<table>
<thead>
<tr>
<th>Control Parameter or Mechanism</th>
<th>Location</th>
<th>Distributed LASR</th>
<th>Non-distributed LASR (Linux)</th>
<th>Non-distributed LASR - (Windows)</th>
<th>Comments</th>
</tr>
</thead>
</table>
| resource.settings             | TKGrid install directory e.g. /opt/sas/TGird  | YES               | NO                          | NO                              | • Primary mechanism for controlling memory on distributed LASR  
• TKMPI_MEMSIZE - memory limit for in-memory tables and processing overhead; excludes memory-mapped files  
• TKMPI_ULIMIT - virtual memory limit for LASR server, in-memory tables, processing overhead; includes memory-mapped files  
• Must be copied to all nodes |
| YARN - integrated using resource.settings | TKGrid install directory | YES | NO | NO | • Requires YARN configuration and colocation with TKGird  
• Verify that existing YARN did not automatically create cgroups which may interfere |
| MEMSIZE=                      | SAS System Option sasv9_usermods.cfg  Startup parameter | NO | YES | YES | • Primary mechanism for controlling memory on non-distributed LASR  
• Amount of virtual memory allocated to the LASR server  
• If MAX or 0 is specified will result in 80% of physical memory  
• Is dependent upon “ulimit -v” setting on Linux |
| TABLEMEM=                     | PROC LASR LASR Server config | YES | NO | NO | • Tables will no longer load once this limit is exceeded  
• Default for PROC LASR is 75 percent  
• Default for VA LASR configuration is 80 percent  
• Represents the average of real memory utilization across all nodes in the cluster, including the LASR root node  
• Requires restart of the associated Web App Server when VA LASR configuration is modified  
• Tables loaded from HDFS do not count toward this limit  
• Can be modified “on the fly” using SERVERPARM option of PROC IMSTAT and PROC VASMP |
| EXTERNALMEM=                  | PROC LASR LASR Server config | YES | NO | NO | • External processes (HPA procedures) prevented from retrieving data above this limit |
| Tables Limit                  | VAA Interface LASR Server config | YES | YES | YES | • Used to limit the amount of memory reserved for tables  
• Impacted by MEMSIZE, ulimit or TKMPI_MEMSIZE limits |
| ulimits                       | /etc/security/limits.conf | YES | YES | NO | • as - address space size limit (aka as virtual memory limit)  
• rss - resident set size limit is ignored beginning with Linux kernel 2.4.30  
• Can be set per user or group |
| cgroups                       | /etc/cgconfig.conf | NO | NO | NO | • Should *not* be used for managing LASR memory  
• Exceeding memory limits using cgroups will result in the LASR server being killed or placed in a wait state  
• Warning: Some customers may set default limits per user or group. Be sure to check before deployment |