



Technical Release Notes

Version 5.11

Manual



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General

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1 General

1.1 License Management

 To use the offline license file, the license must be encrypted by the new LicenseEncryptor of version 5.11. A license file of an older version will become unusable.

1.2 Passwords

 All passwords in configuration files (properties/xml) must be encrypted. Plain-text passwords will no longer work.

1.3 Minimum technical requirements



- The minimum required **Java** version is Java 11 OpenJDK
- The minimum required **Tomcat** version is 9.x
- **MS SQL Server 2014** is not supported anymore.
- **ORACLE available for 12.2 and higher only**
(see <https://flywaydb.org/documentation/database/oracle>)

 For an overview of updated and discontinued products, refer to the document **FORCAM FORCE™ System Requirements**

1.4 fmodeller in separate tomcat

fmodeller will be installed into a separate tomcat to separate businesslogic configuration from reporting and visualization (NewOffice) applications.

1.5 Email services

The javax email service can be used by adding javax.mail-1.5.6.jar:

ffworkbench-tomcat

fftracing-aquisition-tomcat

fftracing-processing-tomcat

1.6 ActiveMQ login required

When creating the artifactory broker, we must use the **--require-login** option instead of **--allow-anonymous**. This will make sure that username and password are required for sending messages via ActiveMQ. This is mandatory from 5.11 on to increase security. For existing systems, either the broker configuration must be recreated or the `artemis-broker/etc/login.config` must be changed manually.

The following config file represents login configuration for anonymous access:

```
activemq {
  org.apache.activemq.artemis.spi.core.security.jaas.PropertiesLoginModule sufficient
  debug=false
  reload=true
  org.apache.activemq.jaas.properties.user="artemis-users.properties"
  org.apache.activemq.jaas.properties.role="artemis-roles.properties";

  org.apache.activemq.artemis.spi.core.security.jaas.GuestLoginModule sufficient
  debug=false
  org.apache.activemq.jaas.guest.user="system"
  org.apache.activemq.jaas.guest.role="amq";
};
```

Change it to the following:

```
activemq {
  org.apache.activemq.artemis.spi.core.security.jaas.PropertiesLoginModule required
  debug=false
  reload=true
  org.apache.activemq.jaas.properties.user="artemis-users.properties"
  org.apache.activemq.jaas.properties.role="artemis-roles.properties";
};
```

The following two changes were applied:

The **GuestLoginModule** configuration was removed completely. The **PropertiesLoginModule** was set from sufficient to required. In order to connect to activemq, you need to specify the following properties in `common.properties` (the password must be encrypted like the other passwords):

```
activemq.server.user=system
activemq.server.password=gF6zlyYGH4CbDcSwWC9GJw==
```

1.7 Common properties

The configuration parameters for FORCE applications were moved from `context.xml` files into property files. This is a pre-requirement for containerization but comes also with some advantages:

- Common configuration options like db connection can be shared and must only be defined once.
- A central place for the complete force configuration.

General

How to migrate from context.xml to properties:

The distribution.zip contains a tool for migrating context.xml files into property format. It is called **java-services.tomcatContextFilesMigration**.

1. Extract the zip directory and change into the created subdirectory on a command line.
 2. Call the run-migration.bat file with the path to your installation
[run-migration.bat F:\ForcamForce\app]
- ➔ This will create a directory F:\ForcamForce\app\conf containing all the required property files. The original file will be backed up and replaced with a new file that should look like this:

```
<?xml version="1.0" encoding="utf-8"?>
<Context>
  <!-- Default set of monitored resources -->
  <WatchedResource>WEB-INF/web.xml</WatchedResource>

  <!--The logging properties are queried before any spring is initialized so it is not
possible to pass them via PropertyConfigurer in any way-->
  <Environment name="log/logRoot" type="java.lang.String" value="logs"/>
  <Environment name="log/dateDirNamePattern" type="java.lang.String" value="yyyy-MM-dd"/>

  <Environment name="application/name" type="java.lang.String" value="${application}"/>
  <Environment name="config/path" type="java.lang.String" value="${config.dir}"/>
</Context>
```

The placeholders will be replaced:

- `${application}`
The name of the application will match the name of the respective property file.
- `${config.dir}`
The path to the created configuration directory.

