CUMULOCITY IoT

BY SOFTWARE AG

Cumulocity IoT
Release notes PREVIEW

Release 10.13.0

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This content applies to Cumulocity IoT 10.13.0 and to all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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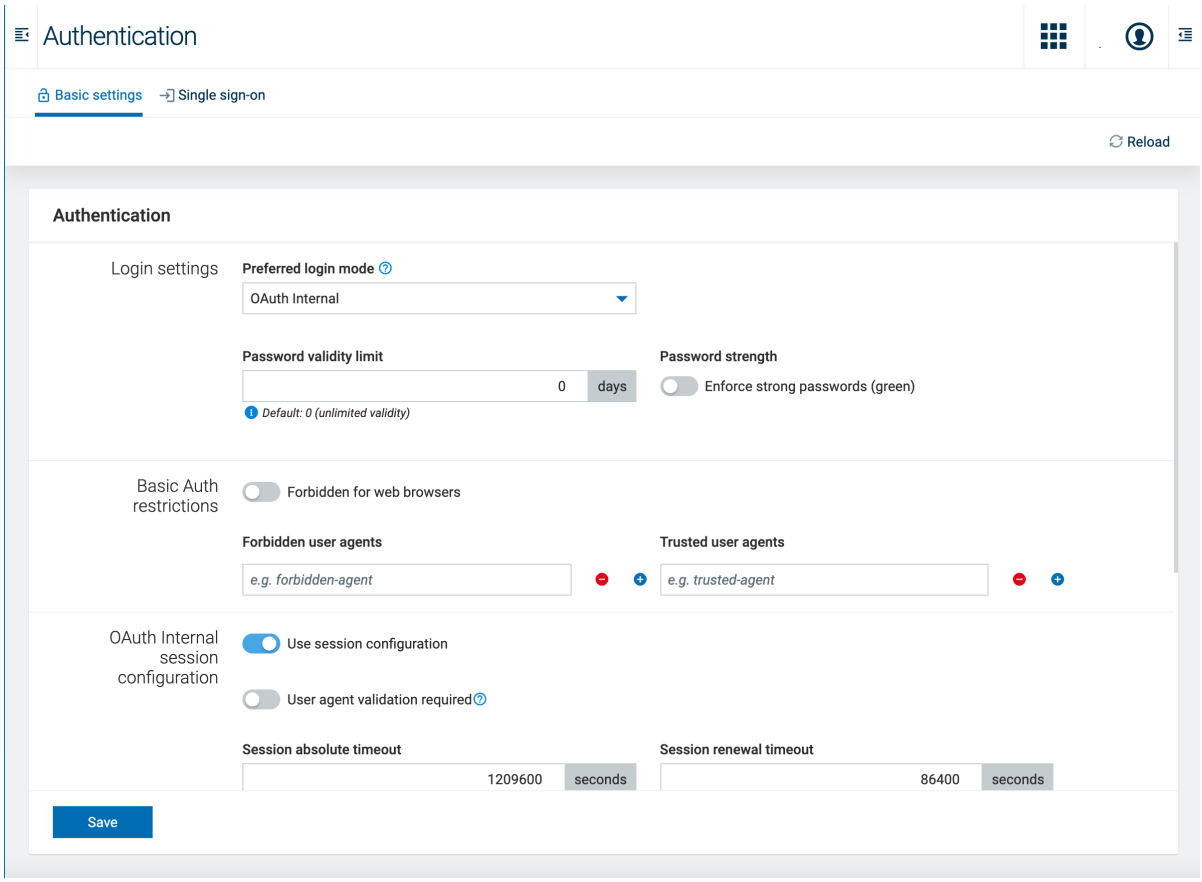
What´s new

Release 10.13 includes the following new features or major feature enhancements.

Security improvement for the token-based authentication login mode

To increase the security level of the Cumulocity IoT platform, OAI-Secure authentication (successor of the previous OAuth Internal mode) is now used as the default login mode for newly created tenants. Moreover, the usage of basic authentication for such tenants will be restricted, that is web browsers are no longer allowed to use basic authentication. Basic authentication is still allowed for IoT devices though.



Additionally, various options have been added to the **Authentication** page to configure the token-based session. The new configuration options determine, for example, how often users of a tenant should be re-authenticated and how many simultaneous sessions they may use. All settings related to the default login mode or OAI-Secure configuration can be changed on tenant level or on platform level.

For details, see Administration > Changing settings > Changing authentication settings in the *User guide* or the section on *Operational procedures* in the *Cumulocity IoT Core - Operations guide*.

All custom applications deployed on the Cumulocity IoT platform or integrated with the Cumulocity IoT platform (web application, microservices, etc.) must support authentication with OAI-Secure. In case of lacking backwards compatibility, the previous behaviour of the Cumulocity IoT platform can be restored for a particular tenant.

Inventory roles performance improvement

The performance of inventory roles has been improved. GET requests for alarms, events and measurements work much faster now for users with inventory-role access when querying with the parameter “source”. GET requests also work faster when the total number of elements matching the filter criteria is relatively small.

In the Cumulocity IoT platform UI this speeds up the following pages:

- Device Management -> alarms and events in single device views
- Device Management/Cockpit -> alarms and events dashboards in particular group views
- pages with all active alarms, all events (if the total number is up to hundreds)

This feature must be enabled on platform level or on tenant level via the tenant option. The tenant option has 2 possible values: LEGACY/OPTIMIZED, where LEGACY currently is the global default.

The option looks like the following in the REST API:

```
{ "category": "configuration", "key": "acl.algorithm-version", "value": "OPTIMIZED"}
```

Custom codec support for LPWAN agents

Cumulocity IoT can interface with LPWAN devices through LPWAN network providers via Cumulocity IoT LPWAN agents, such as Actility LoRa.

The latest LPWAN devices send dynamic payloads which could not be decoded by the binary mapping device protocol capability, similar applied for encoding the commands sent to the devices.

