A Guideline for migrating to an ALCS system with VFA buffers above the bar.

Disclaimer: This guideline is not intended to be a precise reference document for determining the amount of storage as dependencies exist such as the level of z/OS. Rather, it should be used to gain a high-level understanding of the many factors that are involved. Therefore we strongly advise that you to consult your local IBM expert.

4K or 1MB page frames

When you specify either AMODE64=VFA or AMODE64=LPSVFA, VFA buffers will be above the bar.

4K page frames are used, when you specify AMODE64=VFA, however ALCS will try to use 1MB page frames, when you specify AMODE64=LPSVFA.

The performance of ALCS VFA is dependent on the performance of the underlying z/OS memory management infrastructure. Therefore ALCS also supports large 1MB pages above the bar for VFA (See for more details the ALCS Installation and Customization manual: The SCTGEN parameter AMODE64).

Note that the MVS parmlib member IESSYSxx must be coded correctly when using 1MB pages. The LFAREA IEASYSxx parameter must indicate the amount of real memory reserved for large pages. Also must be ensured that there is enough real memory in the 4K memory pool to satisfy 4K workload demands.

Be aware that there are maybe other products that use large pages (They are allocated on a first come first served basis).

In order to use large page support you need a Z10 or Z196 with as least 4GB real memory and at least z/OS 1.9 + OA20902 , or a later z/OS release (**OA31116 for z/OS 1.10 and z/OS 1.11** is recommended)

See for more details this SHARE presentation:

http://mobile.share.org/client_files/SHARE_in__Seattle/S2262ET150105.pdf

How to determine the amount of required real storage:

1. Check that AMODE64=VFA|LPSVFA is defined in the ALCS system generation (SCTGEN macro). If so, then please proceed.

2. Ask your z/OS system programmer how much not-reconfigurable storage there is available above 2 GB. This information can be obtained with help of the MVS D M=STOR command.

Note that there is a class of real storage that is comprised of four contiguous real storage frames used primarily to hold z/OS DAT structures. This real storage area needs to be reclaimable for use by z/OS at any time and therefore is not eligible for backing pagefixed ALCS VFA buffers. When it is not used by z/OS to back DAT structures, this storage is available for application or system use for pageable requests or for pagefix requests of swappable address spaces. Therefore exclude 20% of your on-line real storage above 2 GB when calculating the amount of real storage available on your system for ALCS VFA buffers. Adjust the figure obtained to account for this.

Ask your z/OS system programmer with help of the RMF VSTOR report if your ALCS or other systems currently running use real storage above 2 GB. This may happen only when there is not enough real storage available below 2 GB. This is very unlikely, but if this is the case then you must adjust the figure obtained to account for this.

3. Check if other applications that you intend to run in the same LPAR may use pagefixed real storage above 2 GB. Note that DB2 can pagefix large amounts of real storage above 2 GB (Consult a DB2 expert) and that the ALCS Message trace may pagefix up to 2 MB above 2 GB. Also consider "Automatic takeover" standby ALCS systems with AMODE64=VFA|LPSVFA, and other ALCS system(s) with AMODE64=VFA|LPSVFA, running in the same LPAR as these ALCS systems will pagefix storage above 2 GB. Subtract the real storage pagefixed by DB2 and other z/OS applications from the figure from non-reconfigurable storage from above.

4. Compute the storage required for VFA buffers (use your ALCS system generation). The storage required for VFA must be less than the figure obtained for storage from above by a reasonable margin. We recommend that you allow a margin of about 10%.

5. Ask your z/OS system programmer to investigate with help of the RMF VSTOR report if there is enough real storage for pageable requests. It is very unlikely that this is a problem, but if so then you must adjust the figure obtained to account for this.
Note: If z/OS cannot pagefix real storage above 2 GB then it will first attempt to steal a frame above 2 GB before allocating a real storage frame below 2 GB. In this way the system avoids pageable storage shortages caused by fixing too much real storage below 2 GB, but this process negatively impacts system performance.

Example:

1. In your ALCS system generation you defined AMODE64=VFA|LPSVFA. So you must calculate how much real storage above 2 GB is needed.

2. Your z/OS system programmer told you that there is 1 GB not-reconfigurable storage available above 2 GB. You must exclude 20% when calculating the amount of real storage available on your system for your ALCS VFA buffers. So

you have 819 MB available (Do not forget that 1 K = 1024).
Your z/OS system programmer also told you that your ALCS or other systems currently running do not use pagefixed real storage above 2 GB. So you do not have to adjust the figure of 819 MB.

3. You are certain that in your case neither DB2, nor other ALCS systems, run in the same LPAR. ALCS is not using pagefixed above the bar storage for message trace. So you do not need to adjust the figure just obtained (in the previous step).

4. You must compute the VFA storage required for ALCS . Use your ALCS system generation: if your VFABUF parameter is VFABUF=(50000,150000,1000,100000) and your CISIZSE parameter is CISIZE=(512,1536,4096,4608), the storage needed for VFA in this example is:

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(50000x512)+(150000x1536)+(1000x4096)+(100000x4608) = 688 MB
approximately.
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Add a reasonable margin, let us say 10%. So approxiamately 757 MB is needed. There is no problem as 819 MB real storage above 2GB is available.

5. Ask your z/OS system programmer to investigate if there is enough real storage for pageable requests. It is very unlikely that there is not, but if this is the case then you must adjust the figure obtained to account for this.