

Dell EMC BoostFS for Windows

Version 1.2

Configuration Guide

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REV. 01

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CHAPTER 1

Introduction to BoostFS for Windows

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Revision history

The following table presents the revision history of this document.

Table 1 Revision history of BoostFS for Windows Configuration Guide, version 1.2

Revision	Date	Description
01 (1.2)	July 2018	Initial version introducing BoostFS for Windows.

Introduction to BoostFS

Data Domain Boost Filesystem (BoostFS) 1.2 provides a general file-system interface to the DD Boost library, allowing standard backup applications to take advantage of DD Boost features.

Advantages of BoostFS

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

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

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

Purpose

This document describes how to install and configure BoostFS on client systems.

Supported environments

Environments that use BoostFS 1.2 must meet the following specifications.

BoostFS for Windows requires the following:

- Data Domain Operating System version 6.1.2 or later
- Windows Server 2012, Windows Server 2012 R2, or Windows Server 2016

Supported applications

BoostFS for Windows supports the following applications:

- Commvault Simpana versions 10 and 11
- Microsoft SQL Server 2012 and 2016
- MySQL Community 5.6. and 5.7
- MySQL Enterprise Manager 5.6 and 5.7
- MongoDB Community 2.6, 3.0, and 3.2

Information about integrating BoostFS with other applications can be found in the following white paper on the Data Domain Community site: [Boost Everywhere - Data](#)

[Domain BoostFS Integration Guide: Application Validation and Best Practices for the DD Boost File System Plug-In.](#)

Boost features supported by BoostFS

Transport Layer Security (TLS) anonymous authentication is supported to provide encryption.

Note

If you select TLS, be aware that there is no configuration option to enable TLS from the client. It must be enabled through the Data Domain System.

Boost features not supported by BoostFS

- Managed File Replication (MFR)
- DD Boost-over-Fibre Channel (DFC)
- Retention Lock

Compatibility

BoostFS for Windows does not support accessing files and directories that are created by other means, such as BoostFS for Linux, other Boost-enabled applications, NFS, or CIFS.

If you use ACL functionality with BoostFS for Windows, changing file permissions by a protocol other than BoostFS for Windows causes the ACLs to be lost.

Unsupported file system features

BoostFS for Windows does not support the following NTFS features through the file system interface:

- Alternate data streams
- File links
- Quotas

CHAPTER 2

Preparing the Data Domain system for BoostFS

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Prepare the Data Domain system for BoostFS

Every Data Domain system that is enabled for Data Domain Boost deduplication must have a unique name. You can use the DNS name of the Data Domain system, which is always unique.

Procedure

1. On the Data Domain system, log in as an administrative user.
2. Verify that the file system is enabled and running by entering:

```
$ fileysys status
The file system is enabled and running.
```

3. Verify DD Boost is already enabled:

```
$ ddbboost status
DD Boost status: enabled
```

If the DD Boost status is reported as disabled, enable it by entering:

```
$ ddbboost enable
DD Boost enabled
```

4. Verify distributed segment processing is enabled:

```
ddbboost option show
```

You should see the following output:

Option	Value
distributed-segment-processing	enabled
virtual-synthetics	enabled
fc	disabled
global-authentication-mode	none
global-encryption-mode	medium

If distributed segment processing is shown as disabled, enable it by entering:

```
ddbboost option set distributed-segment-processing enabled
```

Note

- If secure multi-tenancy (SMT) is used, the user role must be set as `none`.
- Users who run backup applications that connect to Data Domain systems must have their user names configured on the Data Domain system. For more information, refer to the *Data Domain Operating System Administration Guide*.
- Multiple applications can use DD Boost to access a Data Domain system, and multiple users can be configured for DD Boost access. The username, password, and role must have already been set up on the Data Domain system using the DD OS `user add` command:

```
user add <user> [password <password>]
[role {admin | limited-admin | security | user | backup-operator |
data-access}]
[min-days-between-change <days>] [max-days-between-change <days>]
[warn-days-before-expire <days>] [disable-days-after-expire <days>]
[disable-date <date>] [force-password-change {yes | no}]
```

For example, to add a user with a login name of `jsmith` and a password of `mP34$muk*E` with administrative privilege, enter:

```
$ user add jsmith password mP34$muk*E role admin
```

Once the user has been created on the Data Domain system, the user must be made a DD Boost user. To add `jsmith` to the DD Boost user list, enter:

```
$ ddboost user assign jsmith
```

Join a Data Domain system to an Active Directory domain

To enable access control list (ACL) support, the Data Domain system must be joined to the Active Directory domain. This procedure is not required if the Data Domain system is already joined to an Active Directory domain.

