

Co:Z Co-Processing Toolkit for z/OS

Co:Z Toolkit Installation and Release Notes

V 2.1.1 Edition

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Revision History

Co:Z Toolkit 2.1.1 - March 16, 2012

This release makes the following enhancements and fixes:

- Added two new dspipes commands **fromfile** and **tofile**. See the *Co:Z user's guide for more information*.
- Added the `-x` option to the **catsearch** which sets the exit code based on the number of entries found: (0=no entries, 1=one entry, 2=more than one entry).
- Changed the saf-ssh-agent utility to respect digital certificate expiration. Note that this change may cause existing Co:Z programs to fail if the certificates used for authentication have expired. The old behavior can be retained by setting the environment variable `COZ_STRICT_CERT_CHECK=false`. The default is `true`.
- Added a man page has been added for the **cozclient** command.
- Extended the use of the `technique` option (for Unicode Services codepage translation) to the dataset pipes commands **fromdsn**, **fromfile**, **todsn**, and **tofile**. The `technique` option was added to Co:Z SFTP in release 1.10.0
- Added `pattern-get:` and `pattern-put:` sections to the config files to provide directional control over file transfer.
- Fixed a problem where **ssh-socket-info** might not run correctly when called from COZBATCH. A workaround (for the previous release) is to `export _BPX_SHAREAS=YES` to your script or profile.
- Fixed a problem where config file patterns were not always matching PDS member names correctly.
- Modified the Co:Z SFTP server subsystem `sftp-server.sh` script to `export _BPXK_JOBLOG=STDERR` which provides additional logging information when certain errors occur.
- Changed the `sftp_batch` sample scripts (`sftp_connect.sh`, `sftp_get.sh`, `sftp_put.sh`, etc.) to `export LC_ALL=C` to ensure proper shell script and C runtime library behavior. Please note that this change will cause the default client code page (for `cozsftp`) and server code page (for `sftp-server`) to the z/OS platform default of IBM-1047. To set a different default codepage for file transfers, place the desired codepage in the `default:` section of `cozsftp_config` and/or `cozsftp_server_config` files respectively. See the *"Session Config Files" appendix of the SFTP user's guide* for more information.
- Changed the `sftp_opts` settings in the SFTPIND sample JCL member to set defaults for `ConnectTimeout` and `ServerAliveInterval`

Co:Z Target System Toolkit 1.1.0 - March 16, 2012

This release makes the following enhancements and fixes:

- Added remote support for the new dspipes **fromfile** and **tofile** commands. *Note:* To use these commands, the Co:Z Toolkit for z/OS version 2.1.1 or later must be installed.
- Added new local command **toasa** which converts POSIX files to ASA carriage control format. This command is useful for converting files with ASCII form feed characters into a dataset RECFM=A format.

- Fixed a problem where logging is not properly set up when using the COZ_SSH_OPTS environment variable in place of the `-ssh` command line option.

Co:Z Toolkit 2.1.0 - January 24, 2012

This release makes the following enhancements and fixes:

- Added two new dspipes commands **fromfile** and **tofile**. See the user's guide for more information.
- Changed the Co:Z Launcher to allow different DD names for SYSOUT (Co:Z Log messages) and SYSPRINT (Co:Z Agent output). In the new sample JCL (COZPROC), these are now named COZLOG and COZOUT respectively.

Co:Z Toolkit 2.0.1 - January 14, 2012

This release makes the following minor changes to the 2.0.0 (Beta) release, and is no longer considered "Beta".

- Fixed a problem in Co:Z SFTP JES support - jobs submitted to `//-JES.INTRDR` may now be listed after they are submitted.
- Corrected an issue in Co:Z SFTP where writing to a z/OS dataset using a source file with a line longer than 128K would fail with an error "InputBuffer will not hold xxxxx bytes of new data".
- Enhanced the sample `sftp_batch` scripts to support SAF keyrings with private keys stored in hardware. See the comments in `sample/scripts/sftp_batch/sftp_connect.sh` for more information.

