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Rev: August 2014
2 Supported Operating Systems, Versions and Architectures

Univa Grid Engine supports various platforms, hardware architectures and versions of operating systems. Find the full list in following table:

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<thead>
<tr>
<th>Operating System</th>
<th>Version</th>
<th>Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLES</td>
<td>10,11,12</td>
<td>x86, x86-64</td>
</tr>
<tr>
<td>RHEL</td>
<td>5 or higher, 6 or higher, 7</td>
<td>x86, x86-64</td>
</tr>
<tr>
<td>CentOS</td>
<td>5 or higher, 6 or higher, 7</td>
<td>x86, x86-64</td>
</tr>
<tr>
<td>Oracle Linux</td>
<td>5 or higher, 6 or higher, 7</td>
<td>x86, x86-64</td>
</tr>
<tr>
<td>Ubuntu</td>
<td>10.04LTS - 16.04LTS</td>
<td>x86, x86-64</td>
</tr>
<tr>
<td>Oracle Solaris</td>
<td>10, 11</td>
<td>x86_64,</td>
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<tr>
<td></td>
<td></td>
<td>SPARC 64bit</td>
</tr>
<tr>
<td>HP-UX</td>
<td>11.0 or higher</td>
<td>64bit</td>
</tr>
<tr>
<td>IBM AIX</td>
<td>6.1 or later</td>
<td>64bit</td>
</tr>
<tr>
<td>Apple OS X</td>
<td>10.8 (Mountain Lion) or higher</td>
<td>x86, x86-64</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>XP Professional (SP3)</td>
<td>32 bit</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>Server 2003 / 2003 R2</td>
<td>32 bit</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>Vista Enterprise / Ultimate</td>
<td>32 and 64bit</td>
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<tr>
<td>Microsoft Windows</td>
<td>Server 2008 / 2008 R2</td>
<td>32 and 64bit</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>7 Professional / Enterprise / Ultimate</td>
<td>32 and 64bit</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>Server 2012 / 2012 R2</td>
<td>32 and 64bit</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>8 / 8.1 Pro / Enterprise</td>
<td>32 and 64bit</td>
</tr>
<tr>
<td>Microsoft Windows</td>
<td>10 Pro / Enterprise</td>
<td>32 and 64bit</td>
</tr>
</tbody>
</table>

Table 1: Supported Operating Systems, Versions and Architectures

**PLEASE NOTE:** Hosts running the Microsoft Windows operations system cannot be used as master or shadow hosts.

**PLEASE NOTE:** Univa Grid Engine qmaster is fully supported on Linux and Solaris. We provide binaries in Univa Grid Engine for running the qmaster on other operating systems but they are not supported and delivered as a courtesy. If you require qmaster support on other architectures please contact us at support@univa.com.

**PLEASE NOTE:** if you require Univa Grid Engine support for older versions of the above operating systems please contact our sales or support team.
3 Fixes and Enhancements

3.1 Summary

3.1.1 8.5.1: Changed limit calculation

The limit calculation for jobs was improved for Univa Grid Engine 8.5.1 and changed compared to previous versions of Univa Grid Engine. The most important changes are:

- The configured consumable type (NO, YES, JOB, HOST) will not influence any resulting limit for tight integrated parallel jobs
- Previous Univa Grid Engine version calculated limits that were too high (depending on pe and consumable settings)
- This also affects the cgroups h_vmem observation

Univa Grid Engine versions prior to 8.5.1 had limit values that were set too high for limits like “h_vmem”. As a result jobs were not terminated although they exceeded one of their limits. The limit calculation is now corrected. A detailed overview of the limit observation and how it works is described in the sge_diagnostics(1) man page (JOB LIMITS).

ATTENTION: If you are updating to 8.5.1 from a previous version please verify the used limit requests of your jobs. It may be necessary to change the requested limit value. If the limit is set too low or adjusted to fit the old limit calculation, jobs which were running fine may fail after installing this version.

3.1.2 8.5.1: Improved rescheduling behaviour

The new execd_params parameter RESCHEDULE_ON_MISSING_EPILOG is introduced. The default value is true, which causes the old behaviour. If set to false, the job is not rescheduled and the queue not set to error state if the configured epilog script cannot be found. Instead, Univa Grid Engine behaves as if no epilog script was configured. This parameter also applies to the stop_proc_args scripts of a parallel environment (also called pe_stop script).

3.1.3 8.5.1: Possibility to reduce qhost data request sizes at sge_qmaster

By setting the environment variable SGE_GDI_REQUEST_REDUCE_LEVEL it is possible to reduce the amount of data transferred from sge_qmaster to qhost clients. A detailed description can be found in the qhost(1) man page (ENVIRONMENTAL_VARIABLES).

3.1.4 8.5.1: New environment variables in the job environment

Univa Grid Engine sets two new environment variables in the environment of the job, the prolog, pe_start, pe_stop and epilog scripts:

SGE_RERUN_REQUESTED=<0|1|2>
A value of 0 means there was no \(-\text{r } \{y|n\}\) request on the submit command line of the job, 1 means \(-\text{r } y\) was requested and 2 means \(-\text{r } n\) was requested.

\[
\text{SGE\_RERUN\_JOB=\langle0|1\rangle}
\]

A value of 1 means the job will be rescheduled on error. The value is determined from the \text{SGE\_RERUN\_REQUESTED} value and the configuration value \text{rerun} of the queue the job runs in.

Additionally, Univa Grid Engine sets this new environment variable in the environment of the pe_stop and epilog scripts:

\[
\text{SGE\_JOB\_EXIT\_STATUS}
\]

This variable is set to the exit status of the job. This is the same value that is written to the accounting to the \text{exit\_status} field.

### 3.1.5 8.5.1: New example script for jsv and core-binding

A new example script that demonstrates core-binding using JSV can be found at “\$\text{SGE\_ROOT}/util/resources/jsv/core binding_jsv.sh”

### 3.1.6 8.5.1: sgepasswd renewal

The upgrade and installation scripts have been updated to ensure that CSP/sgepasswd key store is backed up and is restored correctly in a clone upgrade. If you are currently using CSP or sgepasswd you need to save your configuration as user root with:

\[
\# \text{\$SGE\_ROOT/util/upgrade\_modules/save\_sge\_config.sh} \ <\text{backupdir}>
\]

then replace the original script in your existing installation with the new Univa Grid Engine 8.5.1 one to also ensure backup of existing sgeCA infrastructure. Now an upgrade with \text{inst\_sge -upd -csp} will restore your backed up key store. If you create new key store by creating a new sgeCA infrastructure you will have to reencrypt an existing sgepasswd file manually with the following command as root:

\[
\# \text{\$SGE\_ROOT/bin/\langle sge\_arch\rangle/sgepasswd -n} \ \backslash
\text{/var/sgeCA/\langle old\ port\ number\rangle/\langle old\ sge\_cell\rangle.backup/private/key.pem}
\]

The original sgepasswd file is stored as

\[
\# \text{ls \$SGE\_ROOT/\$SGE\_CELL/common/sgepasswd.oldcert\_backup}
\]

and the reencrypted file is available as

\[
\# \text{ls \$SGE\_ROOT/\$SGE\_CELL/common/sgepasswd}
\]

Please do not repeat this process without first saving the original files otherwise you might lose your original information and need to recreate the sgepasswd file from scratch.

