Table of Contents

1	Release Notes Univa Grid Engine 8.0.0 (Stoat)	
2	<u>License</u>	2
3	Fixes and Enhancements	
	3.1 Summary.	
	3.2 Change of Architecture String	7
	3.3 Qrsh extensions	
	3.4 Full List of Fixes and Enhancements	8
4	Supported Platforms and Upgrade Notes	12
	4.1 Supported Platforms	
	4.2 Upgrade Requirements	
5	Known Issues and Limitations	14
	5.1 Project Spooling	
	5.2 Slotwise Preemption	

1 Release Notes Univa Grid Engine 8.0.0 (Stoat)

2 License

TERM SOFTWARE LICENSE AND SUPPORT AGREEMENT

PLEASE READ THIS AGREEMENT BEFORE USING THE SOFTWARE.

BY USING THE SOFTWARE AND CLICKING OR CHOOSING ?YES,? YOU ARE AGREEING TO BE BOUND BY THIS AGREEMENT. - SIGNIFY YOUR AGREEMENT BY CLICKING OR CHOOSING ?YES.?

IF YOU DO NOT WANT TO AGREE TO THIS AGREEMENT, CLICK OR CHOOSE ?NO.? - IF YOU CLICK OR CHOOSE ?NO? YOU CANNOT USE THE SOFTWARE.

This agreement is between the individual or entity agreeing to this agreement and Univa Corporation, a Delaware corporation (Univa) of 11044 Research Blvd. Suite B-415, Austin, TX 78759.

- 1. SCOPE: This agreement governs the licensing of the Univa Software and Support provided to Customer.
 - Univa Software means the Univa software described in the order, all
 - updates and enhancements provided under Support, its software
 - documentation, and license keys (Univa Software), which are licensed
 - under this agreement. This Univa Software is only licensed and is not
 - sold to Company.
 - Third-Party Software/Open Source Software licensing terms are
 - addressed on the bottom of this agreement.
- 2. LICENSE. Subject to the other terms of this agreement, Univa grants Customer, under an order, a non-exclusive, non-transferable, term license up to the license capacity purchased to:
- (a) Operate the Univa Software in Customer?s business operations; and
- (b) Make a reasonable number of copies of the Univa Software for archival and backup purposes.

Customer?s contractors and majority owned affiliates are allowed to use and access the Univa Software under the terms of this agreement. Customer is responsible for their compliance with the terms of this agreement.

- 3. RESTRICTIONS. Univa reserves all rights not expressly granted. Customer is prohibited from:
- (a) assigning, sublicensing, or renting the Univa Software or using it as any type of software service provider or outsourcing environment; or

(b) causing or permitting the reverse engineering (except to the extent expressly permitted by applicable law despite this limitation), decompiling, disassembly, modification, translation, attempting to discover the source code of the Univa Software or to create derivative works from the Univa Software.

4. PROPRIETARY RIGHTS AND CONFIDENTIALITY.

- (a) Proprietary Rights. The Univa Software, workflow processes, designs, know-how and other technologies provided by Univa as part of the Univa Software are the proprietary property of Univa and its licensors, and all right, title and interest in and to such items, including all associated intellectual property rights, remain only with Univa. The Univa Software is protected by applicable copyright, trade secret, and other intellectual property laws. Customer may not remove any product identification, copyright, trademark or other notice from the Univa Software.
- (b) Confidentiality. Recipient may not disclose Confidential Information of Discloser to any third party or use the Confidential Information in violation of this agreement.
- (i) Confidential Information means all proprietary or confidential information that is disclosed to the recipient (Recipient) by the discloser (Discloser), and includes, among other things:
 - any and all information relating to Univa Software or Support provided
 - by a Discloser, its financial information, software code, flow charts,
 - techniques, specifications, development and marketing plans,
 - strategies, and forecasts;
 - as to Univa the Univa Software and the terms of this agreement
 - (including without limitation, pricing information).
- (ii) Confidential Information excludes information that:
 - was rightfully in Recipient's possession without any obligation of
 - confidentiality before receipt from the Discloser;
 - is or becomes a matter of public knowledge through no fault of
 - Recipient:
 - is rightfully received by Recipient from a third party without
 - violation of a duty of confidentiality;
 - is independently developed by or for Recipient without use or access
 - to the Confidential Information; or is licensed under an open source
 - license.

