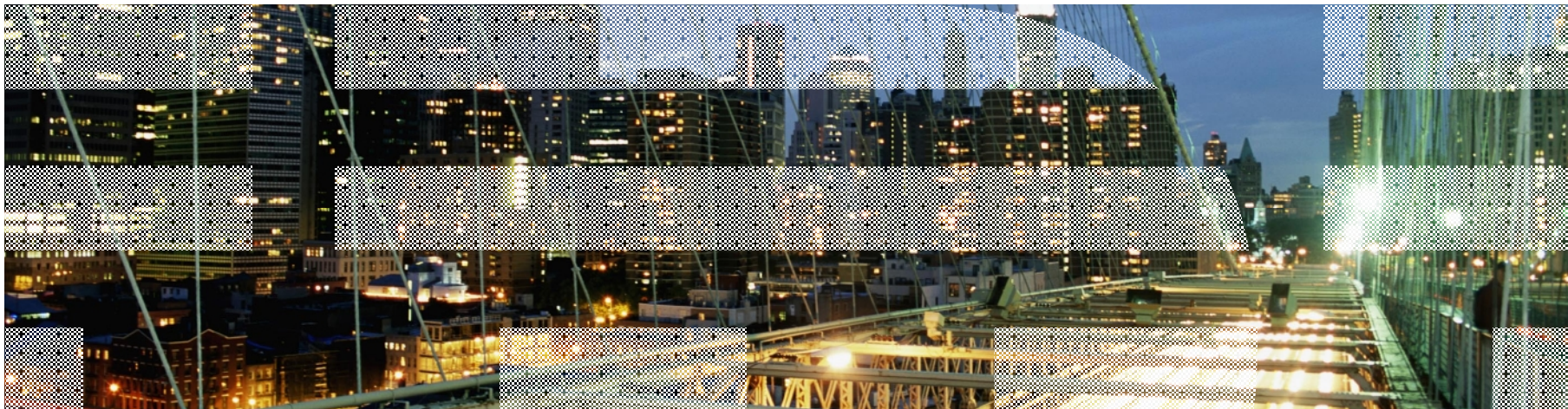


IBM z/VSE Service – Best Practice





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Agenda

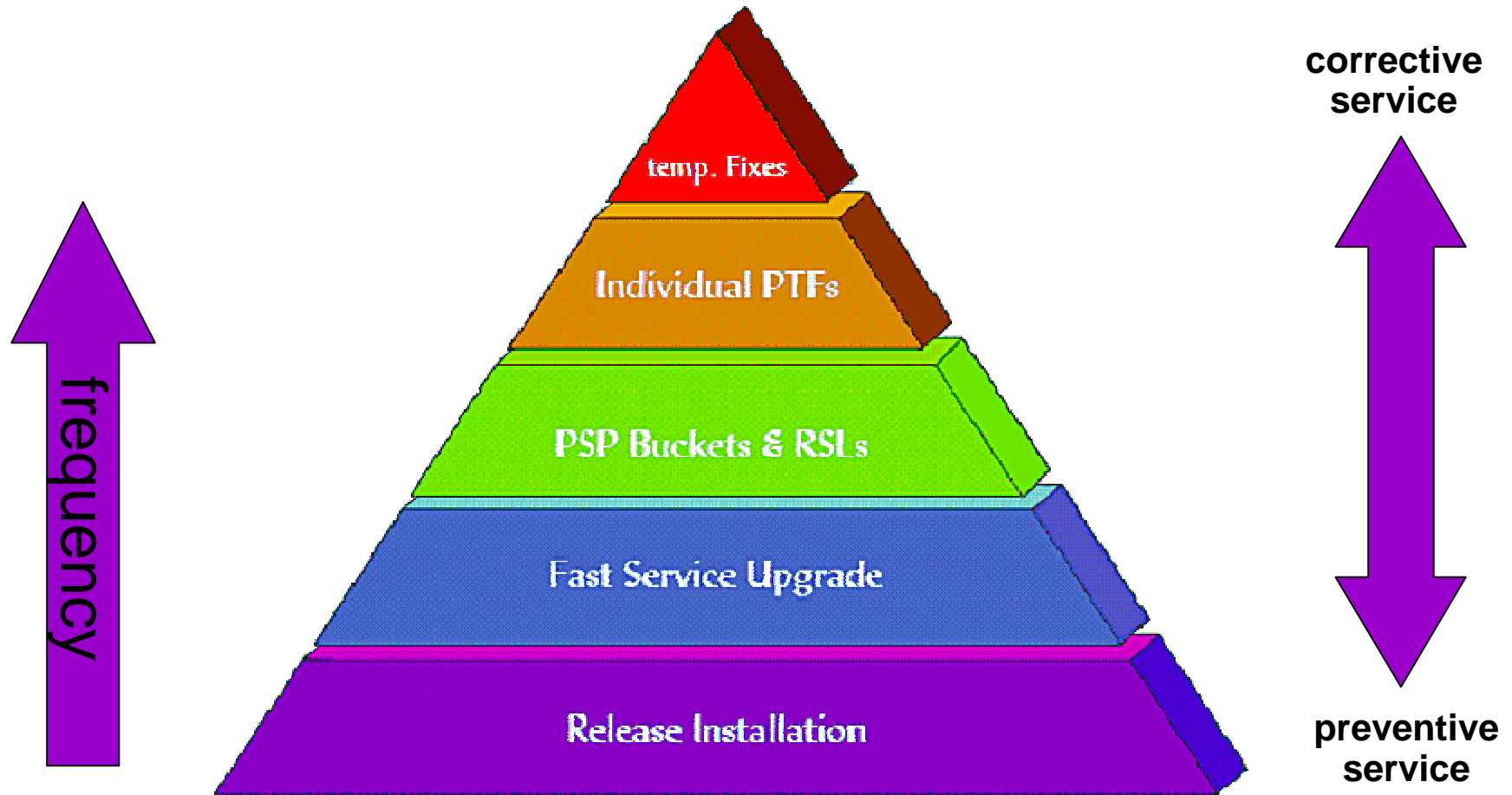
§ Service Concept for z/VSE

- z/VSE service vocabulary
 - MSHP, Temporary Fix,
 - APAR & PTF, RSL, PSP
 - FSU & Release Installation
- Ordering & installing service
 - ShopZ
 - Electronic order & delivery
 - Installation
- System health & Service recommendations
 - Health checker
 - Service plan

§ z/VSE Problem Management

- Problem types
- Problem handling and reporting
- Collaboration with the z/VSE service team
- Utilities for data collection

z/VSE service vocabulary



z/VSE service vocabulary

MSHP Overview

§ The z/VSE base package consist of the multiple products and components

§ MSHP (Maintain System History Program) controls product installation

– tracking via IJSYSHF, VSE.SYSTEM.HISTORY.FILE

§ Each product is identified by

– name, e.g. ‚Z/VSE 4.3.0 - VSE CENTRAL FUNCTIONS 8.3.0‘

– product ID, e.g. CF802C and release level, e.g. 02C

– one or more component ids, e.g. 5686-CF801, ..., 5686-CF811

§ MSHP RETRACE PRODUCTS generates a list of installed products

```

. . .
PRODUCT  CF802C      INSTALLATION DATE = 11/03/2010  'Z/VSE 4.3.0 - VSE CENTRAL FUNCTIONS 8.3.0'
                COMPRISES      5686-CF811  5686-CF810  5686-CF809  5686-CF808  5686-CF807  5686-CF806
                                5686-CF805  5686-CF803  5686-CF801
                RESIDES IN     IJSYSRS.SYSLIB      (PRODUCTION PART)
. . .