Please be aware that the encryption algorithm has changed in version 8.5.0. If you are upgrading from an older installation than 8.5.0 you have to first follow the steps under section: \text{Changes in Windows execution host sgepasswd file}
3.1.7 Performance Improvements and Memory Requirements

For Univa Grid Engine 8.5.4 we invested quite some time to improve the performance of various Univa Grid Engine components and libraries.

As a consequence the following metrics of the cluster have been improved compared to Univa Grid Engine 8.4.4 versions of Univa Grid Engine:

- Submit rate (increased by 5-15% depending of the jobs types and requested functionality)
- Scheduling times (reduced by 5-30% depending on the used policies)
- Faster delivery of dispatched jobs to sge_execd esp. for interactive jobs
- Memory requirements for request handling (reduced by 5-10%) especially for read-only requests like qstat, qhost, ... (reduced by 5-30%)
- Processing and response time of requests send by execution hosts (certain requests will now be handled in parallel within qmaster)
- Processing of clients requests like qstat/qhost (which results in about 30% more requests that can be handled in the same amount of time with the same memory requirements)
- Job turnaround times

This improves the overall cluster throughput as well as interactions with the Univa Grid Engine cluster.

The speedup in your cluster depends on the details of the cluster setup and on the features of Univa Grid Engine that are enabled or disabled.

3.1.8 Standing Reservations

In Univa Grid Engine 8.5.4 the Advance Reservation feature has been extended to allow for Standing Reservations.

A Standing Reservation is a recurring Advance Reservation. Start and end times of the individual Advance Reservations are specified via a calendar, additional command line options allow for the specification of the number of reservations at a time and the behaviour in case a reservation cannot be granted.

All options available for Advance Reservations such as resource requests are also available for Standing Reservations.

See User Guide -> Reservations for details.

3.1.9 Policy Scheme: Consider Slots Instead of Jobs

Univa Grid Engine 8.5.4 provides a configuration option where the scheduler will consider the number of slots used by running jobs and by pending jobs when calculating users and projects contribution toward their sharing goals as defined by the share tree. That is, a parallel job using 4 slots will be considered equal in terms of resource usage to 4 serial jobs. The previous share tree algorithm did not take into account slot use which meant that if a mix of parallel and serial jobs were running or queued, the number of tickets granted to pending jobs did not result in the correct run-time sharing ratios and the share tree targets were not met. For example, if two
projects “a” and “b” are configured at the same level in the share tree with equal shares, the scheduler should try to schedule jobs so that the projects get equal usage. However, if project “a” has mostly parallel jobs, it will tend to get more usage because the previous share tree algorithm treats all jobs equally. In fact, with the old algorithm, if we look at the prioritized order of pending 4-slot jobs for project “a” and pending 1-slot jobs for project “b” for a share tree with no usage, we would see the pending jobs interleaved (a b a b a b a b a b a b a b a b a b ...). With the new algorithm, we would see the pending jobs ordered based on their slot usage (a b b b b b b a b b b b ...), which is more likely to lead to the proper runtime sharing ratios.

The urgency_slots PE attribute will be used to determine the assumed number of slots used by a pending job with a slot range. See urgency_slots in the sge_pe(5) man page for additional information.

The old behavior (sharing based on jobs) can be configured by setting SHARE_BASED_ON_SLOTS=false (default) in the sched_conf(5) params attribute. The new behavior (sharing based on slots) can be configured by setting SHARE_BASED_ON_SLOTS=true in the sched_conf(5) params attribute. See the sched_conf(5) man page for more details.

```
$ qconf -msconf
...
params SHARE_BASED_ON_SLOTS=true
...
```

Please note that beginning with version 8.6.0 of Univa Grid Engine the default for SHARE_BASED_ON_SLOTS will be changed from false to true.

### 3.1.10 RSMAP Enhancements

In Univa Grid Engine 8.5.4 it is possible to request specific Ids of a Resource Map Complex (RSMAP) via command line with the syntax used for RESTRING (see complex(5) man page for details). The following example submits a job that requests four Ids of the complex “GPU”, three Ids with the name “gpu1” or “gpu2” and one Id with the name “gpu3”.

```
qsub -l GPU=3(gpu1|gpu2)&1(gpu3) $SGE_ROOT/examples/jobs/sleeper.sh 3600
```

Depending on the host configuration and the available Ids, one possible combination of assigned Ids for this job is gpu1 gpu1 gpu2 gpu3.

A job cannot be scheduled if the scheduler cannot find enough free Ids with the requested names, even if there are enough free Ids with different names available.

It is still possible to use the RSMAP complex without the syntax enhancements introduced in Univa Grid Engine 8.5.4. The scheduler will then behave like in previous versions and use any free id.

Please be aware that very complicated requests may slow down the scheduler.

To make the configuration of RSMAPs easier, a shortcut has been added.

The syntax is:
3 Fixes and Enhancements

complex_values  complex_name=amount(complex_id:amount)

The following example defines a complex named “GPU” with ten available IDs, five with the name “gpu1” and five with the name “gpu2”:

qconf -me exechost1
...
complex_values  GPU=10(gpu1:5 gpu2:5)
...

3.1.11 Improved Scheduler Profiling

In previous versions of Univa Grid Engine, the scheduler profiling did not completely cover the scheduling main loop. This lead into some wrong or missing profiling data. Univa Grid Engine has additional diagnostics to cover the main loop. Please read the updated sge_diagnostics(1) man page where the scheduler profiling is described in detail.

3.1.12 Improved Logging

The sge_diagnostics(1) man page was introduced to provide an overview on available logging and diagnostic options. The most important changes and new options are:

- show statistics about request types in worker and reader request queues (see “MONITOR_REQUEST_QUEUES”, man page “sge_conf(5)”) 
- log spooling exceeding a certain threshold (see “LOG_SPOOLING_TIME”, man page “sge_conf(5)”) 
- communication errors at first startup not logged into /tmp/execd_messages file 
- communication specific enhancements for profiling and startup behavior (see “PROF_COMMLIB_TIME”, man page “sge_conf(5)”) 
- log job verification time exceeding a certain threshold (see “LOG_JOB_VERIFICATION_TIME”, man page “sge_conf(5)”) 
- log request processing exceeding a certain threshold (see “LOG_REQUEST_PROCESSING_TIME”, man page “sge_conf(5)”) 

3.1.13 Encryption in CSP mode / sgepasswd

The encryption algorithm has been changed from RC4 to AES256_CBC. This affects CSP encryption and the encryption of the Windows execd sgepasswd file. There are no additional upgrade steps necessary for CSP mode and the steps for Windows are described below in section: Changes in Windows execution host sgepasswd file

