Dell Data Domain Boost File System: Deployment and Configuration

June 2023

H18833.1

White Paper

Abstract

This document describes the deployment and configuration of Dell DD Boost File System (BoostFS) for Windows and Linux application hosts.

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Executive summary

Overview

Dell Data Domain Boost File System (BoostFS) provides a general file system interface to the DD Boost library, allowing standard backup applications to take advantage of DD Boost features.

The BoostFS plug-in resides on the application system and presents a standard file system mount point to the application. With direct access to a BoostFS mount point, the application can leverage the storage and network efficiencies of the DD Boost protocol for backup and recovery. Only simple qualifications are needed for the application to support BoostFS. The file system interface makes BoostFS easy to deploy so that it can be up and running in minutes.

Audience

This white paper is intended for Dell Technologies customers, partners, and employees who are interested in learning about the BoostFS plug-in technology and the unique benefits that it provides.

Revisions

Date	Part number/ revision	Description
June 2021	H18833	Initial release
June 2023	H18833.1	Updated for DDOS 7.11

We value your feedback

Dell Technologies and the authors of this document welcome your feedback on this document. Contact the Dell Technologies team by email.

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Note: For links to other documentation for this topic, see the Data Protection Info Hub.

Introduction

BoostFS overview

DD Boost software delivers an advanced level of integration with backup applications and database utilities, enhancing performance and ease of use. The BoostFS plug-In with DD Boost provides even greater application support, which enables all the benefits of DD Boost for data protection. BoostFS is supported and available for Linux and Windows hosts.

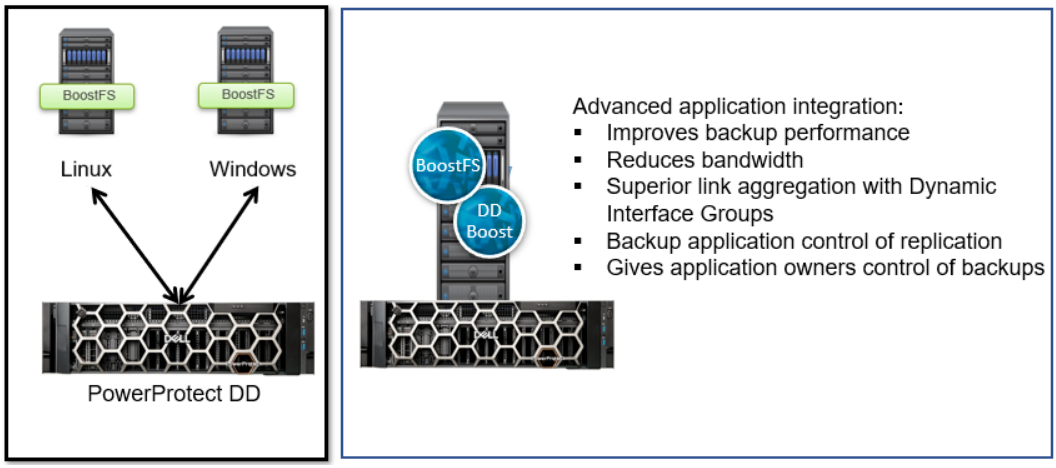


Figure 1. DD Boost and BoostFS features

DD Boost enables the backup server or application client to send only unique data segments, rather than all data, across the network to the PowerProtect DD appliance. This process reduces the amount of data transferred over the network by 80 to 98 percent.

BoostFS licenses are not included with the DD Boost licensing option available on all PowerProtect DD series appliances (including DDVE). BoostFS is a separate software product that must be purchased and licensed for the clients that it is deployed on.

Advantages of BoostFS

By leveraging DD Boost technology, BoostFS helps reduce bandwidth, can improve backup times, offers load-balancing, allows in-flight encryption, and supports the DD multitenancy feature set.

In-flight encryption supported through DD Boost allows applications to encrypt in-flight backup or restore data over LAN from the protection system. When it is configured, the client can use TLS to encrypt the session between the client and the protection system. DD 7.6.0.5 and later versions support GCM-based ciphers in both Boost client and DD.

As a file server system implementation, the BoostFS workflow is similar to NFS but leverages the DD Boost protocol. In addition, BoostFS improves backup times compared to NFS and various copy-based solutions.

BoostFS supports single-node PowerProtect DD systems, high-availability (HA) systems, Extended Retention systems, PowerProtect DD Virtual Edition (DDVE), and Extended Distance Protection.

Features of BoostFS

BoostFS features include:

- **Faster, more efficient backup**: BoostFS distributes parts of the deduplication process to backup server or application client, offering 50 percent faster backups and requiring up to 98 percent less network bandwidth.
- **Simplified disaster recovery**: Applications can control the PowerProtect DD replication process with full catalog awareness.
- **Advanced load balancing and failover**: Transport links are aggregated for transparent load balancing and automatic link failover.
- **DD Boost everywhere**: The Boost File System plug-in expands application support.
- **Concurrent connections**: The maximum number of connections that can be used simultaneously is 256. The minimum value is 64, and the default value is 128.
- **Compressed restore**: This feature reduces bandwidth usage during the sending and receiving of data but increases CPU usage. When the mount option `ddboost-read-compression` is set to true, data is compressed on the server before being sent to the client. When the client receives the data, it must decompress the data. Sending and receiving compressed data uses less network bandwidth, but compressing and decompressing the data requires a significant amount of CPU power. By default, the `ddboost-read-compression` option is set to false.

  ```
  # ddboost-read-compression=<true|false>
  ```

- **Multithreaded Boost Mode**: You can specify the number of threads to use in multithreaded Boost mode for writing each file (the default is 2). The setting does not have any significance if `mtboost-enabled=false`. The minimum value is 0, and the maximum value is 16.

  ```
  # Enable Boost multithreading (default: true)
  mtboost-enabled=true|false
  ```

- **Improved Microsoft SQL backup performance**: Starting with BoostFS 7.2.0.5, BoostFS for Windows provides improved Microsoft SQL backup performance. By default, this feature is disabled. This feature can be enabled by using the `data-cache=enable` mount option.
- **File security**: BoostFS for Windows supports access control lists (ACLs) on files and directories within the BoostFS mount point
- **Linux automounter**: To mount file systems dynamically, use the Linux automounter with the `autofs` command. Mounts created with the `automount` command are automatically unmounted when not in use.

DD Boost features supported by BoostFS

BoostFS supports the following DD Boost features:

- Distributed Segment Processing
- Load balancing and failover
- Hard stream limits

- User authentication (Kerberos)
- Data encryption
- Replication Cloud Tier
- Transport Layer Security (TLS) anonymous authentication, which is supported to provide encryption

Supported environments

BoostFS for Windows

BoostFS for Windows requires:

- DDOS version 6.2 or later
- Windows Server 2016, Windows Server 2019, or Windows Server 2022

BoostFS for Linux

BoostFS for Linux requires:

- DDOS version 6.2 or later
- FUSE 2.8 or later

Boost FS for Linux supports the following Linux distributions:

- Red Hat Enterprise Linux versions 7, 8, and 9
- CentOS 7 and 8
- SUSE Linux Enterprise Server versions 11, 12, and 15
- Ubuntu 14.04, 15, 20, and 22
- Oracle Linux versions 7, 8, and 9

Supported applications

The Dell DD BoostFS support matrix, available from E-Lab Navigator at https://elabnavigator.emc.com/eln/elnhome, lists the supported applications. On the E-Lab Navigator home page, select **Data Protection and Availability Solutions** > **PowerProtect DD series appliances.**

Configuring the BoostFS plug-in

The following figure shows the steps for configuring the BoostFS plug-in. The remaining sections of this paper provide the details.

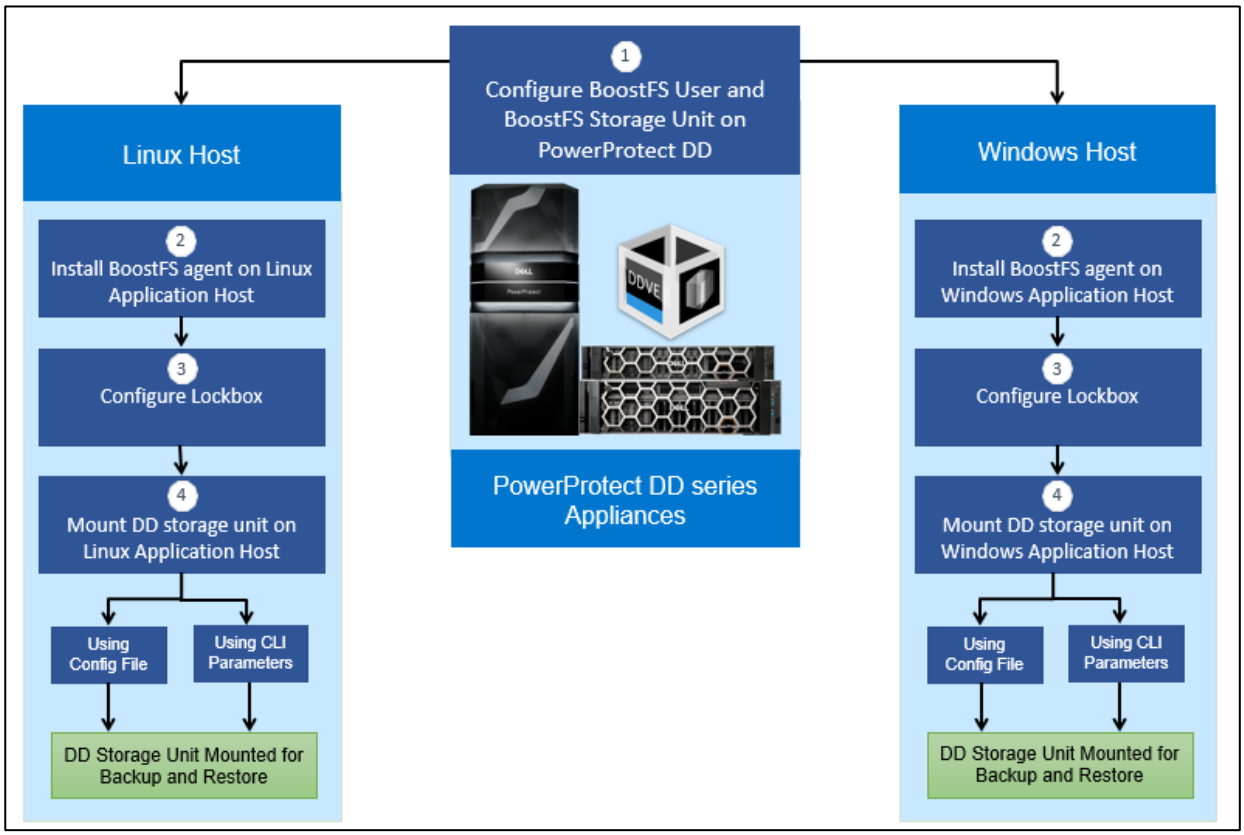


Figure 2. Steps to configure BoostFS plug-in

Preparing PowerProtect DD system for BoostFS

Prerequisites

Ensure that your environment meets the following prerequisites:

- PowerProtect DD enabled for DD Boost deduplication must have a unique name. You can use the DNS name of the PowerProtect DD system, which is always unique.
- All application host systems must be able to access the Key Distribution Center (KDC). In a Windows environment, the Windows server that hosts the Microsoft Active Directory service acts as the KDC and the domain name system (DNS). If the systems cannot reach the KDC, check the DNS settings at `/etc/resolv.conf`.

