

Control Parameter or Mechanism	Location	Distributed LASR	Non-distributed LASR (Linux)	Non-distributed LASR - (Windows)	Comments
<a href="#">resource.settings</a> - TKMPI_MEMSIZE=nnnnn - TKMPI_ULIMIT="-v nnnnn"	TKGrid install directory e.g. /opt/sas/TKGrid	YES	NO	NO	<ul style="list-style-type: none"> <li>Primary mechanism for controlling memory on distributed LASR</li> <li>TKMPI_MEMSIZE - memory limit for in-memory tables and processing overhead; excludes memory-mapped files</li> <li>TKMPI_ULIMIT - virtual memory limit for LASR server, in-memory tables, processing overhead; includes memory-mapped files</li> <li>Must be copied to all nodes</li> </ul>
<a href="#">YARN</a> - integrated using resource.settings	TKGrid install directory	YES	NO	NO	<ul style="list-style-type: none"> <li>Requires YARN configuration and colocation with TKGrid</li> <li>Verify that existing YARN did not automatically create cgroups which may interfere</li> </ul>
<a href="#">MEMSIZE=</a>	SAS System Option sasv9_usermods.cfg Startup parameter	NO	YES	YES	<ul style="list-style-type: none"> <li>Primary mechanism for controlling memory on non-distributed LASR</li> <li>Amount of virtual memory allocated to the LASR server</li> <li>If MAX or 0 is specified will result in 80% of physical memory</li> <li>Is dependent upon "ulimit -v" setting on Linux</li> </ul>
<a href="#">TABLEMEM=</a>	PROC LASR LASR Server config	YES	NO	NO	<ul style="list-style-type: none"> <li>Tables will no longer load once this limit is exceeded</li> <li>Default for PROC LASR is 75 percent</li> <li>Default for VA LASR configuration is 80 percent</li> <li>Represents the average of real memory utilization across all nodes in the cluster, including the LASR root node</li> <li>Requires restart of the associated Web App Server when VA LASR configuration is modified</li> <li>Tables loaded from HDFS do not count toward this limit</li> <li>Can be modified "on the fly" using SERVERPARM option of PROC IMSTAT and PROC VASMP</li> </ul>
<a href="#">EXTERNALMEM=</a>	PROC LASR LASR Server config	YES	NO	NO	<ul style="list-style-type: none"> <li>External processes (HPA procedures) prevented from retrieving data above this limit</li> </ul>
<a href="#">Tables Limit</a> VA.MaxTotalMemoryForTables	VAA Interface LASR Server config	YES	YES	YES	<ul style="list-style-type: none"> <li>Used to limit the amount of memory reserved for tables</li> <li>Impacted by MEMSIZE, ulimit or TKMPI_MEMSIZE limits</li> </ul>
<a href="#">ulimits</a> -v (as - virtual memory limit) -m (rss - no longer applicable)	/etc/security/limits.conf	YES	YES	NO	<ul style="list-style-type: none"> <li>as - address space size limit (aka as virtual memory limit)</li> <li>rss - resident set size limit is ignored beginning with Linux kernel 2.4.30</li> <li>Can be set per user or group</li> </ul>
cgroups	/etc/cgconfig.conf	NO	NO	NO	<ul style="list-style-type: none"> <li>Should <b>*not*</b> be used for managing LASR memory</li> <li>Exceeding memory limits using cgroups will result in the LASR server being killed or placed in a wait state</li> <li>Warning: Some customers may set default limits per user or group. Be sure to check before deployment</li> </ul>