z/VSE Live Virtual Class 2013

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WAVV 2013

COVINGTON, KENTUCKY • APRIL 7-10, 2013

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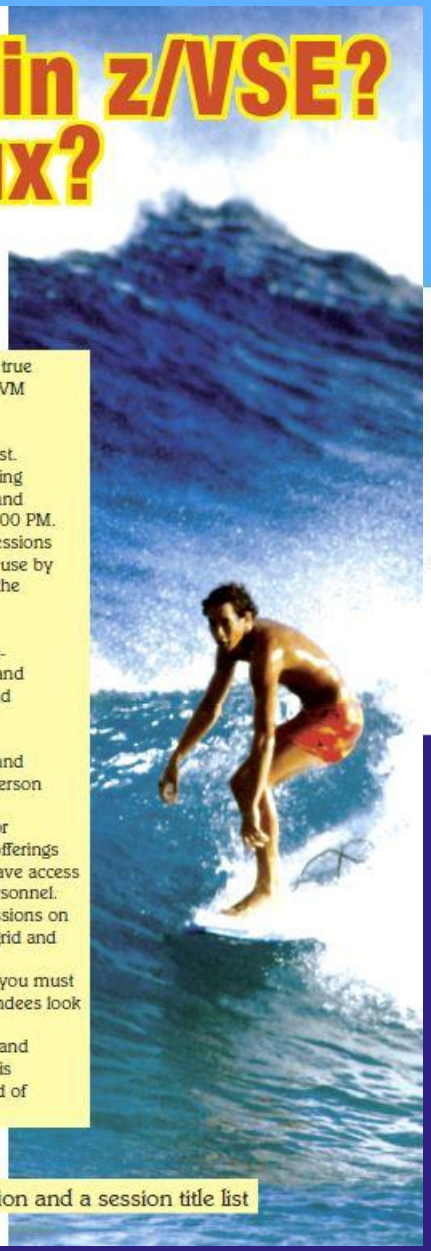


WAVV is the World Alliance of z/VSE, z/VM and Linux, a true world–wide, all-volunteer user group for users of zVSE, zVM and/or Linux Operating Systems.

WAVV 2013 has been restructured based on user request. WAVV 2013 begins at 5:00 PM on Sunday with the Opening Session, the IBM Update, dinner and SPLASH. Sessions and labs begin Monday at 8:30 and run thru Wednesday at 7:00 PM.

Each topical area, zVSE, zVM and Linux will feature sessions that are focused on delivering information for immediate use by the attendees. Information that will make a difference in the stability and productivity of your installation.

WAVV 2013 brings together the most technical and best-informed professionals for the three fields of zVSE, zVM and Linux for information exchange, information gathering and superior technical education.

WAVV 2013 is focused on making you, the zVSE, zVM and Linux professional, the best informed, most productive person in the industry.

On Monday and Tuesday of the conference the Vendor Exhibition will have the latest in hardware and software offerings available to zVSE, zVM and Linux users. Attendees will have access real time to the products, the developers and support personnel.

Vendors are also scheduling in-depth presentation sessions on their products during WAVV 2013. Refer to the sessions grid and abstracts for information.

If you are serious about zVSE, zVM or Linux systems you must be at WAVV 2013. The WAVV Committee and WAVV attendees look forward to seeing everyone at WAVV 2013.

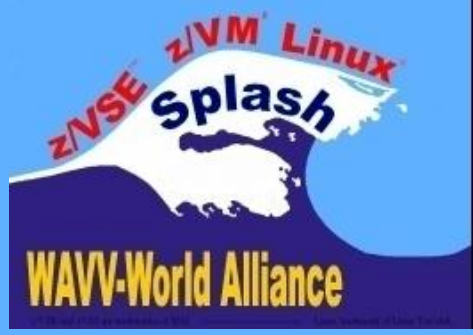
A complete session grid, current abstract information and registration information is available at www.wavv.org. This information is continually updated from now until the end of the conference.

