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HCP Tools Command Introduction Guide

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Note: The package names are provided as examples. You can replace them with the versions you are currently using.

1. Installing

1.1. RHEL server

Get the RPM package included in the package that is most similar to the following.

hcpd-1.1.0-11.el7.centos.x86_64.rpm

Install the package as follows.

rpm -ivh hcpd-1.1.0-11.el7.centos.x86_64.rpm

After completing the installation, edit the following file to add the users you want HCP tools to recognize.

/etc/hcp/users

If you are using a license key, store it in the following path.

/etc/hcp/license.key

Start the server as follows.

/etc/init.d/hcpd start
systemctl start hcpd

This completes the server setup.

The server will be installed with the following status.

Privilege separation on
PAM authentication on
Encrypted communication available using server key

1.1. RHEL client

Get the RPM package included in the package that is most similar to the following.

hcp-1.1.0-11.el7.centos.x86_64.rpm

Install the package as follows.

rpm -ivh hcp-1.1.0-11.el7.centos.x86_64.rpm

This completes the client setup.

Set up the hrm, hcp-ls, hmkdir, hpwd, hmv, and hln commands using the same procedure.

1.2. Ubuntu (Debian) server

Get the Debian package included in the package that is most similar to the following:

hcpd_1.1.0-9_amd64.deb

Install the package as follows.

sudo dpkg -i hcpd_1.1.0-9_amd64.deb

After completing the installation, edit the following file to add the users you want HCP tools to recognize.

/etc/hcp/users

If you are using a license key, store it in the following path.

/etc/hcp/license.key

Start the server as follows.

systemctl start hcpd

This completes the server setup.

The server will be installed with the following status.

Privilege separation on
PAM authentication on
Encrypted communication available using server key

1.3. Ubuntu (Debian) client

Get the Debian package included in the package that is most similar to the following.

hcp_1.1.0-9_amd64.deb

Install the package as follows.

sudo dpkg -i hcp_1.1.0-9_amd64.deb

This completes the client setup.

Setup the hrm, hcp-ls, hmkdir, hpwd, hmv, and hln commands using the same procedure.

1.4.   Windows client

Get the following MSI installer included in the package.

HCP_Tools_Client.msi

Run the installer. Check the box to accept the license agreement and install.

After completing the installation, resources such as programs (hcp, hrm, hcp-ls, hmkdir, hpwd, hmv, and hln) and configuration files are installed in the following folders.

C:¥Program Files¥Clealink¥HCP Tools
C:¥ProgramData¥Clealink¥HCP Tools

When deleting or updating, the configuration files are backed up in the following folder.

C:¥Program Files¥Clealink¥HCP Tools¥Previous

Existing files are overwritten during an update or a new installation. To use the previous settings, replace the configuration files with the ones in this folder.

1.5. Windows service

Get the following MSI installer included in the package.

HCP_Tools_Server.msi

Run the installer. Check the box to accept the license agreement and install.

After completing the installation, resources such as programs (hcpd_winserv, hcpd_winserv_genkey) and configuration files are installed in the following folders.

C:¥Program Files¥Clealink¥HCP Tools
C:¥ProgramData¥Clealink¥HCP Tools

When deleting or updating, the configuration files are backed up in the following folder.

C:¥Program Files¥Clealink¥HCP Tools¥Previous

Existing files are overwritten during an update or a new installation. To use the previous settings, replace the configuration files with the ones in this folder.

1.6. Using hcpd with general user permissions

Note: The following procedure describes an hcpd usage method that may not be compatible with your runtime environment. Use with caution.

To use the hcpd server with general user permissions, such as in an environment where you do not have permission to install packages, select the Linux version of the binary program included together with the package and start the server as follows.

Save the hcpd configuration file (hcpd.conf) in the user domain.

~/hcpd.conf
~/.hcp/hcpd.conf
and so on

Change the service ports to port numbers that do not require privileges.

TCPListenAddress 0.0.0.0:1874
UDPListenAddress 0.0.0.0:1884
Note: Edit hcpd.conf

If you are using a license key, store the same file **[Alternatively, do you mean "the file"?]** in the user domain.

