



## Runtime Software Release Notes

Version: 2016.09

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**Runtime Design Automation**  
www.rtda.com  
info@rtda.com

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# 1 2016.09 Release Note Errata

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## 1.1 2016.09 Release Note Errata

### 1.1.1 The Following Correction(s) Apply to Previously Published Release Note Items

Correction Posted	Release or Patch	Support Case #	Internal Tracking #	Correction
22 Feb 2018	2016.09u13	21997	8074	2016.09u13 release notes incorrectly stated that this item had been fixed. This item will be fixed as of 2017 release.
16 May 2018	2016.09u13	22004	8244	The following correction has been made in the 2016.09u13 Release Notes document. Incorrect line: nc cnd vovsh -x 'vtk_server_config maxORsInResourceExpression 10' Corrected line: nc cnd vovsh -x 'vtk_server_config maxORsInResourceExpressions 10'

## 2 2016.09 Update 21

### 2.1 Update 21 Release Notes

#### 2.1.1 Known Issues in 2016.09 Update 21

None

#### 2.1.2 The Following Release Items are for All Altair Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for All Altair Runtime Products
<b>Enhanced Features</b>		
		No enhanced features were generated for All Altair Runtime Products
<b>Fixed Bugs</b>		
22226, 23455	VOV-8625	Queries for requested-resource fields will now return correct values for jobs with non-running statuses.
	VOV-9376	The vovresourced daemon now cleans up the zombie vovsh process that is caused by the background vovresourced process used to initialize job classes.

#### 2.1.3 The Following 2016.09 Update 21 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 2.1.4 The Following 2016.09 Update 21 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 2.1.5 The Following 2016.09 Update 21 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
23532	VOV-9321	Fixed vovslave crash issue on Windows.

#### 2.1.6 The Following 2016.09 Update 21 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	VOV-9202	NetworkComputer now has an optional event statistics monitoring daemon, voveventstatd, that can be configured to monitor event counts, ratios of counts between event types, and to alert the queue administrator if a count or ratio exceeds configured limits.
<b>Enhanced Features</b>		
22271	VOV-7986	A prototype RabbitMQ-based client logging facility for NC user commands has been added. For additional information, please refer to the appnote titled "A_Client_Logging_Implementation_Using_RabbitMQ_(Prototype).pdf" located in the release area.

22170	VOV-8536	The &apos;nc why&apos; command output for a queued job now includes a count of dependent jobs, if any, that must finish before the queued job runs.
	VOV-9225	Improved the readability of preemption debug messages. Improved vovjournalexpand and journal.cgi page. Added a property, PREEMPT_KILLED_ACCUMULATED_DURATION to a job killed by preemption.
<b>Fixed Bugs</b>		
22157	VOV-8518	Added RESD(maxSumResourceComponentAge) setting to control how old a component resource must be to cause the sum resource calculation to be aborted.
20145, 21596, 22918	VOV-7978	There is a new optional policy.tcl parameter on Linux platforms named "slave.childProcessCleanup". Setting this parameter to 1 causes slaves to kill all child processes when a job exits. This parameter forces the vovslave to inspect the entire process hierarchy for processes that contain the variable VOV_JOB_ID referencing the current job id, matching processes will be killed. Additionally the old method of using vovprocessmgr has been fixed. The user should first run  vovprocessmgr -refresh -orphans  in order to update the list of orphan processes running on all hosts, and run  vovprocessmgr -orphans [-age value]  to print the current list of orphan processes.
	VOV-9093	Fixed an issue that caused cgroups resources to be forgotten by the server.
23210	VOV-9099	Fixed a bug that was causing vovslave to utilize 100% of CPU at startup. Fix was to restrict the reading of shared memory map information to processes related to jobs managed by the slave only.
23545	VOV-9284	A new environment variable (VOV_DISABLE_SHARED_MEMORY_LOOKUP) has been added to control whether the vovslave queries the OS for shared memory statistics for processes it is managing. Set to 1 to disable.
	VOV-9345	Fixed a bug that does not preempt enough jobs if the preempting job asks for PERCENT.
20613	VOV-7394	FairShare group modification logging has been enabled for non-admin users.
	VOV-9176	Improved the performance of forgetting old, unused limits.
	VOV-9358	Added autostart facility for vovresourced to ensure daemon starts with vovfailover process.
23174	VOV-9096	Fixed a bug that when slave names get updated in RESERVE_SLAVES preempt rules, previous slaves still get reserved.

### 2.1.7 The Following 2016.09 Update 21 Release Items are for WorkloadXelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXelerator.
<b>Fixed Bugs</b>		
23696	VOV-9416	Fixed issue that caused vovwxd to stop processing buckets when an invalid resource string was encountered on a job.

### 2.1.8 The Following 2016.09 Update 21 Release Items are for HERO

No changes were generated for HERO.

## 3 2016.09 Update 20

### 3.1 Update 20 Release Notes

#### 3.1.1 Known Issues in 2016.09 Update 20

None

#### 3.1.2 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 3.1.3 The Following 2016.09 Update 20 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 3.1.4 The Following 2016.09 Update 20 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 3.1.5 The Following 2016.09 Update 20 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
21933	VOV-8169	The vovdb_util &apos;showcfg&apos; sub-command now shows information about DB backups, if configured.
23261	VOV-9133	The Altium log file parser now handles dates of a few new formats, such as yyyy-mm-dd, in addition to those using slash and dot as separators.
23136	VOV-9045	ftlm_parse_altiumlog now is able to parse the log line record of the new format of time log: Product Name;License Name;User;Role;Action;Action Time or format of usage log: Product Name;Activation Code;User;Role;Version;Start Time;Returned Time
<b>Fixed Bugs</b>		
		No bugfixes were generated for LicenseMonitor.

#### 3.1.6 The Following 2016.09 Update 20 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
23176	VOV-9075	For preemption rule debugging purposes, a separate preemption log file is written if enabled. The preemption log can be turned on through server config parameters in policy.tcl. set preemption.log.verbosity to 1 or up to 10. For example, add the following to the <swd>/policy.tcl: <pre>set preemption.log.verbosity 3</pre> Turn on debug flag for each preemption rule of interest through WebUI or preemption rule definition in <swd>/vovpreemptd/config.tcl. To enable all preemption rules debugging, add the following to <swd>/policy.tcl: <pre>set preemption.log.allrules 1</pre>

		Verbosity level needs to be chosen carefully. Higher verbosity number will create many messages and may cause the log file size to grow quickly. In case the current preemption log file is removed, it can be recreated with: vovsh -x 'vtk_server_config_rotate_server_preemption_log 1'
<b>Fixed Bugs</b>		
23130	VOV-8018	Removed unnecessary "Load" button for config.tcl. config.tcl is loaded automatically by vovpreemptd daemon.
23028	VOV-8347	The "slave.childProcessCleanup" parameter in policy.tcl no longer requires cgroups; it does still require a Linux platform. Additionally the method of process cleanup has been changed to be more thorough. This setting may cause vovslave to be less responsive in heavy usage scenarios.
23174	VOV-9096	Fixed a bug that when slave names get updated in RESERVE_SLAVES preempt rules, previous slaves still get reserved.
23175	VOV-9097	FREE_SLAVES rule type preempts slaves only in IDLE(READY), WORKING, or FULLLOAD.
	VOV-9118	vovserver doesn't check file existence with lstat for nc run -l <logfile> .
23101	VOV-9025	Initialize job classes in a separate vovresourced process by default.
23102	VOV-9026	Initialize job classes in a separate vovresourced process by default.
23149	VOV-9036	Prevent misleading message in node.cgi about the job being executed on an invalid slave when the job has been forgotten from server memory and job data is being loaded from the database.
22882	VOV-8923	Added an environment variable, VOV_BJOBS_JOBID_WIDTH, that can be used to override the default job ID column width in the bjobs output.
22899	VOV-8986	Fixed incorrect value of cputime field displayed at job completion.

### 3.1.7 The Following 2016.09 Update 20 Release Items are for WorkloadXelerator

No changes were generated for WorkloadXelerator.

### 3.1.8 The Following 2016.09 Update 20 Release Items are for HERO

No changes were generated for HERO.

## 4 2016.09 Update 19

### 4.1 Update 19 Release Notes

#### 4.1.1 Known Issues in 2016.09 Update 19

None

#### 4.1.2 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for All Runtime Products
<b>Enhanced Features</b>		
20684	7453	The vovbrowser command now shows the value of VOV_HOST_HTTP_NAME, if this is set, in the project URL.
<b>Fixed Bugs</b>		
		No bugfixes were generated for All Runtime Products

#### 4.1.3 The Following 2016.09 Update 19 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 4.1.4 The Following 2016.09 Update 19 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 4.1.5 The Following 2016.09 Update 19 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
22940	8967	Now cvs export function works properly on the following pages: Admin->Tags->Server Admin->Tags->Database Admin->Features ->Server Admin->Features->Database Admin->Tasks Admin->Licensing (VovSlaves table)

#### 4.1.6 The Following 2016.09 Update 19 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
22958	8973	NetworkComputer now correctly generates an alert if the LicenseMonitor instance being tracked by vovresourced is not available at first contact attempt. Previously this alert would appear only if contact was made and then lost.
20078	7108	

		nc hosts will show the full list of reservations for a slave in the following format: U:<list of users> C:<list of job classes> G:<list of groups> etc...
20116	7126	vtk_slave_define has a new argument &apos;-expiredate&apos; that specifies the date and time after which the definition of this slave is expired, and it cannot be started with vovslavemgr command. The format of this parameter is year_month_day_hour_min_sec. Example: 2018_12_31_23_59_00
21621	7970	The job output URL protocol (http or https) matches that from the output of vovbrowser. i.e. It is determined by setting of sslenabled from the project.
21705	8014	Added CLOCKTURBO field to slave objects in VovQuery that represents the CPU turbo speed of the host.
21725	8028	The command "vovslavemgr stop -force" with an empty slave list now prints a warning and does not stop any vovslaves. Use with "-all" if you really mean it.
	8996	FreeStyle preemption ruletype no longer preempts more jobs than necessary to run jobs in preempting bucket.
<b>Fixed Bugs</b>		
22868	8911	Fix premature termination of &apos;nc hosts&apos; command when a slave exits during the running of the command. This may have been encountered with large or volatile slave counts and is seen when the -O format option is used. Fixed in 2016.09 Update 19 for the case of volatile slave counts.
	8917	Jobs that has reached WITHDRAWN state later than preemption plan spec. are no longer left as WITHDRAWN and get rescheduled.
22887	8925	Added accountability of RAM used by jobs that are submitted with NUMA supported requested. The total RAM for each socket will be decremented by a job&apos;s RAM request when the job is bound to the socket. This allows the next job requesting NUMA support to be placed according to the RAM that is expected to be available instead of the RAM that is currently available. Additionally, the NUMA_LAYOUT slave property has been augmented to show the memory currently used by all jobs on the slave that requested NUMA support (e.g. "Socket: 0 RAM= 500/32089 000000000").
22922	8964	Interactive jobs no longer consume 100% CPU when attempting to reconnect to a downed NetworkComputer queue.
20991	4453	Added sorting, filtering, and searching capabilities to legacy FairShare page.
22315	8730	Fixed an error where editing a queued interactive job in the NetworkComputer web interface could potentially cause the job to fail.
22965	8978	Removed redundant "Excluded from being declared as input" warnings on for "nc run -f" command.
	9047	The URL shown at the end of the NC startup routine now takes into account the VOV_HOST_HTTP_NAME value and whether SSL is enabled.

#### 4.1.7 The Following 2016.09 Update 19 Release Items are for WorkloadXelerator

No changes were generated for WorkloadXelerator.

#### 4.1.8 The Following 2016.09 Update 19 Release Items are for HERO

No changes were generated for HERO.

## 5 2016.09 Update 18

### 5.1 Update 18 Release Notes

#### 5.1.1 Known Issues in 2016.09 Update 18

None

#### 5.1.2 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for All Runtime Products
<b>Enhanced Features</b>		
22020	8766	When copying the <swd>/vovnginxd/conf/nginx.conf.template file to an nginx.conf file, a message is output to the server log indicating that a copy is being made, and also specifying the source and destination files.
<b>Fixed Bugs</b>		
22666	8826	Prevent vovslave from caching empty group lists returned from OS.
	8947	The AGE field of the SETS object will now return the correct age, defined as time in seconds since the set was last updated. In addition, the LASTUPDATE field will always return a valid timestamp instead of 0 for non-smart sets.

#### 5.1.3 The Following 2016.09 Update 18 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
22728	8854	Fixed vovconsole crash that could occur in flow graphs when using Orthogonal/Manhattan arrows.
22999	8984	Fixed bug which caused a Tcl error in node editor when the expected duration field had a time value with a leading zero, and then changes were made to the node and saved. The time spec parser was failing to trim the leading zeroes and producing an error. Now, the time spec parser does it correctly. An example time spec that could cause the error is "1h05m" due to the "05" value for the minutes.

#### 5.1.4 The Following 2016.09 Update 18 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 5.1.5 The Following 2016.09 Update 18 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
22192	8574	LicenseMonitor now includes support for monitoring licenses of QF-Test software.
22878	8954	Moved the icons for exporting png/csv up in a separate row, so chart area can be highlighted excluding



		those icons for screenshots.
22897	8959	The FLEXlm parser has been enhanced to correctly handle version 11.14+ lmstat output.
<b>Fixed Bugs</b>		
21860	8133	The "shift combo" was fixed in previous 2016.09 release. The test case added to ensure this error will get covered in our regression tests.
23060	9011	Removed the double html-encoding to prevent license editing corruption.
22690	8834	ftlm_batch_report should honor the switch with "Hide" parameter (e.g.-UtilPlotHideAverage) with empty value (default value as 1).
	8852	Configure group access to a tab should not prevent the guests view page using readonly port.
22682	8859	Several robustness improvements to vovresourced with respect to obtaining data from LicenseMonitor: Improved handling of buffer overflow condition in /raw/checkouts and /raw/vovresourced URLs when a large number of checkouts is present. Improved debuggability of HTTP errors by printing errors and timeout occurrences in vovresourced log. Fixed bug in LM lookup procedure when SSL is specified as true in the vovresourced configuration but LM is not running with SSL. Add handling for HTTP timeout in LM lookup procedure so that 3 retries are attempted before marking LM as down. Improved resource life support by entering the mode only for the affected license-based resource when the data request to LM fails only for that license. Improved life support debuggability with improved messaging in the vovresourced log. Improved performance of /raw/checkouts and /raw/vovresourced URLs. Added configurable HTTP timeout to vovresourced configuration to accomodate heavily loaded LM instances. The setting, RESD(timeout,http), accepts timespec values and is set to 30s by default. Disable vtk_flexlm_monitor_all by default for new WX installations.
22208	8615	ftlm_parse_flexlmlic to handle nodelocked licenses (e.g. MATLAB:ID=720099) with correct capacity

### 5.1.6 The Following 2016.09 Update 18 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	8789	The ncupgrade script has been implemented at beta level. This script allows customers to upgrade their NC installation to a different (newer) version of software without taking down the queue. The script prompts users for decisions (such as queue name, location of the new version, etc.) and is intended to perform the upgrade without losing any jobs, and without having client job submissions fail (they just take longer to register). Please provide feedback on this feature during the beta period.
<b>Enhanced Features</b>		
20598	7466	Reservations may now be negated to specify who or what is NOT allowed to use a slave. For example a reservation of "USER  john,mary" will allow all users except "john" and "mary" to run jobs on the slave for the specified duration.
21236	7748	Generate both an event and a server log entry when a FairShare group is changed. Event example: 27 FSGROUP CHANGE 000553805 1507566658 {/test, by joe@localhost SERVER: Window 1h00m to 2h00m } Log example: vovserver(9805) Oct 09 13:26:20 FairShare change: /test, by joe@localhost SERVER: Window 1h00m to 2h00m
	8695	Slave reservation that is created by preemption type FreeSlave is now reserving the preempted slave by bucket id. The reservation duration is 5 seconds by default and it can be configured using preempt rule field reservetime.
22516	8735	Speeds up jobclasses.cgi by showing detailed job statistics per jobclass only on demand, by clicking the basic job count initially displayed.
20959	6199	Documented the boolean jobclass variable "classEditable", which controls whether a jobclass can be edited using the jobclass web UI page. Example: set classDescription "my jobclass" set classEditable false ...rest of jobclass script...
<b>Fixed Bugs</b>		
20265	7242	Fairshare groups now have a "flatten" setting. When a group is flattened, all of its child groups will be treated as though they were on the same level of hierarchy; that is, all leaf-level groups will be assigned weights as though they were direct children of the top-level flattened group, ignoring weights assigned to any non-leaf-level groups in between. This setting can be enabled by the "vovfsgroup modify" command. Note that disabling this setting for a group that has a flattened parent will have no effect; the group will still be flattened.
21608	7806	Fixed FreeSlave preemption type not to preempt slaves that are not compatible with preempting jobs in HW requests such as CORES, RAM.
22655	8824	Do not process commas as option delimiters in SNAPSHOT environment calls so that a snapshot file path can include commas.
22693	8865	Improved error messages for wrong parameters in nc preempt command.
	8686	Improved the preemption rule view page to include all of the fields that are displayed in the new rule page. This mainly includes improvements to the FREE_SLAVES, RESERVE_SLAVES, and RESERVE_RESOURCES rule views.