Co:Z Toolkit 2.0.0 (Beta) - December 1, 2011

Note: We recommend that you use this release if you are evaluating or testing Co:Z outside of a production environment. We expect to provide production support for this release level within 60 days. If you are a commercial customer and have specific support requirements, please contact us. This release makes the following enhancements and fixes:

- Extended Access Volume (EAV) support has been added to Co:Z SFTP.
- Enhanced the Co:Z SFTP client and server to write log message records (INFO level and above) to SMF 119, using new subtypes 192 (client) and 193 (server).
- Added a utility program `ssh-socket-info` which is invoked by the Co:Z SFTP client to get more accurate socket information for SMF records. This program uses the IBM EZBNMIFR network management API, which requires the `ssh-socket-info` program to be APF authorized. The Co:Z installer will attempt to set the "+a" extattr bit on this program, but will only succeed if the installing userid has READ access to the BPX.FILEATTR.APF SAF resource. If for some reason, this program is not APF authorized, Co:Z SFTP will operate properly, but the SMF socket information is not guaranteed to be accurate.
- Support for hex pad characters has been added to Co:Z SFTP.
- Changed the `catsearch` utility to automatically show user catalog entries. Added an option (`-e`) to allow for a custom selection of entry types.

Co:Z Toolkit 1.10.1 - November 7, 2011

This release makes the following enhancements and fixes:

- The Co:Z Launcher now makes the SYSIN DD available for application use.

- Added several sample shell scripts and JCL to simplify the use of `cozsftp` in batch jobs. See the `$COZHOME/sample/scripts/sftp_batch` and the new `SFTPPROC`, `SFTPIND`, and `SFTPSAMP` JCL members in the installation's `SAMPJCL` PDS.
- Changed the Co:Z SFTP server to provide FTP style confidence indicator in the `CZPOSTPR` exit.
- Fixed a problem in the `cozsftp` shell script where command line arguments were not being transparently passed to the Co:Z SFTP client. This problem could affect the use of the `-oIdentityKeyRingLabel` option, which requires quoting. This bug was introduced in release 1.9.0. Contact us if you would like a local fix for releases 1.9.0 through 1.10.0.
- Fixed a problem where `BPXWDYN` dataset options were not being properly overridden when associated with a file pattern.
- Fixed a problem in dataset code where a read error might not be detected.
- The `LOGNAME` feature introduced in the previous release was not working properly. This has been fixed.

Co:Z Toolkit 1.10.0 - September 15, 2011

This release makes the following enhancements and fixes:

- Added a feature to Co:Z SFTP that allows file transfer settings to be associated with POSIX filename and z/OS Dataset patterns. See the updated Co:Z SFTP documentation for details
- Added the `technique` option to Co:Z SFTP. This option is used to specify the Unicode System Services Technique used when translating between the client and server codepages
- Co:Z Batch now automatically sets the `LOGNAME` environment variable to the current z/OS userid. This is in addition to the existing behavior of setting the `HOME` environment variable to the current user's home directory.
- Co:Z Launcher now automatically sets the `LOGNAME` and `HOME` environment variables.
- The `pdsdir` command has been enhanced (via the `-n` option) to display only member names.
- Fixed a problem with dataset pipes handling of hex character line terminators (`0xnnnn`).
- Fixed a problem with `cozsftp` where a non latin locale caused the client to not work properly.
- Added the sample program `CoZSmfServer` which demonstrates how SMF records may be received in real time from Co:Z client and server. See the documentation and build instructions in `$COZ_HOME/samples/smfapi/CoZSmfServer.C`

Co:Z Target System Toolkit 1.0.14 - June 7, 2011

Enhanced Co:Z Agent to track the parent `sshd` process and detect if it has terminated abnormally (e.g. due to the Job Step being cancelled by the operator). If this condition is detected, the Co:Z Agent will terminate its process group, which will prevent orphaned processes from continuing to run on the target system.

Co:Z Toolkit 1.9.0 - May 16, 2011

This release makes the following enhancements and fixes:

- Co:Z SFTP now returns the "last referred date" (midnight) from the VTOC for datasets as last changed time.

While not accurate, this is a reasonable substitute and better than the base UNIX epoch date of 1969-12-31

- The `cozsftp` command is now a shell script. The executable has been renamed to `cozsftp_cmd`. This should be a transparent change to existing jobs. However, it adds a new capability to allow customization of the **cozsftp** command line arguments. See [cozsftp_client.rc](#) for more information.
- Fixed a problem with long (>256) character unix file paths in Co:Z SFTP
- Cleaned up formatting of long dataset name listings in Co:Z SFTP
- Fixed a problem where `disp=mod` was incorrectly being added to `bpxwdyn` allocations of new datasets in Co:Z SFTP
- Fixed a problem with the `-p` option on the **get** subcommand of **cozsftp**.
- Added subcommands **ascii** and **binary** to **cozsftp**. These operate as synonyms to the option settings **lzopts mode=text** and **lzopts mode=binary** respectively.
- Added a new option `-N` to COZBATCH to respect digits in columns 73-80 in STDIN rather than stripping them out, which is the default behavior.

