

Bit Bucket x'36'

Ed Jaffe, edjaffe@phoenixsoftware.com

Tom Conley, pinncons@rochester.rr.com

Mary Anne Matyaz, maryanne4psu@gmail.com


Sam Knutson, Samuel.Knutson@compuware.com

Skip Robinson, Jesse1.Robinson@sce.com



SHARE 129
Session 20844
Providence, RI
11 Aug 2017





German Engineering

(Ed Jaffe)



ISPFSFTP

- I presented at the German Guide/Share Europe conference in Lahnstein, Germany in March 2017.
- One of my co-presenters was Robert Hering from IBM's ITSO in Mainz, Germany.
- Among other things, Herr Hering (love that, BTW) discussed a tool he had written called ISPFSFTP which allows sftp to be used from an ISPF prompt.
- How is it Americans have never heard of this???
- Have you??
- <ftp://www.redbooks.ibm.com/redbooks/SG247035/>

ISPF SFTP

Index of <ftp://www.redbooks.ibm.com/redbooks/SG247035/>

 Up to higher level directory

Name	Size	Last Modified	
 ITSO_Tools.pdf	12 KB	7/31/15	12:00:00 AM
 bpxrc.pdf	62 KB	8/10/15	12:00:00 AM
 bpxrc.txt	5 KB	7/31/15	12:00:00 AM
 copypax.pdf	33 KB	10/8/12	12:00:00 AM
 copypax.txt	20 KB	7/31/15	12:00:00 AM
 disclaimer.txt	2 KB	8/30/16	12:00:00 AM
 dremsfss.pdf	57 KB	1/4/13	12:00:00 AM
 dremsfss.txt	5 KB	7/31/15	12:00:00 AM
 dremsfss.zip	3 KB	7/31/15	12:00:00 AM
 ispfsftp.pdf	139 KB	11/28/16	12:00:00 AM

ISPF SFTP

- ISPF SFTP is a TSO utility to run sftp sessions in an interactive mode from foreground ISPF. It picks up the terminal emulation code page from ISPF and the user can enter the commands as if the session is set up with code page 01047
- It supports both generated ssh keys (preferred) or a password supplied in a RECFM=VB data set named 'tsouser.SFTP.PASSFILE'
 - Native sftp does not allow passwords to be stored in a file
- The HLQ is the TSO userid of the user that opens the sftp session. This password file must be encoded in code page 01047

```
userid1@phoenixsoftware.com      :> password1
userid2(at)phoenixsoftware.com   :> password2
userid3@phoenixsoftware.com      :> password3
```

No Generated Keys; No Password File

==> ispfsftp [userid5@phoenixsoftware.com](mailto:user1d5@phoenixsoftware.com)

IKJ56228I DATA SET EDJX2.SFTP.PASSFILE NOT IN CATALOG OR CATALOG CAN NOT BE ACCESSED

ISFTP082E Allocation of password data set failed with RC= 386400258

FOTS1346 Permission denied, please try again.:

IKJ56228I DATA SET EDJX2.SFTP.PASSFILE NOT IN CATALOG OR CATALOG CAN NOT BE ACCESSED

ISFTP082E Allocation of password data set failed with RC= 386400258

FOTS1346 Permission denied, please try again.:

IKJ56228I DATA SET EDJX2.SFTP.PASSFILE NOT IN CATALOG OR CATALOG CAN NOT BE ACCESSED

ISFTP082E Allocation of password data set failed with RC= 386400258

FOTS1373 Permission denied (publickey,gssapi-keyex,gssapi-with-mic,password) .:

FOTS0841 Connection closed:

ISFTP006E Errors occurred; sftp gave RC= 255.

No Generated Keys; Password Not Found

==> ispfsftp userid5@phoenixsoftware.com

```
ISFTP090E Password could not be found in password file with the parms given.  
FOTS1346 Permission denied, please try again.  
ISFTP090E Password could not be found in password file with the parms given.  
FOTS1346 Permission denied, please try again.  
ISFTP090E Password could not be found in password file with the parms given.  
FOTS1373 Permission denied (publickey,gssapi-keyex,gssapi-with-mic,password) .  
FOTS0841 Connection closed  
***
```

No Generated Keys; Password Found

```
==> ispfsftp userid1@phoenixsoftware.com
```

```
Connected to phoenixsoftware.com.
```

```
sftp>
```

```
pwd
```

```
sftp> pwd
```

```
Remote working directory: /home/userid1
```

```
sftp>
```

```
exit
```

```
sftp> exit
```

```
ISFTP005I The sftp session ended normally.
```

```
***
```


Generated Keys; No Password File Needed

```
==> ispfsftp userid1@phoenixsoftware.com
```

```
Connected to phoenixsoftware.com.
```

```
sftp>
```

```
pwd
```

```
sftp> pwd
```

```
Remote working directory: /home/userid1
```

```
sftp>
```

```
exit
```

```
sftp> exit
```

```
ISFTP005I The sftp session ended normally.
```

```
***
```

Scripted Commands



```
==> ibatsftp `edjx2.a.cntl(sftpscrp)`
```

```
Connected to phoenixsoftware.com.
```

```
sftp> pwd
```

```
Remote working directory: /home/userid1
```

```
sftp> exit
```

```
ISFTP005I The sftp session ended normally.
```

```
***
```

Running in Batch

```
//IBATSFTP JOB 1,JAFFE,CLASS=A,MSGCLASS=T,NOTIFY=&SYSUID
//IBATSFTP EXEC PGM=IKJEFT01,PARM=IBATSFTP
//SYSEXEC DD DSN=SYS2.REXXPROC,DISP=SHR
//SFTPDATA DD DATA,DLM=##
ispfsftp userid1@phoenixsoftware.com
pwd
exit
##
//CODEPAGE DD *
ISPFSFTP_CP=1047
//SYSTSIN DD DUMMY
//SYSTSPRT DD SYSOUT=*
IEF142I IBATSFTP IBATSFTP - STEP WAS EXECUTED - COND CODE 0000
1Connected to phoenixsoftware.com.
sftp> pwd
Remote working directory: /home/userid1
sftp> exit
ISFTP005I The sftp session ended normally.
READY
END
```

SFTP Does Not Support Direct Copy to MVS

- This restriction exists for both native SFTP and for ISPF SFTP.
- You must do a “double copy” using a zFS directory as an intermediate transfer location
 - MVS -> zFS -> SFTP
 - SFTP -> zFS -> MVS
- It's possible to use the z/OS UNIX cp command to allocate an MVS data set into which a z/OS UNIX file is copied, but the syntax is cumbersome and not well-suited to ad-hoc use
- Herr Hering has made things somewhat easier by providing utilities to assist with allocating MVS data sets and copying between MVS and z/OS UNIX

Additional Utilities

>ispfssh

Syntax: ispfssh sftp_options

>mvsalloc

Syntax: mvsalloc mvs_dsn sc,rf,rl,p,s<,0|nn>

mvs_dsn - MVS dsn; name without single quotes will be prefixed with the userid.