```

§ MSHP applies service to installed products by installing PTFs

– IF product id, component id, release level match

– AND requirements listed by PTF fulfilled

z/VSE service vocabulary

z/VSE temporary Fix (patch)

§ VSE Job with MSHP statements to modify z/VSE library member (phase)

- Developed by z/VSE service for
 - Releases out of service where no APAR & PTF exists
 - Bypass / correct problems until a PTF becomes available
 - Provide assistance for problem determination
- Fix is developed for specific APAR level of affected phase
- Library backup is recommended before installing fix

```

* $$ JOB JNM=MSHP,CLASS=0,DISP=D
// JOB MSHP  PATCH IPW$$AT DY46323
*
*  BACKUP PHASE IPW$$AT OR IJSYSRS.SYSLIB  *
*
// PAUSE
// EXEC MSHP
CORRECT 5686-CF-703-81C : DY99999 REVOKABLE
AFFECTS PHASES=IPW$$AT          /* NAME OF POWER PHASE          */
ALTER 25C 4780917E:47000000     /* TAKE DUMP FOR SUBTASK CC=09*/
RESOLVES 'TAKE SUBTASK DUMP CC=09'
/*
/&
* $$ EOJ

```

z/VSE service vocabulary

z/VSE PTF (Problem Temporary Fix)

- § Provides fixes for phases, macros, panels, ... for a z/VSE problem
 - APAR (Authorized Problem Analysis Report) describes the problem
 - Lists PTF(s) to be installed to solve the problem
- § Single PTF or bulk installation done by MSHP (Maintain System History Program)
 - IUI dialogue generates MSHP job stream (recommended way)
- § Different z/VSE releases require different PTFs !
- § Single PTF may provide fixes for several APARs
 - E.g. UD53642 provides fixes for APARs DY47193, DY47209, DY47215, DY47253
- § Single APAR may list multiple PTFs for same component but different releases
 - E.g. DY47224 for component 5686CF805 (VSAM) lists 3 PTFs
 - UD53657 for release 91C (VSAM phases in z/VSE 4.1)
 - UD53654 for release 01C (VSAM phases in z/VSE 4.2)
 - UD53656 for release 02C (VSAM phases in z/VSE 4.3)
 -
- ∅ before order verify which PTF matches to your z/VSE release

z/VSE service vocabulary

z/VSE RSL (Recommended Service Level)

§ Lists of ALL available PTFs for a specific z/VSE Refresh level

- lists are generated every ~ 2 months
- made public after 6-8 weeks monitoring for PE (PTF in Error)
- 2 separate lists for Base products and Optional products
- PTF lists are closed when a new refresh is created
 - e.g. RSL for z/VSE 4.2.0 Base contains all PTFs created after z/VSE 4.2.0 GA and before z/VSE 4.2.1 GA
 - e.g. RSL for z/VSE 4.2.1 Base contains all PTFs created after z/VSE 4.2.1 shipment and before z/VSE 4.2.2 creation

Ø to bring z/VSE 4.2.0 to best service level install RSL420, RSL421 & RSL422

§ Can be ordered from IBM Service or Internet

- Copy & paste PTF List into the service order (Shopz)

§ Shipped as PTF Tape or as Download link

§ <http://www.ibm.com/systems/z/os/zvse/support/preventive.html#rsl>



z/VSE service vocabulary

z/VSE Recommended Service Level (RSL) example

RSL PTF list for z/VSE 4.3.0 Base

Service recommended for	PTF Order List	Cutoff Date
z/VSE 4.3.0	Base Products	PTFs 430B
	Optional Prod.	PTFs 430O
z/VSE 4.2.2	Base Products	PTFs 422B
	Optional Prod.	PTFs 422O
z/VSE 4.2.1	Base Products	PTFs 421B
	Optional Prod.	PTFs 421O
z/VSE 4.2.0	Base Products	PTFs 420B
	Optional Prod.	PTFs 420O
z/VSE 4.1.2	Base Products	PTFs 412B
	Optional Prod.	PTFs 412O
z/VSE 4.1.1	Base Products	PTFs 411B
	Optional Prod.	PTFs 411O
z/VSE 4.1.0	Base Products	PTFs 410B
	Optional Prod.	PTFs 410O

z/VSE base Products - 4.3.0
DITTO/ESA VERSION 1.3.0 UK60980 UK61816
EREP 3.5.0 UD53624 UD53625
ICKDSF 1.17.0 UK65722
CICS Transaction Server 1.1.1 UK61423 UK61557 UK62699 UK63014 UK64258
ACF/VTAM VERSION 4.2.0 UD53629 UD53630 UD53631
VSE Central Functions 8.3.0 (total size of PTFs: 43.3 MB) <ul style="list-style-type: none"> • VSE/SP Unique Code UK63804 UK65064 UK65178 • VSE/UNIQUE CODE ENGLISH none • VSE/UNIQUE CODE KANJI none • VSE/POWER UD53632 UD53679 • VSE/POWER Macros none • VSE/VSAM UD53647 UD53656 UD53710 • VSE/VSAM none • VSE/AF SVR & BAM & GDS

z/VSE service vocabulary

Preventive Service Planning (PSP Buckets)

- § List of PTFs that solve „High Impact or Pervasive“ (HIPER) problems
- § Available for every refresh level
 - e.g. zVSE421, zVSE430...
- § Are permanently maintained and kept up to date by the product change teams
- § Are divided into subsets for the individual components
 - ZVSE/01C
 - IBMLANG/01K
 - . . .
- § Can be ordered from IBM Service or Internet
 - use PSP name plus subset (e.g. zVSE421 - ZVSE/01C)
 - ShopzSeries: <http://www.ibm.com/software/shopzseries>
 - List: <http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp>
- § Shipped as PTF Tapes or as Download link
- § Also available for Hardware Support, e.g. 2817DEVICE for z196
 - Subset 2817/ZVSE contains PTFs for all z/VSE releases in service (4.2 & 4.3)

z/VSE service vocabulary

z/VSE Fast Service Upgrade (overview)

- § requires z/VSE installation tapes („z/VSE refresh“)
- § Fast Service Upgrade (FSU) performed on existing system
 - to move to a higher refresh level within a given release
 - to move from either of the two releases prior to the new release to the new release
 - copies new z/VSE refresh level over existing z/VSE system
 - keeps existing applications & data
- § FSU must be completed before testing can start!
 - return to previous level is only possible by restoring backups
- § either copy existing system as a new z/VSE image and perform FSU
- § or perform FSU directly (**not** recommended for production systems!)
- § install best service level for z/VSE and vendor software (RSL + PSP + vendor fixes)
- § test (applications & data already available) and after successful test define cutover date
- § production cutover
 - backup old system
 - perform FSU on production system
 - install new best service level for z/VSE and vendor software (RSL + PSP + vendor fixes)
 - perform regression test

z/VSE service vocabulary

z/VSE release installation (overview)

