

OAR Documentation - Developer Guide



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Organization: LIG laboratory
Status: Stable
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Dedication: For developers and experimenters.

BE CAREFULL : THIS DOCUMENTATION IS FOR OAR \geq 2.5.0
PDF version : [oar-documentation-devel.pdf](#)

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Coding Guidelines

OAR Documentation - REST API - Developer's guide

Dedication: For OAR developpers wishing to add or modify features of the REST API (not for developpers of third party products that make use of the OAR REST API: read the User's guide)

Abstract: OAR is a resource manager (or batch scheduler) for large clusters. By it's fonctionnalities, it's near of PBS, LSF, CCS and Condor. It's suitable for productive platforms and research experiments.

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PDF version : [OAR-DOCUMENTATION-API-DEVEL.pdf](#)

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Introduction

...To be written...

How does it work

...To be written...

Sources organization

...To be written...

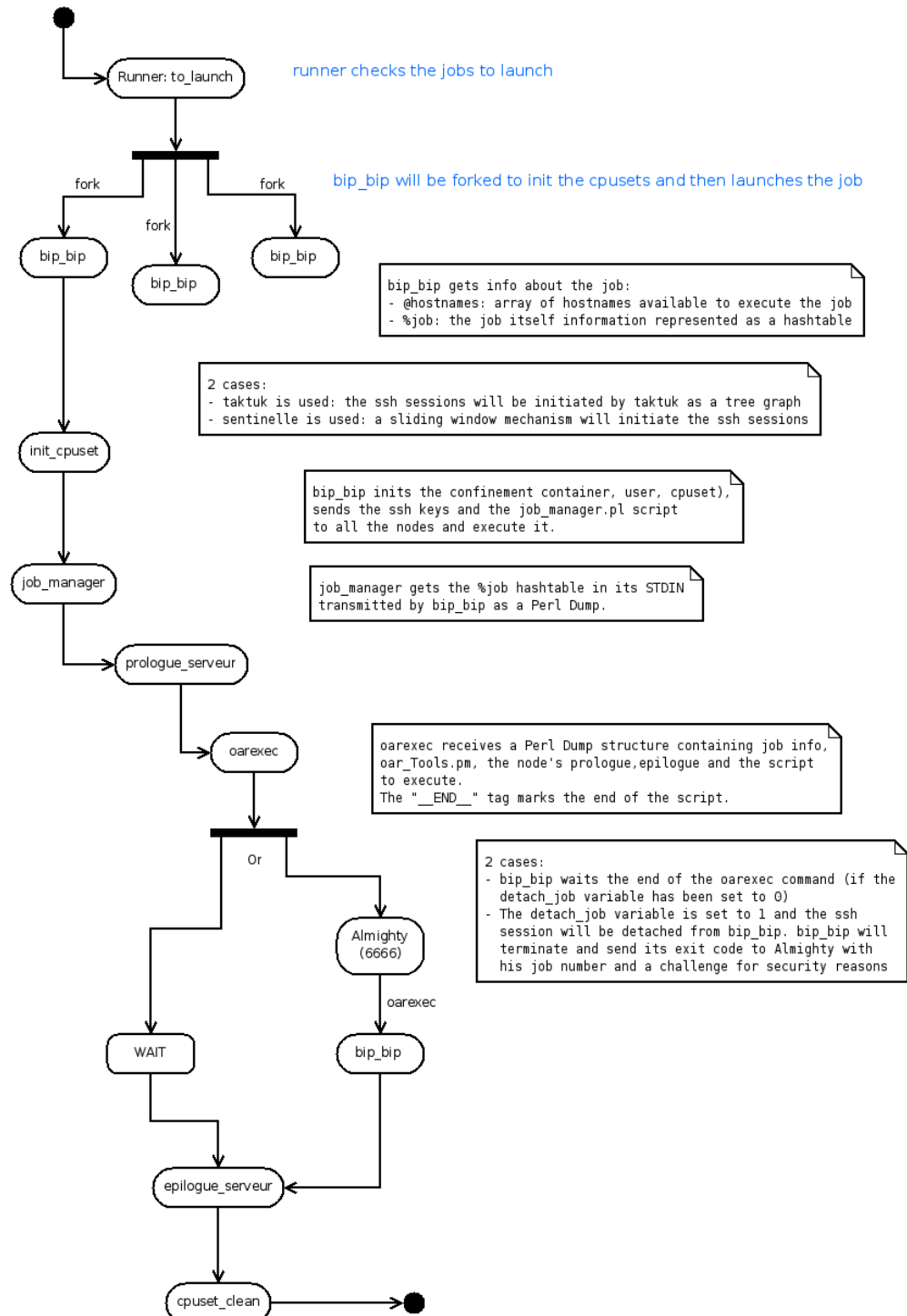
Rspec tests

...To be written...