Preparing for BoostFS

Prepare the environment for BoostFS as follows:

1. On the PowerProtect DD system, log in as an administrative user.
2. Verify that the file system is enabled and running by entering `filesys status`.

```
sysadmin@l1dpdvcld083# filesys status
The filesystem is enabled and running.
sysadmin@l1dpdvcld083#
```

3. Verify that DD Boost is enabled by entering `ddboost status`.

```
sysadmin@l1dpdvcld083# ddboost status
DD Boost status: enabled
sysadmin@l1dpdvcld083#
```

If the DD Boost is reported as disabled, enable it by entering `ddboost enable`.

```
sysadmin@l1dpdvcld083# ddboost enable
DD Boost enabled.
sysadmin@l1dpdvcld083#
```

4. Verify that distributed segment processing is enabled by entering `ddboost option show`.

```
sysadmin@l1dpdvcld083# ddboost option show
Option                          Value
------------------------------  -------
distributed-segment-processing  enabled
virtual-synthetics              enabled
global-authentication-mode      none
global-encryption-strength      none
------------------------------  -------
sysadmin@l1dpdvcld083#
```

If distributed segment processing is shown as disabled, enable it by entering `ddboost option set distributed-segment-processing enabled`.

```
sysadmin@l1dpdvcld083# ddboost option set distributed-segment-processing enabled
DD Boost option "distributed-segment-processing" set to enabled.
sysadmin@l1dpdvcld083#
```

You can set the hostname and the domain name on the PowerProtect DD system by using the `net set` CLI command:

```
# net set hostname [host]
# net set {domain name [local-domain-name]}
```

Creating BoostFS user and storage unit on PowerProtect DD

Introduction to BoostFS user and storage unit

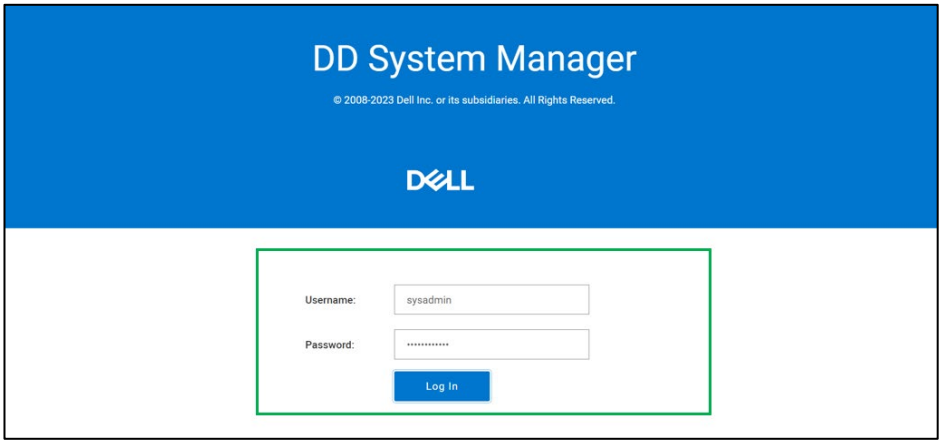
One or more storage units must be created on each PowerProtect DD system that is enabled for BoostFS. Storage units are accessible only to applications with the username that owns the storage unit. One username owns each storage unit, and the same username can own multiple storage units. PowerProtect DD administrators can also use existing DD Operating System (DDOS) CLI commands to create and manage storage units used by BoostFS.

The application passes the username and password to BoostFS, and DD Boost passes them to the PowerProtect DD system when attempting to connect to the PowerProtect DD system. The PowerProtect DD system then authenticates the username and password. The username and password can be shared by different applications.

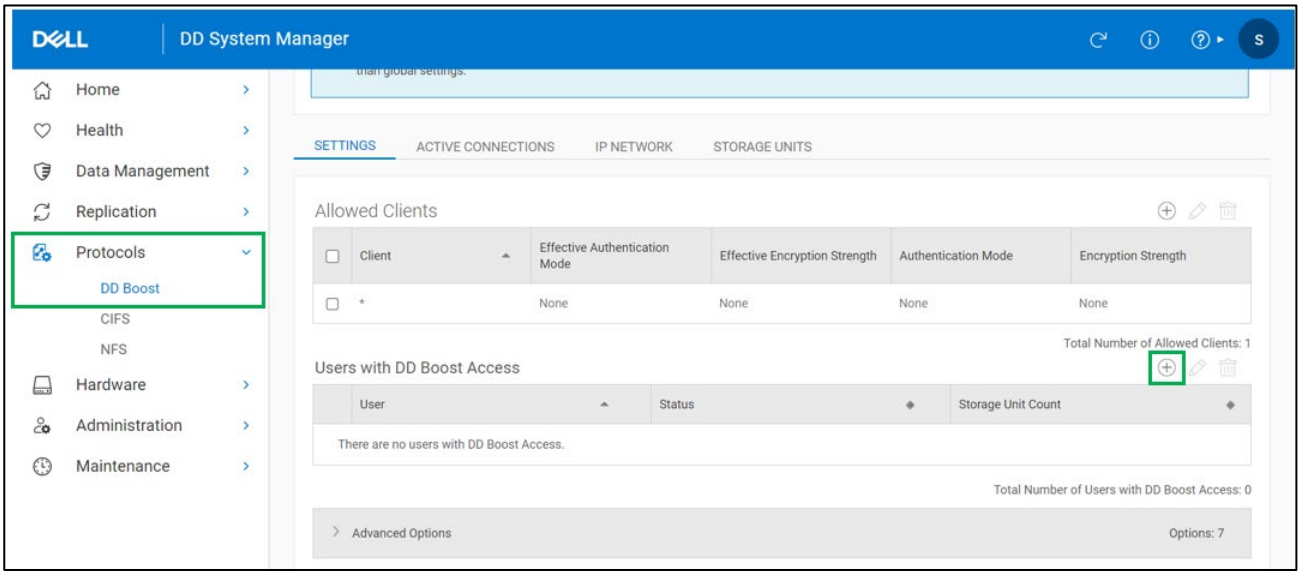
Creating a BoostFS user

Create a BoostFS user on the PowerProtect DD system as follows:

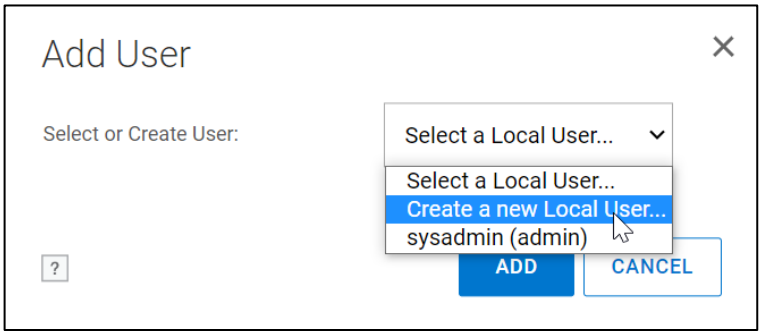
1. Log in to DD System Manager.



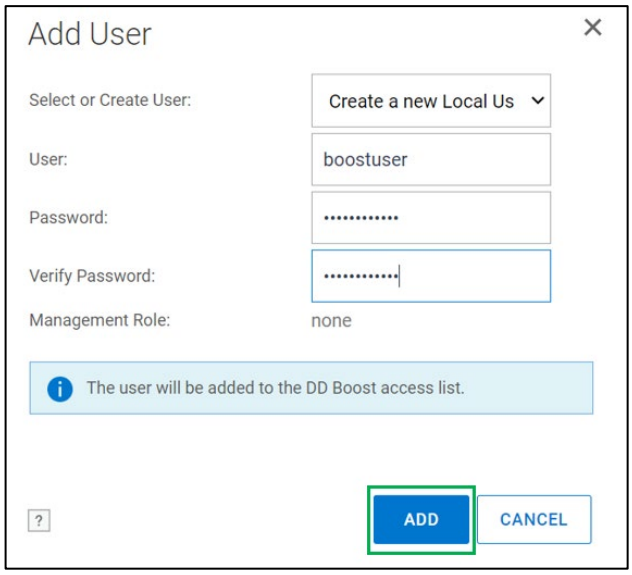
2. Go to **Protocols** > **DD Boost** and create a BoostFS user under **Users with DD Boost Access** by selecting the add icon.

