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2 License

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Rev: 03/09/2011

3 Fixes and Enhancements

3.1 Summary

ⓘ Note
New library dependency on Linux 64bit (lx-amd64) execution hosts! Please double-check before installing the new version if libnuma is installed. The library usually is delivered often with the numactl package. Please try $SGE_ROOT/utilbin/lx-amd64/loadcheck -cb before doing the installation!

Univa Grid Engine v8.0.1 is intended as a drop-in replacement to Sun Grid Engine 8.0.0. It is also an upgrade target from earlier versions of Sun Grid Engine 6.2 and later as well as an upgrade target from Oracle Grid Engine 6.2u6 and 6.2u7. There are currently four patches to Univa Grid Engine v8.0.1, with the latest patch applied the version string is "UGE 8.0.1p4".

Univa Grid Engine v8.0.1 support is available from http://univa.com/products/grid-engine.php

Here is a summary of things that have changed since version 8.0.0

- JSV extensions
- New library for core binding on lx-amd64 (HWLOC instead of PLPA)
- New CUDA load sensor

3.2 JSV Extensions

Univa Grid Engine 8.0.1 provides several JSV extensions. Within JSV scripts following new parameters are available:

New JSV Parameters

Name	Description
UNIVA_EXTENSIONS	The JSV parameter named `UNIVA_EXTENSIONS` is available in Univa Grid Engine 8.0.1 and above. This read-only parameter can be used in client and server JSV scripts to detect if a certain set of JSV parameters can be accessed. If this parameter is not available or when it is set to `n` then these extensions to JSV are missing. In this case it is not possible to access following parameters: `pty`, `sync`, `terse`, `V` and `SUBMIT_HOST`
sync	When a command line application is used with the `-sync` command-line switch then within client and server JSV the parameters with the name `sync` will be available and it will be set to `y`. The `sync` parameter is a read-only parameter in JSV. This means that it is not possible to influence the behavior of the command line client by modifying this parameter in JSV.
terse	When a command line application is used with the `-terse` switch then the parameter named `terse` will be available in client and

	server JSV scripts and it will be set to `y`. If this parameters is set to `n` then the submit client will print the regular "Your job ..." message instead of the job ID. The parameter value can be changed within JSV scripts.
pty	The `-pty` switch of `qrsh` and `qsh` enforces the submitted job to be started in a pseudo terminal. This information will be exported to client and server JSV scripts with the parameter named `pty`. If the command line switch is omitted then then this parameters has the valiue `u` which means *unset*. Client application and executed job will use the default behavior. `y` means that the use of a pseudo terminal is enforced and `n` that no pseudo terminal will be used. This parameters can be changed in JSV scripts. This change will influence the client application and the executed job as if the corresponding command line switch would have been used direclty.
SUBMIT_HOST	Within server JSV's the read-only parameter `SUBMIT_HOST` is available. This parameter contains the hostname where the submit application is executed.
V	The `V` parameter will be available in client and server JSV scripts and it will have the value `y` when the `-V` command line switch was used during the submission of a job. This indicates that the full set of environment variables that where set in the submission environment can be accessed from JSV. If this parameter is not available or when it is set to `n` then only a subset of the user environment can be accessed in JSV scripts. Only those environment variables will be available that were passed with the `-v` command line parameter.

3.3 New Core Binding Library

On Linux AMD64 (lx-amd64) architecture the library for performing the actual core binding changed from PLPA to HWLOC. The job binding itself didn't change, but for the new library additional system library symbols are needed. It could be necessary to install the `libnuma` library separately depending on your Linux distribution (e.g. on Ubuntu the package `numactl` must be installed).

On Linux x86 (lx-x86) the PLPA library is still used because `libnuma` is not available on all distributions (e.g. OpenSuSE 32-bit). Nothing is changed for the remaining architectures (Solaris still uses processor sets).

The output of the `utilbin/loadcheck -cb` command line tool is changed in a way that is now shows the compiled in binding library (HWLOC/PLPA). In case of HWLOC additional checks for the binding functionality are done.

Please check on all lx-amd64 execution hosts if `libnuma` is available by performing `loadcheck -cb` before doing an installation or an hot upgrade.

