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# Yamcs 4 Release Notes

## Space Applications Services

Sep 09, 2020

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## Preface

This document contains release notes for the changes in each release of Yamcs 4 up through Yamcs 4.10.9.

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.

## Changes in Yamcs 4.10

### Changes in Yamcs 4.10.9 (April 25, 2020)

- 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 Yamcs 4.10.8 (Feb. 28, 2020)

- 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 Yamcs 4.10.7 (Feb. 19, 2020)

- 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 Yamcs 4.10.6 (Feb. 13, 2020)

- 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 Yamcs 4.10.5 (Nov. 25, 2019)

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

## Changes in Yamcs 4.10.4 (Nov. 5, 2019)

- 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 Yamcs 4.10.3 (Sept. 24, 2019)

- 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 Yamcs 4.10.2 (July 17, 2019)**

- various bugfixes

## **Changes in Yamcs 4.10.1 (July 8, 2019)**

- 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 Yamcs 4.10.0 (June 14, 2019)**

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

## **Changes in Yamcs 4.9**

### **Changes in Yamcs 4.9.5 (May 8, 2019)**

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

### **Changes in Yamcs 4.9.4 (May 7, 2019)**

- 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 Yamcs 4.9.3 (April 3, 2019)**

- fixes command queues displays

### **Changes in Yamcs 4.9.2 (April 1, 2019)**

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

## **Changes in Yamcs 4.9.1 (March 24, 2019)**

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

## **Changes in Yamcs 4.9.0 (Feb. 19, 2019)**

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

## **Changes in Yamcs 4.8**

### **Changes in Yamcs 4.8.1 (Jan. 28, 2019)**

- allow multiple TSE commands in one telecommand
- various bugfixes

### **Changes in Yamcs 4.8.0 (Jan. 28, 2019)**

- 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

## **Changes in Yamcs 4.7**

### **Changes in Yamcs 4.7.3 (Nov. 26, 2018)**

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

### **Changes in Yamcs 4.7.2 (Oct. 30, 2018)**

- various bug fixes

### **Changes in Yamcs 4.7.1 (Oct. 12, 2018)**

- small bug fixes

## Changes in Yamcs 4.7 (Sept. 28, 2018)

- implemented interface to Test Support Equipment (power supplies, oscilloscopes, ...)
- 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.

## Changes in Yamcs 4.6

### Changes in Yamcs 4.6.3 (Aug. 28, 2018)

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

### Changes in Yamcs 4.6.2 (July 25, 2018)

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

### Changes in Yamcs 4.6.1 (July 18, 2018)

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

### Changes in Yamcs 4.6.0 (July 11, 2018)

- 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

## Changes in Yamcs 4.5

### Changes in Yamcs 4.5.0 (June 26, 2018)

- added a simple object storage API (buckets)
- security improvements - it is possible now to stack multiple AuthModules to provide authentication/authorization from different 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.

## Changes in Yamcs 4.4

### Changes in Yamcs 4.4.2 (May 23, 2018)

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

### Changes in Yamcs 4.4.1 (May 14, 2018)

- 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 Yamcs 4.4.0 (May 7, 2018)

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

## Changes in Yamcs 4.3

### Changes in Yamcs 4.3.1 (April 25, 2018)

- 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 Yamcs 4.3.0 (April 23, 2018)

- 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

## Changes in Yamcs 4.2

### Changes in Yamcs 4.2.2 (April 17, 2018)

- partially fixed the parameter archive for boolean parameters

### Changes in Yamcs 4.2.1 (April 17, 2018)

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

### Changes in Yamcs 4.2.0 (April 6, 2018)

- 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

## Changes in Yamcs 4.1

### Changes in Yamcs 4.1.2 (March 14, 2018)

- 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 Yamcs 4.1.1 (March 7, 2018)

- 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.

## Changes in Yamcs 4.0

### Changes in Yamcs 4.0.1 (Feb. 5, 2018)

- 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 Yamcs 4.0.0 (Jan. 10, 2018)

- 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”, “parameter-Providers” 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