Co:Z Toolkit 1.8.0 - February 3, 2011

This release makes the following enhancements and fixes:

- A new Co:Z SFTP client option **ssh-le-options** can be used to set LE options for IBM Ported Tools OpenSSH. This option can be set in `/etc/ssh/cozsftp_config` to simplify the process of implementing IBM APAR [OA34819](#).
- The **ssh-le-options** settings in the sample configuration files for both Co:Z Launcher and the Co:Z SFTP client were updated to reflect IBM APAR [OA34819](#).
- A new configuration option **properties-exit** was added to the Co:Z Launcher which allows properties to be dynamically provided by a user-supplied exit program or script.T
- Fixed a bug in Co:Z SFTP that can cause an OC4 when querying JES spool jobs using a jobname or owner longer than 8 characters.
- Fixed a bug in Co:Z SFTP that caused the "mode=text" setting to be treated as binary if "mode=TEXT" was given.

Co:Z Toolkit 1.7.8 - January 17, 2011

This release fixes a potential OC4 exception when the 'noreplace' option is used.

Co:Z Toolkit 1.7.7 - January 14, 2011

This release fixes several problems:

- In Co:Z SFTP, listing dataset levels that contain GDGs may cause a loop/hang condition.
- An OC4 exception can occur in Co:Z SFTP if there is an open error on a z/OS dataset.
- In Co:Z SFTP, a z/OS-formatted dataset listing displays January "Last Referred" dates with a day that is one less than the actual LastReferred date.

- A debug-level log message was added to Co:Z SFTP client and server to print out the requested and actual REGION size.

Co:Z Toolkit 1.7.5 - December 13, 2010

In addition to the changes made in the 1.7.4 beta release, the following enhancements and minor fixes are included in this production release:

- A memory leak was fixed in Co:Z SFTP that caused out-of-memory errors if many Unix files were transferred using a small REGION size.
- A fix to Co:Z SFTP job submission which sometimes prevented the display of job handles if multiple jobs were submitted in the same session.
- The `read_passwd_dsn_sh` script was changed to allocate the dataset with DISP=SHR.
- The `lsjes` z/OS Unix command was added to Dataset Pipes to support listing the status of jobs and spool files. Thanks to John McKown for the utility name and the idea of offering this feature as a standalone utility.
- The Dataset Pipes `fromdsn` command was enhanced to support reading JES spool files.
- The Co:Z `safauth` has been enhanced to add DSA key support.
- Some of the JCL members in the SAMPJCL PDS have been renamed for clarity. See the @@README member for details.

Co:Z Target System Toolkit 1.0.11 - December 13,2010

Production version of the previous (beta) 1.0.9 release. This version has a minor change to the target program child I/O process wait / cleanup.

Co:Z Target System Toolkit 1.0.9 - September 30,2010 (Beta Release)

Note: This release of the Co:Z Target System Toolkit should only be used with version 1.7.4 or later of the z/OS Co:Z Launcher. Previous versions are still compatible with Co:Z Launcher 1.7.4.

- CoZAgent changed to emit a "Waiting for completion..." message every five minutes. This may be helpful to keep the ssh session alive in some environments where the connection may otherwise timeout.
- CoZAgent changed to detect cleanup errors with the stdin/stdout/stderr handlers and to exit with RC=103 if one of these child processes did not complete successfully.
- CoZClient and the fromdsn/todsn clients changed to support a new environment variable: `COZ_SSH_OPTS`. This environment variable can be set in a client-initiated ssh connection to set `user@host` and any other ssh option defaults. This variable should not be set when running under the Co:Z Launcher.

Co:Z Toolkit 1.7.4 - September 28, 2010 (Beta Release)

- Co:Z SFTP - significant enhancements to JES support:
 - Support for submitting jobs to internal reader A handle/name can be used to refer to submitted jobs. New settings `jesrecfm` and `jesrecl` can be used to control format of internal reader dataset.
 - A new setting `jesjobwait` allows for waiting for job completion before listing or downloading spool files.