3.4 New CUDA load sensor

A new CUDA load sensor is shipped with this version. The load sensor can be found in the `util/resource/loadsensors` directory (`cuda_load_sensor.c` as C file and as pre-build binary (based on cuda libraries 4.0.17) for the lx-amd64 architecture (in the `jobs/bin/lx-amd64/` directory.). Please consult the documentation (Special Activities/Using the CUDA load sensor) for any details.

3.5 Full List of Fixes and Enhancements

- [GE-114] - Two new cluster configuration parameters (max_aj_instances, max_aj_tasks)
- [GE-178] - New cluster configuration parameter 'max_jobs'
- [GE-601] - queue_conf(5) incomplete for owner_list description
- [GE-615] - Admin doc has to reflect changes of the complex matching
- [GE-691] - missing documentation concerning HGRPs and CQs
- [GE-1202] - Need a means to find out jobs submission hosts
- [GE-1577] - sge_conf man page error
- [GE-1592] - commlib: replace cl_bool_t by the sge bool type
- [GE-2143] - va_end call missing after some va_start/va_copy calls
- [GE-2360] - sge_conf sentence for execd_params in wrong location
- [GE-2379] - manpage of qconf uses 'fname' and 'file, all should be 'fname'
- [GE-2765] - $SGE_CWD_PATH not mentioned in qsub's manpage
- [GE-2766] - man qsub uses GE_* instead of SGE_* for defined variables
- [GE-2783] - Enhance shutdown behaviour of new IJS when client is stopped with CTRL + C or killed with SIGKILL
- [GE-2820] - man accounting has wrong indention for 'priority'
- [GE-2841] - submit(1) man page reports that qrsh does not support -display option
- [GE-3112] - uninitialized memory due to incorrect use of memset
- [GE-3132] - Job validation behaviour changed since 6.0 / 6.1
- [GE-3148] - jobs do not always go to the least loaded host
- [GE-3190] - qrsh hostname: commlib error on linux
- [GE-3243] - SGE 6.2u5 - Man page for qconf -Arqs is formatted incorrectly.
- [GE-3252] - Wrong coding in qstat manpage
- [GE-3259] - Manpage of qstat and qhost still lists Transfer queues
- [GE-3274] - man qsub doesn't mention [command_args] for job scripts
- [GE-3275] - entry ENABLE_BINDING at wrong location in `man sge_conf`
- [GE-3277] - SGE_BINDING missing at the end of `man qsub`
- [GE-3287] - References to REQNAME shoud be removed
- [GE-3294] - Wrong header for sge_ckpt.1
- [GE-3299] - On Windows Vista Enterprise, sgeexecd can fail to start up at boot time
- [GE-3302] - net continue SGE_Helper_Service.exe STOPS the service
- [GE-3304] - no accounting information for Windows GUI jobs
- [GE-3336] - qmon has segmentation fault when changing Job Script in submit dialogue
- [GE-3350] - adjust default paths in aimk.site, build.properties, distinst.site
- [GE-3364] - evaluate / fix / improve the spooling performance tests
- [GE-3375] - remove service tags from installation

