

Bytix Archaea tools Software Guide

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1. Introduction

Bytix Archaea tools, called as this software below, includes the following commands.

hcpd

This command provides a service function to clients of this software as Unix daemon.

hcpd_session

This command provides a privilege separation function on hcpd daemon.

hcpd_winserv

This command provides a service function to clients of this software as Windows service.

hcpd_winserv_genkey

This command provides host key generation for Windows service.
It usually runs automatically if the key does not exist at installation time.
So users do not have to use it.

hcpd_winserv_backup_conf

This command provides a function to backup configuration files of Windows service.
It usually runs automatically when removing the service software or updating it.
So users do not have to use it.

hcp

With this software's hcpd (hcpd_winserv) service, it provides functions for remote copy, local copy and synchronization of files and directories (cp、scp、rsync).
It realizes improved file transfer efficiency at the application layer by improving file delivery confirmation methods.
By using the HpFP protocol in the transport layer, efficient file transfer is

realized even in BDP environments (high latency environments) and high loss environments.

Of course you can use TCP as transport layer protocol with this software as well. And you can also use WebSocket transport well compatible to FWs and HTTP proxies.

hsync

This command provides a function to synchronize files and directories with hcpd (or hcpd_winserv) servers like using rsync command.

hrm

This command provides a function to remove files or directories at hcpd (or hcpd_winserv) servers like using rm command over SSH.

hcp-ls

This command provides a function to list files or directories at hcpd (or hcpd_winserv) servers like using ls command over SSH. It also supports dir command at Windows servers.

This command executes ls or dir command, with options passed from client, on an hcpd server and receives the result as text information.

hmkdir

This command provides a function to make directories at hcpd (or hcpd_winserv) servers like using mkdir over SSH.

hpwd

This command provides a function to print the working directory of user sessions on hcpd (or hcpd_winserv) servers like using pwd over SSH.

hmv

This command provides a function to move files or directories on hcpd (or hcpd_winserv) servers like using mv over SSH.

hln

This command provides a function to create symbolic links or hard links on hcpd servers like using ln over SSH.

hchmod

This command provides a function to change permissions of files or directories on hcpd servers like using chmod over SSH.

hchown

This command provides a function to change owner and group of files or directories on hcpd servers like using chown over SSH.

hcp_backup_conf

This command provides a function to backup configuration files of Windows client.

It usually runs automatically when removing the client software or updating it.

So users do not have to use it.

2. Configuration Files

hcpd (hcpd_winserv)

/etc/hcp/hcpd.conf (Linux)

C:/ProgramData/Clealink/HCP Tools/hcpd.conf (Windows)

* “HCP tools” is the old name of this software. The specification of the directory structure has no changes.

System configuration files of hcpd (or hcpd_winserv) daemon.

Please specify configuration of transport services (TCP/HPFP/WS/WSS), server security, authentication, logging, statistics and tuning parameters in this file.

/etc/hcp/users

C:/ProgramData/Clealink/HCP Tools/users

HCP tool's users file.

hcpd (or hcpd_winserv) daemon will use this file to recognize users or override credential information of them.

Please specify list of authentication methods, UID/GID, home directories, etc in this file.

/etc/hcp/passwd

C:/ProgramData/Clealink/HCP Tools/passwd

LPA (Local Password Authentication) credentials file.

Please specify credentials used by LPA like hashed password string in this file.

It supports MD5, SHA1 and SHA2 algorithms.

You can also generate them by OpenSSL utility.

/usr/lib/systemd/system/hcpd.service

Service description file for systemd daemon.

/etc/pam.d/hcpd

PAM authentication configuration file.

hcp

/etc/hcp/hcp.conf

C:/ProgramData/Clealink/HCP Tools/hcp.conf

/usr/local/etc/hcp/hcp.conf (macOS)

hcp system configuration file.

Please specify configuration of client security, logging, statistics and tuning parameters in this file.

As with /etc/profile, hcp command first tries to load system configuration file.

<User Home Directory>/_hcp/hcp.conf (Linux / macOS)

<User Home Directory>/_hcp/hcp.conf (Windows)

hcp user configuration files.

As with ~/.bash_profile, hcp command tries to load user configuration file after system configuration file.