To overcome this, LPWAN agents can now extend the payload decoding and command encoding by allowing you to plugin a custom implementation via a microservice, called a custom codec microservice. A custom codec microservice is a typical Cumulocity IoT microservice which conforms to a specific contract.

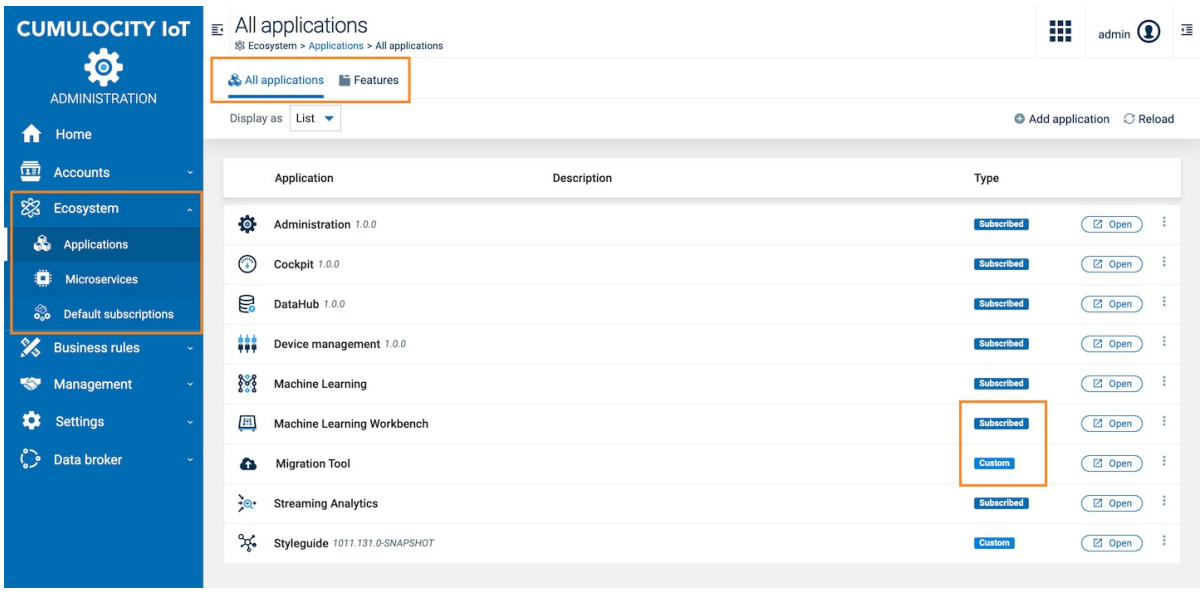
When an LPWAN agent receives an uplink message, it forwards the device data to a REST endpoint (such as `/decode`) exposed by the custom codec microservice for decoding. Similarly, when the user executes a device command through the device shell, the LPWAN agent forwards the command text to a REST endpoint (such as `/encode`) exposed by the custom codec microservice for encoding.

For details, see (https://cumulocity.com/guides/10.13.0/protocol-integration/lpwan-custom-codec/#overview) in the *Protocol integration guide*.

New Ecocsystem view

The previous **Applications** page in the Administration application has been restructured to provide a clearer organization and navigation. A new **Ecosystem** menu entry is available now, grouped into **Applications** and **Microservices**.

The **Applications** page shows an **All applications** tab listing the web and external applications, and a **Feature** tab, listing the applications of the type “feature”. The **Microservices** page list all applications of the type “microservice”. The separation between subscribed and own applications is now reflected by labels in the application lists (subscribed or custom).



For details, refer to Administration > Managing applications and Administration > Managing and monitoring microservices in the *User guide*.

Important announcements

REST API changes

Planned

Removal of deprecated query parameter dateTill from TenantUsageStatisticsCollection

With the 10.15 release, we intend to remove the already deprecated request query parameter `dateTill` in TenantUsageStatisticsCollection. The reason for the deprecation as of release 10.6.0 (see the 10.6.0 documentation as reference (https://cumulocity.com/guides/10.6.0/reference/tenants/#get-a-representation-of-a-tenantusagestatisticscollection) was consistency on the end of Cumulocity IoT. Since the parameter name `dateTo` is used everywhere across Cumulocity IoT and TenantUsageStatisticsCollection was the only place where `dateTill` was used, we decided to change it to `dateTo` and deprecate `dateTill` in 10.6.0.

How does this impact users? After its removal, this deprecated query parameter will no longer work and will no longer be supported. It can easily be replaced by the `dateTo` parameter which serves the same purpose.

Contact us if you have any questions on the removal of this deprecated query parameter.

Security changes

Implemented

Change of basic browser-based authentication

What was the previous state?

With the 10.5.0 release a new token-based mechanism for browser-based authentication was introduced (OAuth Internal) in order to tighten the security of the Cumulocity IoT platform.

What is new with release 10.13?

As announced in release 10.11, with the 10.13 release, the OAI-Secure authentication (successor of OAuth Internal) will be enabled by default for all new created tenants as the authentication method for all browser-based applications.

Basic authentication will still be available as a fallback but has to be manually switched on. For details, see Administration > Changing settings in the *User guide*. Note, that basic authentication for devices is not affected by this change.

What comes next?

With a future release, the fallback for basic authentication will be removed for browser-based applications and all applications will be forced to use the token-based authentication mechanism OAI-Secure.

What does this mean for my organization?

All custom web applications and microservices which do not support OAI-Secure will not work with newly created tenants.

What do I need to do?

In case you have developed your own web applications or microservices, please make sure that they support the OAI-Secure authentication mechanism. This is achieved by changing the authentication mechanism using the appropriate SDK later than 10.5 to rebuild your web applications or microservices.

SDK changes

Planned

Deprecation of addHook and clearHooks methods

The methods `addHook` and `clearHooks` are deprecated. The method `addHook` provided the functionality to invoke a custom method populating the managedObject whenever a managedObject with matching owner ('device_${id}') was created. The method `clearHooks` would flush the registered hooks and therefore no custom method would get invoked. In device management, the hook(s) would run when a newDeviceRequest got accepted.

