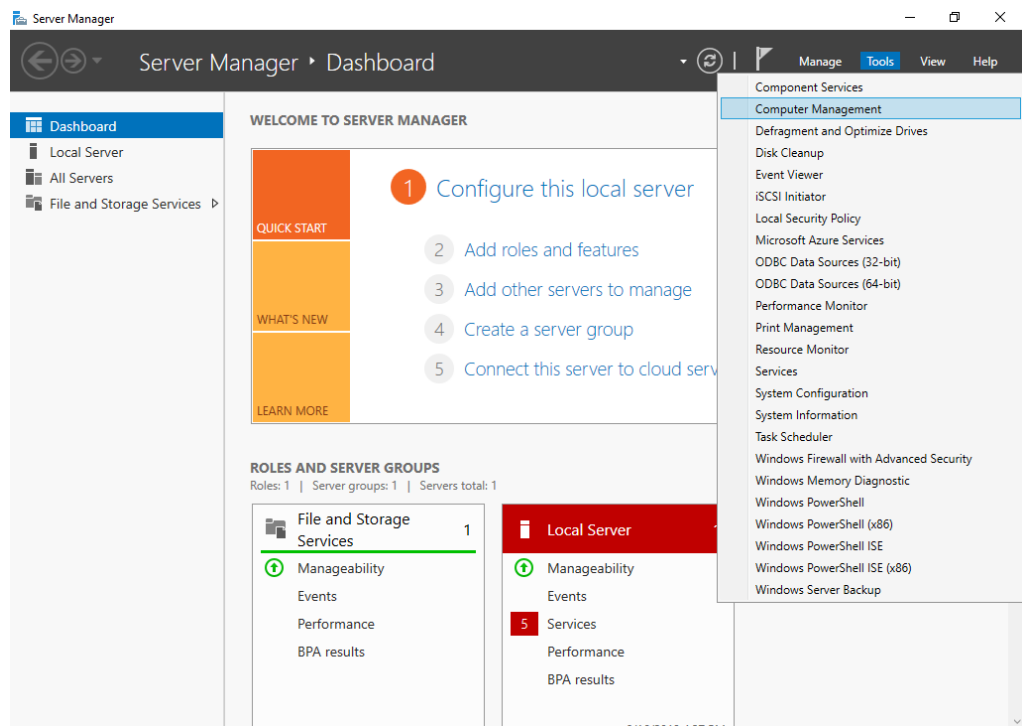
**Step 1**   On the desktop of the server, click the start icon in the lower left corner.

The **Windows Server** window is displayed.

**Step 2**   Click **Server Manager**.

The **Server Manager** window is displayed.

**Figure 2-3** Server Manager

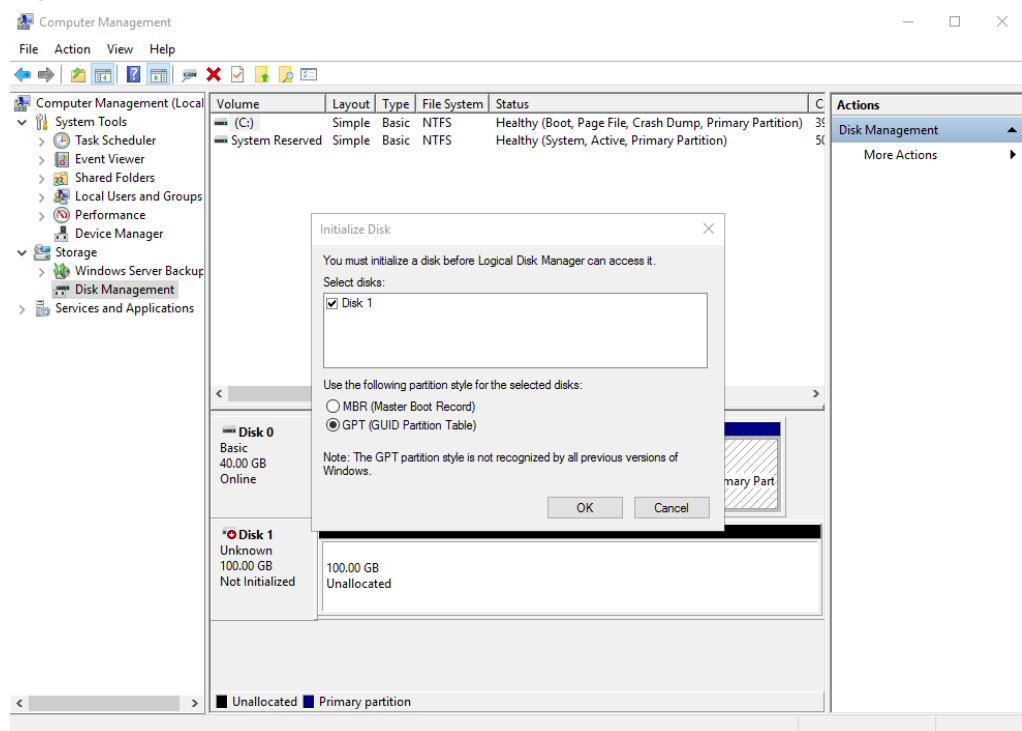**Step 3** In the upper right corner, choose **Tools** > **Computer Management**.

