



Laboperator v4.24.3

Changelog

2023-08-28

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## Changelog

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### v4.24.3 - 2023-08-28

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#### Changed

- [Dashboards] When editing the "Content" element, adding a link without selecting any text will now add the URL as the text to be linked.

#### Fixed

- [Exports] Exporting large data points (measurements) is optimized and will take less time.
- [Usability] Fixed various inconsistencies in text copy.
- [Workflows] When the table cell is configured to be selectable, navigating editable cells via keyboard navigation (tab key) will now correctly select the cell.
- [Workflows] Unnecessary extra button mistakenly displayed at the end of a Workflow Run review is removed.

### v4.24.2 - 2023-08-11

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#### Added

- [Devices] Hei-PLATE Mix'n'Heat from Heidolph: new device (driver-heidolph-connect v3.2.0).
- [Devices] MX from Mettler Toledo: new device (driver-sicsserial v2.8.0).

#### Changed

- [Dashboards] Improved the color contrast of elements that display multiple channels.
- [Dashboards] The Line Chart element now displays the channels' units on the Y-axis, thereby improving the legibility of charts with multiple channels of different units..
- [Workflows] Table cells that are configured with string enum options now display a select instead of a regular textfield.
- [Devices] TM from Papouch: standardize channel units (driver-papouch-tm v2.2.0).

## Fixed

- [Dashboards] Fixed a bug that would prevent the selected device and its channels from being displayed in the dashboard configuration panel.
- [Usability] Fixed a bug that would prevent the parent resource being displayed in the app bar breadcrumb when a resource is opened via a direct link.
- [Devices] All SiLA devices supported by driver-sila-client: fixed a bug that prevented the driver from starting due to a missing file (driver-sila-client v1.3.1).

## v4.24.1-hotfix - 2023-08-02

### Fixed

- [Devices] Fix issue encountered when updating device configuration under a FOS enabled environment.

## v4.24.0 - 2023-07-28

### Added

- [Automations] Automation template files can now be configured via JSON format on top of YAML. The parsed structure can also be requested via the Automation API. These were added to enable easier control of automation from external systems.
- [Workflows] Allow searching for templates based on their name (workflow-editor v1.17.0)

### Changed

- [Devices] Kevin from Fraunhofer IPA: moved to the dynamic SiLA driver (driver-sila-client v1.3.0)
- [Devices] Labeler from HTI: moved to the dynamic SiLA driver (driver-sila-client v1.3.0)
- [Devices] Based on users feedback, we started displaying the channel unit next to the amount inside the form for configuring device/channel thresholds.
- [Maintenance] Only for cloud installations: storage for uploaded files (including files generated by devices, organization logo, workflow templates, etc) will be moved from the server file system to centralized S3 compatible File Object Storage (FOS). This enables centralized storage for all files across Labforward suite, which simplifies backup and recovery of said files.

## Fixed

- [Workflows] Previously, workflows with references to missing external step templates can be created and started, leading to partially broken workflow runs. We've added validations to make sure that workflow runs can only be started once all references to external step templates are resolved.

## v4.23.0 - 2023-07-17

### Added

- [Workflows] Extending the control we recently implemented over the device operation, we are adding device locking within Workflow's execution. Whenever a Workflow Run has a device associated with it, a new measurement will be automatically created for this run, hence locking the device for being used elsewhere. The measurement is visible on the Workflow Show page and it will be stopped if the workflow get paused or completed, and the device will, therefore, be unlocked.
- [API] We introduced new filters for the Channels Incidents API to provide more ways to query for the information about Channels Threshold Incidents.
- [Devices] Added improvements to the UX when selecting a device channel with a new loading indicator.

### Changed

- [Workflows] The Workflow Editor now sets its application language based on the language setting in the user's profile settings. (workflow-editor v1.16.1)

### Fixed

- [Devices] Performance improvements in the device selection by automatically filtering devices that are unable to be used.
- [Dashboards] Fixed minor issues with the correct units to be displayed in volume/hour channels.

### Security

- [Dashboards] We fixed an issue with the Dashboard parser that could potentially compromise the integrity of the database.

## v4.22.1-hotfix - 2023-07-05

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### Fixed

- [Deployment & Maintenance] Fixed authorization issue for websocket connections.

## v4.22.0 - 2023-06-30

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### Added

- [Devices] EL Press from Bronkhorst: new device (driver-bronkhorst-el-press v1.0.0)
- [Workflows] Added additional validation to several configuration options of Workflow Step Template fields. (workflow-editor v1.16.0)
- [Workflows] Added configuration option to mark object properties as required when configuring a Workflow Step Template field. (workflow-editor v1.16.0)
- [Workflows] Added a new interceptor on the workflow template definition that will allow communication between Laboperator and other Labforward products seamlessly for customers using OIDC as the authentication provider. With this feature, it's possible to directly send data to Labfolder and Labregister in a Workflow Run without the need to expose credentials in the workflow template file.
- [Dashboards] A renewed scope functionality was added to the dashboards, allowing you to quickly select scopes in line charts with new scope buttons and select a custom scope in the side panel with a better user experience.

### Changed

- [Devices] Buddy from bAhead: moved to the dynamic SiLA driver (driver-sila-client v1.1.0)
- [Devices] Cedex Cedex Bio HT Analyzer (SiLA Client) from Roche: moved to the dynamic SiLA driver (driver-sila-client v1.1.0)
- [Workflows] A device can now be selected via a combobox when configuring the default value of a Workflow Step Template field of type *relationship*. (workflow-editor v1.16.0)
- [Connectors] The console logs of a connector in the connector's settings page will now be limited to 1000.