If you want to recreate the logic you may use the RealtimeService from @c8y/ngx-components to subscribe to /managedObject/* or use the ManagedObjectRealtimeService which already extends the RealtimeService.

See also the related entry in the Tech Community.

Removing PlatformImpl Spring bean from Microservice SDK

With the upcoming releases 10.15+ we intend to close a design gap, which currently exists in Cumulocity IoT and allows to wrongly use Cumulocity IoT APIs (by mixing Spring injection with raw Java).

In the future, PlatformImpl will no longer be exposed as a Spring Bean and it will not be feasible to inject it.

Instead of creating new instances using PlatformImpl, you should always inject Cumulocity IoT API beans, such as InventoryApi, AlarmApi, IndentityApi, for example:

```
@Autowired //injection
private InventoryApi inventoryApi;
```

Contact us if you have any questions on this change.

Deprecation of the variable HOOK_ROUTE_ONCE

In the context of the new Web SDK plugin concept, the variable HOOK_ROUTE_ONCE has been replaced by HOOK_ROUTE. HOOK_ROUTE_ONCE is deprecated and will be removed with release 10.14.

This change will only affect you if you or your development team use the Web SDK to extend Cumulocity IoT UI applications or to build your own web applications. If you update an application including HOOK_ROUTE_ONCE, make sure to use HOOK_ROUTE instead.

Implemented

Leaflet library has been updated to the latest version

To improve the navigation in the "Map" widget on mobile devices, it is necessary to update the Leaflet library. As announced with release 10.11, the Leaflet library has been updated to the latest version 1.7.1.

This change only affects you if you or your development team use the Web SDK to extend Cumulocity IoT UI applications or to build your own web applications. If you have implemented your own custom map on top of the Cumulocity IoT Web SDK, make sure that your implementation still works properly. In case of any issues, see the Leaflet changelog and check if you use any deprecated functionality.

Upgrade to Angular 12

As announced with release 10.11, Angular has been updated from version 11 to version 12. Moreover, the default renderer has been changed to Ivy.

This change will only affect you, if you or your development team use the Web SDK to extend Cumulocity IoT UI applications or to build your own web applications.

For instructions on the upgrade process refer to Upgrade > Updating the Web SDK in the *Web SDK guide*.

Additionally, you can use the following resources for more details on the changes in Ivy and Angular 12:

- https://angular.io/guide/ivy
- https://angular.io/guide/updating-to-version-12

Other

Implemented

Removal of cep microservice

Software AG terminated support for using CEL (Esper) in Cumulocity IoT on 31 Dec 2020 following its deprecation in 2018.

As announced with release 10.11, the “cep” microservice has been removed from the list of default microservices for new installations.

With this change, all new Cumulocity IoT subscriptions use the Apama CEP engine. Existing installations are not affected. If you plan a new installation, please check out the *system.property* file for details.

Added limit indicator to export files

With GA release 10.13, an indicator row has been added at the end of the export files for alarms, events and measurements when a data limit of 1 million records is exceeded. Previously, when the export files limit was reached, the result was truncated without further notice.

Sample CSV export with indicator:

Time,Device name,Creation time,Device name,ID,Source,Text,Time,Type
2021-11-25T10:37:06.485Z,Position #1,2021-11-25T10:37:06.485Z,Position #1,1266,1195,Location updated,2021-11-25T10:37:06.485Z,c8y_LocationUpdate
2021-11-25T10:37:01.484Z,Position #1,2021-11-25T10:37:01.484Z,Position #1,1265,1195,Location updated,2021-11-25T10:37:01.484Z,c8y_LocationUpdate
[…]
limit exceeded!,result truncated!,limit exceeded!,result truncated!,limit exceeded!,result truncated!,limit exceeded!,result truncated!,limit exceeded!

Automated parsers of export files must be adjusted to handle the indicator row.

Machine learning

Planned

The API to download the serialized source of a PMML model `{{url}}/service/zementis/model/{{model_name}}/serialized` will be a NO_OP starting with 10.13.0 release and will be

removed in 10.15.0 release.

Implemented

With GA release 10.13.0, Cumulocity IoT Machine Learning Workbench introduces “Role Based Access Control” which is a breaking change for its existing users. Refer to the “Role Based Access Control” section in the Machine Learning release notes to learn more about this change.

Streaming Analytics

Implemented

Cumulocity IoT transport in Apama

The following applies as of Apama 10.11.1:

- The `GeoFenceContainer.createGeoFenceContainer()` action no longer throws an exception when provided with any `lat` or `lng` values that cannot be parsed as a float. Instead, an empty `optional<GeoFencePoint>` is now created for that coordinate. See the `com.apama.cumulocity` package in the API Reference for EPL (ApamaDoc) for more information on the `GeoFenceContainer` event.
- Warning messages are now logged for Cumulocity IoT queries where `pageSize` is below 50 and `currentPage` is not set (default). This is because setting a small `pageSize` without setting `currentPage` can result in queries that run very slowly. For example, to request the first 20 items, you have to set `pageSize` to 20 and `currentPage` to 1. See also Paging Cumulocity IoT queries in the Apama documentation.

Platform services

Release 10.13.0.62

Improvements

Component	Description	Issue
Administration	In the **Own Applications** detail view the read-only fields are now properly disabled so that it is clear that they cannot be edited.	MTM-26133
Administration	In the SMS provider configuration certain tenant options can be inherited from the microservice owner tenant. Previously, this could not be determined from the UI. Now an additional hint (inherited from <tenantID>) will be displayed to denote that.	MTM-38050
Administration	The list items in **Data broker** > **Data connectors** had a misaligned icon and title. This has been corrected by placing these elements in the same line.	MTM-43067
Administration	The navigation in the single sign-on authentication and Enterprise tenant configuration pages has been improved. All actionable elements are now visible without too much scrolling, for example, the enabled **Save** button is immediately visible after settings have been changed, instead of scrolling to the bottom of a long page. The layout of these pages was made consistent with the rest of the UI.	MTM-41905
Administration	The **Default subscriptions** page (previously under **Applications** and now under **Ecosystem** in the navigator of the Administration application) had several experience and layout problems. This has been fixed by correcting the title copy, moving the applications column to the left of both **Tenant creation** and **Platform update** checkbox columns and adding missing title properties for improved accessibility.	MTM-43360
Administration	The loading time of the subtenants list in the **Tenants> page has been improved.**	MTM-41049
Authentication	A new tooltip has been added to the authorization settings which explains that the **Enforce that all passwords are strong (green)** checkbox cannot be iterated because the property is enabled on system level.	MTM-36662
Billing	Two additional fields have been introduced to the device statistics: - deviceType - value of the `type` field from the corresponding device - deviceParents - list of unique identifiers of parents for the corresponding device	MTM-41317