21608	8697	Improved the performance and reliability of the FREE_SLAVES preemption rule behavior. Hosts with non-preemptable jobs can be preempted if the machine can still run preempting jobs.
22857	8914	<ol style="list-style-type: none"> <li>1. Implemented "spread" NUMA placement. Jobs using this placement type will be bound to the least-loaded sockets available on the chosen slave.</li> <li>2. Simplified NUMA usage. Requesting the "NUMA" resource is no longer required. NUMA is controlled exclusively by the -jpp option to nc run. The "NUMA" resource is no longer required to be provided by slaves.</li> <li>3. Improved NUMA visibility. Fixed issue with the NUMA field that prevented the NUMA type from being displayed with vovselect, or when using the @NUMA@ keyword in the nc list output format string. Additionally, the NUMA_AFFINITY job property has been augmented to show the placement type (e.g. "NUMA pack: 0 1 * *").</li> <li>4. Improved debug capability. Added ability to use vovslavemgr configure to control the debugnuma setting for slaves. Detailed NUMA information will be printed to the slave log when this setting is set to 1. Also added control in vovslavemgr configure for binding to entire sockets (default) or to individual cores (experimental). See vovslavemgr usage help for details.</li> </ol>

### 5.1.7 The Following 2016.09 Update 18 Release Items are for WorkloadXelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXelerator.
<b>Fixed Bugs</b>		
22773	8878	Fixed problem with SNAPSHOT environments that caused environment variables to get added in subsequent jobs but never removed. Now it uses the correct environment from the shell that launched the job, plus the environment specific to each job. The bug impacted vovslave but not vovslaveroot.

### 5.1.8 The Following 2016.09 Update 18 Release Items are for HERO

No changes were generated for HERO.

## 6 2016.09 Update 17

### 6.1 Update 17 Release Notes

#### 6.1.1 Known Issues in 2016.09 Update 17

In NetworkComputer: Stopping and restarting slaves via the Console menu items, or by using -server with vovslavemgr on the command line, may result in multiple slaves being created. Will be fixed in a future update.

#### 6.1.2 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for All Runtime Products
<b>Enhanced Features</b>		
22285	8720	Added patchlevel display and patch sorting for various options of vovversion command.
<b>Fixed Bugs</b>		
21345	7809	Fixed issue that caused the patch status link in certain web UI pages to be rendered as plain text instead of HTML.
22215	8630	Improved vovnginxd robustness when reconfiguring the web port, and corrected the documentation on how to modify the web port while the server is still running.

#### 6.1.3 The Following 2016.09 Update 17 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
22556	8756	Added 2 config parameters for vovlsfd:  <code>VOVLSFD(bsubErrorsBlackList)</code> specifies a list of bsub errors that will be ignored by vovlsfd. For all other errors vovlsfd will dequeue the jobs that are causing unsuccessful bsub requests.  <code>VOVLSFD(dequeueOnNumBsubErrors)</code> specifies a number of sequential bsub failures that should force vovlsfd to dequeue the corresponding FT jobs. Default value: 2
<b>Fixed Bugs</b>		
		No bugfixes were generated for FlowTracer.

#### 6.1.4 The Following 2016.09 Update 17 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 6.1.5 The Following 2016.09 Update 17 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
15636	7006	Added a pair of new configuration variables in the vovlmd configuration file to control the threshold of elapsed time without an update at which point a license server is to be considered down. That is, you

		can set the following in the licmon.swd/vovlmd/config.tcl file:  <pre>LSset VOVLMD(downthreshold) 10m LSset VOVLMD(checkfrequency) 5m</pre>
22692	8743	Added "Show capacity with queued" and "Show peak with queued" options in the utilization plot batch report UI and corresponding options for CLI.
<b>Fixed Bugs</b>		
22181	8580	LicenseMonitor can now serve batch reports greater than 1GB in size.
	5898	License server emulate thru vtkle_feature_set can take y (year) as time unit.
22083	8451	Remove the VIEW (and other relevant) permissions for EVERYBODY when restricting tag access to specific users.
22701	8846	Fixed "extra switch pattern with no body" Tcl error in the vovdb_util dump function.

### 6.1.6 The Following 2016.09 Update 17 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
22294	8701	The bjobs LSF emulation utility has been modified to support the -o option to control the job listing output format. Column width and specifiers are also supported. See bjobs usage syntax (bjobs -h) for details.
22674	8796	A new subcommand of vovslavemgr, rotatelog, creates new log files and new log directories if missing. Startup log files are not re-created.
<b>Fixed Bugs</b>		
22639	8805	Fixed issue where the highest possible value for the maxload setting of a vovslave was silently capped at 100.0. This prevented slaves configured with more than 100 job slots from running more than 100 jobs. The new highest possible value for the maxload setting is 10000.0. Along with this change, jobs will need to be submitted with PERCENT/0, or the default minimum HW request will need to be modified to PERCENT/0 is requested, or no PERCENT resource at all. The default minimum HW request can be configured in the SWD/policy.tcl file using the "minhw" setting (default is shown):  <pre>set config(minhw) "RAM/20 CORES/1 SLOTS/1 PERCENT/1"</pre> If this setting is changed, the policy.tcl file will need to be reread by the vovserver, which can be accomplished with the following command:  <pre>nc cmd vovproject reread</pre>
21678	8075	The server parameter "schedskip" is now obsolete. We recommend using the parameter "schedMaxEffort" to limit the time usage of the scheduler. See the documentation for schedMaxEffort for more details.
22004	8244	A new server configuration parameter is added to limit the maximum number of ORs in a resource expression. For example in policy.tcl:  <pre>set config(maxORsInResourceExpressions) 10</pre> Or from the shell:  <pre>nc cmd vovsh -x 'set vtk_server_config maxORsInResourceExpressions 10'</pre> If a job is submitted and the number of ORs in its resource expression exceeds the limit, the job will be rejected with a message in the Why info.  The default value for the limit is 20.
22020	8373	Added documentation that describes vovnginxd configuration files and procedure. Note: This ticket is composed of 2 parts. The first part has been addressed. The second part, "nginx sometimes holds up the port indefinitely when the back end NC vovserver has failed", will be addressed in a future release.
22006	8475	Jobs with a negated soft resource containing a colon or underscore character were unexpectedly dispatched instead of queueing. This has been corrected.
21442	7864	Fixed to set correct fail codes for stopped jobs by Ext method
22689	8833	The SOLUTION property on jobs will now use "!" to indicate negated resources rather than "!=".
22713	8872	Fixed the problem that one of preempt rules is not sorted by order. Improved error message.

### **6.1.7 The Following 2016.09 Update 17 Release Items are for WorkloadXcelerator**

No changes were generated for WorkloadXcelerator.

### **6.1.8 The Following 2016.09 Update 17 Release Items are for HERO**

No changes were generated for HERO.

## 7 2016.09 Update 16 Patch 4

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### 7.1 Update 16 Patch 4 Release Notes

#### 7.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 7.1.2 The Following 2016.09 Update 16, Patch 4 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 7.1.3 The Following 2016.09 Update 16, Patch 4 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 7.1.4 The Following 2016.09 Update 16, Patch 4 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 7.1.5 The Following 2016.09 Update 16, Patch 4 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
22271	7986	rabbitmq-based client-log functionality(Prototype) for nc command is added. To enable it: <ol style="list-style-type: none"><li>1. Setup rabbitmq server</li><li>2. Set env VOV_CLIENT_LOG 1, set env VOV_CLIENT_LOG_HOST with hostname where rabbitmq server is running.</li><li>3. Use start_vovclientlogd.tcl to start a default vovclientlogd daemon for writing client logs into daily log files.</li></ol>
<b>Fixed Bugs</b>		
22868	8911	Fix premature termination of &apos;nc hosts&apos; command when a slave exits during the running of the command. This may have been encountered with large or volatile slave counts and is seen when the -O format option is used.

#### 7.1.6 The Following 2016.09 Update 16, Patch 4 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 7.1.7 The Following 2016.09 Update 16, Patch 4 Release Items are for HERO

No changes were generated for HERO.

## 8 2016.09 Update 16 Patch 3

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### 8.1 Update 16 Patch 3 Release Notes

#### 8.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 8.1.2 The Following 2016.09 Update 16, Patch 3 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 8.1.3 The Following 2016.09 Update 16, Patch 3 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 8.1.4 The Following 2016.09 Update 16, Patch 3 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 8.1.5 The Following 2016.09 Update 16, Patch 3 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
22868	8911	Increased performance of "nc host -O @ID@" command when used with a large number of slaves.

#### 8.1.6 The Following 2016.09 Update 16, Patch 3 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 8.1.7 The Following 2016.09 Update 16, Patch 3 Release Items are for HERO

No changes were generated for HERO.

## 9 2016.09 Update 16 Patch 2

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### 9.1 Update 16 Patch 2 Release Notes

#### 9.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 9.1.2 The Following 2016.09 Update 16, Patch 2 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 9.1.3 The Following 2016.09 Update 16, Patch 2 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 9.1.4 The Following 2016.09 Update 16, Patch 2 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 9.1.5 The Following 2016.09 Update 16, Patch 2 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
22655	8824	Do not process commas as option delimiters in SNAPSHOT environment calls so that a snapshot file path can include commas.

#### 9.1.6 The Following 2016.09 Update 16, Patch 2 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 9.1.7 The Following 2016.09 Update 16, Patch 2 Release Items are for HERO

No changes were generated for HERO.



# 10 2016.09 Update 16 Patch 1

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## 10.1 Update 16 Patch 1 Release Notes

### 10.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

### 10.1.2 The Following 2016.09 Update 16, Patch 1 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

### 10.1.3 The Following 2016.09 Update 16, Patch 1 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

### 10.1.4 The Following 2016.09 Update 16, Patch 1 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

### 10.1.5 The Following 2016.09 Update 16, Patch 1 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
22689	8833	Have vovfosterjob detect the malformed negated resource and translate it into the proper syntax (work-around prior to server-side fix).
22291	8753	Fix error in jobclasses.cgi, where a jobclass using the variable VOV_JOB_DESC(jobclass) would trigger a Tcl error.

### 10.1.6 The Following 2016.09 Update 16, Patch 1 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 11 2016.09 Update 16

### 11.1 Update 16 Release Notes

#### 11.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
22235	8641	When a job is modified, do not mark the job unsafe when the host has been changed. Also do not invalidate the job when the resources, aux resources, jobclass, job project, or fairshare group changed.
<b>Fixed Bugs</b>		
22287	8658	Fixed issue that randomly caused a "page too large" error to be displayed for certain pages in the web UI that contain a significant amount of data.

#### 11.1.2 The Following 2016.09 Update 16 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
	8709	Fixed vovfileready bug that existed in 2016.09u12-2016.0u15. The bug caused the vovfileready job to become invalid instead of becoming valid and running the downcone immediately. Now, it behaves correctly. This is a 1-line Tcl change and is a trivial patch to any release.
	8626	An alert for not enough file descriptors from vovlsfd.tcl was confusing users and has been removed. Warnings about this are still issued in the logfile.
	8773	Fixed issue in tcl procedures that attempt to validate nodes (waive exit code, force run, force validate). These procedures were broken in recent 2016.09 versions (validation did not always occur and error messages were seen). This fix allows these functions to successfully validate the requested node, which also includes the output of jobs.

#### 11.1.3 The Following 2016.09 Update 16 Release Items are for LicenseAllocator

No changes were generated for LicenseAllocator.

#### 11.1.4 The Following 2016.09 Update 16 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
21794	8162	Made sure the data series has the same order as the legend series so that there is no mismatch between them.
	8610	Use bold font for the label and legend in pie charts, and use bold font for tick and legend in bar/histogram chart. This change should provide improved look for presentation views.
	8611	

		Adopted a new pie chart color selection algorithm that produces a range of lighter colors that look good with black fonts on top of them in most cases.
	8209	Fixed issue that prevented the lmmgr reset function from working.
	8571	Make sure correct where clause for the SQL is used when retrieve data from database to produce reports.

### 11.1.5 The Following 2016.09 Update 16 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
21366	7878	Added option "-leaf" to "vovfsgroup genconfig" to also include weights for the leaf nodes of the complete fairshare tree.
22239	8644	To prevent excessive server load due to too many OR clauses in resource map sums, calls to vtk_resourcemap_sum from <swd>vovresourced/config.tcl are now limited to expressions of up to 5 ORs (by default). The default limit can be adjusted by setting RESD(maxORsInResourceSum) in <swd>/vovresourced/config.tcl. If a resource sum with excessive ORs is seen, an alert is generated and an error message is output once per day in the vovresourced logfile.
	8749	A new option, -writeprdir <directory_path> has been added to the ncmgr stop command. This permits the PR file to be written, uncompressed, to the specified directory instead of the trace.db directory upon server shutdown.
<b>Fixed Bugs</b>		
22142	8492	Fixed issue with vovslaveroot reconnecting after a 30+ minute network interruption. Now, the slaves will properly reconnect and recover the jobs when the network connection to the server is re-established even after a delay of over 30 minutes. Fixed issue with vovslaveroot when the process exits with an error to make sure that the message gets logged (previously the "fatal error" message was not shown or logged anywhere). Fixed issue with the sleep time between reconnection attempts to be accurate based on wall clock time. Previously, when a vovslave was reconnecting, the timeout would sometimes be very far off from the requested wall clock time.
22515	8739	In certain cases, when a job finishes at the same time as an internal alarm, a job can hang, or be auto-killed, so appears to fail. This problem has been resolved.
22291	8753	Fixed error in jobclass.cgi, where a jobclass using the variable VOV_JOB_DESC(jobclass) would trigger a Tcl error.
20113	7343	When there is an error opening, writing, or closing a dailylog file, such as the log used for vovresourced, catch the error and report it. The error message, including the decoded string from C++, will get printed, as well as the message that was being written. In addition, generate an alert when such an error occurs with the same information (except for the message being written).
22529	8744	Format the value of the WX_BUCKET_LINK property when viewed from within node.cgi.
20821	7562	Made some fixes to input and output declarations to address "Server is operating on a non-internal object" error.
21526	7911	The command "vovslavemgr restart" now behaves identically to "vovslavemgr stop" followed by "vovslavemgr start", allowing "vovslavemgr restart" to properly restart busy slaves.
22166	8623	<ul style="list-style-type: none"> <li>• vtk_fggroup_update is added. Calling this function triggers the server to update fairshare statistics such as target share, actual share, excess share.</li> <li>• Fairshare statistics updated timestamp is showing on the page fairshare.cgi</li> <li>• sanity function does not restart vovresourced daemon any longer.</li> <li>• If running counts is wrong and gets fixed by sanity, the server log will have a message that looks like "Fixing count of running jobs old=1 new=2".</li> <li>• Running count became wrong when a job was invalidated, and this case is fixed.</li> </ul>
22226	8625	Queries for requested-resource fields will now return correct values for jobs with non-running statuses.
22267	8673	Added "USERXDUR" and "USERXDURPP" fields to vovselect (for FlowTracer) and nc getfields (for NetworkComputer) to reflect the expected duration of the job as specified by the user. The existing fields "XDUR" and "XDURPP" will continue to be updated to reflect actual duration when the job completes successfully.
22273	8678	A slave that is in the process of stopping but is still running jobs will now have _stopped_<timestamp> appended to its name, whether stopped from the command line or through the server's browser-based UI. This allows a slave to be restarted multiple times. In addition, a request to a slave to stop can only be canceled if a replacement slave hasn't already started.
21608	8697	Improved the performance and reliability of the FREE_SLAVES preemption rule behavior.

### **11.1.6 The Following 2016.09 Update 16 Release Items are for WorkloadXelerator**

No changes were generated for WorkloadXelerator.

### **11.1.7 The Following 2016.09 Update 16 Release Items are for HERO**

No changes were generated for HERO.

## 12 2016.09 Update 15

### 12.1 Update 15 Release Notes

#### 12.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
		No enhanced features were generated that apply to all Runtime products.
<b>Fixed Bugs</b>		
22165	8529	Attempts to use vtk_resource_map_set to create a self-referential resource map are now rejected with an error message and an alert.
	8570	NetworkComputer and WorkloadXelerator queue configuration files are no longer corrupted when enabling server failover.
	8592	Timespec values are now supported in selection rules, in all places that accept integer values.

#### 12.1.2 The Following 2016.09 Update 15 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
22036	8261	Fixed a problem with editing jobs from the browser UI when the command line uses single quote characters.
22173	8569	We have added a new environment variable, VOV_SLAVE_SID_DISABLE. If this variable is set to 1, vovslave and vovslaveroot will not create new sessions (and consequently will not create new process groups) on startup.
	8595	When calling ForceValidate, queued jobs that are validated are removed from the buckets.
21921	8146	Fixed the occasional failure of vovlsfd to start when run in single user mode for multi-user FT usage. Removed redundant checks for whether it is safe to run or not.

#### 12.1.3 The Following 2016.09 Update 15 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseAllocator.
<b>Fixed Bugs</b>		
22193	8585	Critical jobs check will now work with wait reasons that include number of tokens in the resource specification.
	8635	Improved presentation of "group matching" in LA user interface.

