Release Notes

IoT Gateway – Get ready for Industry 4.0!

IoT Gateway 3.7.2

Release date: September 2022

FIXED ISSUES

- **Docker**:
- Added **Backup/Restore** support for Docker environments. Please restart the docker container to apply the archive.
- Fix: Restore executes a factory reset, instead of restoring the archive.

- **Microsoft Azure Processing**:

- Upgraded and migrated **Azure IoT SDK to version 2.x**. Please see Azure IoT TLS - Critical change by Microsoft for details.

- Added root CA certificates *DigiCert Global Root G2* and *Microsoft RSA Root Certificate Authority 2017* to list of trusted CA's.

- New option to specify a certificate (optional).
- New option to specify a private key (optional).
- New option to specify a private key password (optional).
- New option to specify the SAS token expiry time in seconds (Default: 1h).

CHANGED

KNOWN ISSSUES

- n/a

IoT Gateway 3.7.1

Release date: Mai 2022

FIXED ISSUES

- **Rexroth Drives Interface 3.5.9.0**
- Issues with Oscilloscope configuration verification reset function, auto endpoints update for dual axis device.

- **logback**

- NVD - CVE-2021-42550!
- logback-classic 1.2.11
- logback-core 1.2.11

- **Publisher: ODiN**

- Fix: If any REST related alarm was active, it was not properly cleared after bundle shutdown or publisher disconnect in some cases.

CHANGED

- **MongoDB and InfluxDB Processing**
- Stream arrays as json string to database

- **Rexroth Drives Interface 3.5.9.0**

- New option to enter Memory Depth value in the Oscilloscope configuration.

- **Microsoft SQL Processing**

- Set configuration values for Query Timeout and Cancel Query Timeout to default: -1

- **OPC UA Device**

- Expand Selection of OPC UA Node property "Sampling Rate" with values: 2s, 5s, 10s, 1 min, 5 min, 10 min, 30 min, 1 h

- **Docker**

- Enable HTTP with environment variable 'iot_http_enable=true' and HTTP port number is 7777.

IoT Gateway 3.7.0

Release date: October 2021

NEW FEATURES - HIGHLIGHTS

- **XM Parameter**
- Endpoint converts from String value to [Boolean, Short, Integer, Long, Double]

- **Counter**

- Option to set the reset mode (truthy, falsy, rising edge, falling edge, both edges).
- Option to reset the counter if any input has BAD quality.

- **Math Calculations**

- All mathematical calculations now accept numeric input values as strings

- **Nexeed Industrial Application System - Process Message**

- The generated Phase ID is now also written to the process message field $.measurements[*].name

- **Production Performance Manager - Process Message**

- The generated Phase ID is now also written to the process message field $.measurements[*].name

- **Microsoft SQL Processing**

- Updated Microsoft SQL jdbc driver to newest version 9.4.0

FIXED ISSUES

- **Publisher: ODiN/REST/PPM/Nexeed**
- Fix: Use system proxy configuration and pass proxy credentials in HTTP client connections of ODiN/REST/PPM/Nexeed publisher.

- **Diagnostics**

- Fix: Diagnostics->Logservice shows *DEBUG* messages on system startup.
- Fix: Diagnostics->Logbook-> Button *Clear Logbook* sets all internal log levels to level *DEBUG*, which increased system load.

- **Math Processings**

- Fix: Prevent volatile errors on system startup: *Input Endpoint(s) not defined!*.

- **Counter**

- Fix: Possible increment of 2 instead of 1 on system startup, if there's an input signal that triggers the counter.
- Fix: Counter does not just forward the current value if not counted or resetted (flow broken).

- **Formatter**

- Fix: Formatter resetted it's output to empty string if any input quality was BAD. Now, the output remains unchanged and the quality is set to BAD.

- **Microsoft SQL Processing**

- Fix: Avoid increasing CPU load by update to the latest jdbc driver 'mssql-jdbc-9.2.1.jre8'.
- Fix: Grant access to mssql query timeouts in configuration and thus in frontend.
- Fix: Possible loss of data, if connection to database could not be established.
- Fix: Avoid removing endpoint value buffers after publishing values in case of SQLTimeoutException and SQLServerException

- **Backup / Restore**:

- Fix: PR21: Prevent factory reset on next restart after performing a restore operation, if reboot fails (e.g. docker environment).

- **Telnet**

- Fix: Telnet support removed

CHANGED

- **Processings**
- If set interval is >= 1 minute, the processing execution is now anchored to an exact second within a minute. This can be changed using the Web Console to second *0,5,10,20,30* to have more control over deterministics (**Exact second of execution**). It also can be used to delay the execution for some scenarious. The value defaults to second 0.

KNOWN ISSSUES

- n/a

IoT Gateway 3.6.0

Release date: April 2021

NEW FEATURES - HIGHLIGHTS

- **UA Server: Custom Models - Event Mapping**:

- If the target node has the attribute *EventNotifier*, the node raises an event containing the value as message, by using the *first* reference with *HasEventSource* or *HasCondition*, which has to be of derived from *BaseEventType* as an emitter node. If the Endpoint's value is an UA Event/Alarm/Condition itself, it's mapped to an corresponding event best possible (e.g. MTX Diagnosis / Alarm events).

- This can be used to forward or expose incoming UA events from any field UA Server, connected via UA Device using an UA Endpoint of type EVENT (e.g. UMATI, Maschine Tools Companion Information Model).

- Custom events fields of the original source event (e.g.: *AutomationConditionType*, *AutomationDiscreteExAlarmType*, *AutomationDiscreteEx2AlarmType* are send with the event (custom event fields), but can’t be retrieved by most generic UA clients (e.g. UA.TestClient, UA Expert) , because they only can resolve fields of the most recent base event type (e.g. *AlarmConditionType*) there are knowing about.

- You have to add the custom event fields to the event filter of your event subscription to retrieve them in you own UA clients programmatically (e.g. *Number*, *ErrorText*, *RemedyText*,…).

- The **original event** is send (JSON) as *Message* (which contains all available data), if the *Message* event field is **not** specified in the OPC UA Device Endpoint which is fetching the events from the source UA server.