- Support for downloading concatenated spool files for a job.
- Selection of spool files by either dsid or [step.[procstep.]ddname.
- New setting **jesstatus** can be used to filter job listing by status.
- `sftp-server.sh` changed to remove empty log files on completion.
- Fixed bug where fixed options could be overridden.
- Co:Z Launcher
 - Added `ssh-le-options` to property to allow setting of RUNOPTS for ssh child process. Set the default in COZCFGD so to set the initial HEAP size for Ported Tools OpenSSH to avoid storage allocation problem.
 - Fixed a timing bug that sometimes results in not cleaning up child processes. Before this fix, target fromdsn/todsn commands occasionally do not get cleaned up properly.
- Enhanced to **safauth** command to allow **volser** option.
- Fixed bug in **genlines** command in processing **-l rdw** option.

1.7.2 - July 23, 2010

- Made the Co:Z toolkit compatible with IBM Ported Tools for z/OS version 1.2. Specifically, components in the toolkit that spawn the ssh client have been changed to spawn with a default setting of `_BPX_SHAREAS=YES` (the old default value was MUST). This accomodates IBM's change to ssh that requires it to run in a separate address space.
- Added `create-symlinks.sh` script in the Co:Z install directory. This script can be used to add or replace the symbolic links to the commonly used Co:Z executables.

1.7.1 - <not released - items below are included in all subsequent releases>

- Added new option (no)replace.
- Changed the way the sftp-server log filenames are calculated to eliminate a potential race condition on the name.

1.7.0 - June 8, 2010

- Added support for new `/etc/ssh/cozsftp_config` and `/etc/ssh/cozsftp_server_config` site configuration files.
- Fixed a problem traversing from `/+` to its parent (root).
- Enhanced `sftp-server.sh` to write a message to the console if the log file or `/tmp` is full.
- Sample configuration and `.rc` files are now packaged in a `samples` directory.
- Changed product to use a more corporate-friendly free *Community License* and made Co:Z FTP-SSH Proxy

an add-on component. See the licensing [FAQ](#) for more information.

1.6.1 - April 16, 2010

- Fixed a problem in Co:Z SFTP server where certain options set via the SFTP_ZOS_OPTIONS environment variable can cause a loop.
- Fixed a problem in Co:Z SFTP client and server where SMF records were not being cut for transfers to SYSOUT datasets.

1.6.0 - March 30, 2010

- Fixed a problem in the Co:Z SFTP where dataset write errors might not be reported correctly.
- Fixed a problem in the Co:Z SFTP server where no error was being reported if too many catalog search entries were being read during a client listing request. The client will now report a directory read error and the error log will contain a message.
- Fixed a problem in the Co:Z SFTP server which can prevent uploading to a SYSOUT dataset.
- Fixed saf-ssh-agent so that it reports the exit code of the command run under the -c option. Also fixed a potential race condition where the agent might not start in time for the ssh client to use it.
- Changed cozsftp and CozClient to retry fork() when receiving EAGAIN on z/OS. This is in response to IBM USS DOC APAR OA30943 (Problem #1).
- Added a new z/OS shell command "safauth" which can be used to check the current user's authorization for a SAF resource.

1.5.3 - January 19, 2010

- Enhanced saf-ssh-agent with a new option (-c) that accepts a command (such as ssh) to run as a child process so that it can authenticate via SAF RACDCERT digital certificates.
- Enhanced Co:Z SFTP to provide an interface to z/OS JES job status and spool files. Future releases of Co:Z will also support enhanced job submit, cancel, and purge facilities

1.5.2 - December 8, 2009

- Minor fix to Co:Z SFTP for the `space=blk` setting. This will cause the BPXWDYN keyword `block(n)` to be used, where `n` is either the value on the `blksize` keyword or 0 if the `blksize` keyword is not set.

1.5.1 - December 2, 2009

- Minor fix to Co:Z SFTP FTP-compatible user exit support so that check-command exits are properly called when setting the `unit` and `ucount` options.

1.5.0 - November 2009

- Support added to enable the use of RACF RSA Digital Certificates for OpenSSH client authentication. This feature can be exploited by both the Co:Z Launcher and the z/OS SFTP client (`cozsftp`).

- Co:Z Launcher MVS console communication has been enhanced to automatically fold input to lower case. The underscore ('_') escape character can be used to force the character that follows to upper case.
- The `todsname -x` option has been enhanced to allow the `BPXWDYN DD` or `FI` keyword to allow the use to specify a specific DD name to dynamically allocate rather than using a default system-assigned DD name.
- Fixed a problem in `cozsftp` with large buffers (`-B` option) that was causing hangs and or poor throughput.
- Fixed a problem in Co:Z SFTP so that when processing HFS/zFS files, ASCII linefeed characters (`x'0a`) are properly substituted for ASCII NEL characters (`x'85`). This problem had affected some users who requested `linerule=crlf` with codepages that by default converted EBCDIC linefeed to ASCII NEL (`x'85`).