#### 12.1.4 The Following 2016.09 Update 15 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
22112	8561	Fix issues with LM SFD that prevented it from running as a Windows service under the "system" user. Running under the "system" user requires the user name AND password to be "system" in the account information portion of the SFD GUI. The "system" user is now added to the default security configuration in security.tcl to allow it to run normally. Because the "system" user has no password, at least one real user will need to be granted ADMIN privileges in the security.tcl file as well. After doing so, restart the service for the change to take affect. Please allow for 30 seconds between stop and start of the service. Note that the service must be uninstalled and reinstalled or it will fail to start with this version of the SFD. This can be done using the Install/Delete controls in the service portion of the SFD GUI.
22181	8580	Fixed error in LicenseMonitor that prevented the viewing of very large batch reports.
22225	8620	Now the ftlm_parse_flexlm program correctly outputs the parsed version for the queued for license records to the *.chk file.
	8526	Clarified messaging regarding unrecognized slave configuration parameters; this is now a warning rather than an error, as it can occur for example when using a newer server with an older slave.

#### 12.1.5 The Following 2016.09 Update 15 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
22121	8468	NetworkComputer no longer "forgets" a resource map that has been in use for longer than the cutoff provided or is currently in use by a preempted job.
21098	7643	Fixed issue that caused jobs submitted through the LSF emulation layer to result in a SLEEPING state due to an output conflict caused by the use of the -o option to bsub.
21752	8038	Added the ability to grant a user the privilege to stop another user's job. This can be accomplished by granting the STOP ACL privilege to the other user by using the vovacl command line utility. vovacl -agent "USER joe" -append -actions STOP 008210915
21856	8089	Ensure VOV_JOBCLASS_DIRS is honored in CLI and web UI, regardless whether it is defined in the queue setup file in vncConfig or the vnc_policy.tcl file. This includes a new line in the output of the "nc jobclass -ll" command that shows the location of the jobclass script. For the web UI specifically, jobclasses that are located in a user-defined directory are also marked as editable.
21983	8233	Messaging in vsy, nc info and related commands has been changed to clarify which resources are actually missing when the user specifies OR clauses in the resource request.
22087	8347	The slave.childProcessCleanup parameter in policy.tcl no longer requires cgroups; it does still require a Linux platform. Additionally the method of process cleanup has been changed to be more thorough; this setting may cause vovslave to be less responsive in heavy usage scenarios.
22088	8439	The snapshot environment used by the "nc run -ep" option is now protected against stale system environment variables, such as VOV_PORT_NUMBER.
22194	8587	Fixed handling of selection rules for preemptable job for MULTIQUEUE preemption rules.
	8631	Fixed resource leak caused by hyper-active preemption of same job.
	8412	NetworkComputer now reconnects properly to a LicenseMonitor instance that has been restarted.
	8588	Improved reliability of "nc stop -dir xxx" which now makes sure all stops have been performed.
	8629	A job preempted with EXT and then killed correctly ends up in the FAILED status rather than WITHDRAWN
	8636	Allow editing of mqthresh parameter in MULTIQUEUE preemption rules.

### 12.1.6 The Following 2016.09 Update 15 Release Items are for WorkloadXelerator

No changes were generated for WorkloadXelerator.

### 12.1.7 The Following 2016.09 Update 15 Release Items are for HERO

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for HERO.
<b>Enhanced Features</b>		
		No enhanced features were generated for HERO.
<b>Fixed Bugs</b>		
	8164	Fixed problem with exit-status-based auto-rescheduling that prevent the job from running upon being auto-rescheduled.

## 13 2016.09 Update 14

### 13.1 Update 14 Release Notes

#### 13.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime Products.

#### 13.1.2 The Following 2016.09 Update 14 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
	8479	Fixed "Force Validate", which uses a procedure called MakeDashT to emulate the "-t" option to Make. This feature updates the start and end times of jobs, which was being prevented due to tightened protections that were added. This change also fixes a similar problem with "RECONCILE_WITH_FILE_SYSTEM", which also needs to update start and end times of jobs.
	8519	Added back addflow.cgi and removed the broken web link to it in the web interface. This script is not expected to be used but the broken web link needed to be removed.

#### 13.1.3 The Following 2016.09 Update 14 Release Items are for LicenseAllocator

No changes were generated for LicenseAllocator.

#### 13.1.4 The Following 2016.09 Update 14 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
	8487	Handles correctly the case "No checkouts found for the specified report period." for division calculation when excluding idle time.

#### 13.1.5 The Following 2016.09 Update 14 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
	8248	NetworkComputer will now update license information from LicenseMonitor the minimum of either every 5 minutes or half the configured expiration time.
<b>Fixed Bugs</b>		
22101	8401	An incorrect "why" message produced by "nc info" when jobs had been stopped was corrected.
22148	8503	Added support for entire list of legacy field names in "nc hosts -O", which in turn, fixes issues with the named groups, such as "nc hosts -SLOTS".



21130	8187	Fixed issue with auto-rescheduling of failed jobs so that the downcone dependencies do not get descheduled. Now, the failed job can re-run and the downcone will run if and when the job passes on the second (or later) attempt.
22150	8505	Restored sensitivity to NC_STOP_SIGNALS and NC_STOP_SIG_DELAY job properties.
21588	7952	Reverted FairShare history graph to original width of 600px in order to restore x-axis label visibility for graph windows down to 5d.

### 13.1.6 The Following 2016.09 Update 14 Release Items are for WorkloadXelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXelerator.
<b>Fixed Bugs</b>		
22085	8334	vovelasticd will now use auxiliary resources of WX jobs when submitting slaves to NC. In case of a previously failed slave, using auxiliary resource, WX will try to submit a slave on a different host in NC.
21997	8074	Resource expressions with   operator in job classes should be combined without spaces. e.g. set VOV_JOB_DESC(resources) "(general PD) Limit:..."

### 13.1.7 The Following 2016.09 Update 14 Release Items are for HERO

No changes were generated for HERO.

## 14 2016.09 Update 13-1

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### 14.1 Update 13 Patch 1 Release Notes

#### 14.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 14.1.2 The Following 2016.09 Update 13, Patch 1 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 14.1.3 The Following 2016.09 Update 13, Patch 1 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 14.1.4 The Following 2016.09 Update 13, Patch 1 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 14.1.5 The Following 2016.09 Update 13, Patch 1 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
22150	8505	Restored sensitivity to NC_STOP_SIGNALS and NC_STOP_SIG_DELAY job properties.

#### 14.1.6 The Following 2016.09 Update 13, Patch 1 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 15 2016.09 Update 13

### 15.1 Update 13 Release Notes

#### 15.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
22069	8346	Changed default value of thread.service.max from 2 to 0, per customer request.
22111	8420	Allow control of the maximum number of maps in a job resource expression, previously hard-coded at 300. Now this can be set with the parameter resources.max.maps
<b>Fixed Bugs</b>		
21729	8031	As of 2016.09 update 11, there is a new environment variable VOV_PAUSE_CHILD_SIGNAL, which controls the signalling of child processes on Linux platforms when a slave enters the PAUSED state (usually this happens when a slave receives a SIGTSTP signal). The valid values of this variable are: "STOP" - send SIGSTOP to all child processes. This is the default behavior. "TSTP" - send SIGTSTP to all child processes. SIGTSTP is not guaranteed to suspend child processes. "NONE" or ""(empty string) - do not signal child processes. Any value other than the valid values will result in the default behavior (SIGSTOP). As of 2016.09 Update 13, the environment variable VOV_PAUSE_VW_ON_TSTP can be set to 1 to cause vw jobs to pause when they receive the SIGTSTP signal. The vw jobs will continue if they receive either SIGCONT or SIGALRM.
	8486	Fixed a bug that was introduced in 2016.09u10 wherein the server would crash if it failed to obtain a lock on the server.info file (on server startup).

#### 15.1.2 The Following 2016.09 Update 13 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
22059	8294	Prevent TCL errors for FDL procedures that apply to the most recent job, set, or file when the FDL has not yet declared the necessary item. Issue a warning that the item was ignored for properties, annotations, and job names. For inputs, outputs, capsules, adding items to sets, IFJOB, and X11_DISPLAY, stop the vovbuild with a fatal error when this problem occurs.

#### 15.1.3 The Following 2016.09 Update 13 Release Items are for LicenseAllocator

No changes were generated for LicenseAllocator.

#### 15.1.4 The Following 2016.09 Update 13 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		

21099	7863	vovsql_load_checkouts now is able to process checkout log with handle# > limit of INTEGER data type in one of the following ways: <ol style="list-style-type: none"> <li>1. for newly created checkouts table, the handle's data type is BIGINT, can deal with integer up to 263-1 (vs. the INTEGER can deal with integer up to 231-1=2147483647).</li> <li>2. for existing table, if you set the environment variable ALTER_HANDLE_TO_BIGINT before you upgrade the software, it will convert handle from INTEGER to BIGINT.</li> <li>3. for those keeping the handle as INTEGER type, we will do some processing in the temporary table when loading the data to checkouts table, i.e. handle=handle%2000000000 so that it will not over the limit.</li> </ol>
21594	7977	The efficiency stats report now has option "Include idle time". If selected, the percentile calculation will based duration, match the right-side (Exactly Used) chart in the "Feature Efficiency Histogram".
	8054	The png export for report chart will work correctly even for high dpi canvas.
21817	8251	Updated LicenseMonitor's FlexLM parser to combine reservations for the same feature and user or group that are spread over multiple declarations.
21934	8173	The vovserver policy.tcl file options checkoutHostLowerCase and checkoutUserLowercase were inoperative, but now correctly control case-sensitivity.
21958	8201	Fixes issue in the usage comparison plot report where an error is produced when dropped queued requests are present.

### 15.1.5 The Following 2016.09 Update 13 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
22069	5947	Added ability to shut down threads. This can be done now with % vovsh -x 'vtk_server_config thread.service.max 0' Other parameters called "thread.service...." are accessible to control when to use threads.
20833	7535	The tcl procedure "VovGetRevokeDelay {}" can now be added and customized by redefining it in vovresourced/config.tcl under the SWD directory to allow users to customize the revoke delay to be used in vovreconciled. This allows users to have the revoke delay from their job classes override the default value of RESD(revokeDelay). The proc definition has been added to the documentation. In addition, the verbosity levels of various messages have been modified per customer request.
20674	7455	The optional "live_keepfor_jobs.tcl" task script has been improved to reduce the load on the NC vovserver.
21585	7959	The -maxload option of vtk_slave_define now accepts simple expressions relative to the capacity value, represented by the keyword 'CAPACITY'. For example, -maxload CAPACITY*1.5 would set the maxload to 1.5 times the number of slots. Supported operators are: +/-/*
<b>Fixed Bugs</b>		
21130	8187	Added a post_retrace_downcone post-processing script to schedule the down cone of a job, to cover the case in which a job with dependencies may be automatically resubmitted multiple times.
21985	8241	Fixed a problem with @JOBID@ not being expanded in the environment specification. This was causing a problem with cross queue submission due to environment not being captured correctly.
22086	8362	Fixed issue with new dependencies for existing jobs in NC that caused the job that is a dependency for another job to turn invalid, which also invalidated the downcone. Now, it does not turn invalid.
21646	7982	Changed documentation to suggest usage of the option "-rule" rather than "-hw" for multiple constraints in a "nc hosts" command. Corrected the help for "nc hosts". An issue was also fixed in the "nc hosts -hw" command that prevented multiple elements from being evaluated.
21251	8188	Previously, when vovgetgroups timed out or did not return groups info correctly, the job would run with the incorrect groups. Following this change, if vovgetgroups fails or times out, the job will fail.
	8219	No longer perform detailed slave analysis unless there is a confirmed HW resource wait reason.
22004	8244	A new server configuration parameter is added to limit the maximum number of ORs in a resource expression. For example in policy.tcl: <pre>set config(maxORsInResourceExpressions) 10</pre> Or from the shell: <pre>nc cmd vovsh -x 'vtk_server_config maxORsInResourceExpressions 10'</pre> If a job is submitted and the number of ORs in its resource expression exceeds the limit, the job fails with a message in the Why info. The default value for the limit is 20.
	8458	Synchronized the "nc hosts" utility with supported slave fields so that all fields are supported by the -O option.
21856	8089	NC jobclasses defined via VOV_JOBCLASS_DIRS now are visible in web and command line.
21869	8111	vovserver no longer issues incorrect license status GRACE messages in its log file

	8218	Fixed error message concerning undefined errorCode variable in the "nc why" help message.
22081	8330	Fixed a bug in which "nc hosts -f" did not return an accurate list of field names.
22079	8397	The fork time metric now shows 0 if threading has not been turned on, and also falls to 0 when threading gets turned off after being on.

### 15.1.6 The Following 2016.09 Update 13 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21997	8074	Fixed resource parsing that contains   operator in vovelasticd, vovwxd
21986	8214	WX no longer leaves stranded processes after the vovslave in the base NC setup has become SICK and subsequently recovers.

### 15.1.7 The Following 2016.09 Update 13 Release Items are for HERO

No changes were generated for HERO.

## 16 2016.09 Update 12

### 16.1 Update 12 Release Notes

#### 16.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
		No enhanced features were generated that apply to all Runtime products.
<b>Fixed Bugs</b>		
	8184	Fixed error case when vovconsole prints out unknown color name "" when there is not visible error.

#### 16.1.2 The Following 2016.09 Update 12 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
21619	8052	Fixed bugs with barriers. Prevent jobs above a valid barrier from being retraced when a job below the barrier is retraced with the aggressive retrace flag. Prevent invalidation of a valid barrier that is the output of an invalid job during vovbuild. Added protection from illegal status changes (for example, a job can not be MISSING). Allow only INVALID to propagate to the entire downcone of a node.
21752	8083	vtk_set_get_elements accepts -selrule as the same option with -rule. Error handling with invalid options is improved.
	8161	Fixed bug that sometimes caused deleted sets to not be removed from the set browser in FlowTracer after being forgotten. This was most visible when doing "vovforget -allsets" and depended on the order that sets were forgotten.

#### 16.1.3 The Following 2016.09 Update 12 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseAllocator.
<b>Fixed Bugs</b>		
21866	8123	LA will check allocations against min restriction at every step of allocation calculation.
	8088	LA will check out at least 1 token of jobs_la, even if no job are running.

#### 16.1.4 The Following 2016.09 Update 12 Release Items are for LicenseMonitor

No changes were generated for LicenseMonitor.

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.

Fixed Bugs		
21882	8113	Fixes issue where the override timezone was not being honored for log parsing jobs.
21952	8176	In some cases, the LM &convert to batch report&quot; link generated command lines that produced reports different from those in the browser UI. This is now fixed.

### 16.1.5 The Following 2016.09 Update 12 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
	8174	Improved performance of vtk_resourcemap_set_limit.
	8125	Added timing control for preemption with two new parameters: preemption.max.time.overall which limits the time spent by the preemption code in any given preemption iteration (normally 0.3 seconds at most once every 3 seconds) and preemption.max.time.rule which limits the maximum time for each rule. Improve performance of RESERVE_SLAVES rules. Allow RESERVE_SLAVES lists to be specified with SlaveList:NAMEOFLIST Allow reservation of slaves to a bucket.
21107	6022	Removed the confusing -q option to nc forget, introduced in 2016.09 Update 9, since it could be confused with the -q (queue) option. Replaced it with the -quiet option to nc forget. Note that the command is not quiet in case of errors. To make it completely silent, use: nc forget ... >& /dev/null
<b>Fixed Bugs</b>		
21591	7958	Modified both "nc info" and "node.cgi" to show the CHOSEN_SLAVEID if it is set. Also added the "-sameslave" option to vovresreq to control this behavior.
21723	8027	Prevent changes to a job while running if the changes would invalidate the job. This fixes a bug when resources are modified with "nc modify" on a running job, causing it to turn INVALID/Idle even though the processes are still running.
21884	8126	A new debug environment variable, VOV_DEBUG_NO_START has been created. The script vov_diagnostic_no_start will be run only if this environment variable is set to a non-zero value on the slave. The script contains a vovselect query, which can increase server load significantly under certain conditions. The query will be run only if VOV_DEBUG_NO_START is set to 2 on the slave.
20532	5624	Changed behavior for when we reconcile a resource R we can take a look at the previous resource in the grabbed list and check if the previous resource is a summary resource for R.
21605	7962	Fixed calculation of most recent job in the "nc info !" command.
21762	8043	There are minor changes to the wording of the output of vsy, vovwhy, nc why, wx why and vtk_explain_status.
21778	8090	Corrected incorrect wording in why-waiting analysis that misreported the job's bucket rank in FairShare as the job's order in the bucket.
21849	8093	Fixed incorrect reference to: NC:AlsoRemovePreviousSummaryResources in recursive call.
	8171	Reduced the rate at which vovresourced checks for LM to be up when using a hard-coded LM location and LM is currently down.
21653	6939	Fixed "nc gui" timeout restart so you do not have to go through the additional steps of clicking in the set bar and pressing enter.
21764	8044	If a slave becomes "stopped" slave, symlink slave.log is not updated by the slave.
21772	8050	The behavior of the "nc info" command has been fixed to provide better information in cases where a FAILED or INVALID job has an invalid return code.
	8159	The &quot;nc who&quot; command was nonfunctional starting in 2016.09u9. This has been fixed.
21576	7944	Fixed issue where NC wrapper fails to exit when job is complete.
21596	7978	There is a new optional policy.tcl parameter on Linux platforms named "slave.childProcessCleanup". Setting this parameter to 1 causes slaves to kill all child processes when a job exits. This parameter will implicitly use cgroups. Additionally the old method of using vovprocessmgr has been fixed.
21828	8098	The time window was missing from the URL of the fairshare web page. This prevented it from being shared. The URL now again has name=value pairs, which should once again allow sharing.
21918	8136	There was a race condition which could result in a deadlock when a signal handler was called. This manifested variously in the traceback as a hung call to futex() or readSocket(), and possibly others. This problem has been fixed.
21915	8156	When reading environments, if there is an environment variable with an empty value, call unsetenv on it instead of logging an error with a backtrace in the slave log.
21928	8157	The emulated bsub command now correctly uses the job placement policy defined in the NC jobclass that is mapped to the bsub "-q" option.

