



Storage provisioning in SnapDrive for UNIX

Snapdrive for Unix

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Storage provisioning in SnapDrive for UNIX

You can use SnapDrive for UNIX when you work with storage provisioning. SnapDrive for UNIX helps you to create storage and connect to existing storage systems or entities.

Storage operations in SnapDrive for UNIX

SnapDrive for UNIX provides end-to-end storage management. You can provision storage from a host to a storage system and manage that storage with or without using the host Logical Volume Manager (LVM).

SnapDrive for UNIX enables you to perform the following storage operations:

- Create the storage by creating LUNs, file systems, logical volumes, and disk groups.
- Display information about the storage.
- Connect to the storage.
- Resize the storage.
- Disconnect from the storage.
- Delete the storage.

When you create a storage by using the `snapdrive storage create` command, SnapDrive for UNIX automatically performs all the tasks needed to set up LUNs, including preparing the host, performing discovery mapping, and connecting to each LUN you create. You can use the `snapdrive storage show` command to display information about the NetApp LUNs, disk groups, host volumes, file systems, or NFS directory trees that you create.

You can use the `snapdrive storage connect` command to map the storage to a new location. This command enables you to access the existing storage from a different host than the one used to create it. The `snapdrive storage connect` command enables you to make the existing LUNs, file systems, disk groups, and logical volumes accessible on a new host. This might be useful if you want to back up a storage entity from the new host to another host.

Using the `snapdrive storage resize` command, you can increase the size of your storage in the following ways:

- Specifying the target size that you want the host entity to reach
- Entering a set number of bytes by which you want to increase the storage

If you no longer want your storage mapped to its current location, you can use the `snapdrive storage disconnect` command. This command removes the mappings from one or more host locations to the LUNs creating the storage for that location.

If you want to delete the storage, you can use the `snapdrive storage delete` command. SnapDrive for UNIX deletes all the host-side entities you specify as well as all their underlying entities and the LUNs associated with them.

Storage operations across multiple storage system volumes

SnapDrive for UNIX lets you perform many of the storage operations across multiple storage system volumes as long as the operations do not manipulate the Logical Volume Manager (LVM). This enables you to work with lists of LUNs that exist across multiple storage system volumes.

Considerations for storage operations

You must keep in mind a few considerations related to the various storage commands.

- Support is limited for volume groups spanning multiple storage system volumes or multiple storage systems. You cannot use the `snapdrive storage create` command to create volume groups that span across storage systems.

In this case, SnapDrive for UNIX supports the following key commands:

- `snapdrive snap create`
- `snapdrive snap restore`
- `snapdrive snap connect`
- `snapdrive snap disconnect`

- The `snapdrive storage resize` command does not work with LUNs mapped directly to the host, or with the files systems that they contain.
- SnapDrive for UNIX does not provide any options to control the formatting of host volumes that it creates. SnapDrive for UNIX creates only concatenated host volumes. It does operate correctly on host volumes of other formats (such as striped volumes) that were created using other application.
- You cannot restore a portion of a disk group. SnapDrive for UNIX backs up and restores whole disk groups only.



The `snapdrive` operations performed from a non Linux operating system to a Linux operating system, using even the `-mntopts` command, for NFS, fail in all versions earlier than Red Hat Enterprise Linux 6.

Storage creation with SnapDrive for UNIX

You can use SnapDrive for UNIX to create LUNs, a file system directly on a LUN, disk groups, host volumes, and file systems created on LUNs.

SnapDrive for UNIX automatically handles all the tasks needed to set up LUNs associated with these entities, including preparing the host, performing discovery mapping, creating the entity, and connecting to the entity you create. You can also specify which LUNs SnapDrive for UNIX uses to provide storage for the entity you request.

You do not need to create the LUNs and the storage entity at the same time. If you create the LUNs separately, you can create the storage entity later using the existing LUNs.

Methods for creating storage

SnapDrive for UNIX provides some basic formats for the `snapdrive storage create` command to make it easier to create the storage you want. The storage create operation falls into various general categories.

- Creating LUNs—The `snapdrive storage create` command automatically creates the LUNs on the storage system but does not create any additional storage entities. SnapDrive for UNIX performs all of the tasks associated with host preparation and creating storage discovery for each LUN, as well as mapping and connecting to it.
- Creating a file system directly on a LUN and setting up the LUN automatically—SnapDrive for UNIX performs all of the actions needed to set up the file system. You do not need to specify any LUNs for it to create.
- Creating a file system directly on a LUN and specifying the LUN you want associated with it—In this case, you use the `snapdrive storage create` command to specify the file system you want to set up, and the LUN you want to associate with the file system.
- Creating an LVM and setting up the LUN automatically—The `snapdrive storage create` command lets you create a file system, a logical volume, or a disk group on the host. SnapDrive for UNIX performs all the actions needed to set up the entity, including automatically creating the required disk group and LUN. You do not need to specify any LUN for it to create.
- Creating an LVM entity on the host and specifying the LUN you want associated with it—In this case, you use the `snapdrive storage create` command to specify both the entity you want to set up (file system, logical volume, or disk group) and the LUN you want associated with that entity.
- Creating a file system on a shared host in a host cluster environment—In this case, you create a file system, a logical volume, or a disk group on the shared host.

