



APM Prognostics

Release Notes

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APM Prognostics Version: 3.3.221130.0

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Summary

These release notes are organized by APM Prognostics versions starting from the latest one. If you look for more information about particular features, see Lumada APM Prognostics User Guide or any other document that is referenced in the release notes.

Important: While we complete feature development and prepare our main product Lumada APM for its GA release at the end of September, we temporarily stopped adding new customer-facing features in Lumada APM Prognostics.

At the same time, we continuously keep high availability and security of Lumada APM Prognostics by doing bug fixes (including security vulnerabilities if they occur) and technical changes that are not customer-facing.

There will be no documentation updates to the user guide and release notes until further notice.

Announcement: We disable access to the FTP server on 31st January 2023. If you used this option to upload data to Lumada APM Prognostics, we recommend to use the Upload data API that is a better alternative for the FTP server. For more information, see the *APM Prognostics API* section in Lumada APM Prognostics Guide.

FTP server support - previously used to upload data - will be discontinued by 31.01.2023. Feeder API should be used instead (see chapter 3 in the user guide). Starting from February 2023, FTP access will be revoked from all users.

Close

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Version 3.3.220727.0

Change to the visualization of the value levels

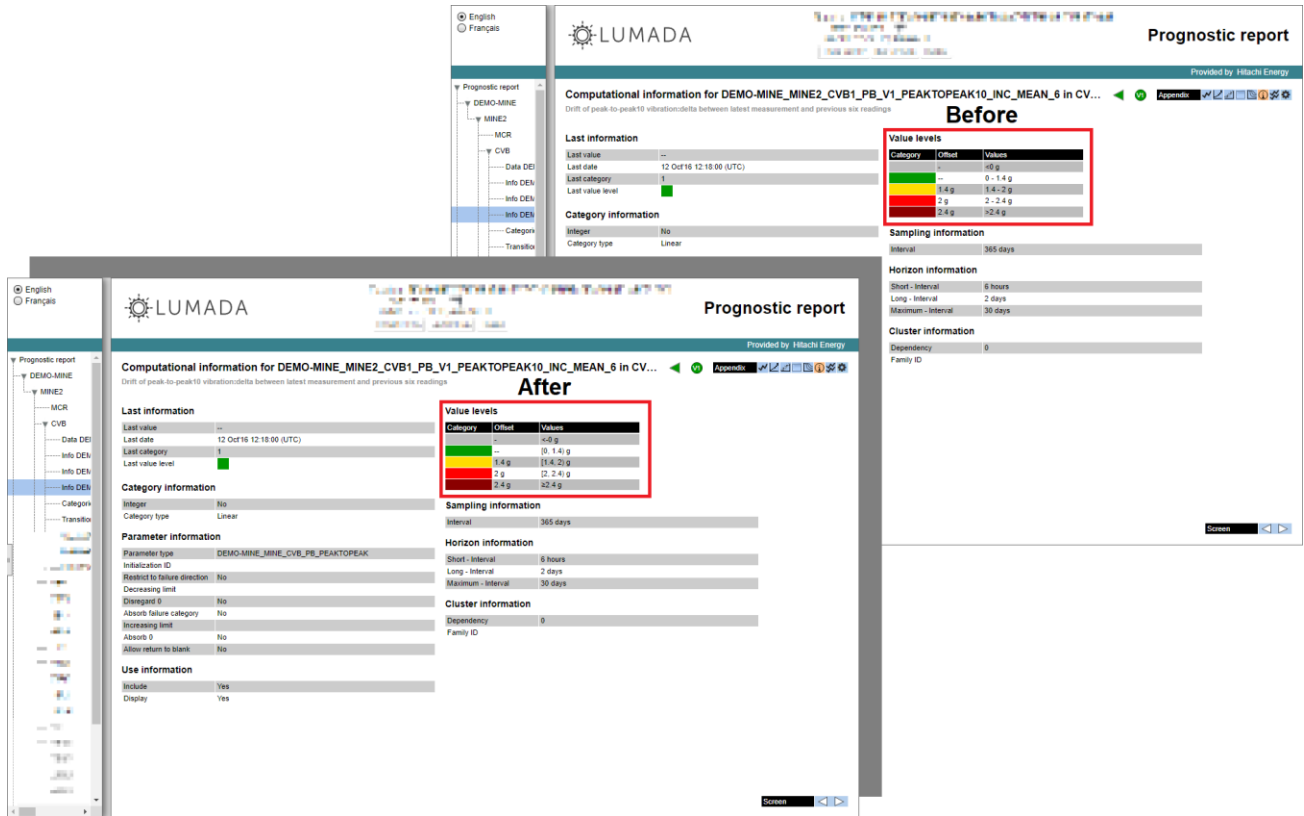
We changed how we show the value ranges in the malfunction prognostics legend and in the Value levels section in the Computational information page. At this time, we show the value ranges in the form of intervals to identify the included and excluded limits.

The screenshot displays the LUMADA Prognostic report interface. It is divided into several sections:

- Equipment specification:** Operator name: DEMO-MINE, Asset name: MINE2, Asset location: MINE2.
- Condition diagnostics:** A list of components with checkboxes for data selection: Axle shaft, Gearbox, Motor, Motor casing, Pulley, Radial bearing, Conveyor belt, Electrical data, Vibration data, Lubricant data, Speed data.
- Condition:** A traffic light indicator showing 'Normal' (green).
- Malfunction prognostics:** A heatmap showing various data points over time, with a color scale from green (low risk) to red (high risk).
- Legend:** A legend for the heatmap, showing 'Before' and 'After' states. The 'Before' legend includes:
 - Downtime risk: >50% (Red)
 - Downtime risk: 30% - 50% (Yellow)
 - Downtime risk: <30% (Green)
 - High prognostic strength (Dark Green)
 - Medium prognostic strength (Light Green)
 - Low prognostic strength (White)
- Schedule:** A traffic light indicator showing 'Risky' (red).

