



# Co:Z Toolkit – New Features

Thursday, October 28<sup>th</sup> 2010

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# Dovetailed Technologies

Our operating philosophy is to offer quality products licensed free of charge, along with world class support and consulting services.

- Co:Z Toolkit, which includes:
  - *Co:Z Launcher* – remote system cooperative processing
  - *Co:Z Dataset Pipes* – convert datasets to files
  - *Co:Z SFTP* – OpenSSH SFTP with z/OS exploitation
  - *Co:Z Batch* – full featured BPXBATCH replacement
  - *Co:Z FtpSshProxy* – tunnel ordinary FTP in SSH proxy
- T:Z Quickstart for Tomcat and z/OS
- JZOS - acquired by IBM in 2005 and now part of the z/OS Java SDK



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### **Co:Z SFTP**

OpenSSH secure file transfer with support for MVS datasets and SMF logging

### **Co:Z Launcher**

Execute Unix or Windows processes from a batch job with access to MVS datasets

### **Co:Z Dataset Pipes**

Flexible conversion of MVS datasets to/from pipes or Unix files

### **Co:Z FTP-SSH Proxy**

FTP tunnelling over SSH

### **Co:Z Batch**

A better BPXBATCH



## **Co:Z Co-Processing Toolkit**

for z/OS | Dataset Pipes : SFTP : FTP-SSH Proxy : JZOS : DtlSpawn



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# Agenda

- Co:Z SFTP JES support
- IBM Ported Tools OpenSSH 1.2
- Preview (and your input for) upcoming webinars
- Quick overview of free and commercial license and support options
- Questions / Free for all



# Co:Z SFTP JES Support

- Goal: a full-featured job submit / status / output facility for SSH / SFTP on z/OS

Enable secure access to z/OS JES facilities to a wide variety of platforms via ubiquitous SFTP clients.



# Co:Z SFTP - Initial JES Support (Jan 2010)

## Job status

```
sftp> cd //-JES           (a special pseudo directory)
```

```
sftp> ls -al
```

JOBNAME	JOBID	OWNER	STATUS	CLASS	COMPL
KIRKCT	JOB02070	KIRK	OUTPUT	A	RC=4000
KIRKCB	JOB02123	KIRK	OUTPUT	B	RC=0001
KIRKSLP	JOB02254	KIRK	OUTPUT	A	RC=0000
KIRK	TSU02274	KIRK	ACTIVE	TSU	

## Job filtering

```
sftp> ls /+jesowner=ibmuser
```

```
sftp> ls -al
```

JOBNAME	JOBID	OWNER	STATUS	CLASS	COMPL
COZUSERJ	JOB00459	IBMUSER	OUTPUT	A	RC=0000
DEFACDS	JOB00499	IBMUSER	OUTPUT	A	RC=0008

```
sftp> ls /+nojesowner,jesjobname=tcip
```

```
sftp> ls -al
```

JOBNAME	JOBID	OWNER	STATUS	CLASS	COMPL
TCPIP	STC02093	TCPIP	OUTPUT	STC	-HELD-
TCPIP	STC02183	TCPIP	ACTIVE	STC	



# Co:Z SFTP - Initial JES Support (cont.)

## 🌐 Spool file status

```
sftp> cd //-JES.J2123      (a job is a directory!)
```

```
sftp> ls -al
```

DSID	STEPNAME	PROCSTEP	DDNAME	C	OWNER	RECFM	LRECL	BYTES
102	EX1		SYSOUT	H	KIRK	FBA	121	309
2	JES2		JESMSGLG	H	KIRK	FA	133	1312
3	JES2		JESJCL	H	KIRK	V	136	375
4	JES2		JESYSMSG	H	KIRK	VA	137	816

## 🌐 Spool file transfer

```
sftp> get 102 localfile.txt
```

```
Sftp> get *      (transfers all spools files individually)
```



# Co:Z SFTP - Initial JES Support (cont.)

## 📁 Spool file names, sorting, etc

```
sftp> cd //-JES.J2123
```

```
sftp> ls
```

```
102  2    3    4          (dsid is the actual file name)
```

```
sftp> ls -al          (long listing (formatted by Co:Z server))
```