- [GE-3390] - qrsh does not forward necessary environment variables
- [GE-3427] - qlogin and qsh jobs cannot be deleted after upgrade from 6.2u5 to 8.0.0
- [GE-3428] - Long running qrsh jobs fail when master is upgraded.
- [GE-3438] - exchange qmon icons with icons from opengridscheduler project
- [GE-3444] - need better os version handling on aix for arch and ibm-loadsensor
- [GE-3449] - error messages generated during scheduler order processing are duplicated
- [GE-3464] - use absolute pathnames for dynamically opening openssl-libraries instead of just the lib-name
- [GE-3465] - topology string is wrong on AMD magny-course architecture
- [GE-3467] - try to detect location of libc.so.6 on Linux in arch script
- [GE-3468] - workaround optimizer bug of Sun Studio 9 on Solaris Sparc 64
- [GE-3469] - add -version option to all binaries
- [GE-3470] - error messages when sourcing settings file or starting sgemaster/sgeexecd on Ubuntu
- [GE-3471] - man page sge_conf.5, execd_params, section ENABLE_BINDING is within section PDC_INTERVAL
- [GE-3472] - output file of "qsub -pty" belongs to UGE admin user (local Administrator on Interix) instead of the job user
- [GE-3473] - output file of "qsub -pty" belongs to UGE admin user (local Administrator on Interix) instead of the job user
- [GE-3474] - PDC_INTERVAL=NEVER does not work
- [GE-3475] - Typos in interactive installation
- [GE-3479] - parallel jobs are not dispatched to the least loaded host
- [GE-3481] - clone upgrade might fail if master host is referenced in host_aliases file.
- [GE-3482] - job start time is not available in qstat -j -xml output
- [GE-3490] - junit tests are broken
- [GE-3497] - mark reporting_params log_consumables as deprecated in the man page sge_conf.5
- [GE-3499] - qconf man page references non-existent ge_conf(5) man page
- [GE-3503] - on Windows, the loadcheck.exe binary output misses a line break
- [GE-3505] - fstype binary doesn't detect NFS4 on Linux if the mountpoint is deeper than one directory or if the name of the mountpoint is e.g. "/sge2"
- [GE-3508] - JSV should also support -sync switch
- [GE-3510] - cannot build with aimk -gcc option on aix51
- [GE-3511] - gdi_retries option is not used for qrsh -inherit
- [GE-3512] - gdi_retries option shall also have effect on sending gdi requests
- [GE-3514] - Pass data as part of GDI return value
- [GE-3515] - Provide sync/terse/pty-parameter in JSV
- [GE-3575] - qmaster can't read spooled jobs after a hot upgrade to version 8.0.0
- [GE-3577] - qtcsh does not build on aix with gcc
- [GE-3579] - hadoop is missing in the common-package
- [GE-3580] - Input redirection of qrsh does not work properly
- [GE-3581] - need means to configure build options for the uge-extensions only
- [GE-3584] - increase MAX_DYN_EC
- [GE-3585] - can only start one qsub -sync y less than configured with MAX_DYN_EC
- [GE-3586] - incomprehensible error message from qsub -sync y (at event client registration)
- [GE-3587] - When submitting a qrsh job a warning message is displayed

- [GE-3591] - sge_shepherd might not deliver a signal because "remaining_alarm" might be 0
- [GE-3596] - change the LINUX code from PLPA library to the successor HWLOC
- [GE-3607] - 62u5 clients causes a segmentation fault of a 8.0.0 qmaster
- [GE-3613] - version.c contains a GDI version which never existed
- [GE-3623] - Add all inherited environment variables of qrsh to documentation and man-page
- [GE-3624] - generate a WARNING message if processing a GDI request takes too long
- [GE-3627] - Limit number of multi GDI get requests in qmaster
- [GE-3628] - Make it possible to disable sending of environment variables in combination with qstat -j requests
- [GE-3629] - qstat -j * should show only own jobs per default
- [GE-3633] - make loadcheck utility hwloc aware and do additional binding tests
- [GE-3634] - Add wiki documentation for JSV changes
- [GE-3635] - Finalize Release Notes for 8.0.1
- [GE-3638] - ship the CUDA load sensor with Grid Engine
- [GE-3639] - add CUDA load sensor description into WIKI
- [GE-3643] - queue/job error states should be explained in more detail

Fixed with the first patch (UGE 8.0.1p1)

- [GE-1926] - no info messages in execd messages file on aix
- [GE-2643] - accounting and online usage of jobs are wrong on aix
- [GE-3722] - qsub -sync y and drmaa clients on AIX cannot connect to sge_qmaster

Fixed with the second patch (UGE 8.0.1p2)

- [GE-3265] - array jobs with PE and dependencies killing qmaster
- [GE-3731] - Java DRMAA Error : can't send response for this message id - protocol error
- [GE-3740] - core check in test binaries is too restrictive
- [GE-3743] - prevent sge_execd to crash when "/" is not a directory and in out of memory scenarios
- [GE-3746] - pe array jobs put queues in error state with a file not found error for the job script
- [GE-3764] - shepherd consumes 100% CPU if IJS does not use builtin as starter method

Fixed with the third patch (UGE 8.0.1p3)

- [GE-3757] - reduce impact of qstat -j "*" on qmaster in clusters with many jobs
- [GE-3773] - qrsh -pty yes fails if invoked within a qsub-job

Fixed with the fourth patch (UGE 8.0.1p4)