**Figure 2-4** Computer Management
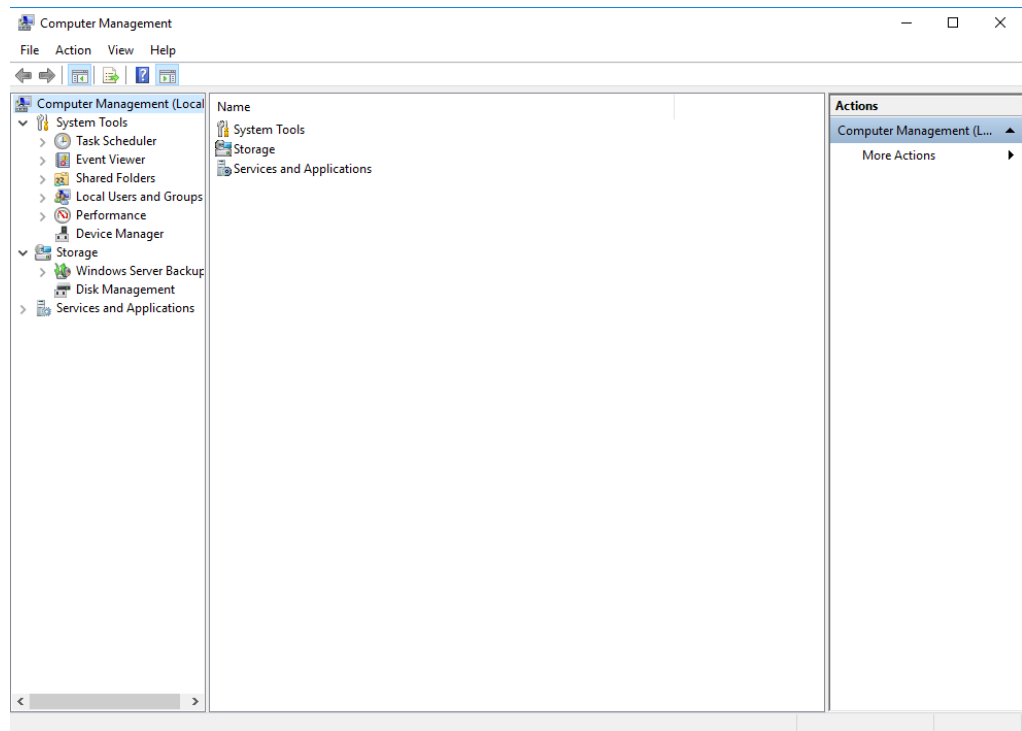


**Step 4** Choose **Storage** > **Disk Management**.

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.

**Figure 2-5** Disk list

**Step 5** In the **Initialize Disk** dialog box, the to-be-initialized disk is selected. Select a disk partition style and click **OK**. In this example, **GPT (GUID Partition Table)** is selected.