Component	Description	Issue
Cloud Remote Access	The vulnerable third party library bcprov-jdk15on-1.66.jar has been upgraded to the secure 1.69 version.	MTM-43148
Core platform	The Inventory API has been enhanced to include information on the child hierarchy of a managed object, this improves both the API and the user interface. A new parameter `withChildrenCount` has been introduced for the endpoints `inventory/managedObjects` and `/inventory/managedObjects/{id}` which returns the number of managed objects in lists: childAdditions, childAssets, childDevices. It works as follows: - if not provided - number of documents is not returned (property is omitted) - for withChildrenCount=true - number of documents is returned - for withChildrenCount=false - number of documents is not returned (property is omitted) The parameter `withChildrenCount` can be used together with the parameter `withChildren` and for parameters `withChildrenCount=true&withChildren=false` the endpoint will return the number of documents in assets without a list of documents.	MTM-40340
Messaging Service	It is now possible to configure a HTTP/HTTPS proxy for the data broker agent microservice, in the usual manner for microservices. See General aspects > Microservice manifest in the *Microservice SDK guide*.	MTM-41307
Messaging Service	All Messaging Service components, including the Pulsar server, notifications WebSocket server, and the data broker microservice, have been updated to fix the vulnerabilities in the log4j library reported as CVE-2021-44228 and CVE-2021-45046.	MTM-42838
Microservices	The "cep" microservice has been removed from the list of default microservices for new installations.	MTM-39794
Microservices	As a microservice provider you can define higher values than 256 MB memory and 250Mi CPU as resources request in the microservice manifest.	MTM-40361
REST API	The REST API has been updated to provide the ability to query alarms and events by filtering using `lastUpdatedFrom=<iso-date-time>` and `lastUpdatedTo=<iso-date-time>` parameters.	MTM-41364
REST API	The legacy Dozer library has been removed from Cumulocity IoT core and CEP Esper, improving security by removing redundant code.	MTM-38301
REST API	The REST API has been updated to provide the ability to query alarms by filtering using `createdFrom=<iso-date-time>` and `createdTo=<iso-date-time>` parameters.	MTM-42499
Security	As a protective measure for CVE-2021-44228 on start-up of a microservice Cumulocity IoT Core adds a specific property to the microservice environment variables in order to suppress log4-jndi lookups. Refer to the *Microservice SDK guide* for details.	MTM-42875
Security	Updated vulnerable libraries to safe versions: jackson-databind to v2.10.5.1 and ehcache to v2.10.9.2.	MTM-40685

Component	Description	Issue
Security	The vulnerable Log4j library has been updated to the secure 2.17.1 version.	MTM-43349
Security	Spring Boot for Microservice SDK has been upgraded to version 2.5.8. For details on the upgrade, see Microservice SDK for Java in the *Microservice SDK guide*.	MTM-41282
Support user	The support user feature can now also be used with session-based token authentication. Prior to this change, it was only available with Basic authentication.	MTM-39645

Fixes

Component	Description	Issue
Administration	Microservice logs can be viewed with realtime on or off. If realtime is on, the next and the last page buttons are now disabled.	MTM-39675
Administration	The **New tenant** form had some overlapping style issues on the **Storage limit per device** field resulting in unreadable error messages. These issues have been fixed.	MTM-41498
Administration	It is now possible to collapse folders on the **Inventory roles** tab of users.	MTM-41004
Administration	Password strength validation works consistently now during subtenant creation.	MTM-41565
Administration	An issue has been fixed where translations were missing on the inventory roles assignment view.	MTM-41374
Administration	Previously it was possible to save an invalid default value when editing or creating new properties which would lead to invalid forms being saved. Therefore, maxlength, minlength and pattern validation has been added when assigning a default value for properties in the **Properties library** page. Additionally, invalid forms in the **Custom properties** page now instantly trigger validation feedback.	MTM-42002
Administration	The inventory roles selection dropdown list now only shows the roles available to the owner instead of all roles defined in the tenant.	MTM-41617
Administration	The cell ID usage statistics icon showed an outdated layout. This has been fixed by a reference to the current Delite icon library.	MTM-42306
Administration	On creating a user, it is now again possible to set a new owner in the user details.	MTM-42578
Administration	The subtenants view now uses the new data grid component for displaying, filtering and sorting tenants. This change fixes the issue that loading of more items had been broken on larger screens.	MTM-38873