Guidelines for the storage create operation

You should follow certain guidelines when you use the `snapdrive storage create` command for the storage create operation.

- If you list LUNs from different storage system volumes with the `-lun` option, you cannot include the `-dg`, `-hostvol`, or `-fs` option at the command prompt.
- The `-nolvm` option creates a file system directly on a LUN without activating the host LVM.

You cannot specify host volumes or disk groups when you use this option.

- You cannot use SnapDrive for UNIX storage provisioning commands for NFS files or directory trees.
- If you use the `snapdrive storage create` command to create a file system directly on a LUN, you cannot specify more than one LUN.

SnapDrive for UNIX always creates a new LUN when you use this form of the command.

- Some operating systems have limits on how many LUNs you can create.

If your host is running one of these operating systems, you might want to run the `snapdrive config check luns` command.

- Creating a file system on a raw LUN with DMP multipathing is supported.

Related information

[SnapDrive for UNIX storage create command fails while discovering some mapped devices](#)

[Configuration options and their default values](#)

Information required for the storage create operation

You must supply some information when you complete the storage create operation.

The following table lists the information you need to supply when you use the `snapdrive storage create` command to create storage:

Requirement	Argument
Decide the type of storage you want to provision. Based on the command you enter, you can create any of the following:	
• LUNs	If you create one or more LUNs, the first argument must use the long form of the LUN name, which specifies the storage system name, the volume name, and the name of the LUN within the volume. To specify additional LUNs, you can use the LUN name (short name) alone if the new LUN is on the same storage system and volume as the previous LUN. Otherwise, you can specify a new storage system name and volume name (or just a volume name) to replace the previous values.
• A file system created directly on a LUN	If you create a file system on a LUN, the first argument must be the <code>-fs</code> mount point. To create the file system on a LUN in a storage system and volume, use the <code>-filervol</code> argument and specify the name of the storage system and volume. To create the file system on a specific LUN, use the <code>-lun</code> argument and specify the storage system name, volume name, and LUN name. You must also include the <code>-nolvm</code> option to create the file system on the LUN without activating the host LVM. By default, SnapDrive for UNIX automatically performs all of the tasks associated with host preparation and discovery for the LUN, as well as mapping and connecting to it.
• LVM disk groups with host volumes and file systems	When you specify a disk or volume group, file system, or host or logical volume, SnapDrive for UNIX performs all the actions necessary to create the entity you specify. You can either explicitly specify the LUNs, or just supply the storage system and volume information and let SnapDrive for UNIX create the LUNs automatically. If you are creating an entity such as a file system, you do not need to supply a value for a disk or volume group. SnapDrive for UNIX automatically creates one.
• A LUN (-lun)	<code>long_lun_name</code>
• Additional LUNs	<code>lun_name</code> (long or short form)

Requirement	Argument
• Disk group (-dg dgname) or volume group (-vg vgnname)	disk or volume group name
SnapDrive for UNIX creates a disk or volume group to hold the LUNs based on the value you enter with the -dg option. The name you supply for the group must not exist.	
• Host volume (-hostvol file_spec) or logical volume (-lvol file_spec)	Host or logical volume name
• File system (-fs file_spec)	filesystem_name
-nolvm	~
Required: If you are creating a file system that resides directly on a LUN, specify the -nolvm option.	
• Lun size (-lunsize)	size
• Disk group size (-dgsize)	size
• Volume group size (-vgsize)	
Specify the size in bytes or some other data unit for each entity being created. The size of the LVM entity depends on the aggregated size of the LUNs you request.	
To control the size of the host entity, use the -dgsize option to specify the size in bytes of the underlying disk group.	
• Path to storage system volume (-filervol)	long_filer_path
• -lun	long_lun_path
Specify the storage system and its volume where you want SnapDrive for UNIX to create the LUNs automatically.	
<ul style="list-style-type: none"> Use the -filervol option to specify the storage system and volume where you want the LUNs created. <p>Do not specify the LUN. SnapDrive for UNIX creates the LUN automatically when you use this form of the snapdrive storage create command. It uses system defaults to determine the LUN IDs, and the size of each LUN. It bases the names of the associated disk/volume groups on the name of the host volume or file system.</p> <ul style="list-style-type: none"> Use the -lun option to name the LUNs that you want to use. 	
File system type (-fstype)	type