- [GE-3767] - the output of qsub -pty yes jobs is not written to the jobs output file
- [GE-3768] - a pty is created for the pre- and post-commands of any -pty yes job
- [GE-3775] - UGE crash with error in qmaster message: got NULL element for JB_type

- [GE-3781] - calling JSV "jsv_set_param binding_exp_n 0" twice segfaults qsub or qmaster
- [GE-3785] - bash shell functions are not properly transferred in the environment
- [GE-3790] - after job end sge_shepherd processes stay running
- [GE-3792] - auto installation fails if EXEC_HOST_LIST points to a file containing host names
- [GE-3793] - the scheduler thread can be stopped by a normal user
- [GE-3740] - core check in test binaries is too restrictive - second fix

Fixed with the fifth patch (UGE 8.0.1p5)

- [GE-3810] - resource reservation does not work correctly with serial jobs
- [GE-3812] - user can be added to multiple departments but it should be denied
- [GE-3829] - importance of soft requests in resource reservations should be higher than earlier start time (make it configurarble)
- [GE-3831] - need a "fair urgency" policy

Fixed with the sixth patch (UGE 8.0.1p6)

- [GE-3839] - getJobProgramStatus call in drmaa is throwing DRMCommunicationException

Fixed with the seventh patch (UGE 8.0.1p7)

- [GE-2603] - qsub option -q breaks -masterq
- [GE-3746] - pe array jobs put queues in error state with a file not found error for the job script
- [GE-3761] - security hole in UGE when setting LD_PRELOAD or LD_LIBRARY path
- [GE-3860] - parallel environment selection order in case of wildcards pes should be configurable

Fixed with the eigth patch (UGE 8.0.1p8)

- [GE-3841] - possible buffer overflow in command line parsing of sgepasswd
- [GE-3846] - builtin qrsh <command> fails if data still has to be transferred after job end
- [GE-3907] - slave tasks are wrongly scheduled to the master queue

Fixed with the ninth patch (UGE 8.0.1p9)

- [GE-3832] Execd init script does not stop sge_execd daemon on non MacOS hosts
- [GE-3866] qsub -w p $SGE_ROOT/examples/jobs/sleeper.sh is crashing
- [GE-3900] both man page and documentation must explain how the new -masterq switch works
- [GE-3921] qmod man page should mention that only the master task of a parallel job gets suspended
- [GE-3924] if '-soft -q <queue>' is specified, '-masterq' doesn't prevent slave tasks from being scheduled to the master queue
- [GE-3926] qstat -j "*" -xml is crashing

- [GE-3943] 'long_term_usage' in the 'users' spool object is not always properly spooled when usage is updated
- [GE-3944] sgeexecd script returns 0 even if it was not able to stop the execution daemon because of missing permissions
- [GE-3992] on AIX, win and 32 bit linux, qstat prints out error message: PE_RANGE_ALG=bin is not a vaild parameter, qconf is not working
- [GE-4018] fair urgency policy is broken after some time

Fixed with the tenth patch (UGE 8.0.1p10)

- [GE-4032] qmaster crashes when a parallel job requests soft resources
- [GE-4038] backup/restore mechanism of inst_sge does not restore all files
- [GE-4031] when a tightly integrated job is rescheduled with qmod -rj the slave tasks are not signalled
- [GE-4039] sge_execd silently ignores duplicate job delivery

Fixed with the eleventh patch (UGE 8.0.1p11)

- [GE-4133] the qrsh client hangs for parallel jobs if consumables are requested
- [GE-4121] qrsh sometimes crashes at job end

Fixed with the twelveth patch (UGE 8.0.1p12)

- [GE-4144] very short qrsh job sometimes seems to fail
- [GE-2842] listener threads get stuck in cl_commlib_receive_message
- [GE-4151] add option for triggering a scheduling run without writing the schedd_runlog file
- [GE-4150] too slow reservation scheduling
- [GE-4201] event client id's are not always reused
- [GE-4194] improve scheduling performance with exclusive complexes
- [GE-4211] qmaster becomes unresponsive when submitting a large job net

Fixed with the thirteenth patch (UGE 8.0.1p13)

- [GE-4101] resource reservation for a (job) exclusive consumable does not work
- [GE-4143] qstat -u @unix_group does not work

Fixed with the fourteenth patch (UGE 8.0.1p14)

- [GE-4271] jobs are scheduled into disabled queue instances when reservation is turned on

