



# **Storage creation with SnapDrive for UNIX**

## **Snapdrive for Unix**

NetApp  
March 24, 2021

# Table of Contents

- Storage creation with SnapDrive for UNIX . . . . . 1
  - Methods for creating storage . . . . . 1
  - Guidelines for the storage create operation . . . . . 1
  - Information required for the storage create operation . . . . . 2
  - Storage creation for LVM entities . . . . . 5
  - Storage creation for a file system that resides on a LUN . . . . . 6
  - Creating LUNs without host entities . . . . . 6
  - Creating a file system on a LUN and setting up the LUN automatically . . . . . 6
  - Creating a file system on a LUN and specifying the LUN . . . . . 7
  - Creating an LVM entity and setting up the LUN automatically . . . . . 8
  - Creating an LVM entity and specifying the LUN . . . . . 9

# 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
<p>Decide the type of storage you want to provision. Based on the command you enter, you can create any of the following:</p> <ul style="list-style-type: none"> <li>LUNs <p>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.</p> <p>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.</p> </li> <li>A file system created directly on a LUN <p>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.</p> <p>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.</p> </li> <li>LVM disk groups with host volumes and file systems <p>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.</p> <p>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.</p> </li> </ul>	
<ul style="list-style-type: none"> <li>A LUN (<code>-lun</code>)</li> </ul>	<code>long_lun_name</code>
<ul style="list-style-type: none"> <li>Additional LUNs</li> </ul>	<code>lun_name</code> (long or short form)
<ul style="list-style-type: none"> <li>Disk group (<code>-dg dgname</code>) or volume group (<code>-vg vgname</code>)</li> </ul>	<code>disk</code> or <code>volume group name</code>
<p>SnapDrive for UNIX creates a disk or volume group to hold the LUNs based on the value you enter with the <code>-dg</code> option. The name you supply for the group must not exist.</p>	
<ul style="list-style-type: none"> <li>Host volume (<code>-hostvol file_spec</code>) or logical volume (<code>-lvol file_spec</code>)</li> </ul>	<code>Host</code> or <code>logical volume name</code>
<ul style="list-style-type: none"> <li>File system (<code>-fs file_spec</code>)</li> </ul>	<code>filesystem_name</code>

Requirement	Argument
<code>-nolvm</code>	~
<b>Required:</b> If you are creating a file system that resides directly on a LUN, specify the <code>-nolvm</code> option.	
• Lun size ( <code>-lunsize</code> )	<b>size</b>
• Disk group size ( <code>-dgsiz</code> ) • Volume group size ( <code>-vgsiz</code> )	<b>size</b>
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 <code>-dgsiz</code> option to specify the size in bytes of the underlying disk group.	
• Path to storage system volume ( <code>-filer</code> )	<b>long_filer_path</b>
• <code>-lun</code>	<b>long_lun_path</b>
Specify the storage system and its volume where you want SnapDrive for UNIX to create the LUNs automatically.	
<ul style="list-style-type: none"> <li>Use the <code>-filer</code> option to specify the storage system and volume where you want the LUNs created.</li> </ul> <p>Do not specify the LUN. SnapDrive for UNIX creates the LUN automatically when you use this form of the <code>snapdrive storage create</code> 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"> <li>Use the <code>-lun</code> option to name the LUNs that you want to use.</li> </ul>	
File system type ( <code>-fstype</code> )	<b>type</b>
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>-vmtype</code>	<b>type</b>

Requirement	Argument
<b>Optional:</b> Specifies the type of volume manager to be used for SnapDrive for UNIX operations.	
<code>-fsopts</code>	<code>option name and value</code>
<code>-mntopts</code>	<code>option name and value</code>
<code>-nopersist</code>	~
<code>-reserve   -nreserve</code>	~
<p><b>Optional:</b> If you are creating a file system, you can specify the following options:</p> <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul> <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> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <div style="display: flex; align-items: center;">  <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.</p> </div> </div> <ul style="list-style-type: none"> <li>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 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.</li> <li>Use <code>-reserve   -nreserve</code> to create the storage with or without creating a space reservation.</li> </ul>	
• <code>igroup name(-igroup)</code>	<code>ig_name</code>
<b>Optional:</b> NetApp recommends that you use the default igroup for your host instead of supplying an igroup 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 ...] -lunsize_size  
[{-reserve | -noreserve}] -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/acct1 -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 | -nreserve }]
```

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/acct1 -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_fspect` 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:

`-dgdg_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_fspect -filervol long_filer_path -dgsize
size [-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:

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

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:

```
# snapdrive 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
```

## Copyright Information

Copyright © 2021 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system- without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

## Trademark Information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.