Requirement	Argument
If you are creating a file system, supply the string representing the file system type.	
For AIX, SnapDrive for UNIX accepts: <code>jfs2</code> or <code>vxfs</code> .	
 On an AIX host, the JFS file system type is not supported for storage operations, but supported for Snapshot operations.	
 By default, SnapDrive for UNIX supplies this value if there is only one file system type for your host platform. In that case, you do not need to enter it.	
<code>-vmttype</code>	type
Optional: Specifies the type of volume manager to be used for SnapDrive for UNIX operations.	
<code>-fsopts</code>	option name and value
<code>-mntopts</code>	option name and value
<code>-nopersist</code>	<code>~</code>
<code>-reserve -noreserve</code>	<code>~</code>
Optional: If you are creating a file system, you can specify the following options:	
<ul style="list-style-type: none"> Use <code>-fsopts</code> to specify options you want to pass to the host command used to create the file systems. For example, you might supply options that the <code>mkfs</code> command would use. The value you supply usually needs to be a quoted string and must contain the exact text to be passed to the command. Use <code>-mntopts</code> to specify options that you want to pass to the host mount command (for example, to specify host system logging behavior). The options you specify are stored in the host file system table file. Allowed options depend on the host file system type. 	
<p>The <code>-mntopts</code> argument is a file system <code>-type</code> option that is specified using the <code>mount</code> command <code>-o</code> flag. Do not include the <code>-o</code> flag in the <code>-mntopts</code> argument. For example, the sequence <code>-mntopts tmplog</code> passes the string <code>-o tmplog</code> to the <code>mount</code> command, and inserts the text <code>tmplog</code> on a new command line.</p>	
 If you pass any invalid <code>-mntopts</code> options for storage and snap operations, SnapDrive for UNIX does not validate those invalid mount options.	
<ul style="list-style-type: none"> Use <code>-nopersist</code> to create the file system without adding an entry to the file system mount table file on the host. By default, the <code>snapdrive storage create</code> command creates persistent mounts. When you create an LVM storage entity on an AIX host, SnapDrive for UNIX automatically creates the storage, mounts the file system, and then places an entry for the file system in the host file system table. Use <code>-reserve -noreserve</code> to create the storage with or without creating a space reservation. 	

Requirement	Argument
• igrup name(-igroup)	ig_name
Optional: NetApp recommends that you use the default igrup for your host instead of supplying an igrup name.	

Storage creation for LVM entities

If you use SnapDrive for UNIX to create a logical volume or file system using the LVM, SnapDrive for UNIX automatically creates the required disk group. SnapDrive for UNIX creates the file system based on the type that is supported by the host volume manager. For AIX, it includes JFS2, JFS, and VxFS.

Storage creation for a file system that resides on a LUN

If you use SnapDrive for UNIX to create a file system that resides directly on a LUN, SnapDrive for UNIX creates and maps the LUN, and then creates and mounts the file system without involving the host LVM.



SnapDrive for UNIX operations are not supported when the host's root file system has read-only permissions.

Creating LUNs without host entities

You can use SnapDrive for UNIX commands to provision storage by creating a LUN on the storage system.

Steps

1. At the command-line interface, enter the following command:

```
snapdrive storage create -lun long_lun_name -lunsize [lun_name ...] -lunsizesize [{-reserve | -norelease}] -igroup ig_name [ig_name ...]] ig_name [ig_name ...]]
```

SnapDrive for UNIX creates the LUNs you specify.

Example: creating three 10 GB LUNs on a storage system

```
snapdrive storage create -lun acctfiler:/vol/vol1/lunA lunB lunC - lunsize 10g
```

Creating a file system on a LUN and setting up the LUN automatically

You can create a file system on a LUN using SnapDrive for UNIX. SnapDrive for UNIX automatically create the associated LUN.

Steps

1. At the command line, enter the following command:

```
snapdrive storage create -fs file_spec -nolvm [-fstype type] [-fsopts options]  
[-mntopts options] [-nopersist] -filervol long_filer_path -lunsize size [-  
igroup ig_name [ig_name ...]] [{-reserve | -noreserve}]
```

SnapDrive for UNIX creates the file system you specify and creates a LUN for it on the storage system you specify. It performs all of the tasks associated with host preparation and discovery for the LUNs, as well as mapping and connecting the LUNs to the host entity.

Examples:

Creating a 100-MB file system directly on a LUN:

```
# snapdrive storage create -fs /mnt/acctl -filervol acctfiler:/vol/vol1  
-lunsize 100m -nolvm
```

Creating a file system on a raw LUN without any volume manager:

```
# snapdrive storage create -fs /mnt/vxfs2 -fstype vxfs -lun  
snoopy:/vol/vol1/lunVxvm2 -lunsize 50m -nolvm  
LUN snoopy:/vol/vol1/lunVxvm2 ... created  
mapping new lun(s) ... done  
discovering new lun(s) ... done  
LUN to device file mappings:  
- snoopy:/vol/vol1/lunVxvm2 => /dev/vx/dmp/Disk_1  
file system /mnt/vxfs2 created
```

Creating a file system on a LUN and specifying the LUN

You can create a file system on a LUN and specify the LUNs that are created as a part of it.

