

VSE/POWER Performance



Priority Output Writers
Execution Readers

WAVV 2002

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Queue File

- IJQFILE consists of only one extent on one or more CKD tracks or FBA blocks
- Power accesses using SYS001
- Records are 256/384 bytes each blocked 16/10 (4096 block size)
 - (Power release)
- Number of FBA blocks allocated should be a multiple of 8 (512 x 8=4096)



Queue File

- Copy of Queue file is stored in memory (either VIO or partition GETVIS)
 - To shorten Instruction Path Length you want it in GETVIS
 - VIO uses Vpool, many users have only 64K for Vpool
 - VIO/Vpool is also used by other VSE facilities



Queue File

- Keep Queue File chains as short as possible
 - IE. Keep the Queue clean
 - Do not store members in very active Queues
 - If storing members in POWER use a non active class.
 - Storing single large member – minor affect
 - Storing many small members – major effect
- In extreme cases consider dedicating drive to Queue File



Data File

- IJDFILE Multiple Extents?
 - 15 or 32 Maximum (POWER release)
 - Entire file (all extents) is treated as one contiguous space, you have no control where entries go.
 - May not improve performance
 - For users with large Disk Cache
 - For users with single Bus/Path to disk



Data File

- IJDFILE Multiple Extents?
 - Each extent on separate disk drive
 - Each extent on 4 channel path disk
 - If more than 4 extents/4 disk then new 4 channel path



Data File

- Dedicate drives to Data File.



Data File

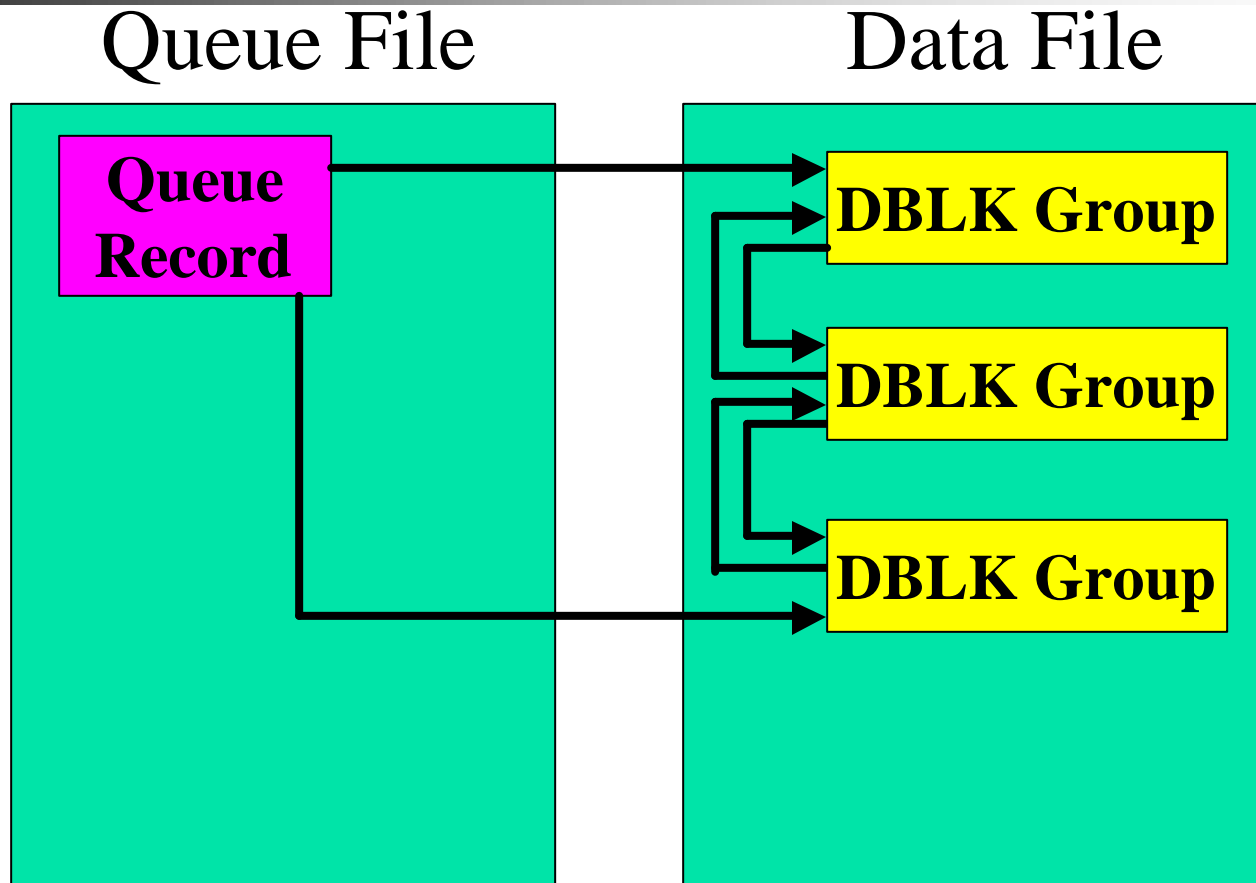
- Space is arranged in DBLK Groups
- DBLK Group is the smallest unit of space allocated to a VSE/Power job
- Every DBLK Group contains an integer number of DBLKs (data blocks)
- Smallest DBLK Group consists of 2 DBLKs