3.1.14 Online usage of running Windows jobs

For Univa Grid Engine jobs running on Microsoft Windows, some usage values are now reported while the jobs are running. The usage values that are reported are:

Grid Engine Release Notes v 8.5.4
wallclock, cpu, mem, io, ioops, vmem, maxvmem

The online usage value iow is not reported on Microsoft Windows.
Not all Windows usage values exactly match the corresponding UNIX usage values; this list shows what Windows system value is retrieved to report the corresponding usage value:

<table>
<thead>
<tr>
<th>Online usage</th>
<th>Corresponding Windows system value</th>
</tr>
</thead>
<tbody>
<tr>
<td>wallclock</td>
<td>(current wallclock time - start wallclock time) of the job.</td>
</tr>
<tr>
<td>cpu</td>
<td>(kernel time + user time) of all processes in the job.</td>
</tr>
<tr>
<td>mem</td>
<td>integral of vmem over time.</td>
</tr>
<tr>
<td>io</td>
<td>(read bytes + write bytes + other bytes) of all processes in the job.</td>
</tr>
<tr>
<td>ioops</td>
<td>(read operations + write operations + other operations) of all processes in the job.</td>
</tr>
<tr>
<td>vmem</td>
<td>private usage of all processes in the job. The private usage is documented to be the “commit charge for this process”, which is nearly the same as the virtual memory of UNIX.</td>
</tr>
<tr>
<td>maxvmem</td>
<td>maximum of all measured vmem values of the whole job.</td>
</tr>
</tbody>
</table>

These online usage values are printed e.g. using the command:

> qstat -j <job_id>

Additionally, for finished jobs that ran on Microsoft Windows, these usage values are accounted:
ru_wallclock, ru_utime, ru_stime, wallclock, cpu, mem, io, ioops, maxvmem

<table>
<thead>
<tr>
<th>Accounting usage</th>
<th>Corresponding Windows system value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ru_wallclock</td>
<td>the wallclock of the whole job measured by Windows.</td>
</tr>
<tr>
<td>ru_utime</td>
<td>user time of the whole Windows Job object that contains all processes of the job.</td>
</tr>
<tr>
<td>ru_stime</td>
<td>kernel time of the whole Windows Job object that contains all processes of the job.</td>
</tr>
</tbody>
</table>

wallclock, cpu, mem, io, ioops, maxvmem are identical to the online usage values.

The accounting values for finished jobs are printed e.g. using the command:

> qacct -j <job_id>
3.1.15 Docker Related Enhancements

With Univa Grid Engine 8.5.4, variable placeholders are allowed in sub-options of the “-xd” option on the submit command line, sge_request files, job scripts, job classes and job submission verifier. These variable placeholders are resolved by corresponding elements of specific RSMAP complexes the Scheduler selects for the tasks of a job.

The format of these placeholders is:

```
placeholder := '${\{ complex_name \(( index )\)' '}' .
```

where complex_name is the name of the corresponding RSMAP complex and index is the index of the element the scheduler selects from the RSMAP for this job, starting with 0.

E.g.:
If a resource map defines these values on a host: `gpu_map=4(0 1 2 3)`
this qsub command line is used:

```
# qsub -l docker,docker_images="*some_image*",gpu_map=2
   -xd "--device=/dev/gpu${gpu_map(0)}/dev/gpu0,
        --device=/dev/gpu${gpu_map(1)}/dev/gpu1" ...
```

and the scheduler selects the elements “1” and “3” from the resource map, the command line is resolved to

```
# qsub -l docker,docker_images="*some_image*",gpu_map=2
   -xd "--device=/dev/gpu1:/dev/gpu0,
        --device=/dev/gpu3:/dev/gpu1" ...
```

which means the physical GPUs “gpu1” and “gpu3” are mapped to the virtual GPUs “gpu0” and “gpu1” inside the container and at the same time are exclusively reserved for the current job among all Univa Grid Engine jobs.

3.1.16 Host Aliasing and Resolving

Univa Grid Engine now better supports changes to the host_aliases file while Univa Grid Engine is running.
Periodically naming services like DNS or NIS may be updated which may result in changed hostnames, additionally administrators may update the host_aliases file. Both of these situations result in changes to the host name resolution in Univa Grid Engine. Univa Grid Engine has been enhanced to handle the following situations:

Adding host_aliases while Univa Grid Engine is running: Adding new entries to the host_aliases file is supported while Univa Grid Engine is running if the resulting name and none of the mapped hostnames is referenced in any Univa Grid Engine configuration. Host names that are changed or added which are referenced in any Univa Grid Engine configuration object will be ignored and a message will be logged in the qmaster messages file.
Update of internal name resolution database on daemon startup: At startup of the qmaster daemon any change of a hostname in the configuration will be detected and the name resolution database will be adjusted to reflect this change. If the name resolution change affects the execution daemon nodes they must be restarted by the Administrator.

Additional Improvements: Improved several places (e.g. plain hostnames used in regular expressions, hostnames reported by loadensors) where hostnames are entering the system. This resulted in not scheduleable jobs and other problems in the past. The final Univa Grid Engine version will get an updated host_aliases man page and an updated admin guide (GE-6013).

3.1.17 Intel® Xeon Phi™ x200 (Knights Landing) integration

Univa Grid Engine 8.5.4 provides an integration for Intel® Xeon Phi™ x200 (Knights Landing) Processors. The pre-compiled load-sensor automatically detects the current Cluster and also the current Memory Mode of the x200 machine. Furthermore the current MCDRAM distribution gets reported.

Please see “Configure and Install Intel Xeon Phi x200 (Knights Landing) Processors support” in the AdminsGuideGE for details.
3.2 Full List of Fixes and Enhancements