### Deprecated

- [Devices] SiLA from labforward GmbH: replaced by SiLA Client (driver-sila v1.4.0)
- [Devices] Devices from driver-oldwrapper incompatible with Connector >= 3.0.0. For extending support to newer Connector versions, please reach out to support.

- [Devices] VC820/VC840 from Voltcraft: (driver-oldwrapper v0.1.0)
- [Devices] DCU 002 from Pfeiffer Vacuum: (driver-oldwrapper v0.1.0)
- [Devices] SC 920 from KNF: (driver-oldwrapper v0.1.0)
- [Devices] Soil Moisture 1282 from Sunrom: (driver-oldwrapper v0.1.0)
- [Devices] Vision from ITA Instruments: (driver-oldwrapper v0.1.0)
- [Devices] HYTELOG from B+B Thermo-Technik GmbH: (driver-oldwrapper v0.1.0)
- [Devices] pH 1140 from Mettler Toledo: (driver-oldwrapper v0.1.0)
- [Devices] Explorer from OHAUS: (driver-oldwrapper v0.1.0)
- [Devices] Discovery DV215CD from OHAUS: (driver-oldwrapper v0.1.0)
- [Devices] AB (dot matrix) from PCE: (driver-oldwrapper v0.1.0)
- [Devices] S/SI Summit from Denver Instruments: (driver-oldwrapper v0.1.0)
- [Devices] RC 900 from KNF: (driver-oldwrapper v0.1.0)
- [Devices] RODist digital from IKA: (driver-oldwrapper v0.1.0)
- [Devices] Innova 42 from Eppendorf: (driver-oldwrapper v0.1.0)
- [Devices] Quantrol from JUMO: (driver-oldwrapper v0.1.0)
- [Devices] P.I.A.2 from Protzek: (driver-oldwrapper v0.1.0)

## Fixed

- [Workflows] Fixed a bug that made the *defaultValue* setting required when other Workflow Step Template field settings are defined. (workflow-editor v1.16.0)
- [Connectors] When connectors go online, they will now be recorded as auditable events.
- [Devices] Fixed an issue causing dynamic channels to not be updated properly in the database.
- [Devices] Fixed the device type selection when pairing a new device that was not displaying the latest name of a device in the latest driver version.

## v4.21.0 - 2023-06-21

## Added

- [Devices] MJPEG Camera from labforward GmbH: parameter for controlling the FPS (driver-mjpeg-camera v1.1.0)
- [Workflows] Each template configuration setting in the Workflow Editor is now linked to its public documentation. (workflow-editor v1.15.0)
- [Workflows] Interpolated field references in markdown preview are now specifically highlighted, indicating the interpolation variant and also linking to their respective field definition. (workflow-editor v1.15.0)
- [Automations] *"Every day, at 6 PM, set the office heater temperature to zero"* - A new feature is available for Automations in this release. Now you can create scheduled

Automations based on a time trigger. Scheduled Automations can run a specific number of times or indefinitely on the scheduled time. With this new feature, a new action to send commands to devices is also available for all kinds of Automations. Similar to what we already had on Workflows.

- [Workflows] To improve the experience of looking up your devices, a new search functionality is added to the Device selection. Now it is possible to search for a device based on the Vendor/Manufacturer name.

## Changed

- [Workflows] The read-only view for published Workflow (Step) Templates has been improved to give more context for Workflow Field settings that combine multiple user inputs, for example min/max settings. (workflow-editor v1.15.0)
- [Workflows] The list view for Workflow Fields now displays the initial value for all field types. (workflow-editor v1.15.0)
- [Dashboards] To provide a better experience when using Dashboards, we changed the layout of the right panel to include a “Go Back” button on top of it when adding new elements.

## Fixed

- [Workflows] Fixed a bug that caused the device selection not to work when using a custom organization theme.
- [Dashboards] Fixed the alignment of the number input field.
- [Dashboards] Fixed a bug when editing the name of line charts.

## v4.20.0 - 2023-06-02

### Added

- [Workflows] A new condition type, For-Each – Array, can be used to control the flow of steps in the Workflow Editor (workflow-editor v1.14.0)
- [Workflows] The Workflow Editor now supports creating, editing, and deleting fields in a Workflow Step Templates (workflow-editor v1.14.0)
- [Devices] Device Simulator from labforward GmbH: new device (driver-device-simulator v1.0.0)
- [Navigation] Resources in Laboperator, such as Workflow Templates or Devices, can belong to different collections simultaneously. To make it easy to identify the locations of a resource, we added in this release a dropdown menu in the Parent Collection breadcrumb when viewing a resource. With this functionality, navigating to a resource's different parent collections is now possible.

## Changed

- [Usability] We improved the connectivity status check to make the message “*You are offline*” more reliable. Customers will now see them only when the connection is idle and a reload of the page is needed.
- [Workflows] To improve the experience within Workflow Runs, we changed the functionality of changing steps to include minimizing the Context Info panel. This will reduce the clicks necessary to work with the Context Info panel workflows.

## Fixed

- [Dashboards] Fixed an issue with the device selection in dialogs where the input field was scrollable.
- [Workflows] Minor improvements in the look and feel of the new device selection.
- [Workflows] Change Reason fields will now have the standard colors and sizes in the input icons.