For more information about ACLs, see [File security](#) on page 31.

Procedure

1. To join a Data Domain system to an Active Directory domain, type the following command:

```
# authentication kerberos set realm <domain> kdc-type windows
```

You are prompted to type credentials for the domain.

2. Type the domain username and password.

Results

If the credentials are valid, the system is joined to the Active Directory domain. The use of this command does not enable CIFS.

Set the host name and domain name on the Data Domain system

Set the host name and the domain name on the Data Domain system using the `net set` CLI command.

Procedure

1. On the Data Domain system, type the following:

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

For more information on `net` commands, see the *Data Domain Operating System Command Reference Guide*.

BoostFS and existing Data Domain commands

You must create one or more storage units on each Data Domain system enabled for BoostFS. Data Domain administrators can use existing DD OS CLI commands to create and manage storage units used by BoostFS.

Assign multiple users to BoostFS

When, as a system administrator, you create the storage units that users employ with the backup applications, you associate a username with each storage unit. This associated username can be changed after creation of the storage unit.

Storage units are accessible only to applications with the username that owns the storage unit.

Each storage unit is owned by one username, and the same username can own multiple storage units. The application passes the username and password to BoostFS, and DD Boost passes them to the Data Domain system when attempting to connect to the Data Domain system. The Data Domain system then authenticates the username and password. The username and password can be shared by different applications.

When a storage unit is created with a valid Data Domain system local user but not assigned to DD Boost, the user is automatically added to the DD Boost users list in the same way that a user is added via the `ddboost user assign` command.

Assign one or more users to the DD Boost users list:

```
$ ddboost user assign user1 user2
User "user1" assigned to DD Boost.
User "user2" assigned to DD Boost.
```

To verify and display the users in the users list, enter:

```
$ ddboost user show
```

DD Boost user	Default tenant-unit	Using Token Access
user1	Unknown	Yes
user2	Unknown	-
user3	Unknown	Yes
user4	Unknown	-
user5	Unknown	-
user6	Unknown	-
user7	Unknown	Yes
user8	Unknown	-

To unassign the user from the users list, enter:

```
$ ddboost user unassign user1
User "user1" unassigned from DD Boost.
```


Create storage units

You need to create one or more storage units on each Data Domain system enabled for BoostFS.

Procedure

1. Create a storage unit on the Data Domain system:

```
$ ddbboost storage-unit create NEW_STU1 user user1
Created storage-unit "NEW_STU1" for "user1".
```

A storage unit name must be unique on any given Data Domain system. However, the same storage unit name can be used on different Data Domain systems.

The username owns the storage unit and ensures that only connections with this username's credentials are able to access this storage unit. See the section on `ddbboost storage-unit` commands in the *Data Domain Operating System Command Reference Guide* for details on command options.

2. Repeat the previous step for each storage-unit needed on the Data Domain system.
3. If you want to modify a storage unit on the Data Domain system, enter:

```
$ ddbboost storage-unit modify NEW_STU1 user user2
Storage-unit "NEW_STU1" modified for user "user2".
```

The `ddbboost storage-unit modify` command allows the backup application to change the username ownership of the storage unit. Changing the username does not require that attributes of every file on the storage unit be changed.

4. Display the users list for the storage units:

```
$ ddbboost storage-unit show
```

After entering the command, the output you see should be similar to the following:

Figure 1 Sample output of `ddboost storage-unit show`

```
# ddboost storage-unit show
```

Name	Pre-Comp (GiB)	Status	User	Report Physical Size (MiB)
backup	3.0	RW	sysadmin	-
DDBOOST_STRESS_SU	60.0	RW	sysadmin	-
task2	0.0	RW	sysadmin	-
tasking1	0.0	RW	sysadmin	-
DD1	0.0	RW	sysadmin	-
D6	5.0	RW	sysadmin	-
TEST_DEST	0.0	D	sysadmin	-
STU-NEW	0.0	D	ddul	-
getevent	0.0	RW	ddul	-
DDP-5-7	120.0	RW	sysadmin	-
TESTME	150.0	RW	sysadmin	-
DDP-5-7-F	100.0	RW	sysadmin	-
testSU	0.0	RW	sysadmin	200

```

D : Deleted
Q : Quota Defined
RO : Read Only
RW : Read Write
RD : Replication Destination

```

Logical stream limits for storage units (optional)

BoostFS is restricted to the same stream limit and storage quota features as DD Boost. See the *DD Boost for Partner Integration Administration Guide* for more information.