In case of UNIX enclose single quotes in a pair of double quotes.

sc - storclas, default STANDARD

rf - recfm, default VB

rl - lrecl, default 80 on RECFM=FB, 260 on RECFM=VB

p - primary allocation in cylinders, default 1

s - secondary allocation in cylinders, default 1

0 - create a PDSE PO data set

nn - create a PDS with a directory DIR(nn)

- if not specified create a PS data set

Additional Utilities

>mvs2uss

Syntax: mvs2uss mvs_dsn uss_file sftp2win? cnv2ascii?

mvs_dsn - MVS data set, for example: 'seitz.test.data'
uss_file - temporary USS file, for example: test.file
sftp2win - sftp the uss_file to Windows? -- Y = Yes
cnv2ascii - convert data from 01141 to ascii? -- Y = Yes

>mvs2unix

Syntax: mvs2unix mvs_dsn ussfile <uss_le>,<uss_cp>,<mvs_cp>

mvs_dsn - Source z/OS MVS data set

Name without single quotes will be prefixed with the userid.

For UNIX enclose single quoted names in a pair of double quotes.

Specify dd:ddname to address a ddname.

ussfile - Target z/OS UNIX file

uss_le - UNIX line end, typically crnl or nl, default nl
(CR= x0D, ASCII NL= x0A, EBCDIC NL= x15)

uss_cp - UNIX code page, default 00819 (=ISO8859-1)

mvs_cp - MVS code page, default 01141 (=IBM-1141)

Additional Utilities

>uss2mvs

Syntax: `uss2mvs uss_file mvs_dsn sftpFwin? cnvFascii?`

`uss_file` - temporary USS file, for example: `test.file`
`mvs_dsn` - MVS data set, for example: `'hering.test.data'`
`sftpFwin` - sftp the `uss_file` from Windows? -- Y = Yes
`cnvFascii` - convert data from ascii to 01141? -- Y = Yes

>unix2mvs

Syntax: `unix2mvs ussfile mvs_dsn <uss_le>,<uss_cp>,<mvs_cp>`

`ussfile` - Source z/OS UNIX file

`mvs_dsn` - Target z/OS MVS data set

Name without single quotes will be prefixed with the userid.

For UNIX enclose single quoted names in a pair of double quotes.

Specify `dd:ddname` to address a ddname.

`uss_le` - UNIX line end, typically `crnl` or `nl`, default `nl`
(`CR= x0D`, `ASCII NL= x0A`, `EBCDIC NL= x15`)

`uss_cp` - UNIX code page, default `00819` (=ISO8859-1)

`mvs_cp` - MVS code page, default `01141` (=IBM-1141)

Adding a New Host to ~/.ssh/known_hosts

- ISPFSFTP defaults to StrictHostKeyChecking=yes
- You might receive:
 - FOTS1305 No RSA host key is known for hostname and you have requested strict checking..
 - FOTS1370 Host key verification failed..
 - FOTS0841 Connection closed.
 - ISFTP006E Errors occurred; sftp gave RC= 255.
- To overcome this and add the host to known_hosts you can use option "-nshkc" to run with setting "StrictHostKeyChecking=no" just once
 - ispf sftp -nshkc hering@wtsc70oe.
- You would get the following message if the host entry is added successfully.
 - FOTS2274 Warning: Permanently added 'wtsc70oe' (RSA) to the list of known hosts.



Master the Mainframe

(Ed Jaffe)

CBT 377

- If you came to my z/OS 2.3 User Experience presentation, you saw that I hoped IBM's z/OS 2.3 TSO/E subsystem logon enhancement could replace my 18+ year-old contribution to the CBT tape.
- Available from <http://cbttape.org>

//*+File 370:	ZAPs-I/O counts in IEF285I msgs-see IEFU83,File 134	*	DOC FILE
//*+File 371:	Load Modules-programs on File 270-Washington State	*	DOC FILE
//*+File 372:	DYNALLOD Program from Ken MacKenzie	*	DOC FILE
//*+File 373:	GTE TSO command - SAL - show dataset allocations	*	DOC FILE
//*+File 374:	SAS Programs to format IBM-produced SMF records	*	DOC FILE
//*+File 375:	SAS Programs to format Vendor SMF records	*	DOC FILE
//*+File 376:	ZDF Display Facility & utilities form David Marsden	*	DOC FILE
//*+File 377:	Exits and mods to run TCAS under SUB=MSTR: Ed Jaffe	*	DOC FILE
//*+File 378:	SORTTRAK to report on DFSORT SMF records: S.Kowalski	*	DOC FILE
//*+File 379:	PROCLIB Cross Reference reports	*	DOC FILE
//*+File 380:	REXX execs and other stuff from David McRitchie	*	DOC FILE
//*+File 381:	First Computer Services - programs and JES2 exits	*	DOC FILE
//*+File 382:	Paul Gillis utilities collection	*	DOC FILE
//*+File 383:	INTEL CLISTS for Techinfo system on File 352	*	DOC FILE
//*+File 384:	Moved CDS programs to File 297 of Overflow Tape	*	DOC FILE

CBT 377

- The description mentions SUB=MSTR only. That was an “add-on” thought to the original “any subsystem logon” modification that ended up being unique on the CBT tape and a great recovery tool.
- Logon on with SUB=MSTR could help you out of a jam in minutes vs IPLing a recovery system which could add significant time to your outage. To make it work, you should be bringing up VTAM and TCAS under MSTR
 - It's actually quite convenient to bring VTAM up before JES
- It consists of IKJEFLD1 and IKJEDFL2 assembler exits as well as a ZAP to IKJEFLB
- The assembler exits take care of the prompting for the subsystem name as well as creation and queuing of a CIB to the CSCB chain to make the “any subsystem” logon work.
- The ZAP is needed only for logon with SUB=MSTR to correct the order of JSTCBs

CBT 377 - Logon to JES2 Secondary

```
LOGON
logon ?edjxadm
===>IKJEFLD1 - ENTER SUBSYSTEM NAME, 'NONE', OR HIT ENTER <===
jes2_
```

----- TSO/E LOGON -----

Enter LOGON parameters below:

Userid ===> EDJXADM

Password ===> _

Procedure ===> \$IKJTEST

Acct Nmbr ===> 1

Size ===> 1096128

Perform ===>

Command ===>

RACF LOGON parameters:

Group Ident ===>

Enter an 'S' before each option desired below:

-New Password -Nomail -Nonnotice S -Reconnect -OIDcard

```
ICH70001I EDJXADM LAST ACCESS AT 12:13:48 ON THURSDAY, JULY 27, 2017
IKJ56455I EDJXADM LOGON IN PROGRESS AT 12:18:27 ON JULY 27, 2017
IKJ56951I NO BROADCAST MESSAGES
Procedure Name is $IKJTEST
JES subsystem JES2 z/OS 2.2
*** Allocating SYSPROC ***
*** Allocating SYSEXEC ***
*** Allocating ISPPROF ***
*** Allocating ISPTABL ***
*** Allocating ISPLLIB ***
*** Allocating ISPPLIB ***
*** Allocating ISPMLIB ***
*** Allocating ISPTLIB ***
*** Allocating ISPSLIB ***
*** Allocating ISPILIB ***
*** Allocating MISC ***
*** _
```

CBT 377 - Logon to MSTR

```
LOGON
logon ?edjxadm
===>IKJEFLD1 - ENTER SUBSYSTEM NAME, 'NONE', OR HIT ENTER <===
mstr_
```

----- TSO/E LOGON -----

Enter LOGON parameters below:

RACF LOGON parameters:

Userid ===> EDJXADM

Password ===> _

Procedure ===> \$IKJTEST

Group Ident ===>

Acct Nmbr ===> 1

Size ===> 1096128

Perform ===>

Command ===>

Enter an 'S' before each option desired below:

-New Password -Nomail -Nonnotice S -Reconnect -OIDcard

```
ICH70001I EDJXADM LAST ACCESS AT 20:42:08 ON THURSDAY, JULY 27, 2017
IKJ56455I EDJXADM LOGON IN PROGRESS AT 20:42:43 ON JULY 27, 2017
IKJ56951I NO BROADCAST MESSAGES
Procedure Name is $IKJTEST
JES subsystem MASTER SP7.2.2
*** Allocating SYSPROC ***
*** Allocating SYSEXEC ***
*** Allocating ISPPROF ***
*** Allocating ISPTABL ***
*** Allocating ISPLLIB ***
*** Allocating ISPPLIB ***
*** Allocating ISPMLIB ***
*** Allocating ISPTLIB ***
*** Allocating ISPSLIB ***
*** Allocating ISPILIB ***
*** Allocating MISC ***
*** _
```

z/OS 2.3 Subsystem Logon - Native Code

```
LOGON
logon edjxadm subsys(jes2)_
```

```
----- TSO/E LOGON -----
IKJ56477I Enter logon information for subsystem JES2

Enter LOGON parameters below:                                RACF LOGON parameters:

Userid      ==> EDJXADM
Password    ==> _
Procedure   ==> $IKJTEST                                     Group Ident ==>
Acct Nbr    ==> 1
Size        ==> 1096128
Perform     ==>
Command     ==>

Enter an 'S' before each option desired below:
-New Password  -Nomail  -Nonnotice  S -Reconnect  -OIDcard
```

```
ICH70001I EDJXADM  LAST ACCESS AT 08:48:07 ON THURSDAY, AUGUST 10, 2017
ICH70002I YOUR PASSWORD WILL EXPIRE IN  17 DAYS.
IKJ56455I EDJXADM LOGON IN PROGRESS AT 11:12:56 ON AUGUST 10, 2017
IKJ56951I NO BROADCAST MESSAGES
Procedure Name is $IKJTEST
JES subsystem JES2 z/OS 2.3
*** Allocating SYSPROC ***
*** Allocating SYSEXEC ***
*** Allocating ISPPROF ***
*** Allocating ISPTABL ***
*** Allocating ISPLLIB ***
*** Allocating ISPLLIB ***
*** Allocating ISPLLIB ***
*** Allocating ISPTLIB ***
*** Allocating ISPSLIB ***
*** Allocating ISPILIB ***
*** Allocating MISC ***
*** _
```

z/OS 2.3 MSTR Logon - Native Code

```
LOGON
logon edjxadm subsys(mstr)_
```

```
----- TSO/E LOGON -----
IKJ56477I Enter logon information for subsystem MSTR

Enter LOGON parameters below:                                RACF LOGON parameters:

Userid      ==> EDJXADM
Password    ==> _
Procedure   ==> $IKJTEST                                     Group Ident ==>
Acct Nbr    ==> 1
Size        ==> 1096128
Perform     ==>
Command     ==>

ICH70001I EDJXADM  LAST ACCESS AT 13:47:25 ON THURSDAY, JULY 27, 2017
IKJ56455I EDJXADM LOGON IN PROGRESS AT 13:53:03 ON JULY 27, 2017
IKJ56452I SYSTEM ERROR. LOGON TERMINATED
```

- The result is some SVC dumps and many lines of “junk” written to the log.
- Note: IBM might change this before GA to make it fail more gracefully. One suggestion was to disallow MSTR logon completely which I’ve asked them NOT to do because the CBT 377 ZAP still works!!!

CBT 377 ZAPs for z/OS 2.2 and z/OS 2.3

```

===>
***** Top of Data *****
++USERMOD(PHXTS01) REWORK(2017208) /*
*****
*
* ZAP for Allowing LOGON under MSTR Subsystem
*
* The ZAP offset may vary from TSO/E release to release.
* To find the exact ZAP location PZAP LMOD IKJEFLA1 CSECT
* IKJEFLB, locate hex string '0000009DC9D2D1C5C6D3C340'
* and rework the ZAP.
*****
*/
++VER(Z038) FMID(HTE77A0)
++ZAP(IKJEFLB)
  NAME IKJEFLB
  VER 08BC 0000009D,C9D2D1C5C6D3C340
  REP 08BC 0000009F,C9D2D1C5C6D3C340
***** Bottom of Data *****

```

```

===>
***** Top of Data *****
++USERMOD(PHXTS01) REWORK(2017222) /*
*****
*
* ZAP for Allowing LOGON under MSTR Subsystem
*
* The ZAP offset may vary from TSO/E release to release.
* To find the exact ZAP location PZAP LMOD IKJEFLA1 CSECT
* IKJEFLB, locate hex string '0000009DC9D2D1C5C6D3C340'
* and rework the ZAP.
*****
*/
++VER(Z038) FMID(HTE77B0)
++ZAP(IKJEFLB)
  NAME IKJEFLB
  VER 09BC 0000009D,C9D2D1C5C6D3C340
  REP 09BC 0000009F,C9D2D1C5C6D3C340
***** Bottom of Data *****

```


z/OS 2.3 MSTR Logon - With CBT 377 ZAP

```
LOGON  
logon edjxadm subsys(mstr)_
```

```
----- TSO/E LOGON -----  
IKJ56477I Enter logon information for subsystem MSTR  
  
Enter LOGON parameters below:                                RACF LOGON parameters:  
  
Userid      ==> EDJXADM  
Password    ==> _  
Procedure   ==> $IKJTEST                                     Group Ident ==>  
Acct Nbr    ==> 1  
Size        ==> 1096128  
Perform     ==>  
Command     ==>
```

```
ICH70001I EDJXADM  LAST ACCESS AT 11:52:31 ON THURSDAY, AUGUST 10, 2017  
ICH70002I YOUR PASSWORD WILL EXPIRE IN  17 DAYS.  
IKJ56455I EDJXADM LOGON IN PROGRESS AT 11:53:00 ON AUGUST 10, 2017  
IKJ56951I NO BROADCAST MESSAGES  
Procedure Name is $IKJTEST  
JES subsystem MASTER SP7.2.3  
*** Allocating SYSPROC ***  
*** Allocating SYSEXEC ***  
*** Allocating ISPPROF ***  
*** Allocating ISPTABL ***  
*** Allocating ISPLLIB ***  
*** Allocating ISPPLIB ***  
*** Allocating ISPMLIB ***  
*** Allocating ISPTLIB ***  
*** Allocating ISPSLIB ***  
*** Allocating ISPILIB ***  
*** Allocating MISC ***  
***
```



Sysprogs. Start Your (zIIP) Engines!
(Ed Jaffe)

Prevent z/OSMF Auto Start

- In z/OS 2.3, IBM made good on its threat to automatically start z/OSMF at IPL time.
- That might not work well for all of your systems, particularly those without available zIIP(s).
- Example: on our zBC12-B03 with no zIIP (DR machine) it takes quite a long time for z/OSMF to initialize after IPL. During that time, TSO/E is nearly unusable.
- AUTOSTART(LOCAL) is the IZUPRMxx default.
- With this value in effect, the first system in the sysplex to IPL will start z/OSMF. The others will connect only.
- Instruct any system to not start z/OSMF simply by specifying AUTOSTART(CONNECT).