Steps

1. Use the following command format to complete this operation:

```
snapdrive storage create -fs file_spec -nolvm [-fstype type] [-vmttype type] [-  
fsopts options] [-mntopts options] [-nopersist] -lun long_lun_name -lunsize  
size ig_name [ig_name...]] [{-reserve | -noreserve}]
```

SnapDrive for UNIX creates the file system on the storage system, volume, and LUN you specify. It performs all of the tasks associated with host preparation and discovery for the LUNs, as well as mapping and connecting the LUNs to the host entity.

Example: Creating a 100 MB file system on luna in acctfiler:/vol/vol1

```
# snapdrive storage create -fs /mnt/acctl -lun acctfiler:/vol/vol1/luna -lunsize  
100m -nolvm
```

Example: This example creates a JFS2 file system on a raw LUN, on an AIX host: # snapdrive storage create -fs /mnt/jfs1 -fstype jfs2 -lun snoopy:/vol/vol1/lunLvm1 -lunsize 100m -nolvm

```
LUN snoopy:/vol/vol1/lunLvm1 ... created
mapping new lun(s) ... done
discovering new lun(s) ... done
LUN to device file mappings:
- snoopy:/vol/vol1/lunLvm1 => /dev/hdisk2
172 Creating storage
file system /mnt/jfs1 created
```

Creating an LVM entity and setting up the LUN automatically

You can create an entity such as a file system, logical volume, or disk group on the host and have SnapDrive for UNIX automatically create the associated LUN.

- The `host_lvm_fspec` argument lets you specify whether you want to create a file system, logical volume, or disk group. This argument has three general formats. The format you use depends on the entity you want to create.

To create a file system, use this format: `-fs file_spec [-fstype type] [-fsopts options] [-mntopts options] [-nopersist] [-hostvol file_spec] [-dg dg_name]`

To create a logical or host volume, use this format:

`[-hostvol file_spec] file_spec [-dg dg_name]`

To create a disk or volume group, use this format:

`-dg dg_name`

- If you create a file system, you can also include the host volume specifications, the disk group specifications, or both specifications to indicate the host volume and disk group on which the file system resides. If you do not include these specifications, SnapDrive for UNIX automatically generates the names for the host volume and disk group or both.
- When you specify a host volume, SnapDrive for UNIX creates a concatenated host volume. While this is the only format SnapDrive for UNIX supports when creating host volumes, it does allow you to manipulate existing striped host volumes.

Steps

1. At the command line, enter the following command:

```
snapdrive storage create host_vxvm_fspec -filervol long_filer_path -dgsizesize [-igroup ig_name [ig_name ...]] [{ -reserve | -noreserve }]
```

SnapDrive for UNIX creates the host entity you specify and creates LUNs for it on the storage system you specify. It performs all of the tasks associated with host preparation and discovery for each of the LUNs, as well as mapping and connecting the LUNs to the host entity.

Creating an LVM entity and specifying the LUN

You can create a host entity such as a file system, logical volume, or disk group and specify the LUN that is created as part of it.

Steps

1. At the command line, enter the following command:

```
snapshot storage create -host_lvm_fspec -lun long_lun_name [lun_name...]
-lunsize size [-igroup ig_name [ig_name...]] [{ -reserve | -noreserve }]
```

This example creates the file system /mnt/acctfs with file system depending on your host. It sets up three LUNs on the storage system acctfiler. Each LUN is 10 GB:

```
# snapshot storage create -fs /mnt/acctfs -fstype jfs2 -lun
acctfiler:/vol/vol1/lunA lunB lunC -lunsize 10g
```

```
LUN acctfiler:/vol/vol1/lunA ... created
LUN acctfiler:/vol/vol1/lunB ... created
LUN acctfiler:/vol/vol1/lunC ... created
mapping new lun(s) ... done
discovering new lun(s) ... done
LUN to device file mappings:
- acctfiler:/vol/vol1/lunA => hdisk2
- acctfiler:/vol/vol1/lunB => hdisk3
- acctfiler:/vol/vol1/lunC => hdisk4
disk group acctfs_SdDg created
host volume acctfs_SdHv created
file system /mnt/acctfs created
```

```
LUN acctfiler:/vol/vol1/lunA ... created
LUN acctfiler:/vol/vol1/lunB ... created
LUN acctfiler:/vol/vol1/lunC ... created
mapping new lun(s) ... done
discovering new lun(s) ... done
LUN to device file mappings:
- acctfiler:/vol/vol1/lunA => /dev/vx/rdmp/c4t0d3s2
- acctfiler:/vol/vol1/lunB => /dev/vx/rdmp/c4t0d7s2
- acctfiler:/vol/vol1/lunC => /dev/vx/rdmp/c4t0d8s2
disk group acctfsvg created
host volume acctfshv created
file system /mnt/acctfs created
```

Command to use to display available storage

The `snapdrive storage show` or `snapdrive storage list show` LUNs or NFS directory trees underlying one or more storage entities. You can use the `snapdrive storage show` command to learn and know what is in a Snapshot copy of a disk group, host volume, file system, or NFS directory tree.