For registration forms, information and a session title list see **www.wavv.org**.

z/VSE z/VM Linux Splash

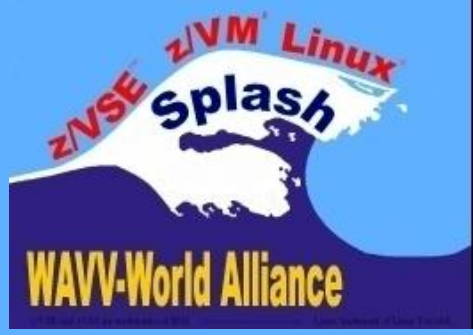
WAVV-World Alliance

WAVV 2013



- Covington, KY
- April 7-10, 2013
- Embassy Suites and NKY Convention Center

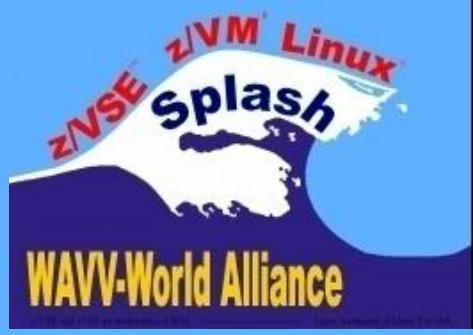
Covington



- **New Format, Functions, Programs**
  - **Based on user request**
- **Starts Sunday 5:00 PM**
- **Ends Wednesday 11:00 PM**

- **Vendor Show – Monday and Tuesday**

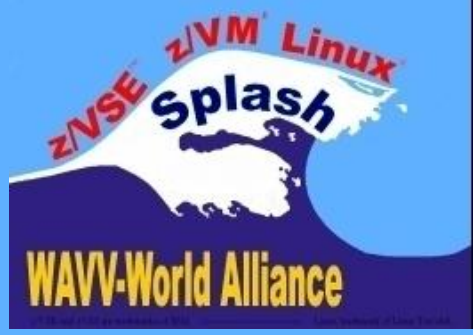
WAVV 2013



- Great Sessions
- Great Technicians
- Great Vendors and Products
- WWW.WAVV.ORG

- Great discussions
- Great education
- Great technical advice
- Same low cost

WAVV 2013



- **WAVV depends on the continued attendance and participation of USERS**
- **Thanks for your time and attention**
- **Thanks to IBM for supporting WAVV**

Your WAVV Committee

z/VSE Release Migration Considerations

August Madlener

http://www.ibm.com/zVSE

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Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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No other workload processing is authorized for execution on an SE.

IBM offers SEs at a lower price than General Processors/Central Processors because customers are authorized to use SEs only to process certain types and/or amounts of workloads as specified by IBM in the AUT.

Agenda

PART 1

- Planning Issues
  - New Hardware
  - Performance
  - System layout
  - Optional and Vendor Products
  - Test
  - Latest Service, RSL, PSP
- Migration Options
  - FSU – Fast Service Upgrade
  - Initial Installation

PART 2

- Independent Migration Issues
  - Migration of VSAM and other Data
  - Security Setup
  - Compiler/Languages
  - Performance Considerations
  - Hardware Issues
  - Vendor Software

Planning

- Hardware upgrades
- Software, Release or Version upgrades
- Performance Considerations
- System layout
- Optional products and vendor products
- First Test
- Latest service, RSL and PSP bucket
- Regression Test
- Cutover

Planning Hardware Upgrades

- New Processor
  - Performance consideration
  - New OSAX cards
  - New channel concept → FICON
  - Sizing of the new processor
- New disks
  - Consider consolidation to larger packs
  - Carefull with micro code updates, plan ahead
- New tape library, drop old tapes
  - Usage of VTAPE
  - Tapeless system?
  - Migration of tape data, multi-volume support
- Shared environment
  - CPU ID is new
- Storage, System layout
- Check Hardware PSP if appropriate

Planning Performance

- Have performance numbers from old system available
  - CICS Statistics (DFH0STAT, DMF)
  - SMF Data
    - SIR SMF
    - SIR MON
  - Job Account Data
  - Monitor Data
  - CPUMON
  - If running a two or three way, Turbo dispatcher data
    - QUERY TD
    - POWER WORKUNIT=PA?
- Refer to performance documentation for impact of new release
- Sizing of the new processor
  - Consult IBM for help
- Check performance parameters like
  - PRTY, consider partition balancing.
  - TCP/IP related parameters
  - LSR pools in CICS
  - Threshold for turbo dispatcher to stop unneeded CPU (Balancing)

Planning System Layout

- Verify selected Environment if modified and if still fits and adjust (FSU). Initial install recommended Environment C.
  - Consider NOPDS, optimize VSIZE versus available storage
  - Partition sizes for CICS, POWER VTAM DB2 etc.
  - More tasks required ?
  - Check if VTAM IOBUF31 is used
    - If used check copyblock usage
  - SVA layout
    - Most likely tuned to a low unused number which may change
      - » LISTDIR SDL for PSIZE on new system
      - » GETVIS SVA on old
    - Newer releases move lot of code above the 16MB line → IODEV=1024
  - Check available and used DSPACE
  - CICS, DLI or DB2 statistics – SOS
  - Shared environment required (shared DASD, shared Spool)?

