STK Silo ACS V1.1 Installation Guide

Exemplar Servers

B5655-90017

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Hewlett-Packard Company
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Purpose and audience

This guide describes the installation of the StorageTek automated cartridge system (ACS), commonly referred to as the *silo*, and the tasks required to configure the silo system.

Using this guide

If you are not familiar with the StorageTek ACS, read the STK *Silo ACS V1.1 Release Notice: Exemplar Servers* before attempting to perform any of the tasks described in this book.

Performing the silo system installation is discussed in Chapter 2, "Silo installation."

Configuring the silo system is discussed in Chapter 2, "Silo configuration."

Notational conventions

This section discusses notational conventions used in this book.

`Bold monospace`

In command examples, text shown in **`bold monospace`** identifies user input that must be typed exactly as shown. Surround this kind of text in a VoiceUser element.

`Monospace`

In paragraph text, `monospace` identifies command names, system calls, and data structures and types.Use the VoiceComputer element for this type of text.

In command examples, `monospace` identifies command output, including error messages. Use theVoiceComputer element for this type of text.

In command syntax diagrams, text shown in `monospace` must be typed exactly as shown. Use VoiceComputer.

Italic

In paragraph text, *italic* identifies new and important terms and titles of documents. Use the Emphasis element for this type of text.

In command syntax diagrams, *italic* identifies variables that must be supplied by the user. Use the Variable element.

Bold

The **bold** character format is used for special emphais. Try not to overuse it. Wrap bold text in the VoiceDisplay element.

{ }

In command syntax diagrams, text surrounded by curly brackets indicate a choice. The choices available are shown inside the curly brackets and separated by the pipe (|) sign.

The following command example indicates that you can enter either `a` or `b`:

```
command {a | b}
```

[ ]

In command syntax diagrams, square brackets indicate optional data.

The following command example indicates that the variable *output_file* is optional:

`command` *input_file* [*output_file*]

...

In command syntax, horizontal ellipsis shows repetition of the preceding item(s).

The following command example indicates you can optionally specify more than one *input_file* on the command line.

`command` *input_file* [*input_file ...*]

KEYCAP

In paragraph text, text shown in **KEYCAP** indicates keyboard keys you must press to execute the command. For example, **RETURN** refers to the carriage return key. Use the Keycap element.

Two **KEYCAP** terms separated by a hyphen indicate two keys that you must press simultaneously. For example, **CTRL-d** indicates that you must press the **d** key while holding down the **CTRL** key.

Notes, cautions, and warnings

This document presents notes, cautions, and warnings in the following formats.

Note

A Note highlights supplemental information.

Caution

A Caution highlights information necessary to avoid damage to the system.

Warning

A warning highlights information necessary to avoid injury to personnel.

Associated documents

The following documents are applicable to the *STK silo ACS* 1.1 release:

- *SPP-UX System Administration Guide* (B5655-90002)
- *ConvexTMR Administrator's Guide* (DSW-480)
- *ConvexTMR Operator's Guide* (DSW-482)
- *ConvexTMR User's Guide* (DSW-481)
- STK *Silo ACS V1.1 Release Notice: Exemplar Servers* (B5655-90016)

Ordering documents

To order the current edition of these or any other Convex documents, send requests to:

Hewlett-Packard Company
Convex Technology Center
Customer Service
P.O. Box 833851
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Please include the order number or the exact title of the document.

Technical assistance

If you have questions that are not answered in this book, contact the Hewlett-Packard Convex Technical Assistance Center (TAC) at the following locations:

Within the continental U.S., call 1 (800) 952-0379.

From Canada, call 1 (800) 345-2384.

All other locations, contact the local Convex Technology Center office.

STK Silo ACS introduction 1

This product provides an interface between the Exemplar machine and the StorageTek automated cartridge system (ACS), commonly referred to as the silo. The silo is an automatic cartridge system that stores and tracks the location of thousands of tape cartridges. Within the silo, a robot arm mounts and removes tapes on the available drives as they are needed without operator intervention.