- **Rexroth Drives Interface 3.5.8.0**:

- Feature: Improved Oscilloscope configuration management to handle duplicate devices.
- Feature: Improved UI to display stored configuration of Oscilloscope in Drives application when device is offline.
- Feature: Enhanced application with option for automatic creation of endpoints after configuring the oscilloscope.

- **Rexroth Drives Interface 3.5.7.0**:

- Feature: Removed limitation on providing only parameter specific input to the signal value and mask in the IoT Gateway Application UI for oscilloscope.

- **Rexroth Drives Interface 3.5.6.0**:

- Feature: Oscilloscope shall be set up and started by IoT Gateway only if the drive is is OM and parking axis is not active.

- **Rexroth Legacy Device Bundles 1.6.0.0**:

- Add list parameter read support for CLC protocol.
- Added two digit support of unit address for ASCII protocol

FIXED ISSUES

- **MySQL Processing**
- Fix: The prepared statement cache of the MySQL JDBC driver has been deactivated to prevent a memory overflow due to a large number of SQL statements.

- **Rexroth Drives Interface 3.5.8.0**:

- Fix: Issue with import feature when duplicate devices are present in application.

- **Rexroth Drives Interface 3.5.7.0**:

- Fix: Enhanced exception handling to handle when no data in channels.

- **Rexroth Drives Interface 3.5.6.0**:

- Fix: Name conflict issue resolution with Device and Oscilloscope factory configuration objects.
- Fix: Improved underlying Java api's to support asynchronous calls for data read from drive.
- Fix: Limited wait time for oscilloscope data ready state after recording is started to eliminate indefinite time wait loop chances.

- **XM Parameters, XM System, XM Logic**

- Fix: "MLPI_E_CONNECTFAILED" with different MLC devices.

KNOWN ISSSUES

- **MQTT Publisher / MQTT Device**:

- **Connection Lost - java.io.EOFException**: Client ID is not unique

```
Each Client connecting to the Server has a **unique Client ID**.
The **Client ID must be used** by Clients and by Servers to identify state that they hold relating to this MQTT Session between the Client and t

     Connection Lost - java.io.EOFException

Ensure a valid, **unique Client ID** regarding MQTT 3.1.1 specification.
```

- **Backup / Restore**:

- Microsoft Internet Explorer creates corrupt backup file during upload.

CHANGED

IoT Gateway 3.5.0

Release date: November 2020

NEW FEATURES - HIGHLIGHTS

- **REVERSE PROXY READY**:
- Feature: IoT Gateway can now be run behind a corporate Reverse Proxy (e.g. Caddy). Please read the Reverse Proxy documentation how to set up.

- **UA Server: UMATI replaced by Custom Models**:

- The (experimental) **UMATI** feature (*umati@...*) has been replaced by the more generalized **Custom Models** feature (*uaserver@...*), which allows you to load any valid UA model(s) into the server to feed with endpoint data which provides a UA server facade for connected UA clients behind, expecting the model(s) inside the address space. This can be used to upgrade your machine tool to UMATI standard with the IoT Gateway, for example. The UA Server has been updated to **DI Model 1.02.2** and allows loading of models using currently latest **UA Base Information Model 1.04.7**. Please see the UA Server configuration page or documentation for further informations.

- **Nexeed Industrial Application System - Measurement**

- Feature: New configuration properties with endpoint value mapping

```
| Configuration field | Payload          |
| ------------------- | ---------------- |
| Part ID             | $.part.id     |
| Part Type ID        | $.part.typeId |
```

- **Production Performance Manager - Measurement**

- Feature: New configuration properties with endpoint value mapping

```
| Configuration      | Payload                       |
| ------------------ | ----------------------------- |
| Operational Status | $.device.operationalStatus |
| Part ID            | $.part.partID               |
| Part Type ID       | $.part.partTypeID           |
```

- **Device S20-ETH-BK**:

- Feature: Tutorial Configure AI Modules of a S20-ETH-BK

- **Rexroth Drives Interface 3.5.4.0**:

- Feature: Backup file creation using factory service implementation for Oscilloscope properties and Driver configuration for endpoints scheduling.

- **Rexroth Drives Interface 3.5.3.0**:

- Feature: Scheduling endpoints read using group id and update duration features.

- **Rexroth Drives Interface 3.5.1.0**:

- Feature: Adjust to local time feature for high frequency endpoints.
- Feature: Oscilloscope configuration restore with device connect/reconnect/IotGateway restart in case of back up file presence in user configuration files directory.

- **Rexroth Drives Interface 3.5.0.0**:

- Feature: Handling duplicate devices through single connection to the device.

- **AWS IoT Cloud Publisher**:

- Feature: You can now use password encrypted private keys.

- **OPC UA Device**:

- Feature: Hidden property *Publishing Interval* now visible and editable in OPC UA device configuration.

MQTT Device/MQTT Publisher/TCP IP Publisher: + Feature: You can now specify an optional **Intermediate Certificate** for TLS, if your client or server is issued not directly by a CA.

FIXED ISSUES

- **Certificates**:
- Fix: Upload of CA and intermediate certificates not possible, but required for full certificate chain validation for UA Devices connecting to a UA Server with a secure policy other than *none*. This is necessary to connect to UA Servers not providing a self-signed certificate.

  Workaround: Upload your CA- and intermediate certificates manually into folder {CertificateStore}/certs

  Certificate Store PR21 (Linux Snappy):

  ```
  /var/snap/iiot/current/IoTGateway/PKI/CA/
  ```

  Windows/Linux:

  ```
  {HOME}\IoTGateway\PKI\CA
  ```

- **MQTT Device (SUB)**:

- Fix: Possible message loss for **Persistent Sessions (NO LOSS OF DATA POLICY)** on system start up. To enable a Persistent Session, **disable Clean Session**, give a **static Client ID** and set **QoS >=1 for all participants**.

- **OPC UA Device**:

- Fix: Reconnect of OPC UA client to OPC UA server after reboot of IoT Gateway fails in certain circumstances.

- **Math Processings**:

- Fix: Possible processing data loss on system startup

- **Rexroth Drives Interface 3.5.4.0**:

- Fix: Enhanced endpoints value processing method to consider special cases like Order number.

