Yamcs Release Notes

Yamcs
MISSION CONTROL

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Contents

Preface

This document contains release notes for the changes in each release of Yamcs up through Yamcs 5.7.2.

The documentation included in source and binary distributions may not be fully up to date with respect to release note entries because integration of the documentation occurs at release build time. For the most up-to-date release notes, please refer to the online documentation instead.

1. Changes in 5.7

Changes in 5.7.2 (2022-06-03)

- yamcs-web: fix render issue with enumerated and command aggregate arguments

Changes in 5.7.1 (2022-05-30)

- Allow 200 aliases in the yaml configuration files (the default was 50). The number can be configured via the java property org.yamcs.yaml.maxAliases
- yamcs-web: Show detail field on links page
- yamcs-client: fix generation of command source for command with binary arguments
- fixed units in the data links synthesized parameters (e.g. /yamcs//tm_realtime/packetRate)

Changes in 5.7.0 (2022-05-28)

- Renamed several java packages to avoid having the same package in different jars (this practice has been discouraged since the introduction of java modules) The “org.yamcs.xtceproc” and “org.yamcs.xtce” in yamcs-core has bene renamed to “org.yamcs.mdb”. May require update of custom plugins if they use classes from those packages.
- Fixed a memory leak in relation to rocksdb snapshots (snapshots taken during parameter archive buildup were never released) and iterators (iterators were not closed when the replay was stopped before reaching the end)
- Various tweaks and fixes

2. Changes in 5.6

Changes in 5.6.2 (2022-04-13)

- Added support for Java 17 by using Nashorn javascript engine as a module
- Removed support for Java 1.8 - 19
- Various tweaks and fixes

Changes in 5.6.1 (2022-04-04)

- Replication: detect and recover dead replication links
- Replication: allow to synchronize the mission time across replication
- Buckets: allow configurable limits for total size and number of objects in a bucket
- Various tweaks and fixes

Changes in 5.6.0 (2022-03-02)

- Keep a log of admin, link, queue and alarm activity
- Add support for folder creation within buckets
- Upgrade of protobuf dependency
- Allow customizing message decoding of UdpParameterDataLink through extension
- Add toggle to switch between hex/decimal input for unsigned integer arguments
- API updates:
  - Link actions are now separate (one method per action)
  - Queue actions are now separate (one method per action)
  - Alarm actions are now separate (one method per action)
  - Old-style websocket is now fully removed (use new-style)
  - Tags are gone (use timeline)
- Various tweaks and fixes

3. Changes in 5.5

Changes in 5.5.7 (2022-02-03)

- restored backward compatibility for GenericPacketPreprocessor time decoding (in version 5.5.6 it was using the CUC decoder by default instead of using the FIXED decoder)
- allow raw frame decoding using Reed-Solomon and de-randomization.
- allow enabling errorDetection for uplink at virtual channel level.
- fixed bug in FilePollingTmDataLink which was double counting the packets

Changes in 5.5.6 (2022-01-30)

- allow algorithms to use parameter and processor times
- allow disabling randomization for specific virtual channels
- various tweaks and fixes

Changes in 5.5.5 (2021-10-20)

- yamcs-web: fixed display of command arguments in the command history

Changes in 5.5.4 (2021-10-20)

- Fixed the CLTU randomization sequence to conform to CCSDS 231.0 issue 4 when LDPC coding is enabled.
- Accept numeric value of an enumeration command argument
- Fixed lost frame count calculation
- Allow DataSource=ground for parameters
- Fixed CFDP reliable option not showing
- Fixed duplicate data in the parameter archive
- Allow specification of generation time in set parameter value requests
- Allow configuring the number of threads serving HTTP requests
- minor tweaks and fixes

Changes in 5.5.3 (2021-07-30)

- first version of the Yamcs Timeline
- various tweaks and fixes

Changes in 5.5.2 (2021-06-22)

- Fixed XTCE reference solver of types para->Type->BaseType which were defined in reverse order in different files.
- Fixed parameter archive retrieval of raw values only.
- yamcs-web: fixed replication page not showing info.