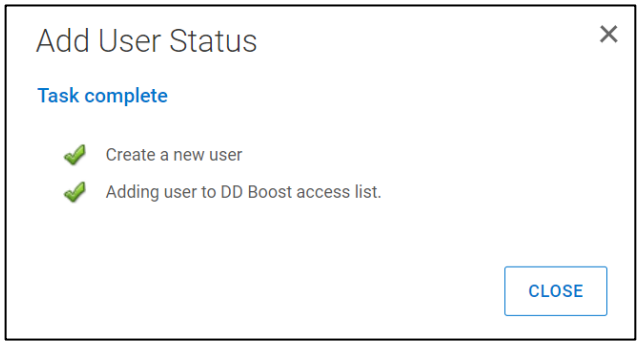


3. Select **Create a new Local User**.

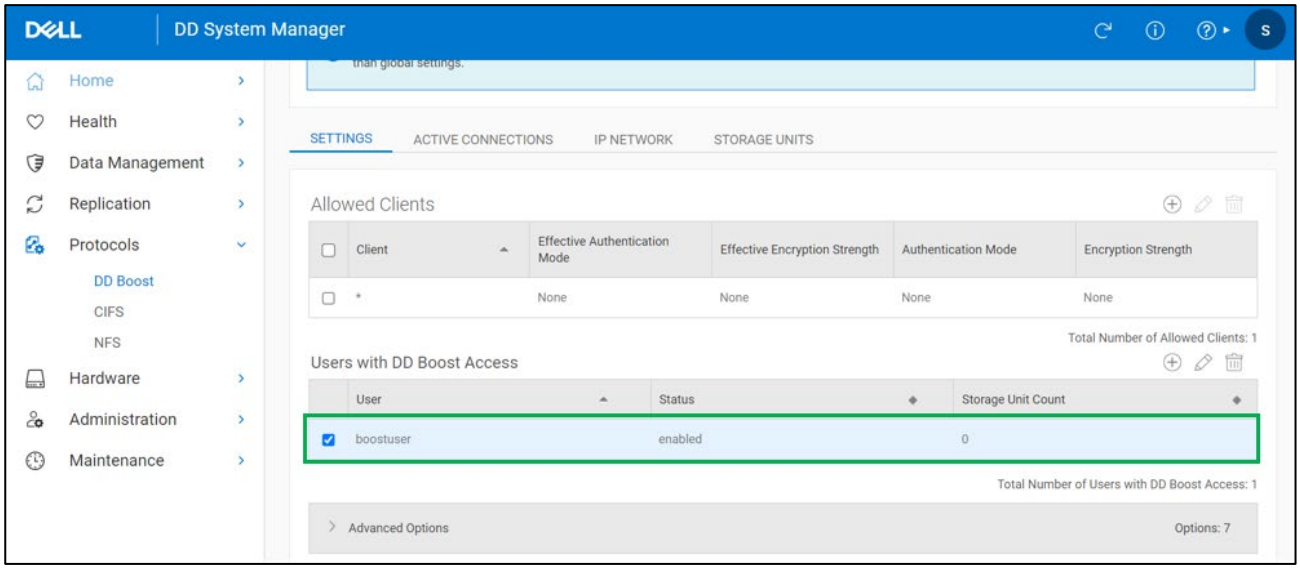


4. Enter the required details and click **ADD**.





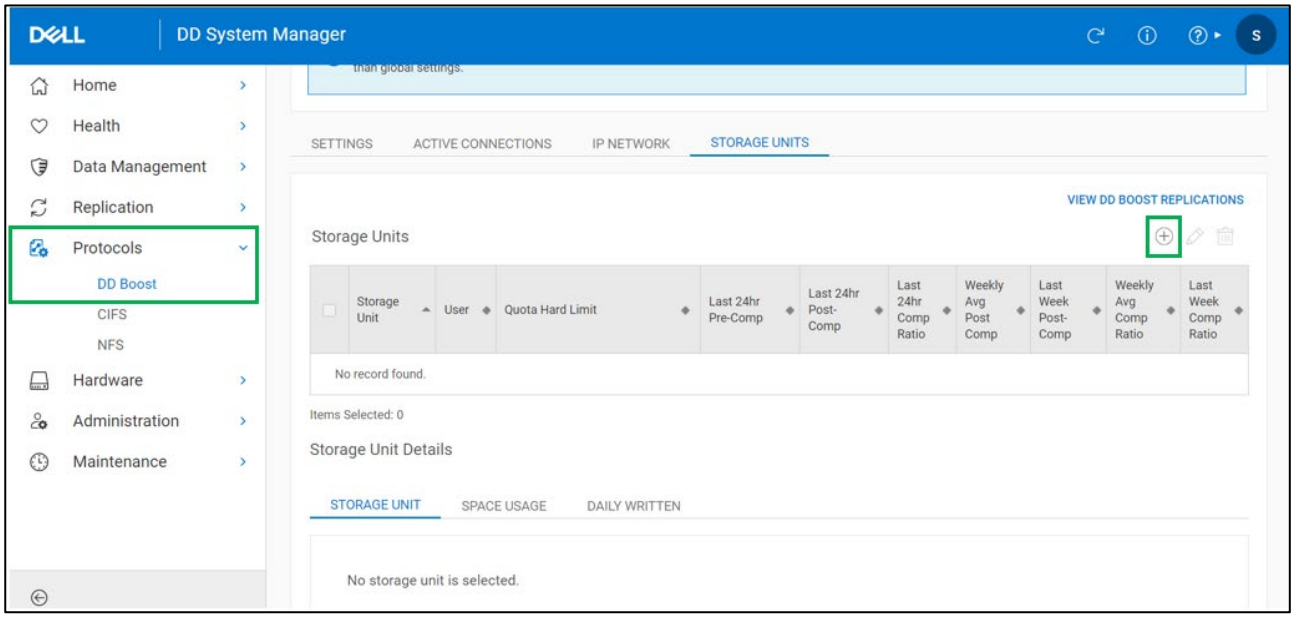
The new BoostFS user, boostuser, has been created:



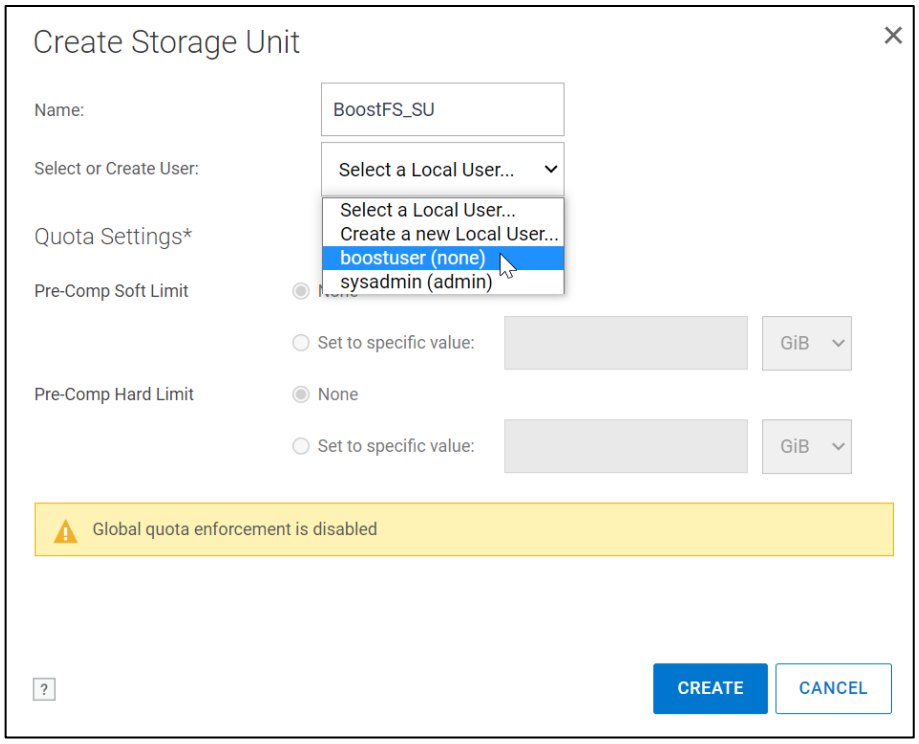
Creating a storage unit

Create a storage unit on the PowerProtect DD system as follows:

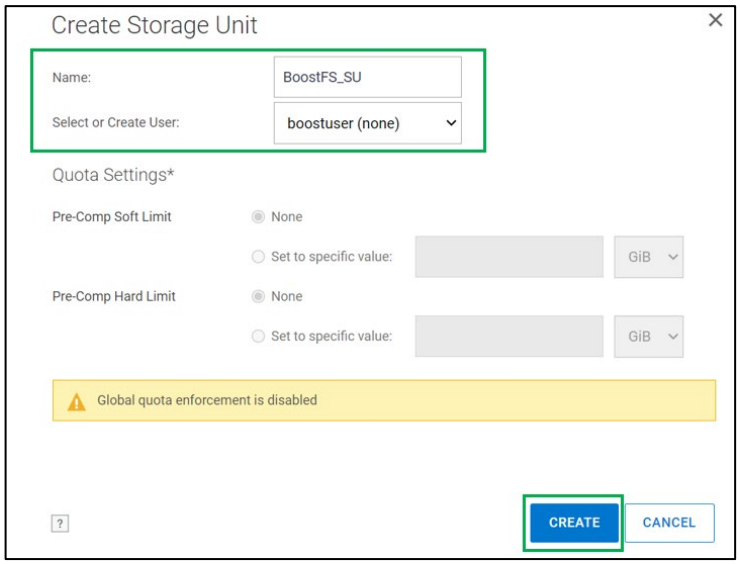
1. Go to **Protocols** > **DD Boost**, select the **STORAGE UNITS** tab, and then select the add icon to create a storage unit.



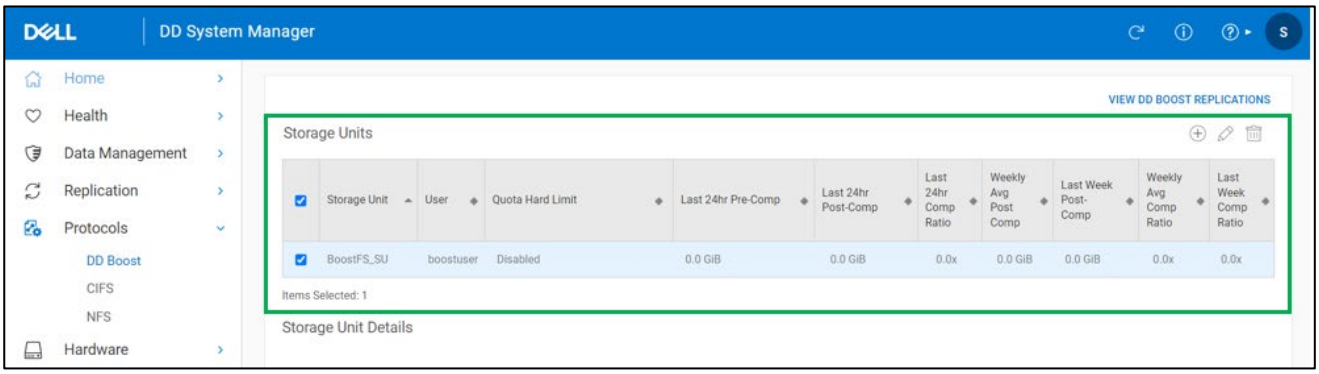
2. Enter a name for the storage unit and select **boostuser**, which is the BoostFS user that you previously created.



3. Click **CREATE** to create the BoostFS storage unit for the BoostFS user boostuser.



The BoostFS storage unit BoostFS_SU has been created successfully for the BoostFS user boostuser:



Installing and configuring BoostFS agent on Windows application host

Prerequisites

You can install or upgrade BoostFS for Windows by using the MSI installer.

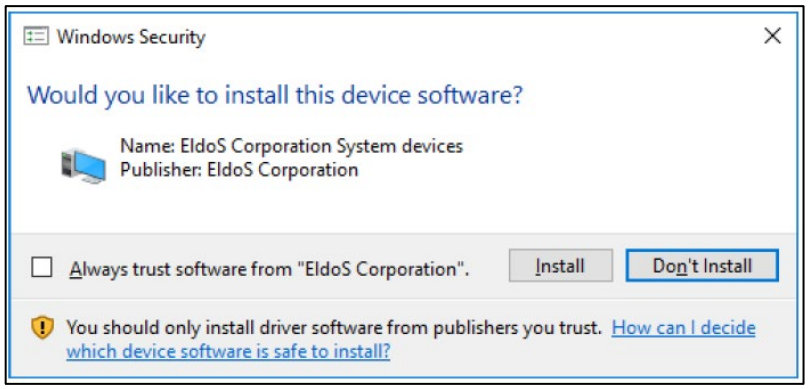
When installing or upgrading BoostFS for Windows:

- Use an account with administrator rights to run the installer.
- Ensure that there is enough free space to complete the installation, which requires approximately 7 MB of disk space.
- Deactivate all BoostFS mount points. If any mount points are active, the upgrade and removal processes will fail.