Trust, but Verify!
(Tom Conley)

The Backstory



- This is the city, Providence, Rhode Island
- The story you are about to hear is true
- The names have been changed to protect the guilty
- My name's Conley, I'm a sysprog
- Widgets Co. leased z12 for 4 years from ACME Computer
- Lease terminates in July 2018
- December 2016, Widgets buys 2 additional CBU tests
- April 2017, HMC says CBU expires in July 2017
- Since Widgets just bought them, why are they expiring?

The Bad News

- CBU has two types of records, test and base
- In this case, the base record was expiring in July 2017
- Why is it expiring 3 years into a 4-year lease?
- Clearly it has to be a mistake, right?
- Original contract personnel at Widgets and ACME gone
- CBU terms did not exist in writing
- Widgets contacted ACME to correct the mistake
- ACME said it wasn't a mistake
- ACME had three-year-old Email from Widgets officer
- Email said "We will do x number of CBU tests in 3 years"
- So ACME set the CBU base record for 3 years
- ACME happy to add a year for \$xx,xxx.xx from Widgets
- Widgets had to pay up, DR test coming in August 2017
 - Attempts to escalate within ACME management proved futile
 - Litigation would have taken longer than one year
 - Litigation would have cost more than \$xx,xxx.xx

Lessons Learned

- Get EVERYTHING in writing
- ACME knows all the tricks, so you have to be thorough
- Knowledge transfer for contract personnel CRITICAL
- In the end, money talks, BS walks
 - ACME knew base record would expire
 - ACME knew tests could not be used before base expiration
 - ACME sold the tests anyway, increasing their leverage
- Try to be the Road Runner, not Wile E. Coyote



You'll Implement AT-TLSv1.2 and Like It!
(Tom Conley)

The Backstory

- SSL and TLSv1.0 are no longer secure
- PCI mandates AT-TLSv1.1 (minimum), by June 30, 2018
- AT-TLS installation looks daunting, so...
- Attended lots of TLS sessions at SHARE, zTechU, etc.
- Read every manual I could about TLS
- Not one had a step-by-step method
- Not one had this Redbook, which I heard about this week
IBM z/OS V2R2 Communications Server TCP/IP
Implementation: Volume 4 Security and Policy-Based
Networking
- Redbook has been around since at least V1R12!
- Redbook eventually shows steps I'll cover more quickly
- The Redbook is an excellent reference
- Wish I'd known about it 6 months ago
- Here's the Reader's Digest version...

Implementing AT-TLSv1.2



- In hindsight, TLS implementation fairly straightforward
 - TCPIP PROFILE changes
 - TN3270 config changes
 - Generate certificate
 - Create AT-TLS policy (manually or z/OSMF Config Assistant)
 - Enable PAGENT (Policy AGENT) started task
 - Create SERVAUTH security profiles
- Use following examples to implement AT-TLS in 1-2 hours
- I take the arrows, you get the glory!

TCPIP Profile Changes

- TCPIP required profile changes for AT-TLS
- Add TTLS parm to TCIPCONFIG
TCPCONFIG RESTRICTLOWPORTS TTLS
- Add PAGENT to AUTOLOG so it starts with TCPIP
AUTOLOG 5
...
PAGENT ; Policy Agent
- Add DELAYSTART TTLS to AUTOLOG tasks needing TTLS
PORTMAP DELAYSTART TTLS ; Portmap Server
LPSERVE DELAYSTART TTLS ; LPD Server

TN3270 Config Changes

- TN3270 configuration changes less extensive
- Use TTLSport statement in TelnetParms

```
TelnetParms                ; AT-TLS TN3270E Telnet server port
    TTLSport 992
; Conntype secure
; ClientAuth None
; SSLtimeout 10
EndTelnetParms
```

- Comment out or delete other options
- All other options specified in AT-TLS PAGENT policy

Generate Certificate

- Existing SSL Certificate may suffice
- RACF commands to generate self-signed certificates ("borrowed" from Tim Raley's TLS session, available [here](#)):

```
racdcert gencert certauth -  
  subjectsdn(cn('TN3720 Certificate Authority (CA)') -  
    o('Pinnacle Consulting Group, Inc.') -  
    ou('TN3270 Cert Org Unit') c('US')) -  
  RSA size(2048) -  
  notbefore(date(2015-09-11)) -  
  notafter(date(2050-09-11)) -  
  keyusage(certsign) -  
  withlabel('TN3270 CA')  
racdcert gencert site -  
  subjectsdn(cn('TN3270 Site Certificate') -  
    o('Pinnacle Consulting Group, Inc.') -  
    ou('TN3270 Site Org Unit') c('US')) -  
  RSA size(2048) -  
  notbefore(date(2015-09-11)) -  
  notafter(date(2050-09-11)) -  
  withlabel('TN3270 SharedSite1') -  
  signwith(certauth label('TN3270 CA'))  
setropts raclist(digtring) refresh  
setropts raclist(digtcert) refresh
```

Generate Certificate

- Create keyring and connect certificates and users

```
racdcert id(START1) addring(TCPIPRing1)
racdcert id(START1) connect(CERTAUTH -
    label('TN3270 CA') ring(TCPIPRing1) -
    usage(certauth) )
racdcert id(START1) connect(SITE -
    label('TN3270 SharedSite1') ring(TCPIPRing1) -
    default usage(personal) )
setropts raclist(digtring) refresh
setropts raclist(digtcert) refresh
rl facility IRR.DIGTCERT.LISTRING all
PE IRR.DIGTCERT.LISTRING CL(FACILITY) -
    ID(START1) ACCESS(read)
SETROPTS RACLIST(FACILITY) REFRESH
rl facility IRR.DIGTCERT.LISTRING all
RL FACILITY IRR.DIGTCERT.GENCERT ALL
RDEF FACILITY IRR.DIGTCERT.GENCERT UACC(NONE) -
    OWNER(SYS1)
PE IRR.DIGTCERT.GENCERT CL(FACILITY) -
    ID(START1) ACCESS(CONTROL)
SETROPTS RACLIST(FACILITY) REFRESH
RL FACILITY IRR.DIGTCERT.GENCERT ALL
```

Generate AT-TLS Policy

- I used z/OSMF Configuration Assistant to create policy
- Really unnecessary, generated policy is cookie cutter
- By default, you'll need two USS files:
 - /etc/pagent.conf
 - /etc/pagent_TTLS.conf
- IBM provides samples for both files
 - /usr/lpp/tcpip/samples/pagent.conf
 - /usr/lpp/tcpip/samples/pagent_TTLS.conf
- Updating samples likely easier than Config Assistant

Generate AT-TLS Policy

- /usr/lpp/tcpip/samples/pagent.conf nearly all comments
- You only really need two lines (remove all QoS statements):

```
CommonTLSConfig /etc/pagent_TTLS.conf  
TTLSConfig /etc/pagent_TTLS.conf FLUSH PURGE
```

- FLUSH PURGE deletes TTLS rules if PAGENT comes down
- /usr/lpp/tcpip/samples/pagent_TTLS.conf
- pagent_TTLS sample contains FTP, Rexec, etc.
- Following is pagent_TTLS.conf for TN3270 only:

Generate AT-TLS Policy

```
##
## AT-TLS Policy Agent Configuration file for:
##   Image: SYSA
##   Stack: TCPIP
##
## Created by the IBM Configuration Assistant for z/OS Communications Server
## Version 2 Release 2
## Backing Store = Conley
## Install History:
## 2017-03-28 18:12:04 : Save To Disk
## 2017-03-28 17:28:43 : Save To Disk
##
## TLS default rules: Default_TN3270-Server|
## End TLS default rules
##
## End of Configuration Assistant information
```

Generate AT-TLS Policy

```
TTLSRule Default_TN3270-Server~1
{
    LocalAddr ALL
    RemoteAddr ALL
    LocalPortRangeRef portR1
    RemotePortRangeRef portR2
    Direction Inbound
    Priority 255
    TTLSGroupActionRef gAct1~TN3270-Server
    TTLSEnvironmentActionRef eAct1~TN3270-Server
}
TTLSGroupAction gAct1~TN3270-Server
{
    TTLSEnabled On
}
```

Generate AT-TLS Policy

```
TTLSEnvironmentAction eAct1~TN3270-Server
{
    HandshakeRole Server
    EnvironmentUserInstance 0
    TLSKeyringParmsRef keyR~SYSA
    TLSCipherParmsRef cipher1~AT-TLS__Platinum
    TTLSEnvironmentAdvancedParmsRef eAdv1~TN3270-Server
}
TTLSEnvironmentAdvancedParms      eAdv1~TN3270-Server
{
    ApplicationControlled           On
    HandshakeTimeout               10
    SecondaryMap                     Off
    SSLv3                           On
    TLSv1                           On
    TLSv1.1                         On
    TLSv1.2                         On
}
```

Generate AT-TLS Policy

```
TTLSTLSKeyringParms          keyR~SYSA
{
    Keyring                   TCPIPRing1
}

TTLSCipherParms              cipher1~AT-TLS__Platinum
{
    V3CipherSuites            TLS_DH_DSS_WITH_AES_256_GCM_SHA384
    V3CipherSuites            TLS_DHE_DSS_WITH_AES_256_GCM_SHA384
    V3CipherSuites            TLS_DH_RSA_WITH_AES_256_GCM_SHA384
    V3CipherSuites            TLS_DHE_RSA_WITH_AES_256_GCM_SHA384
    V3CipherSuites            TLS_RSA_WITH_AES_256_GCM_SHA384
    V3CipherSuites            TLS_RSA_WITH_AES_256_CBC_SHA
    V3CipherSuites            TLS_RSA_WITH_AES_128_CBC_SHA
    V3CipherSuites            TLS_RSA_WITH_DES_CBC_SHA
}
```

Generate AT-TLS Policy

```
##
## The last three cipher suites are required for legacy devices. They
## can be removed when those devices no longer exist.
##
PortRange portR1
{
    Port 992
}
PortRange portR2
{
    Port 1024-65535
}
```

Generate AT-TLS Policy

- Choose Cipher Suites with highest level of security
- Don't use SHA1 hashing, it's proven to have collisions
- NSA no longer recommends SHA256 or AES128
- I've set AES256 SHA384 as MINIMUM level for TLSv1.2

Enable PAGENT Started Task

- Sample PAGENT proc in TCPIP.SEZAINST(PAGENT)
- Can run "as-is", will use /etc/pagent.conf as input
- Create userid and STARTED class profile:

```
AU PAGENT OWNER(SYS1) NOPASSWORD NAME('PAGENT STARTED TASK') +  
    OMVS(UID(0) HOME('/') PROGRAM('/bin/sh'))  
RDEFINE STARTED PAGENT.* OWNER(SYS1) UACC(NONE) +  
    STDATA(USER(PAGENT) GROUP(SYS1))  
SETROPTS RACLIST(STARTED) REFRESH
```

Create SERVAUTH Class Profiles

- SERVAUTH class profiles required to grant access to TLS
- Format EZB.INITSTACK.<sysname>.TCPIP
- Grant READ authority for started task id's requiring TLS
- Define for TCPIP-related tasks
 - TCPIP, PAGENT, TN3270, FTPSERVE, PORTMAP, LPSERVE
 - NFS
 - CICS
 - DB2 DIST regions
 - MQ MSTR's and CHIN's, Qpasa
 - CA-ESP job scheduler
 - OPENSSH
 - SYSLOGD
 - CSSMTP
 - Etc. (your site may have other tasks needing this profile)

Create SERVAUTH Class Profiles

- Define for TCPIP-related tasks

```
RDEFINE SERVAUTH EZB.INITSTACK.SYSA.TCPIP UACC(NONE) OWNER(SYS1)
      FROM(EZB.INITSTACK.SYST.TCPIP)
RDEFINE SERVAUTH EZB.INITSTACK.SYSB.TCPIP UACC(NONE) OWNER(SYS1)
      FROM(EZB.INITSTACK.SYST.TCPIP)
SETROPTS RACLIST(SERVAUTH) REFRESH
PE EZB.INITSTACK.CPUA.TCPIP CL(SERVAUTH) AC(R) ID(CICSA1)
PE EZB.INITSTACK.CPUA.TCPIP CL(SERVAUTH) AC(R) ID(DB2P)
PE EZB.INITSTACK.CPUA.TCPIP CL(SERVAUTH) AC(R) ID(MQPRCHIN)
PE EZB.INITSTACK.CPUC.TCPIP CL(SERVAUTH) AC(R) ID(MQPRMSTR)
PE EZB.INITSTACK.CPUA.TCPIP CL(SERVAUTH) AC(R) ID(QPMON)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(TCPIP)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(TN3270E)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(FTPserve)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(PAGENT)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(NFS)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(OPENSsh)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(SYSLOGD)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(LPserve)
PE EZB.INITSTACK.SYSK.TCPIP CL(SERVAUTH) AC(R) ID(PORTMAP)
SETROPTS RACLIST(SERVAUTH) REFRESH
```

Create SERVAUTH Class Profiles

- Don't forget to create these profiles
- Handy reminders if you do forget:

```
EZD1313I REQUIRED SAF SERVAUTH PROFILE NOT FOUND 840  
EZB.INITSTACK.SYSZ.TCPIP
```

```
ICH408I USER(TN3270 ) GROUP(SYS1 ) NAME(TN3270 SERVER )  
EZB.INITSTACK.SYSA.TCPIP CL(SERVAUTH)  
INSUFFICIENT ACCESS AUTHORITY  
ACCESS INTENT(READ ) ACCESS ALLOWED(NONE )
```

```
EZZ6011I TN3270E BPX1SOC FAILED, RC = 00000070 RSN = 74580296
```

OBEYFILE to Implement

- You can issue OBEYFILE commands to implement
 - S PAGENT
 - OBEYFILE TCPIP PROFILE
 - OBEYFILE TN3270 PROFILE
- Don't forget to change TCPIP and TN3270 proc

Setup PROCs to Implement and Backout

- Create TCPIP and TN3270 procs for AT-TLS or not
 - Symbol &M in proc

```
//TCPIP      PROC PARMS='CTRACE(CTIEZB00) ',M=AT
...
//PROFILE    DD DISP=SHR,DSN=SYS1.PARMLIB(PROFIL&M)

//TN3270     PROC PARMS='CTRACE(CTIEZBTN) ',M=AT
...
//PROFILE    DD DISP=SHR,DSN=SYS1.PARMLIB(TN3270&M)
```

- PROFILA0 for non-AT-TLS and PROFILAT for AT-TLS
- TN3270A0 for non-AT-TLS and TN3720AT for AT-TLS



Who Let the z/OSMF Dog Out?