- **Rexroth Drives Interface 3.5.0.0**:

- Fix: Updated EAL jar file to handle trend data response with empty string.
- Fix: Back up filename issue when device name has special characters('.').

- **InfluxDB v1 publisher**

- Fix: InfluxDB v1 publisher sends no basic authentication header in rest call even if configuration option "Use user and password authentication" is checked.

- **CSP Integrated Processdata Management (IPM v6)**

- Fix: Wrong error code type conversion according IPM specification Version 6.2
- Fix: New output value set only on successful read of IPM acknowledge.
- Fix: No correlation of output to input: Introduced 'TelegramId' in IPM JSON as a reference.

- **Nexeed Industrial Application System**

- Fix: Help is linked to PPM publisher documentation: Updated help for all Nexeed publishers.

- **Docker Image**

- Fix: NoInteractive mode for Docker container.

- **Processing Mode**

- Fix: Change of Recording Trigger Endpoint has no effect.
- Fix: Double value change notification with *Mode = Recording* and *Start Trigger Type = On value Changed*

- **Logservice**

- Fix: After delete of log files in Logbook the Logservice receives no log events any more.

- **UI - Auto Logout**

- Fix: After expiration of an inactive user's login time (which is 1 hour by default), the user has been automatically navigated to an unreachable site instead to the Login page.

CHANGED

- **G1GC Garbage Collector**:
- Change: The **IoT Gateway** moved to use the **G1GC** Garbage Collector by default to ensure equidistant sampling for high sampling intervals up to 100 ms. The minimal pause can be configured on demand (Edit file: *start.bat* for Windows or */var/snap/iiot/current/app/run* for PR21).

  Advantages of G1GC

- default GC from java 9 onwards

- ability to compact free memory space without lengthy pause times
- works well with large heap sizes
- works well with vertical scaling
- many tuning opportunities (unlike other GC s)

KNOWN ISSSUES

- **SCD BLE**, **CISS BLE**:
- The sensor devices can only be detected from the Device Scanner initially, if **not renamed** by user (e.g. via SCD App). If the device is once detected and configured as an IoT Gateway device, it can be renamed because it's tracked by it's unique device ID (MAC) by the IoT Gateway.

- **Rexroth Drives Interface 3.5.x.0**:

- Browser support for Rexroth Drives application is limited to Firefox, Chrome and Edge due to some incompatibility issues for angular features with older versions of IE.
- DAQ endpoints configuration is supported only for single and dual axes drives.
- High Frequency end points can either be configured as External or IOTTrigger type(not both together in same drive).

- **CISS USB**

- Not supported on Windows

IoT Gateway 3.4.0

Release date: August 2020

NEW FEATURES - HIGHLIGHTS

- **Nexeed Industrial Application System - Machine Message**: Publishes machine messages corresponding to the protocol specification Machine Message v3 to a Nexeed Industrial Application System.
- **Nexeed Industrial Application System - Measurement Message**: Publishes measurement messages corresponding to the protocol specification Measurement Message v3 to a Nexeed Industrial Application System.
- **Nexeed Industrial Application System - Process Message**: Publishes process messages corresponding to the protocol specification Process Message v3 to a Nexeed Industrial Application System.

- **CSP Integrated Processdata Management (IPM)**: Publish any process or measuring data as JSON to an IPM server

- Generates IPM telegrams with versions from 6.0 to 6.4 out of json strings that corresponds to a specific IPM JSON Schema
- Uses value buffering with persistence to avoid data loss on IoT Gateway interruptions e.g. power loss.
- Reads the acknowledgment from the IPM server after each successful publish of a IPM telegram and writes the acknowledge content as json in an output.

- **InfluxDB Publisher**: Publishes messages to an InfluxDB Server.

- **Rest Device**: Read values from any Rest service.

- **Rexroth Legacy Device Bundles 1.2.0.0**

- Added feature names for license handling.
- Used the JSSC OSGi component instead of seperate library.
- Created bundles to access parameters of rexroth legacy devices, which supports SIS protocol, CLC protocol and ASCII protocol.

- **Device Scanner**: Improved Device Scanner Application for automatic detection and easy configuring of wireless BLE (Bluetooth Low Energy) Devices similar to your smart device, next to existing USB support. Supported devices:
- Bosch **CISS** sensor (USB, BLE)
- Bosch Rexroth **SCD** sensor (BLE)
- **OPC UA Server - Custom Models Import**: Use your IoT Gateway as an **UA Gateway** and add your own UA Models into the server address space (*.xml). Fill model with data by fast and easy Endpoint value mapping using Endpoint's description prefixing *uaserver@*.
- **OPC UA Device - Time Stamp Origin**: New property int OPC UA Node configuration to select the origin of the time stamp
- **Source**: Uses the source time stamp provided by the OPC UA server
- **Server**: Uses the server time stamp provided by the OPC UA server
- **Gateway**: Uses the current IoT Gateway timestamp at the time of value notification
- **Amazon AWS Cloud Publisher**: Added support for Amazon Trusted Services (ATS) Endpoints
- **MQTT Device (SUB), MQTT Publisher (PUB)**: Support secure connection to Broker (TLS) without the need to specify a client certificate and private key, if Broker doesn't require client authentication.
- **MQTT Device (SUB)**: Added explicit selectable output data types to convert into: **STRING, BOOL, BYTE, SHORT, INT, LONG, FLOAT, DOUBLE** and the raw message as **BYTE ARRAY**. Use the **Value Picker** processing to convert this **BYTE ARRAY** in your original message data type (e.g. float[], int[], ...). The **Convert to Number** option has been removed, so please edit your device once and set the output data type properly which defaults to **STRING**.
- **Simulator**: Added signal types holding constant values (Constant Boolean, Constant Integer, Constant Float, Constant String, Pi, e, g, c) for any purposal.
- **REST API**: IoT Gateway Software supports REST API for configuring Devices, Processings and Endpoints. For further information regarding REST API please refer to the interactive Swagger documentation in Help.
- **Licensing**: The entered license key is converted to uppercase, so users just enter lowercase key characters, which speeds up the licensing process drastically.
- **Boolean Converter**: Added more selectable output data types to convert into: **BYTE, SHORT, INT, LONG, FLOAT, DOUBLE**