Planning System Layout Things that Should not be Changed

- Don't change library structure – IJSYSRS, PRD1, PRD2, SYSDUMP
- Don't change catalog layout, especially storage for master and user catalog VSESP.USER.CATALOG (VSESPUC)
- Control files IESCNTL and BSTCNTL must be unique in the system and accessible by BSM (FB) and each CICS with IUI (DBDCCICS and PRODCICS)
  - Files should not be shared between VSE systems
  - Especially BSTCNTL do not copy via VSAM REPRO services, use logical backup/restore vie SKBSTSAV in ICCF 59
- It is not recommended to change allocation of IJSYSRS and IJSYSR1
- Use STDLABEL procedure to implement your DLBLs (BAM), STDLABUP and IESVCLUP program for VSAM DLBLs, STDLABUS for user labels
- Do not change volids DOSRES and SYSWK1
- History file, work history file, job manager file, text repository file, text repository work file and PTF file, if changed, reflect change in dialog 141 (Verify Location of Involved Serviced Files)

Planning Optional and Vendor Products, Extended Base

- Optional IBM Products should be reordered and (re)installed after upgrade.
- Extended Base Products will be delivered and should be (re)installed if used.
  - Some of them have new components/CLCs like OS390 API
  - After FSU you may delete old products see DELxxx in ICCF library 59, e.g. DELOS390
- Vendor Products
  - Make sure you order appropriate updates in time
  - If FSU is the way to upgrade, it is recommended to upgrade vendor products ahead of the FSU where applicable. Please contact vendor for details.
    - Special care is required with external security manager like Topsecret
    - Make sure you have all service available before you start the upgrade, especially fixes enabling the vendor product for the new z/VSE release.
  - In case of Initial Installation Vendor Products are installed after the Initial Install

Planning Latest Service Upgrade

- Make sure current refresh is installed
- Order latest RSL (Recomended Service Level)
  - IBM can provide information, RSLs have a cutoff date and are produced every two or three months.
  - Test with current RSL on
  - If final cutover is delayed consider to reinstall current RSL
- Order latest PSP Bucket
  - Contains all important fixes
- Vendor Products
  - Check also for know problems with Vendor Products

Planning Test

Test most likely is only possible with a test LPAR or test VM guests.

- FSU will allow some very limited test at the end of Stage 2, but this is only in basic startup mode.
- In case a test system is available,
  - Test applications
  - Verify data, eventually reorganize data
  - Verify system layout and performance data
  - Does new hardware work ok
- Plan also for final cutover

Planning Fallback and Backup

Backup

- Before you start take Backups of the most recent data
- FSU optionally takes backup of the installation libraries, not really recommended, except for DTSFILE
- VSAM catalogs and data backup as described earlier
  - All VSAM controlled volumes need to be flashcopied at the same time, otherwise not recommended
- For the system volumes and all volumes with space for the master catalog and VSESP.USER.CATALOG (VSESPUC) take SA FCOPY or DDR backups. Also IXFP flashcopy is fine.
  - SA FCOPY and DDR are recommended, VSE system needs to be shut down for the system packs

Fallback

- Plan for a fast and effective way to switch back
  - Very fast is PPRC or flashcopy. But see above
  - If not applicable VSAM backup restore and FCOPY/DDR
- This fallback process is usually also part of a disaster recovery solution which can be used in general.
- Please consult IBM in case you have to perform a fallback, especially if fallback from z/VSE 5.1 to an older release

FSU Versus Initial Installation

FSU will update IBM provided Parts like System Libraries, ICCF members and System Files like Online Message Explanation (OME), but keep all user data, applications and products installed.

Initial Installation will just establish the VSE system, user data, applications and additional products need to be reestablished. Usually II is done on a test system (LPAR or VM guest).