1.4.1 - October 2009

This release includes the following changes to Co:Z SFTP from the prior GA release:

- Support for IBM FTP compatible user exits.
- minor bug fixes to several fields in SMF 119 records that were not produced the same as IBM FTP.
- the `CONDDISP=DELETE` option will now delete MVS datasets or HFS/zFS files that are being written to by either the SFTP client or server in the case of an incomplete or interrupted file exchange.
- Corrected MVS dataset name handling with respect to `"/` and `"/` appearing in file names.
- Corrected an OC7 that occurred when processing PDS directories with old SPF format statistics

1.3.2 - July 2009

- Reworked Target System Toolkit to build on more *nix platforms, including FreeBSD.
- Added a new dataset prefix `///xxx.yyy` which forces the dataset `xxx.yyy` to be treated as a dataset rather than a "directory" even if datasets `xxx.yyy.zzz` exist.
- Fixed dataset estimated size calculation so as to avoid under estimating, which could cause performance problems with some SFTP clients.
- The file permissions for non-resident datasets were being reported as 000. This has been fixed so that these datasets have a mode of 0666.

1.3.0 - June 2009

- Co:Z SFTP has been enhanced to allow for an initial directory (or dataset qualifier) to be configured.
- SMF 119 records with failure codes are written when `cozsftp` or `sftp-server` terminates unexpectedly during file transfer.
- The software license has been simplified. The Co:Z components available in source form are now distributed under a more permissive license (no longer GPL).
- In some cases, dataset estimated size was not being properly estimated. This has been corrected.
- The `allowmount` keyword has been renamed `mount` to be consistent with current `BPXWDYN`

implementations.

1.2.5 - April 2009

- Co:Z SFTP has been enhanced to allow for the recall of migrated datasets.
- DTLSPAWN has been improved and renamed COZBATCH.

1.2.4 - March 2009

- The Co:Z Launcher can now launch process on not only Windows, *nix, etc, but also another z/OS machine. The target z/OS must also have the z/OS toolkit installed. A new "-local" option is available on the z/OS fromdsn and todsn commands that allows a remotely launches z/OS process to use local dataset I/O.
- Co:Z SFTP has been corrected to allow group and generic unit names on the BPXWDYN "unit=" setting.

1.2.1 - January 2009

This release has some minor fixes to Co:Z SFTP.

- Navigating alias dataset levels as a "directory" now works better.
- SMF recording can be completely disabled by setting the "nosmf" option in the SFTP_ZOS_OPTIONS environment variable.
- fixed a problem with date formatting in long directory listings while using certain locales.

1.2.0 - December 2008

- Co:Z SFTP added to the Co:Z Toolkit.
- A Beta release of Co:Z FTP-SSH Proxy has been added.

1.0.8 - June 2008

- Changed todsn command so that binary or unterminated source lines properly flow to fill up output records to their maximum size. Previously, short records could result on 128kb boundaries when the output records were variable length.
- Change the todsn command so that the fopen() option "recfm=*" is added if recfm is not specified. This causes the DCB parameters on existing output datasets to be used if not explicitly overridden.

1.0.7 - May 2008

- Changed CoZLauncher to terminate app when STOP command received.
- Changed todsn and fromdsn to honor switches that override -b.
- Changed CoZLauncher and DTLSPAWN to report region size with DEBUG level logging.
- Added the ssh-shareas property to allow the ssh client to be spawned in a separate address space if desired.

1.0.6 - March 2008

- Added the server environment variable COZ_FORCE_ICONV to force the use of iconv for translation, even if Unicode System Services is available.
- Increased performance of single byte character set translations.

1.0.5 - February 2008

Changed the -b option on fromdsn/todsn to disable all translation, even if a source or target codepage was specified.

1.0.0 - December 2007

Co:Z Toolkit initial release

1. Introduction

The Co:Z Co-Processing Toolkit for z/OS consists of the following components:

- **Co:Z SFTP:** OpenSSH SFTP extended to support Datasets, SMF logging, FTP compatible user exits, and SAF/RACF Digital Certificate authentication. See the *[Co:Z SFTP User's Guide](#)*.
- **Co:Z Launcher and Dataset Pipes:**
 - The Launcher is a batch utility which remotely launches a process on a distributed system, redirecting input and output from that process to traditional z/OS datasets or spool files. Remote processes are securely launched using proven SSH (Secure Shell) technology to the target platform, which may be Linux, Windows, or other Unix/POSIX environments.
 - Dataset Pipes are utilities that convert datasets to/from files. These commands may be used locally or over an ssh connection.