The malfunction prognostics legend

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The Computational information page

Version 3.3.220615.0, 3.3.220629.0, and 3.3.220713.0

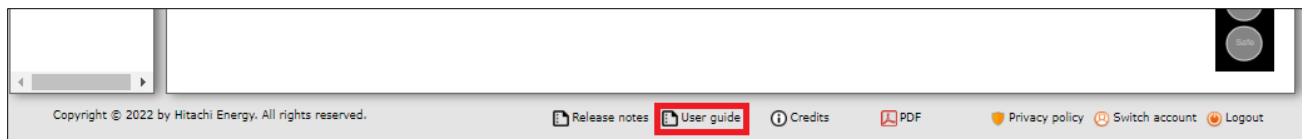
APM Prognostics releases 3.3.220615.0, 3.3.220629.0, and 3.3.220713.0 do not introduce any customer-facing functionalities. See our next versions that are scheduled for July and August.

Version 3.3.220601.0, 3.3.220518.0, and 3.3.220504.0

APM Prognostics Guide becomes available in the application

Enhancement Number APM-12436

You can now open and browse APM Prognostics Guide from the APM Prognostics application. Click the **User Guide** icon at the bottom of the page to open the guide.

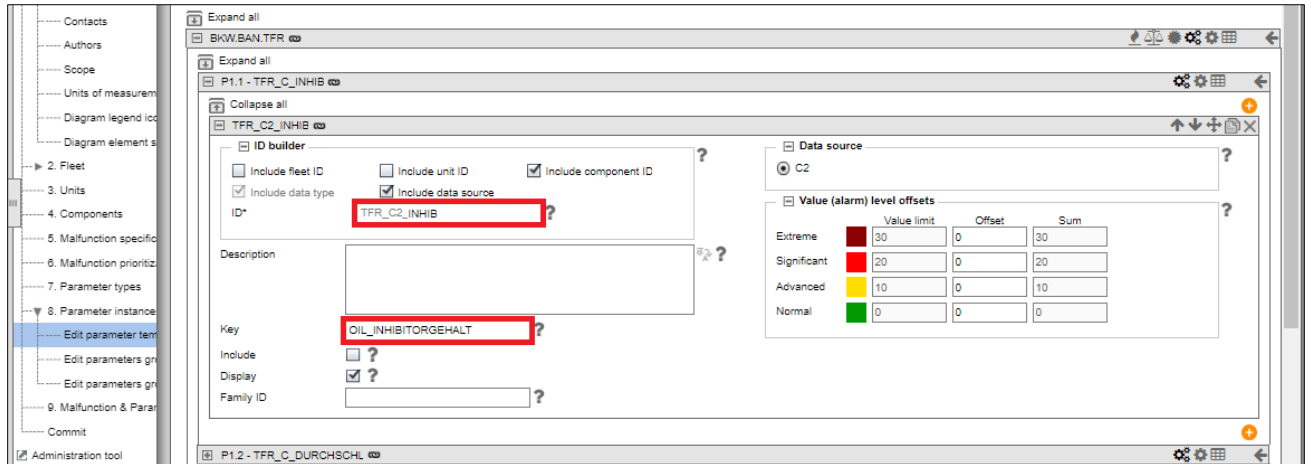


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Unification of parameter keys between APM Prognostics and Lumada APM

Enhancement Number APM-12557

We changed APM Prognostics to use the parameter Key value as the external ID during the model export to Lumada APM. Until now, APM Prognostics used the parameter ID as the external ID for the Lumada APM parameter. This caused a discrepancy between APM Prognostics and Lumada APM.



Model export did not work when a derivative parameter referred to raw parameters that contained a comma in their keys

Bug Number APM-10765

When a key in a raw parameter contained a comma, the user was unable to refer to it in a derivative parameter expression, because APM Prognostics uses comma as a separator between different references. We introduced a mechanism to fix this problem. By placing the backslash (\) sign before a comma when referencing a raw parameter key in a derivative parameter expression, it is possible to have the comma in the key. To compensate for backslash special meaning, you must place two backslashes in order to refer a raw parameter key that contains a backslash. For example:

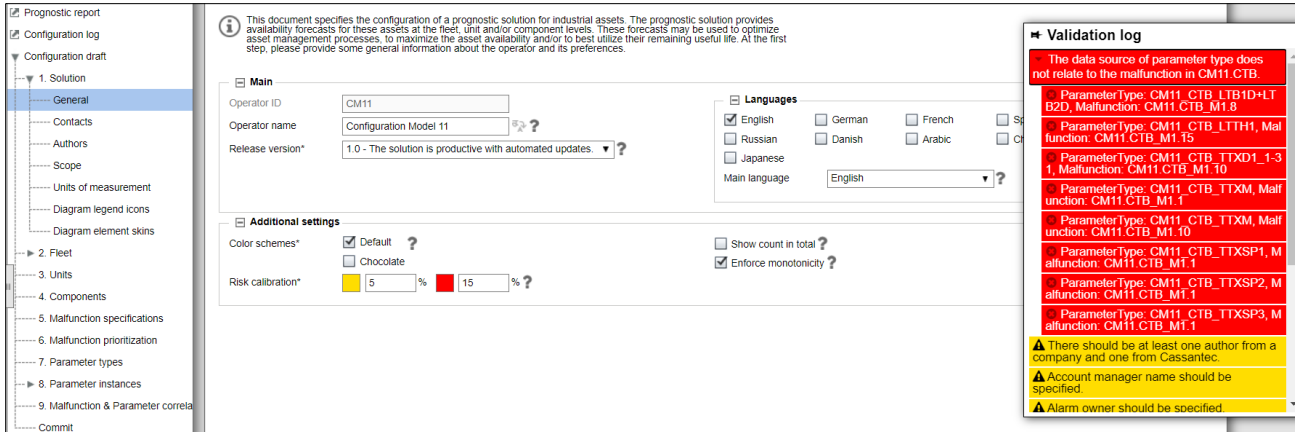
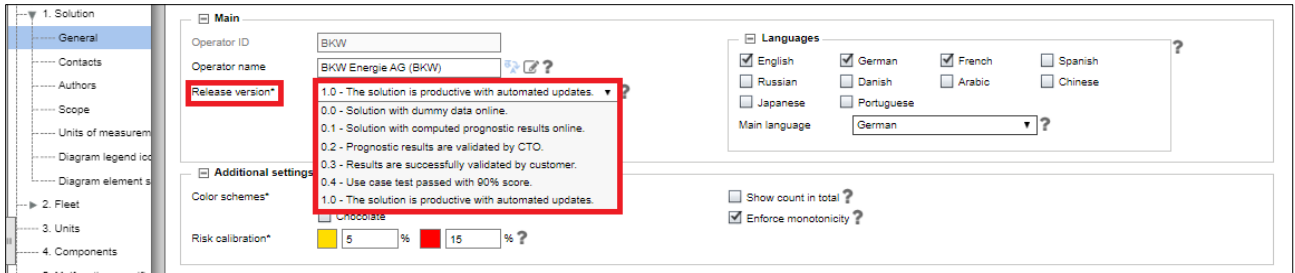
- Raw parameter key: distance,from\coast
- Inverted parameter: B!INV:distance\,from\\coast

Missing correlation in the configuration document was not displayed as an alarm during the validation

Bug Number APM-4477

We introduced a better validation mechanism for release version 0.1 or higher to identify the missing correlation as an error. Previously, the rule applied only to version 1.0.