CBFS driver

The MSI installer includes several binary files as well as a device driver from EldoS Corporation. BoostFS for Windows uses CBFS, a software interface from EldoS that

enables file systems to exist in user space and not only within a driver in kernel space. This functionality is similar to that of FUSE on UNIX operating systems. To install BoostFS for Windows, the CBFS driver from EldoS Corporation must be installed.



BoostFS for Windows components

Installation location components

The BoostFS for Windows installation includes the following files at the installed location:

- `boostfs.exe`—An executable that supports various commands including establishing a BoostFS mount
- Shared libraries that enable `boostfs.exe`
- RSA Lockbox libraries
- Universal C Runtime Library (UCRT)

  If the UCRT is already installed on the system, `boostfs.exe` uses the system version of the UCRT.
- HTML files that provide basic guidance about the use and configuration of `boostfs.exe`
- If not already installed, the 2012 and 2015 Visual C++ redistributables are installed

Start Menu entries

Three links are added to the Start Menu under **Programs** > **BoostFS**. These links open:

- A command prompt at the installed location of BoostFS
- The BoostFS help file
- The BoostFS configuration help file

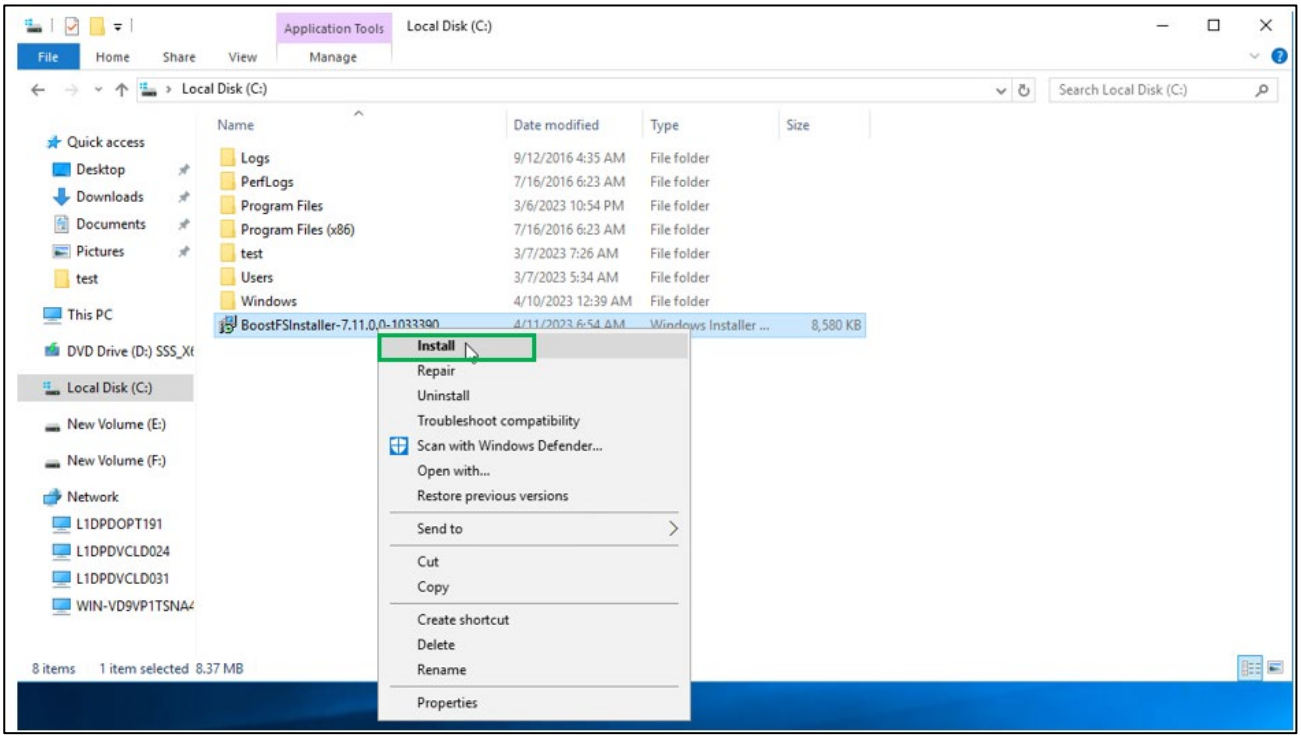
Files in C:\BoostFS

A directory is created at `C:\BoostFS`. This directory is the default location for BoostFS logs and lockbox containers, and it is the sole location of the configuration file `C:\BoostFS\boostfs.conf`. The lockbox and logs directories may be configured to be placed elsewhere after installation, but the configuration file must exist in this location.

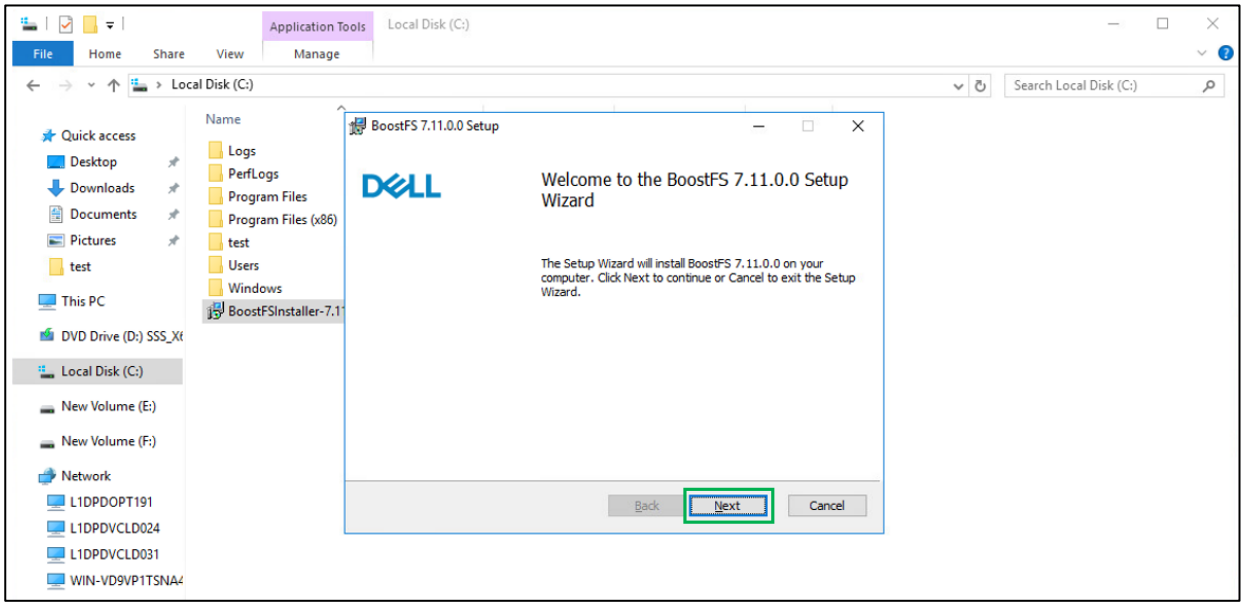
Installing BoostFS agent

Install BoostFS agent as follows:

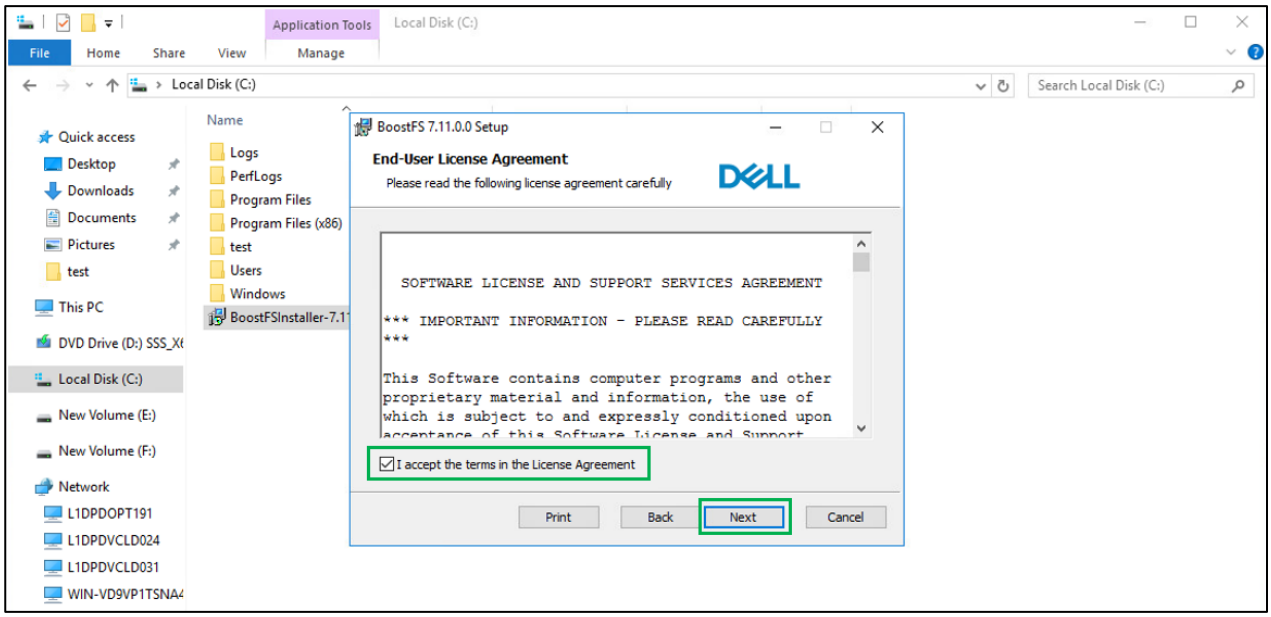
1. Log in to Windows host and download the BoostFS agent package for Windows from Dell Support: https://www.dell.com/support/home/en-us/product-support/product/data-domain-boost-file-system/drivers.
2. Right-click the installer file and select **Install** to proceed with the BoostFS agent installation on the Windows host.