1.8 ffauth - ffignite dependency

The following entries must be added to ffauth context.xml (example context.xml):

```
...
  <Environment name="ignite/discoverySpi/localPort" type="java.lang.String" value="48510"/>
  <Environment name="ignite/discoverySpi/ipFinder/addresses" type="java.lang.String"
value="127.0.0.1:48500..48520"/>
  <Environment name="ignite/communicationSpi/localPort" type="java.lang.String"
value="48100"/>
...
```

ffignite must be started before **ffauth**.

- ⚠ If you have already migrated to property file format, then replace the slashes with dots and add to ffauth.properties file.

General

Background: ffauth SSO tickets are now stored in an ignite persistent cache to ensure that users are still logged in after a restart of ffauth. Even more important: At the same time, it allows users to log out without problems after a restart of ffauth.

1.9 DACQ ini-file

Due to the required authentication for ActiveMQ, the javis.ini needs to be extended with the following parameters:

```
Additional Parameters
...
[messaging]
msgServiceUser=...
msgServicePassword=...
The javis.ini_template has been updated accordingly and can be used as template.
...
```

1.10 OpenOffice Service in Worker & NewOffice

It is no longer necessary to install OpenOffice as a service. This has become obsolete with version 5.11.0 and higher. The service was used in the Shopfloor Terminal & Office modules for document transformation and is now being done without OpenOffice service.

Print labels from SFT

During the printing of PDF labels, the dependency on Open Office service is now removed. The transformation of RTF doc to PDF file is done via third-party API. Therefore it is no longer necessary to install OpenOffice as service for file transformation. This is now handled by Java libraries themselves, which means that a special service or configuration is not needed.

1.11 ERP Download

The ERPDownload.xsd has been changed. When using a version ≥ 5.11 , only one **Operations** Tag is allowed (before, multiple Operations tags were allowed).

176	-	<xs:element name="Operations" minOccurs="0" maxOccurs="unbounded"/>
176	+	<xs:element name="Operations" minOccurs="0">
177	177	<xs:complexType>
178	178	<xs:sequence>
179	179	<xs:element name="Operation" type="ord:OperationType" maxOccurs="unbounded"/>
180	180	</xs:sequence>
181	181	</xs:complexType>
182	182	</xs:element>

1.12 JDE Interface changes

The database configuration will now read through the `config.properties` file which exists under the configuration folder of the tomcat.

JDE interface now also supports the SQL server. Add the following jar in lib folder of tomcat: `mssql-jdbc-7.4.1.jre11.jar`

Perform the required data base configuration in the property file:

```
database.name=${database.name}
database.jdbc.driverClassName=${database.jdbc.driverClassName}
database.jdbc.url=${database.jdbc.url}
database.schema=${database.schema}
database.jdbc.username=${database.username}
database.jdbc.password=${database.password}
configuration.modulDefaultImport=true
```

Remove this configuration from the server `context.xml` file. Now the `context.xml` will be as follows:

```
<?xml version="1.0" encoding="utf-8"?>
<!--
Licensed to the Apache Software Foundation ...-->
<!-- The contents of this file will be loaded for each web application -->
<Context>
<!-- Default set of monitored resources -->
<WatchedResource>WEB-INF/web.xml</WatchedResource>
<!-- Uncomment this to disable session persistence across Tomcat restarts -->
<Manager pathname="" />
<!-- Uncomment this to enable Comet connection tacking (provides events
on session expiration as well as webapp lifecycle) -->
<!--
<Valve className="org.apache.catalina.valves.CometConnectionManagerValve" />
-->
<!--The logging properties are queried bevore any spring is initialized so it is not possible to pass them via PropertyConfigurer in any way-->
<Environment name="log/logRoot" type="java.lang.String" value="logs"/>
<Environment name="log/dateDirNamePattern" type="java.lang.String" value="yyyy-MM-dd"/>
</Context>
```