Data File

- Data Block (DBLK) is the physical size Power writes to the data file
- DBLK size 1000 - 65,024 (default 4,080 or 7xxx) bytes

Queue / Data File Relationship





Data Block Size

- The smaller the DBLK size, the less partition GETVIS storage is needed to have a given number of tasks active
- The larger the DBLK size, the fewer disk I/O operations are required to access the same number of spool records
- DBLK size is a primary influence on the performance of the spooler



Data Block Group Size

- Size can be 2 - 32,767 (default 10)
- If the shop runs many small jobs with minimal output, DBLK Group should be small
- If the shop runs many jobs producing large output, DBLK Group should be set higher



Monitor File Usage

- Look at shutdown stats
- Use FULL=YES operand on PDISPLAY
- Use D Q command

PDISPLAY FULL=YES Command

D LST, ALL, FULL=YES

AR 0015 1C39I COMMAND PASSED TO VSE/POWER

F1 0001 1R46I LIST QUEUE P D C S PAGES CC FORM

F1 0001 1R46I CICSPROD 03663 3 D P 3 1 SLH6 TO=(R105) FROM=(R000)

F1 0001 D=05/18/1999 U=' PLA ' DBGP=000001 L=00000173

F1 0001 1R46I CICSPROD 03690 3 D P 1 1 SLH6 TO=(R002) FROM=(R000)

F1 0001 D=05/18/1999 U=' GLL ' DBGP=000001 L=00000057

F1 0001 1R46I LPR 03351 9 D X 1 1 DEL FROM=(R000)

F1 0001 D=05/18/1999 U=' CRR ' DBGP=000001 L=00000040

F1 0001 1R46I LPR 03384 9 D X 2 1 DEL FROM=(R000)

F1 0001 D=05/18/1999 U=' CRR ' DBGP=000001 L=00000150

F1 0001 1R46I LPR 03413 9 D X 1 1 DEL FROM=(R000)

F1 0001 D=05/18/1999 U=' CRR ' DBGP=000001 L=00000040

F1 0001 1R46I LPR 03441 9 D X 1 1 DEL FROM=(R000)

F1 0001 D=05/18/1999 U=' CRR ' DBGP=000001 L=00000084

F1 0001 1R46I CTINPRCS 62105 6 D Z 138 1 ST1P

F1 0001 D=05/18/1999 U=' SBB ' DBGP=000021 L=00006762

F1 0001 1R46I CTINPRCL 62132 6 D Z 138 1 ST1P

F1 0001 D=05/18/1999 U=' SBB ' DBGP=000021 L=00006762





D Q Command

```
D Q
AR 0015 1C39I  COMMAND PASSED TO VSE/POWER
F1 0001 1R49I    690 FREE QUEUE RECORDS - QUEUE FILE 012% FULL
F1 0001 1R49I    1274 FREE DBLK GROUPS - DATA FILE 029% FULL
F1 0001 1R49I    CURRENT DBLK SIZE=04080, DBLK GROUP SIZE=00010
F1 0001 1R49I    NO ACCOUNTING SUPPORT
```