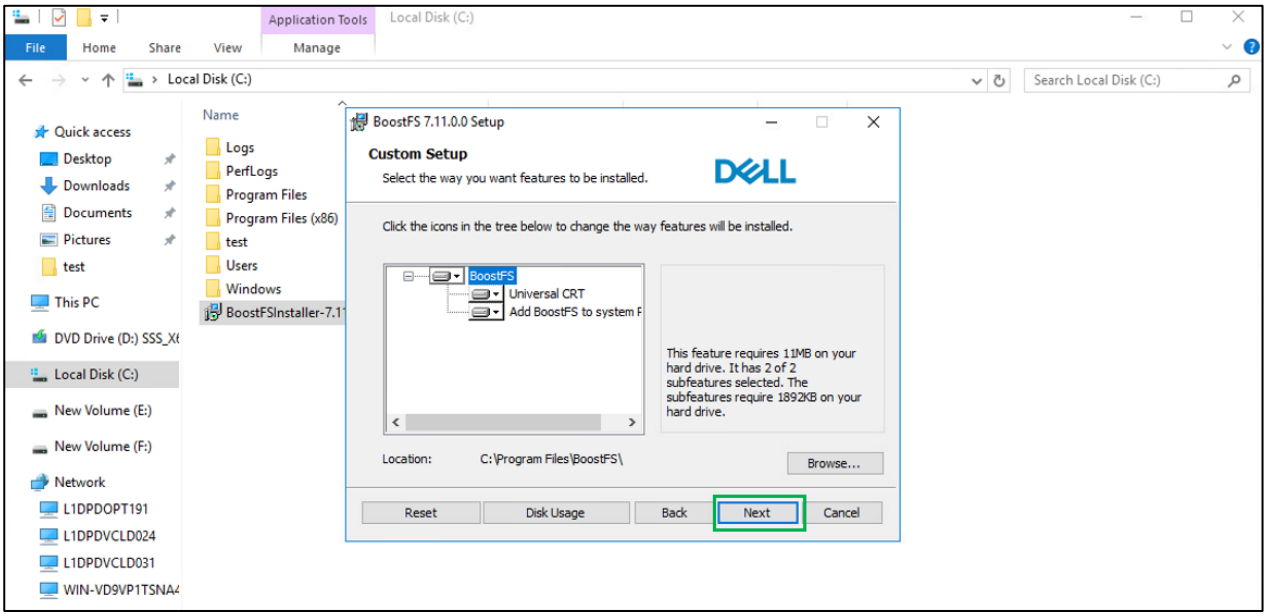
3. Click **Next** to proceed with installation.



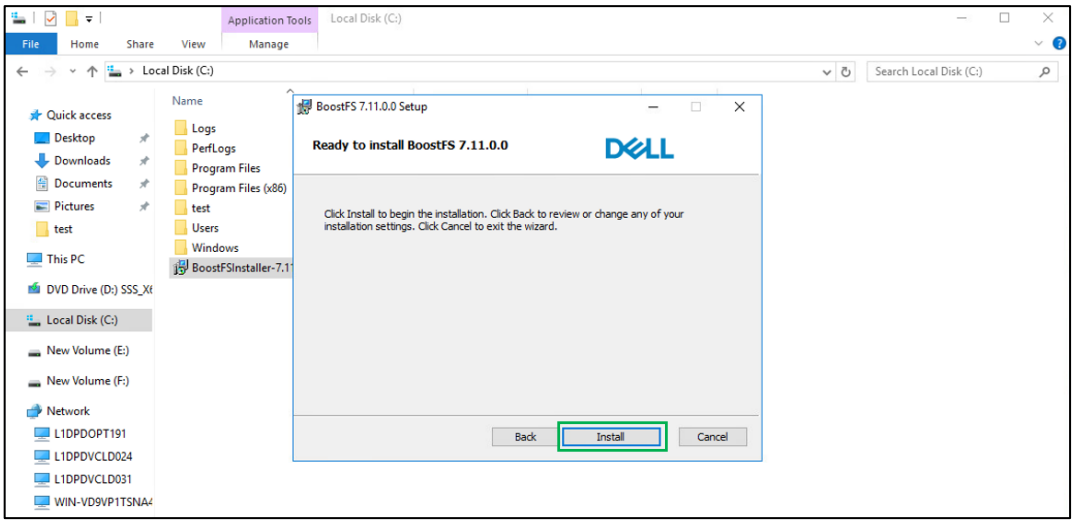
4. Accept the **End-User License Agreement** and click **Next**.



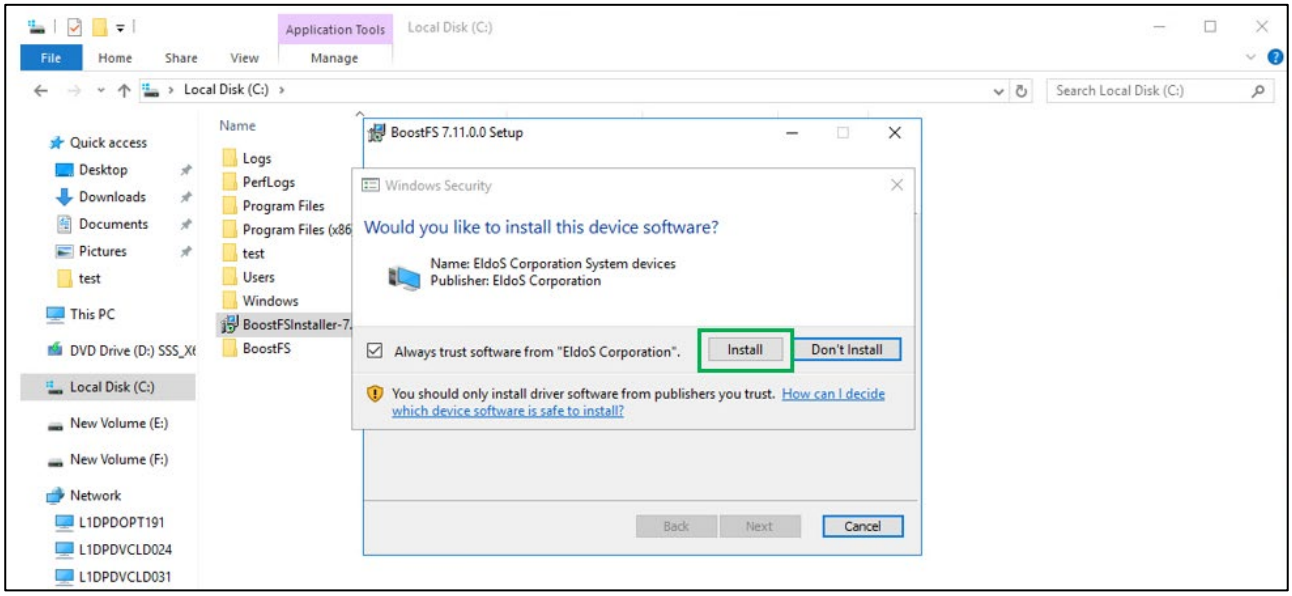
5. At the **Custom Setup** dialog box, click **Next**.



6. Click **Install** to proceed with BoostFS installation.

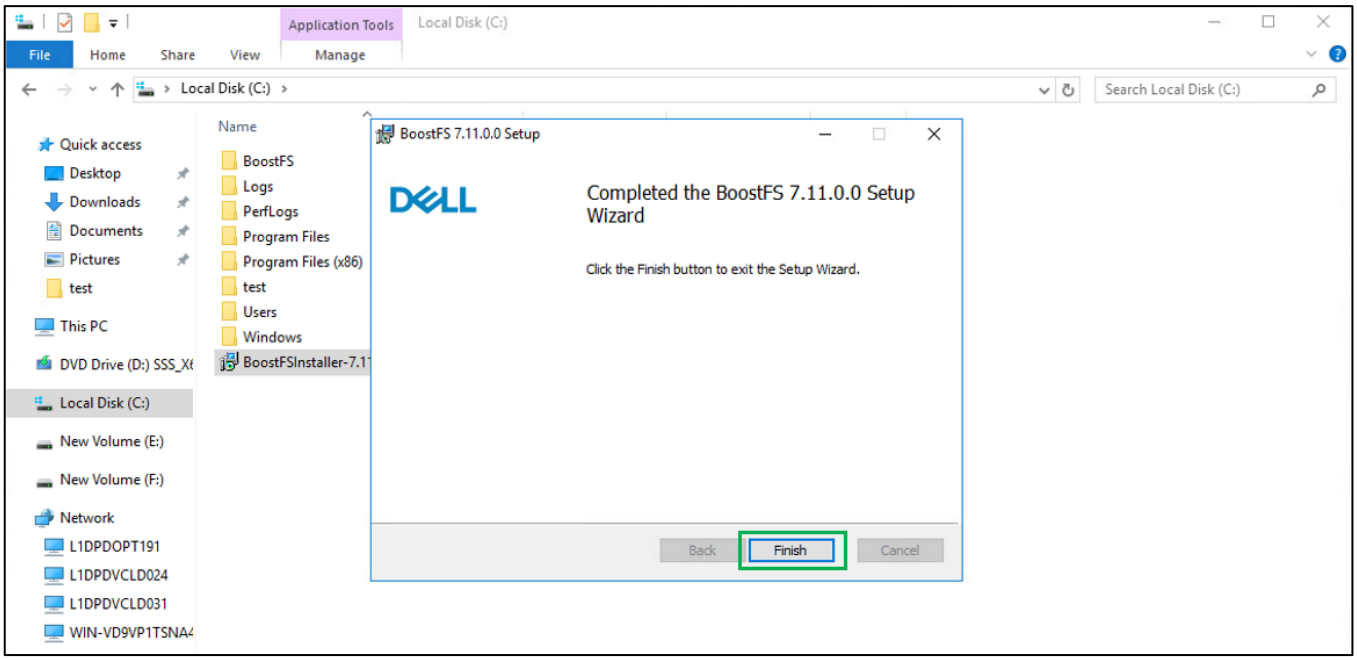


7. Click **Install** to install the device driver.



BoostFS agent installation on the Windows host has been completed successfully.