**Figure 2-6** Computer Management
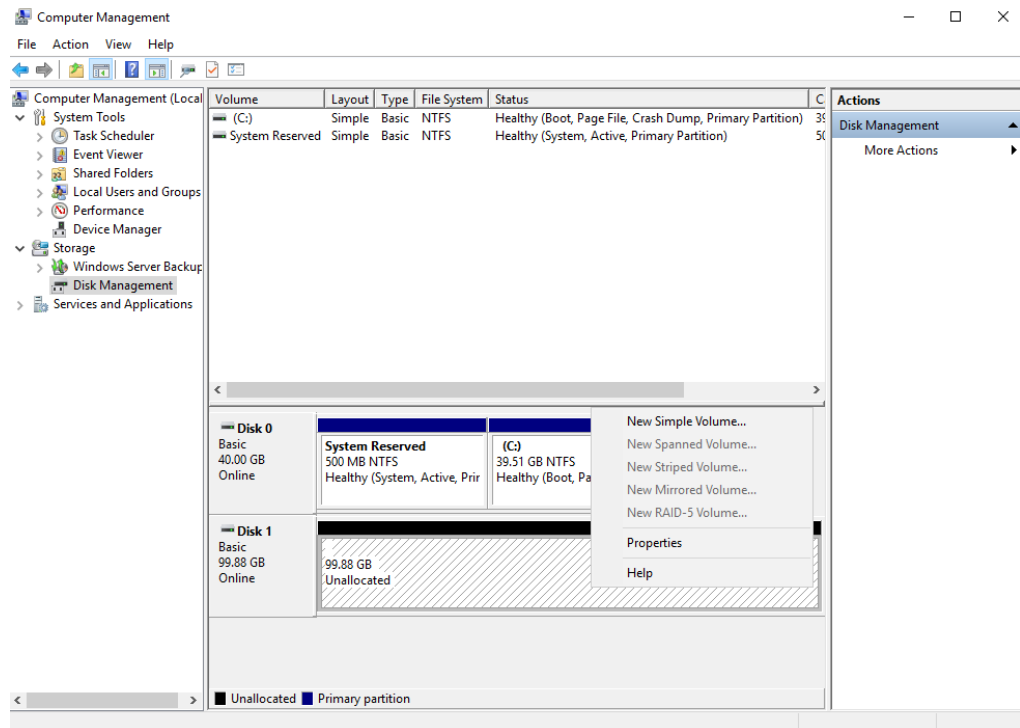


**NOTICE**

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 is changed after the disk has been used, 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 after a disk has been used, it is recommended that you back up the disk data before the change.