Backup POWER

- Use anything but POFFLOAD command
 - User written program that chases the chains
 - POWERTools from SDS



Restore

- Use anything but POFFLOAD command
 - User written program that inputs members
 - POWERTools from SDS



POFFLOAD

POFFLOAD SAVE, LST, 280, , AM

0 LOAD, LST, 280

0 BACKUP, ALL, 280

0 BACKUP, RDR, 280, *

0 BACKUP, ALL, 280, TLBL=TLOUT



POWER Statistics

- Output at Power Shutdown
- Can be displayed using PDISPLAY STATUS command
- Can be used to monitor and tune Power resources



Statistics

```
F1 0001 1R46I VSE/POWER 6.5.0 STATUS FOR IPWPOWER ON 01/16/2001 TIME 18/49/33
F1 0001    PRESENT SESSION START (TURBO-DISP. -NP) ON 01/06/2001 TIME 14/32/38
F1 0001    APPLIED SERVICE LEVEL >> DY-BASE <<    OF 07/03/2000
F1 0001 1R46I  NODE = ----- , SYSID = -
F1 0001 1R46I  QUEUE FILE      IJQFILE
F1 0001    TOTAL NUMBER OF FBA-BLOCKS                576 BLOCKS
F1 0001    TOTAL NUMBER OF QUEUE RECORDS             734 RECORDS
F1 0001    FREE QUEUE RECORDS (INCL. 10 FOR CUSHION) 695 RECORDS
F1 0001    USED QUEUE RECORDS                        39 RECORDS
F1 0001    QUEUE RECORDS IN DELETION                 0 RECORDS
F1 0001    QUEUE RECORDS LOST DUE TO I/O ERROR      0 RECORDS
F1 0001    MAX. NO. OF Q-REC'S USED IN PRESENT SESSION 40 RECORDS
F1 0001    MAX. NO. OF Q-REC'S USED SINCE LAST COLDSTART 96 RECORDS
F1 0001    QUEUE FILE STOR. COPY IN PART. GETVIS (TOTAL) 276 K-BYTES
```



Statistics

F1 0001	1R46I	DATA FILE	IJDFILE	1	EXTENT
F1 0001		TOTAL NUMBER OF FBA-BLOCKS		88896	BLOCKS
F1 0001		TOTAL NUMBER OF DBLK-GROUPS		740	GROUPS
F1 0001		FREE DBLK-GROUPS (INCL. 20 FOR CUSHION)		695	GROUPS
F1 0001		USED DBLK-GROUPS		45	GROUPS
F1 0001		DBLK-GROUPS IN DELETION		0	GROUPS
F1 0001		DBLK-GROUPS LOST DUE TO I/O OR LOGIC ERROR		0	GROUPS
F1 0001		MAX. NO. OF DBLK-GPS USED IN PRESENT SESSION		61	GROUPS
F1 0001		MAX. NO. OF DBLK-GPS USED SINCE LAST COLDSTART		117	GROUPS
F1 0001		DATA BLOCK GROUP SIZE		8	DBLKS
F1 0001		DATA BLOCK SIZE		7680	BYTES
F1 0001		SPOOL LIMIT PERCENTAGE		90	%
F1 0001		DATA FILE DBLK GROUP TRACING			ENABLED