Who! Who! Who! WhoWho!

(Tom Conley)

The Backstory



- z/OSMF V1R13 was resource intensive
- Required 2GB memory and 120 Mips to start
- On small systems, could take up to 20 minutes to start
- z/OSMF V2R1 came with WAS Liberty Profile
- Drastically reduced memory and Mips to start
- Even on small systems, start time 5 minutes max
- Once up, 1-2 second browser response
- z/OSMF V2R1 looked promising with reduced resources

Was looking forward to z/OSMF V2R2

- z/OSMF V2R2 promised big enhancements
 - REST APIs
 - Workflow, WLM, Config Assistant, etc. enhancements
 - Simplified configuration
 - External plug-ins
 - Etc., Etc.
- Luckily for me, z/OSMF pre-configured on my zD&T
- After making appropriate TCPIP changes, I fired it up
- CFZCIM up almost immediately, much faster than V2R1
- IZUANG1 up almost immediately, much faster than V2R1
- IZUSVR1 comes up in 11.5 minutes with 44.5M EXCPs
 - Much slower than V2R1 (5 minutes, 5.3M EXCP's)
 - Initialization message issued after 2 minutes and 6M EXCPs
 - IZUSVR1 continues to come up until 44.5M EXCP's issued
- Browser response about 5-10 seconds, 60 seconds max ☹
- z/OSMF performance in V2R2 clearly worse than V2R1

Why Did z/OSMF V2R2 Become a Dog?



- Additional z/OSMF plugins increased initialize time/EXCP's
- No good explanation for poor browser response
- My z/OSMF V2R2 User Experience in San Jose cancelled
- I had nothing but bad news
- I wanted to give IBM a chance to respond
- Reported findings to IBM
- IBM came back with some Java settings to try

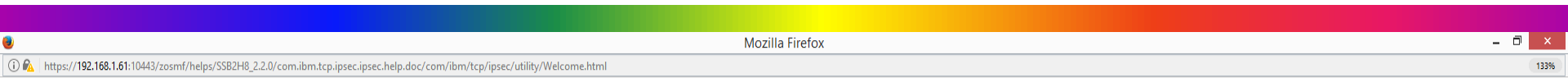
z/OSMF Goes to Obedience School

- `/var/zosmf/configuration/servers/zosmfServer/jvm.options`
 <snip>
 `-Xquickstart` (they asked me to add, already default)
 `-Xshareclasses:none`
 <snip>
- Change `-Xshareclasses:none` to the following
 `-Xshareclasses:cacheDir=/var/zosmf/data/logs/.classCache,name=sharedcc`
- Add following lines to cache Java code:
 `-Xscmx100M`
 `-Xscmaxaot50m`
- Recycled z/OSMF
 - Startup unaffected for elapsed time and EXCP's
 - Browser response time better, 1-5 secs typically (acceptable)
 - Still not quite as good as V2R1

z/OSMF V2R2 Helpless?

- z/OSMF uses KC4z under-the-covers for Help
- IBM also recommended disabling KC4z (as an experiment)
- Rename /usr/lpp/zosmf/installableApps/izughelp.ear
- Recycled z/OSMF, came up in 8 minutes and 27M EXCP's
- But requesting Help results in a blank page

z/OSMF V2R2 Helpless?



z/OSMF V2R2 Helpless?

- Quicker startup not worth losing Help
- Renamed back to /usr/lpp/zosmf/installableApps/izughelp.ear
- IBM looking at potential solutions to host KC4z elsewhere
- Rather than running in z/OSMF address space:
 - Dedicated KC4z repository on z/OS
 - Remote KC4z repository on-prem
 - Remote KC4z repository off-prem
- Stay tuned for future developments

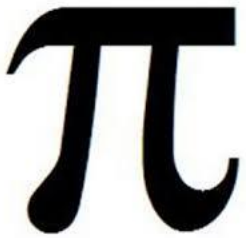
Lessons Learned



- z/OSMF V2R2 performance issues 18 months after GA?
- Surprising that no one else reported performance issues
- Asked IBM to test future versions of z/OSMF on small iron
- zIIP processors make a huge difference!
- Ensure that IEASYSxx option ZAAPZIIP=YES is set
- Yes, I had a client running ZAAPZIIP=NO
- Changed to ZAAPZIIP=YES, zIIP utilization doubled!
- z/OSMF is strategic, IBM wants it to run efficiently
- Coming improvements in Java (Java 9) should help

The Effects of Symbolism

(Mary Anne Matyaz)



The Effects of Symbolism

- The MVS command SETLOAD will allow replacing the entire system symbol table... so you can add/delete/change a symbol.... very easily...
- In the examples below, I told it to use the same IEASYMxx members as were used at IPL.

```
SETLOAD IPL, IEASYM
```

```
IEE252I MEMBER      LOAD0C FOUND IN SYS0.IPLPARM
IEE252I MEMBER IEASYM0C FOUND IN SYS1.PARMLIB.TSAGRP1
IEE252I MEMBER IEASYM7C FOUND IN SYS1.PARMLIB.TSAGRP1
IEF196I IEF285I      SYS0.IPLPARM
IEF196I IEF285I      VOL SER NOS= IPLA00.
IEF900I SYSTEM SYMBOLS WERE UPDATED FROM LOAD0C
CASV0010I STATIC SYSTEM SYMBOL VALUES 386
    &$BCPSOCK.          = ""
    &$CBWTEST.          = "CHARLIE"
    &$CILPARX.          = "CICS$X$$"
```

The Effects of Symbolism

- Here's a simple display showing current values

D SYMBOLS

IEA007I STATIC SYSTEM SYMBOL VALUES 527

&SYSALVL.	=	"2"
&SYSCLONE.	=	"7C"
&SYSNAME.	=	"SDV27"
&SYSOSLVL.	=	"Z1020200"
&SYSPLEX.	=	"TSAPLEX"
&SYSR1.	=	"SARSE1"
&\$BCPSOCK.	=	" "
&\$CBWTEST.	=	"CHARLIE"
&\$CILPARX.	=	"CICS\$X\$\$"

The Effects of Symbolism

- Now I delete symbol cbwtest in IEASYM0C
- And the display shows:

```
SETLOAD IPL, IEASYM
```

```
IEE252I MEMBER      LOAD0C FOUND IN SYS0.IPLPARM
IEE252I MEMBER IEASYM0C FOUND IN SYS1.PARMLIB.TSAGRP1
IEE252I MEMBER IEASYM7C FOUND IN SYS1.PARMLIB.TSAGRP1
IEF196I IEF285I      SYS0.IPLPARM                                KEPT
IEF196I IEF285I      VOL SER NOS= IPLA00.
IEF900I SYSTEM SYMBOLS WERE UPDATED FROM LOAD0C
CASV0010I STATIC SYSTEM SYMBOL VALUES 582
    &$BCPSOCK.          = ""                                     No symbol $CBWTEST now
    &$CILPARX.          = "CICS$X$$"
    &$CILPARY.          = "CIPA$X$$"
    &$ESABINO.          = "V3131"
```

The Effects of Symbolism

- And the d symbols shows:

D SYMBOLS

IEA007I STATIC SYSTEM SYMBOL VALUES 676

&SYSALVL.	=	"2"
&SYSCLONE.	=	"7C"
&SYSNAME.	=	"SDV27"
&SYSOSLVL.	=	"Z1020200"
&SYSPLEX.	=	"TSAPLEX"
&SYSR1.	=	"SARSE1"
&\$BCPSOCK.	=	" "
&\$CILPARX.	=	"CICS\$X\$"
&\$CILPARY.	=	"CIPA\$X\$"
&\$ESABINO.	=	"V3131"

No \$CBWTEST now

Just bounce it
(Mary Anne Matyaz)



Love it

- The latest (for me) SDSF has SYSMSU and AVGMSU on the S.SYS panel:

```
SDSF SYS DISPLAY OS07R1          COMMAND INPUT ==> SCROLL ==> CSR
NP SYSNAME e CPC                      MSU SysMSU AvgMSU #CP
OS07R1 002827.H43.IBM.02.00000001237 514    15     3        2
```

- Handy! So of course I kept it to myself. But others found it. And then I had to answer questions.
- Changed defined capacity at the HMC level and surprise, SDSF did not update it!
- Dangit!

Bounce

- Bounced SDSFAUX. This is not easy because you have to run down the hallway and tell everyone to git out of sdsf.

```
SDSF DA 07R1 PAG 0 CPU/L 2/ 2 COMMAND INPUT => SCROLL => CSR
NP JOBNAME StepName ProcStep JobID   Owner  C  Pos  DP Real Paging
   SDSF      SDSF      SDSF   STC26851 SDSF NS  C1 1654 0.00 0.00
   SDSFAUX   SDSFAUX   SDSFAUX STC26852 SDSF NS  C1 2354 0.00 0.00
```

But it worked!

Being familiar with the MVS Requirements process, I begin to document the scenario, and boom!

PI71420

- PI71420: SDSF SYS PANEL SYSMSU VALUE CAN BE INACCURATE
- Error description:
 - SDSF SYS panel SYSMSU value can be inaccurate *[sic]* if changes made to running system.
- Local fix
 - Restart SDSFAUX to reflect changed values.
- A fix is available (Yoy!)
- R7A0 PSY UI43017 UP16/12/14 P F612
- R790 PSY UI43018 UP16/12/14 P F612
- Where was I? RSU Dec 2016



Stuck on DevOps looking for Mainframe
Fun

(Sam Knutson)

DevOps Stickers

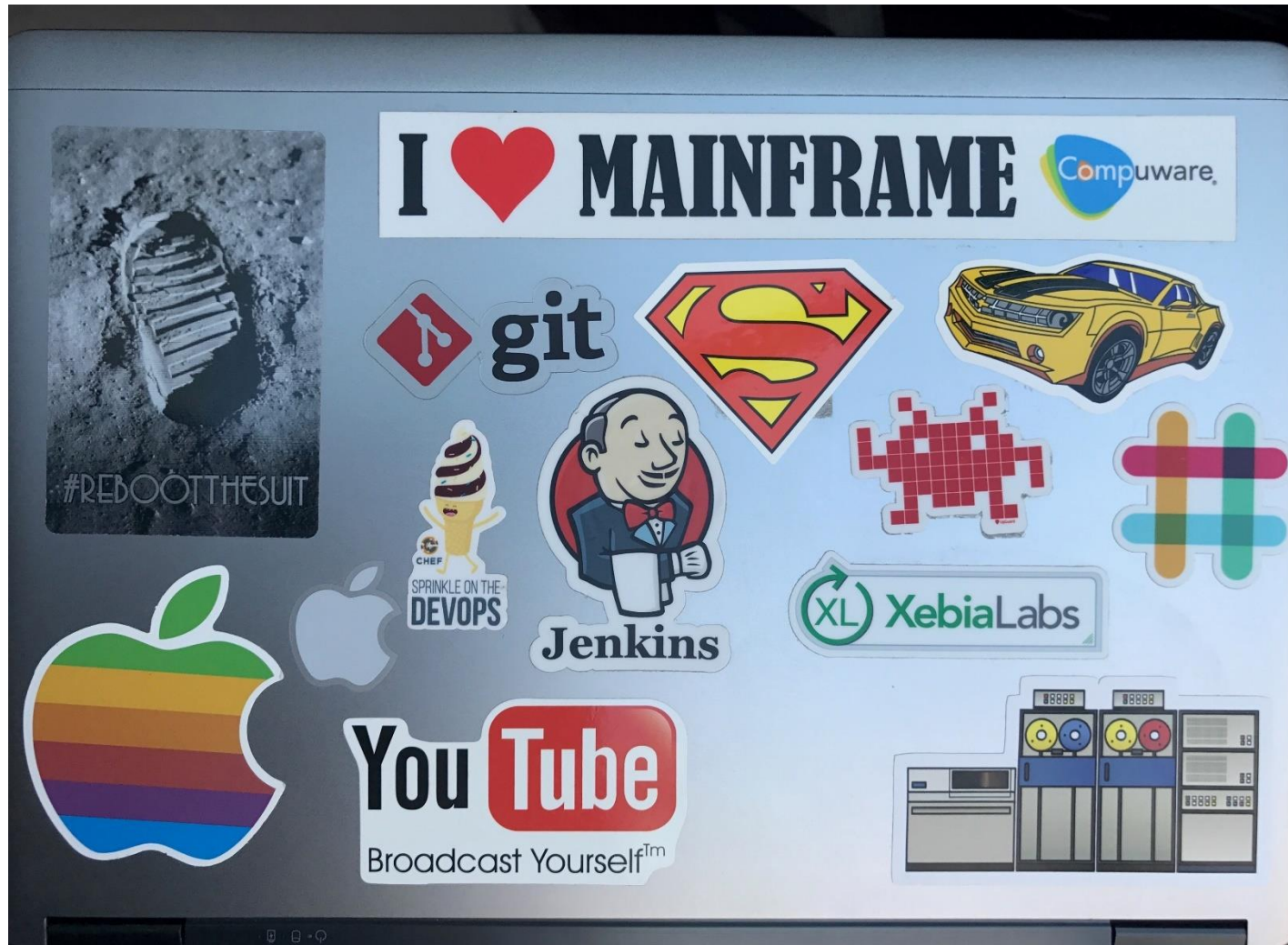


- Coders, Hackers, SysAdmins, Startup employees of all trades, many DevOps junkies and other geeks adopted vinyl stickers as way of personalizing laptops and sharing with others their personality, interests, politics and proficiencies.
- All laptops pretty much look the same. Adding stickers is one way to differentiate ones laptop from the myriad of other identical units and marks that particular laptop as ones own. The selection of the sticker also serves as a tribal identifier for the owner.
- Individuation: the act or process of individuating: such as (1) : the development of the individual from the universal (2) : the determination of the individual in the general. Also the process by which individuals in society become differentiated from one another.

