



Manage home directories

ONTAP 9

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Manage home directories

Learn about enabling dynamic home directories on ONTAP SMB servers

ONTAP home directories enable you to configure an SMB share that maps to different directories based on the user that connects to it and a set of variables. Instead of creating separate shares for each user, you can configure one share with a few home directory parameters to define a user's relationship between an entry point (the share) and the home directory (a directory on the SVM).

A user who is logged in as a guest user does not have a home directory and cannot access other users' home directories. There are four variables that determine how a user is mapped to a directory:

- **Share name**

This is the name of the share that you create to which the user connects. You must set the home directory property for this share.

The share name can use the following dynamic names:

- %w (the user's Windows user name)
- %d (the user's Windows domain name)
- %u (the user's mapped UNIX user name) To make the share name unique across all home directories, the share name must contain either the %w or the %u variable. The share name can contain both the %d and the %w variable (for example, %d/%w), or the share name can contain a static portion and a variable portion (for example, home_%w).

- **Share path**

This is the relative path, which is defined by the share and is therefore associated with one of the share names, that is appended to each search path to generate the user's entire home directory path from the root of the SVM. It can be static (for example, home), dynamic (for example, %w), or a combination of the two (for example, eng/%w).

- **Search paths**

This is the set of absolute paths from the root of the SVM that you specify that directs the ONTAP search for home directories. You can specify one or more search paths by using the `vserver cifs home-directory search-path add` command. If you specify multiple search paths, ONTAP tries them in the order specified until it finds a valid path. Learn more about `vserver cifs home-directory search-path add` in the [ONTAP command reference](#).

- **Directory**

This is the user's home directory that you create for the user. The directory name is usually the user's name. You must create the home directory in one of the directories that are defined by the search paths.

As an example, consider the following setup:

- User: John Smith
- User domain: acme
- User name: jsmith
- SVM name: vs1
- Home directory share name #1: home_%w - share path: %w
- Home directory share name #2: %w - share path: %d/%w
- Search path #1: /vol0/home/home
- Search path #2: /vol1/home/home
- Search path #3: /vol2/home/home
- Home directory: /vol1/home/home/jsmith

Scenario 1: The user connects to \\vs1\home_jsmith. This matches the first home directory share name and generates the relative path jsmith. ONTAP now searches for a directory named jsmith by checking each search path in order:

- /vol0/home/home/jsmith does not exist; moving on to search path #2.
- /vol1/home/home/jsmith does exist; therefore, search path #3 is not checked; the user is now connected to his home directory.

Scenario 2: The user connects to \\vs1\jsmith. This matches the second home directory share name and generates the relative path acme/jsmith. ONTAP now searches for a directory named acme/jsmith by checking each search path in order:

- /vol0/home/home/acme/jsmith does not exist; moving on to search path #2.
- /vol1/home/home/acme/jsmith does not exist; moving on to search path #3.
- /vol2/home/home/acme/jsmith does not exist; the home directory does not exist; therefore, the connection fails.

Home directory shares

Add ONTAP SMB home directory shares

If you want to use the SMB home directory feature, you must add at least one share with the home directory property included in the share properties.

About this task

You can create a home directory share at the time you create the share by using the `vserver cifs share create` command, or you can change an existing share into a home directory share at any time by using the `vserver cifs share modify` command.

To create a home directory share, you must include the `homedirectory` value in the `-share-properties` option when you create or modify a share. You can specify the share name and share path using variables that are dynamically expanded when users connect to their home directories. Available variables that you can use in the path are `%w`, `%d`, and `%u`, corresponding to the Windows user name, domain, and mapped UNIX user name, respectively.

Steps

1. Add a home directory share:

```
vserver cifs share create -vserver vserver_name -share-name share_name -path path -share-properties homedirectory[,...]
```

`-vserver vserver` specifies the CIFS-enabled storage virtual machine (SVM) on which to add the search path.

`-share-name share-name` specifies the home directory share name.

In addition to containing one of the required variables, if the share name contains one of the literal strings `%w`, `%u`, or `%d`, you must precede the literal string with a % (percent) character to prevent ONTAP from treating the literal string as a variable (for example, `%%w`).