## v4.19.0 - 2023-05-22

### Added

- [Workflows] A new user experience to select Devices within Workflows and other parts of the product has been added in this release. Now, when choosing a Device, you can navigate through the Collections to find a specific one to be used in Workflows instead of relying only upon the name search. Name searching is still possible.
- [Devices] BP Series from Sartorius: new device (driver-sartorius-sbi v4.6.0)
- [Devices] Digimatic HD-30AX from Mitutoyo: new device (driver-barcode-hid v1.6.0)
- [Devices] Introspect from Tecan: new device (driver-tecan-introspect v1.0.0)

### Fixed

- [Dashboards] Fixed Dashboards display elements to display long channel names showing first the end of the text, where they differ from each other.
- [Administration] Fixed an inconsistency with the date format field when setting the organization date format, which would prevent the field from being cleaned and, therefore, the original date format from being reset.
- [Dashboards] Fixed the right-click functionality for iOS users that was not working correctly in the dashboards.



- [Dashboards] Fixed the copying functionality for dashboard tables that resulted in incorrect formatting.

## v4.18.2 - 2023-05-05

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### Added

- [Devices] MJPEG Camera from labforward GmbH: new device (driver-mjpeg-camera v1.0.0)
- [Devices] SiLA Client from labforward GmbH: new device (driver-sila-client v1.0.0)

### Changed

- [Devices] MIXcontrol 20 (RS-232) from 2mag: rename device to use the controller name (driver-2mag-mix v2.2.2)

### Fixed

- [Audit Trail] Fix issue with the Audit Trail not being wrapped to fit the available horizontal space of the page when the content of the Audit Trail is sufficiently large.
- [Collections] Fix issue with selected collection being reset when choosing where to put resources into while managing (adding/moving) the target collection of resources.
- [Collections] Fix issues with duplicated Collection being created multiple times due to double submission of the form data.
- [Deployment & Maintenance] Improve reliability of real time data (websocket) connection by avoiding random restart of the server when the system is under heavier load.
- [Devices] Fix issue with driver parameters being reset when the device driver is updated

## v4.18.1-hotfix - 2023-05-03

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### Fixed

- [Devices] Fixed severe performance issues resulting in general system instability caused by the recently introduced Threshold Levels feature.

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## v4.18.0 - 2023-04-24

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### Added

- [Devices] Shelly Plug S from Allterco: new device (driver-shelly-plug-s v1.0.0).
- [Devices] Claire xl from Berner: new device (driver-loggito-logger v1.0.0).
- [Devices] We are adding the Threshold Levels feature to provide more information about the current values being recorded for a device and allow our customers more control over them. With this release, you can add custom thresholds to a device channel to be notified on the dashboard elements whenever the threshold condition is met or crossed. The audit trail was also updated to provide the complete traceability of the Threshold Incidents opened and closed for a device channel.

### Fixed

- [Dashboards] Fixed Dashboards display elements to display long channel names with some adjustments.
- [Collections] Fixed an issue causing the input labels to be cut when inside dialogs.
- [Devices] Fixed an issue causing the device driver parameters to reset when system administrators updated the driver's definitions.
- [Workflows] Workflow's required date fields will now display the asterisk indicator correctly.
- [Devices] Fixed an inconsistency in the Device Types search that was causing the result options to be duplicated.
- [Workflows] Fixed text fields in table cells to be wrapped when the text is long enough.
- [Webhooks] Fixed a behavior causing inactive and deleted webhook subscriptions to be still triggered.

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## v4.17.0 - 2023-04-11

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### Added

- [Devices] Sensor (MQTT) from essentim GmbH: new battery channel and improved inactivity detection (driver-essentim-mqtt v1.1.0).
- [Devices] In the direction of keeping our product as reliable as possible, we are implementing the device operation with exclusive locking in this release. When a measurement starts for a device, it will be unavailable in other contexts, such as the

device dashboard, different measurements, or workflow runs. Sending commands and controlling the device will only be allowed from the context of the measurement of who first locked it.

- [Workflows] When dealing with scrollable tables in workflows, we want to ensure that the UI indicates that the table is scrollable and has more content not being shown. Therefore we are adding scrollbars when hovering over workflow tables.

## Changed

- [Devices] Cedex Bio HT Analyzer (Serial/SiLA) from Roche: new type checks for command parameters and an additional driver parameter for controlling the execution of the SiLA server (driver-roche-cedex-serial-sila v1.3.0).
- [Navigation] We are changing the behavior that always shows the last visited collection in the navigation header breadcrumb, even when the previously visited collection is unrelated to the current resource. To keep the UI consistent, we will display the first parent collection of a resource.

## Fixed

- [Devices] Cedex Bio HT Analyzer (Serial/SiLA) from Roche: no empty ZIP archives (driver-roche-cedex-serial-sila v1.3.0).
- [Workflows] Fixed an issue that caused some specific table cells' content to overflow and be displayed incorrectly.

## v4.16.0 - 2023-03-24

## Added

- [Workflows] Aiming to provide a better experience using Laboperator and improve the productivity in the laboratory, we are introducing the highly requested feature of default storage location for Workflow Runs. When starting a new workflow run and prompted to select the storage collection, an extra option will be displayed to make it the default storage location.

At the Workflow Template view, users with sufficient rights can set the default storage for that template's runs for all users within the organization.

- [Devices] File Uploader from labforward GmbH: finer trigger conditions (driver-file-uploader v1.5.0).
- [Devices] UV WinLab from PerkinElmer, ChemStation from Agilent Technologies, and Folder Uploader from labforward GmbH: finer trigger conditions (driver-folder-uploader v1.3.0).
- [Devices] Command Runner from labforward GmbH: finer trigger conditions (driver-folder-uploader v1.2.0).