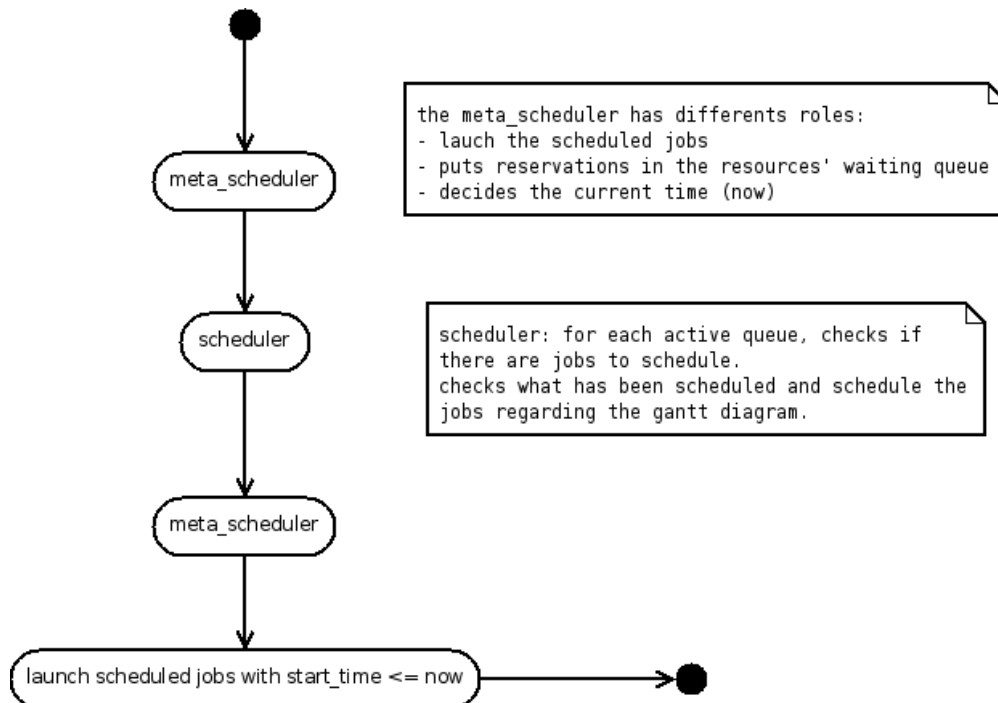
Database scheme

Internal mechanisms

Job execution



Scheduling



FAQ - DEVEL

OAR CHANGELOG

version 2.5.3:

- Add the "Name" field on the main Monika page. This is easier for the users to find there jobs.
- Add `MAX_CONCURRENT_JOB_TERMINATIONS` into the `oar.conf` of the master. This limits the number of concurrent processes launched by the Almighty when the jobs finish.
- Bug fix in ssh key feature in `oarsub`.
- Added `--compact, -c` option to `oarstat` (compact view or array jobs)
- Improvements of the API: media upload from html forms, listing of files, security fixes, add of new configuration options, listing of the scheduled nodes into jobs, fixed bad reinitialization of the limit parameter... See [OAR-DOCUMENTATION-API-USER](#) for more informations.

version 2.5.2:

- Bugfix: `/var/lib/oar/.bash_oar` was empty due to an error in the common setup script.
- Bugfix: the `PINGCHECKER_COMMAND` in `oar.conf` depends now on `%%OARDIR%%`.
- Bug #13939: the `job_resource_manager.pl` and `job_resource_manager_cgroups.pl` now deletes the user files in `/tmp`, `/var/tmp` and `/dev/shm` at the end of the jobs.
- Bugfix: in `oardodo.c`, the preprocessed variables was not defined correctly.
- Finaud: fix race condition when there was a `PINGCHECKER` error jsut before another problem. The node became Alive again when the `PINGCHECKER` said OK BUT there was another error to resolve.
- Bugfix: The feature `CHECK_NODES_WITH_RUNNING_JOB=yes` never worked before.
- Speedup monika (X5).
- Monika: Add the conf `max_cores_per_line` to have several lines if the number of cores are too big.
- Minor changes into API:
 - added `cmd_output` into `POST /jobs`.
- API: Added `GET /select_all?query=<query>` (read only mode).
- Add the field “array_index” into the jobs table. So that resubmit a job from an array will have the right `array_index` environment variable.
- `oarstat`: order the output by `job_id`.
- Speedup `oarnodes`.
- Fix a spelling error in the `oaradmin` manpage.
- Bugfix #14122 : the `oar-node init.d` script wasn’t executing `start_oar_node/stop_oar_node` during the ‘restart’ action.
- Allow the dash character into the `--notify “exec:...”` `oarsub` option.
- Remove some old stuffs from the tarball:
 - `visualization_interfaces/{tgoar,accounting,poar}`;
 - `scheduler/moldable`;
 - `pbs-oar-lib`.
- Fix some licence issues.