Initial Installation is always possible and is necessary if FSU can not be done. Possible reasons:

- Previous System is too old, In general only two releases/versions.
- No FSU from VSE/ESA 2.3 and earlier.
- Change of system disk architecture, like switching from ECKD to FBA SCSI.
- Change of the System language (actually only Japanese and English is supported)
- Change of Environment like change to C (big). However this can be switched after FSU.

Both methods require careful planning, saving of original system in case a fallback is required. For Initial Installation, the effort may be higher in order to reestablish all applications, application data etc.

Performing an FSU

FSU is done in three steps

- Downlevel Check
  - This is an installation check showing service to be reinstalled after FSU
  - Does not change the system
  - Makes no sense in case of a release/version upgrade
- Preparation
  - This is very important, this step establishes the new FSU code and enables it on the old system.
- Installation
  - Two stages, stage 1 install of
    - IJSYSRS onto SYSWK1 Incl. NLS
    - PRD1.MACLIB
    - PRD2.GEN1 (optional will be cleared if not selected)
    - Prepare JCL for Stage 2
  - At the end of Stage 1 generate POWER phase

Performing an FSU

FSU is done in three steps

Installation

- Stage 2
  - Restore ICCF parts, base and NLS
  - Install of PRD2.SCEEBASE (LE)
  - Install of PRD1.BASE (CICS, VTAM, etc)
  - Refresh OME
  - Refresh Text Repository File, upgrade CSD
  - Clear local and global catalog for a so called ice cold start of CICS
  - Install DB2 (optional)
  - Reorganize DTSFILE (optional)
  - Copy back IJSYSR1
- Stage 2 runs without CICS, TCPIP, VTAM, at the end basic CICS and VTAM are started
  - Stage 2 is started with special FSU JCL and normal IPL procedure. OEM products are not started

See System Upgrade and Service manual and also Program Directory

Performing an FSU

Post FSU tasks

- Perform tasks described in the manuals below
- Re-install optional and extended base products
- Reinstall vendor products or install service
- Install RSL and PSP
- Generate SA Dump disk or tape

See System Upgrade and Service manual and also Program Directory

Performing an Initial Installation

Initial Installation is described in the Installation manual, for details concerning layout, configuration see also Planning.

After Initial Installation, optional and vendor products must be installed.

- Startup and hardware must be configured
- VSAM catalogs and data must be established
- POWER Files must be loaded
- CSD File needs to be updated
- DTSFILE (ICCF) user libraries restore
- DB2 and DLI data if available, Install and restore database
- Security setup (IESCNTL and BSTCNTL)
- Other data

Many of above actions are not required with FSU

Parts are documented in the CICS Migration Guide and Administration

Migration Layout and System

FSU

- Own startup and allocation is used ($xJCLyyy procedures and own IPL procedure, ALLOC procedure). Rework as indicated in Program Directory and System Upgrade and Service manual.
  - Verify PRD2.SAVE for correct contents
  - If SVA size was optimized, verify on new system and adjust
  - Please verify also standard labels, FSU will use STDLABEL, STDLABUP and STDLABUS procedures
  - LIBDEF chain is defined using skeleton SKLIBCHN defining LIBDEF and LIBDEFs procedures.

Initial Installation

- Take startup and allocation from your old system, please rework as above with regard to Program Directory and System Upgrade and Service.
- It is recommended to have a current copy of all startup and alloc procedures in PRD2.SAVE
- Rework Partition setup using skeletons SKJCLx and SKALLOCx in ICCF library 59. and also LIBDEF and standard labels .Please refer also to the Administration guide.

In both cases

- Fine tuning, SVA size, data space, storage layout after upgrade.

Migration Connectors, Miscellaneous

In general, Connectors are backward compatible, after upgrade always take newest code from the home page

http://www-03.ibm.com/systems/z/os/zvse/

- Optionally install or update the Workstation component from the Extended Base tape
- See also latest news on the download site

After each upgrade check above home page for any service related news

Post Migration Tasks

SA Dump
- Generate SA dump to disk (recommended) or tape
  - IUI dialog fastpath 461 or 462

Dump Library
- Dump library is now a VSAM library (since z/VSE 5.1), which is more flexible in space
  - Space is allocated in master catalog
  - Space allocation is dependent on environment selected
  - FSU will not move, if wished moving to VSAM can be done using skeleton SKDMPEXT

Verification and Test
- Check your security setup
- User Profiles
- Check VSAM catalogs using the catalog checker
- Test applications