Fixed with the fifteenth patch (UGE 8.0.1p15)

- [GE-3844] execd crash immediately after startup when reading existing active_jobs dirs

Fixed with the sixteenth patch (UGE 8.0.1p16)

- [GE-3866] qsub -w p $SGE_ROOT/examples/jobs/sleeper.sh is crashing
- [GE-4066] enhance qstat -j output to show current wallclock and cpu time when SHARETREE_RESERVED_USAGE is set
- [GE-4291] Cluster is not filled completely because scheduler is skipping remaining orders
- [GE-4311] logchecker.sh generates a error message if execd_spool_dir is set to none
- [GE-4360] optionally break schedulers dispatching loop after a configurable time interval
- [GE-4370] add an option for limiting the number of jobs getting dispatched in one scheduling run
- [GE-4380] sge_execd exits when files cannot get written at job start
- [GE-4388] JSV script does reject core binding settings for linear and striding core allocation

4 Supported Platforms and Upgrade Notes

4.1 Supported Platforms

Univa Grid Engine 8.0.1 supports various hardware architectures and versions of operating systems.

Supported Platforms, Operating Systems and Architectures

Operating System	Version	Architecture
SLES	10,11	x86, x86-64
RHEL	4-5.6, 6	x86, x86-64
CentOS	4-5.6, 6	x86, x86-64
Oracle Linux	4-5.6, 6	x86, x86-64
Ubuntu Server	10.04LTS-10.10	x86, x86-64
Microsoft Windows[1]	Vista, HPC Server 2003, Server 2003 R2, XP SP3 (32 bit only), Server 2008 (not R2)	x86, x86-64
Oracle Solaris	9,10	x86_64
HP-UX	11.0 or higher	32 and 64bit
IBM AIX	5.3, 6.1 or later	64 bit

[1] Hosts running the Microsoft Windows operations system cannot be used as master or shadow hosts.

4.2 Upgrade Requirements

This is a summary of the Upgrade Matrix that describes how you can make the transition from Sun or Oracle Grid Engine 6.2uX or from an older version of Univa Grid Engine to Univa Grid Engine 8.0.1 when you currently use classic or BDB local spooling. If your current version of Grid Engine you are using is missing in the overview then please have a look into the full Upgrade Matrix located in the section _Updating Univa Grid Engine_ of the Installation Guide.

Upgrading from SGE and OGE to UGE 8.0.1

Version	Upgrade Method
Sun Grid Engine 8.0.0p1	Binary replacement and restart
Sun Grid Engine 8.0 FCS	Clone Upgrade. **IMPORTANT:** Binary replacement (Hot Update) is not supported.
Sun Grid Engine 6.2u5	Binary replacement and restart

Sun Grid Engine 6.2u4	Upgrade to SGE 6.2u5 and then binary replacement
Sun Grid Engine 6.2u3	Upgrade to SGE 6.2u5 and then binary replacement
Sun Grid Engine 6.2u2	Upgrade to SGE 6.2u5 and then binary replacement
Sun Grid Engine 6.2u1	Upgrade to SGE 6.2u5 and then binary replacement
Sun Grid Engine 6.2 FCS	Upgrade to SGE 6.2u5 and then binary replacement
Oracle Grid Engine 6.2u6	Backup/Restore
Oracle Grid Engine 6.2u7	Backup/Restore

Please note that for a binary replacement the existing cluster needs to be partially drained. Qrsh, qlogin, qsub -sync, qmake, qsh and tightly integrated parallel jobs have to leave the Grid Engine System before the binaries can be replaced. Detailed step-by-step instructions for the upgrade process can be found in the section Hot Update of the Installation Guide.

In case BDB RPC spooling is currently in use or if using Oracle Grid Engine 6.2u6 or 6.2u7, then use the backup/restore mechanism to install a cluster using the configuration information of the existing cluster as outlined in the section Clone Configuration of the Installation Guide.

5 Known Issues and Limitations

5.1 Upgrade from 8.0 FCS to 8.0.1

The Hot Update mechanism from Univa Grid Engine 8.0 FCS to Univa Grid Engine 8.0.1 is not supported. Instead the Clone Upgrade has to be used as outlined in the section Upgrading with Two Separate Clusters on the Same Resource Pool.