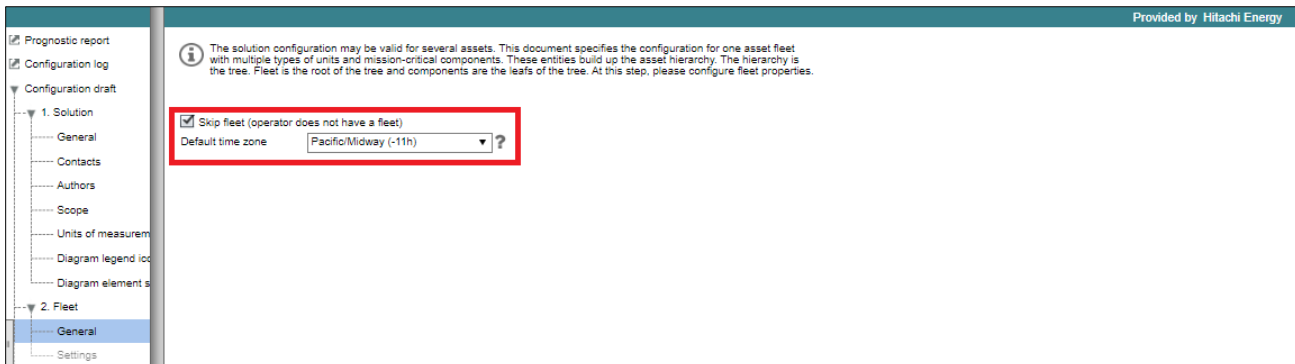
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Empty default time zone caused errors when the Skip fleet option was selected

Bug Number APM-3876

We made a change in the general settings of the Fleet. The **Default time zone** parameter becomes obligatory. Even when you select the Skip fleet option, it is necessary to select a default time zone.



Version 3.3.220420.0

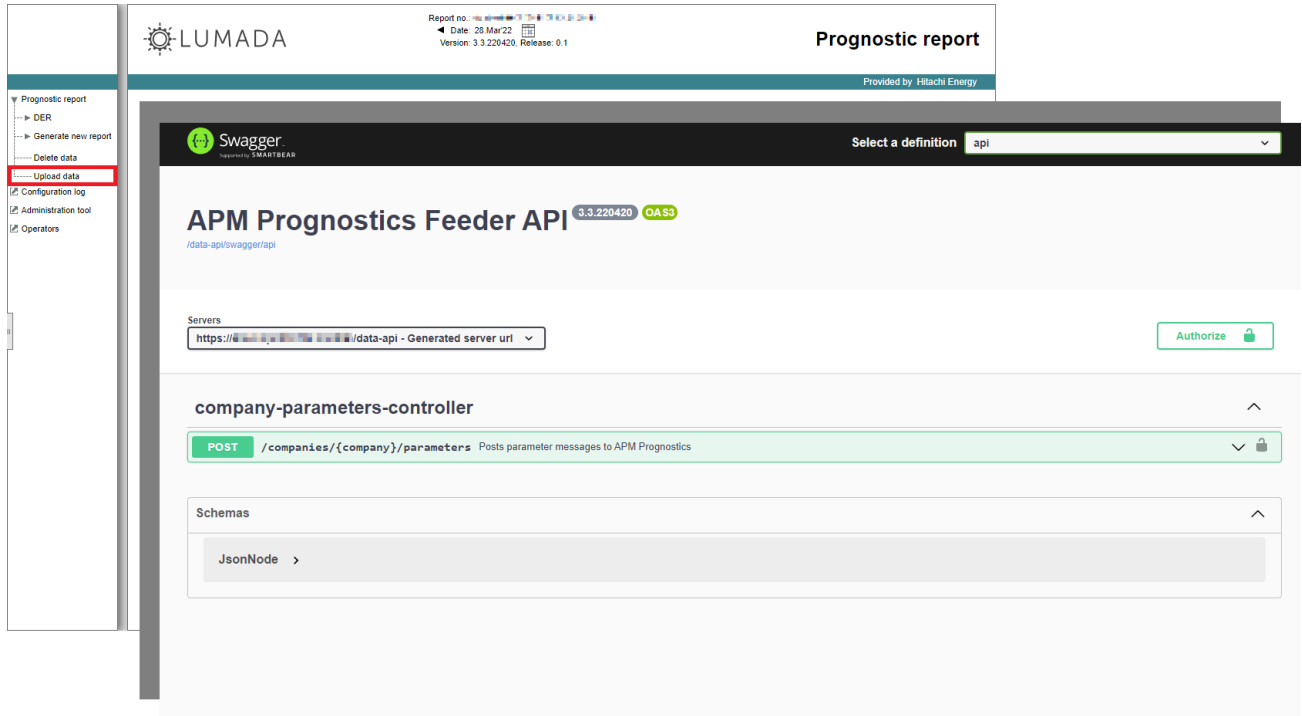
Upload data option in the navigation panel

Enhancement Number APM-13079

In the navigation panel on the left side, there is a new **Upload data** option. Click it to use APM Prognostics Feeder API that we introduced in [the previous sprint](#).

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Now, you can use the Swagger URL address or the **Upload data** option to have access to APM Prognostics Feeder API.