FIXED ISSUES

- **Microsoft Azure/Amazon Cloud/Oracle IoT Cloud/MQTT/TCP Processing**: Fixed JSON format to produce more practible and usable JSON for scalars and arrays of the following endpoint value data types:
- Unsigned Data Types (Unsigned Integer, Unsigned Long, Unsigned Byte, Unsigned Short)
- Date/Time related data

Example:

Endpoint Value is Unsigned Integer Array

[{ "_value": 1 }, { "_value": 2 }, { "_value": 3 },]

Changed to

[1,2,3]

Example:

Endpoint Value is Date or Time related Array

[{ "seconds": 1592204642 "nanos": 0 }, { "seconds": 1592204642 "nanos": 0 }, { "seconds": 1592204642 "nanos": 0 },]

Changed

["2020-06-17T14:50:44.834Z", "2020-06-17T14:50:44.834Z", "2020-06-17T14:50:44.834Z"]

- **TCP Publisher**: Fixed JSON format for EndpointMapping *Value as JSON by Endpoint Description* and *Value as JSON by Endpoint Name* if value is not number/boolean/string from *value* property to *endpoint name* property.

Example:

{ "value": 4711 }

Changed to

{ "MyEndpoint": 4711 }

- **TCP Publisher**: Processing didn't reconnect in some cases if TCP server unavailable on IoT Gateway startup. Possible message loss. The Publisher is trying to resend the most recent message after the connection is established.
- **OPC UA Server**: The exposed endpoint data types remained to *BaseDataType* (address space only) instead of reflecting the correct data type of the endpoint's value (string, float, integer,...)
- **Licensing**: If user entered a valid *VPN Basic* license key, the *Rexroth Drives Interface* license has been enabled additionally, but the *VPN Basic* license was lost after next reboot, so wrong license enabled and persisted.
- **SCD BLE**: Improved scanning usability, initial connectivity and connection durability.
- **Math Processings**: Prevent unnecessary alarms on system startup if inputs not available or temporarily invalid.
- **TCP Publisher**: Fixed possible internal error or lost message to be send during TLS handshake.

- **Certificates**: Uploading / Updating any factory shipped certificate failed (whole certificate chain rejected).
- **REST API Response Error 500**: Fixed problem response error code 500, when creating a processing.
- **Formatter**: The Quality of the input was not reflected to the output value.

- **Dashboard**: After pressing **Save**, the Linechart Widget is *immediately* shown using last input endpoint's value (if existing) instead updating on next data change.

- **Rexroth Drives Interface 3.4.3.0**:
- Fix: Usability improvement in application to redirect control to Browse feature when no device is configured.
- Test: Rexroth Drives Interface Bundles are tested on Windows(IOTG 3.0).

- **Rexroth Drives Interface 3.4.2.0**:

- Fix: Time resolution restore issue when IoT gateway system/drive restarted together.
- Fix: Quality status issue with DAQ endpoints.
- Fix: Reset feature issue with Oscilloscope signal trigger configuration on binary trigger parameters.
- Fix: Issue with Browse over network on multiple requests in a row.

CHANGED

- **Amazon Cloud Publisher (AWS Cloud)**: Disabled protocol *MQTT over WebSockets*, because of security issues requested by AWS. Please use certificate based protocol *MQTT over TLS*, which should be the default.

KNOWN ISSSUES

- **Modbus RTU**: RTU is supported but has prototype status only.

- **Rexroth Drives Interface 3.4.3.0**:

- DAQ endpoints configuration is supported only for single and dual axes drives.
- High Frequency end points can either be configured as External or IOTTrigger type(not both together per drive).

IoT Gateway 3.3.2

Release date: January 2020

NEW FEATURES

FIXED ISSUES

- **SCD BLE**: Improved scanning usability, initial connectivity and connection durability.

- **Math Processings**: Prevent unnecessary alarms on system startup if inputs not available or temporarily invalid.

- **Rexroth Drives Interface 3.4.1.0**:
- Feature: Input Validation for Signal trigger configuration for drive oscilloscope through Application.
- Fix: Binary value input issue for MPX18 with Oscilloscope signal trigger configuration.
- Fix: Wait time improvement with oscilloscope endpoints for DAQ support.
- Test: EAL Bundles are tested on Windows(IOTG 3.0).

CHANGED

KNOWN ISSSUES

- **Rexroth Drives Interface 3.4.1.0**:
- DAQ endpoints configuration is supported only for single and dual axes drives.
- High Frequency end points can either be configured as External or IOTTrigger type(not both together per drive).
- Issue with Browse over network on multiple requests in a row.

IoT Gateway 3.3.1

Release date: October 2019

NEW FEATURES

FIXED ISSUES

- **RestAPI Response Error 500**: Fixed problem response error code 500, when creating a processing.

CHANGED

KNOWN ISSSUES

IoT Gateway 3.3.0

Release date: October 2019

NEW FEATURES

- **UMATI / OPC UA Server***: Use your IoT Gateway as an **UMATI Gateway**. Added **Universal Machine Technology Interface (UMATI)** facade to the builtin UA Server: IoT Gateway can be used as an easy to setup UMATI enabler for your machine tool.

- **SCD BLE**: Connects to a Bosch SCD Sensor Device over BLE and exposes sensor live data and Threshold Violations as Endpoint values for usecase 'Short Time Experiment (STE)'. BLE requires 'bluez' Snap.

- Install 'bluez' Snap: `sudo snap install bluez`
- Complete the installation: `sudo snap connect bluez:bluetooth-control :bluetooth-control`

Officially supported Bluethooth Adapters

This BLE device is only supported using one of the following external USB Bluethooth Adapters:

- LM Technologies Bluetooth® v4.0 Dual Mode Long Range USB Adapter – LM1010

- **Publisher: Amazon/Azure/ODiN/MQTT/TCP IP**: Added support for JSON input, if endpoint mapping (output format) *JSON* selected (packing JSON in JSON)

- **OPC UA Server**: Added support for generic Object[] endpoint value types and other exotic ones given by OPC UA Device endpoint's.
- **Value Picker**: Get byte(s) out of an array and converts them into a java data type.