Client Groups and BoostFS

The Client Group feature identifies specific client loads when clients are associated with groups.

The `client group` command set is supported only for clients that use DD Boost or NFS protocols. For more information about Client Groups, see the *Data Domain Operating System Command Reference Guide*.

Distributed segment processing option

BoostFS supports distributed segment processing as supported by DD Boost. For more information, refer to the *Data Domain Operating System Administration Guide*.

Note

Enabling or disabling the distributed segment processing option does not require a restart of the Data Domain file system.

CHAPTER 3

Installing BoostFS for Windows

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Installation overview

Install or upgrade BoostFS for Windows by using the provided MSI installer. Do not change the default settings.

Note

If you are prompted to restart after installing, failure to do so can cause features such as Explorer integration to not work correctly. If you are not prompted to restart, restarting is not necessary.

Prerequisites

When installing or upgrading BoostFS for Windows:

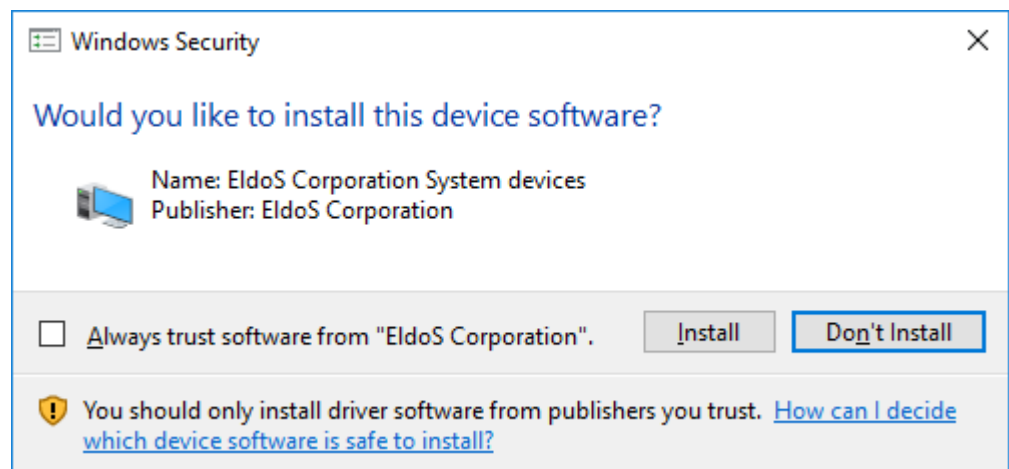
- Use an account with administrator rights to run the installer.
- Ensure that there is enough free space to complete the installation, which requires approximately 7 MB of disk space.
- Deactivate all BoostFS mount points. If any mount points are active, the upgrade and removal processes fail.

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, you must install the CBFS driver from EldoS Corporation.

Figure 2 Windows Security warning for the EldoS Corporation device driver



If another program on the system previously installed the CBFS driver, the driver that BoostFS installs is installed alongside it and does not affect operation of the other program.

Components of BoostFS for Windows

Components in the installation location

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`.
- The RSA Lockbox libraries.
- The 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 on the use and configuration of `boostfs.exe`.
- If not already installed, the 2012 and 2015 Visual C++ redistributables are installed.

Entries on the Start Menu

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, Lockbox containers, and 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.

A sample configuration file, `C:\BoostFS\boostfs_sample.conf`, is provided.

Upgrade the BoostFS client

To upgrade BoostFS, run the MSI installer of the new BoostFS release.

Note

If you are prompted to restart after upgrading, failure to do so can cause features such as Explorer integration to not work correctly. If you are not prompted to restart, restarting is not necessary.

Uninstall the BoostFS client

To uninstall BoostFS for Windows, use either of the following methods:

- Run the MSI installer and select **Remove**.
- Use the **Add or remove programs** interface in the **Control Panel**.

CHAPTER 4

Configuring and using BoostFS for Windows

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BoostFS for Windows configuration overview

Specify BoostFS configuration parameters by using the command line interface (CLI), the configuration file, or both.

The BoostFS configuration file location is `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 by using the CLI.