8. Click **Finish** to exit the installation.



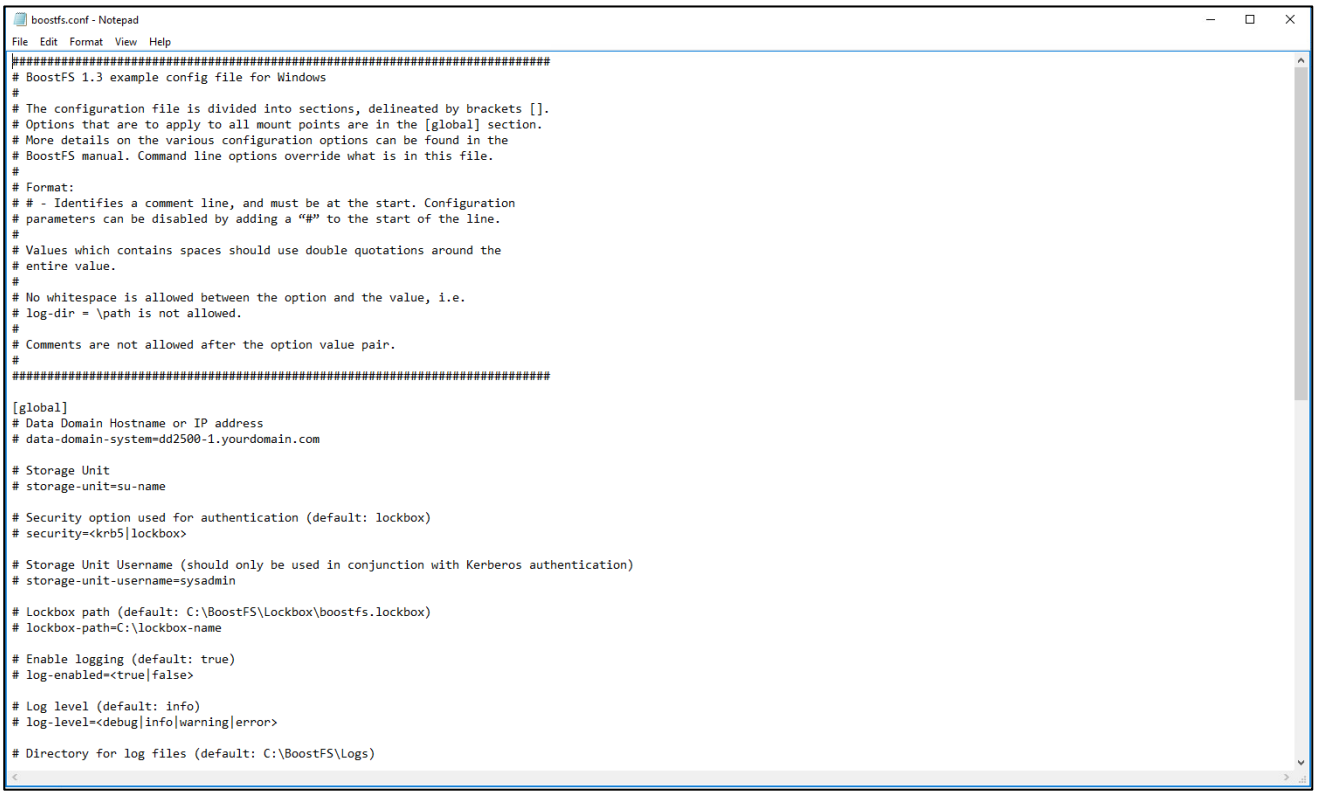
Configuring BoostFS for Windows

BoostFS configuration parameters can be specified by using the CLI, the configuration file, or both.

BoostFS for Windows configuration file

The BoostFS configuration file is at `C:\BoostFS\boostfs.conf`. The configuration file has sections for global and mount-point–specific parameters. Mount-point–specific parameter values override global parameter values. If the global section does not define `data-domain-system` and `storage-unit` parameters, those parameters must be passed to the mount command through the CLI.

Note: Parameters that are configured through the CLI override conflicting values in the configuration file.



BoostFS for Windows command overview

The Windows command prompt or PowerShell can be used to issue BoostFS commands.

The BoostFS installation includes a shortcut on the Start menu to open the command prompt in the directory containing the executable. During the installation process, the installer can automatically add the location of the executable to the PATH environment variable so that there is no need to specify the path when issuing BoostFS commands. If this option is not chosen during installation, the location can be manually added later.

BoostFS authentication methods

BoostFS has two authentication options:

- RSA Lockbox
- Kerberos

RSA Lockbox-based authentication

RSA Lockbox is the default password manager for BoostFS for Windows. To use RSA Lockbox, the lockbox must be configured by using the `boostfs lockbox set` command.

Sharing a BoostFS lockbox file on multiple clients

Sharing a common lockbox file enables you to create a single management point for BoostFS clients to access BoostFS mount points on PowerProtect or Data Domain systems.

A common lockbox file can be created for all BoostFS clients from a primary client. By using this feature, you can avoid creating a separate lockbox file for each unique BoostFS client.

The primary client is the client from which the shared lockbox is initially created. Because some operations can be performed only from the primary client, record which client is the primary.

The easiest way to share a lockbox file is to store it in a network share that is accessible by all clients that use it.

Kerberos-based authentication

BoostFS for Windows supports the MIT implementation of Kerberos authentication as an alternative to RSA Lockbox authentication.

The primary entities involved with Kerberos authentication are:

- BoostFS client
- An Active Directory server acting as the Kerberos Key Distribution Center (KDC)
- PowerProtect DD systems running DDOS version 6.0 or later

The Kerberos file contains a "shared secret" (a password, passphrase, or other unique identifier) between the KDC server and the PowerProtect DD appliance.

In an Active Directory environment, the Windows server that hosts the Active Directory service also acts as the KDC and Domain Name Server (DNS).

Kerberos tickets

To authenticate using Kerberos, a Ticket Granting Ticket (TGT) must be acquired for two types of user accounts:

- A Kerberos TGT
- A Kerberos ticket for various services (service tickets) that the client will use (BoostFS, DNS, CIFS, NFS)

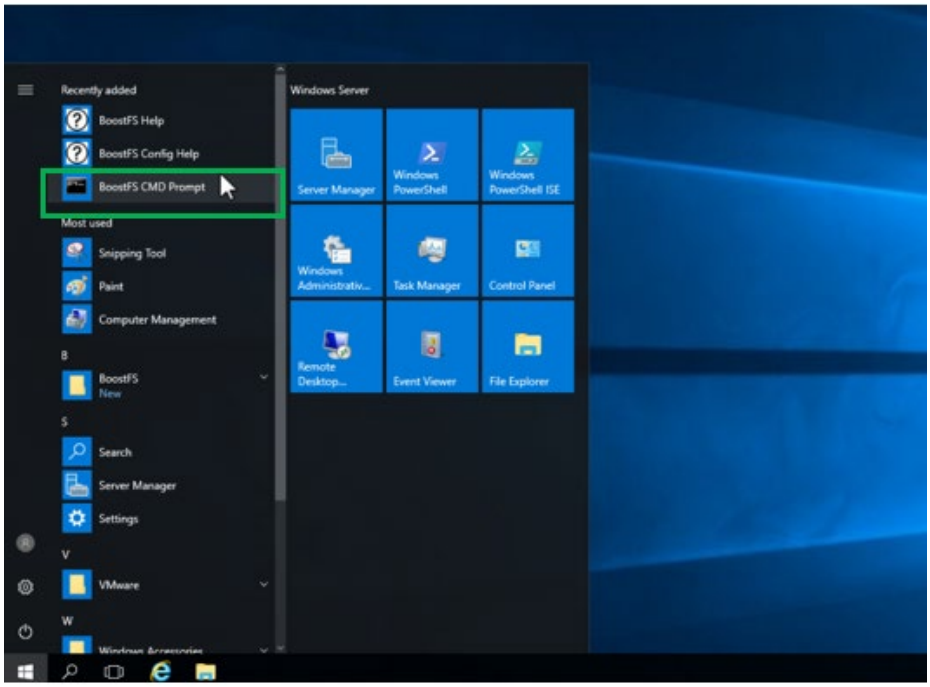
Each user has access to only the tickets they create with the BoostFS Kerberos commands. Users cannot access tickets that others have created.

For more detailed information about using RSA Lockbox-based and Kerberos-based authentication with BoostFS for Windows, see the *DD BoostFS for Windows Configuration Guide*.

Creating lockbox entry using command line

To create a lockbox entry by using the command line:

1. Open the BoostFS command prompt.



2. Enter `boostfs lockbox -h` for lockbox configuration options.

```
Administrator: BoostFS CMD Prompt
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Program Files\BoostFS>boostfs lockbox -h

Usage:
        boostfs lockbox set
                -u <storage-unit-username>
                -d <data-domain-system>
                -s <storage-unit>
                [-l <lockbox-path>]

        boostfs lockbox {remove | query}
                -d <data-domain-system>
                -s <storage-unit>
                [-l <lockbox-path>]

        boostfs lockbox {add-hosts | delete-hosts}
                [-l <lockbox-path>]
                <hostname[[,hostname]...]>

        boostfs lockbox show-hosts
                [-l <lockbox-path>]
```

3. Enter the parameters in the following format to set the lockbox entry:

   `boostfs lockbox set -u <storage-unit-username> -d <data-domain system> -s <storage-unit>`

```
C:\Program Files\BoostFS>boostfs lockbox set -u boostuser -d l1dpdvcld083.hop.lab.emc.com -s BoostFS_SU
Enter storage unit user password:
Enter storage unit user password again to confirm:
Lockbox entry set

C:\Program Files\BoostFS>
```

Mounting and unmounting the BoostFS file system (Windows host)

Mounting options

Mount the BoostFS file system by running the `boostfs mount` command in either of the following ways:

- Using a UNC mount path

  ```
  boostfs mount [-l <lockbox-path>] [[-o <param>=<value>] ...]
  <UNC-mount-path> [<drive-letter>]
  ```

- Using the PowerProtect DD system and storage unit names

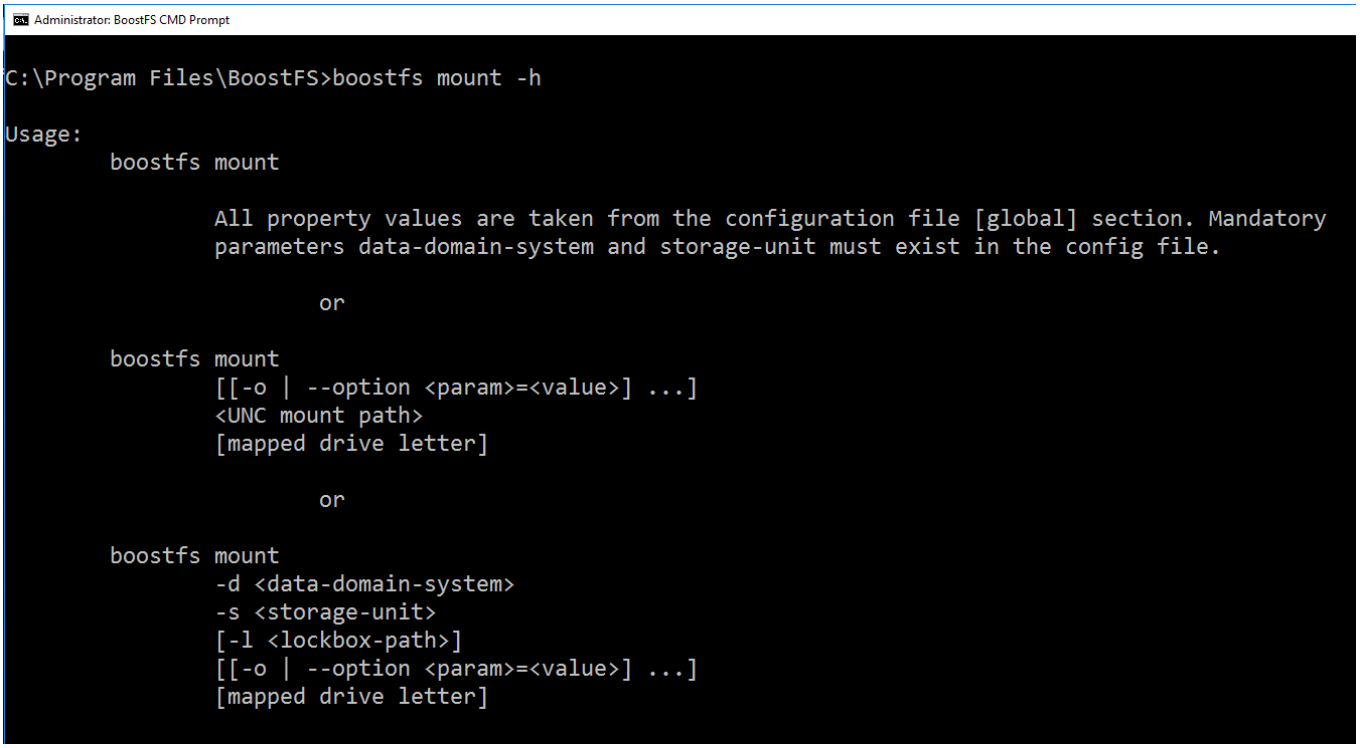
  ```
  boostfs mount -d <data-domain-system> -s <storage-unit> -o
  security=kerb5 -u <storage-unit-username> <mount-point>
  ```

  Where `-d` specifies the PowerProtect DD system and `-s` specifies the storage unit.