- [Devices] Modbus Console (TCP) and Modbus Console (Serial) from labforward GmbH: new device (driver-modbus-console v1.0.0).

## Changed

- [Dashboards] To reduce friction and prevent predictable errors when creating new Dashboard Elements, after selecting the device, we restricted the data channels available to be selected to the ones compatible with the chosen element.
- [Dashboards] All the information necessary to choose between the several types of Dashboard Elements will be visible when adding a new dashboard element. The improved descriptions will make it easier to decide which element is the best option for your needs. We also reduced the clicks necessary to select an element type.
- [Workflows] Locking a workflow run will preserve its original status. Users can now see if the workflow runs were completed or paused before being locked.

## Fixed

- [Dashboards] Fixed an issue that occasionally made multistate controls jump to the previously selected state even when the change state operation succeeded.
- [Documentation] Fixed spelling errors in the API documentation, including broken links to support articles.
- [Dashboards] Fixed an issue when adding Clock Element to a dashboard that could lead to the element having no height or width and therefore being invisible.
- [Workflows] When Workflow Run expects a specific device channel and a non-compatible device is selected, a proper error message will be displayed, orienting the user to select a compatible device.

## v4.15.2 - 2023-03-10

### Added

- [Devices] AC4(CAN) from Waldner: new device (driver-waldner-ac4-canopen v1.0.0).

### Changed

- [Workflows] The default values for various workflows configuration and content will now be displayed. (workflow-editor v1.13.0)

## Fixed

- [Dashboard] Fixed an issue that, when displaying long timestamps in the dashboard tables, would lead to the text being cropped.
- [Workflows] Update adornment icons for change reason and correction fields. All the fields will follow the same pattern when displaying one or more adornment icons.
- [Exports] When not selected to be exported, the *Status* channel of a device will no longer be exported by default.
- [Dashboard] Improved UX when adding dashboard elements indicating whether the element is selected or not, by enabling/disabling the form buttons.
- [Devices] Fixed the parameters schema of the VACUU-SELECT from Vaccubrand that was not correctly updating (driver-vacuubrand-vacuuselect-modbus v1.0.1)
- [Devices] Fixed the "off" state of the Miele XKM 3000 L Med (driver-miele-xkm v1.2.2)

## v4.15.1 - 2023-02-24

### Changed

- [Workflows] Flow conditions can now be configured in a text field, thereby enabling full scripting support. (workflow-editor v1.12.0)
- [Workflows] Clearly indicate when schema fields have not been configured by the template author when viewing published Workflow (Step) Templates. (workflow-editor v1.12.0)

### Fixed

- [Collections] Fixed an issue when filtering resources by status would lead to incoherent results being displayed.
- [Devices] Fixed an issue that could cause File Uploader devices to not be correctly added to the application.  
[Collections] Fixed UI inconsistencies where some buttons could display a "Null" text incorrectly.
- [Connectors] Fixed an issue that would cause the Connector page to become unresponsive after performing a driver reset.

- [Workflows] Fixed an issue with Date and DateTime fields within workflows that incorrectly confirmed the Date/DateTime before clicking the "Ok" button.
- [Workflows] Fixed an issue where workflow timer starting is visually delayed. This is only a visual issue, the logical part of the counter itself is working correctly.
- [Workflows] Fixed an issue that would cause the relevant dialog to hold on to stale values when creating new Workflow (Step) Templates. (workflow-editor v1.12.0)
- [Workflows] Fixed an issue that would result in no message being displayed indicating to the user that a search for Workflow Step Templates did not have any results. (workflow-editor v1.12.0)

## v4.15.0 - 2023-02-10

### Added

- [Devices] HI5522 from Hanna Instruments: new device (driver-hanna-hi5 v1.0.0).
- [Devices] Generic ZPL Printer from labforward GmbH: new device (driver-zpl-printer v1.0.0).
- [Devices] CL Printer from Citizen: new device (driver-zpl-printer v1.0.0).
- [Workflows] Following the line of our commitment with the GxP and QC environments, with this release new functionalities have been added to the existing *Workflow Run Review* feature. Now you can perform a field by field review, with multiple iterations, comments and corrections. We are also improving the user experience for both analysts and reviewers.
- [Workflows] The Workflow Editor now supports creating Workflow Step Templates (workflow-editor v1.11.0)
- [Workflows] The list of Workflow (Step) Templates can now be sorted by workflow title, version, and updated timestamp. (workflow-editor v1.11.0)

## Fixed

- [Dashboards] When accessing a public dashboard the font size will only increase when entering the full screen mode.
- [Devices] All RS232 weighing devices from Mettler Toledo: use the unit configured at the device and support for micrograms (driver-sicsserial v2.7.1).
- [Devices] All TCP weighing devices from Mettler Toledo: use the unit configured at the device and support for micrograms (driver-sicstcp v1.4.1).
- [Workflows] Fixed a bug that would display an empty list of workflows when clicking on the already selected tab. (workflow-editor v1.11.0)
- [Workflows] Fixed a bug that would prevent the workflow title from being updated when it was being changed in the 'Publish Workflow' dialog. (workflow-editor v1.11.0)

## v4.14.0 - 2023-01-27

### Added

- [Devices] VACUU-SELECT (TCP) from Vaccubrand: new device (driver-vacuubrand-vacuuselect-modbus v1.0.0).
- [Devices] Mixer 50 from Esco-Labor: new temperature channel (driver-esco-mixer-modbus v1.1.0).
- [Dashboards] You can now copy the data being displayed in your dashboard elements with a couple of clicks. This will allow close integration between Laboperator and your system, allowing access to Laboperator data from any other application that you're using on a day-to-day basis to fulfill your responsibility.