When a tape request is made, the electromechanical robotic arm locates the requested tape by bar code and delivers it to the cartridge tape drive or passes it to another silo. When the tape is no longer needed, it removes the tape from the drive and returns it to its library slot.

STK Silo ACS installation

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This chapter explains how to run the silo install script and how to configure the StorageTek ACS. The file tree of an installed silo system in shown in Chapter 2.

Upgrading

This product is equivalent to the ACS silo software V1.1 (Convex Part Number 710-022415-000) for SPP-UX release prior to V5.x, except that files use the HP-UX 10.x File System Layout (HP10FSL).

If you are installing this product because you have upgraded from SPP-UX 4.x to SPP-UX 5.x and want to replace pre-HP10FSL version of ACS silo software, remove the existing software from the system:

1. Save a copy of /usr/convex/robot/config/silodrivelist, which can be used in Step 2 of "Configuring the STK silo ACS" section on page 8.
2. Use `swremove` before installing the replacement product.

The installation and configuration of this product does not remove any installed software under /usr/convex/robot/.

Running the STK silo ACS script

The silo installation script was developed to streamline installation procedures while providing satisfactory flexibility for the majority of silo installations. Before you initiate the script, you should read this section to familiarize yourself with the general script procedures.

Note

You must log in as root to install the ACS software properly.

Checking the distribution media

You can check the contents of the distribution media to ensure that all the correct files are available. To check, enter the following command:

/usr/sbin/swlist -l file -s ***host_name:tape_device***

You should then see the following display shown in Figure 1.

```
SPP# /usr/sbin/swlist -l file -s host_name:tape_device_path SILO
# Initializing...
# Contacting target "host"...
#
# Target: host_name:tape_device_path
#

# SILO                      1.1            Silo ACS daemons and commands
# SILO.SILO_CMDS           1.1            Silo ACS daemons and commands
  SILO.SILO_CMDS: /opt/silo/bin/
  SILO.SILO_CMDS: /opt/silo/bin/silodaemon
  SILO.SILO_CMDS: /opt/silo/bin/silodismount
  SILO.SILO_CMDS: /opt/silo/bin/siloeject
  SILO.SILO_CMDS: /opt/silo/bin/siloenter
  SILO.SILO_CMDS: /opt/silo/bin/silomount
  SILO.SILO_CMDS: /opt/silo/bin/siloquery
  SILO.SILO_CMDS: /opt/silo/bin/ssi
  SILO.SILO_CMDS: /opt/silo/init.d/
  SILO.SILO_CMDS: /opt/silo/init.d/silo
  SILO.SILO_CMDS: /opt/silo/newconfig/etc/opt/silo/
  SILO.SILO_CMDS: /opt/silo/newconfig/etc/opt/silo/silodrivelist
  SILO.SILO_CMDS: /opt/silo/newconfig/etc/rc.config.d/
  SILO.SILO_CMDS: /opt/silo/newconfig/etc/rc.config.d/silo
# SILO.SILO_MAN            1.1            Silo ACS Man Pages
  SILO.SILO_MAN: /opt/silo/share/man/man1m.Z/
  SILO.SILO_MAN: /opt/silo/share/man/man1m.Z/silodaemon.1m
  SILO.SILO_MAN: /opt/silo/share/man/man1m.Z/silodismount.1m
  SILO.SILO_MAN: /opt/silo/share/man/man1m.Z/siloeject.1m
  SILO.SILO_MAN: /opt/silo/share/man/man1m.Z/siloenter.1m
  SILO.SILO_MAN: /opt/silo/share/man/man1m.Z/silomount.1m
  SILO.SILO_MAN: /opt/silo/share/man/man1m.Z/siloquery.1m
```