Changes in 5.5.1 (2021-06-08)

- Fixed (again) the name of the packets shown on yamcs-web front page (TM statistics)
- Fixed an XTCE reference solving bug
- Fixed the retrieval from parameter archive with the option useRawValue=true

Changes in 5.5.0 (2021-06-03)

- Added algorithm status and tracing (currently only working for global algorithms)
- Added support for XTCE transmission constraints and verifiers (using MatchCriteria, BooleanExpression. . .)
- Added java-expression algorithms
- Added types to system parameters
- Fixed the realtime parameter archive - it can now be used as a preferred configuration for all systems receiving only realtime data (e.g. testing in an EGSE/Lab setup)
- CCSDS Frame Processing: allow plugging user defined virtual channels handlers
- Fixed the Parameter Archive to reconstruct aggregate and array parameters out of their components
- minor tweaks and fixes

4. Changes in 5.4

Changes in 5.4.5 (2021-04-05)

- Fixed a bug causing the rejection of aggregates with enumeration members when used as command arguments

Changes in 5.4.4 (2021-04-02)

- Fixed a bug in the TM partitioning flags causing the homepage of Yamcs to not display the packets beyond the top level.
- Fixed a typo in reading the TCO configuration causing the defaultTof option to be ignored.

Changes in 5.4.3 (2021-03-16)

- added some REST calls for getting more detailed information about parameter archive (can be used to investigate problems of missing data).
- added possibility to trace algorithm executions.
- minor tweaks and fixes

Changes in 5.4.2 (2021-03-09)

- Fixed the container name used as partition in the tm table. XtceTmRecorder will only use as partition (pname column in the tm table) the containers directly inherited from the root container defined on the stream on which the TM packet is received. Previously, if a container included another container inside, this last one would have been used as partition and also appear as the name of the packet in the home page of yamcs-web.
- Added a maxValues parameter to the parameter range request
- Added an API for instance reconfiguration - the instances created from templates can now be updated following template changes, or with modified template variables.
- Allow aggregate values (not only members) to be used in Java algorithms (not yet available in Python or Javascript algorithms - these have to make reference to aggregate members)
- minor tweaks and fixes

Changes in 5.4.1 (2021-02-17)

- CFDP: allow to configure the inactivityTimeout

- changed yamcs systemd script to not depend on bash being the system shell
- add support for web response filtering
- added a minRange option to the parameter range request allowing to limit the number of ranges returned. This is done by aggregating data into multi value range.

Changes in 5.4.0 (2021-02-10)

- Generalized file transfers: allow different than CFDP file transfer services to be implemented offering the same external API.
- Added displayName/email attribute support to YamlAuthModule
- Added queueing support to CFDP - files can be queued for later upload
- Allow multi-purpose links (e.g. both TM and TC)
- Added a perftest example useful to asses the performance of Yamcs
- Added a bidirectional TCP TM/TC link
- Save the link name in the tm table - this allows later to find out packets received via a certain link
- The usage of time of flight estimatro (TOF) in the time correlation service (TOC) has been made optional (a config setting can be used to set the tof to a fixed value)
- yamcs-web: show an view of the replication status
- yamcs-web: moved the buckets out of the admin area

5. Changes in 5.3

Changes in 5.3.5 (2020-12-20)

- Fixed a bug related to CFDP records storage in archive - the entity id was not saved for the incoming transfers causing a NPE when retrieving the list of transfers
- Changed the incoming CFDP transfers to use the object name specified in the metadata rather than an artificially created name.

Changes in 5.3.4 (2020-12-17)

- Fixed a bug in replication introduced in version 5.3.2 when allowing tuples to contain null values.
- Improved XTCE support for command verifiers, demonstrated with the PUS simulator.