Statistics

F1 0001 1R46I	ACCOUNT FILE IJAFILE		
F1 0001	TOTAL NUMBER OF FBA-BLOCKS	2048	BLOCKS
F1 0001	PERCENTAGE OF FILE THAT IS FILLED	19	%
F1 0001 1R46I	GENERAL STORAGE/TASK STATISTICS		
F1 0001	FIXABLE STORAGE ALLOCATED TO VSE/POWER	200	K-BYTES
F1 0001	MAX. NO. OF K-BYTES FIXED IN PRESENT SESSION	76	K-BYTES
F1 0001	CURR. NO. OF K-BYTES FIXED IN PRESENT SESSION	76	K-BYTES
F1 0001	NO. OF TIMES TASKS WAITING FOR PFIXED STORAGE	0	TIMES
F1 0001	VIRTUAL STORAGE OCCUPIED BY VSE/POWER PHASES	532	K-BYTES
F1 0001	UNUSED STORAGE REMAINING BELOW SIZE BOUNDARY	292	K-BYTES
F1 0001	TOTAL PART. GETVIS-24 STORAGE ALLOCATED	2048	K-BYTES
F1 0001	MAX. GETVIS-24 REQUESTED IN PRESENT SESSION	425	K-BYTES
F1 0001	CURRENT GETVIS-24 AMOUNT REQUESTED	391	K-BYTES
F1 0001	NO. OF TIMES TASKS WAITING FOR GETVIS-24 STOR	0	TIMES
F1 0001	SYSTEM GETVIS STORAGE USED BY VSE/POWER	32	K-BYTES
F1 0001	MAX. NO. OF TASKS ACTIVE AT ONE POINT IN TIME	29	TASKS
F1 0001 1R46I	SPOOL ACCESS PROTECTION MODE		INACT



Statistics

F1 0001 1R46I	DYNAMIC PARTITION SCHEDULING STATISTICS	
F1 0001	SUCCESSFUL DYNAMIC PARTITION ALLOCATION	4 TIMES
F1 0001	UNSUCCESSFUL DYNAMIC PARTITION ALLOCATION	0 TIMES
F1 0001 1R46I	NOTIFY SUPPORT STATISTICS	
F1 0001	NUMBER OF NOTIFY MESSAGES LOST	0 MSG(S)
F1 0001 1R46I	SUPPORT FOR RETRIEVAL OF JOB EVENT MESSAGES	
F1 0001	MESSAGE QUEUE SIZE	20 MSG(S)
F1 0001	MAXIMUM MSG(S) LOST FOR ANY USER	0 MSG(S)



D Block Group Trace

- Stop if not having problem with chain errors
 - PSTOP DBLKTR
- NOTE: Gets restarted after a FORMAT=YES POWER Startup



Task Dispatching Trace

- Disable if not having problem.
 - V TASKTR,DISAB (stop tracing temporarily)
 - P TASKTR (stop tracing and free trace area)



POWER Accounting

- VSE/ESA ships with two pre-assembled versions of VSE/Power tables
 - Phase named POWER - all default values
 - ACCOUNT=NO
 - Phase named IPWPOWER - some changes
 - ACCOUNT=YES
 - Make Account=NO if possible