version 2.5.1:

- Sources directories reorganized
- New “Phoenix” tool to try to reboot automatically broken nodes (to setup into `/etc/oar/oar_phoenix.pl`)
- New (experimental!) scheduler written in Ocaml

- Cpusets are activated by default
- Bugfix #11065: oar_resource_init fix (add a space)
- Bug 10999: memory leak into Hulot when used with postgresql. The leak has been minimized, but it is still there (DBD::Pg bug)
- Almighty cleans ipc's used by oar on exit
- Bugfix #10641 and #10999 : Hulot is automatically and periodically restarted
- Feature request #10565: add the possibility to check the aliveness of the nodes of a job at the end of this one (pingchecker)
- REST API heavily updated: new data structures with paginated results, desktop computing functions, rspec tests, oaradmin resources management, admission rules edition, relative/absolute uris fixed
- New ruby desktop computing agent using REST API (experimental)
- Experimental testsuite
- Poar: web portal using the REST API (experimental)
- Oaradmin YAML export support for resources creation (for the REST API)
- Bugfix #10567: enabling to bypass window mechanism of hulot.
- Bugfix #10568: Wake up timeout changing with the number of nodes
- Add in oar.conf the tag "RUNNER_SLIDING_WINDOW_SIZE": it allows the runner to use a sliding window to launch the bipbip processes if "DETACH_JOB_FROM_SERVER=1". This feature avoids the overload of the server if plenty of jobs have to be launched at the same time.
- Fix problem when deleting a job in the Suspended state (oarexec was stopped by a SIGSTOP so it was not able to handle the delete operation)
- Make the USER_SIGNAL feature of oardel multi job independant and remove the temporary file at the end of the job
- Monika: display if the job is of timesharing type or not
add in the job listing the initial_request (is there a reason to not display it?)
- IoLib: update scheduler_priority resources property for timesharing jobs.
So the scheduler will be able to avoid to launch every timesharing jobs on the same resources (they can be dispatched)
- OAREXEC: unmask SIGHUP and SIGPIPE for user script
- node_change_state: do not Suspect the first node of a job which was EXTERMINATED by Leon if the cpuset feature is configured (let do the job by the cpuset)
- OAREXEC: ESRF detected that sometime oarexec think that he notified the Almighty with it exit code but nothing was seen on the server. So try to resend the exit code until oarexec is killed.

- *oar_Tools*: add in *notify_almighty* a check on the print and on the close of the socket connected to *Almighty*.
- *oaraccounting*: *--sql* is now possible into a “*oarstat --accounting*” query
- Add more logs to the command “*oarnodes -e host*” when a node turns into *Suspected*
- Execute user commands with */proc/self/oom_adj* to 15. So the first processes that will be killed when there is no more memory available is the user ones. Hence the system will remain up and running and the user job will finished. Drawback: this file can be changed manually by the user so if someone knows a method to do the same thing but only managed by root, we take???
- Bugfix API: quotes where badly escaped into job submission (Ugo.Meda@insa-rennes.fr)
- Add the possibility to automatically resubmit idempotent job which ends with an exit code of 99: *oarsub -t idempotent “sleep 5; exit 99”*
- Bugfix API: Some informations where missing into jobs/details, especially the scheduled resources.
- API: added support of “*param_file*” value for array job submissions. This value is a string representing the content of a parameters file. Sample submission:

```
{"resource":"/cpu=1", "command":"sleep", "param_file":"60\n90\n30"}
```

This submits 3 sleep jobs with different sleep values.
- Remove any reference to *gridlibs* and *gridapi* as these components are obsolete
- Add *stdout* and *stderr* files of each job in *oarstat* output.
- API now supports *fastcgi* (big performance raise!)
- Add “*-f*” option to *oarnodesetting* to read hostnames from a file.
- API can get/upload files (GET or POST */media/<file_path>*)
- Make “X11 forwarding” working even if the user *XAUTHORITY* environment variable does not contain *~/.Xauthority* (GDM issue).
- Add *job_resource_manager_cgroups* which handles *cpuset* + other *cgroup* features like network packet tagging, IO disk shares, ...
- Bugfix #13351: now *oar_psql_db_init* is executed with root privileges
- Bugfix #13434: reservation were not handled correctly with the energy saving feature
- Add *cgroups FREEZER* feature to the suspend/resume script (better than kill *SIGSTOP/SIGCONT*). This is doable thanks to the new *job_resource_manager_cgroups*.
- Implement a new script ‘*oar-database*’ to manage the oar database. *oar_mysql_init* & *oar_psql_init* are dropped.
- Huge code reorganisation to allow a better packaging and system integration