You can use these commands to display the following information:

- LUNs available for specific storage systems or storage system volumes
- LUNs associated with file systems, host volumes, or disk groups
- NFS mount points and directory trees
- LUNs known to a specific host, and any LVM entities that the LUNs include
- Devices known to a specific host
- Resources on the shared and dedicated hosts



You can use either `snapdrive storage show` or `snapdrive storage list` at the command line.

Methods for displaying storage information

To make it easier to display information about storage, SnapDrive for UNIX provides several formats for the `snapdrive storage show` command.

Storage show operations fall into the following general categories:

- Displaying information about a specific LUN.
- Listing information about LUNs available for specific storage systems or storage system volumes.
- Displaying information about LUNs associated with the arguments you specify.

These arguments can include NFS entities, file systems, host volumes, or disk groups. If you use the `-verbose` option at the command prompt, SnapDrive for UNIX provides detailed output, such as showing the storage hierarchy including the backing LUNs.

- Displaying information about the devices known to the host.
- Displaying information about all devices and LVM entities known to the host.
- Displaying the status of a resource as shared or dedicated.

Increase in storage size using SnapDrive for UNIX

SnapDrive for UNIX lets you increase the size of the storage system volume group or disk group. You use the `snapdrive storage resize` command to do this.



This command does not let you resize host volumes or file systems. For example, you cannot use the resize command to change the size of a file system on a LUN. You need to use the LVM commands to resize host volumes and file systems after you have resized the underlying disk group.

You can put the storage resize operations into the following general categories:

- Setting a target size in bytes to which you want to increase the storage
- Specifying a number of bytes by which you want to increase the storage

SnapDrive for UNIX adds a system-generated LUN. If you specify an amount by which you want to increase the storage, such as 50 MB, it makes the LUN 50 MB. If you specify a target size for the storage, it calculates the difference between the current size and the target size. The difference becomes the size of the LUN it then creates.

Guidelines for the storage resize command

You need to follow few guidelines when you use the `snapdrive storage resize` command.

- The storage resize operation can only increase the size of storage. You cannot use it to decrease the size of an entity.
- All LUNs must reside in the same storage system volume.
- The resize operation does not support directly on logical host volumes, or on file systems that reside on logical host volumes or on LUNs. In those cases, you must use the LVM commands to resize the storage.
- You cannot resize a LUN; you must use the `-addlun` option to add a new LUN.

Information required for using the snapdrive storage resize command

There is some information that you need to supply before you can use the `snapdrive storage resize` command. This information helps you in using the command correctly.

Requirement	Argument
Decide whether you want to increase the size of a disk or volume group and enter that entity's name with the appropriate argument.	
Disk group (-dg file_spec) or volume group (-vg file_spec)	<i>name of the disk or volume group</i>

Requirement	Argument
Decide how you want to increase the storage size. Remember the following when you use this command:	
<ul style="list-style-type: none"> • Use the <code>-growby</code> option to increase the entity size by the bytes specified in the <code>size</code> argument. • Use the <code>-growto</code> option to increase the entity size so that the new total size is the number of bytes specified in the <code>size</code> argument. • Use the <code>-addlun</code> option to increase the entity size by adding a new, internally-generated LUN to the underlying disk group. If you do not use this argument, SnapDrive for UNIX increases the size of the last LUN in the disk group to meet the byte size specified in either the <code>-growby</code> option or the <code>-growto</code> option. 	
Specify the number of bytes by which you want to increase the storage (<code>-growby size</code>)	<i>number_of_bytes</i>
Specify the size in bytes that you want the storage to reach (<code>-growto size</code>)	<i>number_of_bytes</i>
Tell SnapDrive for UNIX to increase the size by adding a new LUN to the disk group (<code>-addlun</code>)	
Tell SnapDrive for UNIX to increase the size with or without creating a space reservation <code>-reserve -noreserve</code>	
Optional: It is recommended that you use the default igroup for your host instead of supplying an igroup name.	
Igroup name (<code>-igroup</code>)	<i>ig_name</i>
<code>-fstype</code>	<i>type</i>
<code>-vmtpe</code>	<i>type</i>
Optional: Specifies the type of file system and volume manager to be used for SnapDrive for UNIX operations.	

Command syntax to increase the size of the storage

To increase the size of the storage, you should know the correct syntax to be used.

```
snapdrive storage resize -dg file_spec { -growby | -growto } size [-addlun [-
igroup ig_name [ig_name ...]]] [{ -reserve | -noreserve}]] [-fstype type] [-vmtpe
type]
```

You cannot use the `snapdrive storage resize` command to reduce the size of an entity. You can only increase the size using this command.

The `snapdrive storage resize` command does not support directly on logical volumes or file systems. For example, you cannot use the `snapdrive storage resize` command to resize a file system on a LUN.