### 16.1.6 The Following 2016.09 Update 12 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21803	8085	WX now correctly handles SlaveList requests by not attempting to process them in the front-end, passing them on to the NC back-end for processing instead.
21266	7772	Failover slaves now use the original vovserver's VOVDIR as opposed to their own when starting a failover server.
	8097	Catch error caused by the removal of a non-existent slave.

### 16.1.7 The Following 2016.09 Update 12 Release Items are for HERO

No changes were generated for HERO.



## 17 2016.09 Update 11-6

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### 17.1 Update 11 Patch 6 Release Notes

#### 17.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime Products.

#### 17.1.2 The Following 2016.09 Update 11 Patch 6 Release Items are for FlowTracer

No changes were generated for FlowTracer.

#### 17.1.3 The Following 2016.09 Update 11 Patch 6 Release Items are for LicenseAllocator

No changes were generated for LicenseAllocator.

#### 17.1.4 The Following 2016.09 Update 11 Patch 6 Release Items are for LicenseMonitor

No changes were generated for LicenseMonitor.

#### 17.1.5 The Following 2016.09 Update 11 Patch 6 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
22689	8833	Have vovfosterjob detect the malformed negated resource and translate it into the proper syntax (work-around prior to server-side fix).
22291	8753	Fix error in jobclasses.cgi, where a jobclass using the variable VOV_JOB_DESC(jobclass) would trigger a Tcl error.

#### 17.1.6 The Following 2016.09 Update 11 Patch 6 Release Items are for WorkloadXelerator

No changes were generated for WorkloadXelerator.

#### 17.1.7 The Following 2016.09 Update 11 Patch 6 Release Items are for HERO

No changes were generated for HERO.

## 18 2016.09 Update 11-5

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### 18.1 Update 11 Patch 5 Release Notes

#### 18.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 18.1.2 The Following 2016.09 Update 11, Patch 5 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 18.1.3 The Following 2016.09 Update 11, Patch 5 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 18.1.4 The Following 2016.09 Update 11, Patch 5 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 18.1.5 The Following 2016.09 Update 11, Patch 5 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
22239	8644	To prevent excessive server load due to too many OR clauses in resource map sums, calls to vtk_resource_map_sum from <swd>vovresourced/config.tcl are now limited to expressions of up to 5 ORs (by default). The default limit can be adjusted by setting RESD(maxORsInResourceSum) in <swd>/vovresourced/config.tcl. If a resource sum with excessive ORs is seen, an alert is generated and an error message is output once per day in the vovresourced logfile.
<b>Fixed Bugs</b>		
		No bugfixes were generated for NetworkComputer.

#### 18.1.6 The Following 2016.09 Update 11, Patch 5 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 19 2016.09 Update 11-4

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### 19.1 Update 11 Patch 4 Release Notes

#### 19.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 19.1.2 The Following 2016.09 Update 11, Patch 4 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 19.1.3 The Following 2016.09 Update 11, Patch 4 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 19.1.4 The Following 2016.09 Update 11, Patch 4 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 19.1.5 The Following 2016.09 Update 11, Patch 4 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
22239	8644	To prevent excessive server load due to too many OR clauses in resource map sums, calls to vtk_resourcemap_sum from <swd>vovresourced/config.tcl are now limited to expressions of up to 5 ORs (by default). The default limit can be adjusted by setting RESD(maxORsInResourceSum) in <swd>/vovresourced/config.tcl If a resource sum with excessive ORs is seen, an alert is generated and an error message is output once per day in the vovresourced logfile.
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
		No bugfixes were generated for NetworkComputer.

#### 19.1.6 The Following 2016.09 Update 11, Patch 4 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 20 2016.09 Update 11-3

### 20.1 Update 11 Patch 3 Release Notes

#### 20.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for All Runtime Products.
<b>Enhanced Features</b>		
		No enhanced features were generated for All Runtime Products.
<b>Fixed Bugs</b>		
	8500	Provided a workaround to enable the patch url at the top of the project page to be rendered properly as a link instead of displaying html code. This has been fixed in 2016.09u12 and above.

#### 20.1.2 The Following 2016.09 Update 11, Patch 3 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 20.1.3 The Following 2016.09 Update 11, Patch 3 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 20.1.4 The Following 2016.09 Update 11, Patch 3 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 20.1.5 The Following 2016.09 Update 11, Patch 3 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
21646	7982	Changed documentation to suggest usage of the option "-rule" rather than "-hw" for multiple constraints in a "nc hosts" command. Corrected the help for "nc hosts". Also fixed the "nc hosts -hw" command preventing multiple elements from being evaluated.
21130	8187	Provided a workaround that enables auto-rescheduling of failed jobs so that the downcone dependencies do not get descheduled. Now, the failed job can re-run and the downcone will run if and when the job passes on the second (or later) attempt. Requires the workaround script "\$VOVDIR/etc/post/post_retrace_downcone" which must be run at the end of the job as a post cmd.
21985	8241	Provided a workaround for problem where @JOBID@ was not being expanded in the environment specification. This was causing a problem with cross queue submission due to environment not being captured correctly. Workaround requires use of VncCallbackAction (see NC Admin Guide) to call custom callback script in jobclass to perform expansion.

## **20.1.6 The Following 2016.09 Update 11, Patch 3 Release Items are for WorkloadXcelerator**

No changes were generated for WorkloadXcelerator.

## 21 2016.09 Update 11-2

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### 21.1 Update 11 Patch 2 Release Notes

#### 21.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 21.1.2 The Following 2016.09 Update 11, Patch 2 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 21.1.3 The Following 2016.09 Update 11, Patch 2 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 21.1.4 The Following 2016.09 Update 11, Patch 2 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 21.1.5 The Following 2016.09 Update 11, Patch 2 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
21918	8136	There was a race condition which could result in a deadlock when a signal handler was called. This manifested variously in the traceback as a hung call to futex() or readSocket(), and possibly others. This problem has been fixed.

#### 21.1.6 The Following 2016.09 Update 11, Patch 2 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21803	8073	Minor cleanup of errors in vovelasticd.tcl

## 22 2016.09 Update 11-1

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### 22.1 Update 11 Patch 1 Release Notes

#### 22.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 22.1.2 The Following 2016.09 Update 11, Patch 1 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 22.1.3 The Following 2016.09 Update 11, Patch 1 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 22.1.4 The Following 2016.09 Update 11, Patch 1 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 22.1.5 The Following 2016.09 Update 11, Patch 1 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
	8159	The "nc who" command was nonfunctional starting in 2016.09u9. This has been fixed.
21849	8093	Fixed incorrect reference to: NC:AlsoRemovePreviousSummaryResources in recursive call.

#### 22.1.6 The Following 2016.09 Update 11, Patch 1 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21803	8073	Improve handling of job's expected duration with respect to maximum slave lifetime. Also, appropriately handle error caused by the removal of a non-existent slave so that the vovelasticd daemon does not enter the 2-minute wait state for back-end queue errors. More debug output at verbosity level 5 if slave not started for bucket. Improved web based visibility into vovelasticd.
21654	8074	Fixed issue with handling resource specifications that contain boolean OR conditions.

## 23 2016.09 Update 11

### 23.1 Update 11 Release Notes

#### 23.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
		No enhanced features were generated that apply to all Runtime products.
<b>Fixed Bugs</b>		
	8031	As of 2016.09 update 11, there is a new environment variable VOV_PAUSE_CHILD_SIGNAL, which controls the signalling of child processes on Linux platforms when a slave enters the PAUSED state (usually this happens when a slave receives a SIGTSTP signal). The valid values of this variable are: "STOP" - send SIGSTOP to all child processes. This is the default behavior. "TSTP" - send SIGTSTP to all child processes. SIGTSTP is not guaranteed to suspend child processes. "NONE" or ""(empty string) - do not signal child processes. Any value other than the valid values will result in the default behavior (SIGSTOP).

#### 23.1.2 The Following 2016.09 Update 11 Release Items are for FlowTracer

No changes were generated for FlowTracer.

#### 23.1.3 The Following 2016.09 Update 11 Release Items are for LicenseAllocator

No changes were generated for LicenseAllocator.

#### 23.1.4 The Following 2016.09 Update 11 Release Items are for LicenseMonitor

No changes were generated for LicenseMonitor.

#### 23.1.5 The Following 2016.09 Update 11 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	8017	Improve visibility on unused slaves.
<b>Enhanced Features</b>		
21656	6151	Added @JOBLOGDIR@ field for JOBS to allow pre- and post-command logfiles to go to the same directory as the job logfile. Checked if the pre- and post-command output logs are zero length, in which case they are auto-deleted.
20674	7455	The optional live_keepfor_jobs.tcl task script has been improved to reduce the load on the NC vovserver.
20904	7604	Added explanation that the main 'why' reason may not be the only one to discussion of 'nc why' in vncqueue.html in trunk.
<b>Fixed Bugs</b>		
21596	7978	There is a new optional policy.tcl parameter on Linux platforms named "slave.childProcessCleanup". Setting this parameter to 1 causes slaves to kill all child processes when a job exits.
21674	7999	Fixed issue where keyword substitution for the command line can inject curly braces if the command line includes a quoted string.
21693	8011	Increase the max capacity of a running slave to match the new capacity if the slave is being reconfigured with a capacity that exceeds the current max capacity.



### 23.1.6 The Following 2016.09 Update 11 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21266	7772	Improve visibility on unused slaves.
21706	7996	Ensure vovelasticd daemon clears the queue error state to allow launcher submissions to resume after its 2-minute error waiting period.
21663	8025	Disable vovresourced LM interconnect for WX.

### 23.1.7 The Following 2016.09 Update 11 Release Items are for HERO

No changes were generated for HERO.

## 24 2016.09 Update 10-1

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### 24.1 Update 10 Patch 1 Release Notes

#### 24.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 24.1.2 The Following 2016.09 Update 10, Patch 1 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 24.1.3 The Following 2016.09 Update 10, Patch 1 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 24.1.4 The Following 2016.09 Update 10, Patch 1 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 24.1.5 The Following 2016.09 Update 10, Patch 1 Release Items are for NetworkComputer

No changes were generated for NetworkComputer.

#### 24.1.6 The Following 2016.09 Update 10, Patch 1 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21655,21706	7995,7996	Fixed issue that caused vovelasticd daemon to enter a dead-locked state upon reaching the max allowed number of back-end queue errors.
21803	8073	Improve handling of job's expected duration with respect to maximum slave lifetime. Also, appropriately handle error caused by the removal of a non-existent slave so that the vovelasticd daemon does not enter the 2-minute wait state for back-end queue errors. More debug output at verbosity level 5 if slave not started for bucket. Improved web based visibility into vovelasticd.
21654	8074	Fixed issue with handling resource specifications that contain boolean OR conditions.

## 25 2016.09 Update 10

### 25.1 Update 10 Release Notes

#### 25.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
	7925	Symbolic links of log files, such as server.log, slave.log are changed to relative paths.
<b>Fixed Bugs</b>		
	7807	Improved signal handling in vov/vw/vrt wrapper when waiting for a job to finish to increase stability.
	7931	Fixed conflict with the -platform and -nocommon options in the batch installer so that the option order does not matter.

#### 25.1.2 The Following 2016.09 Update 10 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
21547	7928	No longer bind to the X display by default in vovsh. To bind, pass the -d option.
21382	7827	The VOV_STDOUT_SPEC environment variable now supports @JOBNAME@ as part of the stdout and stderr filename formats, e.g.,  <pre>setenv VOV_STDOUT_SPEC .std_@ID@.@UNIQUE@.@JOBNAME@</pre> The jobname portion of these filenames is limited to alphanumeric characters, the underscore, hyphen and the period. Other characters in the jobname are filtered out. For jobs without a jobname, NOJOBNAME is used. Note that the vovserver must have the VOV_STDOUT_SPEC environment variable defined as above for this to take effect.
<b>Fixed Bugs</b>		
21517	7912	LSF jobs can now have multiple "LSFmopts:*" parameters in the resource string.
21590	7953	The capsule for Questa vcom is enhanced to handle files containing both entity and package declarations.
21260	7749	Documentation for PJ has been updated to describe the new method of indicating a PJ is a system job.
21297	7776	When an input or output is disconnected from a running job, do not invalidate the job. If a file was declared as an output of a running job during the job, and it is disconnected, propagate INVALID to the downcone of the disconnected output.
	7829	Prevent md5 barriers from invalidating the downcone when the timestamp changes but the content (md5sum) is still the same.
21356	7837	When the FDL commands T_FINAL or J_FINAL are called, do not disconnect dependencies other than the ones previously declared in FDL (no runtime dependencies such as instrumented tools, stderr, etc, should be detached).

#### 25.1.3 The Following 2016.09 Update 10 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseAllocator.
<b>Fixed Bugs</b>		

21445	7861	LA will prevent reconciliation of licenses by vovreconciled if matching has been turned off for this license resource.
	7984	Fixed the problem with targets being set to 1 even when there is no demand.

#### 25.1.4 The Following 2016.09 Update 10 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
21280	7762	ftlm_batch_report can take input fields from a file % ftlm_batch_report -inputFile <INFILE> and a template <INFILE> can be found at \$VOVDIR/etc/config/lm/ftlm_batch_report.tm
21424	7849	LA will cut back unused tokens to maximize utilization. It will also try hard not to reduce allocations below currently running for higher weightage sites, thus reducing the likelihood of pre-emption on NC.
<b>Fixed Bugs</b>		
20454	7601	Added ability to specify a replacement pattern and string for host names obtained by LM parsers. This is configured by adding the following line to the SWD/config/parser.cfg file:  <pre>set PARSEER(hostReplace) {{PATTERN}} {REPLACEMENT}}</pre> where PATTERN is a case-sensitive regular expression pattern, and REPLACEMENT is the string with which to replace the pattern.
20151	6962	Use the parser time for checkouts in the remote LM parser instead of the remote checkout time, to prevent overlapping of checkout records.
21099	7863	vovsql_load_checkouts now is able to process checkout log with handle# > limit of integer data type.
21279	7775	Uncheck options on batch report via Web UI to disable the plot on that option, now matching the behavior of online history report. Batch report via CLI now takes boolean (1 0) value for options that do not require values before but will backward compatible if no value provided.
21447	7868	Now the report UI is able to display users or any other drop-down list on Windows supported versions of all browsers (Chrome/FireFox/IE) even if the list contains binary characters.
21593	4216	Added average usage statistic to the Efficiency Statistics report table.

#### 25.1.5 The Following 2016.09 Update 10 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
21585	7959	The "-maxload" option of vtk_slave_define now accepts simple expressions relative to the capacity value, represented by the keyword 'CAPACITY'. For example, -maxload CAPACITY*1.5 would set the maxload to 1.5 times the number of slots. Supported operators are: +/-/*
20833	7535	The tcl procedure "VovGetRevokeDelay" can now be added and customized by redefining it in vovresourced/config.tcl under the SWD directory to allow users to customize the revoke delay to be used in vovreconciled. This allows users to have the revoke delay from their job classes override the default value of RESD(revokeDelay). The proc definition has been added to the documentation.
21125	7714	Enabled the @USER@ recipient keyword for the LongJobs health check notification procedure.
21199	7715	A limited-release capability, nc info -legacy, is provided to generate 'nc info' output in the older format (prior to 2016.09). The behavior of this command can be customized via a Tcl file at ../local/vncinfo.config.tcl based on environment variable, username, project name, etc. by doing 'set NCINFO(legacy) 1' under the desired conditions. Example:  <pre>if { [vtk_logname] eq "george" } { set NCINFO(legacy) 1 }</pre> # IMPORTANT: This legacy feature will not be available in releases beyond 2016.09 (and updates).
	7881	Fixed the ROWCOUNT field in REST API output so that it does not report double the correct row count.
21343	7810	"Stop all running jobs" button changed to "Stop jobs for all users", and the default set to "Cancel" on the dialog window instead of "OK" (which also changed to "Yes, Stop All")
<b>Fixed Bugs</b>		
21516	7906	Fixed issue that caused global namespace variables in the vnc_policy.tcl file to not be seen by the Tcl interpreter without adding a global call.