3.2.1 Univa Grid Engine 8.5.0alpha1 (also fixed for a 8.3 or 8.4 patch release)

- GE-2716 interactive jobs (qlogin, qrsh without command) don't set the TZ environment variable correctly
- GE-3392 Job reservation with wildcards in PE names doesn't work correctly
- GE-4229 Reduce executable sizes by removing extra symbols
- GE-4288 Confusing message on h_rt or s_rt limit
- GE-4296 the unit of the io usage value is missing in qstat -j <job_id> output and not explained in the man page
- GE-4384 User lists do not handle space separated user names correctly
- GE-4404 Rounding error, when memory values are reported by execd
- GE-4641 jobs with high job_id may starve when job_id roll over happens when wait_time is not recognized in job priority calculation
- GE-4739 print unique thread names in messages file
- GE-4943 shepherd closes FDs, needed by AD authentication
- GE-5033 setting ENABLE_SUBMIT_LIB_PATH in qmaster_params has no effect for LD_PRELOAD env variable
- GE-5045 qlogin and qrsh without command does not inherit expected variables (e.g. TERM)
- GE-5074 sessionusers ACL not present after installation
- GE-5081 wrong reference to "MONITOR_TIME" in admin guide
- GE-5156 Non-existing paths for input and error files should be implicitly created
- GE-5289 add a note about the msvc redist dll to the installation guide
- GE-5332 DRMAA2 job template needs to support a native specification replacement
- GE-5340 hard coded timeout for PE ..._proc_args, prolog, epilog of 120 s not documented and changeable
- GE-5401 h_vmem kill done by execd even when cgroups is setup to handle this limit
- GE-5486 introduce per job profiling
- GE-5487 introduce performance improvement for -masterq switch
- GE-5536 requesting more than one tmpdir per job
- GE-5557 Add functionality to search primary and secondary groups when '0' used to specify group in Grid Engine
- GE-5587 allow the Cray XC load sensor to update the slots counter in the queue
- GE-5588 communication errors at first startup not logged into /tmp/execd_messages.<pid> file
- GE-5595 GetAdminUser() fails and is setting ADMINUSER to 'default'
- GE-5597 with accounting_summary=true, "wallclock" usage of PE jobs is wrong
- GE-5605 test and release qping.exe for win-x86
- GE-5624 Unix group entries in predefined userlist as well as manager or operator list are ignored
- GE-5625 CUDA and XEON PHI complex attribute installation fails
- GE-5637 jsv task job related params are not transferred for 1 task arrays
- GE-5638 Windows (win-x86) does not forward or collect the job exit code
- GE-5639 gid range observation not always un-blocking additional group ids
3 Fixes and Enhancements

GE-5641 user list man page should mention all predefined lists or list with a special meaning
GE-5643 qalter -w does not work for PE jobs with exclusive consumables
GE-5647 qconf -mu, -au, -du triggers crashes when RQS'es are configured
GE-5649 add an automated TS test for the error scenario
GE-5653 ulx-amd64 packages seem not to be built with HWLOC library
GE-5654 execd crashes on win-x86 when sending a job related admin mail
GE-5655 Qmaster get unresponsive after error "invalid task number 0"
GE-5656 qconf -ke does not completely cleanup execd information
GE-5663 setting host to unheard might block qmaster under certain conditions
GE-5664 array jobs can oversubscribe consumables with qalter -w
GE-5672 develop library to communicate with the Docker Remote API
GE-5673 job lost detection is logging strange error regarding granted resource list
GE-5674 qmaster crash can be trigger with qconf -mattr on an execd object.
GE-5678 implement load sensor that reports docker version and available images
GE-5679 add a "-xdv" switch to the submit clients to allow the user to specify directories to mount into a Docker container
GE-5680 forward information about the selected Docker image and the paths to mount to the shepherd
GE-5682 use Docker API to get online usage of a job
GE-5684 cleanup finished Docker containers after job ended
GE-5685 implement a coshepherd that is started in a Docker container to keep it alive and to run methods and the job
GE-5687 use Docker Remote API to run methods and job and signal container
GE-5689 fix support for foreign filedescriptors in commlib
GE-5690 quota "limit" value rendered as -2^31 for large limits
GE-5693 fix container stats acquisition via docker communication library
GE-5694 Designation of events in logs - many events are labeled as 'Errors', where perhaps they should be 'Warnings'.
GE-5703 non-admin user cannot trigger preemption of own jobs
GE-5718 lothread needs to send reservation information to License Orchestrator
GE-5722 preempted L0 job stays in "dr" state after qdel
GE-5723 qalter -p not transfered to L0
GE-5726 licence_constraints in UGE clusters are not updated
GE-5728 suspend/unsuspend endless loop for Preemption of jobs with the same priority
GE-5731 qmod -p is only allowed on admin-hosts
GE-5732 User should get a warning when preempting a higher prio job
GE-5734 execd dumps core when a large tightly integrated parallel job is submitted to that host
GE-5737 for Docker jobs, adjust paths in environment variables set by the container_coshepherd
GE-5740 fix libnuma dependency of shepherd to allow starting the coshepherd in the container
GE-5741 rework container start mechanism in shepherd
GE-5745 Add a man page containing all kind of error codes
GE-5746 give the docker containers meaningful names
3 Fixes and Enhancements

GE-5750 cleanup container creation struct
GE-5756 make the 'docker' and 'docker_images' complexes builtins
GE-5759 show statistics about request types in worker and reader request queues
GE-5760 add information about start and end (duration) of requests to the DEBUG log_level
GE-5763 improve per thread profiling
GE-5764 create a man page sge_diagnostics that summarizes and explains output of profiling/monitoring/logging/debug functionalities of UGE and LO
GE-5767 Add a means to limit the job script size
GE-5768 keep_active sends all files of a job regardless of the file size
GE-5770 add a means to switch on and off debug logging (DPRINTF) of sge_qmaster during runtime
GE-5775 improve logging in all Docker related components
GE-5779 improve error handling in communication with docker daemon
GE-5796 qmaster crashes with MONITOR_REQUEST_QUEUES=1
GE-5798 performance regression with RQS rules
GE-5803 enhance error logging of Windows (win-x86) qloadsensor.exe
GE-5807 enhance scheduler profiling to show information for RQS calculation
GE-5813 On Windows (win-x86), the execd cannot send the first CR to the qloadsensor.exe, causing it to never send load
GE-5814 On Windows (win-x86), the execd logs a misleading warning about load sensors at startup time
GE-5816 commlib external file descriptor support not thread save
GE-5817 Docker jobs fail if the mount points of the binds are not unique
GE-5818 resource quota cleanup for profiling
GE-5825 improve qdel performance for bulk job deletions
GE-5829 Docker jobs fail to start on some Linuxes because MemorySwappiness cannot be set
GE-5845 possible race condition in event master at event client registration or total update
GE-5858 job_load_adjustments may prevent any job dispatching in scheduler run after parallel job was scheduled
GE-5860 communication specific enhancements for profiling and startup behavior
GE-5865 keep_active option does not copy all job related files into faulty job directory
GE-5870 confirm Windows 10 Pro/Enterprise support and add it to list of supported OS
GE-5876 where and what data structures are not used to prepare data for event clients
GE-5878 inplace upgrade with postgres spooling breaks the upgrade script (inst_sge -upd)
GE-5880 profiling shows zero value for utilization in some scheduler profiling lines
GE-5892 RQS limits with Job Classes do not work when max_reservation > 0
GE-5894 cluster queues are rejected due to missing project even if job has a project request
GE-5895 hosts or qinstances are skipped by dispatch algorithm in
3.2.2 Univa Grid Engine 8.5.0alpha1 (also fixed for a 8.4 patch release)