Changes in 5.3.3 (2020-12-14)

- Added a simple PUS simulator to exemplify the usage of the time correlation (TCO) service with a free running on-board clock.
- Save the OBT (value of the free running on-board clock) in the tm table.
- TCP and UDP packet links populate the ERT (Earth Reception Time) field of the TM packets with the local mission time as this is required by the TCO service.

Changes in 5.3.2 (2020-12-11)

- Reorganized the service creation and initialization such that data links can have access to services before they are initialized. Otherwise for example if a pre-processor wanted to use a time correlation service, it was not possible to check that the service exists when the pre-processor was created.
- CfsPacketPreprocessor can optionally use the time correlation service to verify the time extracted from the packet.
- Removed the clock name from the time correlation service, use the serviceName instead.

Changes in 5.3.1 (2020-12-08)

- CFDP improvements:
  - allow multiple services and multiple local and remote entities per service
  - allow to define fault handlers (i.e. suspend a transaction in case of error so it can be resumed)

- minor tweaks and fixes

Changes in 5.3.0 (2020-11-25)

Version 5.3.0 released 25-Nov-2020

- Added a bulk load option to be used by the command yamcs tables load. It does not update the histograms and also disables the RocksDB WAL (write ahead log) resulting in faster loads. the histograms have to be rebuilt manually after this.
- Introduced a table format V3 which sorts properly the negative numbers and also the strings
  - most Yamcs tables use a timestamp as primary key and the timestamps before 1970 are represented as negative numbers and thus were not sorted properly
  - the old format V2 is still supported but new tables created with this Yamcs version will not be readable by a previous Yamcs vsersion.
- Preview feature: secondary indices on tables; not used for regular Yamcs tables (tm, events, cmd_history, etc) but it will be used for the soon to come Yamcs timeline.
- Preview feature: time correlation service; can be used to correlate a free running on-board clock with the ground time.
  - in case the on-board time is correlated using other means (e.g. on-board GPS receiver), the service can still be used for verifying the synchronization.
- Yamcs-web:
  - show a preview of the evaluation of transmission constraints before sending a command
  - tables/streams are moved to admin section, and a web-based DB-shell is added
  - packets can now be individually exported or copied to clipboard

6. Changes in 5.2

Changes in 5.2.1 (2021-01-08)

YamlAuthModule: added a default role used when the user has no role assigned

Changes in 5.2.0 (2020-10-13)

- allow all TM data links to update a simulation time if configured
- allow the XTCE loader to load multiple files using a glob pattern or a list
- added support for absolute time command arguments
- added more options for time decoding of Cfs and Pus packet preprocessors.
- added support for command arguments of type aggregate
- minor tweaks and fixes

7. Changes in 5.1

Changes in 5.1.4 (2020-11-12)

- fix serialization of integers in table load (used when importing previously exported data with yamcs tables load command)

Changes in 5.1.3 (2020-09-09)

- minor tweaks and fixes

Changes in 5.1.2 (2020-08-28)

- add support for variables when creating instances from templates
- Add RemoteUserAuthModule for proxied authentication (API only)
- Fix retrieval of single packets
- minor tweaks and fixes

Changes in 5.1.1 (2020-08-02)

Fixed the GenericCommandPostprocessor to work with errorDetection: NONE (which is also the default if no errorDetection is specified)

Changes in 5.1.0 (2020-08-02)

- moved the simulator into its own package out of the examples (such that the examples are independent of eachother)
- changed the errorCorrection into errorDetection for TC frames (for consistency with TM links and also to documentation)
- added a parameter on CfsCommandPostprocessor to allow swaping between checksum and command code (necessary on little endian systems with older versions of cFS)
- added the possibility to specify patterns for the TC streams to define which command goes into which stream (before the way to do this was using some sql statements)
- various bugfixes

8. Changes in 5.0

Changes in 5.0.0 (2020-07-03)