Figure 1 Contents of the distribution media

Previewing the install session

You can preview the installation to ensure that it will be successful. When running in preview mode, the install script checks the source and target devices. To run the script in preview mode, use the `-p` option in the `swinstall` command, as shown below.

```
# /usr/sbin/swinstall -p -s host_name:tape_device_path SILO @host_name
```

After entering the `swinstall -p` command, you will see a display similar to that shown in Figure 2.

```
=======  01/02/97 18:20:50 CST  BEGIN swinstall SESSION (non-interactive)

       * Session started for user "user@host".

       * Beginning Selection Phase.
       * Options:
            preview                       no
            target type                   root
            linkinstall                   no
            verbose                       1
            option file
            session file
            software file
            target file

       * Target connection succeeded for "host_name:/".
       * "host_name:tape_device_path": This source is a tape
         device.
       * Source:                        host_name:/tape_device_path
       * Targets:                       host_name:/
       * Software selections:
            SILO.SILO_CMDS,r=1.1,a=Exemplar-K/S/X_HP10FSL,v=CONVEX
            SILO.SILO_MAN,r=1.1,a=Exemplar-K/S/X_HP10FSL,v=CONVEX
       * Selection Phase succeeded.


       * Beginning Analysis Phase.
       * Session selections have been saved in the file
         "/home/user/.sw/sessions/swinstall.last".
       * Analysis Phase succeeded.


NOTE:    More information may be found in the agent logfile (location
         is host_name:/var/adm/sw/swagent.log).

=======  01/02/97 18:21:20 CST  END swinstall SESSION (non-interactive)
```

Figure 2 Sample preview display

Installing ACS

Enter the `swinstall` command, as shown below:

```
# /usr/sbin/swinstall -s host_name:tape_device_path SILO @host_name
```

A sequence of screen messages will be displayed. The script is not interactive. Following this paragraph is captured output from an actual installation session.

The first part of the script should appear as shown in Figure 3:

```
=======  01/02/97 18:21:50 CST  BEGIN swinstall SESSION (non-interactive)

       * Session started for user "user@SPP".

       * Beginning Selection Phase.
       * Options:
            preview                        no
            target type                    root
            linkinstall                    no
            verbose                        1
            option file
            session file
            software file
            target file

       * Target connection succeeded for "host_name:/".
       * "host_name:tape_device_path": This source is a tape device.
       * Source:                host_name:tape_device_path
       * Targets:               host_name:/
       * Software selections:
            SILO.SILO_CMDS,r=1.1,a=Exemplar-K/S/X_HP10FSL,v=CONVEX
            SILO.SILO_MAN,r=1.1,a=Exemplar-K/S/X_HP10FSL,v=CONVEX
       * Selection Phase succeeded.
```

Figure 3 Sample output of `swinstall` command

After the install script selects the target and source devices, it completes the installation as shown in Figure 4.

```
       * Beginning Analysis Phase.
       * Session selections have been saved in the file
         '/home/user/.sw/sessions/swinstall.last'.
       * Analysis Phase succeeded.


       * Beginning Execution Phase.
       * Execution Phase succeeded.


NOTE:    More information may be found in the agent logfile (location
         is host_name:/var/adm/sw/swagent.log).

=======  01/02/97 18:22:20 CST  END swinstall SESSION (non-interactive)
```

Figure 4 Output during the analysis and execution phases

Configuring the STK silo ACS

This section describes the steps you must take to configure the system for the silo. The route from the StorageTek Sun server to the Convex machine must be direct: do not use a router (use a static route if necessary).

Step 1 Get drive coordinates for each of these drives from your StorageTek representative. Drive coordinates define to the mechanical tape operator (robotic arm) the position occupied by the tape drive in the silo. This enables the mechanical tape operator to mount and unmount cartridges on the drive, as well as to report its status. The drive coordinates are four integers separated by commas, as in

```
0,0,0,0
```

Step 2 Map the tape devices to silo tape drives.