FIXED ISSUES

- **Publisher: Amazon/Azure/ODiN/MQTT/TCP IP**: Fixed possible invalid JSON, if endpoint mapping (output format) *JSON* selected and input string contained invalid JSON characters.

CHANGED

- **Math Calculations**: After pressing **Save**, the output is *immediately* set using last input endpoint's value (if existing) instead updating on next data change.

- **Simulator**: After pressing **Save**, the created endpoint's value are *immediately* set (not after configured signal period) instead updating on next data change.

KNOWN ISSSUES

- **Modbus RTU**: RTU is supported but has prototype status only.

IoT Gateway 3.2.0

Release date: September 2019

NEW FEATURES

- **Proxy Settings enable/disable**: It is possible to enable or disable proxy settings. If you update your system to IoT Gateway 3.2.0 this function is disabled by default. If you already use the proxy, please enable it manually once.

- **MQTT Device (SUB)**: Allow wildcards for endpoint topics (e.g. MyMachines/+/Status/Temperature, MyMachines/Machine1/Status/#)

- **MQTT Publisher (PUB)**: Check for wildcarded endpoint topic's (not allowed for subscribe)
- **Modbus Device**: Read data values from Modbus devices via TCP or UDP
- **XM Parameter**: Reads data from a remote Parameter Device
- **MS SQL Publisher**: Publishes data to a MS SQL Server

FIXED ISSUES

- **Bundles/Licensing**: Any user disabled bundles are enabled after booting the system again, if any bundle related license is not licensed (evaluation).

- **MQTT (Subscribe)**: Fixes frequently 'Connection Lost' if user entered a wildcarded endpoint topic

- **TCP/IP Publisher (TLS)**: Connection interruption didn't recover if TLS (SSL) used and server communication lost for more than 10 s.
- **Oracle IoT Cloud Publisher (TLS)**: Can't connect to any Oracle IoT Cloud instance, if no port present (Server URL varification failed).
- **Math Calculator**: Warning not updated/misleading, if datatype of any input endpoint changed to a unsupported one (e.g. boolean), while another warning already present.
- **HTTP REST cloud processings**: Endpoint values are now kept in buffer if no connection exists. If the maximum buffer size is reached only the oldest values get lost.

CHANGED

- **IoT Insights Advanced**: 'IoT Insights Advanced' was renamed to 'IoT Insights Performance'. This change is not backward compatible - Please adapt configurations of 'IoT Insights Advanced' to 'IoT Insights Performance' manually.

- **All cloud and database processings**: After creation of the processing the current values of the referenced endpoints will be sent to the target initially.

KNOWN ISSSUES

- **Modbus RTU**: RTU is supported but has prototype status only.

IoT Gateway 3.1.0

Release date: June 2019

NEW FEATURES

- **Protected Edge**: IoT Gateway Software is supporting VPN and Firewall.

- **Rexroth Drives**: IoT Gateway Software is supporting Rexroth Drives.

KNOWN ISSSUES

- **REST client**: The endpoint values are not buffered in the REST client.

- **Time zone**: If you change the time zone, it will be reset to UTC within one minute.

- **Web Interface**: If you open the web interface during the boot time, not all applications may appear on the home screen. Please reload the page in the browser to get all applications.
- **Boot Time**: The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up the boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.
- **Beckhoff Device**: TwinCAT 2 software systems which does not support an ADS-sum command can not be connected.
- **CISS Sensor**: If a CISS sensor is plugged and a CISS Device configuration is created an alarm message that is quit immediately is written into the logbook. This also happens on startup of the IoT Gateway if the aforementioned constellation is given.
- **Backup/Restore**:
- If you have installed add on Bundles, they will be deleted at a restore.
- No Bundle states (enabled / disabled) are stored in the backup file (check Menu -> Bundles).
- Formatter: If the mustache template is used and if the value of Input Endpoint has not changed since last publish, empty frames are sent.
- Rest Publisher: Risk of data loss because no value buffering is used. Only the current input value is sent.

IoT Gateway 3.0.0

Release date: May 2019

NEW FEATURES

- **Licensing**:

IoT Gateway Software is running in Evaluation and will be stopped after expiration of 2 hours (check Menu -> Bundles). Please enter your purchased Feature license key(s) to enable feature(s) including the Bundles related (Menu -> Licenses).

IMPORTANT: Some bundles are not started automatically for evaluation period after system startup. Please navigate to *Bundles* menu and enable them manually on demand. After enabling press *F5* to refresh the landing page.

Bundles that have to be started for evaluation are currently:

- OPC UA Server
- OPCON Configuration

CHANGED

- **S20-ETH-BK**: If the module equipment of the S20-ETH-BK changes, obsolete Endpoints are no longer deleted automatically.

- **OPC UA Server**: The Bundle is disabled on delivery and can be enabled through the `Bundles` window under the menu.

KNOWN ISSSUES

- **Web Interface**: If you open the web interface during the boot time, not all applications may appear on the home screen. Please reload the page in the browser to get all applications.

- **Boot Time**: The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up the boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.

- **Beckhoff Device**: TwinCAT 2 software systems which does not support an ADS-sum command can not be connected.
- **CISS Sensor**: If a CISS sensor is plugged and a CISS Device configuration is created an alarm message that is quit immediately is written into the logbook. This also happens on startup of the IoT Gateway if the aforementioned constellation is given.
- **Backup/Restore**:
- If you have installed add on Bundles, they will be deleted at a restore.
- No Bundle states (enabled / disabled) are stored in the backup file (check Menu -> Bundles).
- **Formatter**: If the mustache template is used and if the value of Input Endpoint has not changed since last publish, empty frames are sent.
- **Rest Publisher**: Risk of data loss because no value buffering is used. Only the current input value is sent.