- Drop the oarstat/oarstat 2.3 version that was kept for compatibility issues during the 2.4.x branch.
- By default the oar scheduler is now 'oar_sched_gantt_with_timesharing_and_fairsharing' and the following values has been set in oar.conf: SCHEDULER_TIMEOUT to 30, SCHEDULER_NB_PROCESSES to 4 and SCHEDULER_FAIRSHARING_MAX_JOB_PER to 30
- Add a limitation on the number of concurrent bipbip processes on the server (for detached jobs).
- Add IPC cleaning to the job_resource_manager* when there is no other job of the same user on the nodes.
- make better scheduling behaviour for dependency jobs
- API: added missing stop_time into /jobs/details

version 2.4.4:

- oar_resource_init: bad awk delimiter. There's a space and if the property is the first one then there is not a ','.
- job suspend: oardo does not exist anymore (long long time ago). Replace it with oardodo.
- oarstat: when an admission rule died micheline returns an integer and not an array ref. Now oarstat ends nicely.
- Monika: add a link on each jobid on the node display area.
- sshd_config: with nodes with a lot of core, 10 // connections could be too few

version 2.4.3:

- Hulot module now has customizable keepalive feature
- Added a hook to launch a healing command when nodes are suspected (activate the SUSPECTED_HEALING_EXEC_FILE variable)
- Bugfix #9995: oaraccounting script doesn't freeze anymore when db is unreachable.
- Bugfix #9990: prevent from inserting jobs with invalid username (like an empty username)
- Oarnodecheck improvements: node is not checked if a job is already running
- New oaradmin option: --auto-offset
- Feature request #10565: add the possibility to check the aliveness of the nodes of a job at the end of this one (pingchecker)

version 2.4.2:

- New "Hulot" module for intelligent and configurable energy saving

- Bug #9906: fix bad optimization in the gantt lib (so bad scheduling)

version 2.4.1:

- Bug #9038: Security flaw in oarsub --notify option
- Bug #9601: Cosystem jobs are no more killed when a resource is set to Absent
- Fixed some packaging bugs
- API bug fixes in job submission parsing
- Added standby info into oarnodes -s and available_upto info into /resources uri of the API
- Bug Grid'5000 #2687 Fix possible crashes of the scheduler.
- Bug fix: with MySQL DB Finaud suspected resources which are not of the "default" type.
- Signed debian packages (install oar-keyring package)

version 2.4.0:

- Bug #8791: added CHECK_NODES_WITH_RUNNING_JOB=no to prevent from checking occupied nodes
- Fix bug in oarnodesetting command generated by oar_resources_init (detect_resources)
- Added a --state option to oarstat to only get the status of specified jobs (optimized query, to allow scripting)
- Added a REST API for OAR and OARGRID
- Added JSON support into oarnodes, oarstat and oarsub
- New Makefile adapted to build packages as non-root user
- add the command "oar_resources_init" to easily detect and initialize the whole resources of a cluster.
- "oaradmin version" : now retrieve the most recent database schema number
- Fix rights on the "schema" table in postgresql.
- Bug #7509: fix bug in add_micheline_subjob for array jobs + jobtypes
- Ctrl-C was not working anymore in oarsub. It seems that the signal handler does not handle the previous syntax (\$SIG = 'qdel')
- Fix bug in oarsh with the "-l" option
- Bug #7487: bad initialisation of the gnatt for the container jobs.
- Scheduler: move the "delete_unnecessary_subtrees" directly into "find_first_hole".
Thus this is possible to query a job like:

```
oarsub -I -l nodes=1/core=1+nodes=4/core=2
(no hard separation between each group)
```

For the same behaviour as before, you can query:

```
oarsub -I -l {prop=1}/nodes=1/core=1+{prop=2}/nodes=4/core=2
```