Component	Description	Issue
Authentication	If the login mode is OAI-Secure, the user now must logout after password change. A confirmation dialog shows up in which the user confirms to be logged out to apply the new password. The change is added in the user settings and the user details view for the current user.	MTM-43440
CEP (Esper)	Random blocking of database connection attempts from predefined smart rules has been fixed.	MTM-41797
Core platform	Responses to the HEAD/GET requests to the file repository now return a Content-Length header which lets the requesting clients know the size of the files before downloading them. This makes the progress bar in the file repository more reliable.	MTM-41679
Connectivity	In the Administration application, the **Connectivity** menu entry had been displayed in the navigator even when there were no connectivity providers to be displayed resulting in navigating to an empty page. The **Connectivity** entry is now only displayed if there are accessible connectivity providers.	MTM-41798
Data Broker	Updated the pulsar-client to version 2.8.2 to address security vulnerabilities identified in version 2.7.0.	MTM-43194
Email templates	When the tenant administrator creates a new user, the user receives a confirmation email along with a password reset option. Previously, the default password reset email template did not contain the username. The template has been changed so that for new users the username is included in the email.	MTM-40430
Enterprise tenant	The documentation about the delegation of authority in user hierarchies has been improved. See Enterprise tenant > Managing user hierarchies in the *User guide*.	MTM-40337
Enterprise tenant	The REST client which is used for Enterprise tenant requests for managing SSL certificates has been optimized by increasing the connection pool size, introducing read, connect and connection keep alive timeout limits and enabling expired and idle connection evict mechanisms.	MTM-41182
Enterprise tenant	On the **Branding** page the following fields are now mandatory: **Main brand logo**, **Favicon**, **Main brand color**.	MTM-42893
Export	The date picker dropdown is now expanded correctly on the export creation screen when selecting a custom date range for a report.	MTM-41479
Export	The export title has been missing in the filename of export files. This has been resolved.	MTM-41901
Karaf/OSGI	The vulnerable netty-codec library has been updated from version 4.1.66 to version 4.1.70.	MTM-42147
Karaf/OSGI	The Log4j library has been updated to version 2.16 to mitigate CVE-2021-44228.	MTM-42885

Component	Description	Issue
Kubernetes	The microservice manifest provides settings to manage microservice instances and the application deployment in the Cumulocity IoT platform. Microservice providers are now enabled to configure requests for memory higher than 256M and for CPU higher than 250m. Note that based on system settings it might be the case that a higher or lower value is used when creating the microservice subscription. Refer to General aspects > Microservice manifest in the *Microservice SDK guide* for details about resource requests and limits.	MTM-38924
Microservices	The error message which shows up on uploading an invalid microservice docker image has been improved.	MTM-39240
Microservices	Fixed the issue where microservice proxy was removing trailing slashes from request URIs passed to microservices.	MTM-43037
MQTT	Fixed a race condition, where TCP packets were received in wrong order, resulting in the operation status reverting back to PENDING state on a delivery update.	MTM-39815
Realtime	Fixed an issue where a real-time connection loss looked like a data loss. Now, when the real-time connection is recovered, the graph will be reloaded and re-rendered to avoid the impression of data loss.	MTM-41680
Report agent	Removing the export configuration now properly removes its configured schedulers. As a result, the report agent doesn't attempt to create an export for non-existing configurations, which previously resulted in an error in logs.	MTM-40358
REST API	When green password is enforced and the minimal strong password length (`system.password.green.min-length` property) is higher than the device password length (`device-user.password.length` property), the system will use the green.min-length value, i.e. generate a longer password. Prior to this change, the system rejected auto-generated passwords that were too short blocking device bootstrap.	MTM-39836
REST API	The race condition which can occur during the processing of the following requests has been corrected: GET, POST, PUT /user/{tenantId}/users/{username}/roles/inventory GET, PUT, DELETE /user/{tenantId}/users/{username}/roles/inventory/{id} GET /user/{tenantId}/users/{username}/roles/inventory/{id}/roles In rare cases the race condition could have caused errors during the processing of the above requests.	MTM-41855
REST API	Previously, when there were issues related to SMTP, and any action triggered the platform sending an email, the request was blocked until timeout. Now the SMTP server is not blocked by emails which can't be delivered, such emails are rejected instead.	MTM-40429
REST API	Fixed a race condition during event binary upload which caused a wrong binary assignment.	MTM-43591
Security	To improve security, the 3rd party software moment.js and jQuery have been upgraded to their latest versions.	MTM-39227
SMS microservice	Removed default names related to Cumulocity IoT or Software AG in the SMS provider configuration.	MTM-41014

Component	Description	Issue
SMS microservice	It is now possible to override default spring-boot error message attributes by defining a *microservice_error_attributes.properties* file. Sample content: server.error.include-message=ALWAYS server.error.include-binding-errors=ALWAYS	MTM-42000
SMS microservice	In some non-deterministic cases the SMS configuration had not been shown properly after setting it. This was caused by a validation based on potentially outdated cached data in the sms-gateway microservice. This validation is now based on freshly loaded data.	MTM-42407
UI	Only text-based log files (with mime type `text\*`) can be previewed in the UI, for other mime types a warning will be displayed.	MTM-38672

Applications

Release 10.13.0.62

Improvements

Component	Description	Issue
Web SDK	A slider component `RangeComponent` has been added to the Web SDK. The new component allows developers to show range sliders with a Cumulocity IoT layout. Documentation is available under http://resources.cumulocity.com/documentation/websdk/ngx-components/modules/FormsModule.html. The usage example is available in the tutorial application.	MTM-41224
Web SDK	The WebSDK now supports, and uses by default, the new Ivy rendering engine from Angular. You can opt-in Ivy on existing applications by: - Setting "enableIvy" to true in your *tsconfig.json*. - Adding the Angular Compatibility Compiler (ngcc) to your scripts in *package.json*: "postinstall": "ngcc"	MTM-39325
Web SDK	The child devices grid has been improved to work like the sub-assets grid. It is now possible to filter devices, and pagination has been added. The auto-refresh via real-time notifications for the child devices page has been removed as it wouldn't scale well when filters are applied.	MTM-41003
Web SDK	The documentation for the `c8y-data-grid` component has been improved and usage examples have been added to the tutorial application.	MTM-37358
Web SDK	Developers using the Web SDK now have the possibility to create named dashboards (dashboards stored with a given name in the database) with a context (device or group).	MTM-42104
Web SDK	Cumulocity IoT Web SDK has been upgraded to Angular 12.	MTM-40665
Web SDK	The AngularJS implementation of the Cumulocity IoT dashboards has been removed. The following modules from the @c8y/ng1-modules package are affected: - modules/dashboardUI - modules/dashboard2 - modules/cockpit-reports	MTM-40537