### Changed

- [Devices] All weighing devices from Sartorius: send original weight values to the application (driver-sartorius-sbi v4.5.0).
- [Devices] All RS232 weighing devices from Mettler Toledo: send original display and stable weight values to the application (driver-sicsserial v2.7.0).
- [Devices] All TCP weighing devices from Mettler Toledo: send original display and stable weight values to the application (driver-sicstcp v1.4.0).
- [Workflows] Indicate missing template titles with a placeholder title. (workflow-editor v1.10.1)

## Fixed

- [Dashboards] Improved display of device data in dashboard, to keep the unit and precision as it was received from the devices. Depending on the type of devices, you'll now be able to see in the dashboard the same data representation as it is displayed by the device's screen.

## v4.13.0 - 2023-01-13

### Added

- [Deployment & Maintenance] Now the system responsible for collecting data points is being monitored with logs and performance information.
- [API] Added support for authentication via custom Identity Providers including the new Labforward IAM system using an access token.
- [Workflows] The Workflow Editor now supports user authentication via the Labforward IAM (workflow-editor v1.10.0)

### Changed

- [Devices] When exporting data points the timestamps are now displayed in human readable format.
- [Devices] The response of the enrollment process with the devices has been updated to match all configurations.

### Fixed

- [Devices] All weighing devices from Sartorius: update software dependencies and TS testing style (driver-sartorius-sbi v4.4.1).
- [Devices] RCT digital and RCT digital (Dual-Operation) from IKA: update software dependencies and TS testing style (driver-ika-rctdigital v5.2.1).
- [Devices] System Health Monitor from labforward GmbH: update software dependencies and TS testing style (driver-system-health v1.1.1).
- [Workflows] Update the custom attributes of a device via the command *update\_resource* will now properly trigger the audit trail and log the changes.
- [Workflows] Fixed an issue where the Linechart wouldn't be displayed correctly.
- [Deploy & Maintenance] Fixed the version of a dependency which was preventing emails from being sent from the test environment.
- [Users] Fixed an issue that was causing a warning message to be displayed after log in via IAM.



- [API] The API documentation for Laboperator is now publicly accessible.
- [Audit Trail] Fixed an issue which prevented specific audit trails from being exported.
- [Workflows] Fixed an issue that resulted in Workflow Templates being incorrectly filtered and displayed according to their 'published' status. (workflow-editor v1.10.0)

## v4.12.0 - 2022-12-20

### Added

- [Workflows] Two new String "case conversion" routines: *UPCASE* and *DOWNCASE* were added to template scripting.
- [Dashboard] New units of *Practical Salinity* and *Megaohms* were added to the HI5522 device from the manufacturer Hanna Instruments.
- [Workflows] Workflow runs can now be filtered by several attributes such as *Title*, *Custom attributes*, *Workflow Run Execution status*, *Created at* and *Last updated at*.
- [Workflows] The Workflow Editor API now supports basic operations for Workflow Step Templates. (workflow-editor v1.9.0)
- [Devices] DMA Series from Anton Paar: new device (driver-anton-paar-dma v1.0.0).

### Changed

- [Organizations] When accessing the *New Organization* page without having a license, a link will be displayed that when clicked will redirect the user to the license request form.
- [Users] Prompt for re-authentication, when signing workflows or approving secrets, now is configurable on the installation settings.
- [Workflows] Optimizations in the evaluation of the user permissions leading to better performance.
- [Devices] All weighing devices from Sartorius: improve stability by refactoring to TypeScript (driver-sartorius-sbi v4.4.0).

### Fixed

- [Deploy & Maintenance] Several performance improvements regarding the database indexes used with json data.
- [Administration] The application version number is now restored and visible at the admin page.
- [Users] Creation of users with the same email address is now possible and won't override existing users.
- [Deploy & Maintenance] Fixed an issue that caused data migration to raise errors on fresh installations. Now data migrations won't be called if no previous database exists.

- [Collections] Fixed an issue that was preventing some resources from being hidden due to not applicable validations being performed upon them.

## v4.11.0 - 2022-12-02

### Added

- [Organizations] Customers who had on-premise installations using Replicated were limited to customize only their main domains for our products. With this new release we are adding the possibility of configuring specific sub-domain names for all applications.
- [Dashboards] Dynamic device channels and commands are now distinguished properly in the UI with a lightning icon.
- [Workflows] The Workflow Editor now supports basic markdown formatting. (workflow-editor v1.8.0)

### Changed

- [Workflows] Several improvements were made to the workflow runs to allow better performance in database communication.
- [Devices] System Health Monitor from labforward GmbH: improve stability by refactoring to TypeScript (driver-system-health v1.1.0).

### Fixed

- [Audit Trail] When a user commits a change in a step field of a template it is now recorded correctly to the audit trail with the reference to the step that was changed.
- [Workflows] Accessing the resources of type "version" is now fixed via the workflow "get\_resources" function.
- [Devices] Fixed an issue that sometimes would make the "last\_response\_at" of the command execution history of a device to show dates way in the future.
- [Workflows] When creating a workflow run from a template, the user will now only see templates that have not been hidden.
- [Workflows] Fixed an issue that could prevent PDF files from being saved as attachments.
- [Collections] Fixed an issue in the custom/resource attribute filter on the "home" page of collections that was displaying only the first twenty custom attributes.
- [Workflows] Fixed an internal behavior when dividing by numbers with a big decimal part, that would lead to imprecision in the results.