- Bug #7634: test if the resource property value is effectively defined otherwise print a "
- Optional script to take into account cpu/core topology of the nodes at boot time (to activate inside oarnodesetting_ssh)
- Bug #7174: Cleaned default PATH from "." into oardodo
- Bug #7674: remove the computation of the scheduler_priority field for besteffort jobs from the asynchronous OAR part. Now the value is set when the jobs are turned into toLaunch state and in Error/Terminated.
- Bug #7691: add --array and --array-param-file options parsing into the submitted script. Fix also some parsing errors.
- Bug #7962: enable resource property "cm_availability" to be manipulated by the oarnodesetting command
- Added the (standby) information to a node state in oarnodes when it's state is Absent and cm_availability != 0
- Changed the name of cm_availability to available_upto which is more relevant
- add a --maintenance option to oarnodesetting that sets the state of a resource to Absent and its available_upto to 0 if maintenance is on and resets previous values if maintenance is off.
- added a --signal option to oardel that allow a user to send a signal to one of his jobs
- added a name field in the schema table that will refer to the OAR version name
- added a table containing scheduler name, script and description
- Bug #8559: Almighty: Moved OAREXEC_XXXX management code out of the queue for immediate action, to prevent potential problems in case of scheduler timeouts.
- oarnodes, oarstat and the REST API are no more making retry connections to the database in case of failure, but exit with an error instead. The retry behavior is left for daemons.
- improved packaging (try to install files in more standard places)
- improved init script for Almighty (into deb and rpm packages)
- fixed performance issue on oarstat (array_id index missing)
- fixed performance issue (job_id index missing in event_log table)
- fixed a performance issue at job submission (optimized a query and added an index on challenges table) decisions).

version 2.3.5:

- *Bug #8139: Drawgantt nil error (Add condition to test the presence of nil value in resources table.)*
- *Bug #8416: When a the automatic halt/wakeup feature is enabled then there was a problem to determine idle nodes.*
- *Debug a mis-initialization of the Gantt with running jobs in the metascheduler (concurrency access to PG database)*

version 2.3.4:

- *add the command “oar_resources_init” to easily detect and initialize the whole resources of a cluster.*
- *“oaradmin version” : now retrieve the most recent database schema number*
- *Fix rights on the “schema” table in postgresql.*
- *Bug #7509: fix bug in add_micheline_subjob for array jobs + jobtypes*
- *Ctrl-C was not working anymore in oarsub. It seems that the signal handler does not handle the previous syntax (\$SIG = 'qdel')*
- *Bug #7487: bad initialisation of the gnatt for the container jobs.*
- *Fix bug in oarsh with the “-l” option*
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- *Bug #7691: add --array and --array-param-file options parsing into the submitted script. Fix also some parsing errors.*
- *Bug #7962: enable resource property “cm_availability” to be manipulated by the oarnodesetting command*

version 2.3.3:

- *Fix default admission rules: case unsensitive check for properties used in oarsub*
- *Add new oaradmin subcommand : oaradmin conf. Useful to edit conf files and keep changes in a Subversion repository.*
- *Kill correctly each taktuk command children in case of a timeout.*
- *New feature: array jobs (option --array) (on oarsub, oarstat oardel, oarhold and oarresume) and file-based parametric array jobs (oarsub --array-param-file) /!in this version the DB scheme has changed. If you want to upgrade your installation from a previous 2.3 release then you*

have to execute in your database one of these SQL script (stop OAR before):

```
mysql:
    DB/mysql_structure_upgrade_2.3.1-2.3.3.sql
```

```
postgres:
    DB/pg_structure_upgrade_2.3.1-2.3.3.sql
```

version 2.3.2:

- *Change scheduler timeout implementation to schedule the maximum of jobs.*
- *Bug #5879: do not show initial_request in oarstat when it is not a job of the user who launched the oarstat command (oar or root).*
- *Add a --event option to oarnodes and oarstat to display events recorded for a job or node*
- *Display reserved resources for a validated waiting reservation, with a hint in their state*
- *Fix oarproperty: property names are lowercase*
- *Fix OAR_JOB_PROPERTIES_FILE: do not display system properties*
- *Add a new user command: oarprint which allow to pretty print resource properties of a job*
- *Debug temporary job UID feature*
- *Add 'kill -9' on subprocesses that reached a timeout (avoid Perl to wait something)*
- *desktop computing feature is now available again. (ex: oarsub -t desktop_computing date)*
- *Add versioning feature for admission rules with Subversion*

version 2.3.1:

- *Add new oarmonitor command. This will permit to monitor OAR jobs on compute nodes.*
- *Remove sudo dependency and replace it by the commands "oardo" and "oardodo".*
- *Add possibility to create a temporary user for each jobs on compute nodes. So you can perform very strong restrictions for each job (ex: bandwidth restrictions with iptable, memory management, ... everything that can be handled with a user id)*
- *Debian packaging: Run OAR specific sshd with root privileges (under heavy load, kernel may be more responsive for root processes...)*