Customer acknowledges that any misuse or threatened misuse of the Univa Software may cause immediately irreparable harm to Univa for which there is no adequate remedy at law. Univa may seek immediate injunctive relief in such event.

- 5. PAYMENT. Customer will pay all fees due under an order within 30 days of the invoice date, plus applicable sales, use and other similar taxes.
- 6. WARRANTY DISCLAIMER. UNIVA DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTY OF TITLE,

MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE UNIVA SOFTWARE MAY NOT BE ERROR FREE, AND USE MAY BE INTERRUPTED.

- 7. TERMINATION. Either party may terminate this agreement upon a material breach of the other party after a 30 days notice/cure period, if the breach is not cured during such time period. Upon termination of this agreement or expiration of an order, Customer must discontinue using the Univa Software, de-install it and destroy or return the Univa Software and all copies, within 5 days. Upon Univa request, Customer will provide written certification of such compliance.
- 8. SUPPORT INCLUDED. Univa technical support and maintenance services (Support) is included with the fees paid under an order. Univa may change its Support terms, but Support will not materially degrade during any paid term. More details on Support are located at www.univa.com/support
- 9. LIMITATION OF LIABILITY AND DISCLAIMER OF DAMAGES. There may be situations in which, as a result of material breach or other liability, Customer is entitled to make a claim for damages against Univa. In each situation (regardless of the form of the legal action (e.g. contract or tort claims)), Univa is not responsible beyond:
- (a) the amount of any direct damages up to the amount paid by Customer to Univa in the prior 12 months under this agreement; and
- (b) damages for bodily injury (including death), and physical damage to tangible property, to the extent caused by the gross negligence or willful misconduct of Univa employees while at Customer?s facility.

Other than for breach of the Confidentiality section by a party, the infringement indemnity, violation of Univa?s intellectual property rights by Customer, or for breach of Section 2 by Customer, in no circumstances is either party responsible for any (even if it knows of the possibility of such damage or loss):

- (a) loss of (including any loss of use), or damage to: data, information or hardware:
- (b) lost profits, business, or goodwill; or
- (c) other special, consequential, or indirect damages
- 10. INTELLECTUAL PROPERTY INDEMNITY. If a third-party claims that Customer?s use of the Univa Software under the terms of this agreement infringes that party's patent, copyright or other proprietary right, Univa will defend Customer against that claim at Univa?s expense and pay all costs, damages, and attorney's fees, that a court finally awards or that are included in a settlement approved by Univa, provided that Customer:
- (a) promptly notifies Univa in writing of the claim; and
- (b) allows Univa to control, and cooperates with Univa in, the defence and any related settlement.

If such a claim is made, Univa could continue to enable Customer to use the Univa Software or to modify it. If Univa determines that these alternatives are not reasonably available, Univa may terminate the license to the Univa Software and refund any unused fees.

Univa?s obligations above do not apply if the infringement claim is based on the use of the Univa Software in combination with products not supplied or approved by Univa in writing or in the Univa Software, or Customer?s failure to use any updates within a reasonable time after such updates are made available.

This section contains Customer?s exclusive remedies and Univa?s sole liability for infringement claims.

11. GOVERNING LAW AND EXCLUSIVE FORUM. This agreement is governed by the laws of the State of Texas, without regard to conflict of law principles. Any dispute arising out of or related to this agreement may only be brought in the state and federal courts for Travis County, TX. Customer consents to the personal jurisdiction of such courts and waives any claim that it is an inconvenient forum. The prevailing party in litigation is entitled to recover its attorneys? fees and costs from the other party.

12. MISCELLANEOUS.

- (a) Inspection. Univa, or its representative, may audit Customer?s usage of the Univa Software at any Customer facility. Customer will cooperate with such audit. Customer agrees to pay within 30 days of written notification any fees applicable to Customer?s use of the Univa Software in excess of the license.
- (b) Entire Agreement. This agreement, and all orders, constitute the entire agreement between the parties, and supersedes all prior or contemporaneous negotiations, representations or agreements, whether oral or written, related to this subject matter.
- (c) Modification Only in Writing. No modification or waiver of any term of this agreement is effective unless signed by both parties.
- (d) Non-Assignment. Neither party may assign or transfer this agreement to a third party, except that the agreement and all orders may be assigned upon notice as part of a merger, or sale of all or substantially all of the business or assets, of a party.
- (e) Export Compliance. Customer must comply with all applicable export control laws of the United States, foreign jurisdictions and other applicable laws and regulations.
- (f) US Government Restricted Rights. The Univa Software is provided with RESTRICTED RIGHTS. Use, duplication, or disclosure by the U.S. government or any agency thereof is subject to restrictions as set forth in subparagraph (c)(l)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013 or subparagraphs (c)(1) and (2) of the Commercial Computer Software Restricted Rights at 48 C.F.R. 52.227-19, as applicable.
- (g) Independent Contractors. The parties are independent contractors with respect to each other.