20576	7383	Start time, end time, and duration values are now validated in a call to vtk_slave_reserve to prevent values of 0 from being applied to a reservation. This prevents confusing reservation property entries in the /system/slaves/reservations FairShare group, if enabled. Slave reservation expirations and cancellations are now logged in the server log, even if the reservation expires while the slave is down. Slave properties, which store reservations for persistence, are now enabled by default for NetworkComputer instances.
20455	7487	Fixed issue where bash functions were not being defined correctly in snapprop.
20807	7739	Resumer jobs for jobs preempted via preemption rules that are waiting for HW now request the same slave and HW resources as the preempted job.
21560	7937	Prevent the following environment variables from being carried over from the job submission environment to the execution environment when using environment snapshots:  TK_TABLE_LIBRARY VTCL_LIBRARY VTIX_LIBRARY VTK_LIBRARY  By doing so, conflicts in a mixed-version environment will be prevented.
	7866	Cleanup stderr files generated by the SNAPPROP job environment when an error is caught by the Tcl interpreter when fetching a system property.
	7880	Fixed the format of JSON output in the REST API to include commas between list elements.
21520	7919	The following changes have been made to non-legacy output of vsy, vovwhy, nc why, wx why, vtk_explain_status and related commands: slavelists will not appear as SLAVELIST-NOT-AVAILABLE with 0 slaves when running wx. For non-wx products, empty or non-existent slavelists will now appear under "Main Reason" in the first section of the output. This is an additive change; slavelist information will still appear in the "Additional Information" section as well. The redundant line "Analyzing job 12345" has been removed from non-verbose output. This makes the "Main Reason" section easier to read.
21591	7958	A slave spawned by vovelasticd should use the trigger job's expected duration for its max life if the duration is longer than the slave max life configuration. This will prevent a deadlock situation where a slave is available to run a job, but cannot because it will exit before the job is expected to be finished.
	7973	Modified job why-waiting analysis to report on cases where the job's expected duration exceeds a slave's maximum lifetime.
21634	7975	Enabled pre/post commands with use of -f option to nc run.
21646	7982	Changed documentation to suggest usage of the option "-rule" rather than "-hw" for multiple constraints in a "nc hosts" command.
20830	5725	The "Seamless Transition To A Cycle-Based Scheduler" of the docs has been modified to provide added description for scheduler parameters.
21092	7644	Improved error handling in LSF emulation's bsub
21518	7930	Do not attempt to kill a non-existent subslave (with a PID of 0) after a job fails to start due to an unknown user error.
21020	7631	If job class description has html tag <em>, the enclosed text will rendered to the intended effects as italic/emphasized.
21153	7682	Fixed so that all NC jobclasses from \$VOVDIR/local/jobclass show up in the web GUI.

### 25.1.6 The Following 2016.09 Update 10 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21478	7890	Enabled initialization of jobclasses so that jobclass limit resources are defined correctly.
21532	7910	Made vovelasticd sensitive to bucket FairShare groups for determining the number of job launchers to submit to the back-end queue.
	6281	Added "VOVELASTICD(maxQueueErrors)" setting, defaulting to 10, that will cause the vovelasticd daemon to stop attempting launcher submissions when the number of consecutive launcher submission failures to the back-end queue exceed the setting. Both a system alert, as well as a vovelasticd log file entry, will be generated during this condition. Most often, this is related to a misconfigured queue. The daemon will resume normal operation once the configuration files have changed to correct the issue.
	6314	Documented the requirement to include LSFqueue:<queueName> in the resource specification in order to direct jobs to a specific LSF queue when using LSF as the base scheduler.
20975	7744	Enabled additional health check procedures, which can be used to monitor for errant conditions in the compute environment or the workload, such as jobs that have been queued or running for longer than desired.
21266	7772	

		Failover slaves now use the original vovserver's VOVDIR as opposed to their own when starting a failover server.
21173	7820	Fixed case in WX where users first jobs do not run when they are submitted with "-f file".
21614	7969	Slaves spawned by vovelasticd should be reserved for the trigger job's bucket instead of its FairShare group. This will ensure that the slave will execute the trigger job first, then any subsequent jobs in the same bucket instead of allowing unrelated jobs to be executed.
21633	7976	Elastic slave launchers should reflect the job placement policy of the trigger job.
21661	7989	Elastic slaves should be initialized with actual RAMTOTAL instead of using the trigger job's requested RAM.

### **25.1.7 The Following 2016.09 Update 10 Release Items are for HERO**

No changes were generated for HERO.

## 26 2016.09 Update 9-4

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### 26.1 Update 9 Patch 4 Release Notes

#### 26.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 26.1.2 The Following 2016.09 Update 9, Patch 4 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 26.1.3 The Following 2016.09 Update 9, Patch 4 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 26.1.4 The Following 2016.09 Update 9, Patch 4 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
6962	20151	Use the parser time for checkouts in the remote LM parser instead of the remote checkout time, to prevent overlapping of checkout records.

#### 26.1.5 The Following 2016.09 Update 9, Patch 4 Release Items are for NetworkComputer

No changes were generated for NetworkComputer.

#### 26.1.6 The Following 2016.09 Update 9, Patch 4 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 27 2016.09 Update 9-3

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### 27.1 Update 9 Patch 3 Release Notes

#### 27.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 27.1.2 The Following 2016.09 Update 9, Patch 2 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 27.1.3 The Following 2016.09 Update 9, Patch 2 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 27.1.4 The Following 2016.09 Update 9, Patch 2 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 27.1.5 The Following 2016.09 Update 9, Patch 2 Release Items are for NetworkComputer

No changes were generated for NetworkComputer.

#### 27.1.6 The Following 2016.09 Update 9, Patch 2 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21532	7910	Made vovelasticd sensitive to bucket FairShare groups for determining the number of job launchers to submit to the back-end queue.



## 28 2016.09 Update 9-2

### 28.1 Update 9 Patch 2 Release Notes

#### 28.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 28.1.2 The Following 2016.09 Update 9, Patch 2 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 28.1.3 The Following 2016.09 Update 9, Patch 2 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 28.1.4 The Following 2016.09 Update 9, Patch 2 Release Items are for LicenseMonitor

No changes were generated that apply to LicenseMonitor.

#### 28.1.5 The Following 2016.09 Update 9, Patch 2 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
21365	7822	Corrected the vovslavemgr reserveshow output format for unending reservations.
	7906	Fixed issue that caused global namespace variables in the vnc_policy.tcl file to not be seen by the Tcl interpreter without adding a global call.

#### 28.1.6 The Following 2016.09 Update 9, Patch 2 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
21173	7820	Fixed case in WX where users first jobs do not run when they are submitted with "-f file".
21478	7890	Fixed issue where WX limits were not being defined correctly.
	6314	Documented the requirement to include LSFqueue: <queueName> in the resource specification in order to direct jobs to a specific LSF queue when using LSF as the base scheduler.
20975	7744	Enabled additional health check procedures, which can be used to monitor for errant conditions in the compute environment or the workload, such as jobs that have been queued or running for longer than desired.
	6281	Added VOVELASTICD(maxQueueErrors) setting, defaulting to 10, that will cause the vovelasticd daemon to stop attempting launcher submissions when the number of consecutive launcher submission failures to

	<p>the back-end queue exceed the setting. Both a system alert, as well as a vovelasticd log file entry, will be generated during this condition. Most often, this is related to a misconfigured queue. The daemon will resume normal operation once the configuration files have changed to correct the issue.</p>
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## 29 2016.09 Update 9-1

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### 29.1 Update 9 Patch 1 Release Notes

#### 29.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 29.1.2 The Following 2016.09 Update 9, Patch 1 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 29.1.3 The Following 2016.09 Update 9, Patch 1 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 29.1.4 The Following 2016.09 Update 9, Patch 1 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
21451	7867	Enabled project tracking in remote LM parser.

#### 29.1.5 The Following 2016.09 Update 9, Patch 1 Release Items are for NetworkComputer

No changes were generated for NetworkComputer for this patch.

#### 29.1.6 The Following 2016.09 Update 9, Patch 1 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 30 2016.09 Update 9

### 30.1 Update 9 Release Notes

#### 30.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
21191	7697	In Admin/Database page or vovdbd_util, user is able to specify port for use by the VOV Postgres DB
	7657	The slave will now print a warning message to its log when the server appears to be a different version from the slave.
	7728	Allow colons in property names.
<b>Fixed Bugs</b>		
	6966	If a server log file cannot be opened at server startup, the server will exit with a fatal error. If a new server log file cannot be opened during daily rotation and the previous log file is not accessible, a new log file will be opened under tmp directory.
20552	7381	Added a column to show resource reservations in the monitor GUI.
	6921	Slaves will timeout predictably, after attempting to connect/reconnect to server. VOV_RELIABLE_TIMEOUT can be used to specify the timeout period. Command line option -t can be used to override the setting of VOV_RELIABLE_TIMEOUT.
20809	7524	Now db host can be configured using fqcn, alias, or IP address, in addition to the canonical short host name. If host provided cannot be pinged, an error message will be displayed.
21345	7809	Fixed issue that caused the patch status link in certain web UI pages to be rendered as plain text instead of HTML.
	7698	vovconsole -geometry option was ignored in 2016.09 u8. Fixed to make -geometry option respected.
	7801	No longer show utilization percentage in monitor GUI for resources with unlimited capacity.

#### 30.1.2 The Following 2016.09 Update 9 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	7788	Added option to vovbuild to prevent building when jobs are running.
<b>Enhanced Features</b>		
21229	7743	When vov/vw/vrt is used to launch jobs from a client, and an illegal option is passed, make sure to update the "WHY" property to tell the user exactly why it failed. Previously it would exit with error code 2 and not provide any reason why.
21025	7609	Display run and suspend times in UIs that show job duration.
15427	6852	

		In FlowTracer and NC GUI, added subsets to the list of nodes that "quick find" highlights and selects. Previously it would only search for jobs and files.
	7667	In FlowTracer and NC GUI, the quick find search field searches every time you type or click the mouse in the search field, provided there are at least 2 characters. For large node counts, this made it feel like it was hanging between keystrokes. In this fix, it initiates a search request when the search text is changed, but does not start the search until a small amount of time passes, so it prevents starting the search too early. It also can interrupt the previous search if more characters are typed. In addition, a bug was found that was causing it to search for each node type twice. That bug was fixed. For large node counts (100k+), it prints white status messages on the screen to show the search progress. The result is a faster and more responsive quick find feature.
	7689	When NFS protection is enabled using the nfsDelay setting in policy.tcl, do not wait for the nfs delay time to pass when checking if a file exists if the file's status is MISSING.
	7688	When using vovbuild, if an input or output dependency is excluded due to exclusion rules such as those in the server working directory file "exclude.tcl", print a warning message.
<b>Fixed Bugs</b>		
21297	7777	Added option to vovbuild to prevent building when jobs in the flow are running. The new option is "vovbuild -c" which is short for "cautious" mode.
21190	5423	vovlsfd will generate a warning if it detects jobs with expected duration longer than MaxLife parameter. Slaves will not be submitted for these jobs.
	7814	Fixed a bug that caused printing an incorrect count of the number of overloaded slaves in the output of vsy, nc why, wx why and vtk_explain_status. The formatting of the output of the vsy, nc why, wx why, and vtk_explain_job_status commands has changed in the following ways: <ul style="list-style-type: none"> <li>• In the "Server Summary" section, we now print "Hardware conflicts found" instead of "No compatible slaves found".</li> <li>• In the "Server Summary" section, we now print "Job cannot be run because the following resources are not currently free on any slave" instead of "Job cannot be run because the following resources do not currently exist on any slave".</li> <li>• In the "Slave Summary" section, we now print "Final available candidate count: 0" in the event of hardware conflicts that prevent any slave from starting a job.</li> <li>• In the "Slave Summary" section, we now print "(ignoring load)" instead of a meaningless overloaded count when -i is specified for vtk_explain_job_status.</li> <li>• In the "Additional Information" section, the status "Full" is now written as "Fully Loaded".</li> <li>• In the "Additional Information" section, slave statuses are separated from slave counts by a colon (:) character.</li> </ul>
	7694	Sending a SIGTSTP signal to an indirect slave no longer kills the slave. Instead the slave process and all of its jobs will be suspended until another signal is received.
	7707	Fixed vtk_server_config protocol error in readonly security level.
	7724	Redirected indirect slave log from stdout to the slave daily log file.
	7725	Fixed grid mode drawing bug that made FlowTracer seem to go into an infinite loop of drawing when the setting to move nodes to the end in grid mode was enabled and the graph was already maxed out (autofit overflowed the bottom due to too many nodes to fit in the canvas).
20930	7590	Corrected vovps documentation, and added example.

### 30.1.3 The Following 2016.09 Update 9 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
20054	7105	Site nicknames will no longer be truncated in the column headers of the overview page - the full nickname will be displayed.
20897	7576	LA overview page will now show the sum of all running jobs for each resource, and all queued jobs for each resource, across all sites.
20901	7581	Clicking running or queued jobs in Overview page or Resource Summary page will take you to an NC page that only shows jobs that are running with or queued for this specific resource.
20452	7279	The resourcemap owner name will now include the name of the LA project which is currently controlling this resource.
<b>Fixed Bugs</b>		
21220	7222	LA now correctly drops overbooking to zero when overbooking is turned off.
21306	7794	LA will try to meet demand first before distributing extra tokens. Also, LA will not take tokens away from critical sites when adjusting for uncertainties.

21311	7796	LA will use wave based OOQ values for computing available tokens for distribution.
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### 30.1.4 The Following 2016.09 Update 9 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
	7706	Added CLI version of the LM agent SFD for Windows. The new agent, Imagent-win64-cli.exe, can interact with the Windows SCM (requires UAC elevation). Run with -h to get the full usage syntax.
<b>Fixed Bugs</b>		
20906	7647	Fixed issue with loading remotely-generated data via the "Immgr loadremotedata" command caused by the utility not connecting to the LicenseMonitor server.
21269	7676	On windows, one of file path modules tried a shortcut expansion on a regular file and reported that the file doesn't exist even though the file exists. Fixed to try the shortcut file expansion when it is a really a shortcut. Also added recovery codes when the expansion fails.
20884	7665	Fixed an issue in the detailed plot report when showing reservations that caused currently-active reservations to be displayed as normal checkouts in the plot.
21178	7704	Fixed issue with batch reporting of denial plot for multiple features that resulted in the carryover of previous plot data for subsequent features that have no denials.

### 30.1.5 The Following 2016.09 Update 9 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
21107	6022	Added option -q to nc forget. Note that the command is not quiet in case of errors. To make it completely silent, use: nc forget ... >& /dev/null
20720	7452	The vovreconciled daemon now includes the name of the license when notifying that reconciliation is skipped for a job.
21013	7652	Added new "nc info -dep" command to easily list job dependencies: <pre>&gt; nc info -dep 7299670 007299670 dependees: 007299667 007299670 dependents: 007299673 007299676 007299688</pre>
<b>Fixed Bugs</b>		
20532	5624	Changed behavior for when we reconcile a resource R we can take a look at the previous resource in the grabbed list and check if the previous resource is a summary resource for R.
	7680	Fixed bug where exporting preemption rules previously wrote out incomplete rules in some situations.
20879	7699	Fixed bug where removing resources from slaveClass.table would not remove them from the server without a restart.
20883	7770	Output files are no longer tracked for jobs submitted via the LSF emulation layer. This prevents a queue bucket from being created for each job that uses the bsub -o option to specify the job log file.
20982	7607	LSF bsub emulator uses VOV_JOBPROJ environment variable for the project name. Specifying a project explicitly with -P in bsub command overrides the project specification in the VOV_JOBPROJ variable.
20603	7636	Fixed a bug that caused VOV_PORT_NUMBER not to be applied correctly after a connection timeout. Previously, only the last port listed would be used after VOV_RELIABLE_TIMEOUT had expired.
	7641	Preempting and preemptable selection rules are now validated at preemption daemon start time. Preemptable rules are also validated upon each update of the rule as job queue buckets change.
21153	7682	Fixed behavior so that all NC jobclasses from \$VOVDIR/local/jobclass show up in the web GUI.
	7708	Fixed issue with slave-reservation preemption that treated this HW-based rule as one that is SW-based, preventing all related preemption attempts from succeeding.
21365	7822	Corrected the vovslavemgr reserveshow output format for unending reservations.
	6498	NC and WX now use the 'any' port mode by default, to help prevent deadlock situations when the port chosen by the previous default of 'automatic' mode is already in-use.

**30.1.6 The Following 2016.09 Update 9 Release Items are for WorkloadXcelerator**

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
		No enhanced features were generated for WorkloadXcelerator.
<b>Fixed Bugs</b>		
20923	7588	Fixed issue that prevented auto-rescheduled jobs from avoiding the previously used host. Also added a new configuration parameter in the policy.tcl file, autoRescheduleOnNewHost, to control whether autorescheduled jobs will avoid an entire host, or just the same slave. Set to 1 (default) for entire host, set to 0 for same slave.

**30.1.7 The Following 2016.09 Update 9 Release Items are for HERO**

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
20071	7103	Completed implementation of vtk_fs_stat by supporting the field "fsid"
<b>Enhanced Features</b>		
		No enhanced features were generated for HERO.
<b>Fixed Bugs</b>		
		No bugfixes were generated for HERO.

## 31 2016.09 Update 8.1-2

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### 31.1 Update 8.1 Patch 2 Release Notes

#### 31.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 31.1.2 The Following 2016.09 Update 8.1, Patch 2 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 31.1.3 The Following 2016.09 Update 8.1, Patch 2 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 31.1.4 The Following 2016.09 Update 8.1, Patch 2 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
		No bugfixes were generated for LicenseMonitor.

#### 31.1.5 The Following 2016.09 Update 8.1, Patch 2 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
21199	7715	nc info compatibility enhancement backported from 2016.09u9.
<b>Fixed Bugs</b>		
internal	7786	Support FairShare groups that contain a dash in their name in the vovfsgroup loadconfig command.

#### 31.1.6 The Following 2016.09 Update 8.1, Patch 2 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.



## 32 2016.09 Update 8.1-1

### 32.1 Update 8.1 Patch 1 Release Notes

#### 32.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to All Runtime products.

#### 32.1.2 The Following 2016.09 Update 8.1, Patch 1 Release Items are for FlowTracer

No changes were generated that apply to FlowTracer.

#### 32.1.3 The Following 2016.09 Update 8.1, Patch 1 Release Items are for LicenseAllocator

No changes were generated that apply to LicenseAllocator.