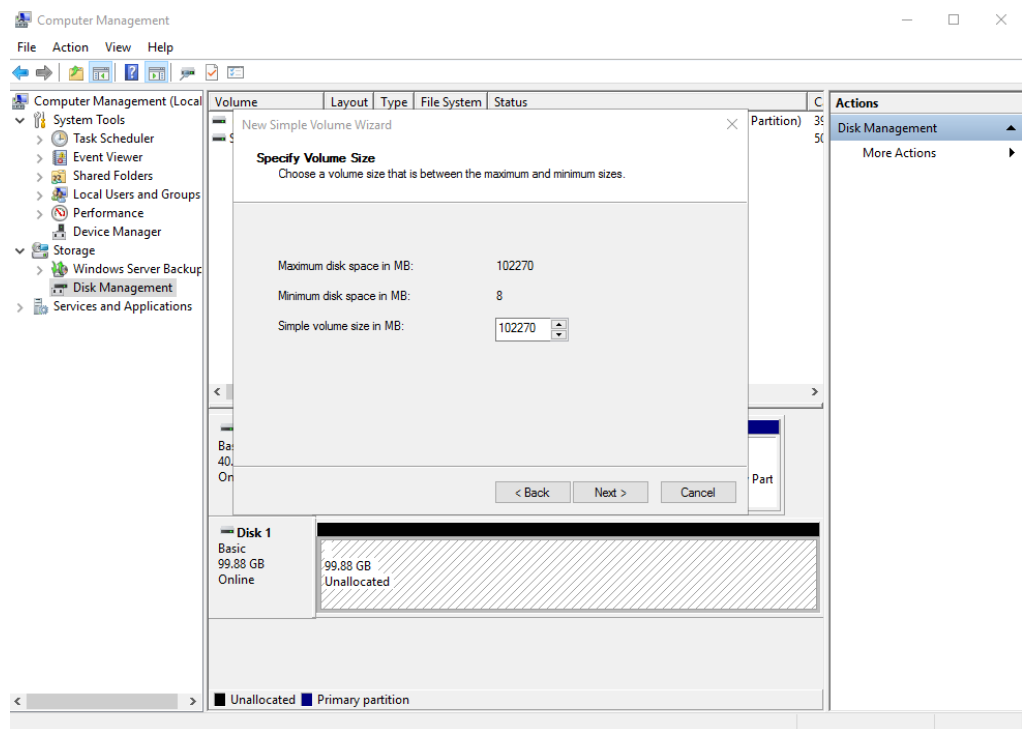
**Step 6** Right-click the unallocated disk space area and choose **New Simple Volume** from the shortcut menu.
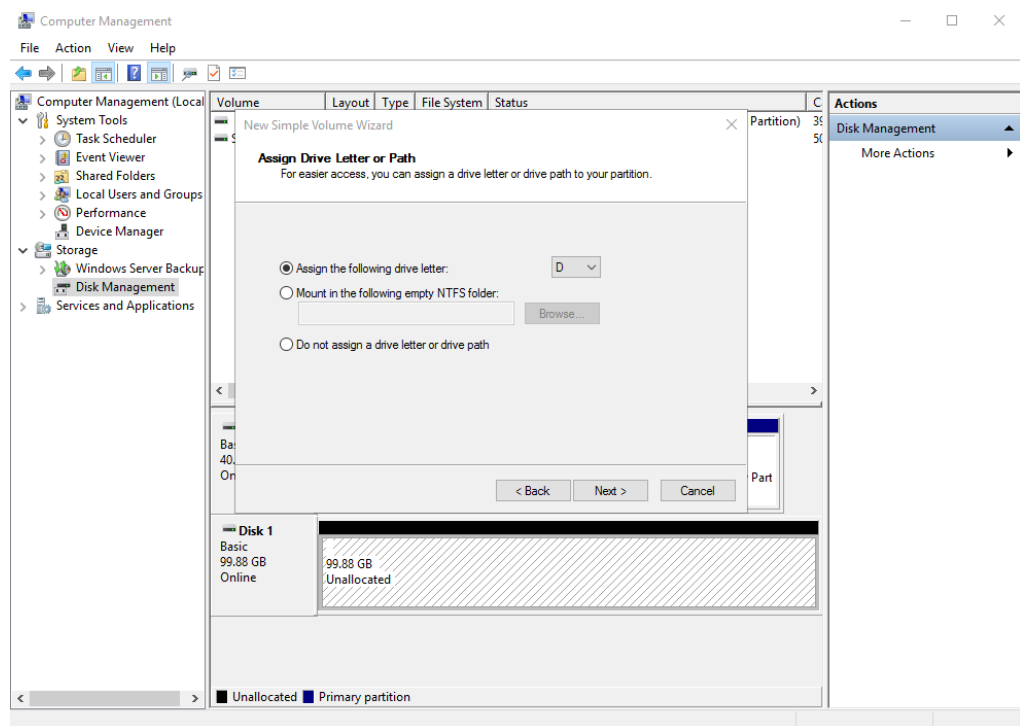
**Figure 2-7** New Simple Volume Wizard
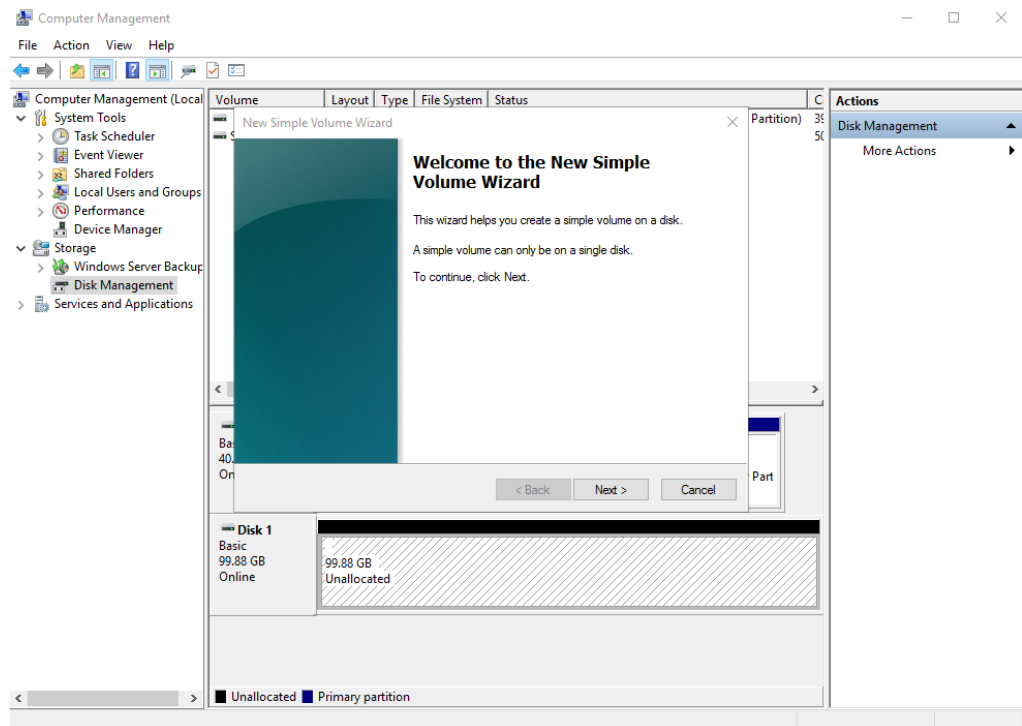