Parameters that are configured by using the CLI override conflicting values in the configuration file.

The following is a sample configuration file:

```
#####
# BoostFS 1.2 example config file for Windows
#
# The configuration file is divided into sections, delineated by brackets [].
# Options that are to apply to all mount points are in the [global] section.
# More details on the various configuration options can be found in the
# BoostFS manual. Command line options override what is in this file.
#
# Format:
# # - Identifies a comment line, and must be at the start. Configuration
# parameters can be disabled by adding a "#" to the start of the line.
#
# Values which contains spaces should use double quotations around the
# entire value.
#
# No whitespace is allowed between the option and the value, i.e.
# log-dir = \path is not allowed.
#
# Comments are not allowed after the option value pair.
#
#####

[global]
# Data Domain Hostname or IP address
# data-domain-system=dd2500-1.yourdomain.com

# Storage Unit
# storage-unit=su-name

# Lockbox path (default: C:\BoostFS\Lockbox\boostfs.lockbox)
# lockbox-path=C:\lockbox-name

# Enable logging (default: true)
# log-enabled=<true|false>

# Log level (default: info)
# log-level=<debug|info|warning|error>

# Directory for log files (default: C:\BoostFS\Logs)
# log-dir=C:\directory-name

# Log file name (default: ddboostfs_ddr-name_su-name.log)
# A unique log file name should be used for each mount point.
# log-file=unique-file-name.log

# Maximum log size in MB (default: 100MB)
# log-maxsize=100
```



```
# Number of log files to save (default: 8)
# log-rotate-num=10

# Text string that describes the application using boostfs with additional information such
# as the version.
# app-info="text_string"

# Maximum number of connections that can be used at the same time (default: 128)
# Min value is 64. Max value is 256.
# max-connections=128

# Allow for Windows ACLs to be set on files in the mountpoint
# NOTE: Unless the client is joined to an AD domain, this parameter cannot be set to true.
# local-user-security=<true|false> (default: false)

# UNC Mount point sections are delineated by [UNC Path]
# The UNC Path must be of the form [\\ddr-name\su-name].
# Forward slashes and extra slashes must not be used.

# [\\ddr-name\su-name]
# Drive Letter specifies the Windows drive to map to this UNC mount point
# drive-letter=h:
```

BoostFS for Windows command overview

Use the Windows command prompt or PowerShell 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. You can also add the location of the executable to the *PATH* environment variable so that you do not need to specify the path when issuing BoostFS commands.

BoostFS parameters

The following parameters are used to configure BoostFS:

<data-domain-system>

The hostname or IP address of the Data Domain system.

<storage-unit>

The target storage unit on the Data Domain system.

<storage-unit-username>

The username of the storage unit owner on the Data Domain system.

<lockbox-path>

The path to the lockbox file. If this parameter is not set with the CLI or in the configuration file, the default path is `C:\BoostFS\Lockbox\boostfs.lockbox`.

<UNC-mount-path>

The Universal Naming Convention (UNC) path of the mounted storage-unit. The UNC path must be of the form `\\<data-domain-system>\<storage-unit>`

<drive-letter>

The drive letter to which the BoostFS mount is mapped.

BoostFS and high availability

If you are configuring a Data Domain high availability (HA) system, you should make sure the IP address (or hostname) that you specify for the system is one of the floating IP addresses. Only the floating IP addresses in an HA system are accessible after a failover.

If you incorrectly specify one of the fixed HA addresses, you will not be able to connect to the Data Domain system in the event of a recoverable failure.

RSA Lockbox-based authentication

RSA Lockbox is the password manager for BoostFS for Windows.

To use RSA Lockbox, you need to set the lockbox using the `boostfs lockbox set` command. You can also set up a shared BoostFS lockbox file.

Sharing a BoostFS Lockbox file on multiple Windows clients

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

You can create a common Lockbox file for all BoostFS clients from a master client. This feature allows you to avoid creating a separate Lockbox file for each unique BoostFS client.

The master client is the client from which the shared Lockbox is initially created. Since some operations can only be performed from the master client, it is recommended to record which client is the master.

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.

Create the Lockbox on the master client

Before you begin

Verify that BoostFS is installed on the server that manages access to the shared Lockbox.

Note

The command `boostfs lockbox set` fails if there is an existing Lockbox file in the same location.

In this example, `Z:` represents the network share that is accessible by all clients.