- The share name must contain either the `%w` or the `%u` variable.
- The share name can additionally contain the `%d` variable (for example, `%d/%w`) or a static portion in the share name (for example, `home1_%w`).
- If the share is used by administrators to connect to other users' home directories or to permit users to connect to other users' home directories, the dynamic share name pattern must be preceded by a tilde (~).

The `vserver cifs home-directory modify` is used to enable this access by setting the `-is-home-dirs-access-for-admin-enabled` option to `true` or by setting the advanced option `-is-home-dirs-access-for-public-enabled` to `true`.

`-path path` specifies the relative path to the home directory.

`-share-properties homedirectory[,...]` specifies the share properties for that share. You must specify the `homedirectory` value. You can specify additional share properties using a comma delimited list.

1. Verify that you successfully added the home directory share by using the `vserver cifs share show` command.

Example

The following command creates a home directory share named `%w`. The `oplocks`, `browsable`, and `changenotify` share properties are set in addition to setting the `homedirectory` share property.



This example does not display output for all of the shares on the SVM. Output is truncated.

```

cluster1::> vserver cifs share create -vserver vs1 -share-name %w -path %w
-share-properties oplocks,browsable,changetrigger,homedirectory

vs1::> vserver cifs share show -vserver vs1
Vserver      Share      Path          Properties      Comment      ACL
-----
vs1          %w          %w          oplocks      -          Everyone / Full
Control
                                browsable
                                changetrigger
                                homedirectory

```

Related information

- [Add home directory search paths](#)
- [Requirements and guidelines for using automatic node referrals on servers](#)
- [Manage accessibility to user home directories](#)

Learn about unique ONTAP SMB user name requirements for home directory shares

Be careful to assign unique user names when creating home directory shares using the %w (Windows user name) or %u (UNIX user name) variables to generate shares dynamically. The share name is mapped to your user name.

Two problems can occur when a static share's name and a user's name are the same:

- When the user lists the shares on a cluster using the `net view` command, two shares with the same user name are displayed.
- When the user connects to that share name, the user is always connected to the static share and cannot access the home directory share with the same name.

For example, there is a share named "administrator" and you have an "administrator" Windows user name. If you create a home directory share and connect to that share, you get connected to the "administrator" static share, not to your "administrator" home directory share.

You can resolve the issue with duplicate share names by following any of these steps:

- Renaming the static share so that it no longer conflicts with the user's home directory share.
- Giving the user a new user name so that it no longer conflicts with the static share name.
- Creating a CIFS home directory share with a static name such as "home" instead of using the %w parameter to avoid conflicts with the share names.

Learn about what happens to static ONTAP SMB home directory share names after upgrading

Home directory share names must contain either the %w or the %u dynamic variable. You

should be aware of what happens to existing static home directory share names after upgrading to a version of ONTAP with the new requirement.

If your home directory configuration contains static share names and you upgrade to ONTAP, the static home directory share names are not changed and are still valid. However, you cannot create any new home directory shares that do not contain either the %w or %u variable.

Requiring that one of these variables is included in the user's home directory share name ensures that every share name is unique across the home directory configuration. If desired, you can change the static home directory share names to names that contain either the %w or %u variable.

Add ONTAP SMB home directory search paths

If you want to use ONTAP SMB home directories, you must add at least one home directory search path.

About this task

You can add a home directory search path by using the `vserver cifs home-directory search-path add` command.

The `vserver cifs home-directory search-path add` command checks the path specified in the `-path` option during command execution. If the specified path does not exist, the command generates a message prompting for whether you want to continue. You choose `y` or `n`. If you choose `y` to continue, ONTAP creates the search path. However, you must create the directory structure before you can use the search path in the home directory configuration. If you choose not to continue, the command fails; the search path is not created. You can then create the path directory structure and rerun the `vserver cifs home-directory search-path add` command.

Steps

1. Add a home directory search path: `vserver cifs home-directory search-path add -vserver vserver -path path`
2. Verify that you successfully added the search path using the `vserver cifs home-directory search-path show` command.