- migrated the .def table definitions into the rocksdb. WARNING: the migration is automatic but once migrated the version 4 will not be able to read the data anymore! (the data in the database is not changed, if absolutely necessary we can make a version 4.10.x that can read it)
- split Event and ParameterValue protobuf messages into internal and external. The internal messages use Yamcs timestamps whereas the external messages use protobuf timestamps.
- changed the link configuration to be more consistent: removed the “args” parameter; all the properties should be moved one level up.
- added a status bitfield on all packets where pre-processors can set specific flags such as: packet invalid local time used instead of spacecraft generation time extracted from packet do not archive
- implemented a replication service
- removed default yearly partitions for tm/pp data (can still be done by creating manually the tables)
- added an option to send raw frame data over streams (such that they can be monitored externally or saved into tables)
- CfsEventDecoder: added an option to specify byte endianess with default to big endian (used to be hardcoded to little endian) added also an option for the charset used to decode the text string, default to US-ASCII
- removed yamcs-artemis (since it was used mainly for replication)
- removed the IndexServer: The CCSDS completeness index functionality is provided now by the CcsdsTmIndex service. The histograms do not require definition of any extra service.
- yamcs-xtce: all parameter and argument types need to be constructed through builders. all data encodings need to be constructed through builders. support the baseType XTCE property which allows a type to inherit properties from another type. AbsoluteTimeParameterType uses java Instant as initial value (rather than Yamcs times)
- remove the yamcs-simulation rpm. Simulation is one of the examples along others.
- updated RocksdDB to a newer version such that Yamcs can be run now on Windows 64bits and Linux ARM64 (e.g. Rasbperry Pi 4)

9. Changes in 4.10

Changes in 4.10.9 (2020-04-25)

- reorganized the links by removing the DataLinkInitializer and creating a LinkManager that has more functionality, like for example being able to negatively acknowledge commands if all the TC links are disabled.
- add a filter box to Packet Viewer (thanks to QinetiQ Space)
- minor other tweaks and fixes

Changes in 4.10.8 (2020-02-28)

- Fixed a shutdown issue with RealtimeArchiveFiller (#377)
- Link activity is now protected by the `ReadLinks` privilege
- Fixed an issue with completion of TSE commands
- Minor other tweaks and fixes

Changes in 4.10.7 (2020-02-19)

- added command stacks on the yamcs-web
- added command clearance functionality
- allow to specify command options (such as enabling/disabling pre-transmission constrains and post-transmission command verifiers) when sending commands

Changes in 4.10.6 (2020-02-13)

- allow to save invalid packets into a stream/table for later retrieval
- several improvements to CFDP
- allow to configure CLTU start and tail sequence
- added COP1 status subscription via websocket
- other small fixes and improvements (see detailed git log for a list)

Changes in 4.10.5 (2019-11-25)

- small random fixes and improvements (see detailed git log for a list)

Changes in 4.10.4 (2019-11-05)

- made the command acknowledgments more uniform
- cancel the pending verifiers on command completion
- improvements into the command queue definition
- added CCSDS TC Data Link protocol including COP1
- allow links to set an Earth Reception Time on TM packets (used by the SLE link to set the time as received from the ground station) - useful for spacecraft/ground time synchronization purposes
- various changes in the web interface
- various bugfixes

Changes in 4.10.3 (2019-09-24)

- changed the alarms to follow more closely the ISA-18.2 standard
- added a user management module in the web interface
- improved validation of yaml configuration files
- many improvements in the web interface
- various bugfixes

Changes in 4.10.2 (2019-07-17)

- various bugfixes

Changes in 4.10.1 (2019-07-08)

- fixed bug with TSE driver not recovering from connection reset
- allow specific buckets to map to the file system instead of rocksdb (previously it was all or nothing)

Changes in 4.10.0 (2019-06-14)

- added a UDP TC data link
- added pre/post processors for cFS
- added initial CFDP support

10. Changes in 4.9

Changes in 4.9.5 (2019-05-08)

- fixed bug in 4.9.4 that causes the websocket packet subscriptions to fail (meaning that Packet Viewer was not working)

Changes in 4.9.4 (2019-05-07)