Procedure

1. Create the Lockbox with the `-l` option:

```
boostfs lockbox set -u <storage-unit-username> -d <data-domain-system> -s <storage-unit> -l Z:\boostfs.lockbox
```

You can also specify the `lockbox-path` in the configuration file.

2. Repeat the `lockbox set` command for each Data Domain system or storage unit that needs to be accessed by the Lockbox.

After you finish

Optionally, record which client is the master.

Use the shared Lockbox on other clients**Before you begin**

Create a shared Lockbox and add credentials for the Data Domain systems and storage units that need access to the Lockbox.

In this example, *Z:* represents the network share that is accessible by all clients.

Procedure

1. To allow access to the Lockbox for the other clients, type the following command on the master client:

```
boostfs lockbox add-hosts -l Z:\boostfs.lockbox
client1.dell.com,client2.dell.com
```

In this example, clients with the hostname *client1.dell.com* and *client2.dell.com* are allowed access to the shared Lockbox.

2. On each client that needs access to the shared Lockbox, specify the path to the shared Lockbox by either:

- Using the `mount` command:

```
boostfs mount -d <data-domain-system> -s <storage-unit> -l Z:
\boostfs.lockbox
```

- Editing the configuration file:

```
[global]
lockbox-path=Z:\boostfs.lockbox
```

Modify the shared Lockbox

Only the master client can modify the Lockbox file. Other clients encounter an error when they try to modify the Lockbox. Other clients are still able to query the Lockbox.

In this example, *Z:* represents the network share that is accessible by all clients.

Procedure

1. To remove client access:

```
boostfs lockbox delete-hosts -l Z:\boostfs.lockbox
client2.dell.com
```

Note

After removing a client from the Lockbox, the client can no longer use the Lockbox and can no longer access any of the Data Domain systems defined in the Lockbox.

2. To remove a Lockbox entry:

```
boostfs lockbox remove -d <data-domain-system> -s <storage-
unit> -l Z:\boostfs.lockbox
```

Note

After removing a Data Domain system or storage unit from those that the Lockbox grants access to, none of the clients that use the Lockbox can access the system or storage unit.

Mounting the BoostFS file system

The `boostfs mount` command allows you to mount the BoostFS file system

You can mount the BoostFS file system in either of the following two ways:

- To use a UNC mount path, type:

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

Where the UNC mount path is in the form `\\<data-domain-system>\<storage-unit>`.

- To use the Data Domain system and storage unit names, type:

```
boostfs mount -d <data-domain-system> -s <storage-unit> [-l <lockbox-path>] [[-o <param>=<value>] ...] [<drive-letter>]
```

Where `-d` specifies the Data Domain system and `-s` specifies the storage unit.

If no drive letter is specified, the mount is only accessible through the UNC path.

If a BoostFS mount is established with an optional drive letter, the drive letter must be an unused drive letter. On mount, the drive shows up in the Windows Explorer sidebar immediately.

After mounting without a drive letter, you can use the **Map Network Drive** context option in Explorer or the `net use` command to map the UNC path to a drive letter.

Command options for mount

The following options are valid for the `boostfs mount` command.

Option	Description
<code>-o log-enabled=<true false></code>	Enable or disable logging. Default value: <code>true</code>
<code>-o log-level=<debug info warning error></code>	Set the log detail level. Default value: <code>info</code>
<code>-o log-dir=C:\directory-name</code>	Specify the directory for log files. Default value: <code>C:\BoostFS\Logs</code>
<code>-o log-file=unique-file-name.log</code>	Specify the log file name. Default value: <code>ddbostfs_ddr-name_su-name.log</code>
<code>-o log-maxsize=100</code>	Specify the maximum log size in MB. Default value: <code>100</code>
<code>-o log-rotate-num=8</code>	Specify the number of log files to save. Default value: <code>8</code>

Option	Description
<code>-o app-info="text_string"</code>	Display a text string describing the application using BoostFS.
<code>-o local-user-security=<true false></code>	Allow Windows ACLs to be set on files in the mount point. Default value: <code>false</code> For more information, see File security on page 31.
<code>-o ddbboost-read-compression=<true false></code>	Enable compressed restoration. Default value: <code>false</code> For more information, see Compressed restoration on page 30

Mount on startup

BoostFS is a regular process that the operating system stops when the system restarts or the user logs off, and BoostFS for Windows mounts do not survive without the process.

To remount BoostFS mounts during system startup, you can add `boostfs mount` commands as part of a system startup or user login script. For information on system startup and user login scripts, refer to Microsoft documentation.