Example

The following example adds the path `/home1` to the home directory configuration on SVM `vs1`.

```
cluster::> vserver cifs home-directory search-path add -vserver vs1 -path /home1

vs1::> vserver cifs home-directory search-path show
Vserver      Position Path
-----
vs1          1          /home1
```

The following example attempts to add the path `/home2` to the home directory configuration on SVM `vs1`. The path does not exist. The choice is made to not continue.

```
cluster::> vserver cifs home-directory search-path add -vserver vs1 -path
/home2
Warning: The specified path "/home2" does not exist in the namespace
belonging to Vserver "vs1".
Do you want to continue? {y|n}: n
```

Related information

[Add home directory shares](#)

Create ONTAP SMB home directory configurations using the %w and %d variables

You can create a home directory configuration using the %w and %d variables. Users can then connect to their home share using dynamically created shares.

Steps

1. Create a qtree to contain user's home directories: `volume qtree create -vserver vserver_name -qtree-path qtree_path`
2. Verify that the qtree is using the correct security style: `volume qtree show`
3. If the qtree is not using the desired security style, change the security style using the `volume qtree security` command.
4. Add a home directory share: `vserver cifs share create -vserver vserver -share-name %w -path %d/%w -share-properties homedirectory\[,...\]`

`-vserver vserver` specifies the CIFS-enabled storage virtual machine (SVM) on which to add the search path.

`-share-name %w` specifies the home directory share name. ONTAP dynamically creates the share name as each user connects to their home directory. The share name will be of the form *windows_user_name*.

`-path %d/%w` specifies the relative path to the home directory. The relative path is dynamically created as each user connects to their home directory and will be of the form *domain/windows_user_name*.

`-share-properties homedirectory\[,...\]` specifies the share properties for that share. You must specify the `homedirectory` value. You can specify additional share properties using a comma delimited list.

5. Verify that the share has the desired configuration using the `vserver cifs share show` command.
6. Add a home directory search path: `vserver cifs home-directory search-path add -vserver vserver -path path`
`-vserver vserver-name` specifies the CIFS-enabled SVM on which to add the search path.
`-path path` specifies the absolute directory path to the search path.
7. Verify that you successfully added the search path using the `vserver cifs home-directory`

search-path show command.

8. For users with a home directory, create a corresponding directory in the qtree or volume designated to contain home directories.

For example, if you created a qtree with the path of /vol/vol1/users and the user name whose directory you want to create is mydomain\user1, you would create a directory with the following path: /vol/vol1/users/mydomain/user1.

If you created a volume named "home1" mounted at /home1, you would create a directory with the following path: /home1/mydomain/user1.

9. Verify that a user can successfully connect to the home share either by mapping a drive or connecting using the UNC path.

For example, if user mydomain\user1 wants to connect to the directory created in Step 8 that is located on SVM vs1, user1 would connect using the UNC path \\vs1\user1.

Example

The commands in the following example create a home directory configuration with the following settings:

- The share name is %w.
- The relative home directory path is %d/%w.
- The search path that is used to contain the home directories, /home1, is a volume configured with NTFS security style.
- The configuration is created on SVM vs1.

You can use this type of home directory configuration when users access their home directories from Windows hosts. You can also use this type of configuration when users access their home directories from Windows and UNIX hosts and the file system administrator uses Windows-based users and groups to control access to the file system.

```
cluster::> vserver cifs share create -vserver vs1 -share-name %w -path %d/%w -share-properties oplocks,browsable,changenotify,homedirectory
```

```
cluster::> vserver cifs share show -vserver vs1 -share-name %w
```

```
          Vserver: vs1
          Share: %w
          CIFS Server NetBIOS Name: VS1
          Path: %d/%w
          Share Properties: oplocks
                           browsable
                           changenotify
                           homedirectory
          Symlink Properties: enable
          File Mode Creation Mask: -
          Directory Mode Creation Mask: -
          Share Comment: -
          Share ACL: Everyone / Full Control
          File Attribute Cache Lifetime: -
          Volume Name: -
          Offline Files: manual
          Vscan File-Operations Profile: standard
```

```
cluster::> vserver cifs home-directory search-path add -vserver vs1 -path /home1
```

```
cluster::> vserver cifs home-directory search-path show
```

Vserver	Position	Path
vs1	1	/home1

Related information

- [Configure home directories using the %u variable](#)
- [Learn about additional home directory configurations](#)
- [Display information about user home directory paths](#)

Configure ONTAP SMB home directories using the %u variable

You can create a home directory configuration where you designate the share name using the %w variable but you use the %u variable to designate the relative path to the home directory share. Users can then connect to their home share using dynamically shares created using their Windows user name without being aware of the actual name or path of the home directory.