**Step 7** Click **Next** to go to the **Specify Volume Size** page.

**Figure 2-8** 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 2-9** 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 2-10** Format Partition
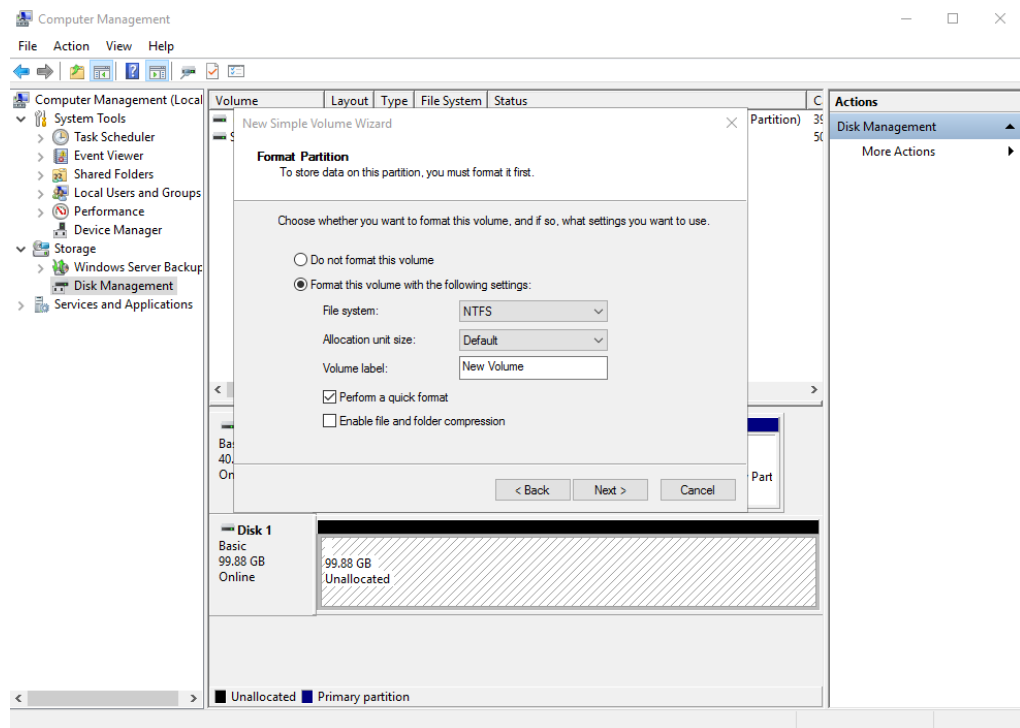


**Step 10** Specify format settings and click **Next**. The system selects the NTFS file system by default. You can specify a file system type as required. In this example, the default setting is used.