It is possible to overwrite the configuration values by including the external configuration files created by the user at any position except for include statement itself and configuration values dependent to each command.

hsync

/etc/hcp/hsync.conf

C:/ProgramData/Clealink/HCP Tools/hsync.conf

/usr/local/etc/hcp/hsync.conf

hsync system configuration files.

<User Home Directory>/_hcp/hsync.conf

<User Home Directory>/_hcp/hsync.conf

hsync user configuration files.

The loading order of configuration files is the same as the hcp command.

hrm

/etc/hcp/hrm.conf

C:/ProgramData/Clealink/HCP Tools/hrm.conf

/usr/local/etc/hcp/hrm.conf

hrm system configuration files.

<User Home Directory>/_hcp/hrm.conf

<User Home Directory>/_hcp/hrm.conf

hrm user configuration files.

The loading order of configuration files is the same as the hcp command.

hcp-ls

/etc/hcp/hcp-ls.conf

C:/ProgramData/Clealink/HCP Tools/hcp-ls.conf

/usr/local/etc/hcp/hcp-ls.conf

hcp-ls system configuration files.

<User Home Directory>/_hcp/hcp-ls.conf

<User Home Directory>/_hcp/hcp-ls.conf

hcp-ls user configuration files.

The loading order of configuration files is the same as the hcp command.

hmkdir

/etc/hcp/hmkdir.conf

C:/ProgramData/Clealink/HCP Tools/hmkdir.conf

/usr/local/etc/hcp/hmkdir.conf

hmkdir system configuration files.

<User Home Directory>/etc/hcp/hmkdir.conf

<User Home Directory>/_etc/hcp/hmkdir.conf

hmkdir user configuration files.

The loading order of configuration files is the same as the hcp command.

hpwd

/etc/hcp/hpwd.conf

C:/ProgramData/Clealink/HCP Tools/hpwd.conf

/usr/local/etc/hcp/hpwd.conf

hpwd system configuration files.

<User Home Directory>/etc/hcp/hpwd.conf

<User Home Directory>/_etc/hcp/hpwd.conf

hpwd user configuration files.

The loading order of configuration files is the same as the hcp command.

hmv

/etc/hcp/hmv.conf

C:/ProgramData/Clealink/HCP Tools/hmv.conf

/usr/local/etc/hcp/hmv.conf

hmv system configuration files.

<User Home Directory>/.hcp/hmv.conf

<User Home Directory>/_hcp/hmv.conf

hmv user configuration files.

The loading order of configuration files is the same as the hcp command.

hln

/etc/hcp/hln.conf

C:/ProgramData/Clealink/HCP Tools/hln.conf

/usr/local/etc/hcp/hln.conf

hln system configuration files.

<User Home Directory>/.hcp/hln.conf

<User Home Directory>/_hcp/hln.conf

hln user configuration files.

The loading order of configuration files is the same as the hcp command.

hchmod

/etc/hcp/hchmod.conf

C:/ProgramData/Clealink/HCP Tools/hchmod.conf

/usr/local/etc/hcp/hchmod.conf

hchmod system configuration files.

<User Home Directory>/.hcp/hchmod.conf

<User Home Directory>/_hcp/hchmod.conf

hchmod user configuration files.

The loading order of configuration files is the same as the hcp command.

hchown

/etc/hcp/hchown.conf

C:/ProgramData/Clealink/HCP Tools/hchown.conf

/usr/local/etc/hcp/hchown.conf

hchown system configuration files.

<User Home Directory>/etc/hcp/hchown.conf

<User Home Directory>/_etc/hcp/hchown.conf

hchown user configuration files.

The loading order of configuration files is the same as the hcp command.

Common files used by clients

<User Home Directory>/etc/hcp/known_hosts

<User Home Directory>/_etc/hcp/known_hosts

known_hosts files.

As with SSH, this software save already confirmed public keys and host information.

3. List of Functions Provided

In addition to the main functions mentioned above, the command provides the following functions for use in the same way as general software or in the Internet environment.