## v4.10.0 - 2022-11-21

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### Added

- [Organizations] Organization admin are already able to configure how date/time values should be displayed across the application. With this release they can now separately define how date (without time) values should be displayed across the application.
- [Devices] inoLab Multi 9630 IDS from WTW: new device (driver-inolab-multi v1.0.0).

### Changed

- [Dashboard] Make the notification for pending Device Dashboard updates from Dynamic probes more prominent.
- [Workflows] Notification of Workflow Runs pertaining to its execution status will now only be displayed when the users are actually viewing the respective Workflow execution.
- [Workflows] Validate presence of title and version fields when creating Workflow Template drafts. (workflow-editor v1.7.0)

### Fixed

- [Dashboards] Improve processing performance of incoming data points.
- [Workflows] Improve API serialization performance of workflow runs
- [Workflows] Improve validation of workflow templates, which would now ensure valid relation to the resources being referred to in the workflow fields.
- [Workflows] Fix missing change reason from audit trail, when the changes are triggered by the system during Workflow execution
- [Workflows] Fix visibility of the main menu's toggle button when the organization is using custom theme colors
- [Workflows] Fix issue with completing review of workflow run in environments which are configured only with SSO authentication.
- [Workflows] Fix text wrapping in workflow tables
- [Devices] SevenExcellence from Mettler Toledo: fix driver parameters and support for different probe types (driver-mt-sevenexcellence v1.1.0).
- [Workflows] Fix duplicate and redundant network requests when editing a Workflow Template. (workflow-editor v1.7.0)
- [Workflows] Prevent adding conditions with empty condition statements to the Workflow Template flow. (workflow-editor v1.7.0)
- [Workflows] Fix Workflow Template drafts from being temporarily editable immediately after being published. (workflow-editor v1.7.0)

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## v4.9.0 - 2022-11-04

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### Added

- [Workflows] To ensure format compatibility, table cells whose data is of the date-time format will now be editable using a date picker instead of regular text input element.
- [Workflows] Completed workflow run can be configured to trigger the review flow. Which would allow peers to check and confirm valid execution of said run. The review will need to be finalized with an e-signature.
- [Workflows] Allow saving and switching between drafts of workflow templates. You will now be able to save in-progress workflow templates without losing progress and be able to continue editing it at a different time (workflow-editor v1.6.0)

### Changed

- [Dashboard] Improve readability of the public dashboard when viewed in full screen, by using larger font sizes and thicker lines, to ensure that scientists can read the information when the dashboard is displayed on a wall-mounted TV screen.

### Fixed

- [Workflows] Fix issue in GetResources action when filtering for resources by their custom attributes.

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## v4.8.1 - 2022-10-21

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### Added

- [Workflows] The Workflow Editor now supports If-Then-Else conditions in the template flow. (workflow-editor v1.5.0)

### Changed

- [Users] Allow multiple user accounts with duplicate email addresses when the installation is configured with SSO strictly as the only method of authentication.

### Fixed

- [Connectors] Fastly reduce memory usage of the connector page, which improves general reliability and performance.

- [Dashboards] Fix issues which affect some dashboard elements from correctly displaying the latest value of the configured channels.
- [Devices] Fix issues where data points are recorded with the server timestamp, instead of with the timestamp that is captured by the drivers when the data point is received. The two timestamps might have milliseconds differences, and given that data points might be processed by the server out of order, it was also possible for the server to record the data points in the wrong order.
- [Devices] Mixer 50 from Esco-Labor: fix typos (driver-esco-mixer-modbus v1.0.2).
- [Workflows] The system will now detect and inform users from double clicking on buttons in workflows. This will help protect the system from data inconsistency that could be triggered by unexpected calculations being performed in parallel.
- [Workflows] Improve performance of snapshot calculation, which would improve the observed performance that users see when updating field values, and when completing steps and substeps.
- [Workflows] Fix validation for global field names in field mapping configuration when adding Workflow Step Templates to the flow. (workflow-editor v1.5.0)

## v4.8.0 - 2022-10-06

### Added

- [Workflows] The Workflow Editor now supports overwriting the default title of a step for each of its references within a Workflow Template flow. (workflow-editor v1.4.0).
- [Devices] SevenExcellence from Mettler Toledo: new device (driver-mt-sevenexcellence v1.0.0).
- [Devices] Cubis II MCA from Sartorius: new device (driver-sartorius-sbi v4.3.0).
- [Devices] All weighing devices from Mettler Toledo: driver parameter for preventing manual operation (driver-sicsserial v2.6.0).
- [Devices] All weighing devices from Mettler Toledo from: driver parameter for preventing manual operation (driver-sicstcp v1.3.0).

### Changed

- [Navigation] The main navigation menu design is updated to better align with our updated design system
- [Workflows] Remove artificial limits of maximum 4 buttons in step definitions.
- [Workflows] Workflow Templates published to Laboperator via the Workflow Editor now use their title as the file name when downloading the template from within the application. (workflow-editor v1.4.0)
- [Devices] All weighing devices from Sartorius: improved weight parsing (driver-sartorius-sbi v4.3.0).