The file /etc/opt/silo/silodrivelist maps the silo's tape drives' special device files to a silo drive coordinate, which allows the device file to access the associated drive. The silodrivelist file is a simple ASCII file. You must create this file before using ACS tape commands. Figure 5 illustrates an example silodrivelist file.

tc0	0,0,10,0
tc:0	0,0,10,0
/dev/tmid/rtc0	0,0,10,0
/dev/tmid/rtc0n	0,0,10,0
/dev/tmid/rtc0ni	0,0,10,0
/dev/tmid/rtc0i	0,0,10,0
tc1	0,0,10,2
tc:1	0,0,10,2
/dev/tmid/rtc1	0,0,10,2
/dev/tmid/rtc1n	0,0,10,2
/dev/tmid/rtc1ni	0,0,10,2
/dev/tmid/rtc1i	0,0,10,2

Figure 5 Example Silodrivelist file

Each line in this file represents one entry. Each entry is a Convex tape drive or special device file name followed by the silo drive coordinates. Name and coordinates are separated by a space or tab. Each coordinate is separated by a comma. No comments are allowed.

Step 3 Edit the /etc/rc.configid/silo file to add the following lines:

```
RUN_SILO=1
set -A SILO_HOST sunserver
```

The silodaemon starts a storage server interface (ssi) daemon to communicate with the StorageTek server.

Step 4 Add an entry to /etc/services identifying the port number that the ssi daemon monitors.

The line should be similar to the following:

```
silo            50004/tcp          #silodaemon pid
```

Note

If no port is specified, port number 50004 is used by default.

Step 5 As root, start the silo product subsystem:

```
# /sbin/init.d/silo start
```

Step 6 If desired, edit the default search path for all users:

Edit /etc/PATH to include /opt/silo/bin.

Edit /etc/MANPATH to include /opt/silo/share/man.

Testing links

You can test the link with the `spray` command. Figure 6 shows an example of using the `spray` command.

```
15:13<jaguar>[jplemar]<103>spray smetana
sending 1162 packets of lnth 86 to smetana ...
no packets dropped by smetana
482 packets/sec, 41503 bytes/sec
```

Figure 6 Example of `spray` command

Removing STK ACS

You can remove the STK silo ACS V1.1 software for SPP-UX by using the following command:

`/usr/sbin/swremove SILO @`*`host_name`*

The remove session is not interactive. The output is shown in Figure 7.

```
SPP# /usr/sbin/swremove SILO @host

=======  01/02/97 19:59:46SCDT  BEGIN swremove SESSION
         (non-interactive)

       * Session started for user "user@SPP".

       * Beginning Selection Phase.
       * Options:
             preview                       no
             target type                   root
             linkinstall                   no
             verbose                       1
             option file
             session file
             software file
             target file

       * Target connection succeeded for "host_name:/".
       * Software selections:
             SILO.SILO_CMDS,r=1.1,a=Exemplar-K/S/X_HP10FSL,v=CONVEX
             SILO.SILO_MAN,r=1.1,a=Exemplar-K/S/X_HP10FSL,v=CONVEX
       * Selection Phase succeeded.

       * Beginning Analysis Phase.
       * Session selections have been saved in the file
         "/home/user/.sw/sessions/swremove.last".
       * Analysis Phase succeeded.


       * Beginning Execution Phase.
       * Execution Phase succeeded.


NOTE:    More information may be found in the agent logfile (location
         is host_name:/var/adm/sw/swagent.log).

=======  01/02/97 19:00:02 CST  END swremove SESSION (non-interactive)
```