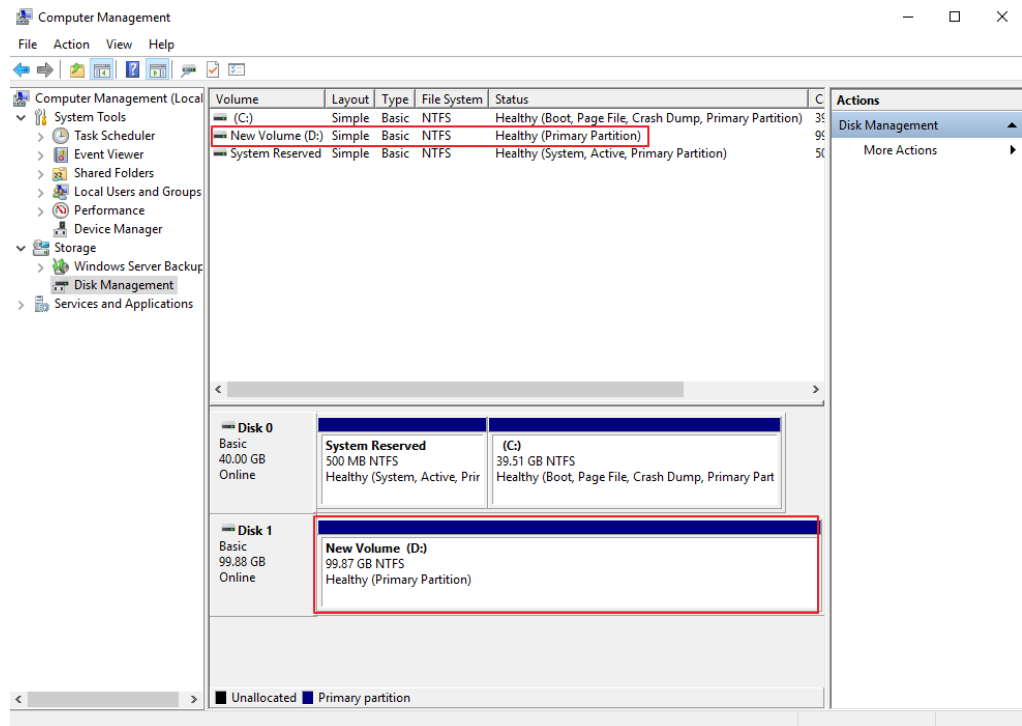**Figure 2-11** Completing the New Simple Volume Wizard
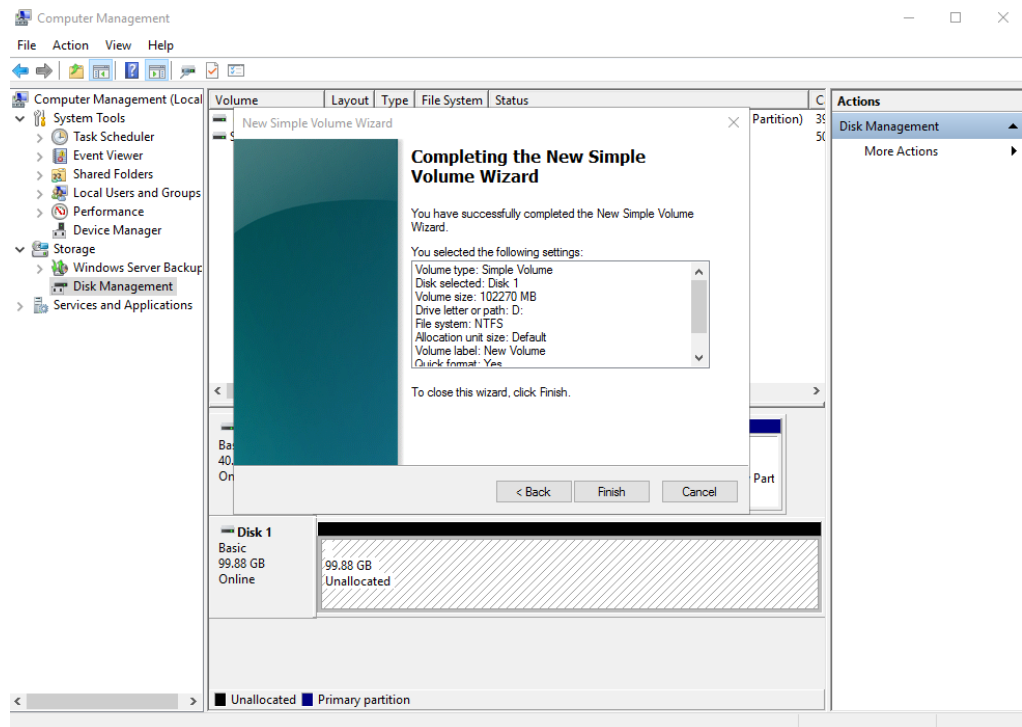