Result: This command increases the size of the storage entity (logical volume or disk group) by either of the following:

- Adding bytes to storage (`-growby`).
- Increasing the size to the byte size you specify (`-growto`).

Host volumes and file system resize operation

The `snapdrive storage resize` command applies only to storage system disk groups and volume groups. If you want to increase the size of your host volume or file system, you must use LVM commands.

The following table summarizes the LVM commands you can use on the different platforms. For more information about these commands, see their man pages.

Host	Volume manager	Host volume	File systems
AIX	LVM	extendlv	chfs
	VxVM	vxassist	fsadm

The storage connect command

The `snapdrive storage connect` command connects storage entities to the host. Using this command you can connect LUNs and storage entities to the host

Use the `snapdrive storage connect` command to connect to:

- LUNs
- A file system created directly on a LUN
- Disk groups, host volumes, and file systems created on LUNs

When you enter the `snapdrive storage connect` command to connect LUNs to the host, SnapDrive for UNIX performs the necessary discovery and mapping. It does not modify LUN contents.

Guidelines for the storage connect command

You need to follow few guidelines to use the `snapdrive storage connect` command.

Storage that includes LVM entities has special requirements. To use the `snapdrive storage connect` command to connect LVM entities, you must create the storage so that each entity in the storage hierarchy has

exactly one instance of the next entity. For example, you can use the `snapdrive storage connect` command to connect a storage hierarchy that has one disk group (dg1) with one host volume (hostvol1) and one file system (fs1). However, you cannot use the `snapdrive storage connect` command to connect a hierarchy that has one disk group (dg1) with two host volumes (hostvol1 and hostvol2) and two file systems (fs1 and fs2).

Information required for using the `snapdrive storage connect` command

There is some information that you need to supply when you use the `snapdrive storage connect` command. This information helps you to use the command correctly.

Requirement	Argument
Specify the LUNs, the file system created directly on a LUN, or the LVM entity that you want to connect to the host.	
<ul style="list-style-type: none">If you connect one or more LUNs, the first argument must use the long form of the LUN name, which specifies the storage system name, the volume name, and the name of the LUN within the volume. <p>To specify additional LUNs, you can use the LUN name alone if the new LUN is on the same storage system and volume as the previous LUN. Otherwise, you can specify a new storage system name and volume name (or just a volume name) to replace the previous values.</p> <ul style="list-style-type: none">If you connect a file system created directly on a LUN, you must include the long form of the LUN name, and also the <code>-nolvm</code> option.If you connect a LUN with a disk group, host volume, and file system, you must use the <code>-fs</code> and <code>-hostvol</code> options to specify the file system and host volume. The host volume must include the name of the disk group.	
A LUN (<code>-lun</code>)	<i>long_lun_name</i>
The first value you supply with the <code>-lun</code> option must include the storage system name, volume, and LUN name. To connect multiple LUNs on the same volume, you can use relative path names for the <code>-lun</code> option after you supply the complete information in the first path name. When SnapDrive for UNIX encounters a relative path name, it looks for the LUN on the same volume as the previous LUN. To connect additional LUNs that are not on the same volume, enter the full path name to each LUN.	
Additional LUNs	<i>lun_name</i> (long or short form)
The <code>file_spec</code> given to <code>-fs</code> is the name of the file system mountpoint when connecting a file system created directly on a LUN.	
A file system (<code>-fs file-spec</code>)	<i>filesystem_name</i>
To connect a file system that is created on a LUN without activating the host LVM.	
<code>-nolvm</code>	

Requirement	Argument
To connect a file system on a host volume:	
The <code>-fs file_spec</code> and <code>-hostvol file_spec</code> you supply identify the LVM file system, disk group, and host volumes that you want to connect to a new host.	
The storage hierarchy that you connect must contain a disk group, host volume, and file system. You must specify a value for <code>-fs</code> and <code>-hostvol</code> . The <code>-hostvol</code> value must include the name of the disk group.	
Host volume (<code>-hostvol file-spec</code>)	<i>disk_group_name</i> and <i>host_volume_name</i>
Optional: Use the <code>-nopersist</code> option to connect the storage to a new location without creating an entry in the host file system table. By default the storage connect command creates persistent mounts. This means that when you create an LVM storage entity on a AIX host, SnapDrive for UNIX automatically creates the storage, mounts the file system and then places an entry for the file system in the host file system table.	
<code>-nopersist</code>	<code>~</code>
Optional: It is recommended that you use the default igroup for your host instead of supplying an igroup name.	
Igroup name (<code>-igroup</code>)	<i>ig_name</i>
<code>-fstype</code>	<i>type</i>
<code>vmtype</code>	<i>type</i>
Optional: Specifies the type of file system and volume manager to be used for SnapDrive for UNIX operations.	
<code>-mntopts</code>	<code>~</code>
Optional: If you are creating a file system, you can specify the following options:	
<ul style="list-style-type: none"> Use <code>-mntopts</code> to specify options that you want to pass to the host mount command (for example, to specify host system logging behavior). The options you specify are stored in the host file system table file. Allowed options depend on the host file system type. The <code>-mntopts</code> argument is a file system <code>-type</code> option that is specified using the <code>mount</code> command <code>-o</code> flag. Do not include the <code>-o</code> flag in the <code>-mntopts</code> argument. For example, the sequence <code>-mntopts tmplog</code> passes the string <code>-o tmplog</code> to the <code>mount</code> command, and inserts the text <code>tmplog</code> on a new command line. 	
 If you pass any invalid <code>-mntopts</code> options for storage and snap operations, SnapDrive for UNIX does not validate those invalid mount options.	