Power Generation

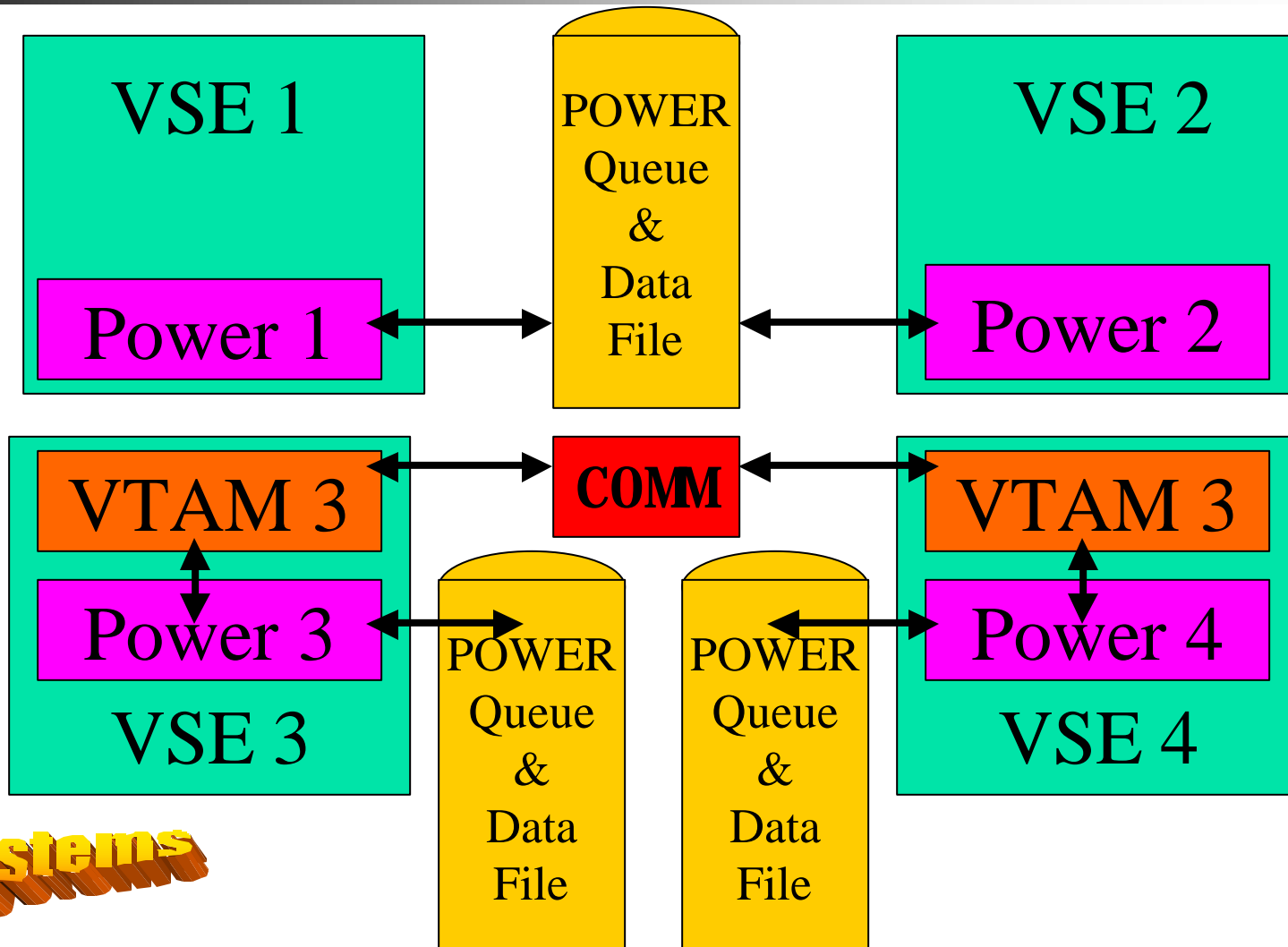
- Skeleton in ICCF library 59 SKPWGEN
- Copy skeleton to library 10 and modify
- Submit the job to assemble, link edit and catalog the POWER phase



Power Networking or Shared Spool?

- Depends upon what you are doing and how much it you are doing.
 - Moving very few entries from 1 POWER to the other – PNET
 - Moving lots of entries - Shared Spool
- Maybe both
 - Need connection to JES

Shared Spool vs PNet



Shared Spool Example

```
PRINT NOGEN  
POWERA POWER ACCOUNT=YES,  
DBLK=10796, DBLKGP=25,  
-----  
SHARED=(Q, A),  
SNA=(, , POWERA),  
-----  
SYSD=1,  
TIME=(5, 1, 60)  
  
END
```

```
PRINT NOGEN  
POWERT POWER ACCOUNT=YES,  
DBLK=10796, DBLKGP=25,  
-----  
SHARED=(Q, A),  
SNA=(, , POWERT),  
-----  
SYSD=9,  
TIME=(5, 1, 60)  
  
END
```





Shared POWER Time Parameters

- $\text{TIME} = (5, 0, 60) | (t1, t2, t3)$ and $t4$
 - $t1$ - the maximum seconds VSE/POWER is given update control of the spool files, value 1 to 99.
 - $t2$ - seconds VSE/POWER must wait before it can issue another update-control request for the spool files, value from 0 to 9.
 - $t3$ - seconds VSE/POWER waits to poll when none of its tasks are active, value from 1 to 999.
 - $t4$ - Wait for lock request, default 180 seconds



Output Segmentation

- Segmenting large reports allows printing to begin before the entire job is completed
 - Record count specification
 - Specification in the input stream
 - Specification in the program
 - NOTE: Down side creates extra Queue records



Output Segmentation

- Specify the number of pages where segmentation will occur
 - Use the RBS operand in the * \$\$ LST statement
- Can submit multiple * \$\$ LST statements
- // SETPRT VSE JCL statement
- IPWSEGM or SEGMENT macros may be used to separate output