**NOTICE**

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.
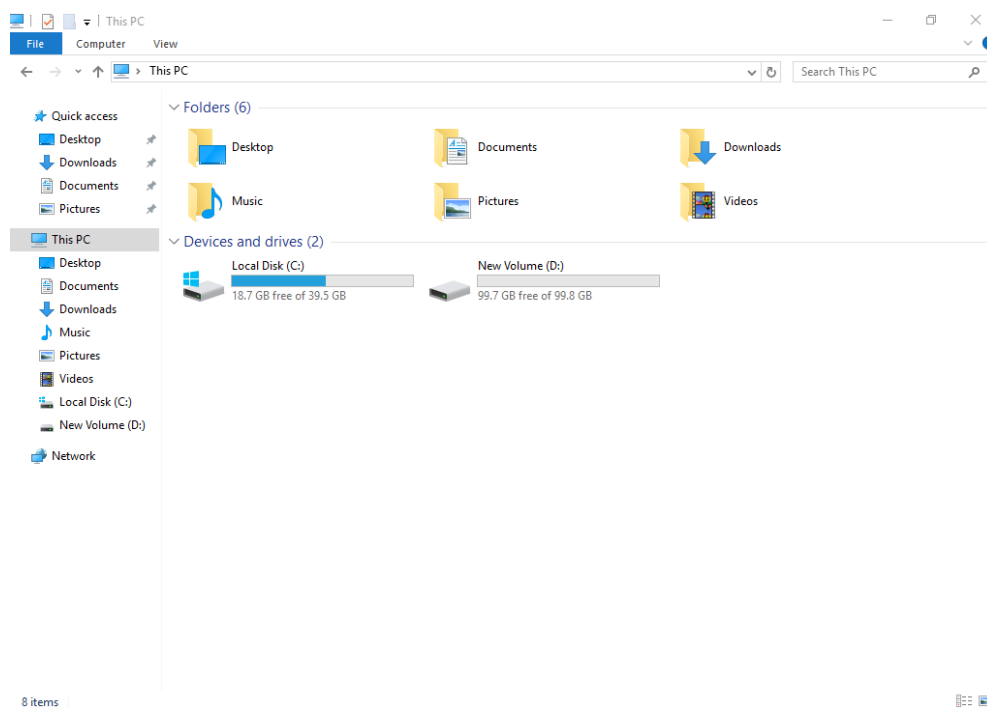
**Figure 2-12** Disk initialized



**Step 12**  After the volume is created, click [folder icon] 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 2-13** File Explorer



**----End**

After initializing the disk, go back to the disk list page. After the disk status changes to In-use, you can use the disk.