Version 3.2.220406.0

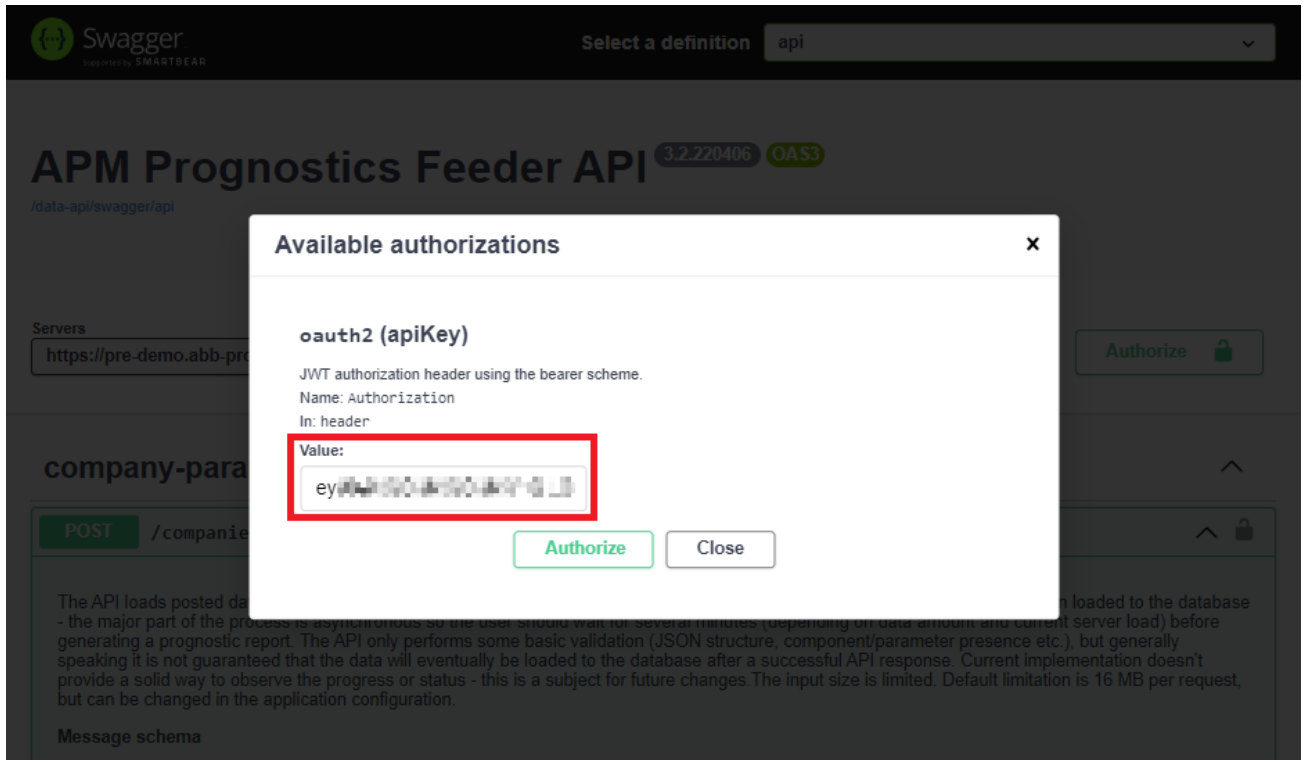
Introduction of APM Prognostics Feeder API in Swagger

Enhancement Number APM-12618

We created APM Prognostics Feeder API in Swagger that is available at this URL address:
{{baseUri}}/data-api/public/swagger-ui/index.html?url=/data-api/swagger/api-docs

Authorization is necessary for this Swagger API. You must supply the ID token for your APM Prognostics environment to use it. For information, how to obtain the ID token, see the *Getting an access token by using account credentials* section in Lumada APM Prognostics guide.

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Version 3.2.220323.0

Introduction of a REST API endpoint for uploading inspection data

Enhancement Number APM-12414

We created the **POST** `{{baseUrl}}/data-api/companies/{{company}}/parameters` REST API endpoint that you can use to upload inspection data into APM Prognostics. We did it as an alternative for the FTP server and for consistency with Lumada APM.

This endpoint is a part of the DataTransformer [Postman collection](#). Contact the Customer Experience if you want to get the Postman collections.

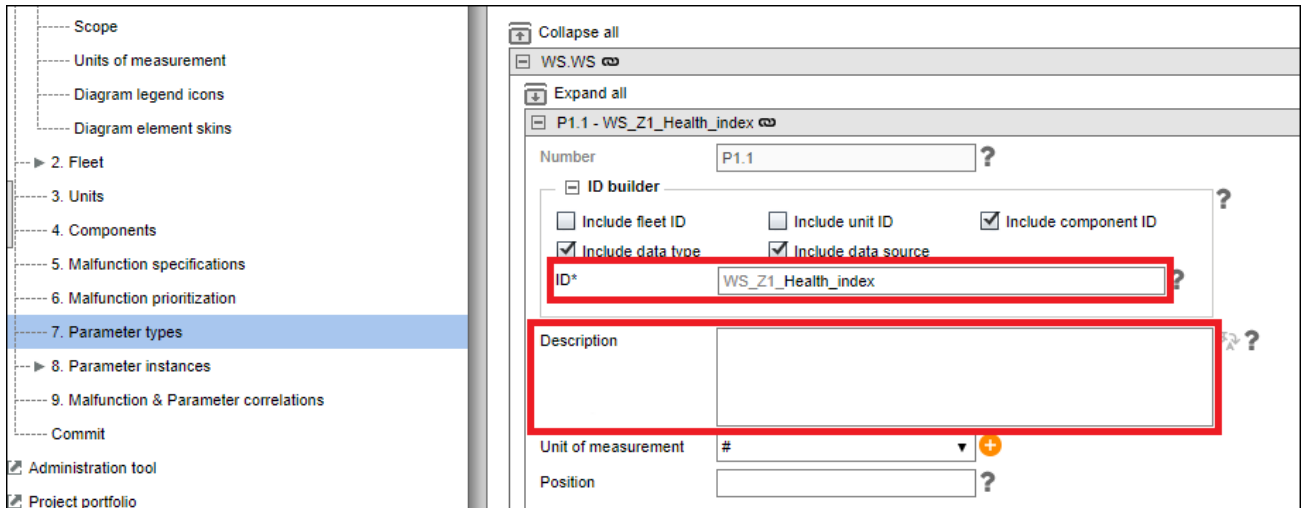
Note: We plan to discontinue support for the FTP server, see the future release notes for more updates.

Improvement for exporting Lumada APM models

Enhancement Number APM-12734

Until now, when you exported a Lumada APM model and there were parameter types without a description, APM Prognostics generated translation files that had no values for the description.