§ requires z/VSE installation tapes („z/VSE refresh“)

- has applied **all** PTFs available until cut off date
- has undergone a basic regression test by IBM
- orderable until a new refresh level or new release becomes available
- ordered via IBM Business Partner or shopZ

§ install as a new z/VSE image (new LPAR or new z/VM user ID)

§ install best service level for z/VSE and vendor software (RSL + PSP + vendor fixes)

§ copy applications & data from production system to test system for testing

§ after successful test define cutover date

- install new Hiper PTFs 2-3 weeks before cutover & perform regression test

§ production cutover

- backup old system and shutdown
- connect data to new production system

z/VSE service vocabulary

Summary of service deliverables

	Temp.Fix	PTF	RSL	PSP	Refresh
Content	Temporary Fix for a code problem (APAR or release out of service) or code modification to ease diagnostics	Official Fix for an officially documented code problem (APAR)	List of ALL PTFs at a cut off day for the named refresh	List of selected PTFs (HIPER)	Complete Product (includes all PTFs)
Available	created on request for a defined service level	Will be created when a fix is available	~ Every 2 Month	Is constantly kept up to date	Every 6-12 Month, usually for the newest release only
To be installed	To fix a certain problem, until a PTF is available or to generate diagnostic data	To fix a certain problem	Preventive to stay on a current level	After a refresh installation and preventive to avoid HIPER problems	For base install or Fast Service Upgrade (FSU)

Ordering & installing service

Shopz

§ IBM's productivity tool for planning and ordering zSeries software + service

§ Requires registration and configuration

§ With Shopz you can:

- Order tailored product and service packages for z/VSE, z/VM and z/OS
- Review your software licenses in all of these environments
- Plan for future upgrades

§ URL:

- <http://www.ibm.com/software/shopzseries>

§ **Detailed description how to use Shopz in presentation**

<ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/wavv08/ShozSeries-EN.pdf>

§ Note that according to Shopz PTF orders will include 90 days of requisite service only

- To bypass restriction, an installed software report must be generated on the z/VSE system and uploaded to Shopz !
- Report tool è <http://www-03.ibm.com/systems/z/os/zvse/downloads/tools.html#isrtool>

Ordering & installing service

z/VSE: Installing downloaded PTFs

§ You will be notified by e-Mail, when your order is ready

§ You get ONE binary job stream (fixed 80)

- Zipped with PKZIP (Shopz)
- includes all ordered PTFs

§ Recommended installation procedure:

- Unzip the package into a temporary directory on your PC
- use Virtual Tape (PTF tape simulation)
- or upload it into PTF.FILE (IJSYSPF)

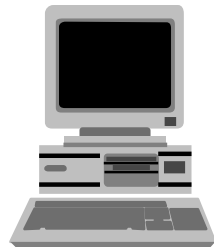
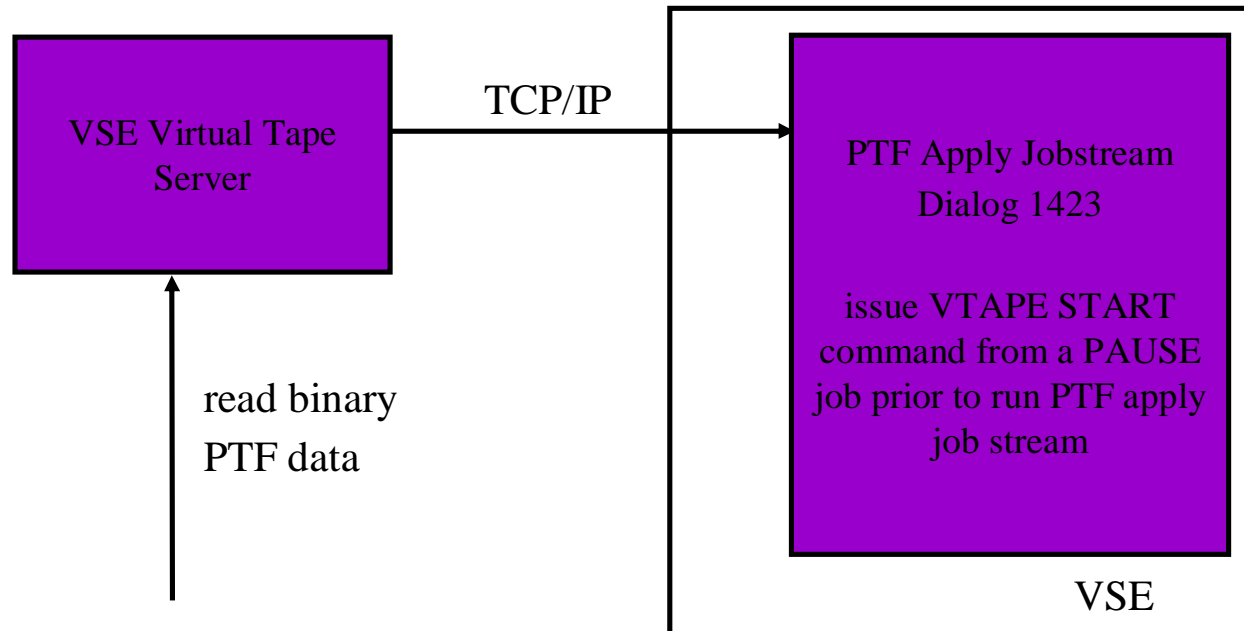
- <http://www.ibm.com/servers/eserver/zseries/zvse/documentation/edelivery.html#eptf>

§ Don't submit PTF(s) into VSE/POWER reader !!

- no indirect PTF apply possible
- PRE-requirements may not be fulfilled, CO-requirements can't be fulfilled via reader
- VSE/POWER processes JECL and JCL in the data part of PTFs

Ordering & installing service

z/VSE: Apply PTFs via Virtual Tape



- 1.) Rename file eptf6234.bin to eptf6234.ptf
- 2.) issue VTAPE START command from a PAUSE job

```
// VTAPE START,UNIT=<cuu1>,LOC=<ip-address>,
FILE='C:\eptf6234.ptf',READ
```


Ordering & installing service

z/VSE: Apply PTFs via Virtual Tape

§ Change file extension, e.g. eptf6234.bin → eptf6234.ptf

§ Issue VTAPE START command from a PAUSE job

– // VTAPE START,UNIT=<cuu>,LOC=<ip-address>,FILE='C:\eptf6234.ptf',READ

§ Apply service using IUI dialog, Fastpath 1423. Service Medium is Tape

– VIRTUAL TAPE = 2 (no virtual tape)

```

SRV$PH19                                APPLY PTF

Enter the required data and press ENTER.

SERVICE MEDIUM..... 1                Is the service file on tape?
                                           (Enter 2 if on disk)
VIRTUAL TAPE..... 2                    Enter 1 if service tape is a
                                           remote virtual tape.
TAPE UNIT ADDRESS..... cuu             For list of valid addresses see HELP.
TAPE QUANTITY..... 1                   Enter the number of service tapes
TYPE..... 1                             Enter the type of mass-application
                                           1=ALL 2=INCLUDE 3=EXCLUDE

Enter 2 for NO and 1 for YES
BACKUP..... 1                          Do you want to backup all affected
                                           libraries?
FORCE INDIRECT..... 2                  Do you want to apply all PTFs indi-
                                           rectly?
ADD INFO TO THE LIST..... 1            Do you want to add this info to the
                                           list of your processed service units?
                                           For tapes only one tape is possible.

PF1=HELP      2=REDISPLAY  3=END
  