#### 32.1.4 The Following 2016.09 Update 8.1, Patch 1 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
21218	7746	Fixed issue with GreenHills license parser for checkout records that have a handle that is greater than a 32-bit integer. Also added protection in the database loader to handle such records.

#### 32.1.5 The Following 2016.09 Update 8.1, Patch 1 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
21199	7715	A limited-release capability, nc info -legacy, is provided to generate 'nc info' output in the older format (prior to 2016.09). The behavior of this command can be customized via a Tcl file at <code>.../local/vncinfo.config.tcl</code> based on environment variable, username, project name, etc. by doing 'set NCINFO(legacy) 1' under the desired conditions. Example: <code>if { [vtk_logname] eq "george" } { set NCINFO(legacy) 1 }</code> # IMPORTANT: This legacy feature will not be available in releases beyond 2016.09 (and updates).
20944	7594	Added -failover constraint option for vovslavemgr operations. Also ensure that failover slaves are the first to start when starting multiple slaves. Note: These functionalities require that failover slaves be defined in <code>slaves.tcl</code> using <code>vtk_slave_define</code> with the -failover option.
21289	7664	Fix case where "nc stop -reason" doesn't add reason to Why.

### **32.1.6 The Following 2016.09 Update 8.1, Patch 1 Release Items are for WorkloadXcelerator**

No changes were generated for WorkloadXcelerator.

## 33 2016.09 Update 8.1

### 33.1 Update 8.1 Release Notes

#### 33.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
		No enhanced features were generated that apply to all Runtime products.
<b>Fixed Bugs</b>		
		No bugfixes were generated that apply to all Runtime products.

#### 33.1.2 The Following 2016.09 Update 8.1 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
		No bugfixes were generated for FlowTracer.

#### 33.1.3 The Following 2016.09 Update 8.1 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseAllocator.
<b>Fixed Bugs</b>		
	7751	Added NRU job detection in LA, so this information can be used by vovreconciled to add the used tokens back to the job's grabbed tokens list.

### 33.1.4 The Following 2016.09 Update 8.1 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
		No bugfixes were generated for LicenseMonitor.

### 33.1.5 The Following 2016.09 Update 8.1 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
	7755	Improved the nc gui responsiveness when 50k jobs are submitted.
	7547	Added ability for the administrator to configure the maximum environment size for job submissions. This is done via the \$VOVDIR/local/vncrun.config.tcl file, using the following configuration variable:  <pre>set VOV_JOB_DESC(maxEnvSize) 10000</pre> The value is specified in bytes. Note that the maximum property length limit, prop.maxStringSize, that can be defined in the SWD/policy.tcl file, can also act as a limit when using the snapshot property for job submissions (nc run -ep).
	7715	A limited-release capability, nc info -legacy, is provided to generate 'nc info' output in the older format (prior to 2016.09). The behavior of this command can be customized via a Tcl file at .../local/vncinfo.config.tcl based on environment variable, username, project name, etc. by doing 'set NCINFO(legacy) 1' under the desired conditions.  Example: <pre>if { [vtk_logname] eq "george" } {     set NCINFO(legacy) 1 }</pre>
<b>Fixed Bugs</b>		
	7383	Start time, end time, and duration values are now validated in a call to vtk_slave_reserve to prevent values of 0 from being applied to a reservation. This prevents confusing reservation property entries in the /system/slaves/reservations FairShare group, if enabled. Slave reservation expirations and cancellations are now logged in the server log, even if the reservation expires while the slave is down. Slave properties, which store reservations for persistence, are now enabled by default for NetworkComputer instances.
	7455	Documentation for update live_keepfor_jobs.tcl (job persistency) has been improved.
	7601	Added ability to specify a replacement pattern and string for host names obtained by LM parsers. This is configured by adding the following line to the SWD/config/parser.cfg file:  <pre>set PARSER(hostReplace) {{PATTERN}} {REPLACEMENT}}</pre> where PATTERN is a case-sensitive regular expression pattern, and REPLACEMENT is the string with which to replace the pattern.
	7741	Fixed SNAPSHOT property expansion in web pages for cases where the environment was large enough to be split across multiple SNAPSHOT properties.

### 33.1.6 The Following 2016.09 Update 8.1 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 34 2016.09 Update 8

### 34.1 Update 8 Release Notes

#### 34.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	7474	Fixed instances where replacing/following symlinks is not supported in Windows.
<b>Enhanced Features</b>		
20602	7387	Added a "updatecrontab_vovdir.csh" script to the project.swd/autostart directory to automatically update the "scripts/vovdir.csh" file when the server starts. Upgrading to a new release now automatically updates the version of crontab used to be consistent.
20035	7088	Added logic to check if the .stdstart (headLog) and .stdend (footLog) files are in use. If so, delete if size 0.
12768	5525	The environment variable HOSTNAME was previously being transferred to slaves via SNAPSHOT or SNAPPROP. This was causing the HOSTNAME on the slave to show an incorrect value. The transfer is now suppressed.
<b>Fixed Bugs</b>		
20517	7328	The sets page now reloads after invalidating the set via the invalidate icon.
20713	7456	The frequency of calls made by vovslave to the "w" command have been reduced to once per minute across all slaves for a given host.
	7473	Fix instances where symlink depth in Linux is limited to 5 or 8 in some cases.
20517	7506	The sets page now reloads after invalidating the set via the invalidate icon.
20635	7503	Fixed a possible memory corruption issue that occurred when defining equivalences.
	7557	Enhanced sanity to create resources for any fairshare groups that do not have a corresponding resource, such as "Group:time_users". They can be deleted by doing "vovforget -allresources" so this provides a mechanism to get them back.

#### 34.1.2 The Following 2016.09 Update 8 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
20870	7553	2016.09 update 8 adds PAUSED state for slaves that receive SIGTSTP; receiving this signal suspends all child jobs and the slave itself. Resuming slaves will resume all child jobs. Additionally, we have added a queryable HEARTBEAT field to the "slaves" table.
	7673	In FlowTracer, changed the default value of nfsdelay from 0 to 60 seconds to protect against invalidation of jobs due to filesystem caching, such as NFS attribute and directory caching. This change is made in the policy.tcl file in the server working directory. In FlowTracer, changed the default value of timeTolerance from 0 to 1 second to protect against invalidation of jobs due to clocks not being synchronized across hosts in the network. This change is made in the policy.tcl file in the server working directory.
<b>Fixed Bugs</b>		
	7459	vovconsole is resizable to smaller size. Previously the minimum size was set to an optimal size.
20481	7467	Allow vovfileready to work with paths that did not exist or symlinks that point to paths that did not exist at build time.
	7511	Fixed instances where there was random invalidation due to rejection of good timestamp update.
20731	7003	Flush NFS directory cache when starting a job on a vovslave to prevent chdir failure.
	7463	Fixed bug in vsx output that would cause a job with a name to appear next to the command without a space inbetween.
	7611	Status color is properly updated on Navigator and Alert window after a row is removed.
	7659	Ignore bkill failure when removing slave object.

### 34.1.3 The Following 2016.09 Update 8 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
20229	6499	Historical metrics can be loaded upon server restart by adding the command "LA::ReloadHistoricalMetrics" to LA's "config.tcl" AFTER all the sites and resources have been declared. The command requires a parameter specifying a duration (Vov time specification) for which to load the metrics. The duration is the time going back from "now".
<b>Fixed Bugs</b>		
20230	7450	An issue was uncovered wherein significant memory bloat occurred resulting in large process size and gradual slowdown over a period of days or weeks. This problem has been fixed.
20691	7451	LA will now catch errors in stopping and forgetting old probes before creating new ones. It will wait for up to 60 seconds for the probes to stop, and if they still don't stop, it will raise an alert and not create new probes.
	7494	Reset allocations before beginning new distribution, instead of upon receiving a new NC sample.
20460	7265	LA will now convert fully qualified host names into short names before performing matching.

### 34.1.4 The Following 2016.09 Update 8 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
20235	7507	Added new -replaceImages option to ftlm_batch_report to replace the dynamic image elements of a batch report HTML file with static PNG images. The usage syntax for the new option is:  ftlm_batch_report -replaceImages <INFILE> [OUTFILE]  If the OUTFILE option is not passed, the utility will generate a new file named INFILE-static.html. OUTFILE can be the same as INFILE, but is not recommended.
<b>Enhanced Features</b>		
20744	7472	When available, make pid visible in certain LM reports.
<b>Fixed Bugs</b>		
20803	7523	Fixed issue that caused the rlmstat parser to fail if the license server host was changed in the configuration for a live monitor.
20878	7565	It is now possible to choose whether or not to plot the average usage line on the usage-over-time graph of the Feature Detailed Plots page.
	7527	ftlm_agent on Linux and MacOS has been fixed to prevent an error trying to change into a non-existent LMSWD directory when attempting to execute ControlCenter jobs.
	7533	Fixed issue that caused tag renaming and site assignment to use an empty string value.

### 34.1.5 The Following 2016.09 Update 8 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
20674	7455	The optional live_keepfor_jobs.tcl task script has been improved to reduce the load on the NC vovserver.
	7433	Added field XDURPERCENT for jobs, which can be used in preemption rules.
20837	5579	Log an entry in the server log when a slave fails to send its required heartbeat to the server and enters a sick state. The log entry resembles:  vovserver(1323) May 05 11:51:19 Slave parser on host maiden (client 1) is sick due to a missing heartbeat  The server log also contains a message when the slave is healthy again:  vovserver(1323) May 05 12:10:18 Sick=1 slave parser on maiden (client 1) is healthy again

20833	7535	The proc "VovGetRevokeDelay" can now be added and customized by redefining it in vovresourced/config.tcl under the SWD directory to allow users to customize the revoke delay to be used in vovreconciled. This allows users to have the revoke delay from their job classes override the default value of RESD(revokeDelay). The proc definition has been added to the documentation.
20834	7537	Provide the ability to specify slot count as an adjustment to the core count. The following capacity specification forms have been added: CORES+N, CORES-N, CORES*N, CORES/N The word CORES is required, followed by a single-character operator, then a whole or decimal number. These new forms work in addition to the traditional numerical capacity setting and are supported in the following: vtk_slave_define -capacity XXXXX vtk_slave_set_defaults -capacity XXXXX vovslave -T XXXXX vovslavemgr configure -capacity XXXXX *Where XXXXX is capacity specifier as described previously. Note: Capacity cannot be less than 0 slots, nor can it exceed 1000 slots.
	7561	Improved debugability of preemption rules with a DEBUG property.
	7642	Slave grouping was added in 2016.09 and "nc gui -slaves" was showing groups if there are more than 20 slaves. This changeset returns to 2016.03 behavior. "nc gui -slaves" shows individual slaves.
<b>Fixed Bugs</b>		
21004	7632	Addressed issue with NC starting jobs from 2016.09u7 vovserver to 2015.03 clients.
20576	7383	Start time, end time, and duration values are now validated in a call to vtk_slave_reserve to prevent values of 0 from being applied to a reservation. This prevents confusing reservation property entries in the /system/slaves/reservations FairShare group, if enabled. In 2016.09, this and the /system/slaves/messages FairShare groups/properties are disabled unless this configuration item is added to the policy.tcl file:  <pre>set config(slave.props.enable) 1</pre>
	6042	Fixed balloon error in "nc gui -slaves"
	7461	Fixed formatting issue on system recovery setup web UI page for failover server candidates information.
11584	5276	Improved life support mode for license-based resources when the connection to LM is interrupted. Life support is now activated when an HTTP update fails, in addition to when the event monitor is closed. External resource data, such as capacity and used-by-others numbers, will be held at the value last obtained from LM, and will be updated immediately upon reconnection to LM.
20787	7566	Improved the performance and configurability of the nc list utility concerning listing by job names: Modified -J option to not use a smart set. Added help clarify the impact of -J option. Provided ability for the administrator to disable -J usage. Added documentation for vnclist.config.tcl.
20821	7562	Made some fixes to input and output declarations to address "Server is operating on a non-internal object" error.
20774	7505	Added non-Admin visibility to NC fair share graphs showing running and queued job totals.
	7528	Fixed behavior where preemption method gets lost some point after server restart.
	7442	The LSF emulation scripts, bjobs and bsub were modified to allow "bsub -J jobname" to work reliably. Job names with embedded blanks are no longer allowed.
21054	7638	Fixed HW resource accounting issue that caused slaves to report higher-than-actual numbers when suspended jobs were stopped instead of being resumed.
20475	7547	Added ability for the administrator to configure the maximum environment size for job submissions. This is done via the \$VOVDIR/local/vncrun.config.tcl file, using the following configuration variable:  <pre>set VOV_JOB_DESC(maxEnvSize) 10000</pre> The value is specified in bytes.
20983	7633	Added space between job name and command to correct format in nc.
	7677	The "vovfsgroup create" command is now more efficient when copying parent group ACL's.
21174	7678	Previously: If there was no vnc_logs directory and "nc run" commands run with -l log file.log option, snapshot was saved to "vnc_logs" file. Fixed: If there is no vnc_logs directory, snapshot capturing module will try to create one. If it cannot create, it will save the snapshot to "env\$hashcode.env" file instead of vnc_logs file.

### 34.1.6 The Following 2016.09 Update 8 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

## 35 2016.09 Update 7

### 35.1 Update 7 Release Notes

#### 35.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
		No enhanced features were generated that apply to all Runtime products.
<b>Fixed Bugs</b>		
	6121	Added a compound tab with an alert icon next to "Why", instead of automatically raising why tab on failed jobs and failed/invalid files.
	6745	The path of slave startup log is printed in every daily log that is rotated midnight. Symbolic links are created as server.log, subserve.log, slave.log, and startup.slave.log. These symbolic links point to latest corresponding log files. vovcleanup rules can be customized by editing cleanup.config.tcl located in swd (server working directory).
	6966	If the daily log file of vovserver cannot be opened in swd/logs directory at startup time due to permission or other failures, the daily log is created in /tmp directory.
20389	7255	<p>As of 2016.09 Update 7, the Trace object can be queried for PARAMETERS, PARAMDUMP and individual trace parameters via vovselect and all related vtk commands (e.g. vtk_select_loop). The PARAMETERS field will return a list of all trace parameters and their values, separated by '=', for example:</p> <pre>vovselect parameters from trace   sched.megapoll.threshold = 100   longServiceWarningDuration = 0.800000   allowUidForSecurityFile = 0   switchToExtBufThresh = 100000   maxNotifyBufferSize = 400000   ...other parameters...</pre> <p>The PARAMDUMP field will return a list of parameters and their default and current values, for example:</p> <pre>vovselect paramdump from trace   sched.megapoll.threshold { default = '100' value = '100' }   longServiceWarningDuration { default = '0.800000' value = '0.800000' }   allowUidForSecurityFile { default = '0' value = '0' }   switchToExtBufThresh { default = '100000' value = '100000' }   maxNotifyBufferSize { default = '1000000' value = '400000' }   ...other parameters...</pre> <p>The PARAM field will retrieve a single parameter by name, similar to the way PROP currently works. For example:</p> <pre>vovselect param.resmap.max.map.length from trace    1024</pre> <p>All 3 fields are case-insensitive.</p>
	7377	Fixed bug that cause entry fields in node editor to lose focus after double or triple clicking, making it impossible to backspace over the selected text after a double or triple click. Now the focus is retained.

#### 35.1.2 The Following 2016.09 Update 7 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
20081	5871	LicenseMonitor's FlexLM monitor will now report the PID associated with a checkout, if that support is enabled in FlexLM. Also NetworkComputer will provide PID information to LicenseAllocator for



		matching.
20688	7432	Added pie slice limit control for detailed plot report.
<b>Fixed Bugs</b>		
20323	7230	fixed "vovsh -s clock offset" to send vovserver a right IP address instead of 0. The message "Found host with different ip: 10.132.26.30 instead of 0.0.0.0" observed when running "vovslavemgr start" has been eliminated.
20529	7318	Restored missing filter negation control in batch report web UI.
20589	7350	Fixed issue with feature filter select menu when feature aliases have been configured.
20458	7329	Increased vovnginxd web page processing timeout to allow long-running reports to finish.
20665	7351	Fixed BATCH_OPTIONS variable errors for pie chart reports in the batch reporting facility.
*	7413	Fixed issue with detecting database status when running within a Windows service.
	7428	Fixed issue with peak statistics showing 0 usage for the others object in the legend of the usage comparison plot.

### 35.1.3 The Following 2016.09 Update 7 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	5599	Enabled ranking of fairshare groups using weighted sum of excess_running and excess_history.
<b>Enhanced Features</b>		
13969	6022	Added option -q to nc forget
<b>Fixed Bugs</b>		
20141	5308	The preemption facility now retries to create the resumer job for a preempted job until successful.
20591	7385	Modified LSF bsub emulation to allow multiple -R directives.
20296	7219	Addressed instances where negative CPU progress was being reported.
20299	7221	Added -cwd option to bsub LSF emulation utility. This option specifies the run directory for the job being submitted.
20297	7231	Added support for "-cwd" option to specify the job execution directory and defaulted VOV_JOB_DESCRIPTION(rundir) to "." so that the variable is present when the NC policy is processed. Also fixed issue with "-n" option that requests multiple CPUS for a job, as well as added sensitivity to the "span[hosts=1]" resource string that constrains such jobs to a single host.
20509	7262	The vtk_resourceemap_set command has a new optional argument, -sum. Specify -sum to indicate that a resource is a sum resource, i.e. that it is composed of a boolean OR/AND combination of other resources. For example, to create a resource "License:a" that requires "License:b" or "License:c", the command would be:  vtk_resourceemap_set [other options...] License:a -sum -map 'License:b OR License:c
20493	7321	Fixed JavaScript error in IE 11 on slave resources page.
20615	7410	Fixed instances where LSF bsub.config.tcl custom settings are overwritten.
	7418	Improve snapshot property processing to handle a malformed property value that is missing the continue sentinel for large environments.