IoT Gateway 2.3.1

Release date: April 2019 - Beta Version

Device - S20-ETH-BK

Processing - Cloud Service

- Fixed: Microsoft Azure - Automatic reconnection did not work properly

OPC UA Server / OPC UA Device

- Fixed: New server and device certificates contain current IoT Gateway IP address instead of 127.0.0.1 if no DNS available. This prevents **BadCertificateHostNameInvalid** exception on client side. Please force certificate recreation by deletion of the certificate store and reboot:

sudo rm -r /var/snap/iiot/current/IoTGateway/PKI

KNOWN ISSSUES

- If you open the web interface early on boot time, not all applications may appear on the home screen. Please reload the page in the browser to get all applications.

- Depending on the amount of confgurations, changing an Endpoint configuration may not be displayed immediately on the web interface. Please refresh the screen in your browser in order to display the changes.

- The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.
- OPC UA Device: Connection to an OPC UA Server fails if it provides a certificate with an empty string instead of null.
- Beckhoff Device: TwinCAT 2 software systems which does not support an ADS-sum command can not be connected.
- Timer: If the quality of the Output Endpoint is "BAD" it turns to "GOOD" as soon as the quality of the corresponding Input Endpoint is "GOOD" and its value has changed. If the value has not changed, it stays "BAD".
- CISS: If a CISS sensor is plugged and a CISS Device configuration is created an alarm message that is quit immediately is written into the logbook. This also happens on startup of the IoT Gateway if the aforementioned constellation is given.

IoT Gateway 2.3.0

Release date: March 2019 - Beta Version

Device - S20-ETH-BK

- Fixed: The module configuration was scanned permanently.

Processing - Cloud Service

- New: IoT Insights Advanced - Publishes messages in Bosch Rexroth 'IoT Insights' format to an Influx DB (Advanced edition).

KNOWN ISSSUES

- If you open the web interface early on boot time, not all applications may appear on the home screen. Please reload the page in the browser to get all applications.

- Depending on the amount of confgurations, changing an Endpoint configuration may not be displayed immediately on the web interface. Please refresh the screen in your browser in order to display the changes.

- The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.
- OPC UA Device: Connection to an OPC UA Server fails if it provides a certificate with an empty string instead of null.
- Beckhoff Device: TwinCAT 2 software systems which does not support an ADS-sum command can not be connected.
- Timer: If the quality of the Output Endpoint is "BAD" it turns to "GOOD" as soon as the quality of the corresponding Input Endpoint is "GOOD" and its value has changed. If the value has not changed, it stays "BAD".
- CISS: If a CISS sensor is plugged and a CISS Device configuration is created an alarm message that is quit immediately is written into the logbook. This also happens on startup of the IoT Gateway if the aforementioned constellation is given.

IoT Gateway 2.2.0

Release date: February 2019 - Beta Version

Devices

- New: CISS USB - Reads data from a CISS V2 USB sensor.

- New: UMG96RM-EL - Reads data from a UMG96RM-EL device.

- New: Simulator - Generates a set of various test signals with a sampling resolution of 100 ms (10 values per second) and exposes as Endpoint values.
- Changed: OPC UA - Added support for complex data types (Structs, ExtensionObjects).

Processing - Cloud Service

- New: IoT Insights Standard - Publishes messages in Bosch Rexroth 'IoT Insights' format to an Influx DB (Standard edition).

- Changed: Bosch Online Diagnostics Network (ODiN) - Removed deprecated round option for DAQ processing (ODiN Protocol V2.0).

Processing - Calculation

- New: Counter - Supports a (non-realtime) resettable Counter, which increases a numeric value by a given step from start to end.

- New: Boolean Calculator - Supports a Boolean calculator for simple boolean operations (AND, OR, XOR, NAND, NOR, XNOR).

- New: Boolean Converter - Provides a conversion from a boolean input value to any numeric output value.
- Changed: Math Calculator - Changed input arguments, you need to reconfigure your processing (only if used).

Backup/Restore

- New: Backup or restore your IoT Gateway configuration.

System

- New: Factory Reset - Reset your IoT Gateway to factory default via the settings menu.

- New: The command `iiot.cmd` in Ubuntu Core to execute useful functions, like clean up the iiot runtime environment, get product info, initialize debug mode, initialize logs environment, initialize the Felix Webconsole.

- Changed: Bundle Configurator was renamed to Bundles.
- Bugfix: Certificates - Upload of customer self-signed certificates failed in some cases (security checks failed).

KNOWN ISSSUES

- If you open the web interface early on boot time, not all applications may appear on the home screen. Please reload the page in the browser to get all applications.
- Depending on the amount of confgurations, changing an Endpoint configuration may not be displayed immediately on the web interface. Please refresh the screen in your browser in order to display the changes.
- The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.
- OPC UA Device: Connection to an OPC UA Server fails if it provides a certificate with an empty string instead of null.
- Beckhoff Device: TwinCAT 2 software systems which does not support an ADS-sum command can not be connected.
- Timer: If the quality of the Output Endpoint is "BAD" it turns to "GOOD" as soon as the quality of the corresponding Input Endpoint is "GOOD" and its value has changed. If the value has not changed, it stays "BAD".
- CISS: If a CISS sensor is plugged and a CISS Device configuration is created an alarm message that is quit immediately is written into the logbook. This also happens on startup of the IoT Gateway if the aforementioned constellation is given.

IoT Gateway 2.1.1

Release date: October 2018 - Beta Version

Devices

- Bugfix: MQTT Device - Connection couldn't initiated if the Broker was not accessible after pressing `Save`.
- Bugfix: S20-ETH-BK - During startup or shutdown of the IoT Gateway additional Endpoints were created.

Processing

- Bugfix: MongoDB Publisher - Writes the DateTime field now in the format expected by DAS Server.
- Bugfix: MQTT Publisher - Connection couldn't initiated if the Broker was not accessible after pressing `Save`.

OPCON

- Bugfix: OPCON Application - Writes a valid configuration file independent of the used OSGi framework.

System

- Bugfix: Proxy Settings could not be saved, if empty port entered.

KNOWN ISSSUES

- OPC UA Device: Connection to an OPC UA Server fails if it provides a certificate with an empty string.