```

Ordering & installing service

z/VSE: Apply PTFs via Virtual Tape

§ Change file extension, e.g. eptf6234.bin → eptf6234.ptf

§ Apply service using IUI dialog, Fastpath 1423. Service Medium is Tape

– VIRTUAL TAPE = 1 (yes) → prompts for parameters for VTAPE on add. panel

```

SRV$PH19                APPLY PTF

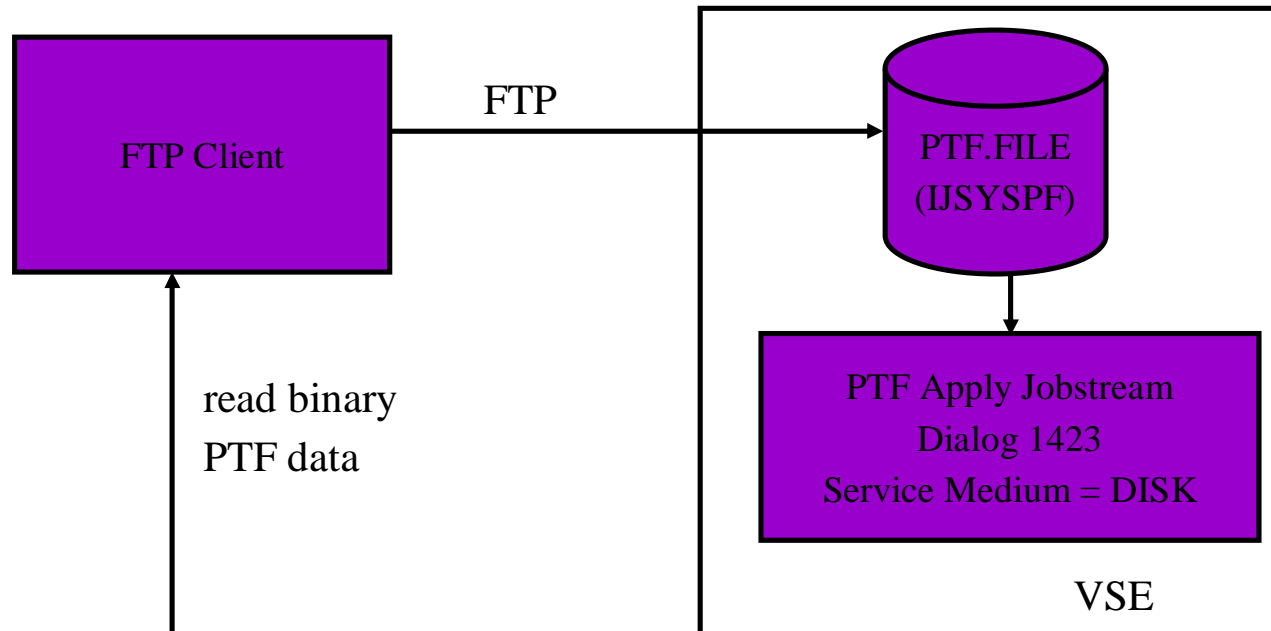
Enter the required data and press ENTER.

SERVICE MEDIUM..... 1           Is the service file on tape?
                                   (Enter 2 if on disk)
VIRTUAL TAPE..... 1             Enter 1 if service tape is a
                                   remote virtual tape.
TAPE UNIT ADDRESS..... cuu       UTL$VTAP2           VIRTUAL TAPE: SPECIFY THE DATA SET
TAPE QUANTITY..... 1
TYPE..... 1                     Enter the required data and press ENTER.

Enter 2 for NO and 1 for YES
BACKUP..... 1                   Service application from remote virtual tape.
FORCE INDIRECT..... 2           Specify the following residence values of the service tape:
ADD INFO TO THE LIST..... 1     IPADDR..... 9      152  214  38   IP address of the remote system
HOST NAME : _____
...
PORT..... _____           TCP/IP port number
DATA SET NAME : C:\EPTF6234_PTF
...
...
...
PF1=HELP      2=REDISPLAY  3=END
    
```

Ordering & installing service

z/VSE: Apply PTFs via PTF.FILE (IJSYSPF)



```
DEFINE FILE,TYPE=ESDS,DLBL=IJSYSPF,PUBLIC='IJSYSPF'
```

Upload:

BINARY

RECFM=F (fixed) – quote site recfm f

LRECL=80 –quote size lrecl 80

Ordering & installing service

z/VSE: Apply PTFs via PTF.FILE (IJSYSPF)

§ The file needs to be defined in TCP/IP

– DEFINE FILE,TYPE=ESDS,DLBL=IJSYSPF,PUBLIC='IJSYSPF'

§ Transfer the PTF file directly to disk into the VSAM file IJSYSPF.

– ftp> quote site unix off

ftp> bin

ftp> quote site lrecl 80

ftp> quote site recfm f

ftp> put ptffile.bin IJSYSPF or put ptffile.bin PTF.FILE

§ Apply service using IUI dialog, service medium is disk. Fastpath 1423

```

SRV$PH19                APPLY PTF
Enter the required data and press ENTER.
SERVICE MEDIUM..... 2          Is the service file on tape?
                                   (Enter 2 if on disk)
VIRTUAL TAPE..... 2             Enter 1 if service tape is a
                                   remote virtual tape.
TAPE UNIT ADDRESS..... _____ For list of valid addresses see HELP.
TAPE QUANTITY..... 1           Enter the number of service tapes
TYPE..... 1                    Enter the type of mass-application
                                   1=ALL 2=INCLUDE 3=EXCLUDE
Enter 2 for NO and 1 for YES
BACKUP..... 1                  Do you want to backup all affected
                                   libraries?
FORCE INDIRECT..... 2          Do you want to apply all PTFs indi-
                                   rectly?
ADD INFO TO THE LIST..... 1     Do you want to add this info to the
                                   list of your processed service units?
                                   For tapes only one tape is possible.
PF1=HELP      2=REDISPLAY  3=END

```

Ordering & installing service

z/VSE: Performing an Fast Service Upgrade

§ FSU from z/VSE 3.1 or later can be done with VTAPE (VSAM tape image)

- upload of tape image into VSAM file needed

§ FSU is done as usual (either from real tape or VTAPE)

- FSU Preparation - Dialog 1432
- FSU Installation - Dialog 1433

z/VSE: Performing a Release Installation

§ Base installation can NOT be done from VTAPE

- You need to create a real tape from the tape image
- Use DITTO Tape to Tape Copy
 - source: VTAPE (remote tape image)
 - destination: real tape
- Remote Tape image (source) can be
 - AWS file (CD-ROM)
 - AWS file within a ZIP file (download)

For details see <ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/wavv08/ShozSeries-EN.pdf>
and [z/VSE V4R3 Installation](#)

System health & Service recommendation

VSE Health Checker

Purpose of the VSE Health Checker

- § Improve system performance and prevent system downtime
 - Find upcoming problems before they occur
 - Save time otherwise spend on problem solving
 - Increase stability and performance by tuning system settings correctly
- § Provide knowledge about z/VSE system settings & parameters
 - Education about z/VSE settings by VSE Health Checker
- § Works best for z/VSE 4.1 and higher releases

- § Download tool at
 - <http://www.ibm.com/systems/z/os/zvse/downloads/#healthchecker>
- § Find more information at
 - <ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/techconf2007/munich/E76.pdf>

System health & Service recommendation

VSE Health Checker

How does it work?