Steps

1. Create a qtree to contain user's home directories: `volume qtree create -vserver vserver_name -qtree-path qtree_path`
2. Verify that the qtree is using the correct security style: `volume qtree show`
3. If the qtree is not using the desired security style, change the security style using the `volume qtree security` command.
4. Add a home directory share: `vserver cifs share create -vserver vserver -share-name %w -path %u -share-properties homedirectory ,...]`
-vserver vserver specifies the CIFS-enabled storage virtual machine (SVM) on which to add the search path.
-share-name %w specifies the home directory share name. The share name is dynamically created as each user connects to their home directory and is of the form *windows_user_name*.



You can also use the %u variable for the -share-name option. This creates a relative share path that uses the mapped UNIX user name.

-path %u specifies the relative path to the home directory. The relative path is created dynamically as each user connects to their home directory and is of the form *mapped_UNIX_user_name*.



The value for this option can contain static elements as well. For example, eng/%u.

-share-properties homedirectory\[,... \] specifies the share properties for that share. You must specify the homedirectory value. You can specify additional share properties using a comma delimited list.

5. Verify that the share has the desired configuration using the `vserver cifs share show` command.
6. Add a home directory search path: `vserver cifs home-directory search-path add -vserver vserver -path path`
-vserver vserver specifies the CIFS-enabled SVM on which to add the search path.
-path path specifies the absolute directory path to the search path.
7. Verify that you successfully added the search path using the `vserver cifs home-directory search-path show` command.
8. If the UNIX user does not exist, create the UNIX user using the `vserver services unix-user create` command.



The UNIX user name to which you map the Windows user name must exist before mapping the user.

9. Create a name mapping for the Windows user to the UNIX user using the following command: `vserver name-mapping create -vserver vserver_name -direction win-unix -priority integer -pattern windows_user_name -replacement unix_user_name`



If name mappings already exist that map Windows users to UNIX users, you do not have to perform the mapping step.

The Windows user name is mapped to the corresponding UNIX user name. When the Windows user connects to their home directory share, they connect to a dynamically created home directory with a share name that corresponds to their Windows user name without being aware that the directory name corresponds to the UNIX user name.

10. For users with a home directory, create a corresponding directory in the qtree or volume designated to contain home directories.

For example, if you created a qtree with the path of `/vol/vol1/users` and the mapped UNIX user name of the user whose directory you want to create is “`unixuser1`”, you would create a directory with the following path: `/vol/vol1/users/unixuser1`.

If you created a volume named “`home1`” mounted at `/home1`, you would create a directory with the following path: `/home1/unixuser1`.

11. Verify that a user can successfully connect to the home share either by mapping a drive or connecting using the UNC path.

For example, if user `mydomain\user1` maps to UNIX user `unixuser1` and wants to connect to the directory created in Step 10 that is located on SVM `vs1`, `user1` would connect using the UNC path `\vs1\user1`.

Example

The commands in the following example create a home directory configuration with the following settings:

- The share name is `%w`.
- The relative home directory path is `%u`.
- The search path that is used to contain the home directories, `/home1`, is a volume configured with UNIX security style.
- The configuration is created on SVM `vs1`.

You can use this type of home directory configuration when users access their home directories from both Windows hosts or Windows and UNIX hosts and the file system administrator uses UNIX-based users and groups to control access to the file system.

```
cluster::> vserver cifs share create -vserver vs1 -share-name %w -path %u  
-share-properties oplocks,browsable,changetrigger,homedirectory
```

```
cluster::> vserver cifs share show -vserver vs1 -share-name %u
```

```
          Vserver: vs1  
          Share: %w  
          CIFS Server NetBIOS Name: VS1  
          Path: %u  
          Share Properties: oplocks  
                                browsable  
                                changetrigger  
                                homedirectory  
          Symlink Properties: enable  
          File Mode Creation Mask: -  
          Directory Mode Creation Mask: -  
          Share Comment: -  
          Share ACL: Everyone / Full Control  
          File Attribute Cache Lifetime: -  
          Volume Name: -  
          Offline Files: manual  
          Vscan File-Operations Profile: standard
```

```
cluster::> vserver cifs home-directory search-path add -vserver vs1 -path  
/home1
```

```
cluster::> vserver cifs home-directory search-path show -vserver vs1  
Vserver      Position Path
```

```
-----  
vs1          1          /home1
```

```
cluster::> vserver name-mapping create -vserver vs1 -direction win-unix  
-position 5 -pattern user1 -replacement unixuser1
```

```
cluster::> vserver name-mapping show -pattern user1
```

```
Vserver      Direction Position  
-----  
vs1          win-unix  5          Pattern: user1  
                                Replacement: unixuser1
```