Component	Description	Issue
Web SDK	The AngularJS module `c8y.deviceBulkControl` is no longer used in standard applications and has been removed. To take advantage of standard UI components for bulk operations you should use the components and services of the `@c8y/ngx-components/operations` library.	MTM-41441
Web SDK	A virtual scroll feature has been added to the capabilities of the c8yFor directive. To enable the feature, the parameter `enableVirtualScroll: true;` must be passed along side with other virtual scroll-related properties. An example for the usage can be found in the tutorial application documented at https://cumulocity.com/guides/web/tutorials/.	MTM-41121
Web SDK	The new application scaffold with c8ycli now by default includes a pre-defined test setup. This allows developers to add unit tests to their custom applications easily.	MTM-33599
Web SDK	Hooks weren't working well with lazy-loading routes (an Angular feature), therefore plugins couldn't extend any application. Developers can now use hooks in lazy-loaded routes and thus use it to develop plugin extensions.	MTM-40842
Web SDK	A new template for creating plugins has been added. This template helps you when you want to scaffold a new plugin with the c8y command line interface. You can select the new template if you run c8ycli and select the latest version.	MTM-37132
Web SDK	The c8ycli has been improved to make the user experience more fluent. A wizard has been added which guides the user through the scaffolding process by asking certain questions. Alternatively, users can still use the previous way of scaffolding applications.	MTM-37124

Fixes

Component	Description	Issue
Cockpit	Setting "0" as a decimal place value in the "Silo" and "Linear gauge" widget now works correctly.	MTM-42024
Cockpit	In the Cockpit and Device Management application, **Load more** in the navigator menu is now disabled, while the assets load request is in progress, after clicking the button. Previously it was possible to click the **Load more** button multiple times before the browser had a response, and that resulted in getting duplicated groups in the list.	MTM-41681
Cockpit	The image in the dashboard's "Image" widget had not been properly resized. This has been fixed by making the image width responsive.	MTM-42351
Cockpit	It is now possible again to send the data explorer as a widget to a report.	MTM-42739
Cockpit	The documentation describing the behavior of the "On geofence send email" smartrule has been updated, see Cockpit > Smart rules collection in the *User guide*.	MTM-37552

Component	Description	Issue
Cockpit	The switch buttons in smart rules cards in groups and configurations had inconsistent styling. This has been fixed by adjusting the buttons spacing, icon/label colors, horizontal alignment, and the labels text.	MTM-43321
Cockpit	While editing a widget all the available data points will be visible now irrespective of whether they are switched on or off.	MTM-42004
Web SDK	When changing the localization to certain languages, for instance Arabic, date strings generated by an application will no longer break API calls.	MTM-40087
Web SDK	Fixed an issue, where translations containing hyperlinks would cause hyperlinks to not be clickable.	MTM-41185
Web SDK	For easier navigation on mobile devices, you must now use two fingers to zoom in and out on the "Maps" widget. Placing one finger on the map allows you to scroll instead. To achieve this, it was necessary to update the "leaflet" library to the latest version. If you have implemented your own custom map on top of our Web SDK, please check that your implementation still works properly.	MTM-40339
Web SDK	An issue has been fixed in the typing interface of @c8y/client that led to compile type errors while using older versions of the Web SDK.	MTM-42047
Web SDK	Icons are now correctly loaded for custom applications created with c8ycli.	MTM-42678
Web SDK	The styles are now correctly loaded for applications created with the Angular Command Line Tool (CLI) and extended by adding Cumulocity IoT CLI.	MTM-42762
Web SDK	The performance when loading data (for example in the tenants list or subassets view) has been improved by improving the responsiveness of the data grid component.	MTM-41986
Web SDK	When proxying from a locally developed application within the Web SDK, WebSocket was failing and falling back to long-polling (HTTP-based). This fix enables the WebSocket connection again.	MTM-42566
Web SDK	The Web SDK is now correctly handling the case that a third-party library imports an asset containing "favicon" in the asset name.	MTM-43196

Device management & connectivity

Release 10.13.0.62

Improvements

Component	Description	Issue
Actility	The **Connectivity settings** page has been enhanced to allow the user to configure the Actility ThingPark URL at the tenant level. This is an optional field. If the URL is not specified, then the default value from the agent properties is considered.	MTM-41853
Actility	A **LPWAN** tab for actility devices has been added to the device details page to be able to change the device type after the device registration.	MTM-34439
Bulk Operations	With the introduction of the new bulk operations functionality (see Device Management > Monitoring and controlling devices in the *User guide*) the **Bulk operations** tab in the groups view became obsolete and has been removed.	MTM-41264
Device Management	Updated the layout for the **Device network**, **Measurements** and **Modbus** tabs for an improved user experience and consistent look & feel.	MTM-38920
Device Management	When creating or editing a group, the **Name** field now correctly enforces the limit of 254 characters. This update does not change the existing behaviour as the limit existed but was not enforced, which meant users could use names exceeding the limit and then experience problems when trying to use the group.	MTM-42285
Device Management	A new required field **Software type** has been introduced when creating a new software item in the software repository. The new field is a filterable dropdown list presenting the software types to select from. This additional field improves the software management capabilities, allowing software to be managed by type.	MTM-42177
Device Management	In the device details view, the **Software** tab now offers better navigation through large lists. Users can easily locate a software item to be updated or removed by filtering the list by the software name.	MTM-42182
Device Management	In the **Software** tab, the **Installed software** view displays a **Filter by software type** dropdown box allowing the software list to be filtered by the type of the software object. In the list, if a software object has a software type defined it is displayed as a label next to its name.	MTM-42183