- (h) Enforceability. If any term of this agreement is invalid or unenforceable, the other terms remain in effect.
- (i) No PO Terms. Univa rejects additional or conflicting terms of a Customer?s form-purchasing document.
- (j) No CISG. The United Nations Convention on Contracts for the International Sale of Goods does not apply.
- (k) Survival. All terms that by their nature survive termination or expiration of this agreement, will survive.

Additional software specific licensing terms:

UniCloud Kits

- Third Party Software means certain third-party software which is provided along with the Univa Software, and such software is licensed under the license terms located at: http://www.univa.com/resources/licenses
- Open Source Software means certain opens source software which is provided along with the Univa Software, and such software is licensed under the license terms located at: http://www.univa.com/resources/licenses

Grid Engine

- Third Party Software means certain third-party software which is provided along with the Univa Software, and such software is licensed under the license terms located at: http://www.univa.com/resources/licenses
- Open Source Software means certain opens source software which is provided along with the Univa Software, and such software is licensed under the license terms located at: http://www.univa.com/resources/licenses

Rev: 03/09/2011

3 Fixes and Enhancements

3.1 Summary

Univa Grid Engine v8.0.0 is intended as a drop-in replacement to Sun Grid Engine 6.2u5. 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.

Univa Grid Engine v8.0.0 support is available from http://univa.com/products/grid-engine.php

Here is a summary of things that have changed since version 6.2u5

- Qrsh (interactive job support) was extended by an advanced multi-threaded implementation
- process-suspend handling
- Qsub -pty extension
- Change of ghost and gstat output
- Dropped Linux Kernel 2.4 Support
- Dropped BDB RPC Spooling Support
- Dropped JMX Support

3.2 Change of Architecture String

Univa Grid Engine 8.0.0 drops the 2.4 kernel for the Linux architecture as a supported binary target platform. As a result of that the architecture string that is reported by the script \$SGE_ROOT/util/arch has changed. Instead of *lx24-x86* or *lx24-amd64* it will now return *lx-x86* or *lx-amd64*. The binary/library paths within the Univa Grid Engine have also changed. Files are now located in

- \$SGE_ROOT/bin/lx-x86
- \$SGE_ROOT/utilbin/lx-x86
- \$SGE ROOT/lib/lx-x86

For users that have hardcoded the old architecture string into paths, environment or script settings this will be an issue. Corresponding users should either adjust the scripts or the Univa Grid Engine administrator can add links that refer to the new directory so that the old paths remain valid.

```
# ln -s $SGE_ROOT/bin/lx24-x86 $SGE_ROOT/bin/lx-x86
# ln -s $SGE_ROOT/lib/lx24-x86 $SGE_ROOT/lib/lx-x86
# ...
```

Also architecture strings that are hard coded into strings that are passed to the Univa Grid Engine as resource requests might cause problems. Users must modify their usage of the resource to match the new resource string.

3.3 Qrsh extensions

Qrsh has be enhanced to provide following functionality when Ctrl-Z or %Ctrl-Z is pressed:

Qrsh Suspension Overview

Command	Ctrl-Z	%Ctrl-Z
qrsh (without command)	Suspends the process started by the qrsh-session.	Suspends the local qrsh client. The process started by qrsh-session
		stays untouched.
qrsh -pty yes <cmd></cmd>	Only the local qrsh-client will be suspended. The remotely executed <md><md>stays untouched.</md></md>	Suspendeds the qrsh-client as also the remotely executed <cmd>.</cmd>
qrsh -pty yes -suspend_remote yes <cmd></cmd>	Both processes will be suspended, the qrsh-client as also the remotely	Only the local qrsh-client will be suspended. The remotely executed
	executed <cmd>.</cmd>	<cmd> stays untouched.</cmd>

Note

Univa Grid Engine will track all jobs as running, regardless of the process state.