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Part of a translation file

```

}, {
  "ModelId": "APM.Prognostics.WS.WS",
  "TextId": "WS_Z1_Health_index",
  "TextValue": ""
  "CultureName": "en",
  "Type": "parameter"
}

```

Now, all the empty descriptions are automatically supplied. The empty descriptions (**TextValue**) for the parameter type use the value of the ID (**TextId**).

Dashboard page in APM Prognostics

Enhancement Number APM-12112

We changed the automated redirection for the root URL of APM Prognostics. After you log in, you see the Portfolio page. Users with access to one operator, see the latest report for their operator. Users who have access to more than one operator, see:

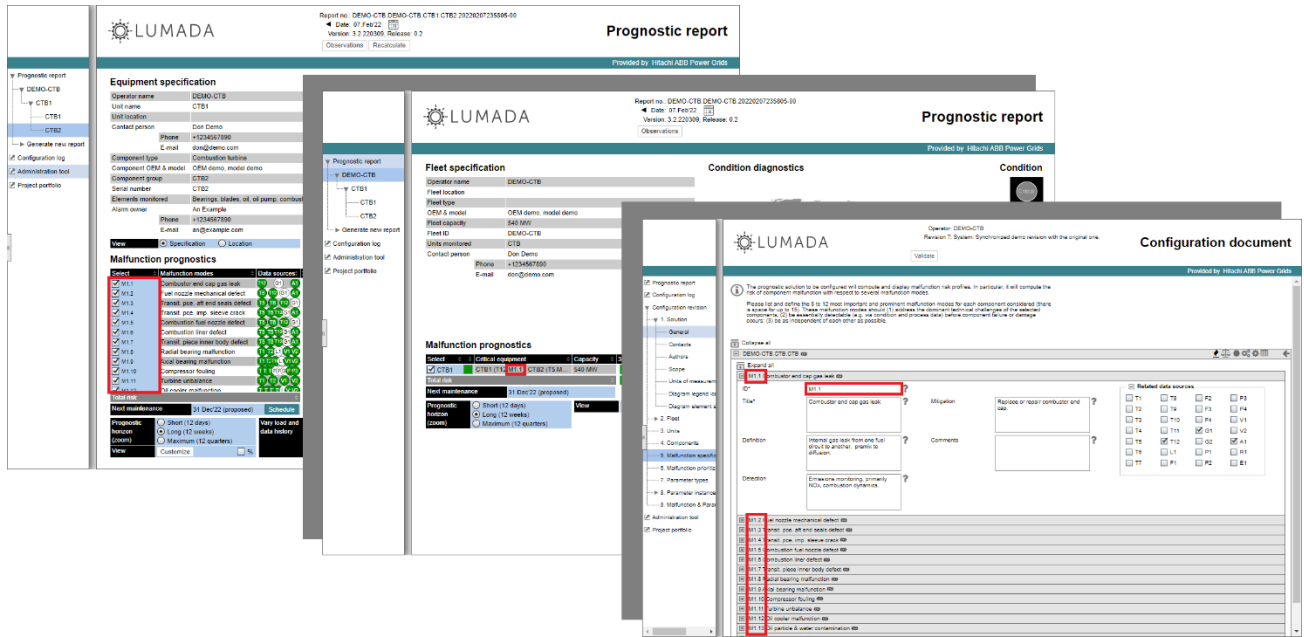
- Project portfolio – It displays all demo operators that are available for the current user (operators included in the portfolio)
- Solutions – It displays all the non-demo operators that are available for the current user. Each operator is a link to the latest report for this operator.

Changes for the malfunction mode IDs

Bug Number APM-8906

APM Prognostics showed malfunction modes IDs in different places of the user interface.

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These IDs are no longer in the user interface. What is more, the ID field is now descriptive and you can supply up to 128 characters there. All the characters are supported.

We recommend to stop using the non-descriptive IDs (M1.1., M1.2, and so on) and enter more meaningful and human-readable values.

Version 3.2.220223.0 and 3.2.220309.0

APM Prognostics release 3.2.220223.0 and 3.2.220309.0 do not introduce any customer-facing functionalities. See our next versions that are scheduled for March and April.

Version 3.2.220209.0

Postman collections with APM Prognostics API methods

Enhancement Number APM-10773

APM Prognostics has API that we designed for the internal usage in the application. At your own discretion, you can also use some of these methods for integrations between APM Prognostics and 3rd-party systems, platforms, or tools.

We prepared Postman collections that show all the API methods and have information about these methods to help you use them. Contact the Customer Experience if you want to get these collections.

Prognostic models with dashes in the Model ID could not be uploaded into Lumada APM

Bug Number APM-12016

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It was not possible to upload prognostic models into Lumada APM when component types that represent these models had dashes in their paths.

Before:

Dashes in the component paths led to generation of a Model ID with dashes, and Lumada APM does not let you use dashes in the Model ID.

After:

Now, when you export a ConfigDoc as an APM model set, the dashes in the Model IDs are replaced with dots. As a result, the Model IDs are correct and you can upload the models into Lumada APM.

Parameter template not associated with a data source prevents the release of the ConfigDoc

Bug Number APM-12298

An internal error occurred when you tried to release a ConfigDoc that contained a parameter template that was not associated with a data source.

Before:

It was not possible to release the ConfigDoc.

After:

We now have a ConfigDoc validation rule to make sure that all parameter templates have a data source. You will see a user-friendly validation error about the missing data source instead of the internal error.

Version 3.2.220126.0

Prognostic model preparation has fewer restrictions

In APM Prognostics 3.2.220126, we loosen rules for preparing prognostic models. You can have customizations on the component instance level that follow:

- Custom component load interval
- Custom parameter family ID
- Custom parameter inclusion flag
- Custom parameter value level offsets
- Parameter deletion from a certain component (it has the same effect as exclusion, but the parameter is still be visible in the APM user interface).

These customizations also get exported to Lumada APM as domain configurations.

What is more, you no longer have to explicitly disable translations for all units of measurement. They do not cause validation errors anymore. However, Lumada APM still does not support these translations, so you will see them in English.