Test Considerations

If you decided for a test system

- Can this test system work with test data only?
- If real data is required, this means most likely sharing data with production
  - Be aware of the performance impact (SHR(4,4)
  - External lock file required
  - Setup of the shared environment is difficult
- Keep things like layout, startup procedures, workfiles etc. as close as possible the same as production
  - This might be used to copy this sandbox type system over to production as physical copy. This can avoid time consuming FSU on production
- To avoid data sharing, exchange and actualization of data can be done with FTP or similar tools.
- Consider also performance related parameters during test

Fallback and Backups

Backup

- See also planning section

Fallback

- This is for example if in FSU Stage 2 system will not come up, or in case of severe problems which cannot be repaired by corrective service
- IMPORT CONNECT VSAM catalogs
- Restore VSAM catalogs
- Restore system volumes (SA FCOPY or appropriate tools)
- In case of a fallback consider backups of the new system also in order to allow easier and faster resuming
- If a fallback is required after a migration, please contact IBM for known problems with such fallback situations
- Keep in mind that the service level on the previous system may be very old compared to the new z/VSE. Usually the old system was not upgraded to the most up-to-date level of that release.

Summary FSU versus Initial Installation

FSU

- No change to user data, applications
- z/VSE code is upgraded in a fast efficient way
- Refresh of optional products is optional, vendor products need updates
- After FSU all applications and data are ready for testing
- Data base may need migration to newer level
- No change to language/compiler setup
- Network definition will stay unchanged

Initial Installation

- New vanilla system all data, applications need to be brought in again
- Optional and vendor products need to be installed
- Control data like IESCNTL, CSD, DTSFILE, BSTCNTL need to be migrated.
- Import customer data, restore customer applications
- Load POWER queues
- Implement data base
- Adjust compile options
- Adjust layout
- Adjust network setup

Summary Initial Installation Pros and Cons

Pro

- Total reset – start from scratch
- Select appropriate hardware
- Each control file like IESCNTL BSTCNTL CSD etc just contains what it needs
- Possibility to clean up old stuff
- If the complete setup is kept outside VSE e.g. on VM all configuration, installation and restore work is easy
- Can be used to setup a test system which can be cloned for production later
- Good to learn for untrained personnel

Cons

- Every piece of customer specific data, applications, control information like user profiles, program definition etc needs to be re-iplemented
- Requires good knowledge of what to do and a good overview which job is required to define which part
- If working on ICCF, all configuration, installation and restore jobs first need to be reestablished in the DTSFILE
- Not really good to migrate a production system directly since too time consuming

Summary FSU Pros and Cons

Pro

- Fast way to get system upgraded
- All products, applications and data are kept
- User definition, security setup, CSD etc ready to use
- Same look and feel after upgrade
- Can be used for both test and production system
- Allows testing right after FSU
- For less skilled personnel provides fast results
- Very stable, allows resuming and many steps can be redone

Cons

- Vendor products like security manager can cause problem
- Requires discipline to synchronize changes in startup process in PRD2.SAVE
- No way to change disk type and size
- Dependent on standard layout like libraries and catalaogs
- Old products, applications, files will stay in the system even if not used anymore, unless deleted manually

Check List FSU

- PRD2.SAVE contains all current startup procedures, label procedures, current DTSECTAB – especially procedures with same name as shipped procedures.
- PRD2.CONFIG contains all configurable files like CICS tables, TCPIP configuration, VTAM startup
- Check if own POWER phase and allocation – specify accordingly in FSU dialog. DTRPOWR.PROC refers to all POWER files? Run POWER generation at the end of Stage 1.
- Check Program Directory and System Upgrade an Service manual for further Information
- Consider to establish startup with separate JCL procedures without activating vendor software, especially with external security manager
- Test

Check List Initial Installation

Please also see Installation Guide and Installation worksheet there.

- Check if all startup procedures of previous release are available (ICCF, CMS, Volley ...)
- Under VM – prepare the new VSE guest (CMS profiles, storage, OSA etc.)
- Select large enough system packs
- Select correct environment
  - Correct VSIZE, processor storage – consider NOPDS
- Install extended Base, Optional and Vendor Products
- Reestablish ICCF, POWER queues and generation
- Re-establish your startup procedures
- Migrate user profiles and BSTFILE – SKBSTSAV
- Reestablish VSAM data
- Reestalish data base
- Reestablish applications
  - CSD
  - Application libraries
  - Check LE and language setup
- Test

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