~/hcp_license.key
~/.hcp/license.key
and so on

Start the hcpd daemon with the configuration file, PID file, and license key specified using the command line options.

hcpd -c ~/hcpd.conf -p ~/hcpd.pid -k ~/hcp_lisense.key

Note: If the daemon installed from the RPM (Debian) package is running, there may be issues such as PID file conflicts (if the same PID file is used) and TCP service port number conflicts, or other problems. The daemon will fail to start if a conflict occurs.

2. Example usage

To specify and copy a file locally, do the following.

hcp my_src.txt my_dst.txt

Note: If you specify a local path as a relative path, the relative path will be interpreted relative to the current directory.

To copy a folder recursively, do the following.

hcp -R my_src_dir my_dst_dir

To send a file to a remote server, do the following.

hcp my_src.txt 192.168.100.100:874:my_dst.txt

Note: If you specify a server path as a relative path, the relative path will be interpreted relative to the home directory, which is designated by the authenticated user information or the server's document settings.

To receive a file from a server, do the following.

hcp 192.168.100.100:874:my_src.txt my_dst.txt

To communicate using HpFP2, do the following.

hcp -U D:D:D:D:D my_src.txt 192.168.100.100:884:my_dst.txt

To copy a file on a Windows client using an absolute path and similar, use the Windows path format.

hcp C:¥Users¥MyUser¥my_src.txt C:¥Users¥MyUser¥my_dst.txt

To send to a Linux server, use the Linux path format to specify a path on Linux.

hcp C:¥Users¥MyUser¥my_src.txt 192.168.100.100:874:/home/my_user/my_dst.txt

To measure communication performance without the file access overhead, do the following.

hcp -n 10000:1048576 /home/my_user/src_dir 192.168.100.100:874:/home/my_user/dst_dir

Note: Communications sending 10,000 1 MB files is performed.

Delete a file on the server.

hrm 192.168.100.100:874:/home/my_user/my_dst.txt

Delete a directory on the server without prompts asking for confirmation.

hrm -Rf 192.168.100.100:874:/home/my_user/dst_dir

hcp-ls -q 192.168.100.100:874
ls
Note: Queries the list command executed on the server.

hcp-ls -q 192.168.100.101:874
dir
Note: On a Windows server.

hcp-ls 192.168.100.100:874:/home/my_user/dir1
file01.txt
file02.txt
...
Note: The file list in the specified directory (dir1) is output to the standard
output in ls format.

hmkdir 192.168.100.100:874:/home/my_user/dir2

hpwd 192.168.100.100:874
/home/my_user

Move a file on the server.

hmv 192.168.100.100:874:/home/my_user/file1
192.168.100.100:874:/home/my_user/file2

Create a link to a file on the server.

hln -s 192.168.100.100:874:/home/my_user/file1
192.168.100.100:874:/home/my_user/link1

Specify the host name and port number as options during file operations on the server. The host name and port number can be omitted from the path description.

hcp-ls -H 192.168.100.100 -P 874 /home/my_user/dir1 /home/my_user/dir2
hcp-ls -H 192.168.100.100 -P 874
hmkdir -H 192.168.100.100 -P 874 /home/my_user/dir1 /home/my_user/dir2
hmv -H 192.168.100.100 -P 874 /home/my_user/file1 /home/my_user/file2
hln -H 192.168.100.100 -P 874 /home/my_user/file1 /home/my_user/link1

3. Notes

3.1. Common performance considerations

The following factors have an effect at the application level.

· File size
 A decline in performance is likely to occur when there is a large
 number of small files. Measurements using a uniform file size showed
 a drop occurring at around 128 KB.
 Note: based on our specific environment and measurement method

· Data tests using encryption, compression or digests
 Performance may decline as the CPU load increases.
 (If encryption processing performance is a bottleneck, or for other reasons.)

· Memory usage restriction
 MaxTotalBufferSize uses a shared limit among multiple sessions, which may
lead to a performance bottleneck for simultaneous connections in a broadband
environment.