See the *[Co:Z Launcher and Dataset Pipes User's Guide](#)*.

- **Co:Z COZBATCH:** An improved replacement for BPXBATCH. This utility is often used in conjunction with Dataset Pipes or Co:Z SFTP. See the *[Co:Z COZBATCH User's Guide](#)*

1.1 Packaging

The Co:Z Toolkit consists of two packages:

Co:Z Toolkit for z/OS

- **Package contents:**
 - Co:Z Launcher
 - Co:Z Dataset Pipes
 - Co:Z SFTP (client and server)
 - Co:Z Batch
 - Sample JCL
- **z/OS Host requirements:**
 - z/OS V1R7 or later
 - *[IBM Ported Tools for z/OS \(SSH\)](#)*

Co:Z Target System Toolkits



Note

Target system toolkits are only required by the Co:Z Launcher and / or remote Dataset Pipes components. All other toolkit components (e.g. Co:Z SFTP) run on z/OS and do not require target system toolkit installation.

The Co:Z Toolkit for Target Systems are supported on a wide variety of distributed platforms, including Linux, Windows, or other Unix/Posix platforms. The Co:Z Launcher is a particularly good fit for organizations that run both z/OS and Linux for System z connected via HiperSockets.

- **Package Contents:**

- Co:Z Launcher Agent
- Co:Z Dataset Pipes client commands

- **Windows Target System Toolkit requirements:**

- Supports the following Windows environments: 2000, XP, Vista, and Windows 7
- Requires the *Cygwin* environment.

- **Unix/Linux/Posix Target System Toolkit requirements:**

- An SSHD server, compatible with OpenSSH.
- Pre-built binary packages are available for many Linux distributions.
- Source code is also available for the traditional `configure`, `make`, `make install` process.

2. Installation

This chapter explains how to install the Co:Z Toolkit on z/OS. Once the toolkit is installed, individual components can be configured for use. For component configuration details, consult the user's guides (referenced in [Chapter 1, Introduction](#)).

For questions, please visit the [Dovetailed Technologies Co:Z Forum](#)

1. Download the Co:Z z/OS self-extracting installer file (download available from [dovetail.com](#)).
2. Upload **coz-vv.rr.mm.bin** file to the z/OS HFS or zFS file system. Make sure you transfer the file with a binary mode transfer option.
3. Verify that the cksum command (cksum coz-vv.rr.mm.bin) results match the checksum values published on the website download page.
4. The installation script requires a small amount of temporary space to run successfully. Ensure that your /tmp file system is not full.
5. The installing userid should have READ access to the BPX.FILEATTR.APF SAF resource. If not, Co:Z will install without APF authorization on the ssh-socket-info utility, but will otherwise operate properly. See http://dovetail.com/docs/sftp/options.html#ssh_socket_info
6. Make the installer file executable:

```
$ chmod +x coz-vv.rr.mm.bin
```