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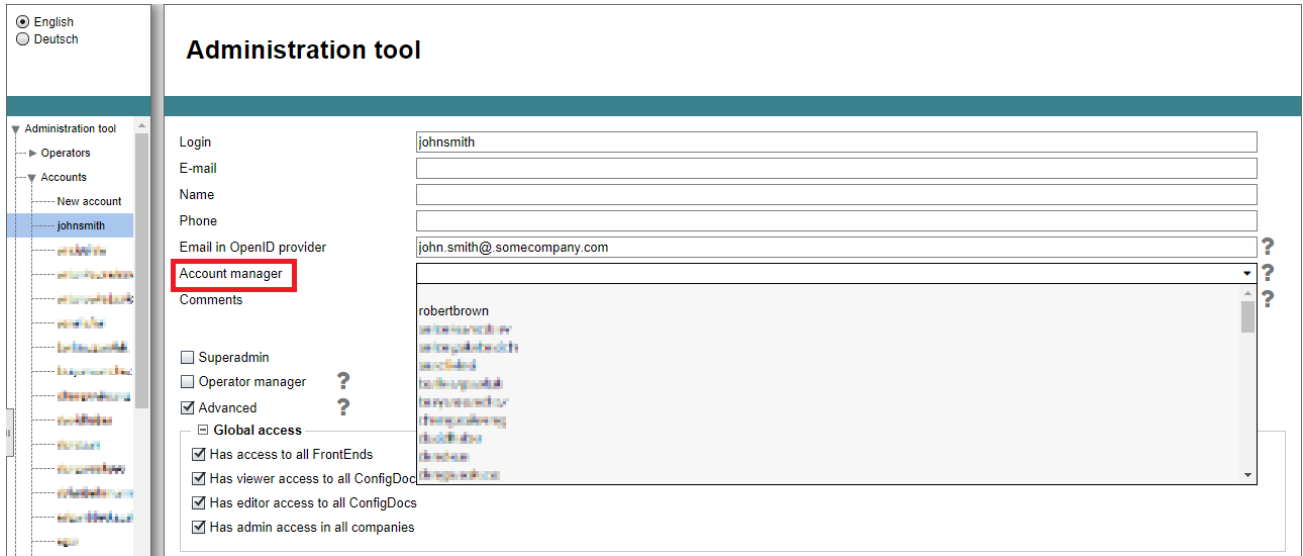
Version 3.2.220112.0

The Account manager role becomes available for any user

Enhancement Number APM-11704

Until now, only a user with the Superadmin role could be the Account manager for other users. We changed it to let you select any user for the Account manager role.

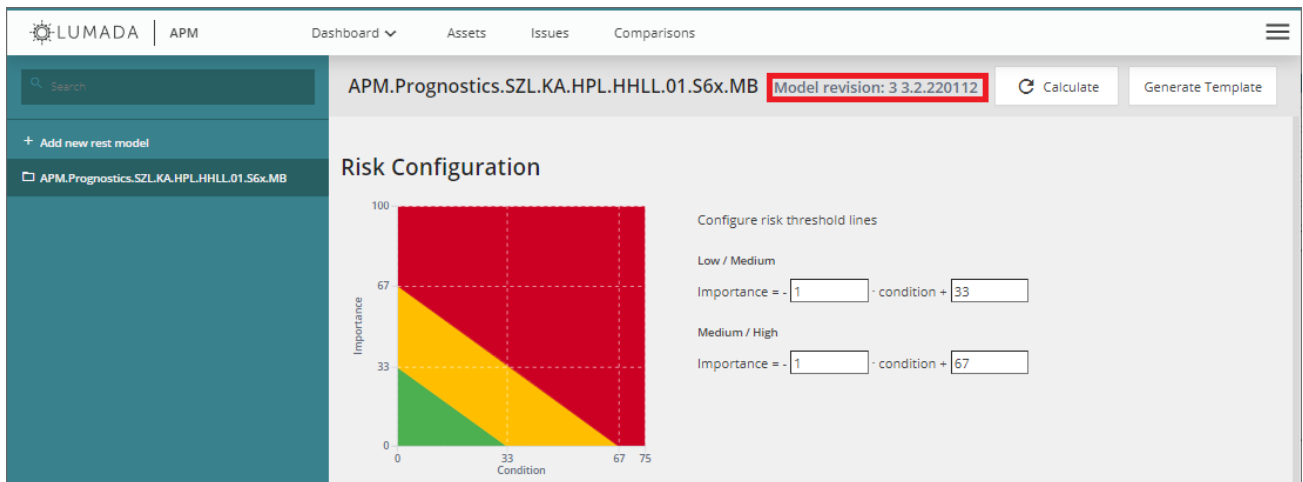
You can select the Account manager for a user in the Administration tool page.



Model JSON exported from APM Prognostics includes model version

Enhancement Number APM-11158

The models that you export from APM Prognostics now include the model version (revision and software version). As a result, Lumada APM can show these values in the Model Admin page.



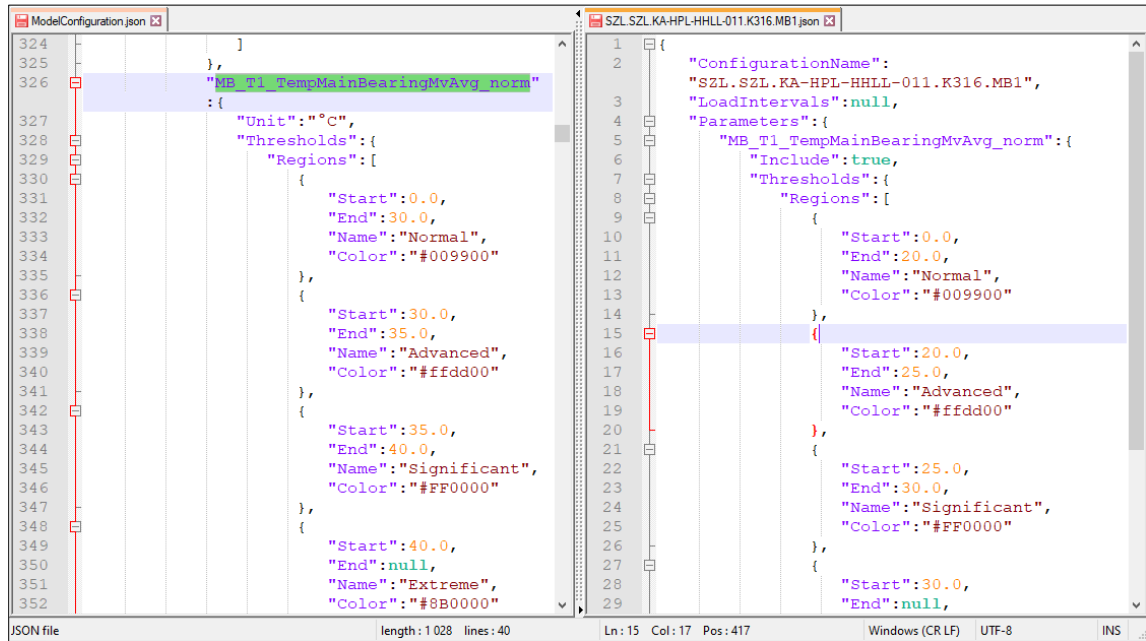
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Automatic generation of the asset named configuration