- [Devices] All weighing devices from Mettler Toledo: improved weight parsing (driver-sicsserial v2.6.0).
- [Devices] All weighing devices from Mettler Toledo from: improved weight parsing (driver-sicstcp v1.3.0).

## Fixed

- [Workflows] Fixed issue that caused nested flow items to be removed from the Workflow Template flow when editing a flow condition. (workflow-editor v1.4.0)
- [Devices] Sensor (MQTT) from essentim GmbH: improve the dynamic channel processing (driver-essentim-mqtt v1.0.1).

## v4.7.2 - 2022-09-22

### Added

- [Devices] VariRef from S+H: new device (driver-sh-variref v1.0.0).
- [Workflows] The Workflow Editor now supports configuring the context information settings of a Workflow Template. (workflow-editor v1.3.0)

### Changed

- [Devices] Selekt from Biotage: support for remote API rev. 4 (driver-biotage-selekt v2.0.0).
- [Navigation] The navigation bar design is updated to better align with our updated design system
- [Workflows] Improved performance of loading Workflow Step Templates in the Workflow Editor by implementing a paginated "Load More" functionality. (workflow-editor v1.3.0)

### Fixed

- [Dashboards] Fix download of attachments displayed in file table elements, impacting installation which already have sufficiently large data points recorded.
- [Devices] Fixed issue when updating device drivers, impacting drivers without predefined dashboard include.
- [Devices] Mixer 50 from Esco-Labor: fix negative pressure values and pause command (driver-esco-mixer-modbus v1.0.1).
- [Workflows] Fixed issue that would prevent adding an item to the Workflow Template flow inside a nested condition. (workflow-editor v1.3.0)

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## v4.7.1 - 2022-09-08

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### Added

- [Devices] Direkt T from Thermofühler GmbH: new device (driver-therma-direkt-t v1.0.0).
- [Devices] IP Camera from Axis Communications: new device (driver-axis-camera v1.0.0).

### Changed

- [Workflows] The Workflow Editor now highlights the currently active page in the main navigation. (workflow-editor v1.2.0)

### Fixed

- [Dashboards] Improve performance when editing dashboard layout
- [Dashboards] Dynamically created Dashboard Elements initiated by updates from the Device will now deterministically be appended after existing elements
- [Workflows] Fix issue with some workflow field types not displaying the correct value persisted in the database.
- [Workflows] Mapping Workflow Step Template fields to global fields in the Workflow Editor now sets all respective local field attributes also on the mapped global field. (workflow-editor v1.2.0)

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## v4.7.0 - 2022-08-25

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### Added

- [Workflows] When authoring workflow templates, workflow designer can now decide to apply "formatSpecifier" conditionally via table rules
- [Workflows] Allow to display change reason icons in a read only manner. This can be useful when workflow designers want to indicate that certain cells in a table are only editable via workflow behaviors instead of via direct user input.

### Changed

- [Devices] When upgrading device drivers and there are multiple compatible drivers found, the system would now prefer to use the latest driver defined by the buildpack. This

change of behavior can be observed when upgrading device drivers that either gets renamed, or superseded by a different driver class.

- [Workflows] Device statuses will no longer be displayed in completed workflow runs.
- [Workflows] Network response messages in the Workflow Editor now appear in the user's chosen application language (workflow-editor v1.1.0).

## Fixed

- [Collections] Fix various minor issues with searching for resources by their name.
- [Organization] In a fresh on-premise installation which is configured to authenticate users via SSO, the first user who signs up will now be asked to create a new organization. There's no longer a need to manually create a new organization beforehand.
- [Workflows] Display of time within tables will now respect the organization settings. To get the desired effect, the underlying table data must have the proper data schema definition including "type: string" and "format: date-time".
- [Devices] 2mag Mix (Serial): dependencies and configs updated, parameters schema fixed, removed deprecated field (driver-2mag-mix v2.2.1).
- [Devices] 2mag Stirring Hotplate 6 (Serial): dependencies and configs updated, parameters schema fixed, removed deprecated field (driver-2mag-stirring-hotplate v2.0.1).

## v4.6.0 - 2022-08-11

### Added

- [Audit Trail] When reviewing audit trail, user can now bulk expand/collapse details of all audit trail entries
- [Devices] Cedex Bio HT Analyzer (Serial/SiLA) from Roche: commands to insert and remove racks (driver-roche-cedex-serial-sila v1.2.0).

### Changed

- [Devices] In addition to added/removed channels, user will also now be warned of added/removed commands when upgrading/downgrading device drivers.
- [Devices] VIAFLO, VIAFLO-4634, and VOYAGER-4724 from INTEGRA: stability improvements and standardization of command and channel naming. The naming change is a breaking change for existing workflows (driver-integra-viaflo v3.0.0).