Component	Description	Issue
Device Management	In the Software repository overview, the list group layout has been replaced by a data grid. This allows for better navigation through large software lists, enables filtering by different properties, and adds sorting options. Additionally, a new column displaying the software type of a software object has been added.	MTM-42181
Device Management	On searches in pages with software and firmware lists, the name, description and type now are highlighted when matching the searched string.	MTM-42700
Device Management	On smaller screens, the configuration preview box used to hide the **Save to repository** and **Download** buttons on the **Configuration** tab of the device details view. The layout of the view has been adjusted so that the preview box does not extend too much on smaller screens.	MTM-42949
Device Monitoring	A new log file related to devices availability monitoring has been created. The log file is by default disabled. The purpose of the log file is to trace communication between the device and the Cumulocity IoT platform. For details, see *Log files* in the *Cumulocity IoT Core - Operations guide*.	MTM-36556
LWM2M	The supported LWM2M version has been added to the documentation, see LWM2M in the *Protocol integration guide*.	MTM-40609
LWM2M	A description of the "execute" operation with optional parameters has been added to the documentation, see LWM2M > LWM2M device details in the *Protocol integration guide*.	MTM-40590
OPCUA	Due to security improvements, opcua-device-gateway downgrades from 10.13.0 to previous versions will not be directly supported. Downgrading to a previous version is still possible by following the downgrade instructions as described in the OPC UA protocol integration documentation for release 10.13.0, see OPCUA > Gateway configuration and registration in the *Protocol integration guide*.	MTM-41560

Fixes

Component	Description	Issue
Bulk operations	The bulk operation progress bar on the bulk operations overview tab used to round the percentage value to the nearest whole number. For bulk operations with at least hundred devices this led to the progress bar showing a completed bulk operation (100%) even though the single operations had not yet been completed on all devices (<0.5%). The percentage value in the progress bar is now rounded down to the nearest whole number ensuring that a bulk operation will only be shown as completed if all single operations have been completed.	MTM-41363
Connectivity	The check if a mobile device is managed by the currently configured SIM provider is now only done on opening the **Connectivity** tab of a device. This puts eventual errors in a logical context and reduces the number of checks.	MTM-40958
Connectivity	In the Administration application, the **Connectivity** menu entry had been displayed in the navigator even when there were no connectivity providers to be displayed resulting in navigating to an empty page. The **Connectivity** entry is now only displayed if there are accessible connectivity providers.	MTM-41798

Component	Description	Issue
Device Management	An issue has been fixed with translations which caused some words in specific languages to be incorrectly presented with upper/lowercase.	MTM-40802
Device Management	Fixed an issue in device registration, that caused devices to receive incorrect device credentials via MQTT if its ClientID (e.g. serial) - entered on creating a new device request - contained language-specific characters.	MTM-39667
Device Management	In the Cockpit and Device Management application, **Load more** in the navigator menu is now disabled, while the assets load request is in progress, after clicking the button. Previously it was possible to click the **Load more** button multiple times before the browser had a response, and that resulted in getting duplicated groups in the list.	MTM-41681
Device Management	When adding or editing a new configuration snapshot, the **Configuration type** field is now limited to 254 characters and the **Use a URL** field is limited to 2048 characters.	MTM-41906
Device Management	Previously it was possible to select the wrong date range while filtering bulk operations. This issue has been fixed.	MTM-41622
Device Management	An issue has been fixed where the "more" dropdown (for example on the **Control** or **Firmware** tab) was empty or non-clickable on switching views.	MTM-41222
Device Management	Fixed and issue where searching by description was not working.	MTM-42617
Device Management	An empty box was shown at the top of the **Measurements** tab in the device details view. This has been fixed.	MTM-43086
Device Management	An issue has been fixed where the simulated device name was not displayed in its details tabs.	MTM-43052
LWM2M	The attribute `C8Y.lwm2m.enableBootstrapPSKFragmentFallback` has been added to the agent's default configuration. If enabled, the LWM2M agent will find the bootstrap PSK ID from the fragments ("bootstrap psk_id") if it cannot be found from the external IDs. See Registration of PSK-secured devices in the *Protocol integration guide* for more information on the fields required for a bootstrap PSK connection.	MTM-40632
LWM2M	When a LWM2M device registration update comes with a different port or address than the previous registration, for example the LWM2M registration update comes with a new COAP port due to the load balancer's idle timeout being exceeded, all ongoing operations that are not finished meanwhile will be set back to PENDING state, instead of directly canceling them.	MTM-41981
LWM2M	The resourceValue fragment added to events and alarms now works with opaque resources. Measurements cannot be created with opaque resource values. If enabled, it will create a warning alarm if non-numeric/non-boolean values are received. Additionally, the type for no-mapping-known alarms has been improved by including the object ID. See also LWM2M device protocols in the *Protocol integration guide*.	MTM-41682

Component	Description	Issue
LWM2M	The failure response of a LWM2M operation has been improved when failing on the device side. The message now states that it failed on the device side along with the error code and response returned from the client.	MTM-41999
LWM2M	The LWM2M compatibility with certain Java 8 JRE versions has been improved. However, we recommend you to use Java 11 for executing LWM2M.	MTM-42596
LWM2M	String resources can now again be mapped into measurement values, that is the LWM2M agent accepts numeric (integer and float) values sent as a string. In addition also the following strings will be treated as numeric values: - Any positive or negative numeric sequence with leading 0 (zero) will be interpreted as octal value, but will be transformed and stored as a decimal number. - Any positive or negative alphanumeric sequence containing letters from A to F, starting with 0x will be interpreted as hex value, but will be transformed and stored as a decimal number. Strings which do not meet these requirements won't be processed and an error message will be logged. See also Overview in the *Protocol integration guide*.	MTM-43661
LWM2M	The LWM2M agent operation handler now handles a Californium library's connector error by setting the operation back to pending state to process the operation later on. This kind of error can happen when sending an operation to a device and there is no longer a DTLS connection with the URI that is used.	MTM-43663
LWM2M	In the custom actions of the device protocol details, LWM2M now only returns decoder microservices which are subscribed to the current tenant. Prior to this change, decoder microservices not subscribed to the tenant were shown as well.	MTM-41435
OPC UA	The processing mode set in the OPC UA device protocol is now also applied to the mappings created due to historic read operations with tag type TAG.	MTM-40524
OP CUA	To achieve higher security, the private key used in the gateway for application identity is now AESCGM-encrypted. As a result, running previous versions of the opcua-device-gateway is no longer supported.	MTM-40343
OPC UA	The creation of alarms is no longer prevented in case a HTTP post action is resulting in an error.	MTM-40496
OPC UA	The management microservice now better handles malformed device type JSON and returns a proper HTTP error response (400 bad request).	MTM-41988

Streaming Analytics

Release 10.13.0

Apama correlator version

This release of Cumulocity IoT Streaming Analytics includes the Apama version 10.11.2 correlator. See also What's New In Apama 10.11.2 in the Apama documentation.