- fixes replay with multiple XTCE root containers
- added support for HTTPS
- added the Enumerated parameter value type (previously, the values for the XTCE Enumerated parameter types were represented as parameter values with String engineering value and Integer raw value)

Changes in 4.9.3 (2019-04-03)

- fixes command queues displays

Changes in 4.9.2 (2019-04-01)

- allow to set (via REST) individual members of aggregates and elements of arrays
- better support for XTCE initial values
- various bugfixes

Changes in 4.9.1 (2019-03-24)

- allow to get and subscribe individual members of aggregates and elements of arrays
- various bugfixes

Changes in 4.9.0 (2019-02-19)

- added support for CCSDS TM frame protocols (TM, AOS and USLP frames)
- various improvements in yamcs-web

11. Changes in 4.8

Changes in 4.8.1 (2019-01-28)

- allow multiple TSE commands in one telecommand
- various bugfixes

Changes in 4.8.0 (2019-01-28)

- allow to create instances on the fly from templates
- added a generic packet input stream (for spiting tcp stream into packets)
- added a generic packet preprocessor that reads timestamps in UNIX millisec format and sequence count from user defined offsets

12. Changes in 4.7

Changes in 4.7.3 (2018-11-26)

- allow to online (i.e. without modifying the MDB) change calibrations and alarms for parameters part of a running processor
- various bugfixes

Changes in 4.7.2 (2018-10-30)

- various bug fixes

Changes in 4.7.1 (2018-10-12)

- small bug fixes

Changes in 4.7 (2018-09-28)

- implemented interface to Test Support Equipment (power supplies, osciloscopes, . . .)
- several changes in instance state - allow offline instances
- implemented step by step replay
- allow same DataLink to be IN and OUT
- added some options in the simulator to allow performance testing
- create a new rpm for yamcs-client containing the java swing clients. Most of the functionality is already available in the Yamcs Web so this package will be discontinued in the future.

13. Changes in 4.6

Changes in 4.6.3 (2018-08-28)

- limit the number of parameters that can be stored in one segment of the parameter arhchive to avoid OOM errors
- various small bugfixes

Changes in 4.6.2 (2018-07-25)

- implemented better cleanup after instance shutdown and restart
- store CCSDS TM Index also in the tablespace (rahter than in a separate rocksdb database)

Changes in 4.6.1 (2018-07-18)

- added support for XTCE IndirectParameterRefEntry
- added EXTERNAL data sources to better support writable parameters not managed by yamcs

Changes in 4.6.0 (2018-07-11)

- introduced aggregate and array data types (not yet fully working with the parameter archive)
- introduced a V7 spreadsheet loader that makes a distinction between parameters/arguments and their data types
- added support for MIL-STD-1750A floating point encoding (32 and 48 bits)
- added a ECSS/PUS packet preprocessor
- added a CCSDS Unsegmented Time Code decoder
- config: Deprecate webConfig in favour of args under HttpServer
- archive: Add File System-based bucket implementation
- web: Add file browser for quickly accessing displays in standalone mode
- web: Add full-screen support for both displays and layouts
- web: Add parameter table viewer

14. Changes in 4.5

Changes in 4.5.0 (2018-06-26)

- added a simple object storage API (buckets)
- security improvements - it is possible now to stack multiple AuthModules to provide authentication/authorization from diferent sources.
- added a Kerberos/Spnego authModule
- Introduced YamcsService as a required interface for global and instance services
- Show contextual calibrators in web interface
- Added various CLI commands (for buckets, processors, clients)
- General clean-up of Yaml configuration files to match closer to the upcoming Server manual
- added a last value cache that is present all the time.

15. Changes in 4.4

Changes in 4.4.2 (2018-05-23)

- yamcs-web: support multiple series plots
- TmLink: added the posibility to specify the checksum type in the Columbus pre-processor and added an option to drop corrupted packets.