Mounting the BoostFS file system

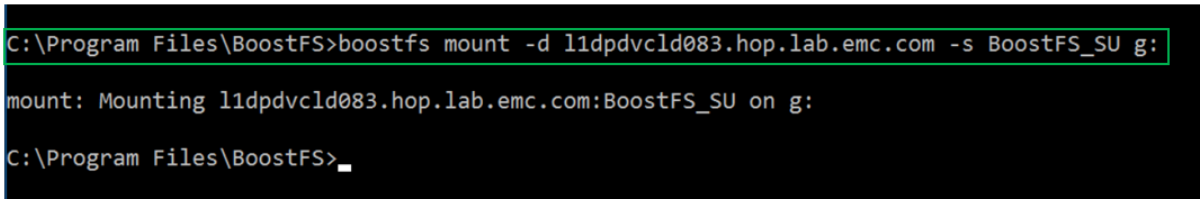
Mount the BoostFS file system as follows:

1. From the Windows host CLI, go to the path where BoostFS is installed and enter `boostfs mount -h` for mount options.

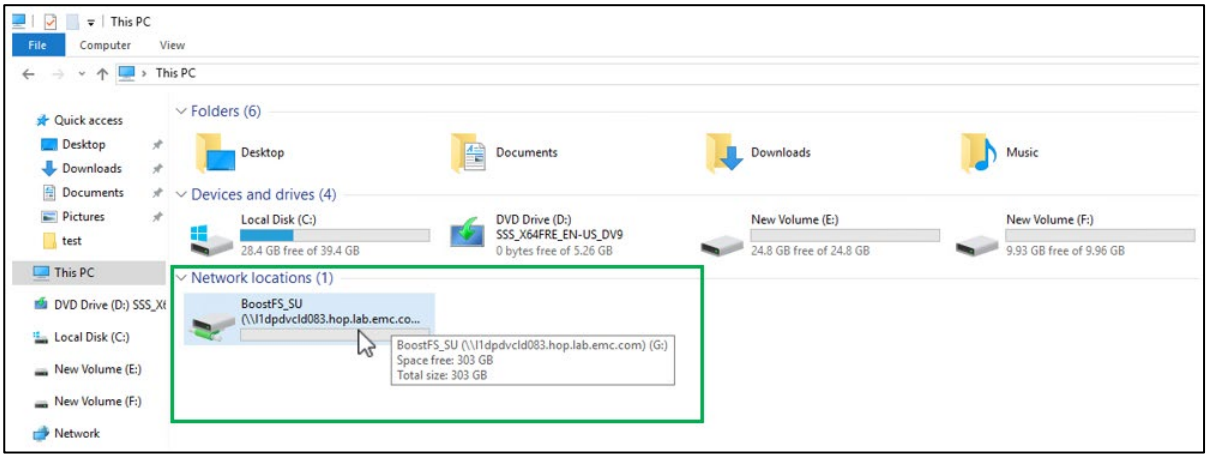


2. Enter the parameters in the following format to mount the BoostFS file system:

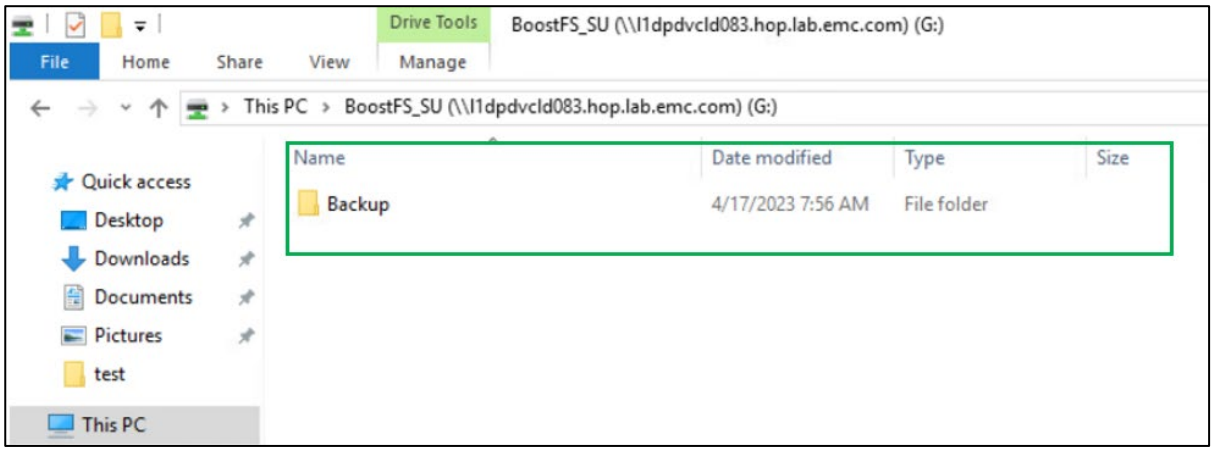
   ```
   boostfs mount -d <data-domain-system> -s <storage-unit>
   <drive-letter>
   ```



The BoostFS storage unit has been mounted as a file system on the Windows host for performing backup and restore operations:



For example, sample folder **Backup** is created on the DD storage unit mounted on the Windows host.



Unmounting the BoostFS file system

You can unmount the BoostFS file system by running the `boostfs umount/unmount` command in one of the following formats:

- `boostfs umount/unmount <UNC-mount-path>`
- `boostfs umount/unmount <drive-letter>`

```
C:\Program Files\BoostFS>boostfs unmount g:

umount: unmounting //l1dpdvcld083.hop.lab.emc.com/BoostFS_SU

C:\Program Files\BoostFS>
```

Installing and configuring BoostFS agent on Linux application host

BoostFS agent for Linux—introduction and prerequisites

BoostFS agent for Linux is available as a single RPM installation package that both enterprise and small-scale users can download. It is available in both RPM and .deb formats. The RPM package includes the `boostfs` executable.

Before beginning the process, ensure that:

- The FUSE version on the client is 2.8 or later.

While the BoostFS process is running:

- BoostFS mount points must be deactivated.
- BoostFS cannot be upgraded.
- BoostFS cannot be uninstalled.

BoostFS for Linux components

The BoostFS for Linux client is composed of the following:

- A daemon process that supports various commands
- Two shared libraries: `libDDBoost.so` and `libDDBoostFS.so`
- `rsalib`: A hidden directory that contains redistributable RSA libraries
- A configuration file
- A manual page

`libDDBoost.so`, a FUSE-agnostic library built on the DD Boost library, provides such services as connection management, a retry mechanism, and client logging. The packaging defaults to the Red Hat Package Manager (RPM) format, but the native packaging for other operating systems is also supported.

Note: Verify that the appropriate package is used for the client operating system.

Role of FUSE in BoostFS for Linux

BoostFS for Linux uses FUSE, an open-source software interface that enables nonprivileged users to securely create and mount their own file-system implementations.

FUSE allows the export of a virtual file system to the Linux kernel. Write operations through BoostFS and FUSE benefit from PowerProtect DD distributed segment processing.

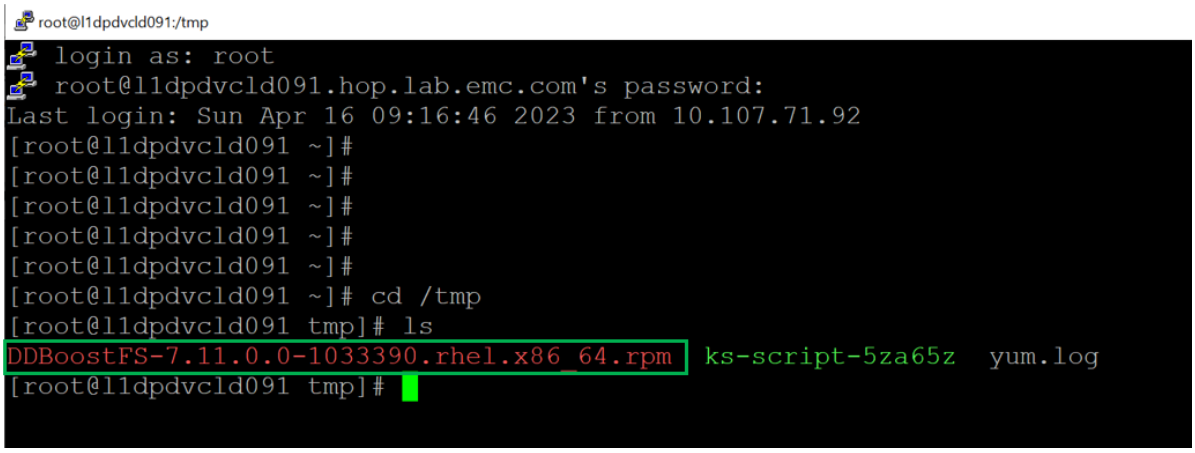
Using FUSE and the DD Boost plug-in, BoostFS exports a storage unit on a PowerProtect DD system to a mount point on a client. On the client, file system operations conducted on the mount point are captured by the kernel before being passed through FUSE to BoostFS.

BoostFS runs as a daemon on a client. As a software module, BoostFS serves as a layer between FUSE and DD Boost.