Improvements for time zone support

In smart rules (and also in the **Text Substitution** block, see below), it is now possible to define the new `FORMAT` parameter for specifying a different time format. For example, `#{time:TZ="America/New_York",FORMAT="HH:mm:ssZ"}` specifies the time zone for New York and the format to be `HH:mm:ssZ`. For a list of valid time format strings, see Format specification for the TimeFormat functions in the Apama documentation. See also Cockpit > Smart rules collection > Smart rule variables in the *User guide*.

Improvements in alarms generated by the Apama-ctrl microservice

When you create or edit a smart rule, an alarm is now also raised when the smart rule contains an unrecognized or invalid configuration for a substitution variable. See also Smart rule configuration failed.

Improvements for EPL apps

The EPL samples that can be accessed from the EPL editor of the Streaming Analytics application have been revised to make them more concise and to have a more narrow focus. See also Developing apps with the Streaming Analytics application.

Improvements in Analytics Builder

The Send Email and Send SMS blocks can now be used in simulation and test mode. When running in these modes, these blocks log the output instead of sending an email or SMS. In previous versions, when using these blocks in simulation or test mode, the activation of the model failed with the following error message: `Model produces output for device '' not declared by any block. Make sure that device parameters of all blocks are properly tagged`.

The Text Substitution block now supports the new `FORMAT` parameter for specifying a different time format. For example, `#{time:TZ="America/New_York",FORMAT="HH:mm:ssZ"}` specifies the time zone for New York and the format to be `HH:mm:ssZ`. For a list of valid time format strings, see Format specification for the TimeFormat functions in the

Apama documentation.

Machine Learning

Release 10.13.0

Improvements in Machine Learning Engine

- Enhancements:
  - New API in Nyoka microservice to generate matrix profile for univariate time series data for detecting trends and anomalies.
  - Enabled Zementis microservice to scale out if and when more compute is required for serving incoming inference requests.
  - Implemented caching of user roles in Nyoka and Onnx microservices to improve performance.
  - Improved pipeline restoration in the Onnx microservice which ensures a more robust & reliable restoration process.
  - Added support for audio processing by allowing pre-processing scripts to leverage the `librosa` library in the Onnx microservice.
  - In the Machine Learning web application, ongoing requests are now canceled if the user navigates away from the current page at any point in time.
- Upgrades:
  - Machine Learning web application upgraded from Angular version 11 to version 12.
  - Machine Learning web application upgraded to use Cumulocity Web SDK 1013.0.0.
  - Nyoka and Onnx microservices upgraded NumPy from version 1.18.1 to version 1.18.5.
  - Zementis microservice upgraded to use Cumulocity Java Microservice SDK 1011.0.16.
- Bug fixes:
  - Fixed the issue with `Access is denied` when OAuth is used as the tenant's authentication scheme.
  - Fixed the issue with `Resource not found` error message when trying to delete artifacts.
  - Fixed the issue with the artifact download when the artifact name contains a comma.
  - Fixed the issue with predictions when input data is provided in a ZIP format.

Improvements in Machine Learning Workbench

- Role Based Access Control:
  With this release, to use Cumulocity IoT Machine Learning Workbench, it is mandatory that users are assigned to Machine Learning global roles or user groups. This was done to tighten the security of the product and avoid issues related to privilege escalation. Existing Machine Learning Workbench application users will see an *Access denied* error if they are not yet part of Machine Learning global roles or user groups. Likewise, the MLW microservice APIs will respond with `403 - Forbidden` if the necessary permissions are not associated with the requests made by the clients. Refer to the Machine Learning guide for more details.
- Enable Project Export and Import:
  Machine Learning Workbench provides a project-based structure for encapsulating data science assets - data, code, resources, and models. This helps data scientists and machine learning practitioners organize assets

relevant to various stages of model lifecycle from data preparation to model building and deployment. To facilitate collaboration and sharing, users can now export the contents of a project as a compressed file and similarly, contents from an exported archive can be uploaded as new project.

- Notebook UI:
  The Notebook UI of Machine Learning Workbench was a custom implementation created by using the Monaco editor. The UI has been upgraded to use off-the-shelf JupyterLab UI components, which is the next-generation user interface for the project Jupyter, offering all the familiar building blocks of the classic Jupyter Notebook (notebook, text editor, rich outputs, etc.) in a flexible and powerful user interface.

- Enhancements:
  - Project improvements:
    - Enabled resource rename for project artifacts.
    - Enabled data validation with type annotations using the Pydantic package for all the MLW APIs.
    - Ability to delete a specific version of a project via the API (`{{url}}/service/mlw/projects/{projectID}?versionNumber={versionNumber}`).
    - Neural networks improvements:
    - Full screen mode for Neural Network Designer.
    - Improvements to Neural Network task to show model training progress graphically.

- Upgrades:
  - Machine Learning Workbench web application upgraded from Angular version 11 to version 12.
  - MLW microservice upgraded from tensorflow version 1.15.3 to version 2.0.4.
  - MLW microservice upgraded from ipython version 7.16.1 to version 7.31.1.
  - MLW microservice upgraded from ipykernel version 5.3.4 to version 6.8.0.
  - MLW microservice upgraded from Apache-httpd version 2.4.38 to version 2.4.52.
  - MLW microservice downgraded from numpy version 1.19.1 to version 1.18.5 to support tensorflow 2.0.

- Bug fixes:
  - Fixed the issue with downloading artifacts from a project taking long time by introducing the progress bar.
  - Fixed the issue with training more epochs on the integrated Jupyter Notebook within the MLW by upgrading tensorflow to 2.0.
  - Fixed the issue with committing the project when an existing project commit task is in-progress.
  - Fixed the issue with deleting the project when any of the project related task is in-progress.