Figure 7 Output of the `swremove` command

STK Silo ACS files

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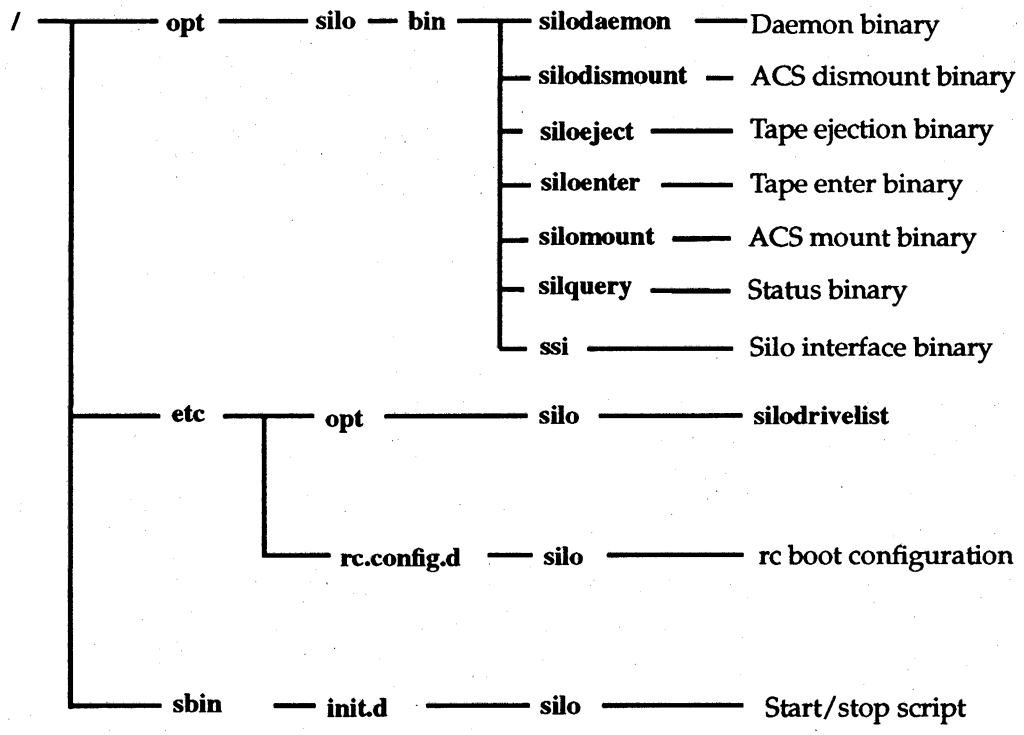

Figure 8 SILO_CMDS file sets

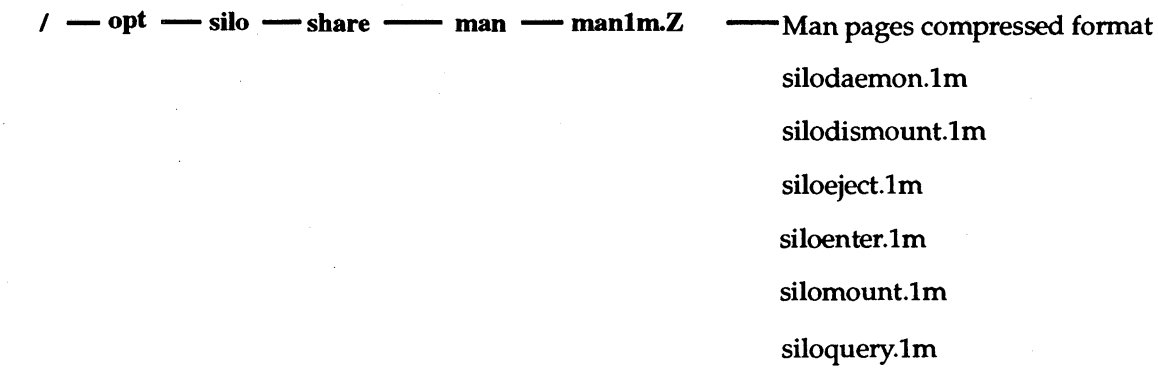

Figure 9 SILO_MAN fileset

STK Silo ACS files
STK Silo ACS files