Enhancement Number APM-7595

Asset named configuration is a customization of a model configuration for one asset instance. Now, it is possible to generate the asset named configuration for each asset that has offset on any parameter instances. As a result, when you export a model from APM Prognostics, the following files are available in the exported package:

- Main configuration files (ModelConfiguration.json and ModelTranslations.json)
- A named configuration file for each component instance that has one of the following properties customized: load interval, parameter inclusion flag, parameter family ID, or parameter value level offsets.



Example of an asset named configuration (in the right tab)

Improved the mechanism for showing validation errors

Enhancement Number APM-7595

Now, when you export a ConfigDoc as an APM model, you see all the validation errors at the same time. Until now, in the majority of cases, you saw only one error. To see more errors, you had to fix the one you saw.

Fixed a difference between the JSON formats in APM Feeder API and APM Prognostics Generic Data Transformer

Enhancement Number APM-11245

The JSON formats in APM Feeder API and APM Prognostics Generic Data Transformer were not equivalent. We did a check in APM Feeder API and added support for the missing parameter-value formats in the APM Prognostics Generic Data Transformer.

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Version 3.2.211215.0

Introduction of the Operator Manager role

Enhancement Number APM-11192

Until now, a user with the Superadmin role could create new operators and update the existing ones in the Administration tool. However, it was necessary to have a user role that lets you do only these two actions without the Superadmin privilege level. This is why we introduced the Operator Manager role.

APM Prognostics shows the Recalculate button all the time

Enhancement Number APM-6308

Starting with this release, the Prognostic report page shows the Recalculate button all the time. Until now, you could see this button after you changed some options in the page. However, it is necessary to see and use this button if there is a ConfigDoc change or new data becomes available and you must recalculate the report.

Change of the file structure of the Prognostic models

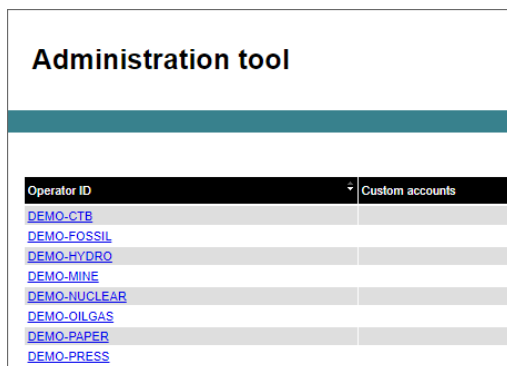
Enhancement Number APM-10361

We decreased the quantity of JSON files that APM Prognostics generates when you export a prognostic model. A package with the model will have only two files: modelConfiguration.json and modelTranslations.json. All the translations files are merged into one. We also removed the modelWithEmptyMappings.json file from the model package.

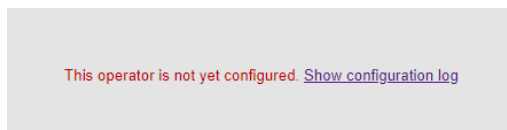
New links in the Administration tool and Prognostic report

Enhancement Number APM-11020

In the Administration tool, you can now click an Operator ID to open a Prognostic report for this operator.



When you try to open a prognostic report of an operator whose ConfigDoc was never released, you now see a link to the configuration log.



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Generate several models from one ConfigDoc

Enhancement Number APM-7596

You no longer have to explicitly split a ConfigDoc into smaller parts (one per component type) to export it to Lumada APM. Now you can export a ConfigDoc with any asset type and instance hierarchy. Each component type gets automatically exported as a separate APM model. The model ID is automatically inferred from the respective component type path - you no longer can set it explicitly. After you export the models, you get a zipped package that contains all the included APM models.

The package will have a folder with the modelConfiguration.json and modelTranslations.json files per each model. The modelConfiguration.json file for each model contains a part of the ConfigDoc related only to this model (component).

Version 3.2.211201.0

Access to Project portfolio for the authenticated users

Enhancement Number APM-9286

Starting with this release, each authenticated user can have access to the Project portfolio page (previously known as the Quality check page). Before that, only the Superadmin had access to this page.

We made several changes to enable this feature:

- We renamed the **Quality check** page to **Project portfolio**.
- There is the **Include in portfolio** option in the Operator form for including it into Project portfolio.
- We introduced new user rights to manage the access to the portfolio:
 - Has access to all reports in portfolio – It lets you see and access prognostic reports of all operators that are included in the portfolio.
 - Has viewer access to all ConfigDocs in portfolio – It lets you see ConfigDocs of all operators that are included in the portfolio.

Problem with access to ConfigDoc for an anonymized operator

Bug Number APM-9915

A user who had only the ConfigDoc viewer access to an anonymized operator could not access the ConfigDoc for that operator. We fixed this problem.

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Versions 3.2

3.2.210714

- APM-8939: Added service account support for integration with third parties. See the [APM Prognostics Permission Management](#) document for details.

3.2.210811

- APM-7332: Feature was added allowing for parameters observations data deletion by user with Operator Admin role. User may specify if data should be deleted for one or multiple components at once, one or multiple parameters, as well as define date range for data removal.
- APM-9794: Defect - Observations not properly processed when milliseconds in timestamp.
 - Before fix: If observations used timestamp format with usage of milliseconds, then they were not properly processed.
 - After fix: Data Transformer accepts data with milliseconds in timestamp format.