- § Java based PC tool using the VSE Connector Server to access z/VSE
 - Automatic system diagnosis of z/VSE systems settings and highwater marks
- § Takes up to 5 minutes for collecting, analysing and formatting
 - Settings may depend on other settings
 - Combining Data from different settings
- § Visualizes analysis results using Graphical display, diagrams, charts
- § Captured data can be
 - saved to disk (XML format)
 - read from disk
 - sent via e-mail to a z/VSE expert (e.g. to IBM)

- § Ideas for additional data to be analysed è z/VSE team (zvse@de.ibm.com)

System health & Service recommendation

VSE Health Checker

VSE Health Checker - Data loaded from: POWER421(9.152.85.48)

File Selected Configuration Help

VSE Health Checker

- H05LPAR41
- M04_LPAR2
- POLLUX_LPAR4
- POWER421
 - CICS
 - System
 - Security
 - Storage
 - VTAM
 - POWER
 - Status
 - TCP/IP
- R.35_LPAR56
- VSE4.2_MIT_1.5F_HEINZ
- VSEHELL
- VSEP10
- VSER05
- VSER06
- VSER18
- VSET3
- ZVSE420

Status Extents Internal

General

Service Level	DY47093
Present Session Start	NP
Spool Limit Percentage	90 %
Start Phase	POWERSLB
PNET Nodename	POWER421
Shared Spooling SYSID	-

Partition Storage

Total Partition Storage	40960 KB
Partition Storage Above	29696 KB
Fixable Storage Allocated	200 KB
Max. Fixed Storage in Present Session	96 KB
Currently Fixed Storage	92 KB
Virtual Storage Occupied By Phases	835 KB
Unused Storage Remaining Below Size Boundary	26 KB

Account File

Account File Name	IJAFILE
Total Tracks	90
Account File Percent Full	23 %

Queue File

Queue File Name	IJQFILE
Total Tracks	15
Total Queue Records	1886
Max no. of q-recs used since last coldstart	199
Used Records	196
Free Records (incl. 10 for cushion)	1690
Lost Records	0
Queue File Percent Full	10 %

Data File

Data File Name	IJDFILE
Total Tracks	1920
DBLK Size	7548 Bytes
DBLK Group Size	8 DBLKs
Total DBLK Groups	1680
Max no. of DBLK groups used since last coldstart	877
Used DBLK Groups	682
Free DBLK Groups (incl. 20 for cushion)	998
Lost DBLK Groups	0
Data File Percent Full	41 %

Data received (142 sec.). 18 plugins initialized.

POWER421

System health & Service recommendation

Hints & Tips for z/VSE

§ Manual provided as PDF via z/VSE homepage

– <http://www.ibm.com/systems/z/os/zvse/documentation/#hints>

§ To help z/VSE customers to better understand new and existing functions

§ Available after general availability of a new z/VSE release

– Insights into new & old functions

- VSE/POWER Storage Management

– Detailed Howto descriptions

- Stand-Alone Dump handling
- Handling corrupted VSE/AF libraries (Backup & Restore)
- . . .

– Detailed description of Internal Attention Routine commands

- SIR, DEBUG, STACK, STATUS

§ Hints & Tips for z/VSE 4.3 will be available soon (currently in review)

System health & Service recommendation

z/VSE releases in service

- § 2-3 z/VSE releases are concurrently in service
- § IBM announces End-of-Service dates at least 12 Month ahead
- § Check the z/VSE homepage for the current status of your z/VSE release

<http://www.ibm.com/systems/z/os/zvse/about/status.html>

Product	End of Marketing	End of Service
z/VSE 4.3	tbd	tbd
z/VSE 4.2	October 26, 2010	tbd
z/VSE 4.1	October 31, 2008	April 30, 2011
z/VSE 3.1	May 31, 2008	July 31, 2009
VSE/ESA 2.7	September 30, 2005	February 28, 2007
VSE/ESA 2.6	March 14, 2003	March 31, 2006
VSE/ESA 2.5	December 14, 2001	December 31, 2003

System health & Service recommendation

Never change a running system ? è Bad idea !!

§ Environment changes constantly, even unintended

- E.g. Application changes, different workload, file size increases,...
- New Hardware, new z/VM release, LPAR weights,...
- Ø Different code executed in applications, vendor software and z/VSE
- Ø Problems may occur although “nothing” was changed

§ z/VSE releases goes out of service

- Ø Access to IBM L1/L2/L3 support for z/VSE is lost

§ High risk to suffer already solved problems

- e.g. system outages, data corruption, application abends, ...

§ If migration to new release is blocked (applications or hardware not ready,...)

Ø IBM offers Extended Service Contracts

- to get defect support beyond the end-of-service date
- fee based contract offered through IBM Global Technology Services
- IBM asks for a migration plan (max period is 2 years)
- fulfilled by the product L1/L2/L3 teams with some restrictions
 - E.g. no APARs & PTFs, only patches or module replacements

System health & Service recommendation

Preventive Corrective Service

§ Preventive Service = Install service BEFORE problem(s) occur

- + Prevents occurrence of already solved problems
- + Saves time otherwise needed for diagnosis & repair
- + Staying on / moving to actual z/VSE releases gives access to full z/VSE service
- + Schedule system down time for service when convenient
- Needs resources (time, disk space, CPU) for planning & testing
- Will not prevent all problems

§ Corrective Service = Install service AFTER problem(s) occur

- + Saves time and resources
- + Prevents new problems by less changes ?
- System down / Data loss at inconvenient time
- More time for repair needed
- Installation time forced by problem, i.e. can not be planned in advance

System health & Service recommendation

Preventive Service Strategy



§ Balance available Time & Resources \leftrightarrow required Stability & Data Integrity

§ Our recommendations

- Install the latest Refresh every 12-24 months
- Install the newest RSL every 6-12 months
- Install the newest PSP Bucket every 3-6 months
- Install fixes/PTFs for vendor software every 3-6 months
- Install the hardware PSP before you install new hardware
- And plan sufficient time for service installation !