<i>DSID</i>	<i>STEPNAME</i>	<i>PROCSTEP</i>	<i>DDNAME</i>	<i>C</i>	<i>OWNER</i>	<i>RECFM</i>	<i>LRECL</i>	<i>BYTES</i>
102	EX1		SYSOUT	H	KIRK	FBA	121	309
2	JES2		JESMSGLG	H	KIRK	FA	133	1312
3	JES2		JESJCL	H	KIRK	V	136	375
4	JES2		JESYSMSG	H	KIRK	VA	137	816

```
sftp> ls -alf        (tells sftp client not to sort names)
```

<i>DSID</i>	<i>STEPNAME</i>	<i>PROCSTEP</i>	<i>DDNAME</i>	<i>C</i>	<i>OWNER</i>	<i>RECFM</i>	<i>LRECL</i>	<i>BYTES</i>
2	JES2		JESMSGLG	H	KIRK	FA	133	1312
3	JES2		JESJCL	H	KIRK	V	136	375
4	JES2		JESYSMSG	H	KIRK	VA	137	816
102	EX1		SYSOUT	H	KIRK	FBA	121	309

- Your sftp client may have different options for controlling listings



# Co:Z SFTP - new JES Support in 1.7.4

## Filter jobs by status

- New setting: `jesstatus = INPUT | OUTPUT | ACTIVE | *`

```
sftp> cd //-JES
sftp> ls /+nojesowner
sftp> ls /+jesjobname=T
sftp> ls /+jesstatus=active
sftp> ls -al
```

JOBNAME	JOBID	OWNER	STATUS	CLASS	COMPL
TCPIP	STC02183	TCPIP	ACTIVE	STC	
TN3270	STC02202	TCPIP	ACTIVE	STC	
TCAS	STC02205	STRTASK	ACTIVE	STC	



# Co:Z SFTP - new JES Support in 1.7.4

## Transfer concatenated spool files for a job

```
sftp> cd //-jes/J2254
sftp> ls -alf
DSID STEPNAME PROCSTEP DDNAME C OWNER RECFM LRECL BYTES
  2 JES2 JESMSG LG H KIRK FA 133 1312
  3 JES2 JESJCL H KIRK V 136 253
  4 JES2 JESYSMSG H KIRK VA 137 822
102 UNIX SYSOUT H KIRK FBA 121 428

sftp> get 102 out.txt (get a single spool file)
Fetching //-JES.J2254/102 to out.txt

sftp> get * (get all spool files individually)
Fetching //-JES.J2254/102 to 102
Fetching //-JES.J2254/2 to 2
Fetching //-JES.J2254/3 to 3
Fetching //-JES.J2254/4 to 4

sftp> get all myjob.txt (get all spool files concatenated)
Fetching //-JES.J2254/all to myjob.txt
```

- The special name “all” refers to all concatenated spool files



# Co:Z SFTP - new JES Support in 1.7.4

- Refer to spool files by [step.[jobstep]].ddname

```
sftp> cd //-jes/J2254
```

```
sftp> ls -alf
```

DSID	STEPNAME	PROCSTEP	DDNAME	C	OWNER	RECFM	LRECL	BYTES
2	JES2		JESMSG LG	H	KIRK	FA	133	1312
3	JES2		JESJCL	H	KIRK	V	136	253
4	JES2		JESYSMSG	H	KIRK	VA	137	822
102	UNIX		SYSOUT	H	KIRK	FBA	121	428

```
sftp> get unix.sysout
```

```
Fetching //-JES.J2254/unix.sysout to unix.sysout
```

```
sftp> get jesysmsg
```

```
Fetching //-JES.J2254/jesysmsg to jesysmsg
```

- The first (earliest DSID) matching spool file is selected



# Co:Z SFTP - new JES Support in 1.7.4

## Job submission

```
sftp> cd //-jes.intrdr      (a psuedo directory)
sftp> !cat sleep.jcl
//KIRKSLP  JOB (),'Dovetail',MSGCLASS=H
//UNIX     EXEC PGM=COZBATCH
//STEPLIB DD  DISP=SHR,DSN=IBMUSER.COZ.LOADLIB
//STDIN   DD  *
count=10
while [ $count -ge 0 ]
do
    echo "Sleeping..."
    sleep 1
    count=$((expr $count - 1))
done
//
sftp> put sleep.jcl myhandle
Uploading sleep.jcl to //-JES.INTRDR/myhandle
sftp> ls -alf
ALIAS      JOBNAME  JOBID      OWNER      STATUS     CLASS      COMPL
MYHANDLE   KIRKSLP   JOB02283  KIRK       ACTIVE     A
sftp> ls -alf
ALIAS      JOBNAME  JOBID      OWNER      STATUS     CLASS      COMPL
MYHANDLE   KIRKSLP   JOB02283  KIRK       OUTPUT     A           RC=0000
```