GE-3146 resource reservation is broken with SGE calendar
GE-3227 AR shouldn't be scheduled to already disabled queues at time of submission
GE-4158 Some of the job class attributes are incorrect in man page and users guide
GE-4293 qsub -w e -l exclusive=true rejects job, even if the request is valid
GE-4425 SGE_LONG_QNAMES=-1 lead to qstat segfault
GE-4497 PE job is not scheduled when a non-requestable consumable is setup in global host
GE-4603 Job <jid> cannot run in PE <pe_name> because it only offers 0 slots
GE-4672 default_jc and enforce_jc are not documented in the man page
GE-4908 native Windows (win-x86) UGE binaries can't find the SGE_ROOT directory if it is the root directory of a share
GE-5129 regular "ckpt_command" in CKPT interface not executed
GE-5135 user has to login at least one time on each native Windows (win-x86) exec host to get the PROFILE created
GE-5345 UGE to auto resolve host_aliases
GE-5492 cuda loadssensor bash script compatibility issue
GE-5509 host_aliases not working for resource hostname OR request
GE-5510 host_aliases not working for qconf -purge request
GE-5524 newline in job submission breaks reporting/accounting lines and qstat -j
GE-5528 hostname resolving changes should trigger update of all affected data objects at qmaster/execd daemon startup
GE-5547 The install_cuda_complexes.sh doesn't handle '\n' correctly
GE-5577 Server side JSV parameters l_hard, l_soft and masterl contains job class access specifier
GE-5579 Cray XC integration needs to support multiple Crays in a cluster out-of-the box
GE-5589 changes to host_aliases file should be updated when hosts are re-resolved
GE-5604 install_cuda_complexes.sh produces invalid complex
GE-5635 multiple occurrences of same resource in RSMAP is not working
GE-5667 describe in win-x86 installer and documentation that the UGE Starter Service doesn't work with mounted network directories
GE-5670 integration of Docker into UGE
GE-5675 Fully integrate Univa Grid Engine with systemd
GE-5692 enhance sge_container_shepherd to handle stdin/stdout/stderr stream to allow interactive and parallel jobs
GE-5710 changed host aliases can trigger qmaster abort() at startup
GE-5712 need concurrent array jobs where either all tasks run concurrently or no task at all
GE-5714 unbelievable high ru_wallclock values in accounting
GE-5717 basic environment check during startup of Grid Engine daemons
GE-5739 qmaster installation script does not add admin host if its hostname cannot be resolved (error message unclear)
GE-5747 sharetree might be wrong if host clock changes
GE-5758 possible segmentation fault in commlib when static clients try do reconnect
GE-5774 enable execution of tasks of parallel jobs in Docker containers
GE-5776 bind lists of UGE directories properly into the Docker container
GE-5800 update openssl library to current version 1.0.2
GE-5813 exec host goes into unknown (u) state when the system time is set to an earlier time
GE-5821 reported wallclock time is too low when the system time is set to an earlier time
GE-5792 docker jobs are reported as failed on execd restart
GE-5795 exit dispatching loop immediately when shutdown of scheduler thread is triggered
GE-5821 remove basic Docker integration that uses load sensor and starter_method when real Docker integration works
GE-5834 bad performance of RQS rules on host groups
GE-5849 new masterl switch s_rss limit setting is enforced for slave
3 Fixes and Enhancements

tasks
GE-5877 max_aj_instances and -tc submit option are not respected with enrolled tasks
GE-5879 when max_aj_instances is set to 0 (unlimited) the submit option -tc does no longer have effect
GE-5901 allow Docker containers to automatically start the application configured in the Docker image
GE-5913 On native Windows (win-x86), improve error logging of wl_connect_to_service() function and subfunctions
GE-5920 not all functions retrieving passwd information do resize used buffer if it turns out that it is too small
GE-5935 header of HTTP response from Docker daemon > 1.9 not handled properly
GE-5955 host_aliases not working for sge_shadowd
GE-5962 the Docker daemon doesn't download an image when its not available locally
GE-5989 jobs are not started in Docker containers if the job user has insufficient permissions to write docker specific files
GE-5991 host names used for host_aliases should be handled case insensitive
GE-5994 sge_qmaster startup fails with critical "setup failed" logging message
GE-5995 job is executed even if prolog fails
GE-6022 native Windows (win-x86) execution daemon installer unnecessarily needs sgepasswd file
GE-6023 native Windows (win-x86) submit clients need private keys of sgepasswd file
GE-6028 User/group management done via Windows Active Domain might break UGE
GE-6036 job loss on exed restart after host_aliases changes
GE-6039 clients report "failed to extract authentication information" error
GE-6042 Scheduling run might take longer than with previous versions of UGE
GE-6045 on native Windows (win-x86), the win_getpwnam_r() always tries to load the user profile, even if called with insufficient permissions
GE-6046 infinite loop writing to trace file in docker container
GE-6049 default job class is not used correctly
GE-6056 Cray XC integration needs to set unlimited timeout for epilog for newer UGE version
GE-6059 job gets rescheduled when epilog gets a SIGABRT signal
GE-6064 on native Windows (win-x86), error handling of (Un)LoadUserProfile() overwrites real error message
GE-6067 adding a queue with calendar generates error messages and no jobs will be scheduled into this queue
GE-6068 Interactive Docker jobs fail because sge_container_shepherd doesn't have the permission to "write the shepherd_about_to_exit" file
GE-6073 qsub does not support multiple use of "-binding" or "-t" parameters
GE-6076 on native Windows (win-x86), all job spool directories are deleted when the first job on an execution host finishes
GE-6087 error message complains about missing Qmaster port when Execd port is missing
GE-6095 log job verification time exceeding a certain threshold
GE-6098 RC script fails to install when the OS is using LSB
GE-6099 RC script not being uninstalled when update-rc.d is used as RCFILE
GE-6100 the name of the named pipe between UGE Job Starter Service and

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3 Fixes and Enhancements

SGE_Starter.exe is not always unique
GE-6109
dbwriter log is showing invalid integer value for a_ioops field
GE-6112
ar_attr and ar_log records in reporting have incorrect record time
GE-6113
the SGE_Starter on win-x86 logs always, even if /log was not specified
GE-6117
dbwriter / arcodb - error parsing the reporting file using MySQL backend
GE-6118
the UGE Job Starter service on native Windows (win-x86) sometimes crashes when starting qrsh with command jobs
GE-6126
submitting a docker autostart job fails if no job name is given
GE-6148
uge_js_service.exe crashes on native Windows (win-x86) if the slave task of a tightly integrated parallel job finishes
GE-6149
it is not possible to submit the slave task of a tightly parallel job from native Windows (win-x86)
GE-6156
execd crashes when a docker job is submitted, requesting memory resources
GE-6163
errors for sge_mirror_process_events() result in scheduler inactivity until it times out after 600 seconds
GE-6173
Description of certain states for qstat -s is missing in help output and man page
GE-6181
automated install still using systemd initscript even when it is turned off in the config file
GE-6185
job start fails when Docker daemon is busy
GE-6186
the sge_container_shepherd fails to distinguish between yet unhandled IJS control messages and container related messages
GE-6188
Windows (win-x86) interactive uninstaller should default to remove the services
GE-6193
mirror interface reports unexpected error "callback function ("callback_default") for event MOD QUEUE INSTANCE failed
GE-6195
startup scripts are being installed during the automated install even if ADD_TO_RC=false
GE-6200
child shepherd of builtin interactive job waits infinitely for mutex in shepherd_trace()
GE-6203
communication to Docker daemons built with Go (golang) > 1.6 does not work
GE-6211
the provided Docker container name is overwritten by automatically generated one
GE-6219
missing 110n for INFO message plus wrong newline character at the end of message
GE-6262
broken sge_usleep() could cause very long sleeps
GE-6168
sgepasswd issues