- Remove `ALLOWED_NETWORKS` tag in `oar.conf` (added more complexity than resolving problems)
- `#!/change` database scheme for the field `exit_code` in the table `jobs`. Now `oarstat exit_code` line reflects the right exit code of the user passive job (before, even when the user script was not launched the `exit_code` was 0 which was BAD)
- `#!/add` DB field `initial_request` in the table `jobs` that stores the `oarsub` line of the user
- Feature Request #4868: Add a parameter to specify what the “nodes” resource is a synonym for. `Network_address` must be seen as an internal data and not used.
- Scheduler: add timeout for each job == 1/4 of the remaining scheduler timeout.
- Bug #4866: now the whole node is Suspected instead of just the part where there is no job on it. So it is possible to have a job on Suspected nodes.
- Add job walltime (in seconds) in parameter of prologue and epilogue on compute nodes.
- `oarnodes` does not show system properties anymore.
- New feature: container job type now allows to submit inner jobs for a scheduling within the container job
- Monika refactoring and now in the `oar` packaging.
- Added a table schema in the db with the field `version`, representing the version of the db schema.
- Added a field `DB_PORT` in the `oar` config file.
- Bug #5518: add right initialization of the job user name.
- Add new `oaradmin` command. This will permit to create resources and manage admission rules more easily.
- Bug #5692: change source code into a right Perl 5.10 syntax.

version 2.2.12:

- Bug #5239: fix the bug if there are spaces into job name or project
- Fix the bug in `Iolib` if `DEAD_SWITCH_TIME > 0`
- Fix a bug in `bipbip` when calling the `cpuset_manager` to clean jobs in error
- Bug #5469: fix the bug with reservations and Dead resources
- Bug #5535: checks for reservations made at a same time was wrong.
- New feature: local checks on nodes can be plugged in the `oarnodecheck` mechanism. Results can be asynchronously checked from the server (`taktuk` ping checker)

- Add 2 new tables to keep track of the scheduling decisions (`gantt_jobs_predictions_log` and `gantt_jobs_resources_log`). This will help debugging scheduling troubles (see `SCHEDULER_LOG_DECISIONS` in `oar.conf`)
- Now reservations are scheduled only once (at submission time). Resources allocated to a reservations are definitively set once the validated is done and won't change in next scheduler's pass.
- Fix `DrawGantt` to not display besteffort jobs in the future which is meaningless.

version 2.2.11:

- Fix Debian package dependency on a CGI web server.
- Fix little bug: remove notification (scheduled start time) for Interactive reservation.
- Fix bug in reservation: take care of the `SCHEDULER_JOB_SECURITY_TIME` for reservations to check.
- Fix bug: add a lock around the section which creates and feed the OAR `cpuset`.
- Taktuk command line API has changed (we need `taktuk >= 3.6`).
- Fix extra ' in the name of output files when using a job name.
- Bug #4740: open the file in `oarsub` with user privileges (`-S` option)
- Bug #4787: check if the remote socket is defined (problem of timing with `nmap`)
- Feature Request #4874: check system names when renaming properties
- `DrawGantt` can export charts to be reused to build a global multi-OAR view (e.g. `DrawGridGantt`).
- Bug #4990: `DrawGantt` now uses the database `localtime` as its time reference.

version 2.2.10:

- Job dependencies: if the required jobs do not have an exit code `== 0` and in the state `Terminated` then the schedulers refuse to schedule this job.
- Add the possibility to disable the `halt` command on nodes with `cm_availability` value.
- Enhance `oarsub` `"-S"` option (more `#OAR` parsed).
- Add the possibility to use `oarsh` without configuring the `CPUSETs` (can be useful for users that don't want to configure there `ssh` keys)

version 2.2.9:

- Bug 4225: Dump only 1 data structure when using `-X` or `-Y` or `-D`.

- Bug fix in Finishing sequence (Suspect right nodes).

version 2.2.8:

- Bug 4159: remove unneeded Dump print from oarstat.
- Bug 4158: replace XML::Simple module by XML::Dumper one.
- Bug fix for reservation (recalculate the right walltime).
- Print job dependencies in oarstat.

version 2.2.7:

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- Fix Debian package dependency on a CGI web server.
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- *Bug fix in Finishing sequence (Suspect right nodes).*

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- *Bug 4159: remove unneeded Dump print from oarstat.*
- *Bug 4158: replace XML::Simple module by XML::Dumper one.*
- *Bug fix for reservation (recalculate the right walltime).*
- *Print job dependencies in oarstat.*

version 2.2.7:

- *Bug 4106: fix oarsh and oarcpc issue with some options (erroneous leading space).*
- *Bug 4125: remove exit_code data when it is not relevant.*
- *Fix potential bug when changing asynchronously the state of the jobs into "Terminated" or "Error".*

version 2.2.6:

- *Bug fix: job types was not sent to cpuset manager script anymore.
(border effect from bug 4069 resolution)*

version 2.2.5:

- *Bug fix: remove user command when oar execute the epilogue script on the nodes.*
- *Clean debug and mail messages format.*
- *Remove bad oarsub syntax from oarsub doc.*
- *Debug xauth path.*
- *bug 3995: set project correctly when resubmitting a job*
- *debug 'bash -c' on Fedora*
- *bug 4069: reservations with CPuset_ERROR (remove bad hosts and continue with a right integrity in the database)*
- *bug 4044: fix free resources query for reservation (get the nearest hole from the beginning of the reservation)*
- *bug 4013: now Dead, Suspected and Absent resources have different colors in drawgantt with a popup on them.*

version 2.2.4:

- *Redirect third party commands into oar.log (easier to debug).*
- *Add user info into drawgantt interface.*
- *Some bug fixes.*

version 2.2.3:

- *Debug prologue and epilogue when oarexec receives a signal.*

version 2.2.2:

- *Switch nice value of the user processes into 0 in oarsh_shell (in case of sshd was launched with a different priority).*
- *debug taktuk zombies in pingchecker and oar_Tools*

version 2.2.1:

- *install the “allow_clasic_ssh” feature by default*
- *debug DB installer*

version 2.2:

- *oar_server_proepilogue.pl: can be used for server prologue and epilogue to authorize users to access to nodes that are completely allocated by OAR. If the whole node is assigned then it kills all jobs from the user if all cpus are assigned.*
- *the same thing can be done with cpuset_manager_PAM.pl as the script used to configure the cpuset. More efficient if cpusets are configured.*
- *debug cm_availability feature to switch on and off nodes automatically depending on waiting jobs.*
- *reservations now take care of cm_availability field*

version 2.1.0:

- *add “oarcop” command to help the users to copy files using oarsh.*
- *add sudo configuration to deal with bash. Now oarsub and oarsh have the same behaviour as ssh (the bash configuration files are loaded correctly)*
- *bug fix in drawgantt (loose jobs after submission of a moldable one)*
- *add SCHEDULER_RESOURCES_ALWAYS_ASSIGNED_TYPE into oar.conf. Thus admin can add some resources for each jobs (like frontale node)*
- *add possibility to use taktuk to check the aliveness of the nodes*
- *%jobid% is now replaced in stdout and stderr file names by the effective job id*

- change interface to shu down or wake up nodes automatically (now the node list is read on STDIN)
- add `OARSUB_FORCE_JOB_KEY` in `oar.conf`. It says to create a job ssh key by default for each job.
- `%jobid%` is now replaced in the ssh job key name (`oarsub -k ...`).
- add `NODE_FILE_DB_FIELD_DISTINCT_VALUES` in `oar.conf` that enables the admin to configure the generated content of the `OAR_NODE_FILE`
- change ssh job key `oarsub` options behaviour
- add options “--reinitialize” and “--delete-before” to the `oaraccounting` command
- `cpuset` are now stored in `/dev/cpuset/oar`
- debian packaging: configure and launch a specific `sshd` for the user `oar`
- use a file descriptor to send the node list --> able to handle a very large amount of nodes
- every config files are now in `/etc/oar/`
- `oardel` can add a `besteffort` type to jobs and vis versa

version 2.0.2:

- add warnings and exit code to `oarnodesetting` when there is a bad node name or resource number
- change package version
- change default behaviour for the `cpuset_manager.pl` (more portable)
- enable a user to use the same ssh key for several jobs (at his own risk!)
- add node hostnames in `oarstat -f`
- add `--accounting` and `-u` options in `oarstat`
- bug fix on index fields in the database (syncro): bug 2020
- bug fix about server pro/epilogue: bug 2022
- change the default output of `oarstat`. Now it is usable: bug 1875
- remove keys in `authorized_keys` of `oar` (on the nodes) that do not correspond to an active `cpuset` (clean after a reboot)
- reread `oar.conf` after each database connection tries
- add support for X11 forwarding in `oarsub -I` and `-C`
- debug mysql initialization script in debian package
- add a variable in `oarsh` for the default options of ssh to use (more useful to change if the ssh version installed does not handle one of these options)
- read `oar.conf` in `oarsh` (so admin can more easily change options in this script)
- add support for X11 forwarding via `oarsh`
- change variable for `oarsh`: `OARSH_JOB_ID` --> `OAR_JOB_ID`

version 2.0.0:

- Now, with the ability to declare any type of resources like licences, VLAN, IP range, computing resources must have the type default and a network_address not null.
- Possibility to declare associated resources like licences, IP ranges, ... and to reserve them like others.
- Now you can connect to your jobs (not only for reservations).
- Add “cosystem” job type (execute and do nothing for these jobs).
- New scheduler : “oar_sched_gantt_with_timesharing”. You can specify jobs with the type “timesharing” that indicates that this scheduler can launch more than 1 job on a resource at a time. It is possible to restrict this feature with words “user and name”. For example, ‘-t timesharing=user,name’ indicates that only a job from the same user with the same name can be launched in the same time than it.
- Add PostgresSQL support. So there is a choice to make between MySQL and PostgresSQL.
- New approach for the scheduling : administrators have to insert into the databases descriptions about resources and not nodes. Resources have a network address (physical node) and properties. For example, if you have dual-processor, then you can create 2 different resources with the same network address but with 2 different processor names.
- The scheduler can now handle resource properties in a hierarchical manner. Thus, for example, you can do “oarsub -l /switch=1/cpu=5” which submit a job on 5 processors on the same switch.
- Add a signal handler in oarexec and propagate this signal to the user process.
- Support ‘#OAR -p ...’ options in user script.
- Add in oar.conf:
 - DB_BASE_PASSWD_RO : for security issues, it is possible to execute request with parts specified by users with a read only account (like “-p” option).
 - OARSUB_DEFAULT_RESOURCES : when nothing is specified with the oarsub command then OAR takes this default resource description.
 - OAREXEC_DEBUG_MODE : turn on or off debug mode in oarexec (create /tmp/oar/oar.log on nodes).
 - FINAUD_FREQUENCY : indicates the frequency when OAR launches Finaud (search dead nodes).
 - SCHEDULER_TIMEOUT : indicates to the scheduler the amount of time after what it must end itself.
 - SCHEDULER_JOB_SECURITY_TIME : time between each job.

- `DEAD_SWITCH_TIME` : after this time Absent and Suspected resources are turned on the Dead state.
 - `PROLOGUE_EPILOGUE_TIMEOUT` : the possibility to specify a different timeout for prologue and epilogue (`PROLOGUE_EPILOGUE_TIMEOUT`).
 - `PROLOGUE_EXEC_FILE` : you can specify the path of the prologue script executed on nodes.
 - `EPILOGUE_EXEC_FILE` : you can specify the path of the epilogue script executed on nodes.
 - `GENERIC_COMMAND` : a specific script may be used instead of ping to check aliveness of nodes. The script must return bad nodes on `STDERR` (1 line for a bad node and it must have exactly the same name that OAR has given in argument of the command).
 - `JOBDEL_SOFTWALLTIME` : time after a normal frag that the system waits to retry to frag the job.
 - `JOBDEL_WALLTIME` : time after a normal frag that the system waits before to delete the job arbitrary and suspects nodes.
 - `LOG_FILE` : specify the path of OAR log file (default : `/var/log/oar.log`).
- Add `wait()` in pingchecker to avoid zombies.
 - Better code modularization.
 - Remove node install part to launch jobs. So it is easier to upgrade from one version to an other (oarnodesetting must already be installed on each nodes if we want to use it).
 - Users can specify a method to be notified (mail or script).
 - Add cpuset support
 - Add prologue and epilogue script to be executed on the OAR server before and after launching a job.
 - Add dependancy support between jobs (“-a” option in oarsub).
 - In oarsub you can specify the launching directory (“-d” option).
 - In oarsub you can specify a job name (“-n” option).
 - In oarsub you can specify stdout and stderr file names.
 - User can resubmit a job (option “--resubmit” in oarsub).
 - It is possible to specify a read only database account and it will be used to evaluate SQL properties given by the user with the oarsub command (more secure).
 - Add possibility to order assigned resources with their properties by the scheduler. So you can privilege some resources than others (`SCHEDULER_RESOURCE_ORDER` tag in oar.conf file)

- a command can be specified to switch off idle nodes (`SCHEDULER_NODE_MANAGER_SLEEP_CMD`, `SCHEDULER_NODE_MANAGER_IDLE_TIME`, `SCHEDULER_NODE_MANAGER_SLEEP_TIME` in `oar.conf`)
- a command can be specified to switch on nodes in the Absent state according to the resource property `cm_availability` in the table `resources` (`SCHEDULER_NODE_MANAGER_WAKE_UP_CMD` in `oar.conf`).
- if a job goes in Error state and this is not its fault then OAR will resubmit this one.