Agenda

§ Service Concept for z/VSE

- z/VSE service vocabulary
- Ordering & installing service
- System health & Service recommendations

§ z/VSE Problem Management

- Problem types
- Problem handling & reporting
 - Collect problem related data
 - Search for known problems
 - Report the problem & SR tool
- Collaboration with the z/VSE service team
 - z/VSE service team
 - Initial contact
 - Data transfer via FTP or email
 - Follow-on-contact
- Utilities for data collection
 - SADUMP, SDAID, trace tools, DEBUG, ...
 - z/VSE service homepage

Problem types

Program errors

§ Caused by

- Program check in executable code
- Hang situation (deadlock, wait never posted, loop, ...)
- Inconsistencies detected by application or z/VSE

§ Results in

- z/VSE hardwait (e.g. program check or inconsistency in supervisor)
- z/VSE softwait (deadlock or wait for system task or control block or loop)
- Application abend with messages and / or dump(s)
- Application hang (deadlock/ wait only for application task or ctl blk or loop)

§ Prepare your system

- Keep log of all changes
- Take system backups before changes
- Create 2 SADUMP tapes (on same level as z/VSE)
- `STDOPT SADUMP=(3,3)` in `$0JCL` or `OPTION SADUMP=(5,5)` for new/changed jobs
- Maintain dump library (free space for at least 2 more dumps)
- `OPTION DUMP,SYSDUMP & LIBDEF DUMP,CATALOG=SYSDUMP.xxx` in JCL

Problem types

Data integrity problems

§ Caused by

- Data loss due system or application errors
- Data access problem
- Data areas overwritten

§ Results in (detection can be delayed / postponed)

- Job Termination
- Wrong output
- IO errors
- Loop

§ Prepare your system against data integrity problems

- Keep log of all changes (new volumes, new files & VSAM catalogs,...)
- Take data backups regularly and verify them for being correct
 - A set of empty or outdated backups is useless !
- Use IPL option SYS DASDFP=YES to prevent overlays
- Use File & Data management tools to ease administration

Problem types

Performance degradation

§ Caused by

- Increased workload
- Hardware changes
- Software changes
- Configuration changes

§ Results in

- Decreased throughput
- Time window for batch or backup too small
- Increased CPU utilization
- Increased Job duration

§ Prepare your system

- Install a performance monitor (e.g. [z/VSE CPU Monitor Tool](#) as a basic tool)
- Acquaint yourself with SIR SMF (see „zVSE Hints & Tips“ manual)
- Collect data for comparison from system with good performance
 - IO performance
 - CPU utilization
 - Job duration

Problem handling & reporting

Problem handling

When a problem occurs 2 tasks compete :

Collecting material for problem analysis ⚡ Repairing the system

The decision depends on frequency and gravity of the problem. Establishing routines when and how to collect data will provide better data for analysis by the z/VSE service team.

§ Collect material for analysis

- Secure console logs & job logs with messages
- Take Standalone Dump (z/VSE hardwait or softwait or loop)
- Backup destroyed data areas for later analysis (copy complete disk if possible)

§ Repair the system

- Restore backups
- Undo changes
- Re-IPL the system (z/VSE hardwait or softwait or loop)

Problem handling & reporting

Search for known problem (optional !)

§ Determine available data

- Hardwait code
- Message number(s)
- Reason, feedback & cancel codes
- Recipe to reproduce problem
- Involved vendor program(s)

§ Visit z/VSE homepage service & support

- Select corrective service, then z/VSE component
- Choose z/VSE release for [APAR list](#)
 - Click on APAR for detailed description
 - Use MSHP to verify PTF is missing

è order and install matching & missing PTF(s) via ShopZ or level 1

§ Contact software vendor for know problems and/or missing fixes

§ Search the internet for similar problems,

- e.g. vse-L forum <http://groups.google.com/group/bit.listserv.vse-l/topics>

APAR Date	PTF	Contents
DY47243 2011/06/17	UD53682-02C	LINUX FAST PATH REJECTS SOCKET CALLS WITH ERRNO EIO DURING END OF TASK CLEANUP The Linux Fast Path rejects socket calls with errno EIO when issued during end of task cleanup (EOT). This may happen when using DB2 batch programs with the DRDA application requestor and Linux Fast Path (LFP).
DY47289 2011/05/12	UD53727-02C UD53728-02J	WAITFFF during error recovery with IODEV=1024
DY47235 2011/05/11	UD53676-02C	WAITFFF due to storage overlay by \$\$ABERAY.
DY47197 2011/04/11	UD53668-02C	Missing data in SCRT report due to time change.
DY47282 2011/04/11	UD53727-02C UD53728-02J	DEVICE IS IN ERROR - missing error recovery on PAV
DY47226 2011/04/04	UD53662-02C	When using the Linux Fast Path, the following problems may occur: <ul style="list-style-type: none"> • The SELECT or SELECTEX function returns -1 with errno=EINVAL. • The ACCEPT function does not allow the address parameter to be NULL. • The FCNTL function did not properly handle the F_GETFL command when called through the EZA interface. • In very rare situations, a hardwait may occur while allocating buffers.

Problem handling & reporting

Problem reporting

§ Contact IBM and report the problem

- Call IBM customer service center
- Or report problem by SR Tool (Service Request Tool)
- Or create Electronic PMR by ETS access (being replaced by SR Tool)

§ You will be asked for

- Software license for z/VSE
- Software service contract for special service options
 - customers without service contract may be limited in SRTool usage
- z/VSE component and release level causing problem
 - E.g. 5686CF806 for VSE/AF in z/VSE V4, 01C for release z/VSE 4.2
- Problem description and severity and priority of your problem
 - Sev 1 = high impact, production stopped
 - Sev 2 = medium impact, production hindered
 - Sev 3 = low impact, problem bypassed or on test system
 - Sev 4 = no impact, e.g. typing error
- Priority defines how fast IBM should contact you (initially = Severity)

§ PMR (=Problem Management Record) is created in RETAIN and sent to z/VSE service team

- Identified by 5 digit no. + 3 char. branchoffice + 3 digit country no. e.g. 12345,7TD,000

§ In case of problems opening PMR [contact z/VSE via z/VSE Home Page](#)

Problem handling & reporting

Access to Service Request Tool

- § SR Tool requires an IBM User ID and password
- § If you are a current user of the SSR or ESR software support application, your ID has been migrated to the new application and you should have the same level of access to your customer numbers currently registered in these tools.
- § If you are a new user without an IBM User ID, visit [The IBM Registration Site](https://www.ibm.com/account/profile?page=reg) (<https://www.ibm.com/account/profile?page=reg>) to register for an ID.
- § Please be aware, that you will be asked to enter a valid IBM customer number (7 digits long, starting with "zero") or machine type and serial number for your software support contracts during the self registration process using the self-nomination form in the tool.
- § Your Site Technical Contact or Country Administrator will grant your request with access. After this you will get a notification eMail confirming action.
- § Once you have registered an IBM User ID you can request access in SR.
- § To sign in SR Tool please visit URL <http://www.ibm.com/support/servicerequest>
- § For additional information or assistance on software service request, go to [Service Request help](http://www.ibm.com/support/electronic/navpage.wss?category=25) (<http://www.ibm.com/support/electronic/navpage.wss?category=25>) Contact IBM and report the problem

Problem handling & reporting

SR Tool Functions

- § Registered users can create a PMR and attach documentation, e.g. logs, dumps, configuration data

- § Customers with a z/VSE service contract
 - are notified when the support team updates the PMR
 - can read the update
 - can respond to questions
 - ask for status or close the PMR

- § US & Canadian customers without a service contract can receive access to SR tool, **but**
 - can only open a PMR and attach data during open
 - all further activities (read and send updates, attach more data, close) must be done per phone (or email with z/VSE service)

- § EMEA customers receive access to SR tool only with a service contract

Collaboration with z/VSE service

z/VSE – Global L2 / L3 Service Team

A world map with a red background and yellow landmasses. Four locations are marked with blue starburst icons and labeled: US (North America), DE (Germany), RU (Russia), and AUS (Australia). Curved blue arrows indicate a clockwise flow of collaboration: from AUS to RU, from RU to DE, from DE to US, and from US to AUS.

z/VSE development is main part of global L2 / L3 team

- Direct exchange between customer and development
- Customers have fast access to expert skill
- Development receives direct feedback & requirements

Collaboration with z/VSE service from US L2 perspective

Collaboration with z/VSE service

Initial contact

§ z/VSE service team reviews the PMR and the available documentation

- Is the problem description meaningful?
- Does the documentation match the problem?
- Is this a known problem?