3.4 Full List of Fixes and Enhancements

- [GE-270] Make it possible not checking for binaries at install
- [GE-334] cull functionality not available for all data types
- [GE-659] sge execd creates world-writeable files in active jobs directory
- [GE-933] masterq command line switch is accepted for serial jobs although this should not be allowed
- [GE-1589] gstat -j incorrectly reports environment variable names
- [GE-2194] authuser binary returns unusable error message!
- [GE-2623] qmon icons are terrifyingly bad
- [GE-3002] keystore password should be asked for twice to avoid typos
- [GE-3061] improve Ctrl-Z handling in builtin interactive jobs with '-pty yes' option set
- [GE-3095] add '-pty <yes|no>' switch to gsub
- [GE-3100] in interactive jobs, tty or pty handles Ctrl-Z wrongly
- [GE-3147] BATCH and IMMEDIATE QUEUES concept need to be clarified in man pages
- [GE-3193] core dump when sending TERM signal to sge_execd / sge_qmaster
- [GE-3194] sge shepherd segfault on OpenSuSE 11.2 (x86 64)
- [GE-3216] rerun of a tightly integrated parallel array job crashes qmaster after restart
- [GE-3221] qsub '-tc' needs better wording

- [GE-3223] execd does not verify the pe task start user in non CSP mode
- [GE-3226] binding parameters parsing does not check number values completely
- [GE-3228] jsv logging does not work when multiple users submit jobs on same submit host
- [GE-3233] slotwise preemption fails to unsuspend one job per host
- [GE-3235] modifying the global configuration make sge_qmaster unresponsive in a huge cluster
- [GE-3236] exec host object gets spooled whenever an execd connects to qmaster
- [GE-3237] finishing a tightly integrated job takes too long
- [GE-3238] consistency of JSV binding information is not checked completely
- [GE-3268] On Ubuntu 10.04 LTS libc version detection fails
- [GE-3303] wrong vmem reporting of qstat and qacct on Linux (only on 32bit linux, fixed in OGS)
- [GE-3306] jobs get scheduled but are not started after global host changed
- [GE-3307] qmod -rj should reschedule a job only when run with root/sgeadmin privileges
- [GE-3310] ENABLE_RESCHEDULE_SLAVE=1 doesn't work anymore
- [GE-3311] adding a resource request via jsv_sub_add_param will change the default of a BOOL attribute to false
- [GE-3314] intermittendly, interactive jobs die
- [GE-3316] Saving incorrect complex value on host level leads to qmaster segmentation fault
- [GE-3320] gmaster crashes with the error message in caueue list locate ginstance
- [GE-3323] remove experimental comment from qsub -tc help output
- [GE-3326] qconf segfaults on bad subordination string
- [GE-3328] on Windows Vista, the 2nd fork of the daemonizing execd sometimes fails at boot time
- [GE-3329] high cpu load of qrsh -inherit when using builtin interactive job support
- [GE-3331] ENABLE_RESCHEDULE_SLAVE=1 causes also other jobs to be rescheduled
- [GE-3333] Requesting any memory limit for a job on linux doesn't work
- [GE-3334] on csh, %CTRL-Z doesn't properly suspend the "qrsh -pty yes <command>" client
- [GE-3337] qrsh <command> with prolog and epilog configured may fail with invalid stdin/out/err path
- [GE-3342] gridengine/i18n testsuidroot messages not i18n'd
- [GE-3345] remove authuser binary
- [GE-3346] Eliminate possibility of double free
- [GE-3347] build fails on Ubuntu 10.04
- [GE-3348] fix sprintf without format string
- [GE-3349] fix system calls without checking of return code
- [GE-3351] enable core binding on Linux hosts per default
- [GE-3352] BDB RPC installation must be removed from GUI installer
- [GE-3353] GUI installer must point to new Wiki and/or gridengine.org
- [GE-3355] Snow Leopard installation fails due to incorrect setting of environment variables in installation scripts
- [GE-3356] Solaris installation of execution hosts fails
- [GE-3358] parsing of qsub -binding explicit is broken
- [GE-3359] Old files should be removed from git repository