3.2.3 Univa Grid Engine 8.5.0alpha1

GE-575
Parallel jobs exceeding wall clock time are not killed
GE-3909
job submitted with user not on every execd node is stuck in zombie state
GE-4991
loading dynamic libraries fails if uid != euid
GE-5317
remove "verify_suitable_queues" from qstat -j output

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GE-5505  Job that is restarted and that was in certain error states previously stays in t-state
GE-5540  GE-5949 drmaa does not provide the submit_cmd line
GE-5560  Java Binding for DRMAA2
GE-5583  enhance RSMAP so that necessity of OR requests in command line can be avoided
GE-5600  Windows (win-x86) queue instance is set to error state if job can't be executed
GE-5608  Atomically Delete Jobs by State
GE-5648  cleanup and speed-up execd job start when using additional group ids
GE-5651  Unify behavior of UGE calls that trigger library functions depending on directory services (NIS, LDAP, Active Directory, ...)
GE-5657  Enhance RSMAP so that only elements / instances with the same name within a RSMAP are chosen.
GE-5658  Enhance RSMAP so that instances can be requested via REGEX
GE-5659  Allowing to configure RSMAP that the above OR is restricted only to one type.
GE-5660  Allow shortcut for RSMAP definition
GE-5661  Allow load sensor to restrict RSMAP
GE-5668  Posix priority 0 not anymore scaled to 0.5
GE-5696  add xd switch to job classes
GE-5721  improve and reduce qhold/qrls messages and logging
GE-5855  skip pending read-only requests where clients are already gone
GE-5856  replace 'old' execd reports in the list of pending worker requests
GE-5875  functionality missing that allows to filter thread specific debug output of components
GE-5899  AR accepts jobs after cleanup of running jobs before end of AR
GE-5957  jobs submitted with qsub -sync are not killed when Ctrl+C is pressed
GE-5985  sharetree algorithm should consider slots, not jobs
GE-6015  It takes 2 load_reports_intervals to get load_values when a new load_sensor is setup
GE-6054  docker jobs started with qrsh have incorrect environment (SGE_ROOT, ...)
GE-6075  Improved scheduler performance due to CULL performance improvement of all lGet/lSet functions
GE-6088  make sure AR and SR are correctly written to the reporting file
GE-6096  improve and reduce qdel messages/logging
GE-6110  Reduce communication overhead by optimizing communication layer
GE-6120  sge_execd reports "can't resolve hostname ",_sge_pseudo_host" in messages file
GE-6128  update openssl to 1.0.2j
GE-6134  qmaster receives empty report lists that qmaster tries to process.
GE-6136  Lock handling done in qmaster for reports send by execd might cause slowdown of qmaster
GE-6138  Reports from execd's are always send in groups. Qmaster uses the same lock for all.
GE-6139  Introduce possibility to set job report flush time @ execd
3 Fixes and Enhancements

GE-6142  All read-only-requests from execd’s will be executed by worker threads
GE-6162  qmaster crashes at startup when a SR with a multi time calendar is spooled
GE-6169  Improve performance of packing operations and reduce size of objects within packbuffers
GE-6232  reporting of job end is delayed up to one second in sge_execd
GE-6241  update jemalloc to version 4.3.1
GE-6242  reduce the number of events subscribed by scheduler
GE-6250  speed up delivery of scheduler job start orders
GE-6266  -clearp switch not available for xd-attribute of job
GE-6267  -mods does not work correctly with rou-attribute
GE-6268  rou-attribute of JC is not tagged as list attribute in man page
GE-6269  XML output might be incorrect for JB_mail_list depending on the API or submit client that was used to submit the jobs
GE-6153  use stronger cipher for CSP mode communication and sgepasswd file encryption

3.2.4 Univa Grid Engine 8.5.0alpha2

GE-3060  in order to connect through a firewall, qrsh/qlogin should use only specified port numbers
GE-3341  pe_min value is not correct in JSV if multiple slots ranges are requested
GE-3928  Document and/or change default shell for qsub ’-b y’
GE-5631  -mods/-clears does not work for masterl
GE-5632  -adds/-mods/-clears for "masterl" not described in qsub man page
GE-5906  possible endless loop in test_drmaa2 -> test_job_wait_all
GE-5980  getInfo() does always return a null
GE-5997  allow to specify placeholders for Scheduler selected values in the argument list to the -xd option
GE-6000  Have UGE documentation available in HTML format.
GE-6026  Documentation for job name starting with a digit needs to be corrected
GE-6027  scheduler thread repeats logging of cluster configuration
GE-6131  update postgres library to version 9.6
GE-6145  qsub client crashes with specific sge_request file
GE-6153  use stronger cipher for CSP mode communication and sgepasswd file encryption
GE-6154  Configuration API needs to be part of the regular package build
GE-6164  qmaster, execd and scheduler params should be in upper case letters in man page and documentation
GE-6165  log a warning when qmaster reads unknown cluster config parameters
GE-6166  log a warning when qmaster and execd read unknown *_params
GE-6168  sgepasswd issues
GE-6170  qsub_time is set to a time at year 1970, in case of job error
GE-6192  reduce spoiling operations for a job lifecycle
GE-6251  Rest and Config API should also support ’port_range’ parameter
GE-6283  switch and argument in xd attribute of job classes cannot be delimited by space although this is possible at command line in qsub
GE-6289  load sensor script triggered endlessly (independent from the configured load report interval)
Fixes and Enhancements

GE-6291 scheduler profiling does not show time spend for updating event master settings
GE-6314 JC variant output for xd attribute missing
GE-6317 resource bookkeeping is broken, scheduler stops dispatching large parallel jobs, qmaster getting overloaded
GE-6323 Scheduler tries to find a master_queue for not schedulable job even if there is no master queue request
GE-6329 changing a resource with qalter -mods fails if mem_free is part of the requested resources in the qsub command
GE-6331 docker autostart jobs run through but exit_status is 1 and start/end time missing
GE-6336 incorrect hostname resolving for qsub -q parameter
GE-6337 transient builtin load values are spooled
GE-6358 sge_execd might crash on AIX
GE-6341 Config API should also support new job class ‘xd’ parameter
GE-6345 build sol-sparc64 packages on Solaris 10 instead of Solaris 9
GE-6352 qalter displays success message even if modification is not allowed due to job class
GE-6353 shepherd crashes on MacOS and possibly other OS after job finishes
GE-6357 FQDN Hostnames are limited to 63 Characters
GE-6359 remove obsolete load sensor scripts
UWSA-177 automatic installation is broken -> missing SGE_CELL setting
UWSA-179 Document should mention exact file name for adjusting logging
UWSA-183 UGERest Api crashes when masterl switch is used