1.13 Configurable scheme for iFrames (ffworker & ffnewoffice)

The following environment entry must be added into the ffworker configuration file, ffworker.properties (replace the value as per the requirement):

```
#iFrame scheme for operation view details  
avo.details.iframe.scheme=auto
```

The following environment entry must be added into the ffnewoffice configuration file, ffnewoffice.properties (replace the value as per the requirement):

```
#iFrame scheme for risc visualization  
risc.visu.iframe.scheme=auto
```

2 Artifactory

Artifactory has been updated to version 6.14.0.

- ① The distribution.zip delivers a **artifactory_config-1.0-prod.zip** file, which must be imported for NEW installations. For upgrading existing installations, see instructions in chapter “Central Artifactory Fallback”

3 Security

3.1 SSO with Active Directory for Office and Modeller

For SSO with Active Directory, the common-modules.jndi-5.11-SNAPSHOT.jar - file needs to be moved to:

- ffnewoffice-tomcat\lib
- ffmodeller-tomcat\lib

For docker, the file also needs to be moved to:

- install\docker\ffnewoffice\lib
- install\docker\ffmodeller\lib

To configure SSO, add the following parts:

- context.xml

```
<ResourceLink global="forcam/ffoffice/auth" name="forcam/ffoffice/auth"
type="com.forcam.na.common.jndi.JNDIMap"/>
```

- server.xml

```
<Resource description="user authentication"
type="com.forcam.na.common.jndi.JNDIMap"
factory="com.forcam.na.common.jndi.JNDIMapFactory"
name="forcam/ffoffice/auth"
mode="AUTH_EXTERNAL_AD"
<!-- URL to Ldap system, use ldaps protocol and port 636 for SSL/TLS -->
provider_url_1="ldap://10.48.116.40:389"
base_dn_1="dc=sso,dc=loc"
user_suffix_1="sso.loc"
<!-- User suffix of ldap system -->
query_user_name_1="user" <!-- Ldap user name -->
query_user_pwd_1="encryptedPwd" <!-- Encrypted Ldap user password -->
<!-- optional part for second user -->
provider_url_2="ldap://10.48.116.40:389"
<!-- URL to Ldap system, use ldaps protocol and port 636 for SSL/TLS -->
base_dn_2="dc=xy,dc=org"
user_suffix_2="ou=users,dc=xy,dc=org" <!-- User suffix of ldap system -->
query_user_name_2="query" <!-- Ldap user2 name -->
query_user_pwd_2="encryptedQueryPwd"/><!-- Encrypted Ldap user2 password -->
<Connector port="19009" protocol="AJP/1.3" redirectPort="12443" connectionTimeout="-1"
"tomcatAuthentication="false"/>
<!-- use port of module: 19009 newoffice, 15009 workbench -->
```