DevOps Stickers

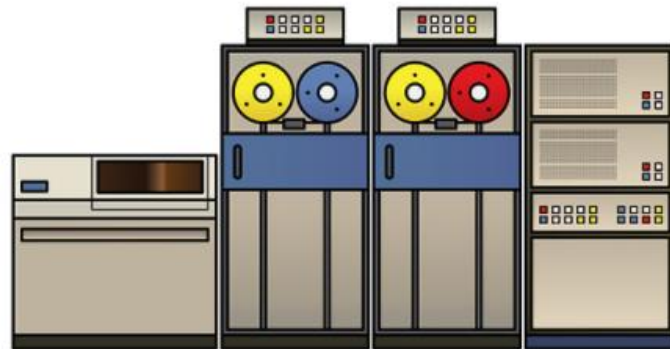
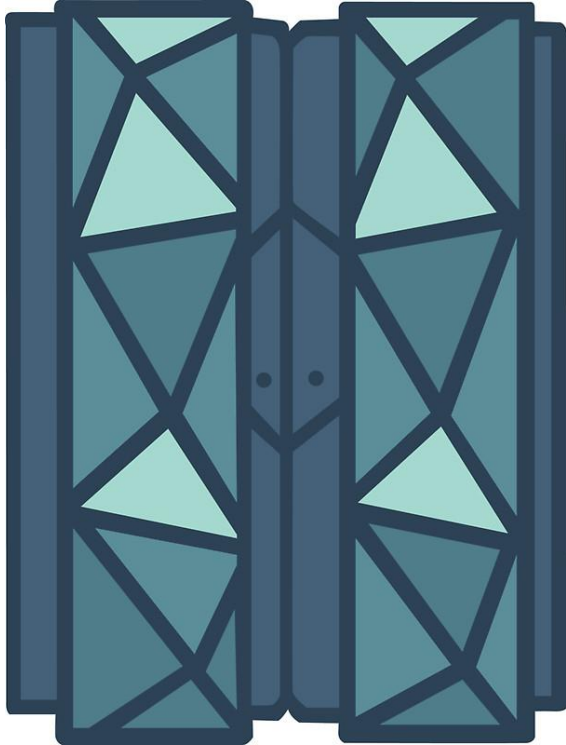


DevOps Stickers



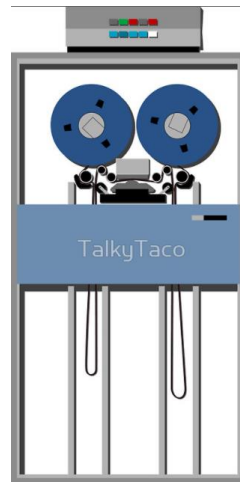
- This laptop is mine but it's due for replacement; stay tuned for an updated décor in Sacramento

Mainframe Stickers



- **Redbubble**
<https://www.redbubble.com/shop/stickers+mainframe>

Mainframe Stickers



MAKE THE MAINFRAME



• Redbubble

<https://www.redbubble.com/shop/stickers+mainframe>

Mainframe Stickers



- Café Press <http://www.cafepress.com/+mainframe+stickers>

Make your own Stickers



I ♥ MAINFRAME



- Make your own stickers at Stickermule
<https://www.stickermule.com/>

SHARE Buttons

[Home](#)

The Button Man Collection

Listen to

[Boney
Fingers](#)



Browse the

[Button
Collection](#)

[Introduction to the Collection](#)

- Before there were stickers we individuated using SHARE Buttons <http://mxg.com/thebuttonman/index.htm>
- Barry Merrill has curated the definitive collection

SHARE Buttons

- Barry Merrill has created a searchable photo database of all the SHARE buttons he could capture or that others have sent him
- The early buttons were created by individual system programmers who were active attendees at SHARE (and to a lesser degree, GUIDE), and they were created with a whimsical intent to convince IBM to provide better support, to point out perceived defects, or to advertise a preference for particular products or features.
- They were created in small quantity, usually less than 100 in the early years, out of the pocket of the creator, who only wanted to recover his costs of production, and were distributed at SCIDS on the first night of each SHARE.

Photo by Roger Zimmerman

SHARE Buttons



Mainframe Tee Shirts



- Bob Thomas continues to create some awesome mainframe T-Shirts that let you express your Big Iron soul!
- <https://teespring.com/es/stores/mainframezone-t-shirt-store>



Normal Distribution (Skip Robinson)

Distributed Console

- As of z/OS 2.3, consoles must run in 'distributed mode'
- System will not IPL otherwise
- This mode has been around for years
- Make sure you aren't caught short
- Checking current mode
- D OPDATA,MODE
- CNZ9006I 14.33.09 DISPLAY O,MODE
- CURRENT: DISTRIBUTED

Distributed Console

- Health Check CNZ_CONSOLE_OPERATING_MODE
- CNZHS0014I Console Services is running in the preferred operating mode of Distributed.
- How to change console mode if necessary
- Parm in IEASYSxx:
- CON=(00,DISTRIBUTED) /* ADDED "DISTRIBUTED"
6/16/11 SRH */

Distributed Console



- MVS command:
- SETCON MODE=DISTRIBUTED



Hold that PTF!
(Skip Robinson)

Hold That PTF!

- SMP/E is very good at coordinating related PTFs
 - Some PTFs require that a set be installed serially
 - Some PTFs require that a set be installed concurrently
- Such coordination is accomplished with PRE() or REQ() HOLDDATA
- But SMP/E cannot coordinate 'environmental' interactions, for example
 - A pre-conditioning PTF that must go on first, i.e.
 - A MULTISYS PTF with ++HOLD like this:
- "PTF-A must be installed on all sharing systems before PTF-B is installed on any system"
- SMP/E has no knowledge of where or when PTF-A is installed on all systems
- Such coordination must be managed manually by the installer

Hold That PTF!

- My preference for coordinating pre-conditioning PTFs is a USER HOLD record
- For MULTISYS example above, RECEIVE this HOLD:
- ++HOLD(PTF-B) FMID(fmid) **USER** REASON(PTF-A) DATE(yyddd) COMMENT(PTF-A MUST BE RUNNING EVERYWHERE BEFORE INSTALLING PTF-B) .
- This will hold PTF-B over successive mass APPLYs
 - APPLY PTFS BYPASS(HOLDSYS) .
- At each APPLY, CAUSER report will show status of PTF-B and the reason for not APPLYing it
- After PTF-A is running everywhere, RECEIVE this RELEASE record:
- ++RELEASE(PTF-B) FMID(fmid) USER REASON(PTF-A) DATE(hold-date) .
- The next mass APPLY after RELEASE will install PTF-B

Hold That PTF!

- There are other possible ways to manage environmental coordination
- E.g. EXCLUDE PTF-B during mass APPLY until PTF-A is running on all systems
- The trouble with EXCLUDE: it lives only in the APPLY job stream
- If a different job stream is used for mass APPLY, EXCLUDE may be overlooked and left out
- Maybe the same installer at a (much) later date
- Maybe a different installer at any time
- OTOH USER HOLD becomes part of the SMP/E CSI
- No matter who follows up or when, USER HOLD persists until explicitly RELEASED

Acknowledgments Both Knowing and Unknowing

- Robert Hering (IBM)
- James Chan (IBM - Retired)
- Meral Temel (Ishbank)
- Bruce Koss (Wells Fargo)
- Barry Merrill (MXG)
- Bob Thomas (ESM)
- Tim Raley (IBM)
- Sam Reynolds (IBM)
- Mike Fox (IBM)
- Diane Shannon (IBM)
- Gary Puchkoff (IBM)
- Marius Pirvu (IBM)
- Xi Xue BJ Jia (IBM)
- Joran Siu (IBM)
- Xiao Zhen (Joey) Zhu (IBM)



See You in
Sacramento