Related information

- [Create home directory configurations using the %w and %d variables](#)
- [Learn about additional home directory configurations](#)
- [Display information about user home directory paths](#)

Learn about additional ONTAP SMB home directory configurations

You can create additional home directory configurations using the %w, %d, and %u variables, which enables you to customize the home directory configuration to meet your needs.

You can create a number of home directory configurations using a combination of variables and static strings in the share names and search paths. The following table provides some examples illustrating how to create different home directory configurations:

Paths created when /vol1/user contains home directories...	Share command...
To create a share path \\vs1\~win_username that directs the user to /vol1/user/win_username	vserver cifs share create -share-name ~%w -path %w -share-properties oplocks,browsable,changeNotify,homedirectory
To create a share path \\vs1\win_username that directs the user to /vol1/user/domain/win_username	vserver cifs share create -share-name %w -path %d/%w -share-properties oplocks,browsable,changeNotify,homedirectory
To create a share path \\vs1\win_username that directs the user to /vol1/user/unix_username	vserver cifs share create -share-name %w -path %u -share-properties oplocks,browsable,changeNotify,homedirectory
To create a share path \\vs1\unix_username that directs the user to /vol1/user/unix_username	vserver cifs share create -share-name %u -path %u -share-properties oplocks,browsable,changeNotify,homedirectory

ONTAP commands for managing SMB search paths

There are specific ONTAP commands for managing search paths for SMB home directory configurations. For example, there are commands for adding, removing, and displaying information about search paths. There is also a command for changing the search path order.

If you want to...	Use this command...
Add a search path	vserver cifs home-directory search-path add

If you want to...	Use this command...
Display search paths	vserver cifs home-directory search-path show
Change the search path order	vserver cifs home-directory search-path reorder
Remove a search path	vserver cifs home-directory search-path remove

Learn more about `vserver cifs home-directory search-path` in the [ONTAP command reference](#).

Display information about ONTAP SMB user home directory paths

You can display an SMB user's home directory path on the storage virtual machine (SVM), which can be used if you have multiple CIFS home directory paths configured and you want to see which path holds the user's home directory.

Step

1. Display the home directory path by using the `vserver cifs home-directory show-user` command.

```
vserver cifs home-directory show-user -vserver vs1 -username user1
```

Vserver	User	Home Dir Path
vs1	user1	/home/user1

Related information

[Manage accessibility to user home directories](#)

Manage accessibility to ONTAP SMB user home directories

By default, a user's home directory can be accessed only by that user. For shares where the dynamic name of the share is preceded with a tilde (~), you can enable or disable access to users' home directories by Windows administrators or by any other user (public access).

Before you begin

Home directory shares on the storage virtual machine (SVM) must be configured with dynamic share names that are preceded with a tilde (~). The following cases illustrate share naming requirements:

Home directory share name	Example of command to connect to the share
~%d~%w	net use * \\IPaddress\\~domain~user/u:credentials
~%w	net use * \\IPaddress\\~user/u:credentials
~abc~%w	net use * \\IPaddress\\abc~user/u:credentials

Step

1. Perform the appropriate action:

If you want to enable or disable access to users' home directories to...	Enter the following...
Windows administrators	<pre>vserver cifs home-directory modify -vserver vserver_name -is-home-dirs -access-for-admin-enabled {true false} The default is true.</pre>
Any user (public access)	<ol style="list-style-type: none"> a. Set the privilege level to advanced: set -privilege advanced b. Enable or disable access: vserver cifs home-directory modify -vserver vserver_name -is-home-dirs-access-for-public-enabled {true false} The default is false. c. Return to the admin privilege level: set -privilege admin

The following example enables public access to users' home directories:

```
set -privilege advanced
vserver cifs home-directory modify -vserver vs1 -is-home-dirs-access-for-public
-enabled true
set -privilege admin
```

Related information

[Display information about user home directory paths](#)

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