Installing the BoostFS agent

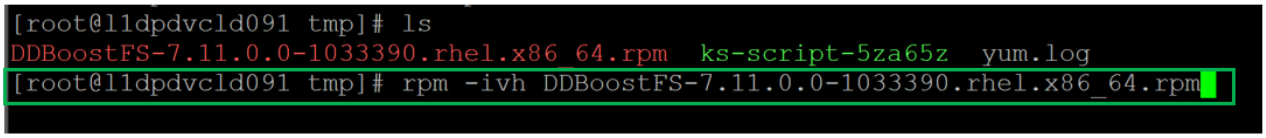
Install the BoostFS agent for Linux as follows:

1. Download and place the BoostFS agent for Linux host to the `/tmp` directory.

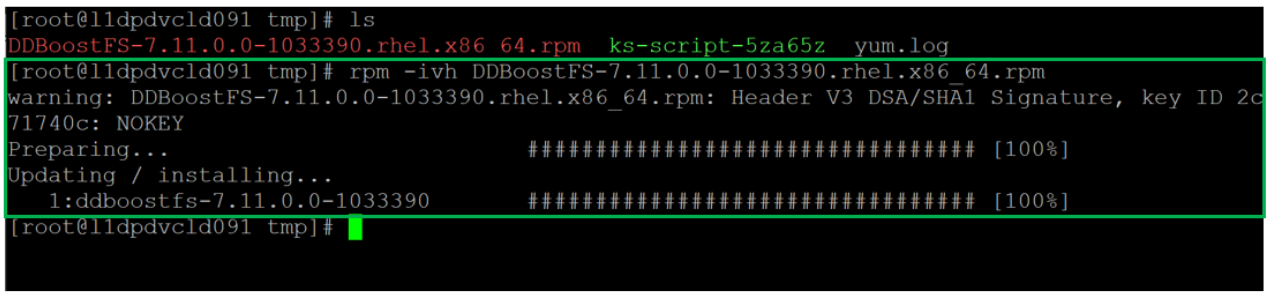


2. Install the BoostFS agent package by running the following command:

   `rpm -ivh DDBoostFS-7.11.0.0-1033390.rhel.x86_64.rpm`



BoostFS agent has been installed successfully on the Linux host:



Configuring BoostFS for Linux

You can configure BoostFS by using either of the following options:

- CLI
- Configuration file: `boostfs.conf`

BoostFS for Linux command overview

The `boostfs` command is used to establish the FUSE mount, create the lockbox (optional), and set up Kerberos credentials if Kerberos is chosen as the authentication method.

BoostFS for Linux configuration file

The configuration file is in `/opt/emc/boostfs/etc` and can be edited by the root user or a user with sudo privileges. Parameters can be specified either in the configuration file or on the command line, or both.

The configuration file has a global section and a mount-point-specific section. Configuration parameters that are configured through the command line take the highest priority and override any values in the configuration file. Mount-specific parameter values override global parameter values.

BoostFS authentication methods

BoostFS has two authentication options:

- RSA Lockbox (default)
- Kerberos

RSA Lockbox-based authentication

RSA Lockbox is the default password manager for BoostFS for Linux. To use RSA Lockbox, you must run the `boostfs lockbox set` command to configure the lockbox. Starting with BoostFS 1.1, a shared BoostFS lockbox file can also be configured.

Shared lockbox files

Beginning with BoostFS 1.1, a common lockbox file can be created for all BoostFS clients. By using this feature, you can avoid creating a separate lockbox file for each unique BoostFS client.

Sharing a common lockbox file enables you to create a single management point for BoostFS clients to access BoostFS mount points on PowerProtect DD systems.

Kerberos-based authentication

BoostFS Linux supports the MIT implementation of Kerberos authentication as an alternative to RSA Lockbox authentication.

The primary entities involved with Kerberos authentication are:

- BoostFS client
- Kerberos Key Distribution Center (KDC), which can be on either one of the following:
  - An Active Directory server on a domain controller in a Windows environment
  - A POSIX-based operating system with optional NIS lookups

- PowerProtect DD system running DD OS version 6.0 or later

The Kerberos file contains a "shared secret" (a password, passphrase, or other unique identifier) between the KDC server and the PowerProtect DD appliance.

In an Active Directory environment, the Windows server that hosts the Active Directory service also acts as the KDC and a Domain Name Server (DNS). When you use a UNIX KDC, the DNS server does not have to be the KDC server; it can be a separate server.

Note: Before using Kerberos for BoostFS, verify that the Kerberos client libraries for Linux distribution are installed on the machine.

Kerberos tickets

To authenticate using Kerberos, Ticket Granting Ticket (TGT) must be acquired for two types of user accounts:

- A Kerberos TGT
- A Kerberos ticket for various services (service tickets) that the client will use (BoostFS, DNS, CIFS, NFS)

Each user has access to only the tickets that they create with the BoostFS Kerberos commands. Users cannot access tickets that others have created.

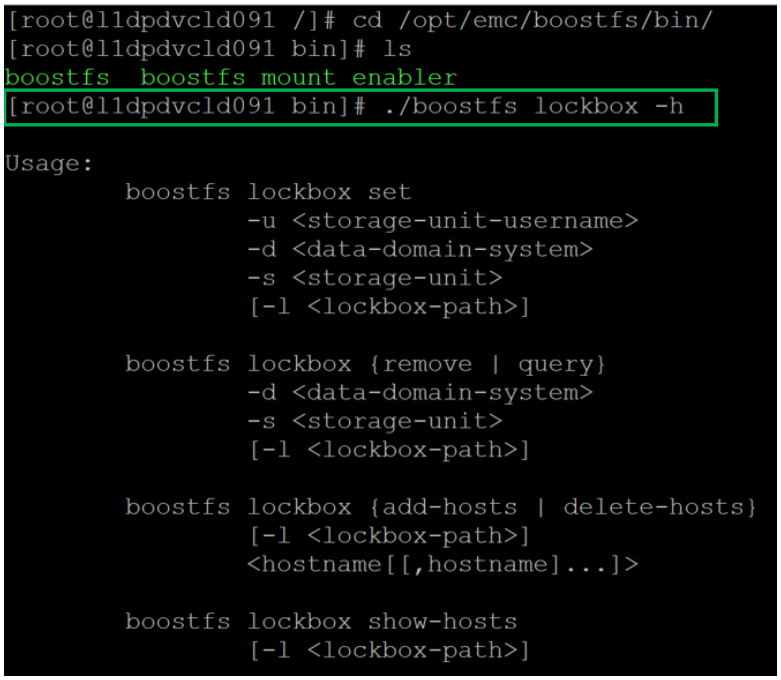
For more detailed information about using RSA Lockbox-based and Kerberos-based authentication with BoostFS for Linux, see the *DD BoostFS for Linux Configuration Guide*.

Creating lockbox entry using the command line

To create a lockbox entry by using the command line:

1. From the `/opt/emc/ddboost/bin` directory, enter the following command:

   `./boostfs lockbox -h`



2. Enter parameters in the following format to set the lockbox entry:

   ```
   ./boostfs lockbox set -u <storage-unit-username> -d <data-domain-system> -s <storage-unit>
   ```

```
[root@l1dpdvcld091 bin]# ./boostfs lockbox set -u boostuser -d l1dpdvcld083.hop.lab.emc.com
-s BoostFS_SU
Enter storage unit user password:
Enter storage unit user password again to confirm:
Lockbox entry set
```

The lockbox entry has been set successfully.

Mounting and unmounting the BoostFS file system (Linux host)

Prerequisites

The `boostfs mount` command establishes the BoostFS FUSE mount:

```
boostfs mount [-d|--data-domain-system] <data-domain-system> [-s|--storage-unit] <storage-unit> [[-o|--option <param>=<value>] ...] <mount-point>
```

Before mounting the BoostFS Storage Unit, a mount point must be created.

From the command line, create a directory by running the `mkdir /mnt/boostfs_SU` command, and validate the mount point by running the `ls-lrt /mnt` command.

```
[root@l1dpdvcld091 ~]# mkdir /mnt/boostfs_SU
[root@l1dpdvcld091 ~]# ls -lrt /mnt
total 0
drwxr-xr-x. 2 root root 6 Apr 17 12:58 boostfs_SU
[root@l1dpdvcld091 ~]#
```

Mounting the BoostFS file system

Mount the BoostFS file system as follows:

1. From the command line, go to the path where BoostFS is installed and enter `./boostfs mount -h` for mount options.

```
[root@l1dpdvcld091 bin]# ./boostfs mount -h

Usage:
        boostfs mount <mount-point>

        Property values from the configuration file apply. Mandatory options
        data-domain-system and storage-unit must be present

                        or

        boostfs mount
                -d <data-domain-system>
                -s <storage-unit>
                [-l <lockbox-path>]
                [[-o | --option <param>=<value>] ...]
                <mount-point>

[root@l1dpdvcld091 bin]#
```

2. Enter the parameters in the following format to mount the BoostFS file system:

   ```
   ./boostfs mount -d <data-domain-system> -s <storage-unit>
   <mount-point>
   ```

```
[root@l1dpdvcld091 bin]# ./boostfs mount -d l1dpdvcld083.hop.lab.emc.com -s BoostFS_SU /mnt/boostfs_SU

mount: Mounting l1dpdvcld083.hop.lab.emc.com:BoostFS_SU on /mnt/boostfs_SU
[root@l1dpdvcld091 bin]#
```

The BoostFS storage unit has been mounted as a file system on the Linux host for performing backup and restore operations:

```
[root@l1dpdvcld091 bin]# cd /mnt/boostfs_SU
[root@l1dpdvcld091 boostfs_SU]# ls
Backup
[root@l1dpdvcld091 boostfs_SU]#
[root@l1dpdvcld091 boostfs_SU]#
[root@l1dpdvcld091 boostfs_SU]#
[root@l1dpdvcld091 boostfs_SU]#
[root@l1dpdvcld091 boostfs_SU]#
[root@l1dpdvcld091 boostfs_SU]# df -h
Filesystem              Size  Used Avail Use% Mounted on
devtmpfs                1.9G     0  1.9G   0% /dev
tmpfs                   1.9G     0  1.9G   0% /dev/shm
tmpfs                   1.9G  8.5M  1.9G   1% /run
tmpfs                   1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/mapper/rhel-root    46G  2.2G   44G   5% /
/dev/sda1               497M  154M  343M  31% /boot
tmpfs                   380M     0  380M   0% /run/user/0
boostfs                 304G  288M  304G   1% /mnt/boostfs_SU
[root@l1dpdvcld091 boostfs_SU]#
```

Unmounting the BoostFS file system

Run the following command to unmount the BoostFS file system:

```
./boostfs unmount <mount-point>
```

```
[root@l1dpdvcld091 bin]# ./boostfs unmount /mnt/boostfs_SU
[root@l1dpdvcld091 bin]#
```

Conclusion

The BoostFS plug-In leverages the DD Boost protocol and provides improved backup times compared to various copy-based solutions. BoostFS, the DD Boost file system interface for backup and recovery:

- Expands the benefits of DD Boost to even more applications
- Can be deployed in minutes to reduce backup window and storage capacity
- Provides key advanced DD Boost features in a file system format

References

Dell Technologies support and documentation

Dell.com/support is focused on meeting customer needs with proven services and support.

The following documents provide additional information related to this white paper. Access to documents depends on your login credentials. If you do not have access to a document, contact your Dell Technologies representative.

- Dell DD BoostFS for Windows Configuration Guide
- Dell DD BoostFS for Linux Configuration Guide
- Dell DDOS Administration Guide

The Dell PowerProtect DD Series Appliances web page provides more information about PowerProtect DD series appliances.

The Data Protection Info Hub provides expertise to ensure customer success with Dell Technologies data protection products.