Yes ! è z/VSE service team orders PTF if missing
 or may ask to contact vendor for known problems

No ! è z/VSE service team calls for add. documentation (e.g. VSE/AF specific questions)

§ Environmental data by SIR output

- System Environment (LPAR or z/VM)
- z/VSE release and Supervisor APAR Level
- number of CPUs

§ Request console log, job logs, available dumps or other material

§ Ask for latest changes (OEM software, PTF install, new workload,...)

- intention for change/update/program (e.g. new program/workload/preventive service...)

§ Verify severity and priority of PMR match customer situation

- Production or test system? Production stopped?
- Single occurrence or multiple times? Is problem reproducible (testcase available)?
- Deadlines pressing? Important project on hold?

Collaboration with z/VSE service

Initial contact

Customer will be asked to prepare for another occurrence (e.g. for VSE/AF)

§ For a hardwait, softwait or loop, z/VSE service will ask customer to

- Turn DEBUG ON
- Prepare an actual SADUMP tape (or confirm that tape is available)
 - EXEC DOSVSDMP (option 1 = Create Stand Alone Dump program)
- Set STDOPT SADUMP=(5,5)
 - In \$0JCL or via job executed in BG
 - QUERY STDOPT shows actual settings
- Set OPTION SADUMP=(5,5) for suspicious job(s)

§ For abnormal job termination, z/VSE service will ask customer to

- Provide enough space in system dump library (e.g. remove old dumps)
- Turn specific trace options on
- Modify failing job with
 - Set LIBDEF DUMP,CATALOG=SYSDUMP.partition|DYN
 - Set OPTION DUMP,SYSDUMP

Collaboration with z/VSE service

Data transfer via FTP

- § z/VSE service instruct customers how to send requested data
 - E.g. large amounts of data via FTP (or SR Tool)
- § 2 FTP server are available for data upload by customer
 - ftp.ecurep.ibm.com (recommended for African, Asian and European customers)
 - testcase.boulder.ibm.com (recommended for USA & Canadian customers)
- § Directory /toibm/vse for PUT (available on both servers)
- § Data names must start with complete PMR identifier
 - Names are analysed and matching PMRs are updated automatically
 - Correct names generate notification for z/VSE service team
 - Incorrect names è no automatic update and no service team notification !
 - E.g. upload dump DF100003 for PMR 12345,7TD,000 as 12345.7TD.000.DF100003.DUMP
 - Data is stored in CDDR (= Client Diagnosis Data Repository) for access by z/VSE service team
- § Existing data can not be replaced è select new name if retransmit is required
 - E.g. 12345.7TD.000.DF100003.2nd.DUMP
- § Detailed description on z/VSE service homepage with 2 step by step examples
 - <http://www.ibm.com/systems/z/os/zvse/support/problem.html>
- § For FTP only binary data is supported è text data must be converted to binary

Collaboration with z/VSE service

Data transfer via FTP - details

§ Binary data

- Partition dumps in z/VSE system dump library
- Dump files from Standalone Dump tape or disk
 - SADUMP files must be loaded to SYSDUMP
- Don't print / analyse dumps with INFOANA
- Use example for [binary data](#) to FTP data to IBM

§ Text data

- Dumps in SYSLST format in VSE/POWER LST queue
- Traces printed to SYSLST by DOSVSDMP
- Jobs, JCL, console logs, other LST output
- Use example for [text data](#) to FTP data to IBM
 - download text data to PC and convert to ASCII
 - Zip data and send with name starting with PMR identifier followed by descriptive part followed by zip

Appendix B:

Sample job to load dump files from stand alone dump disk to the VSE dump library:

```
* $$ JOB JNM=DMFOND1,DISP=D,PRI=8,CLASS=0
* $$ LST DISP=H,RES=1000
// JOB DMFOND1  ONLOAD DUMP FROM DISK
* NOTE THAT DUMP FILES ON DISK START WITH NUMBER 1. THIS JOB EXAMPLE
* LOADS DUMP FILES 1 TO 7 INTO SYSDUMP.BG AS DUMPS SADMPO01 TO SADMPO07
* PLEASE CHANGE CUU, EXTENT AND NUMBER OF FILES BEFORE RUNNING THIS JOB
// PAUSE
// ASSGN SYS009,201
// DLBL IJSDYSDU,'VSE.DUMP.FILE'
// EXTENT SYS009,,,,,16680,1320
// EXEC PROC=DIRINFOA
// EXEC INFOANA,SIZE=300K
SELECT DUMP MANAGEMENT
  DUMP NAME SYSDUMP.BG.SADMPO01
  RETURN
SELECT DUMP ONLOAD
  VOLID DISK SYS009
  FILE 1
  RETURN
SELECT DUMP MANAGEMENT
  DUMP NAME SYSDUMP.BG.SADMPO02
  RETURN
SELECT DUMP ONLOAD
  VOLID DISK SYS009
  FILE 2
  RETURN
SELECT DUMP MANAGEMENT
  DUMP NAME SYSDUMP.BG.SADMPO03
  RETURN
SELECT DUMP ONLOAD
  VOLID DISK SYS009
  FILE 3
  RETURN
SELECT DUMP MANAGEMENT
  DUMP NAME SYSDUMP.BG.SADMPO04
  RETURN
SELECT DUMP ONLOAD
  VOLID DISK SYS009
  FILE 4
  RETURN
SELECT DUMP MANAGEMENT
  DUMP NAME SYSDUMP.BG.SADMPO05
  RETURN
SELECT DUMP ONLOAD
  VOLID DISK SYS009
  FILE 5
  RETURN
SELECT DUMP MANAGEMENT
  DUMP NAME SYSDUMP.BG.SADMPO06
  RETURN
SELECT DUMP ONLOAD
  VOLID DISK SYS009
  FILE 6
  RETURN
SELECT DUMP MANAGEMENT
  DUMP NAME SYSDUMP.BG.SADMPO07
  RETURN
SELECT DUMP ONLOAD
  VOLID DISK SYS009
  FILE 7 LAST
  RETURN
SELECT END
/*
/ &
* $$ EOJ
```