4 Workbench

4.1 Operation management

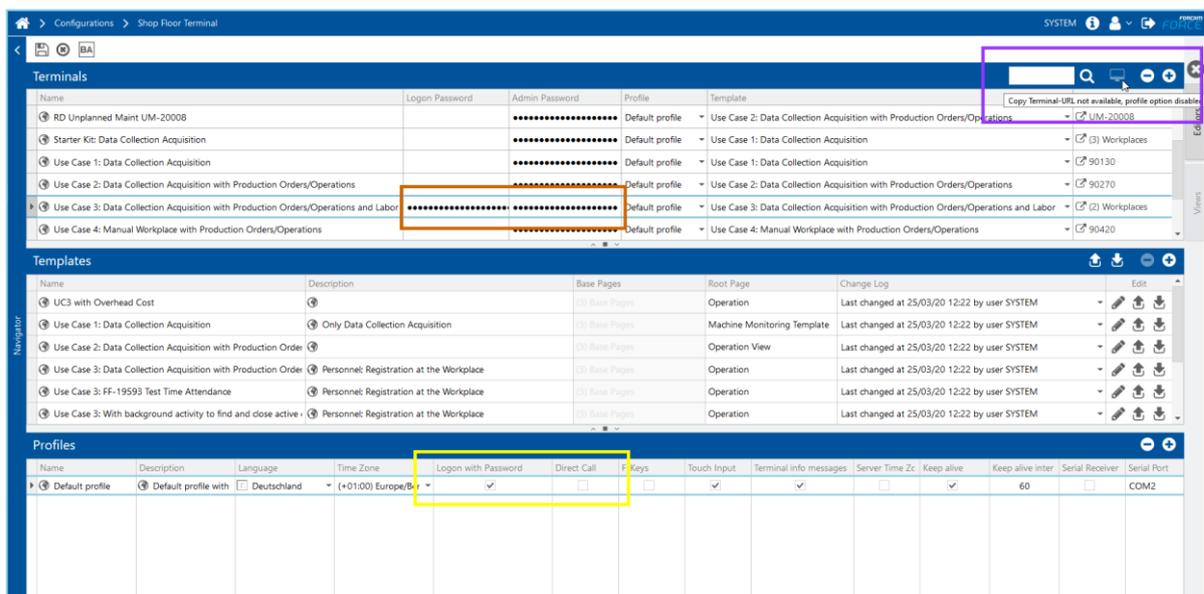
The configuration of color models is renewed, containing default values.

4.2 Removed password from SFT direct link

Passwords from SFT direct link and clear text password in fields of SFT editor are removed.

When creating a SFT-link for direct usage in the Shopfloor, the created link has previously shown the defined password in clear letters. This has been removed.

- A direct link to a SFT should NEVER contain a password - neither encrypted, nor clear text. So this has been removed. The URLs no longer contain passwords.
- The creation of a terminal link should not be possible if the SFT profile does not support direct links. The “create URL” icon has an additional tooltip now. If the profile does not support direct links, the icon is disabled and shows a hint as tooltip, saying that the profile does not support this functionality.
- The passwords in the Workbench were readable in clear text in the SFT configurator. These fields have been replaced by password fields with dots instead of clear text.



5 BridgeAPI

5.1 General changes

A new API version v3 has been introduced. Breaking changes in this API are mentioned explicitly in the following notes

- Removal of a JSON property
- Renaming of a JSON property
- General restructuring in the design of existing representations

A UUID has been introduced for materials.

The ISO_8601 timestamp format which is returned by the API has been standardized. An offset of zero is now stated numerically as "+00:00" instead of the special representation "Z"

5.2 Authentication

The Bridge API authentication has been changed. The following OAuth2 flows are now supported:

- Authorization Code
- Client Credentials
- Refresh Token

Authentication with one of the mentioned flows is mandatory. For all flows, `ffauth` is required. The new field `refresh_token` has been added to the token response.

The old token URL `/ffwebservices/oauth/token` is **deprecated**, the new token URL is `/ffauth/oauth2.0/accessToken`.

 It is now required to actively request the necessary scopes when requesting a token.