3.2.210908

APM-6210: Feature was added in the Administration tool, allowing each user account to have its manager information, for the purpose of better managing its permissions. User account form was extended with Account Manager field (to assign an account manager to it) as well as with comment field (for keeping information about account status). Only a person with Super Admin role can be an Account Manager.

Versions 3.1

- Added component type export/import feature in ConfigDoc.
- Added auto-anonymization option for operators. Read the tooltip of "Source operator" field in operator creation form for details.
- Added Portuguese language support in the ConfigDoc.
- Fixed a bug of recalculations (simulations) unintendedly influencing the machine learning algorithm in further report calculations.
- Fixed a bug of CoreSolution failing to reconnect to the event queue on database server restart.
- Improved user feedback on a failed attempt to export a file.
- Improved the application security.

3.1.210127

- APM-3234: Deleted authserver.max_csrf_token_count config option. A new CSRF protection approach has been implemented, which doesn't need it.
- APM-3811: Defect fixed, with saving the blank field of "Its last update time/date" in Admin.
 - Before fix: The field "Its last update time/date" wasn't required and the form could be saved with the blank space what caused problems after saving. The whole website stopped working correctly. The message "Internal Error" appeared on every page of the website.
 - After fix: The field "Its last update time/date" is required for filling in and it's not allowed to save with the blank space.

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3.1.210210

- APM-6540: Extend prognostic model APM configuration JSON (export to APM feature) to contains derivative parameters relation with factors.
- APM-6686: It is possible to automate data imports to CVT, without requiring the implementation of a customized data transformer. Generic Data Transformer was extended to support variety of generic file formats: csv, xlsx, JSON. For more information, check documentation page <https://pgga-es.atlassian.net/l/c/pNuCg1TN>.

3.1.210224

- APM-6738: Memory usage optimization. We achieved 60% savings in memory consumption during report generation.
- APM-3657: Application maintenance notification message. To notify users about the downtime, it is possible to display a message to all users about that fact. The message can be set in the admin tool, domain form. When specified, all users will see this message. Setting an empty message disables the feature.

3.1.210310

- APM-4909: SCALE was added to the standard derivative parameter library.
- APM-7536: Null pointer while computing rolling average formula (RAVG).
 - Before change: If RAVG parameter key was not properly defined a null pointer exception would abort the whole data transformation.
 - After change: Default parameter value applied. If no duration is provided, 7D will be used.
- APM-6841: For assets of anonymized operators, OEM & Model also get anonymized now.

3.1.210324

- APM-3620: Certain ConfigDoc edits could lead to an error on release attempt.
 - Before fix: Following actions were discovered as incorrect (so-called "Not-To-Do List"):
 - Deleting a record and recreating it back with the same path and/or textual ID.
 - Renaming record to previously existing name of other record.
 - Changing parent component type of a parameter type.
 - Changing parent parameter type or component instance of a parameter instance.
 - After fix: Any actions are now allowed and can be performed without a risk of ConfigDoc release error.

3.1.210407

- APM-6214: Security improvement - Following events were considered as 'security events' and are logged in the application, with 1 year retention:
 - Software changes (installations/updates)
 - Service start/tsop
 - Login (including failed one)
 - Administrative actions
 - Security/integrity measure and control
 - Incorrect application input

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- Unauthorized access attempts
- ConfigDoc commit and release
- Internal error
- CSRF attempt
- AAD change
- APM-7814: Defect - Blocked/disappearing correlation percentage in correlation matrix.
 - Before fix: In Chrome browser only, once changing correlation matrix values in draft, cells immediately disappear and kept grey until the escape button applied. This doesn't allow to do any changes in correlation matrix.
 - After fix: Correlation matrix values can be edited in Chrome browser.
- APM-8031: Defect - Report generation was completed with error.
 - Before fix: In some cases, report generation could complete with error: "Could not connect to CoreServer".
 - After fix: Report is now generated and available to user.

3.1.210505

- APM-2462: No data for Condition Gradient visualization.
 - Before fix: After accessing Condition Gradient visualization, user could encounter following error: "CoreServer has not provided data for this report".
 - After fix: Data for Condition Gradient is properly displayed when report is recalculated.

Versions 3.0

- The prognostic solution has been successfully integrated with ABB APM as a fully-compatible performance model.

3.0.1

- Added a meta data field to unit instance and component instance configuration.
- Added an automated fleet diagram renderer.
- Added ConfigDoc auto-correction feature on revision import.
- (for multi-tenant on premise only) Added a configuration option allowing to set a default diagram configuration for new operators.

Versions 2.16

2.16.1

- We have drastically improved the application security. In particular, we performed:
 - [Nessus scan](#) to identify and fix vulnerabilities in the underlying technology stack and configurations.
 - [ZAP scan](#) and [ABB DSAC scan](#) to identify and fix common problems in Web API interaction.
 - [BlackDuck scan](#) to identify all known vulnerabilities in third party software and update this software.

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- [SonarQube scan](#) to identify and fix potential weak spots in the application source code.
- Comprehensive internal penetration testing, architectural design review and threat modeling.
- In the result of the security hardening, we made the following functional changes:
 - User passwords are no longer stored in the application itself. Instead, all user authentication and credential management has been delegated to OpenID Connect Providers. In SaaS version of the application, we use Microsoft Azure Active Directory as an OpenID Connect Provider. In on premise environments, you are free to pick an OpenID Connect Provider which best suits your expectations and integrates with the rest of your corporate network services. This improvement makes the following impact:
 - End users no longer need to remember another password.
 - End users have full control over their credentials.
 - End users have full control over their sessions.
 - End users may utilize Multi-Factor Authentication as long as the Provider supports it.
 - End users may switch easily between accounts, as long as the Provider supports it.
 - User credentials are stored safely on the Provider's side and protected against password brute forcing and other similar attacks.
 - In the unlikely case of data leak from the application, users' personal credentials won't be stolen.
 - End users now have full control over their FTP passwords used for data uploading.
 - FTP server is now better protected against password brute forcing.
 - Credentials and secrets no longer show up in server-side application log files. You are free to share these files with our support team in case of an unexpected error.
- Included "Credits" page in the application footer listing all third-party software the application is built with along with their respective license files.

2.16.1

- Added possibility of importing/exporting revisions in configuration log.
- Added configuration for skins and label icons for asset diagram configuration (globally in administration tool and locally ConfigDoc).
- Added a new validation rule that verifies correlation consistency in a ConfigDoc.

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