IoT Gateway 2.1.0

Release date: September 2018 - Beta Version

Devices

- New: TCP/UDP Data Acquisition - Receives data from a DAQ Device.

Processing

- New: MongoDB - Publishes messages to a MongoDB Server.
- Changed: Formatter - Enhanced mustache syntax, introduced for Bosch Production Performance Manager - Measurement (bold key words have been added):
- Inputs: name, **unit**, values, **firstInput**, lastInput
- Value: value, time, **timeOffset**, **firstValue**, lastValue, valueAsBool, qualityIsGood

Dashboard

- New: Guest access can be activated or deactivated via the settings menu.

Optimizations

- Performance and usability improvements, especially on the web interface.
- Stabilization and various bug fixes.

KNOWN ISSSUES

- If you open the web interface early on boot time, not all applications may appear on the home screen. Please reload the page in the browser to get all applications.
- The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.
- We suggest maximum 100 Endpoints, maximum 20 Endpoints per device because of restrictions on the web interface. If you need many Endpoints, please create further devices.

IoT Gateway 2.0.1

Release date: August 2018 - Beta Version

Devices

- Bugfix: S20-ETH-BK - Reading S20-DI channels fixed.

Diagnostics

- Bugfix: Endpoints - 'Show details' doesn't open with a special character in Endpoint name fixed.

KNOWN ISSSUES

- The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.
- We suggest maximum 100 Endpoints, maximum 20 Endpoints per device because of restrictions on the web interface. If you need many Endpoints, please create further devices.

IoT Gateway 2.0.0

Release date: July 2018 - Beta Version

Devices

- New: A-B ControlLogix - Reads data from an Allen-Bradley ControlLogix device.

Processing

- Removed: Sum and Diff - Use Math Calculator instead.
- Removed: Scale - Use Range Converter instead.
- Removed: Bosch Energy Platform - Use Bosch Production Performance Manager - Measurement instead.
- Removed: Sensor Cloud - Removal without replacement.

OPC UA Server

- Removed: Security modes 'Basic128Rsa15' and 'Basic256', because of security issues (security policies that have been deprecated in OPC UA 1.04).

Dashboard

- New: Guest access. The Dashboard is accessible without login and no logout is forced. Use `https://<IP>:8888/dashboard/index.html` for direct browsing.

Device Portal

- New: Device Portal Client - Manage plugins via the Device Portal.
- Note: The Bundle is disabled on delivery and can be enabled through the Bundle Configurator.

OPCON

-Changed: The Bundle is disabled on delivery and can be enabled through the Bundle Configurator.

System

- Changed: OSGi framework changed. Bosch IoT Gateway 9.0.0 (formerly ProSyst mBS) instead of Apache Felix.
- Changed: Hardware changed. IndraControl PR21 instead of IndraControl XM.
- Changed: Operating system changed. Ubuntu Core instead of VxWorks.
- Changed: Incompatible improvements.
- The default value of a Value Change Trigger for Devices is `Quality or Value` instead of `Quality or Value or Timestamp`.
- Bundle endpoint.api: The method `getTimestamp()` in the interface `Value` has changed its return type from `Date` to `Instant`.
- Bundle endpoint.api: Deprecated interfaces have been removed: `AlarmTrigger2`, `ValueChangeNotifyer2`, `Processor2`, `PropertyService2`

Optimizations

- Performance and usability improvements, especially on the web interface.
- Stabilization and various bug fixes.

KNOWN ISSSUES

- The boot time on PR21 can take up to 4 minutes if network interfaces are configured but no network cable is plugged in. To speed up boot time, plug in a network cable or reconfigure the network settings. Please use `Netplan` under Ubuntu Core.
- We suggest maximum 100 Endpoints, maximum 20 Endpoints per device because of restrictions on the web interface. If you need many Endpoints, please create further devices.

IoT Gateway 1.6.0

Release date: March 2018 - Beta Version

Devices

- New: MQTT - Subscribes topics from a MQTT Broker and exposes as Endpoint values.
- New: OPC UA - Authentication to server with username and password.
- New: S/IP - Read values from a S/IP device as single read access.
- New: S20-ETH-BK - Read analog and digital values from the input modules of a S20-ETH-BK device.
- Note: The Endpoints are generated automatically. We recommend not to use the 'Add Endpoint' button on the web interface.
- Note: Depending on how many modules are attached to the S20-ETH-BK, the number of Endpoints may increase beyond the recommended limit of 20 Endpoints per device. This can affect the display performance on the web interface, please see KNOWN ISSSUES.
- New: Value Change Trigger - Define the trigger when the Endpoint value change event will be sent.
- Quality: Triggers a value change event only if the quality changes.
- Quality or Value: Triggers a value change event if either the quality or value changes.
- Quality or Value or Timestamp: Triggers a value change event if either the quality, value or timestamp changes.

Processing

-Changed: 'On Trigger Event' is now displayed as 'Recording' in the Processing 'Interval' drop down. - Note: Your configuration is still valid and does not need to be changed.

Processing - Cloud Service

-Changed: MySQL - In mode 'IoT Schema', the MAC address is written without separator '-' to the database. If several network adapters are available, the first found MAC address will be used.

Processing - Calculation

- New: Average - Supports various average calculation algorithms.
- New: Dead Band - Supports a relative Dead Band (Neutral Zone, Hysteresis). The output value does not change, until the input value exceeds a relative threshold in percent.
- New: Factor (y = a *x + b)* - *Supports a linear factor computation (y = a* x + b).
- New: Limiter - Provides a simple limiter. If the input value is lower than the lower bound, the output value equals the lower bound. If the input value is higher than the upper bound, the output value equals the upper bound.
- New: Math Calculator - Supports a simple math calculator for basic operations.
- New: Nelson Rules Monitor - Provides a Nelson Rules monitor for value out-of-control detection. If the selected rule is broken, the output value equals 'true', else 'false'.
- New: Range Converter - Provides a linear conversion from a given input value range to another output value range using the two-point form of the line equation: y = (y2 - y1) / (x2 - x1) * (x - x1) + y1
- New: Threshold Monitor - Provides a threshold monitor for value limit detection. If the input value is lower than the lower bound or higher than higher bound, the boolean output value equals 'true', else 'false'.
- New: Timer - Provides the ability to trigger a timed signal with reference to the value of a certain Endpoint. -Changed: Formatter - A simple insert of an Endpoint value or timestamp is possible besides the existing mustache syntax.