# Co:Z SFTP - new JES Support in 1.7.4

- Job submission alias
  - A unique reference (handle) to a submitted job within the current SFTP session.
  - A 1-8 character name under //JES.INTRDR
  - Must be unique (you can't replace an existing alias)
  - Survives for the current session only



# Co:Z SFTP - new JES Support in 1.7.4

- Wait for spool file list/transfer until job completes

- New setting: `jesjobwait=[secs[.poll-interval]]`

```
sftp> cd //-JES
sftp> ls -al
JOBNAME  JOBID      OWNER      STATUS     CLASS      COMPL
KIRKCT   JOB02070  KIRK       ACTIVE     A
sftp> cd J2070
sftp> ls /+jesjobwait      (default wait time is 60.2)
sftp> get all job.txt      (this waits until job is complete)
Fetching //-JES.J2070/all to job.txt
```

- Other examples -

```
sftp> ls /+nojesjobwait    (turn off setting)
sftp> ls /+jesjobwait=300  (wait up to 5 minutes)
sftp> ls /+jesjobwait=300.10 (wait 5 min, poll every 10 secs)
```



# Co:Z SFTP - new JES Support in 1.7.4

## Combining job submission with jesjobwait / output

```
sftp> cd //-jes.intrdr
sftp> put sleep.jcl myhandle
Uploading sleep.jcl to //-JES.INTRDR/myhandle
sftp> ls /+jesjobwait
sftp> cd myhandle
sftp> get all out.txt (first waits for job to complete)
Fetching //-JES.INTRDR.MYHANDLE/all to out.txt
```

- Can be used in automated scripts that submit jobs, wait for completion, get output, ....



# Co:Z SFTP - Security Considerations

- Co:Z SFTP runs as a normal non-authorized program under the user's security.
- The Co:Z JES facility uses the new IBM non-authorized “extended status” SSI and spool browse interfaces.
  - These IBM interfaces use SAF to verify the user's access to JES jobs/files, compatible with how SDSF works with SAF.
- FTP-compatible user exits can be used to customize access to the JES facility



# Co:Z SFTP - Job cancel/purge & file purge

- ❏ Currently unsupported in Co:Z SFTP
  - What is customer demand?
- ❏ Lack of IBM non-authorized APIs -
  - We could spawn a REXX/SDSF script in a child process
    - what about non SDSF customers?
  - We could spawn an APF-authorized process written in assembler
    - would do same SAF checking as SDSF
    - customer acceptance of our new APF-authorized z/OS Unix command??



# IBM Ported Tools OpenSSH 1.2

- Available July 9, 2010
- Updates OpenSSH port from 3.8 to 5.0
- SAF key ring support
  - SSH private keys in keyring for z/OS ssh/sftp client
  - SSH public keys in keyring for z/OS sshd/sftp server
  - Not PKI; SSH keys are stored in a self-signed certificate
  - Keyrings are compatible with our previous “saf-ssh-agent” support in Co:Z.
- SMF logging
  - New SMF119 subtypes (not the same types as FTP / Co:Z SFTP use)
- Ported Tools ssh command, used by Co:Z SFTP and Co:Z Launcher was changed to require a separate address space. This required a Co:Z Launcher change.



# Planned upcoming webinars

- 🕒 **Administering and using z/OS SAF Keyrings with SSH**
  - SSH and SFTP client and server user keys in SAF (RACF/ACF2/TSS)
  
- 🕒 **Integrating z/OS Unix in batch**
  - effective use of Unix shell scripts in your JCL
  - use JCL SET/PROC variables in scripts
  - use datasets by name or DD reference in batch Unix scripts
  
- 🕒 **Batch cooperative processing with the Co:Z Launcher**
  - Use z/OS batch to launch off-platform Unix/Windows apps
  - Target application can use datasets and DDs in launching step
  - Cost savings and application integration
  - Exploit zEnterprise BladeCenter Extension (zBX) and HiperSockets
  
- 🕒 **Your suggestions?**



# Co:Z Toolkit License and Support Options

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- Enterprise License and Support
  - Fee-based annual commercial license and support agreements
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# Questions



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