- [GE-3361] rmon library should be integrated into libuti
- [GE-3362] unify linux arch strings (lx24-* and lx26-*) to lx-*
- [GE-3367] system calls retrieving passwd information do not always get called with a sufficiently large buffer
- [GE-3368] scheduler messages are generated even when they are not needed
- [GE-3369] core binding related information should be displayed per default
- [GE-3370] qhost should display socket, core and thread related information per default
- [GE-3371] qstat -j should show requested and actual binding of a job per default (xml as well)
- [GE-3372] remove the THROTTLE FLUSH event client busy handling
- [GE-3375] remove service tags from installation
- [GE-3379] BDB RPC installation must be removed from CLI installer
- [GE-3381] the default complexes have m_socket, m_core but the amount of threads are missing
- [GE-3382] qrsh -pty yes converts NL line breaks in CR NL line breaks, corrupting the output on Unix/Linux
- [GE-3389] change version to 8.0.0
- [GE-3391] create a testsuite test reproducing the issue
- [GE-3393] implement the -suspend_remote parameter for qrsh like on SGE 6.2u7, which defines the CTRL-Z behavior
- [GE-3395] update README.arch
- [GE-3399] Perl JSV script does not allow comma in CMDNAME and CMDARGS
- [GE-3400] Setting of supplementary group id might fail on Mac OS X
- [GE-3402] Note user of open source version that qrsh -suspend_remote is only available in the Univa version.
- [GE-3412] When supplementary group id cannot be set the queue is set into error state
- [GE-3413] Architecture string is not correct after Mac OS X update to v10.6.7
- [GE-3416] remove no longer used package from 3rdparty/3rd_party_licscopyrights file
- [GE-3417] alpha packages contain usermapping man page
- [GE-3418] Sun service tag support must be removed completely or Univa data has to appear there
- [GE-3420] group ids for submitted jobs are incorrect
- [GE-3421] GPL sources need to be available in common package
- [GE-3422] remove JMX dialog as default and change JMX dialog
- [GE-3423] Auto installation rejects ADMIN MAIL parameter although it is correct
- [GE-3425] Make sure the LICENSE file is copied by distinst
- [GE-3426] for qsub -pty, improve handling of pty fd and wait in sge shepherd
- [GE-3430] gconf reports error of command when tmp directory has 755 permissions
- [GE-3431] install_execd prints error messages on 'install' of /etc/init.d script on Ubuntu
- [GE-3432] qstat -j shows in binding field "unknown unknown"
- [GE-3434] Suspending of remote process on qrsh -pty yes <cmd> does not work on Solaris hosts
- [GE-3437] man page sge_intro contains just Sun Copyright and not Univa Copyright
- [GE-3439] add bash into default login shell list
- [GE-3440] file descriptor -1 passed to system calls in interactive job support

- [GE-3443] when a immediate parallel job is rejected through missing resources the remaining job orders for the scheduling run are refused
- [GE-3446] Additional JSV needed that makes it possible to reject all new jobs
- [GE-3451] invalid load_formula value is not rejected
- [GE-3453] update DRMAA-README.txt files in doc directory in order to reflect Univa
- [GE-3454] final distribution must contain BDB documentation
- [GE-3457] qsub man page does not mention that tc job parameter can be changed via JSV
- [GE-3458] XML output of client commands point to wrong name space
- [GE-3459] default value of the sge_shadowd environment variable SGE GET ACTIVE INTERVAL is not documented in the man page
- [GE-3462] large entries in group DB might cause sge_group2gid() to fail
- [GE-3463] Grid Engine does not reject calls from users with expired certificates (csp-mode)
- [GE-3466] cannot install on Ubuntu 11.04

4 Supported Platforms and Upgrade Notes

4.1 Supported Platforms

Univa Grid Engine 8.0.0 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, 7, XP SP3	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 to Univa Grid Engine 8.0.0 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 8.0.0

Version	Upgrade Method
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	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 <u>Clone Configuration</u> of the Installation Guide.

5 Known Issues and Limitations

5.1 Project Spooling

SGE 6.2u5 has a bug in the project spooling. This might cause problems during the upgrade when using classic spooling and all of the following conditions were met in the existing cluster in the past:

- Share-tree exists
- Project as part of share-tree exists
- Core-binding is activated
- Job uses core-binding and project that is referenced in share-tree

In this case, unnecessary values were spooled in projects that might cause Univa Grid Engine to drop those projects if the sge_qmaster process is started during the upgrade. This issue can be identified by corresponding error messages that are written into the message file of qmaster.

In order to overcome this issue, the project spooling files have to be modified before the new master is started. Entries like "binding_inuse=SccSCC=0.000000" (key/value pairs that contain two equal characters (=)) have to be removed. (see also markmail.org)

5.2 Slotwise Preemption

If OGE 6.2u6 or OGE 6.2u7 was used with parallel jobs in slotwise preemption, be aware that Univa Grid Engine does not support this.