### 35.1.4 The Following 2016.09 Update 7 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

### 35.1.5 The Following 2016.09 Update 7 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
20081	7332	LA can now perform matching between LM checkouts and NC jobs based on the unix PID information, whenever available. Such matches are clearly identified by the keyword "pid" in the matches page in LA.
<b>Fixed Bugs</b>		
20398	7259	

		LicenseAllocator will now remove all allocations of a resource to a site if it has been marked as DO_NOT_SHARE.
20460	7265	LA will now convert fully qualified host names into short names before performing matching.
20564	7339	LicenseAllocator UI no longer has buttons for disallowed operations for users when logged in as a non-admin user.

### 35.1.6 The Following 2016.09 Update 7 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
		No enhanced features were generated for FlowTracer.
<b>Fixed Bugs</b>		
20542	7341	Duration reporting behavior has been fixed for duration > 10000.
20551	7360	Corrected the "duration" field behavior in FlowTracer Node Editor.
20627	7395	Fixed vovconsole crash with READONLY permission.

## 36 2016.09 Update 6

### 36.1 Update 6 Release Notes

#### 36.1.1 The Following Release Items are for All Runtime Products

No changes were generated that apply to all Runtime products.

#### 36.1.2 The Following 2016.09 Update 6 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
	7217	ftlm_lmproject and SSL are not compatible
	7285	ControlCenter issues
	7303	Fixed issue with LM ControlCenter license file deployment jobs that run on a remote machine that does not have access to the LM SWD.
	7102	Fixed issue with ftlm_batch_report when using the -breakdownByFeature option and there is a feature in the database that has an empty tag name. This is a rare, corner-case bug, being as how empty tag names are not allowed in normal configuration and operation.

#### 36.1.3 The Following 2016.09 Update 6 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
15496	7146	VOV_JOB_DESC(xdur) in FlowTracer bsub emulation
<b>Fixed Bugs</b>		
20296	7219	Negative percentages in job progress
20363	7247	nc gui -slaves does not work
20338	7260, 7261	NC bad cpu utilization; NC negative cpu progress

#### 36.1.4 The Following 2016.09 Update 6 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 36.1.5 The Following 2016.09 Update 6 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseAllocator.
<b>Fixed Bugs</b>		
15647	7040	LA possible 201609 jobs_la license issue
	7265	Host name discovery broken in licensing matching

Known Issues		
		If there is a syntax error in the LA::AddResource command in config.tcl, it can cause the vovlad daemon to exit. In this case, please recheck the syntax of the LA::AddResource command and restart the vovlad daemon.

### 36.1.6 The Following 2016.09 Update 6 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
	7254	Check out separate FT license for each user in multi-user FT
<b>Fixed Bugs</b>		
	7225	Statistics View should not be editable

## 37 2016.09 Update 5

### 37.1 Update 5 Release Notes

#### 37.1.1 The Following Release Items are for All Runtime Products

No change were generated that apply to all Runtime products.

#### 37.1.2 The Following 2016.09 Update 5 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
20081	5871	LicenseMonitor's FLEXlm monitor will now report the process ID (PID) associated with a checkout, if that support is enabled in the specific vendor's FLEXlm license server.
<b>Enhanced Features</b>		
20259	7205	Added ability to specify custom pie chart dimensions in batch reporting utility. This can be used to increase the width, so that long labels in the legend will not overlap the pie.
<b>Fixed Bugs</b>		
20002	6114	Support has been added for multiple wildcard patterns in the wildcard input of the LM filters box. You can now specify a space-separated list of wildcard patterns to match, such as "A* B* C?".
-	7209	For home page utilization and wait status widgets, if user and/or wait analysis takes longer than 10s, abort the analysis and return. This can occur when a large number of checkouts are being tracked.
20256	7195	Prevent overlap of pie slice labels for skinny slices by disabling labels for slices that represent less than 3% of the total pie.
20234	7190	Added ability to relocate the utilization plot legend to the right-hand (east) side of the plot to allow for a lower custom height when using ftlm_batch_report. The new option is: "-utilPlotLegendLocation". Possible values are s and e, with s (south) being the default.

#### 37.1.3 The Following 2016.09 Update 5 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
-	7167	As of 2016.09 update 5, cgroups support has changed. Individual cgroups are no longer displayed as extra resources by vovslavemgr or the web UI. Pre-existing cgroups can no longer be individually requested via "nc run -r". CGROUP:RAM is still available as an extra resource, and its behavior is unchanged.
<b>Fixed Bugs</b>		
		No bugfixes were generated for NetworkComputer.

#### 37.1.4 The Following 2016.09 Update 5 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 37.1.5 The Following 2016.09 Update 5 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		

	6499	Historical metrics can be loaded upon server restart by adding the command reloadHistoricalMetrics to LA's config.tcl. The command requires a parameter specifying a duration (Vov time specification) for which to load the metrics. The duration is the elapsed time going back from "now" to the desired event.
<b>Fixed Bugs</b>		
		No bugfixes were generated for LicenseAllocator.

### 37.1.6 The Following 2016.09 Update 5 Release Items are for FlowTracer

No changes were generated for FlowTracer.

## 38 2016.09 Update 4

### 38.1 Update 4 Release Notes

#### 38.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
		No enhancements were generated that apply to all Runtime products.
<b>Fixed Bugs</b>		
	7162	Accumulation job fields are not reset on job start.
	7114	2016.09u3_54562_Dec15: installation report broken pipe error in win64.

#### 38.1.2 The Following 2016.09 Update 1 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
20235	7194	Added ability to extract images from batch report HTML files.
<b>Fixed Bugs</b>		
		No bugfixes were generated for LicenseMonitor.

#### 38.1.3 The Following 2016.09 Update 4 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
20226	7185	NC preemption doe not work when "-waitingfor" in rule has the following syntax License:name#N
	7121	Fully implemented matching disable threshold.

#### 38.1.4 The Following 2016.09 Update 4 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 38.1.5 The Following 2016.09 Update 4 Release Items are for LicenseAllocator

No changes were generated for LicenseAllocator.

### 38.1.6 The Following 2016.09 Update 4 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for FlowTracer.
<b>Enhanced Features</b>		
	7187	Full support for single-user mode (multiuser FT project) in vovlsfd.
<b>Fixed Bugs</b>		
		No bugfixes were generated for FlowTracer.



## 39 2016.09 Update 3

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### 39.1 Update 3 Release Notes

#### 39.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
		No enhanced features were generated that apply to all Runtime products.
<b>Fixed Bugs</b>		
	7085	Previously, accessing the READONLY port of vovserver, caused the vovserver to hang. This issue has been fixed.
	7059	The env-var VOV_LICENSE_KEY can be used to designate a non-standard location for the Runtime license file. (This applies to installing Runtime products.)

#### 39.1.2 The Following 2016.09 Update 3 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
20010	7077	The feature selection of LicenseMonitor report filters is now remembered correctly when navigating between report types.
20025	7089	Fixed the issue that caused tag-based notification POCs to be compounded, which resulted in unwanted notification mails going to the POCs.

#### 39.1.3 The Following 2016.09 Update 3 Release Items are for NetworkComputer

No changes were generated for NetworkComputer.

#### 39.1.4 The Following 2016.09 Update 3 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 39.1.5 The Following 2016.09 Update 3 Release Items are for LicenseAllocator

No changes were generated for LicenseAllocator.

#### 39.1.6 The Following 2016.09 Update 3 Release Items are for FlowTracer

No changes were generated for FlowTracer.

## 40 2016.09 Update 2

### 40.1 Update 2 Release Notes

#### 40.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
14562	6261	Project rehosting is now allowed at at start time. New options, <code>-rehost</code> and <code>-block</code> now separate the rehosting functionality from the blocking behavior. The following envvars have been renamed, which makdes them scheduler agnostic (this feature is not backwards compatible): VOV_BSUB_VOVCONSOLE has been renamed VOVCONSOLE_SUBMIT_CMD VOV_BSUB_VOVSERVER has been renamed VOVPROJECT_SUBMIT_CMD.
	7017	PostgreSQL 9.6 is now included as the VOV database engine for new instances and as an optional upgrade for existing instances. PostgreSQL 9.6 improves performance for historical reports in LicenseMonitor.
<b>Fixed Bugs</b>		
15698	7050	Fixed: error that caused corruption in LicenseMonitor checkout and denial data files.
	7064	<code>vovusergroup -unix</code> now iterates over all entries in the unix groups database. Previously, only the users from the first entry of the given group were populated.

#### 40.1.2 The Following 2016.09 Update 2 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	7016	Information specified by the combination of the license tag and feature name can now be excluded from being loaded into the VOV database. This prevents overloading the database with unnecessary information.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
		No bugfixes were generated for LicenseMonitor.

#### 40.1.3 The Following 2016.09 Update 2 Release Items are for NetworkComputer

No changes were generated for NetworkComputer.

#### 40.1.4 The Following 2016.09 Update 2 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 40.1.5 The Following 2016.09 Update 2 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		

		No enhanced features were generated for LicenseAllocator.
<b>Fixed Bugs</b>		
	6994	Fixed custom defined resource map expressions. A resource in site is no longer overwritten by the automatic computation of resource map expression that is in response to the change of resource weights.
	7071	LicenseAllocator correctly detects vendor queued tokens. Previously, vendor-queued data was lost when the same feature is served by multiple license servers.
	7075	Overbooking boost values are cleared when overbooking is turned OFF. When overbooking is turned OFF, matching is not automatically turned ON. On the resources page, the matching button now shows ON/OFF instead of ENABLE/DISABLE.

#### 40.1.6 The Following 2016.09 Update 2 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	7012	The new API <code>vtk_transition_chown_to_me</code> supports multiuser FT projects. This API allows a user to "take" a job. It is only enabled when the <code>seat_ft_mu_*</code> feature is used.
<b>Enhanced Features</b>		
	7013	The new option <code>-u</code> for <code>vovlsfd</code> supports multiuser FlowTracer projects.
<b>Fixed Bugs</b>		
		No bufixes were generated for FlowTracer.

## 41 2016.09 Update 1

### 41.1 Update 1 Release Notes

#### 41.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated that apply to all Runtime products.
<b>Enhanced Features</b>		
15448	6918	The initial vovslave connection timeout for elastic vovslaves can now be configured via the config.tcl file.
<b>Fixed Bugs</b>		
	6926	vovset list -all has been fixed; all objects are displayed..
	7014	The ACL mechanism now includes a new ACL role type called LEADER. Default ACL for LEADER role for jobs is VIEW, EXISTS, CHOWN.

#### 41.1.2 The Following 2016.09 Update 1 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseMonitor.
<b>Fixed Bugs</b>		
15252	6968	With large token capacities, checkouts appear to use a very large number of them. The C/O Stats page sums the (duration * tokens) for each feature, and for this feature that number is much larger than a 32b integer. Added ::bigint to the query in the checkout stats report.

#### 41.1.3 The Following 2016.09 Update 1 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for NetworkComputer.
<b>Enhanced Features</b>		
		No enhanced features were generated for NetworkComputer.
<b>Fixed Bugs</b>		
14154	5699	fairshare.cgi takes fstokens into account for visualization.
	6720	The in-command documentation for the nc run -keepfor option has been clarified: nc run -keepfor <time>: Disables auto-forget. Requires the NetworkComputer administrator to copy the live_keepfor_jobs.tcl script into the tasks directory.
15317	6821	Indirect slaves no longer crash during failover.
	6930	Prevent the generation of an error concerning LiveRecorder not being enabled when shutting down vovserver or vovslave. For vovserver, this also resulted in an additional log file, generated at shutdown, that contained the error.

#### 41.1.4 The Following 2016.09 Update 1 Release Items are for WorkloadXcelerator

No changes were generated for WorkloadXcelerator.

#### 41.1.5 The Following 2016.09 Update 1 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
		No enhanced features were generated for LicenseAllocator.
<b>Fixed Bugs</b>		
15265	6767	Resource tokens are now counted correctly. Previously, the double counting of resource tokens occurred when license servers (FlexLM servers) were restarted.

#### 41.1.6 The Following 2016.09 Update 1 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	7012	A new API, <code>vtk_transition_chown_to_me</code> supports multiuser FlowTracer projects: a user can "take" a job. <code>vtk_transition_chown_to_me</code> is only enabled when a <code>seat_ft_mu_*</code> feature is used.
<b>Enhanced Features</b>		
	7013	The option <code>-u</code> was added for <code>vovlsfd</code> to support multiuser FlowTracer projects.
<b>Fixed Bugs</b>		
	6684	In grid mode, nodes are now visible at any level. Previously, with many nodes displayed in grid mode (about 40k), when the nodes were drawn very small, the files appeared to vanish.
	6912	A crash no longer occurs when using certain features when the <code>vovserver</code> version is older than 2016.09, but the <code>vovsh</code> version is 2016.09. The features that previously caused crashes: <code>vsv</code> , <code>vovwhy</code> , <code>nc why</code> , <code>wx why</code> , or the "Why" tab in <code>vovconsole</code> .
	6913	Sorting results and the status column color are now correct. Previously, the sorting and color(s) was incorrect when there were more rows than visible on the table for inputs or output.
	6964	Floating Slave Monitor menu is now available for "group" in Slave Monitor.

## 42 2016.09 Base Release

### 42.1 2016.09 Release Notes

#### 42.1.1 The Following Release Items are for All Runtime Products

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	6258	<p>There is now a Python interface for the vovserver REST API. The Python interface returns a JSON formatted string as a result of posted query. For more information about request URLs and response format please refer to REST API documentation.</p> <p>As vovserver requires the user to be authenticated, the Python interface will automatically prompt the user for username and password if the current login session is expired.</p> <p>Example scripts:</p> <pre>from common.scripts.rtda_rest import RTDARest rtda_client = RTDARest() obj = rtda_client.getUrl(&amp;http://localhost:11913/api/v1/jobs/12345/status&amp; print (&amp;Return type is&amp;, type(obj)) print (&amp;Return val: &amp;, obj)</pre>
<b>Enhanced Features</b>		
	2272	<p>Selection rule syntax now supports several additional features.</p> <p>Summary:</p> <ul style="list-style-type: none"> <li>Logical "or" operations in selection rules are available via the   operator.</li> <li>Logical operations may be grouped with parentheses.</li> <li>AND operations always take precedence over OR operations in the absence of parentheses.</li> <li>The words <b>and</b>, <b>or</b> and <b>not</b> can now be used in place of <b>&amp;</b>, <b> </b> and <b>!</b> respectively; this makes shell-level scripting easier. These words are case-insensitive; they may also be typed as <b>AND</b>, <b>OR</b> and <b>NOT</b>.</li> <li>The = operator is now supported, which is equivalent to the == operator.</li> <li>Spaces are now allowed in non-quoted string values if they are preceded by a backslash \ character. Example: <b>command^sleep\ 60</b> is now a valid rule.</li> </ul>
	4218	<p>Improved protocol for more compact packing.</p> <p>Summary:</p> <ul style="list-style-type: none"> <li>To send 16-bit integer, packing size is changed from 8 bytes to 3 bytes.</li> <li>To send 32-bit integer, packing size is changed from 8 bytes to 5 bytes.</li> <li>To send 64bit integer, packing size is changed from 16 bytes to 10 bytes.</li> <li>By removing 4-byte alignment packing and reducing data type encoding method, encoding of string and double types is also more efficient.</li> </ul>
	4980	Daily log files generated by system daemons are now automatically compressed. <b>Note:</b> This applies only to non-Windows platforms.
	5349	Vovselect now supports the '*' wildcard to signify all fields of a particular object. <b>Note:</b> Ensure the '*' character is quoted as required by your shell. Example: <code>vovselect '*' from jobs where idint==12345</code>
13053	5595	The increased web server security now prevents local file inclusion via a path relative to an open URL, such as /gif.
	5935	Added <code>waitreasons</code> as <i>from</i> source to <code>vovselect</code> , which provides access to the data available in <code>vovshow -waitreasons</code> .
	5954	Jobs submitted to NetworkComputer by the administrator can no longer be accidentally dispatched to the VOV database support slave.
	5985	Added <code>coresused</code> and <code>corestotal</code> fields to <code>vovselect</code> when querying slaves.
	6071	<p>The interface to the vovversion shell command has been changed.</p> <p>The new command interface:</p> <pre>% vovversion -h vovversion: Usage Message DESCRIPTION:     Print the VOV version. Optionally show more details. USAGE:     vovversion [options] OPTIONS:</pre>

		<ul style="list-style-type: none"> <li>-help -- Print this message</li> <li>-all -- Print all available version information</li> <li>-clients -- List clients and their version numbers</li> <li>-install -- Print the VOV version with patch names, if any</li> <li>-patches -- Print patch names, if any</li> <li>-project -- Print the version of vovserver associated with the current project [Can abbreviate options provided they are unambiguous]</li> </ul>
	6107	Added timestamp for FILE type and start and end time for JOB job in vovconsole Navigator. This allows users to easily see the dependencies of a timestamp.
	6119	For easier editing, Cut/Copy/Paste menus have been added to Text fields.
	6168	Added support for doing daily maintenance on the VOV database, which is configurable through the database administration web interface.
	6196	<p>A new configuration parameter, <code>liverecorder.logsize</code>, now controls the size of Live Recording log files.</p> <p>The parameter, <code>liverecorder.logsize</code>, can be added to the <code>policy.tcl</code> file, or set on-demand for the server via:  <code>vovsh -x &amp;vtk_server_config liverecorder.logsize N</code>  or for the slave via: <code>vovslavemgr configure -liverecorder.logsize N SLAVENAME</code>  where N is any number between 256 and 8192, which represents the size of the log file in megabytes. This setting must be applied before turning Live Recorder on.</p>
	6400	The protection against deleting a resource when a job is queued against is now improved; it no longer slows the vovresourced-based expiration extender.
<b>Fixed Bugs</b>		
13056	3120	Increased web server security, which prevents cross-site scripting.
	6132	Added arch field support for slave objects to VovQuery: <code>vovselect</code> , <code>vtk_select</code> .
	6193	An issue has been fixed with field-only selection rules for string fields. By passing the field name without an operator or a value, you can now query for objects that have a non-empty value in the specified field. For integer fields, this form of selection rule queries for objects that have a non-zero value in the specified field.
	6253	Scrolling has been added to the alerts dialog, which makes long lists of alerts easier to access and consumes less space on the monitor.
	6394	<p>Viewing the files of sets has been made easier:</p> <p>Summary:  For default sets that only contain files, such as <code>System:files</code>, <code>System:filesToCheck</code>, <code>System:zippable</code>, <code>Predefined:missing files</code>, and <code>Predefined:blocking files</code>, files are always displayed regardless of the setting of the flag.  However, for user defined sets, <b>Show files</b> must be turned on to view the files.</p>

#### 42.1.2 The Following 2016.09 Release Items are for LicenseMonitor

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseMonitor.
<b>Enhanced Features</b>		
	5394	Integrated licensing capabilities now support server lists. This feature is useful for unlicensed tool wrapping.
<b>Fixed Bugs</b>		
13577	6103	New format is now recognized, and added support for additional date format in Feature line.
	6268	Detailed plots are now easier to read. The visibility of plot lines was increased for checkouts and queued requests with shorter durations compared to the report time range.