- Control of File Permissions and Attributes
- Control of Copy Actions (conditions to copy, overwrite and halt)
- Digest Verification of Files and Transfer Blocks
- Multiple Source Support Similar to FTP mput and mget
- Transfer Character Encoding Negotiation
- User Authentication (PAM, Windows Logon, RSA/ECDSA/Ed25519 Key Authentication, Client Certificate, key agent ssh-agent/pageant, Authentication defined by this software)
- Privilege Separation Similar to SSH
- Transport Extension (HpFP, WebSocket, Multi-Channel)
- Transport Security (Server Certificate and RSA Keys like SSL/SSH)
- Transport Compression
- Bandwidth Shaping (Simple Shaping in Application Layer)
- Transport Failure (Timeout) Detection
- Remote Access Control (Admission Control, ACL)
- Protocol Version Negotiation
- Access Control for File System at Server (including user home isolation)
- Resuming Function of File Copy, Direct I/O and Asynchronous I/O(Linux)
- Interactive Interface (Prompts, Progress Animation, Loading Env. Variables)
- Reporting Host Information and Host Performance
- Cooperation with Server Applications (including user home isolation for callback scripts)
- Logging (syslog support at Linux)
- Statistics Recording
- Log Rotation
- Unix Daemon (systemd), Windows Service
- Webmin Support (for Server Administration on Linux)
- Change Installation Place, Installation by non-privileged users (RPM)

4. Platforms Supported

Linux

- RHEL (CentOS 7, AlmaLinux/RockyLinux 8, AlmaLinux/RockyLinux 9)
- Debian (Ubuntu 20.04, Ubuntu 22.04, Ubuntu 24.04)
- SLE (openSUSE Leap 15.3/15.4/15.5)
- Raspberry Pi OS 9 32bit (Pi 3 B+)
- Raspberry Pi OS 11 64bit (Pi 4 B)
- macOS as client (Intel Catalina or later. M1/M2 Monterey or later)

Windows

- Windows 10/11 as client
- Windows Server 2012/2016/2019 as server

Schedule to be removed:

CentOS 7 some release after 2025/6/30

openSUSE Leap 15.3 the next release

5. Requirements

Hardware Requirements

hcpd

CPU	Processors corresponding to Intel Core 3GHz 4th generation or later recommended AES-NI recommended
RAM	2GB or more (8GB recommended)
Storage	10GB free space or more (100GB recommended, but not including area for storing data files)
Network	1Gbps or more You need network environment where HCP clients can access to the hcpd.

hcp/hsync (x86)

CPU	Processors corresponding to Intel Core 3GHz 4th generation or later recommended AES-NI recommended
Memory	1GB or more (2GB recommended)
Storage	10GB free space or more (100GB recommended, but not including area for storing data files)
Network	100Mbps or more (1Gbps recommended) If you perform a remote copy you need network environment where you can access to the hcpd.

hrm/hcp-ls/hmkdir/hpwd/hmv/hln/hchmod/hchown (x86)

CPU	Processors corresponding to Intel Core 3GHz 4th generation or later recommended AES-NI recommended
Memory	1GB or more (2GB recommended)
Storage	1GB free space or more (10GB recommended)
Network	100Mbps or more (1Gbps recommended) You need network environment where you can access to the hcpd.

hcp/hsync/hrm/hcp-ls/hmkdir/hpwd/hmv/hln/hchmod/hchown (ARM)

CPU	Cortex-A53 (RPi 3 Model B+) AES-NI recommended
Memory	1GB
Storage	1GB free space (This dose not include area to save files)
Network	100Mbps You need network environment where you can access to the hcpd.

Software Requirements

Maximum Sessions	TCP 1000 HpFP 1000 WS/WSS 1000
Bandwidth Range	100 Kbps ~ 100Gbps (1Gbps at Windows OS)
Maximum File Size	8EiB (maximum of signed 64bit integer)

History of editing

Date	Changes
2024/2/13	Modified the platform information.
2024/10/15	Modified the platform information.
2024/06/27	Modified the platform information.
2024/04/22	Modified the list of functions.
2023/12/12	Modified the platform information.
2023/10/20	Modified the list of functions.
2023/09/12	Modified the list of functions and the platform information
2023/08/23	Modified the list of functions.
2023/07/28	Modified the list of functions.
2023/03/31	Added description on the function list about changing installation place and installation by non-privileged users support in RPM.
2022/12/02	Modified the platform information.
2022/10/07	Modified the platform information. Edited Hardware Requirements
2022/07/07	Modified the total description on translation from Japanese.
2019/04/25	Modified the software requirements.
2019/03/21	The first edition was made.