Collaboration with z/VSE service

Data transfer via ECUREP

§ <http://www.ecurep.ibm.com/app/upload> for standard and **Secure** http based upload to CDDR

The screenshot shows the 'Standard Upload' page on the IBM ECuRep website. The page has a dark blue header with the IBM logo and a search bar. Below the header is a navigation menu with links for Home, Business solutions, IT services, Products, Support & downloads, and My IBM. The main content area is titled 'Standard Upload' and features a sidebar on the left with options for 'Standard Upload', 'Secure Upload', 'Exchanging Diagnostic Data with IBM', and 'In case of problems'. The 'Standard Upload' section includes tabs for 'PMR', 'RCMS', 'CROSS', and 'Machine Type/Serial (No case)'. The 'PMR' tab is active, showing a form with the following fields: 'PMR number*' (12345,71d,000), 'Upload is for*' (VSE), and 'Email address*' (walb@de.ibm.com). A 'Usage informations' box on the right explains that the PMR number is required and that an email address will be used for failure notifications. A 'Continue' button is located below the form, followed by a note that fields with an asterisk are required. At the bottom of the page, there are links for 'About IBM', 'Privacy', 'Contact', and 'Terms of use'.

The screenshot shows the file selection interface on the IBM ECuRep website. The page has a dark blue header with the IBM logo and a search bar. Below the header is a navigation menu with links for Home, Business solutions, IT services, Products, Support & downloads, and My IBM. The main content area is titled 'upload' and features a list of files for selection. The first file is 'SPOWER.TXT', followed by four empty rows. Each row has a 'Durchsuchen...' button. A 'Usage informations' box on the right explains that up to 5 files can be uploaded per request and that the total file size cannot exceed 2 GB. A 'Please note' section mentions that some web browsers do not support file uploads exceeding 2 GB. A 'Submit' button is located below the file list, followed by a note that fields with an asterisk are required. At the bottom of the page, there are links for 'About IBM', 'Privacy', 'Contact', and 'Terms of use'.

Collaboration with z/VSE service

Data transfer via email

- § z/VSE service team may ask customers to send smaller amounts of data via email
- A target email address will be provided by L1|L2|L3
 - All email needs to contain PMR identifier in subject, e.g. 12345,7TD,000
 - Binary data should be attached as .BIN or .DUMP
 - Text data should be attached as .TXT or as zipped file .ZIP
 - Short description of attached data is appreciated
 - Note that emails may be rejected or deleted without notification if too large
 - For Sev 1 problems z/VSE service may ask customers to put mail gateway on copy
 - gateway email address for z/VSE is vse_support@ecurep.ibm.com
 - Email server stores email and attachments in CDDR
 - Updates PMR if email subject starts with complete PMR identifier
 - Generates secondary call for PMR to notify z/VSE service team
 - Homepage for [mail gateway](#) describes functionality
 - [Secure Email](#) is also available

Collaboration with z/VSE service

Follow-On-contact

§ z/VSE service team reviews received material

- All questions answered, all material readable and as requested?
- Confirms arrived material to customer and agrees on next contact date
- Starts analysis or forwards material to next level (L3 or development)

§ On next contact date

- Customer is informed about status of analysis
- Is this a known problem?

Yes ! è z/VSE service team orders PTF if missing
 or may ask to contact vendor for known problems

- Is this a new problem?

Yes ! è z/VSE service team creates APAR and builds PTF
 Test fix may be offered to customer

No ! è z/VSE service team calls for add. documentation (dumps, traces, ...)
 è service team may ask to install additional service for better data

§ This process is continued until the problem is solved (or the customer closes the PMR)

Utilities for data collection

List of tools & documentation

The [z/VSE Guide for Solving Problems](#) is a good start to learn more about problem handling

- § Stand Alone Dump (SADUMP) – [z/VSE Diagnosis Tools](#)
- § SDAID trace program – [z/VSE Diagnosis Tools](#)
- § Interactive trace program (executed program) – [z/VSE Diagnosis Tools](#)
- § DEBUG function – [z/VSE Hints & Tips](#)

- § LIBR TEST – [VSE Central Functions Librarian DRM](#)
- § VSAM LISTCAT – [VSE/VSAM Commands](#)
- § VSE/POWER spool file analyser IPW\$\$\$DD – [VSE/POWER Administration & Operation](#)
- § LE Debug Tool – [Debug Tool homepage](#)

- § Other analysis and diagnosis tools are available on [z/VSE homepage](#)
 - JLink LE/VSE tool, z/VSE CPU Monitor Tool , z/VSE Installed Software Report ,...

Utilities for data collection

Stand Alone Dump

§ Stand Alone Dump (SADUMP)

- Prepare SADUMP program in advance and with same release as z/VSE to be dumped
 - Ø Different z/VSE releases require different SADUMP tapes | disks
- Used in case of system hang, hard wait, soft wait, loop or DEBUG STOP
- Stop processor, display and note storage x0 – x17, STORE STATUS (and mount tape)
- IPL SADUMP tape | disk NORMAL (to avoid that storage is cleared)
- Depending on STDOPT SADUMP & OPTION SADUMP
 - z/VSE virtual storage (partitions & data spaces) is captured to tape or disk
 - Supervisor with SVA and Page Manager data is always captured
- SADUMP to Tape can use multiple tapes, SADUMP to disk is limited to 1 disk (~45G)
- SADUMP completes with hardwait PSW 00020000 00CE0000
- IPL z/VSE

§ Scan the SADUMP tape | disk with DOSVSDMP

§ Extract the partitions and data spaces needed from tape or disk in binary format

- Use example from [Step by step example for binary data](#)

Utilities for data collection

SDAID, Interactive Trace & DEBUG

§ Tracing affects system performance and throughput

- Installing a trace on a production system should be closely monitored
- The z/VSE service team will supply detailed trace statements which include
 - How to start and to stop the trace
 - How to collect the data
- Trace output may be produced continuously or one-time (e.g. dump)
- Trace output may be collected in a wrap-around buffer (e.g. SDAID, DEBUG, ...) or to console, LST output, external printer or tape (e.g. SDAID, PNET trace, ...)
- Traces may stop z/VSE (e.g. DEBUG STOP, VM/CP trace) to take a SADUMP

§ Scope of trace depends on trace type

- DEBUG scope is complete system
- SDAID scope can be selected
- scope for interactive trace is partition only

§ Transfer trace output in text format as shown by [step by step example for text data](#)

§ Literatur: [z/VSE Diagnosis Tools](#), [z/VSE Hints & Tips](#), [z/VSE Guide for Solving Problems](#)

z/VSE Service & support homepage

www.ibm.com/zvse/support/corrective.html

www.ibm.com/zvse/support/problem.html

z/VSE Service – Best practices

Many thanks to

- Stev Glodowski
 - „Communicating with IBM “
 - „ShopzSeries: Ordering service and Products for z/VSE and z/VM on-line“

- Ingo Franzki & Joerg Schmidbauer
 - „z/VSE Health Checker “

- Elke Schaefer-Tenhaken
 - Editor of „Hints and Tips for z/VSE“

- Gerhard Zierl
 - „Wellness - how to improve the health of your z/VSE system “

Please ask your questions now or send them to zvse@de.ibm.com or walb@de.ibm.com