7. Run the installer:

```
$ ./coz-vv.rr.mm.bin

This software is licensed under the Co:Z Community License Agreement available
for review at http://dovetail.com/docs/coz/licenses.html or as part of this
install package in file LICENSE (the "License").
...

Do you agree to the above license terms? [yes or no]
yes
Enter home directory [/usr/local/coz] : 1
(Enter)
/usr/local/coz is not an existing directory, create it? [y/n] :
y
Enter new or existing target PDSE load module library name [SYS1.COZ.LOADLIB]: 2
(Enter)
The PDSE load module library 'SYS1.COZ.LOADLIB' does not exist, create it? [y]:
y
/usr/local/coz/loadmodules/COZBATCH -> //'SYS1.COZ.LOADLIB(COZBATCH)': executable
/usr/local/coz/loadmodules/COZLNCH -> //'SYS1.COZ.LOADLIB(COZLNCH)': executable

Enter new or existing PDS for Co:Z Sample JCL and PROCs [SYS1.COZ.SAMPJCL]: 3
(Enter)
The PDS 'SYS1.COZ.SAMPJCL' does not exist, create it? [y]:
y
/usr/local/coz/sampjcl/@@README -> //'SYS1.COZ.SAMPJCL(@@README)': text
```

```

/usr/local/coz/sampjcl/COZCFGD -> //'SYS1.COZ.SAMPJCL(COZCFGD)': text
/usr/local/coz/sampjcl/COZPROC -> //'SYS1.COZ.SAMPJCL(COZPROC)': text
...

Enter PATH directory in which to create command symlinks
or 'none' [/usr/local/bin]: ❶

(Enter)
created symlink /usr/local/bin/catsearch -> /usr/local/coz/bin/catsearch
created symlink /usr/local/bin/cozserver -> /usr/local/coz/bin/cozserver
created symlink /usr/local/bin/cozsftp -> /usr/local/coz/bin/cozsftp
created symlink /usr/local/bin/fromdsn -> /usr/local/coz/bin/fromdsn
created symlink /usr/local/bin/pdsdir -> /usr/local/coz/bin/pdsdir
created symlink /usr/local/bin/read_passwd_dsn.sh
                -> /usr/local/coz/bin/read_passwd_dsn.sh
created symlink /usr/local/bin/saf-ssh-agent -> /usr/local/coz/bin/saf-ssh-agent
created symlink /usr/local/bin/safauth -> /usr/local/coz/bin/safauth
created symlink /usr/local/bin/todsn -> /usr/local/coz/bin/todsn
created symlink /usr/local/bin/zsym -> /usr/local/coz/bin/zsym

FOMF0303I /usr/local/bin/ssh-socket-info: chattr() error: rv=-1, errno=8B, rsn=0924041A ❷
***
Unable to set extended attributes for program bin/ssh-socket-info
- see installation guide for more information
***

You should update user profiles so that MANPATH contains: /usr/local/coz/doc/man

*** Co:Z Installation complete ****
(see README and LICENSE in install root directory for more information)

```

- ❶ Enter the name of a new or existing zFS or HFS directory that will become the top-level "home" directory for the Co:Z Toolkit installation. This directory must be in a filesystem that is writable by the installing user and contains 12MB of free space. If you supply the name of an existing directory that is not empty, you will be prompted to continue, as it is not generally advisable to overlay an existing installation with a new version.
- ❷ The fully-qualified name of the PDSE library to contain the Co:Z Launcher and Co:Z Batch program objects. If this dataset exists, it must be a PDSE and existing Co:Z load modules will be replaced.
- ❸ The fully-qualified name of the PDS library to contain sample JCL for the Co:Z Toolkit. If this dataset exists, it must be RECFM=FB,LRECL=80 and existing members with the same names will be replaced.
- ❹ Several Co:Z Toolkit Unix commands, such as **cozsftp**, **fromdsn**, **todsn**, etc. should be made available in user's PATH. One option is to customize /etc/profile to add <COZ_HOME>/bin to the PATH, but an alternative is to create symbolic links in an existing PATH directory to the Co:Z user commands in <COZ_HOME>/bin.

To have the installation script create symbolic links, enter the name of the existing directory in which to create the links, or none to skip. When creating symlinks, this script will prompt you before replacing existing symlinks or files.

The <COZ_HOME>/install/create-symlinks.sh script can be used to create these links at a later time, or to replace links to one Co:Z home directory (version) with links to another. See the comments in this script for more information and example usage.

- ❺ These messages will appear if the installing userid does not have READ access to the BPX.FILEATTR.APF SAF resource. Co:Z will install properly and can be used, but the SMF socket information is not guaranteed to be accurate.

8. Install and configure *IBM Ported Tools for z/OS (SSH)* per the IBM documentation.

If possible, configure z/OS ssh to use /dev/random. This can significantly decrease startup times for the z/OS ssh client. See the "Trouble Shooting" chapter in the IBM z/OS Ported Tools manual for more information.

9. Some of the toolkit components require additional configuration. Details can be found in the individual user's guides. See *Chapter 1, Introduction* for more information.

Appendix A. License

The Co:Z Co-Processing Toolkit for z/OS, comprised of Co:Z Launcher, Co:Z Dataset Pipes, Co:Z SFTP, Co:Z Batch and Co:Z Target System Toolkit (in object code form only) is distributed under the Co:Z Community License Agreement (see below). The Co:Z Load Balancer, in object form only, is also distributed under the Co:Z Community License Agreement. *Note:* This community license is superseded for Co:Z Toolkit Enterprise License and Support customers. All components are distributed in binary form.