## Fixed

- [Connector] Improve page performance when viewing connector with sufficiently large number of connected devices

## v4.5.0 - 2022-07-28

## Added

- [Dashboards] Organization admin may now disable the public dashboard feature via feature flag toggle when necessary.
- [Devices] Select device drivers will now send raw data received from devices as additional data points. The raw data is persisted in the database and may be referred to as necessary for GxP audit.
- [Resources] When viewing resources under collection, users may now filter the resources by custom attributes defined by the organization.
- [Workflows] The updateResource action within workflows are now able to update values of custom attributes of resources
- [Workflows] Early access to the Workflow Editor which enables non-technical users to visually construct workflow templates based on previously uploaded step templates. The editor is available for access on our on-cloud installation. Contact us for support to enable it in your on-premises installation.
- [Devices] Mixer 50 from Esco-Labor: new device (driver-esco-mixer-modbus v1.0.0).
- [Devices] UART Shield from SmartLab Solutions: new channels and commands (driver-smartlab-uart-shield v1.1.0).
- [Devices] All Sartorius balances supported by driver-sartorius-sbi: send raw data for weight channel (driver-sartorius-sbi v4.2.0).
- [Devices] All Mettler Toledo balances supported by driver-sicsserial: send raw data for weight channel (driver-sicsserial v2.5.0).
- [Devices] All Mettler Toledo balances supported by driver-sicstcp: send raw data for weight channel (driver-sicstcp v1.2.0).

## Changed

- [Exports] Format of audit trail exports and login attempts report are updated to make the content easier to understand, and to also allow inclusion of customizable logos.

## Fixed

- [Dashboards] Fix issues where some elements are showing as forbidden when viewing a public dashboard.

- [Resources] Fix issues where the timestamp for hidden resources is not displayed correctly.
- [Workflows] Fix display of field with type file
- [Workflows] Fix issue in mapping local steps of external step templates

## v4.4.0 - 2022-07-14

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### Added

- [Administrations] Add support for registering custom attributes which can be associated with all resources inside collections. These attributes can be used to store organization specific data, and the values will be available for further processing from inside workflows. Which would enable greater flexibility in designing workflows.

### Fixed

- [Workflows] Fix issue where webhook response are recognized with the wrong content type, making the data inaccessible from inside workflow scripting

## v4.3.0 - 2022-06-30

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### Added

- [Devices] Sensor (MQTT) from essentim GmbH: new device (driver-essentim-mqtt v1.0.0).
- [Devices] XPR (TCP) from Mettler Toledo: new device (driver-sicstcp v1.1.0).
- [Devices] XSR (OPC-UA) from Mettler Toledo: new device (driver-opc-ua-weighing v1.0.0).
- [Dashboards] Dashboards can now be shared with non-registered users in read-only mode.
- [Workflows] Allow workflow designers to write workflows with webhooks that download a file and save it as an attachment.

## v4.2.0 - 2022-06-16

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### Added

- [Workflows] Allow workflow designers to write workflows with webhooks that communicate in data types other than JSON.

- [Workflows] Allow workflow designers to access the change reason of field updates in scripting.
- [Webhooks] Added support for using short internal domain names for approved webhook URLs.

## Changed

- [Audit Trail] Allow users to filter Audit Trail by multiple event types.

## Fixed

- [Devices] VIAFLO from INTEGRA, VIAFLO-4634 from INTEGRA, VOYAGER-4724 from INTEGRA: use latest build dependencies (driver-integra-viaflo v2.1.2).
- [Organizations] Fixed UI bug in user in profiles to correctly display user initials.
- [Deployment] Remove conflicting configuration settings for custom system certificates.

## v4.1.0 - 2022-06-02

## Added

- [Devices] Osmomat 3000 from Gonotec: new device (driver-osmomat v1.0.0).
- [Devices] Cedex Bio HT Analyzer (Serial/SiLA) from Roche: commands to control orders and start/stop the device (driver-roche-cedex-serial-sila v1.1.0).
- [Devices] Cedex Bio HT Analyzer [SiLA Client] from Roche: new device (driver-sila v1.3.0).
- [Usability] Support for displaying the application, and to set user preferred language, in French
- [Workflows] Support for querying accessible resources during workflow execution. To achieve this, a new action called "getResources" is added to workflow behaviors.

## Changed

- [Devices] Buddy from bAhead: updated definition with latest SiLA definition (driver-sila v1.3.0).
- [Workflows] When the last step of a Workflow is completed, if the user executing the Workflow does not have the permission to add a step to a dynamic Workflow, then the Workflow will automatically be considered as completed.

## Fixed

- [Collections] Fixed navigation to parent collection in the collection selector being shown when managing resources inside collections
- [Workflows] Fixed error when trying to permanently delete a Workflow Run

## v4.0.0 - 2022-05-20

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### Added

- [Devices] UR10 from Universal Robots: new device (driver-ur-dashboard v1.0.0).

### Changed

- [Resources] Archival of resources are replaced with hiding of resources. The changes are mostly cosmetic with minimum expected impact on user's ability to manage their resources.
- [Devices] R-300, R-220 pro, SyncorePlus from Büchi: simplified driver parameters. An upgrade to this version requires manually updating the parameters. (driver-buchi-openinterface v2.0.0).

### Removed

- [API] APIv1 of Laboperator was deprecated since release of Laboperator v2.17.0 and is finally removed
- [Administrations] Management of user permissions and access to resources via ACL is removed in favor of RBAC.
- [Audit Trail] Activities page is removed in favor of Audit Trail
- [Collections] With the removal of ACL, the ability to review ACL permissions and filter resources based on ACL roles is also removed
- [Connectors] Non-functional attributes are removed from the Connector edit form and info panel.
- [Exports] Support for exporting to remote Network Drive is removed.
- [Organizations] The explicit distinction between Administrator and Member is removed in favor of assigned roles and permissions via RBAC

### Fixed

- [Dashboards] Fixed issue with invalid count of data points in Line Chart elements
- [Exports] Fixed issue with export with sufficiently large amount of data points
- [Workflows] Fixed issue with outdated snapshot observed in workflows which have behaviors written to sequentially update a field and complete substep/step within a single action.