BoostFS client connection details

After mount points are created, you can use the `ddbboost show connections` command to see details about clients that use BoostFS to connect to the Data Domain system.

The details displayed in the output include the BoostFS version number and the Boost library, as shown in the following example:

```
dduser@ddve1# ddbboost show connections
Active Clients: 0

Clients:
Client          Idle Plugin Version OS Version          Application Version          Encrypted DSP Transport
-----
client.yourdomain.com YES 3.4.2.0-593989 Microsoft Windows Server 2012, 64-bit BOOSTFS:1.2.0.1-594272 ucslod05 CBFS 6.1 NO YES IPv4

Client Connections:
Max Client Connections: 180
ifgroup
-----
Group-name Status Interface          Write Read Src-repl Dst-repl Synthetic Repl-out Repl-in Total
-----
none          10.6.109.148          0 0 0 0 0 0 0 0 0
none          2620:0:170:1604:2a0:d1ff:feec:d071 0 0 0 0 0 0 0 0 0
-----
Total Connections: 0 0 0 0 0 0 0 0 0 0
```

See the *Data Domain Operating System Command Reference Guide* for more information about the `ddbboost show connections` command.

Compressed restoration

This option reduces bandwidth usage when sending and receiving 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, this option is set to `false`.

This option can be used in one of the following two ways:

- As a command-line option:

```
boostfs mount -o ddboost-read-compression=true /mnt/bfs-mount
```

- As an option configured in the `boostfs.conf` file:

```
ddboost-read-compression=true
```

Unmounting the BoostFS file system

The `boostfs umount` command allows you to unmount the BoostFS file system.

Use one of the following two formats:

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

If the BoostFS file system is mounted with a drive letter, you must unmount by using the drive letter.

If the BoostFS file system is mounted with a drive letter and a mount path, you must unmount by using the drive letter.

If the BoostFS file system is mounted without a drive letter, you must unmount by using the UNC mount path.

If the BoostFS file system is mounted using the Map Network Drive option:

1. Disconnect the network drive.
2. Unmount by using the UNC mount path. Do not use the drive letter.

Note

Do not use the Explorer disconnect utility to disconnect a drive that was mapped to a drive letter with the `boostfs mount` command.

File security

If the required conditions are met, BoostFS for Windows supports access control lists (ACLs) on files and directories within the BoostFS mount point.

Note

If ACLs are not used, the Boost user credentials are used for all users who access the client mount point. Any files or directories that are created in the mount point are fully accessible by any user with access to the mount point or storage unit.

ACL requirements

- The Data Domain system and the client must be joined to the same Active Directory domain. If the client is not joined to a domain, ACLs cannot be enabled during the mount process. If the Data Domain system is not joined to the domain and ACLs are enabled during the mount process, the mount point is not accessible.
- The `local-user-security` option must be set to `true` during mount. This setting can be applied by using the CLI or the BoostFS configuration file.

User identity

When `local-user-security` is enabled, the identity of the client user determines access to a file or directory, not the identity of the storage unit user.

For a user on the client system to access a file in a BoostFS mount point, the ACL on the file must give that user the required rights. Without Active Directory support for ACL configuration, a client user on one system may appear to be a different user when using a different system and be denied access to the file.

ACL default permissions



If you use ACL functionality with BoostFS for Windows, changing file permissions by a protocol other than BoostFS for Windows causes the ACLs to be lost.

File

If no inheritance occurs, the default ACL on a file contains:

- No system access control list (SACL)
- A discretionary access control list (DACL) with the following permissions:
 - Creator of the file—Full control
 - Group of the creator of the file—Read and execute permissions
 - Everyone—Read and execute permissions

If inheritance occurs, the ACL on a file contains the permissions inherited from the parent directory.

Directory

If no inheritance occurs, the default ACL on a directory contains:

- No SACL
- A DACL with the following permissions:

- Creator of the directory—Full control on the directory
- Group of the creator of the file—Read and execute permissions on the directory
- Everyone—Read and execute permissions on the directory

If inheritance occurs, the ACL on a directory contains the permissions inherited from the parent directory.