· Log level or investigation log
 If you change the following log levels to debug or enable an investigation log,
performance may decline.

 hcpd.conf
 SystemLogLevel

 hcp.conf, other client configuration files
 ApplicationLogLevel

 Commands
 --investigation option

· Antivirus software

    If real-time protection is enabled with the Windows version of Windows
Defender, disk access speed may decrease and file transfer performance may
decline. This problem has not been encountered with Norton Internet Security by
Symantec Corporation.

3.2. HpFP performance considerations

Before using HpFP, be sure to perform an evaluation using the following tool to check its environmental compatibility.

HpFP effectiveness check tool

The following factors have an effect at the transport (HpFP) level.

· MTU size

   If MTU size is about 1.5 KB, a performance of about 10 Gbps may not be attained.

   The use of jumbo frames (at about 9 KB) is recommended if you are using bandwidths that exceed several Gbps. **[This is the literal translation. However, if it would convey your meaning, please consider simplifying as: "if your bandwidth exceeds several Gbps."]**

· Buffer size of IP socket

   If the following OS parameters are small (for example, CentOS 122 KB), a performance of about 10 Gbps may not be attained due to packet loss or due to other causes.

   net.core.rmem_max
   net.core.wmem_max

· CPU power saving mode

   Performance may decline if the CPU is operated at a lower performance level than the CPU performance level required for a wide bandwidth due to the following settings of each OS.

   Windows
      Processor power management
   Linux
      /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor

· Packet queue size of relay device

   Packet loss occurs with no increase in RTT if there is a relay device with an extremely small queue size (or under conditions equivalent to this), causing congestion control to operate improperly and leading to a decline in performance and fairness levels.

3.3. Functional considerations

· When starting multiple instances of hcpd with the same UDP port specified
Communication timeout and other issues may occur when connecting from the client. This may lead to unexpected behavior.

Example:
hcpd1
UDPListenAddress 0.0.0.0:884
Note: UDP uses port 65520 by default. The privileged port 884 is specified.

systemctl start hcpd
Note: Service is started.

hcpd2
UDPListenAddress 0.0.0.0:1884
Note: UDP uses port 65520 by default. A non-privileged port is specified.

hcpd -f -c ~/hcpd.conf -p ~/hcpd.pid
Note: Started by a general user
Note: Two instances of hcpd have been started with the same UDP port number that is actually used for communication.

Connect from the client to the host running with the above setup as follows.

hcp -U D:D:D:D:D my_src.txt 192.168.100.100:884:my_dst.txt

Troubleshooting example:
Change the UDP port number of hcpd2 (Specify a value other than the default).

UDPListenAddress 0.0.0.0:1884*:65519*

· What to do when Out Of Memory (OOM) Killer in Linux is activated
   Linux provides a mechanism to monitor memory consumption patterns of processes and forcibly kill processes (with the KILL signal) as an OS function.

   If the following maximum buffer sizes are set to large values with respect to the system memory size (including when set to less than the memory size), the process may be killed by this mechanism.

   hcp.conf:
   MaxBufferSize

   hcpd.conf:
   MaxTotalBufferSize

   If there are indications that this happened, you can resolve the problem by changing buffer sizes to smaller values or increasing the system memory.

· Log level or investigation log
   If you change the following log levels to debug or enable an investigation log, it may take a while to finish sending a file and a timeout may occur depending on the environment (with NAT, and so on).

   hcpd.conf
   SystemLogLevel

   hcp.conf, other client configuration files
   ApplicationLogLevel

   Commands
   --investigation option

Revision History

Date	Changes
February 10, 2020	Added notes on log level and antivirus
December 17, 2019	Added performance considerations
November 12, 2019	Corrected errors
November 8, 2019	Added hcpd notes
June 7, 2019	Updated tutorial description and Windows installation description
April 26, 2019	Corrected errors in header, title and section title
April 25, 2019	Changed style, supplemented HpFP performance notes
February 1, 2019	Added Windows installation explanation
January 20, 2019	Added description of additional commands
July 30, 2018	Added performance and functional considerations