3.2.5 Univa Grid Engine 8.5.0beta1

GE-4876 make the native Windows PDC report IO and memory values
GE-4956 qmon about box contains incorrect copyright information
GE-4967 general documentation and man pages typos and issues
GE-5721 improve and reduce qhold/qrls messages and logging
GE-5999 Preempted jobs stay in P-state
GE-6107 add information about not properly started Docker daemon to AdminGuide
GE-6316 rework parts of the UGE documentation
GE-6332 docker containers are not always removed after job end
GE-6354 Improve qalter message logging
GE-6372 possible execd crash in Docker job handling
GE-6374 job start fails with Docker 1.13.0
GE-6375 job lost detection might cause severe problems in qmaster
GE-6376 for Docker jobs, a wrong mem online and accounting usage value is reported
GE-6381 possible handshake problems with external load sensors
GE-6382 AAPRE cplx column is not set correctly in qmon complex dialog
GE-6383 qmon crash when job is suspended
GE-6387 qtcsh does not provide an error message when command should be executed on remote host but SGE_ROOT is not set
GE-6388 unexpected CRITICAL ERROR logging in qmaster messages file
3.2.6 Univa Grid Engine 8.5.0 FCS

GE-4170  
- help for ./inst_sge -upd
GE-4514  
Spooledit can create strange 'CONFIG:CONFIG:global' entry
GE-4699  
one cannot create CSP credentials for a user 'a', if a user 'ab' already exists
GE-5502  
modularize install and upgrade scripts
GE-5804  
far too much usage data spooled in user objects
GE-6013  
Enhance host_aliases man page and admin guide
GE-6026  
Documentation for job name starting with a digit needs to be corrected
GE-6216  
fix memory leaks in native Windows (win-x86) execution daemon
GE-6289  
load sensor script triggered endlessly (independent from the configured load report interval)
GE-6291  
scheduler profiling does not show time spend for updating event master settings
GE-6336  
incorrect hostname resolving for qsub -q parameter
GE-6341  
Config API should also support new job class 'xd' parameter
GE-6357  
FQDN Hostnames are limited to 63 Characters
GE-6362  
fix memory leaks and access issues in 8.5.0
GE-6384  
ARs oversubscribe queue slots
GE-6399  
shutdown of execd in early startup phase might take long
GE-6398  
jobs running in Docker containers write files with wrong group ownership
GE-6399  
if the version comparison in the upgrade script doesn't find the given version, upgrading should be stopped
GE-6400  
invalid load and memory usage reported by execd during install
GE-6401  
qmon Modify queue dialog fails with 'no default value for slots'
GE-6405  
qmon Clone queue dialog fails with "Multiple values for one queue domain/host..."
GE-6409  
autostarting Docker job cause the shepherd to use 100% CPU for many seconds at job end
GE-6411  
Jobs sometimes don't get a reservation when using RQS
UWSA-184  
Expose the 'qmod -p' preemption functionality in the REST API

3.2.7 Univa Grid Engine 8.5.1

GE-4305  
Better documentation for basic share tree use case
GE-4389  
enhance qsub man page with JSV modification examples for core binding
GE-5650  
with allocation rule $fill_up, slave resource requests are not obeyed when master resource and queue requests are provided
GE-5806  
parallel jobs might not startup due to wrong RQS calculations
GE-5941  
renewing certificates makes sgepasswd file unreadable
GE-6020  allow native Windows (win-x86) functions to retry to logon
users several times
GE-6103  jobs are bound to cores even if no binding is requested
GE-6183  sge_shepherd sets limits too high for master task
GE-6237  jobs are being restarted even if the '-r no' was specified
during submission
GE-6402  Scheduler might not respect RQS limits during the time RQS
rules are changed
GE-6407  add documentation for config-api
GE-6413  shepherd does not handle all error responses to a pull Docker
image request
GE-6434  incomplete binding requests shown in qstat for long lists of
binding requests
GE-6462  on native Windows (win-x86), environment variable values
containing an equal sign are truncated
GE-6467  installer fails to restart qmaster when upgrading and using
SYSTEMD
GE-6478  Very long load value of loadsensor causes segfault of execd
GE-6480  wrong/missing error messages and wrong exit status when
initializing invalid RSMAP ranges
GE-6489  using of external loadsensors might deadlock execution daemon
GE-6490  load sensor specific errors are not logged into execd messages
file
GE-6493  RSMAP map entry selection request does not work
GE-6510  Core binding: striding-strategy counts needed cores wrong and
rejects viable hosts
GE-6511  gdi_request_limits does not behave as documented
GE-6521  Qmaster crashes with L0 enabled and job dependencies
GE-6534  sge_execd crash with core dump with GPGPU jobs
GE-6537  Submitting RSMAP-range jobs via -adds is broken
GE-6553  RQS limits incorrectly applied when PE job submitted with
"-l h=<host>"
GE-6573  reduce resulting qhost client requested data sizes transferred
via network
GE-6575  stree-edit utility broken
GE-6583  scheduler is wrongly skipping hosts or queue instances for
parallel jobs that are using master task specific requests
GE-6587  abort of sge_qmaster if a JC where V is set to yes is used to
create a job
UWSA-81  Add support for listening only on localhost
UWSA-186  requested jobEnvironment is not shown in jobs
UWSA-188  jobEnvironment ugeresstdk contains error in json converter
UWSA-189  ugerest is showing same scheduler conf twice
UWSA-190  upgrade of restlet-jse-2.3.6 to restlet-jse-2.3.10

3.2.8 Univa Grid Engine 8.5.2

GE-5569  native Windows (win-x86) sge_execd exits if it cannot access
3 Fixes and Enhancements

the act_qmaster file
GE-6454 improve documentation of Docker integration
GE-6236 accounting file broken on Solaris if accounting line has 1023 characters
GE-6615 enhance error logging if load sensor cannot be started
GE-6618 native Windows (win-x86) execution daemon crashes if qloadsensor does not work
GE-6620 error messages from qloadsensor.exe (win-x86) are not forwarded to the execd messages file
GE-6623 add the UGE admin user to the Performance Monitor Users group on native Windows 10 (win-x86)
GE-6629 qhost NSOC and NCOR incorrect on lx-arm64
GE-6637 using hostgroups in rqs limit definition can trigger short qmaster hang at startup or rqs modify request
GE-6640 qloadsensor.exe report "no error" if an error occurs while initializing the PDH service
GE-6644 any epilog SIGSEGVs and sets queue in error state with execed_params INHERIT_ENV=false
GE-6660 Requesting a RSMAP without ID can crash qmaster