Connecting LUNs with disk groups, host volumes, and file systems

To use the snapdrive storage connect command to connect LUNs that have disk groups, host volumes and file systems, you need to follow the syntax.

Enter the following command:

```
snapdrive storage connect -fs file_spec -hostvol file_spec -lun long_lun_name [lun_name...] [-igroup ig_name [ig_name...]] [-nopersist] [-mntopts options] [-fstype type] [-vmttype type]
```

Example: Connecting a file system created on a LUN

```
# snapdrive storage connect -fs /mnt/fs -lun f270-221-189:/vol/vol0/lun111 -nolvm
mapping lun(s) ... done
discovering lun(s) ... done
LUN f270-221-189:/vol/vol0/lun111 connected
- device filename(s): /dev/vx/dmp/fas2700_939
```

Connecting existing LUNs with shared resources

If a new node is added to the host cluster configuration that uses a shared disk group or file system, you need to follow a different syntax.

```
snapdrive storage connect -fs file_spec -lun long_lun_name [lun_name...] [-mntopts options]
```

The storage disconnect command

The storage disconnect operation removes the LUNs, or the LUNs and storage entities that were mapped to the host using the snapdrive storage create or snapdrive storage connect command.

Use the snapdrive storage disconnect command to disconnect:

- LUNs
- A file system created directly on a LUN
- Disk groups, host volumes, and file systems created on LUNs

When SnapDrive for UNIX removes the LUN mappings, it exports the disk groups or file systems that the LUNs contain. This action, which marks the disk and file system as exported, is the only change that disconnecting the mappings has on the contents of the LUNs.

Methods for disconnecting storage

To make it easier to disconnect the storage, SnapDrive for UNIX provides several formats

for the `snapdrive storage disconnect` command.

This is because the disconnect operations fall into the following general categories:

- Specifying the LUNs that you want to disconnect from the host.
- Specifying a file system that is created directly on a LUN that you want to disconnect from the host.

SnapDrive for UNIX disconnects both the file system and LUN.

- Specifying a disk group, host volume, or file system that resides on LUNs you want to disconnect from the host.

SnapDrive for UNIX disconnects all the LUNs associated with that entity, and also removes mappings for the file system, host volume, and disk group that comprise the entity you disconnected.

Guidelines for the `snapdrive storage disconnect` command

Follow these guidelines when using the `snapdrive storage disconnect` command:

- When you disconnect a file system, SnapDrive for UNIX always removes the mountpoint.
- If you use the `-lun` option to specify the name of a LUN that is a member of either a host disk group, or a file system, the `snapdrive storage disconnect` command fails.
- If you use `-lun` option to specify the name of the LUN that is not discovered by multipathing software on the host, the `snapdrive storage disconnect` command fails.

Tips for using the storage disconnect command

When you use the `snapdrive storage disconnect` command on some operating systems, you lose information such as the host volume names, the file system mountpoint, the storage system volume names, and the names of the LUNs. Without this information, you can connect again to the storage at a later point in time is difficult.

To avoid losing information, you should first create a Snapshot copy of the storage using the `snapdrive snap create` command before you execute the `snapdrive storage disconnect` command.

That way, if you want to reconnect the storage later, you can use the following workaround:

Steps

1. Execute the following command:

```
snapdrive snap restore filespec -snapname long_snap_name
```

Include the full path to the Snapshot copy in this command.

2. Optionally, remove the Snapshot copy by executing the `snapdrive snap delete` command.

Information required for using the `snapdrive storage disconnect` command

The following table gives the information you need to supply when you use the

snapdrive storage disconnect command:

Requirement	Argument
Based on the command you enter, you can remove mappings from any of the following:	
<ul style="list-style-type: none">• LUNs	
<p>If you disconnect one or more LUNs, the first argument must use the long form of the LUN name, which specifies the storage system name, the volume name, and the name of the LUN within the volume.</p>	
<p>To specify additional LUNs, you can use the LUN name alone if the new LUN is on the same storage system and volume as the previous LUN. Otherwise, you can specify a new storage system name and volume name (or just a volume name) to replace the previous values.</p>	
<ul style="list-style-type: none">• File systems on LUNs	
<p>The <i>file_spec</i> given to <code>-fs</code> is the name of the file system mountpoint. SnapDrive for UNIX automatically locates and disconnects the LUN that is associated with the file system you specify.</p>	
<ul style="list-style-type: none">• Disk or volume groups• File systems on disk or volume groups• Host or logical volumes	
The value you enter for the <i>file_spec</i> argument must identify the storage entity you are disconnecting.	
A LUN (<code>-lun</code>)	<i>lun_name</i> (long or short form)
Disk group (<code>-dg file_spec</code>) or volume group (<code>-vg file_spec</code>)	name of the disk or volume group
File system (<code>-fs file_spec</code>)	<i>filesystem_name</i>
Host volume (<code>-hostvol file_spec</code>) or logical volume (<code>-lvol file_spec</code>)	name of the host or logical volume
If you want SnapDrive for UNIX to disconnect the storage you specify even if you include at the command prompt a host-side entity that has other entities (such as a disk group that has one or more host volumes), include the <code>-full</code> option at the command prompt.	
If you do not include this option, you must specify only empty host-side entities.	
<code>-full</code>	<code>~</code>
If you want to disable a node or a host cluster from sharing a file system	
<code>-fstype</code>	<i>type</i>

Requirement	Argument
<code>-vmttype</code>	<code>type</code>
Optional: Specifies the type of file system and volume manager to be used for SnapDrive for UNIX operations.	

Command syntax for disconnecting LUNs from the host

To use the `snapdrive storage disconnect` command to remove the mappings for the LUNs you specify, use the following syntax:

```
snapdrive storage disconnect -lun long_lun_name [lun_name...]
```

Command syntax for disconnecting a file system created on a LUN from the host

To use the `snapdrive storage disconnect` command to remove a file system created directly on a LUN, use the following syntax:

```
snapdrive storage disconnect -fs file_spec [-fstype type] [-vmttype type]
```

Command syntax for disconnecting LUNs and storage entities from the host

To use the `snapdrive storage disconnect` command to remove the mappings for the LUNs with storage entities, use the following syntax:

```
snapdrive storage disconnect { -dg | -fs | -hostvol } file_spec [file_spec...] [{ -dg | -fs | -hostvol } file_spec [file_spec...] ...] [-full] [-fstype type] [-vmttype type]
```

The storage delete command

The `snapdrive storage delete` command removes the storage entities on the host in addition to all underlying host side entities and storage system LUNs backing them.



This command deletes data.

Guidelines for using the storage delete command

The `snapdrive storage delete` command has some restrictions in SnapDrive for UNIX.

- When you delete a file system, SnapDrive for UNIX always removes the file system's mount point.
- If you use the `-lun` option to specify the name of a LUN that is a member of either a host disk group or a file system, the `snapdrive storage delete` command fails.
- If you use `-lun` option to specify the name of the LUN that is not discovered by multipathing software on

the host, the snapdrive storage delete command fails.

Information required for using the snapdrive storage delete command

There is some information that you need to supply before you can use the snapdrive storage delete command. This information helps you in using the command correctly.

Requirement	Argument
Based on the command you enter, you can delete any of the following types of storage:	
• LUNs	<p>Specify one or more LUNs that you want to delete from the storage system.</p> <p>If you delete one or more LUNs, the first argument must use the long form of the LUN name, which specifies the storage system name, the volume name, and the name of the LUN within the volume.</p> <p>To specify additional LUNs, you can use the LUN name alone if the new LUN is on the same storage system and volume as the previous LUN. Otherwise, you can specify a new storage system name and volume name (or just a volume name) to replace the previous values.</p>
• A file system created directly on a LUN	
• Disk or volume groups	
• File systems on disk, or volume groups	
• Host or logical volumes	
The value you enter for the file_spec argument must identify the storage entity you are deleting.	
A LUN (-lun)	<i>long_lun_name</i>
Additional LUNs	<i>lun_name</i> (long or short form)
Disk group (-dg <i>file_spec</i>) or volume group (-vg <i>file_spec</i>)	name of the disk group or volume group
File system (-fs <i>file_spec</i>)	<i>filesystem_name</i>
Host volume (-hostvol <i>file_spec</i>) or logical volume (-lvol <i>file_spec</i>)	<i>name of the host volume or logical volume</i>  You must supply both the requested volume and the disk group containing it; for example, - hostvol dg3/acct_volume.

Requirement	Argument
<p>If you want SnapDrive for UNIX to delete the storage you specify even if you include at the command prompt a host-side entity that has other entities (such as a disk group that has one or more host volumes), include the -full option at the command prompt.</p> <p>If you do not include this option, you must specify only empty host-side entities.</p>	
<p>-full</p>	<p>~</p>
<p>To specify the shared host entity for which you want to delete the storage.</p>	
<p>-fstype</p>	<p><i>type</i></p>
<p>-vmtype</p>	<p><i>type</i></p>
<p>Optional: Specifies the type of file system and volume manager to be used for SnapDrive for UNIX operations.</p>	

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