Changes in 4.4.1 (2018-05-14)

- added the possibility to exclude parameter groups from replays
- yamcs-web: added a view for the archive index
- yamcs-web: support replays
- fixed the retrieval of static files when zeroCopy was disabled
- bugfix: in /api/instances do not reload the XtceDb from disk, instead provide information about the db already loaded
- bugfix: when an instance fails to init - force it to the FAILED state (rather than NEW), also do not store the instances that failed to init in the instance list

Changes in 4.4.0 (2018-05-07)

- added support for context calibrators
- added support for XTCE MathOperationCalibrator
- fixed the names in the spreadsheet such that additional columns can be inserted without loosing compatibility.
- added support for XTCE MathOperation algorithms
- various XTCE parser fixes

16. Changes in 4.3

Changes in 4.3.1 (2018-04-25)

- parameter archive: fixed encoding of boolean segments
- XTCE parser: fixed parsing container references in command definition
- yamcs-web: allow to set software parameters and display information about time parameters

Changes in 4.3.0 (2018-04-23)

- implemented IncludeCondition for container and parameter entries as per XTCE spec
- server support for access token generation based on password credentials
- updates to yamcs-web to support authentication and privilege checking (using access tokens)
- fixed the parameter archive for boolean parameters
- fixed the processing of XTCE absolute time parameters

17. Changes in 4.2

Changes in 4.2.2 (2018-04-17)

- partially fixed the parameter archive for boolean parameters

Changes in 4.2.1 (2018-04-17)

- send events when an algorithm execution fails
- read commands from XTCE XML files compatible with CCSDS green book

Changes in 4.2.0 (2018-04-06)

- various web improvements - alarm detail, plots improvement, event downloads. . .
- added parameter ranges API
- allow to filter stream data on protobuf message properties
- better enforcements of privileges on table/stream downloads/uploads and other REST calls

18. Changes in 4.1

Changes in 4.1.2 (2018-03-14)

- fixed bug in the parameter archive encoding of large integer numbers
- fixed the handling of expiration of parameters when the processor is running with a simulated clock
- Events significance: added the XTCE significance levels for Events produced from the MDB algorithms

Changes in 4.1.1 (2018-03-07)

- added an alternative Parameter Cache that consumes less memory by using array of primitives to store parameter values
- refurbished yamcs-web
- support multiple parameter subscriptions via the websocket
- serialized XTCEDB use now a filename which is a SHA-1 of the old filename (which is made of the list of individual components of the XtceDB). This avoids problems with too long filenames.

19. Changes in 4.0

Changes in 4.0.1 (2018-02-05)

- fixed Artemis data links to acknowledge the messages (otherwise they are kept indefinitely on the server)
- the parameter select dialog from the Archive Browser will show now also parameters that are not part of containers

Changes in 4.0.0 (2018-01-10)

- fixed the version 6.0 in refmdb.xls and the changelog (it was mistakenly written as version 5.7 not matching the SpreadsheetLoader)
- TcpTcDataLink: the configuration can be made in the service declaration in yamcs..yaml, not necessary to have the tcp.yaml anymore
- changed algorithms to work as functions such that they can coexist in the same scriptEngine (to improve performance)
- allow java-expressions to be used for command argument reverse calibrations (eng->raw value conversion)
- Spreadsheet Loader: allow to better specify the encoding in the command arguments
- Introduced tablespaces to
  - use less rocksdb databases for one yamcs instance
  - allow to share the same rocksdb databae for multiple instances (useful in case of short lived instances such as simulation/test sessions)
  - improve starting performance - no more need to scan all the databases at startup
- renamed yprocessor.yaml to processor.yaml and replaced “tmProvider”, “commanReleaser”, “parameterProviders” with generic “services”
- changed WebSocket parameter unsubscribe all to unsubscribe both the “all” subscription as well as the individual subscriptions (if any). Fixes issue #210 in github.
- Introduced two components part of the TM Packet Data Link:
  - packet input stream - responsible for chopping up a stream into packets
  - packet preprocessor - responsible for extracting basic information (time, seq count) from a packet