Subdirectory

Subdirectories and files within the directory inherit the following permissions:

- Creator of the subdirectory—Full control
- Creator of the file—Full control
- Group of the creator of the subdirectory or file—Read and execute permissions
- Everyone—Read and execute permissions

CHAPTER 5

Troubleshooting

- [Log information](#).....34
- [Common issues](#)..... 34

Log information

You can use the following log files to diagnose BoostFS problems:

- **BoostFS log file**
By default, the BoostFS log file is found in the directory `C:\BoostFS\Logs`. The default name of the file is `ddbostfs_<data-domain-hostname>_<storage-unit>.log`, where:
 - `<data-domain-hostname>` is the hostname or IP address for the BoostFS mount
 - `<storage-unit>` is the storage-unit name of the BoostFS mount

A typical BoostFS log message appears in the following format:

```
Date + Time + ProcSS-ID + Thread-ID + [logging-level: E - error, W - warning, I - info, D - debug] + Message-Text
```

The following is an example information message:

```
May 23 12:53:51 2996 4014012160 [I] bfs_close_open_nodsp: File / 00000004 opened in non-DSP mode
```

- **DD Boost SDK precert log file**
- **Data Domain File System logs**
Data Domain File System logs are found on the Data Domain system in the directory `/ddr/var/log/debug`. See the *Data Domain Operating System Administration Guide* for more information.

BoostFS generates a local log file that contains its internal status, activities, warnings, and errors. You can specify the logging level in addition to the name and location of the log file by using the CLI or the BoostFS configuration file.

You might need to set a size limit on the log file to ensure that when the size of the log file reaches that limit, BoostFS will rotate log messages.

You can configure the maximum size of the BoostFS log file in the configuration file. You can also configure the number of older log files you wish to keep.

When the log file size reaches the maximum specified size (in MB), the log file is renamed by appending ".1" to the log file name. If there is already an existing log file that ends in ".1," that file is renamed to replace ".1" with ".2." As each log file reaches the maximum size, log files with numbers (n) appended are renamed .n+1 up to the maximum log rotate number.

Common issues

Some common issues with BoostFS for Windows can be resolved quickly.

Installation fails

If installing BoostFS Windows fails, verify that:

- There is enough space on the drive on which you are installing BoostFS.
- The VeriSign Class 3 Public Primary Certification Authority - G5 is not blocked. This root certificate is used to sign the driver.

Mount fails

[Table 2](#) on page 35 explains the causes and resolutions of several common errors that are encountered when mounting BoostFS.

Table 2 Troubleshooting mount issues

Error message	Cause	Resolution
Mount failed with error code 183: Cannot create a file when that file already exists.	This error occurs when a mount has the same Data Domain hostname and storage-unit name as an existing BoostFS mount.	To map a drive to the same mount, use the <code>net use</code> command.
Cannot mount mount-point: unexpected error, please see log for details.	This error usually occurs when the DD Boost protocol is not enabled and configured on the Data Domain system.	Review the BoostFS log files for more details. Use the <code>ddboost status</code> command on the Data Domain system to confirm that DD Boost is enabled.
Invalid mount point option and value pair [option=key from config file] [value= value from config file]: Configuration initialization failed	This message can appear when errors occur during the processing of the BoostFS configuration file.	Review the specific key and value in the BoostFS configuration file and make any necessary corrections.

Explorer performance degraded

If the Properties window for files or directories loads slowly, ACLs cannot be set from the Explorer interface, or both, verify that port 445 is not blocked from the client to the Data Domain system. These issues occur because SMB messages over port 445 are used to determine the security configuration of the Data Domain system.

To resolve both issues, unblock the SMB port. Alternatively, you can set ACLs using the Windows command prompt or PowerShell.

Access denied when using ACLs

To perform operations on a file or directory that is a child of a directory, the `traverse folder` permission is required on the parent directory, in addition to any other applicable permissions. This includes, but is not limited to, creating or deleting a child file or directory.

For example, to delete the file `M:\parent\child.txt`, both `traverse folder` and `delete subfolders and files` permissions are required on `M:\parent`, as well as `delete` permissions on `M:\parent\child.txt`.

To delete a directory, the `list folder` and `delete` permissions are required because Windows checks that a directory is empty before deleting it.

APPENDIX A

Appendix

- [References](#).....38

References

The following documents, located at [Online Support](#), provide additional and relevant information. Access to these documents depends on your login credentials. If you do not have access to a document, contact a sales representative.

- *Data Domain BoostFS Integration Guide: Application Validation and Best Practices*, available on <https://community.emc.com>
- *Data Domain Operating System Version Administration Guide*
- *Data Domain Operating System Version Initial Configuration Guide*