OPC UA Server

-Changed: UA Server Certificate changed. After updgrading to version 1.6.0 the UA Server won’t run in some cases, because the Server Certificate has changed. Because of previously wrong set subject URI containing 'localhost' instead of the host name of the device, OPC UA clients may have received an 'BadCertificateUriInvalid' status code during certificate validation which failed to connect. Please do the following steps to support the new UA Server Certificate on IndraControl XM: - Login with any SFTP Client (e.g. WinSCP, initial login: boschrexroth, boschrexroth) - Delete file /OEM/ProjectData/CertificateStore/private/IoTGateway OPC UA Server.der - Delete file /OEM/ProjectData/CertificateStore/private/IoTGateway OPC UA Server.pem - Reboot the IoT Gateway

System

- New: The description of a device, calculation or cloud service is displayed in the web interface.
- New: RESTful Services allows now `PUT` and `DELETE`. `POST` and `GET` have been already supported. -Changed: Menu restructured in web interface.

Optimizations

- Performance improvements, especially loading the web interface.
- Memory optimizations, especially for the support on IndraControl XM.
- Stabilization and various bug fixes.

KNOWN ISSSUES

- The IoT Gateway does not start sporadically, because of a crash in the Java Virtual Machine (JVM). If the web interface cannot be reached within 10 min., please restart the IndraControl XM - *Defdb00198834 Undefined PLT symbol*
- Boot time about 5 minutes until web interface is available. Use Bundle Configurator to optimize boot time.
- We suggest maximum 100 Endpoints, maximum 20 Endpoints per device because of restrictions in the web interface. If you need many Endpoints, please create further devices.
- If the 'Certificates' menu entry is missing, please do the following steps like described in 'New UA Server Certificate'.

IoT Gateway 1.5.0

Release date: December 2017 - Beta Version

Devices

- New: Beckhoff Device - Read data from Beckhoff ADS Devices.
- New: OPC DA - Read data from an OPC DA device.

Processing - Cloud Service

- New: REST - Publishes REST requests to a WEB Server.
- New: TCP/IP - Publish data to a TCP Server.

OPC UA Server

- New: Unsecure OPC UA (Port 9999) Endpoints - SecurityMode: none, SercurityPolicy: none.

IndraControl XM

- New: Network Time Protocol (NTP) to synchronize the clock of the XM2 control with a time server.
- New: Activate/Deactivate FTP (Port 21) / OPC UA (Port 4840).
- New: Boot-LED BT displays the IoT Gateway starting progress. -Changed: Firmware 14V20 - If you have ordered an IoT Gateway with PLC option please use at least IndraWorks 14V20.

System

- New: Configure your IoT Gateway proxy.
- New: Activate/Deactivate OSGi Web Console.
- New: Change your IoT Gateway password.

Optimizations

- This version contains additional minor enhancements and fixes.

KNOWN ISSSUES

- The IoT Gateway does not start sporadically, because of a crash in the Java Virtual Machine (JVM). If the web interface cannot be reached within 10 min., please restart the IndraControl XM - *Defdb00198834 Undefined PLT symbol*
- Boot time about 5 minutes until web interface is available. Use Bundle Configurator to optimize boot time.
- We suggest maximum 100 Endpoints, maximum 20 Endpoints per device because of restrictions in the web interface. If you need many Endpoints, please create further devices.

IoT Gateway 1.4.1

Release date: September 2017

Beta version. We suggest maximum 100 Endpoints, maximum 20 Endpoints per Device.

System

- Bugfix: Avoid sporadic loss of network communication caused by faulty configuration of network controller. *Defdb00196887*

Optimizations

- This version contains additional minor enhancements and fixes.

KNOWN ISSSUES

- Boot time about 5 minutes until web interface is available. Use Bundle Configurator to optimize boot time.

IoT Gateway 1.4.0

Release date: July 2017

Beta version. We suggest maximum 100 Endpoints, maximum 20 Endpoints per Device.

Devices

- New: S5 Control - Read data from a Siemens S5 control.

Processing - Cloud Service

- New: Bosch Production Performance Manager - Machine Message
- New: Bosch Production Performance Manager - Process Message
- New: MySQL - Send data to a MySQL Server.

Processing - Calculation

- New: Scale - Scales an input value to a new output value.

System

- New: Bundle Configurator - Install or uninstall basic or custom bundles.

Optimizations

- This version contains additional minor enhancements and fixes.

KNOWN ISSSUES

- Boot time about 5 minutes until web interface is available. Use Bundle Configurator to optimize boot time.

IoT Gateway 1.3.0

Release date: April 2017

Beta version. We suggest maximum 100 Endpoints, maximum 20 Endpoints per Device.

Devices

- enhancements and bug fixes

Processing - Cloud Service

- New: Bosch Energy Platform
- New: Bosch Online Diagnostics Network (ODiN)
- New: Microsoft Azure
- New: MQTT
- New: Oracle IoT Cloud Service
- enhancements and bug fixes

Processing - Calculation

- New: Formatter

Dashboard

- enhancements and bug fixes

Diagnostics

- enhancements and bug fixes

S20 Configuration

- New: Predefined projects for preselected configurations
- New: Remote project generator via email

OPCON Configuration

- New

OPC UA Server

- enhancements and bug fixes

KNOWN ISSSUES

- Boot time about 5 minutes until web interface is available.
- Connection breaks to cloud services can cause the web interface to freeze. We recommend to restart your device.

IoT Gateway 1.2.1

Release date: December 2016

Beta version. First release.

Devices

- New: Logic
- New: OPC UA
- New: S20 Analog Input

- New: S20 Digital Input
- New: S7 Control
- New: System

Processing - Cloud Service

- New: Bosch Production Performance Manager - Measurement
- New: Sensor Cloud

Processing - Calculation

- New: Diff
- New: Sum

Dashboard

- New

Diagnostics

- New

OPC UA Server

- New