#### 42.1.3 The Following 2016.09 Release Items are for NetworkComputer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	5766	<p>New features have been added to the <code>vovprocessmgr</code> utility for finding processes that are descendents of <code>vovslave</code>, orphans of <code>vovslave</code> and external processes.</p> <p>There is an option to create foster jobs for discovered orphans; orphans can now be accounted for by a slave on the same host, and tracked for</p>

		the rest of their lifetime.
	5904	<p>On Linux slaves, a job can now be requested to run in one or more cgroups. The syntax is similar to requesting any other resource, with the resource name consisting of the prefix CGROUP: followed by the path to the cgroup on the filesystem.</p> <p>Example, to use /sys/fs/cgroup/cpuset/my_cgroup1 /sys/fs/cgroup/memory/my_cgroup2:</p> <pre>nc run -r CGROUP:/sys/fs/cgroup/cpuset/my_cgroup1 -r CGROUP:/sys/fs/cgroup/memory/my_cgroup2 -- sleep 120 will assign a "sleep 120" job to the cgroups my_cgroup1 and my_cgroup2.</pre> <p>If the user specifies multiple conflicting cgroups (such as 2 cgroups under the /memory hierarchy), the cgroup that is specified last is the one that the process will be assigned to.</p> <p>The special resource CGROUP:RAM can be used to limit memory usage of a job within a cgroup.</p> <p>Example:</p> <pre>nc run -r CGROUP:RAM -r RAM/2000 -- sleep 120</pre> <p>will assign the job to a default cgroup and limit that cgroup to 2000 megabytes of RAM. Since we only place one job in each default cgroup, we can effectively limit RAM usage on a per-job level. The path to this default cgroup will be: &lt;path to cgroup root directory &gt;/memory/ &lt;queue name&gt;_ &lt;slave name&gt;_ &lt;job slot number&gt;</p> <p><b>Note:</b> CGROUP:RAM cannot be used with a non-default cgroup; if both CGROUP:RAM and a non-default cgroup are specified, the job will be placed in the specified cgroup without changing that cgroup's RAM usage limit. We strongly recommend specifying a RAM resource when using CGROUP:RAM, as the default value is low (currently 20 megabytes).</p> <p>To see slave resource for cgroups, use <code>nc hosts -r</code> and look for CGROUP: entries. If they are not present, ensure that they are set up on the slaves with <code>lscgroups</code> and check the slave logs for errors.</p>
	5909	The new dynamic server tuning feature enhances performance when the server is under heavy load conditions: a unique maximum value is set per bucket.
<b>Enhanced Features</b>		
	5080	Slaves now account for jobs running on a stopped slave on the same host. When a slave is started, if there is a matching slave in the stopped condition (waiting on its jobs to finish), the new slave will adopt any jobs on the stopped slave by using foster jobs. This feature helps prevent host overloading
12544	5472	<p>There is a new server configuration parameter for statistics: <code>cpuprogressWindowSize</code>.</p> <p>This parameter can be set in the <code>policy.tcl</code> configuration file.</p> <p>The default value (1) provides identical behavior to previous releases. Increasing the parameter increases the number of samples to be used in the calculation of the <code>cpuprogress</code> statistic.</p> <p>The accepted range of values is 1-1440. 1440 signifies one full day, assuming the sample time is 60 seconds.</p>
	5689	The fields <code>REQCORES</code> , <code>REQCPUS</code> , <code>REQPERCENT</code> , <code>REQRAM</code> , <code>REQSLOTS</code> , and <code>REQSWAP</code> are now valid on <code>SCHEDULED</code> jobs. This can be useful in writing -preempting clauses on preemption rules.
14414	6144	<p>Validation is improved with two new options and a new health check.</p> <p>Summary:</p> <p>The new <code>-failover</code> option to <code>vtk_slave_define</code> now sets the capacity to 0, which prevents the slave from accepting jobs and pulling a license. This also acts as a flag to perform some failover configuration testing, such as checking <code>servercandidates.tcl</code> to ensure the slave host is in the list.</p>



		<p>Passing in the new <code>-descriptors</code> as well as the <code>-failover</code> option to <code>vovslavestartup</code> triggers a check to ensure the host has at least as many descriptors as <code>vovserver</code>, which ensures it can operate at full capacity in the event of failover. It also checks that the <code>server_election</code> directory is empty.</p> <p>In addition, a new health check ensures that a slave is running on each host listed in the <code>servercandidates.tcl</code> file. By default, the health check is on; it can be disabled in the health check configuration of the web UI. <b>Note:</b> the health check features and options are listed on the health check configuration of the web UI.</p>
	6195	Update calls to <code>ftlm_lmproject</code> from <code>vw</code> every 20m. The period is controlled by the variable <code>VOV_VW_PING</code> .
	6204	The PERCENT slave resource can now be configured in the slave resource specification. This is specified in consumable form, such as PERCENT/50. Previously, PERCENT was always initialized to 100 and could not be changed.
	6312	<p>New parameter <code>resuserDisableMatchingThreshold</code> allows matching to be disabled for license resources from a license server: in such cases, the matching process can take a very long time.</p> <p><code>resuserDisableMatchingThreshold</code> provides a threshold that disables matching if the sum of LicenseMonitor handles and FlowTracer jobs exceed that threshold.</p> <p>The range is 0 - 10000; the default value is 1000.</p> <p>This parameter can be specified in <code>policy.tcl</code>. Example:</p> <pre>set config(resuserDisableMatchingThreshold) 1000</pre> <p>This parameter can also be set using the VTK api. Example:</p> <pre>vtk_server_config resuserDisableMatchingThreshold 1000</pre>
14704	6722	<p>The <code>vovserver</code> now responds to multiple incoming client connections during the same cycle.</p> <p>This capability is enabled by default, and can be controlled with the following configuration parameters via the <code>policy.tcl</code> file:</p> <pre>set config(clientConnectionQueue.mode) multi set config(clientConnectionQueue.size) 512</pre> <p>The mode can be "single" or "multi" (default=multi). The size can be any integer in the range of 25-1024 (default=512).</p>
<b>Fixed Bugs</b>		
	5253	The <code>vovfsgroup create</code> command now copies the parent ACL when creating a subgroup. Example: <code>vovfsgroup create /abc/def</code> will create a new group <code>/abc/def</code> , with ACL permissions copied from the group <code>/abc</code> . If there is no applicable parent group, the default ACLs will be used.
14154	5699	<code>fairshare.cgi</code> now takes <code>fstokens</code> into account. Previously, <code>fstokens</code> were ignored.
13420	5715	The autokill function now takes suspension time into account when determining if a job has exceeded the autokill time threshold.
13705	5993	License resources are no longer overbooked. Previously, the configured threshold was honored the first time the overbooking procedure was called for a specific feature.
13164	6125	<code>vovset list</code> can now display more than 600k sets.
	6617	The failover process now works correctly. <b>Note:</b> It can take over 2 minutes for the failover process to complete.
	6618	The error message for a specific port issue is better handled: where <code>ncmgr</code> is being used to start or stop an <code>NetworkComputer</code> instance, but the specified port matches that of an <code>NetworkComputer</code> instance other than the one being controlled.
15159	6619	The DISPLAY environemnt is unset during the failover process, which prevents the process from failing due to an invalid value.;

#### 42.1.4 The Following 2016.09 Release Items are for WorkloadXcelerator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for WorkloadXcelerator.
<b>Enhanced Features</b>		
	6558	<p>The <code>ncmgr</code> and <code>wxmgr</code> utilities now check for a minimum number of file descriptors on Unix-based platforms.</p> <p>Summary:            The default value can be over-riden with the <code>VOV_MIN_DESCRIPTOR</code> environment variable.            An attempt is made to raise the default limit if needed.            If the target's limit is higher than the system's hard limit, an error is displayed and the product start will be aborted.</p>
<b>Fixed Bugs</b>		
		No bugfixes were generated for WorkloadXcelerator.

#### 42.1.5 The Following 2016.09 Release Items are for LicenseAllocator

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
		No new features were generated for LicenseAllocator.
<b>Enhanced Features</b>		
12150	5311	<p>License resources can now be allocated from multiple servers or excluded.</p> <p>Summary:            Resource groups can be defined that are a <b>logical OR</b> of components that are hosted on different license servers.            Licenses from specific servers can be excluded from distribution to specific sites.</p>
<b>Fixed Bugs</b>		
	6414	ADMIN permission is no longer needed to read LicenseMonitor or NetworkComputer data. That data is now accessible by all USERS. However, updating the NetworkComputer instances with new allocations still requires ADMIN privileges.
12150	6601	The minimum number of tokens to run any queued job on a site are allocated when possible. This ensures jobs will be run.
15243	6752	When a new resource is declared in the LA config.tcl file, restarting LicenseAllocator or vovlad is no longer needed to get the resource tokens
15245	6753	LicenseAllocator now uses the expression specified through <code>LA::SetMapForResourceInSite</code> to set the resource map expression in NetworkComputer; components are in the resource map in the correct order.
15244	6756	LicenseAllocator now sets the weight of the components of a resource group from the weight of the resource group, unless the weight of the component has been set explicitly.

#### 42.1.6 The Following 2016.09 Release Items are for FlowTracer

Support Case #	Internal Tracking #	Description
<b>New Features</b>		
	6358	<p>A SNAPSHOT of the server environment is now automatically captured on FlowTracer <code>vovproject start</code>. This new feature enables users to run a job in the same environment as the server. A shell environment snapshot can also be saved on demand from any project enabled shell.</p> <p>Summary:            The automatically captured environment is saved as a file under the server working directory, which can be used to set the SNAPSHOT environment at any time.            The new standalone utility <code>vovenvcapture</code> is for saving the environment on demand, either into a file or as a property on a Vov object.</p>

Enhanced Features		
	4879	A periodic job can be paused by setting a property "PERIOD_PAUSE" as 1. This is done through web interface, vovconsole NodeEditor, <code>vtk_prop_set tcl</code> function, or <code>vovprop cli</code> . If a paused job is running when this property is set, the current run will continue to completion, but a new run will not be started at the next period; it will remain paused until <code>PERIOD_PAUSE</code> property is reset to 0.
	5428	If <b>EventOverflow</b> occurs from server, vovconsole will empty all events, wait, reconnect and refresh all set viewers. When this occurs, a message is displayed: Updating ... please wait
13082	5617	Upcone Set and Downcone set menus are now added to the popup menu of vovconsole when a set is selected. If no node is selected, Connectivity popup menus of Downcone, Upcone and Expand will apply to the current set displayed in the SetViewer.
	6018	Details about the condition of a schedule job that is stuck due to barrier invalid are now available.  Summary: When a job is stuck due to barrier invalid node in upcone, a balloon message appears and shows "barrier invalid". On NodeEditor, the "Why" tab shows barrier invalid messages on the associated node(s).  Trouble-shooting methods: (1) An aggressive retrace flag can be done in the main console window or by using <code>vsr</code> . (2) Find the invalid jobs in the upcone and retrace them to validate the barrier. If there are no invalid jobs in the upcone, fix the barrier invalid flag by running <code>sanity</code> .
	6122	The Navigator column now sorts per the severity of the node status.
	6156	SERIAL and PARALLEL commands in FDL now work with any level of nesting: you can nest parallel in serial and vice versa, for as many levels deep as desired. SERIAL and PARALLEL commands now work with S (set), T (task), and J (job) commands, which can be nested under one another in any order.
	6440	<code>vovlsfd</code> now utilizes an agent script ( <code>vov_lsf_agent</code> ) in the installation to launch <code>vovslave</code> in the batch system. Previously, shell scripts had to be written to the launchers/<hourly sub-directory>.
15109	6571	The <code>vw</code> command now has the option to apply a delay that allows latency on outputs as well as inputs.  Previously, if the environment variable <code>VOV_VW_NFS_PROTECTION</code> was set to 1 (or if the <code>-n</code> option is used with <code>vw</code> ), <code>vw</code> added a delay when waiting for inputs to allow for Network File System (NFS) latency. By default, the wait duration was 60 seconds that could be overridden by setting the environment variable <code>VOV_VW_NFS_WAIT</code> .  In this release, in addition to the above behavior, if <code>VOV_VW_NFS_PROTECTION</code> is specified as 2 (or the <code>-N</code> option is used), <code>vw</code> also applies the same delay to allow for latency on outputs.  Overview: Under certain conditions, for both inputs and outputs, <code>vw</code> will attempt to trigger a cache update sooner if possible. <b>Note:</b> for this to work, <code>nfsdelay</code> must be enabled in the vovserver settings in the <code>policy.tcl</code> file, and also applied to any currently running vovserver (by doing <code>vovproject sanity</code> ). Example: <code>set config(nfsdelay) 60</code> It is also recommended to specify a small time tolerance in <code>policy.tcl</code> to compensate for minor time discrepancies among machines and/or the filer. Example: <code>set config(timeTolerance) 3</code> <b>Note:</b> This should also be applied to any currently running vovserver using <code>vovproject sanity</code> .
Fixed Bugs		
11903	4826	When a new set is created in the Set Browser, the sets can now be placed in alphabetical order: right-click any node and select the Update and Sort option. Previously, new sets were appended to the bottom, with no option to update the order.
10461	4901	<code>vovproject enable</code> now returns a non-zero exit when it fails.
	4945	Detailed information of "why" is now provided if a job fails with no outputs.

	5198	<p>Improved Slave Monitor: Slave LED Monitor on vovconsole and Floating Slave Monitor.</p> <p>Summary:  When there are many slaves, Slave Monitor will not occupy the vovconsole area and show only one row and rest of them can be seen at floating Slave Monitor  If there are more than 20 slaves, grouping options are displayed.  Users can group slaves by state, arch, group(=slavegroup)</p>
3186 4562 5409	5231	<p>Predefined sets on the console can now be deleted or modified; they are not permanently deleted.</p> <p>Summary of the changes:  After a predefined set is deleted, the vovconsole keeps the set names.  When the predefined sets are double-clicked, the predefined sets are recreated: the predefined set is recomputed and the up-to-date set is drawn on the set viewer.</p>
	5424	<p>Manually overriding vovslave cores and capacity is now improved.</p> <p>Summary of features:  By default, the capacity follows the core count.  The capacity can be manually set via the <code>-T</code> option, or by defining the SLOTS/N consumable resource via the <code>-r</code> option. N is a positive integer.  In all cases, the capacity directly affects the number of slot licenses that will be requested.</p>
	5537	<p>Sticky attachment attributes on inputs are now preserved when creating job arrays. Previously, sticky attributes were not copied for inputs.</p>
14221	6101	<p>vovconsole no longer crashes when running in READ-ONLY mode. Menus and buttons that are not applicable for read-only security are now disabled.</p>
13269	6129	<p>A race condition that occurred between resource reservations and resource grabbing by a job has been fixed. Previously, this occurred when a job was dispatched by the server and resource was reserved between the time of the dispatch and the time the job started running on a slave.</p>
	6262	<p>The Disconnect popup menu of the Navigator is now fixed. Previously, error messages were displayed.</p>
	6364	<p>In vovconsole, jobs in a set are no longer deleted when the set is flattened then rebuilt from FDL.</p>
	6438	<p>The following commands that were previously deprecated are no longer available:  vovstopjobs  vovleader -K retraces</p>
	6668	<p>The numbers of projects for other users shown in registry.cgi page has been corrected.</p>
	6683	<p>Files no longer appear in sets that should not contain files such as "Predefined:stuff to do" and "System:jobs".</p>