3.2.9 Univa Grid Engine 8.5.3

GE-3721 qstat -j "*" -u "user1" is not working
GE-5290 qstat (-xml) does not accept filter switches when -j "*" is specified
GE-6432 qdel -u "*" is only allowed to managers, not to operators
GE-6483 document placeholders in Docker requests in the UserGuide and man pages
GE-6497 support halftime -1 setting in scheduler config to disable past usage for sharetree
GE-6568 Allow for forced job deletion through UGE REST
GE-6578 Duplicate calendar entries associated with host_aliases
GE-6595 Docker interactive job can't be deleted by qdel
GE-6617 provide workaround in native Windows (win-x86) sgeexecd.bat script for start /b bug on Windows 10, version 10.0.15063
GE-6644 When host aliases are configured qsub -sync y reports "commlib info: successfully updated host aliases (add: 0, del: 0)"
The global configuration parameter "gdi_request_limits" not working for aliased hostnames
GE-6670 sudo requests for same user as ugerest service user are rejected
GE-6678 Improve accept() handling in commlib
GE-6682 exec host cannot startup if no admin or submit host
GE-6687 RSMAP-topology-masks jobs and -binding jobs result in wrong scheduling decisions
GE-6695 qrstat does not output cal_depth and cal_jmp information for standing reservations
GE-6696 save_sge_config.sh needs to dump advance/standing reservations for upgrade to newer versions

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3 Fixes and Enhancements

GE-6697 qstat -j "*" does not support "$user" placeholder set in sge_qstat request file
GE-6706 unexpected logging and possibly incorrect accounting if multiple array tasks of a job are running on a host

3.2.10 Univa Grid Engine 8.5.4

GE-5835 long scheduling times with wildcard PEs and resource reservation
GE-5848 allow to use UGE cgroups in Docker jobs
GE-6356 drmaa2_j_get_info does not provide full job information -> not all fields are filled
GE-6709 huge virtual memory requirements with test DRMAA1 application
GE-6713 shadowd on Solaris cannot start sge_qmaster
GE-6728 sched_conf.5 man page is inaccurate regarding the PREFER_SOFT_REQUESTS scheduler param
GE-6734 wrong scheduler info messages shown for jobs
GE-6739 Parallel job requesting pe range not scheduled even if resources available
GE-6741 jobs submitted into AR with RSMAP resources are not scheduled
GE-6744 qstat does not output queue request (-q) and immediate request (-now y)
GE-6754 Adding new session (qconf -asi) not working on admin only host
GE-6755 save_sge_config.sh does not dump all advance/standing reservations
GE-6764 very long dispatching time due to RQS rule result in scheduler timeout
GE-6771 qsub -sync stops immediately on native Windows (win-x86)
GE-6777 huge erroneous reader thread logging at calendar state transition
GE-6782 qstat -njd is not working as documented in the man page
GE-6783 Supplementary groups in manager and operator lists are ignored during access validation for job deletions.
GE-6786 false logging for 'qmaster_params': 'gdi_timeout', 'gdi_retries' and 'gdi_ping'
GE-6787 qmaster and execd logging "invalid value (33026) for ar->op"
GE-6788 qmaster logging about receiving older load report
GE-6796 Calendar modification/state transition might cause repeated timed calendar events for up to one second.
GE-6799 unexpected logging messages in sge_qmaster messages file
GE-6812 started docker job at execd may result in sge_shepherd process eating up all memory
GE-6814 removing non "lo_*" complex entry triggers error logging of lothread
GE-6818 error logging: getgrgid(...) failed: Numerical result out of range
UWSA-193 additional job usage values for execd_params ENABLE_MEM_DETAILS=1 are missing
4 Upgrade Notes

4.1 Upgrade Requirements

This is a summary of the Upgrade Matrix that describes how you can carry out the transition from Sun or Oracle Grid Engine 6.2uX, Univa Grid Engine 8.X.X to Univa Grid Engine 8.5 when you are currently using classic, BDB local spooling or PostgreSQL spooling. If the current version of Grid Engine you are using is missing in the overview, then please look at the full Upgrade Matrix located in the section Updating Univa Grid Engine in the Installation Guide.

<table>
<thead>
<tr>
<th>Version</th>
<th>Upgrade Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univa Grid Engine 8.X.X</td>
<td>Backup/Restore</td>
</tr>
<tr>
<td>Oracle Grid Engine 6.2u6-6.2u8</td>
<td>Backup/Restore</td>
</tr>
<tr>
<td>Sun Grid Engine 6.2u5</td>
<td>Backup/Restore</td>
</tr>
<tr>
<td>Sun Grid Engine 6.2u1-6.2u4</td>
<td>Upgrade to SGE 6.2u5 and then Backup/Restore</td>
</tr>
<tr>
<td>Sun Grid Engine 6.2 FCS</td>
<td>Upgrade to SGE 6.2u5 and then Backup/Restore</td>
</tr>
</tbody>
</table>

Table 4: Upgrading from SGE, OGE, UGE 8.X.X to Univa Grid Engine 8.5.X
5 Compatibility Notes

5.1 Changes in Output Format of Commands

The output format of some commands has been changed:

- 'qstat -xml' output for jobs did sometimes show the mail recipient in the XML node "JB_mail_list/element/MR_user" or "JB_mail_list/mail_list/MR_user" of jobs depending on the used submit interface or submit client. Beginning with Univa Grid Engine 8.5.4 it will always be: "JB_mail_list/element/MR_user". (see GE-6269)
- 'qstat -j' output showed an Univa Grid Engine internally used parameter with the name 'verify_suitable_queues'. This line of output is not shown anymore beginning with Univa Grid Engine 8.5.4 (see GE-5317)
- 'qstat -j' might show additional online usage values compared to previous versions of UGE. Depending on the architecture of the underlying execution node of a job following values might be reported additionally in the 'usage' line: ioops (number of io operations), iow (io waiting time). (see GE-4296)
- If resource requests of jobs contained newline-characters then they were also shown in the 'qstat -j' output. This issue has been resolved. (see GE-5524)
5.2 Changes in Windows execution host sgepasswd file

The encryption algorithm for the “$SGE_ROOT/$SGE_CELL/common/sgepasswd” file passwords has been changed from RC4 to AES-256-CBC:

If you upgrade to Univa Grid Engine 8.5.4 you need to convert your existing sgepasswd file during the upgrade procedure.

Become superuser and execute the following command on the master machine:

```
# sgepasswd -c
```

This will create a backup of your original ‘sgepasswd’ file as ‘sgepasswd.old_algorithm_backup’ and create the new compatible sgepasswd file. Otherwise encryption related error messages might show up.

If you create a new sgepasswd file from scratch no additional steps compared to previous versions are required.
5.3 Deprecated Functionality

Following components/features are deprecated and will be removed with version 8.6.0 of Univa Grid Engine:

- Graphical Installer
- qtcsh
6 Known Issues and Limitations

6.1 setting halftime to -1 (GE-6497) not supported in qmon

It is recommended to use the qconf command line client.