Co:Z COMMUNITY LICENSE AGREEMENT

PLEASE READ THIS COMMUNITY LICENSE AGREEMENT (THIS "AGREEMENT") CAREFULLY. THIS AGREEMENT SETS FORTH THE TERMS ON WHICH DOVETAILED TECHNOLOGIES, LLC ("DOVETAIL"), A MISSOURI LIMITED LIABILITY COMPANY, MAKES AVAILABLE THE CO:Z CO-PROCESSING TOOLKIT FOR z/OS AT NO CHARGE FOR DOWNLOAD, INSTALLATION AND USE BY THE COMMUNITY. BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU ACKNOWLEDGE THAT YOU HAVE READ, UNDERSTAND, AND AGREE TO BE LEGALLY BOUND BY THIS AGREEMENT.

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"Documentation" means Dovetail's accompanying user documentation for the Software, as may be updated by Dovetail from time to time, in print or electronic form.

"Software" means (i) the Co:Z Co-Processing Toolkit for z/OS, comprised of Co:Z Launcher, Co:Z Dataset Pipes, Co:Z SFTP, Co:Z Batch and Co:Z Target System Toolkit in object code form only, together with certain sample code and scripts in source form and (ii) Co:Z Load Balancer in object form only.

"Update" means any bug fix, enhancement, or other modification to or update for the Software issued by Dovetail for general release to the Software community.

"You" means the person or entity downloading, installing or using the Software. If you are downloading, installing or using the Software on behalf of a company or organization, the term "You" refers to both you and your company or organization, and you represent and warrant that you have authority to bind your company or organization to the provisions hereof.

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11. MISCELLANEOUS

Governing Law. This Agreement shall be governed and interpreted for all purposes by the laws of the State of Missouri, U.S.A., without reference to any conflict of laws principles that would require the application of the laws of a different jurisdiction. The United Nations Convention on Contracts for the International Sale of Goods and the Uniform Computer Information Transactions Act (as enacted in any jurisdiction) do not and shall not apply to this Agreement, and are hereby specifically excluded.

Jurisdiction; Venue. Any dispute, action or proceeding arising out of or related to the Software or this Agreement shall be commenced in the state courts of St. Louis County, Missouri or, where proper subject matter jurisdiction exists, the United States District Court for the Eastern District of Missouri. Each party irrevocably submits and waives any objections to the exclusive personal jurisdiction and venue of such courts, including any objection based on forum non conveniens.

Notices. All notices under this Agreement shall be in writing, and shall be delivered personally or by postage prepaid certified mail or express courier service, return receipt requested. Notices to You may be delivered to the most current address on file. Notices to Dovetail shall be directed to the following address, unless Dovetail has provided an alternative notice address:

Dovetailed Technologies, LLC
305 Willowpointe Drive
St. Charles, MO 63304

Assignments. You may not assign or transfer this Agreement, or any rights or

duties hereunder, in whole or in part, whether by operation of law or otherwise, without the prior written consent of Dovetail. Any attempted assignment or transfer in violation of the foregoing shall be null and void from the beginning and without effect. Dovetail may freely assign or transfer this Agreement, including to a successor in interest upon Dovetail's merger, acquisition, corporate reorganization, or sale or other transfer of all or substantially all of its business or assets to which this Agreement relates.

Relationship; Third Party Beneficiaries. The parties hereto are independent contractors. Nothing in this Agreement shall be deemed to create any agency, employment, partnership, fiduciary or joint venture relationship between the parties, or to give any third party any rights or remedies under or by reason of this Agreement; provided, however, the disclaimers and limitations on liability in this Agreement shall extend to Dovetail and its directors, officers, shareholders, employees, agents and affiliates. All references to Dovetail in connection therewith shall be deemed to include the foregoing persons and entities, who shall be third party beneficiaries of such contractual disclaimers and limitations and entitled to accept all benefits afforded thereby.

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Amendment; Waiver. This Agreement may be amended only by a written instrument signed by an authorized representative of Dovetail. No rights shall be waived by any act, omission or knowledge of a party, except by an instrument in writing expressly waiving such rights and signed by an authorized representative of the waiving party. Any waiver on one occasion shall not constitute a waiver on subsequent occasions.

Severability; Construction. If any provision of this Agreement is determined to be invalid or unenforceable under applicable law, such provision shall be

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Entire Agreement. This Agreement sets forth the entire agreement of the parties and supersedes all prior agreements and understandings, whether written or oral, with regard to the subject matter hereof. Any additional or conflicting terms proposed by You in any purchase order, request for proposal, acknowledgement, or other writing shall not be binding, and are hereby objected to and expressly rejected.