When using **client credentials grant**, a token can be requested by a simple GET request:

```
https://{host}:25443/ffauth/oauth2.0/accessToken?client_id={client_id}&client_secret={client_secret}&grant_type=client_credentials&scope=read
```

or

```
https://{host}:25443/ffauth/oauth2.0/accessToken?client_id={client_id}&client_secret={client_secret}&grant_type=client_credentials&scope=read%20write
```

The following roles can be defined for clients in the Workbench system configuration:

- TDM_DOCS
- TDM
- CAQ
CAQ_DOCS
- COMMAND_CALLBACK_DOCS
COMMAND_CALLBACK (formerly OPENAPI_EXTENDED)
- DETAILED_SCHEDULING
DETAILED_SCHEDULING_DOCS
- ANALYTICS
ANALYTICS_DOCS
- CUSTOMIZED
CUSTOMIZED_DOCS
- STAFF_RESPONSIBILITY
STAFF_MEMBER_MINIMAL
- ERP_UPLOAD
ERP_DOWNLOAD
- ERP_DOCS

 To ensure security, there is no automatic migration to the new roles.

When using **authorization code grant**, FORCAM FORCE™ users with user permissions in addition to the clients must be configured in the Workbench.

 When a customer SSO is used (as for BMW Sideminder, Depuy IIS), the authorization code flow is not supported.

The authorization code URL is:

```
https://{host}:25443/ffauth/oauth2.0/authorize
```

The token endpoint is:

```
https://{host}:25443/ffauth/oauth2.0/accessToken
```

The redirect URI is:

```
http(s)://{host}:{port}/ffwebservices/swagger/oauth2-redirect.html
```

More details about how to authenticate with **authorization code grant** can be found here:

```
https://apereo.github.io/cas/6.1.x/installation/OAuth-OpenId-Authentication.html#authorization-code
```

5.3 Operation API

The properties **startDate** and **endDate** have been added to the operation model which is returned by GET /operations and GET /operations/{operationId}.

The properties **targetStartDate** and **targetEndDate** have been added to the model which is returned by GET /operations/{operationId}/specification.

The type of the property **targetTimePerUnit** has been corrected and is now a signed 64-bit integer: integer(\$int64).

The property **productionTime** has been removed from the operations/{operationId}/quantitySummary API response with version 3. It can still be found in the response of operatingStateSummary.

The operations/search API request property **phaseIds** has been renamed to **operationPhaseIds** with version 3.

5.4 Workplace API

The **associatedDay** filter format has been changed from **DateTime** to **Date**.

The format of the shift property **associatedDay** has been changed from **DateTime** to **Date**.

A new workplace property **workplaceType** has been introduced which can take one of the following values:

- MANUAL_WORKPLACE
- MANUAL_MACHINE_WORKPLACE
- MACHINE_WORKPLACE

The workplace property **isManualWorkplace** was removed with version 3.

The former manual workplace is now MANUAL MACHINE WORKPLACE.

5.5 Staff Member API

The **recordedActivities** API has been renamed to **recordedLoginPeriods** with version 3.

5.6 Command API

A new command response property **bookingTimestamp** has been introduced.

5.7 Material API

Material APIs have been added under **Miscellaneous**.

5.8 Ticket API

Ticket APIs have been added under **Ticket**.

5.9 Reporting API

Some Reporting APIs have been added under **Reporting**.

5.10 Document API

DocumentStateIds are now UUIDs and no longer predefined strings.

The parameters **editor/creator** were removed from the document APIs with version 3. The editor/creator is now implicitly set by the authenticated API user or client.

5.11 Callback API

The properties **lastTriggeredDate** and **lastSuccessfulDate** have been added to the callback model.

The callback event **Workplace Shift Changed** no longer has the property **workplaceId** in its data payload. It has been removed because the **objectId** already contains the **workplaceId**.

5.12 Machine API

Machine APIs have been added under **Machine**.

6 Track & Trace

6.1 Data Migration

For single piece trace data migration, add release status **RELEASED** to each single piece: Run the **datamigrationNoSql** utility in non-production time. In case of a load of single piece trace data, this will take a while and can even take days to finish. Ask the Track & Trace team for this utility as it is not part of the distribution ZIP.

Configuration: in the application.properties configuration of the datamigrationNoSql utility, set parameter **add.singlePieceReleaseStatus** to "true".

6.2 Virtual Image configuration

Customer and project names in the configuration will now be in lower case letters and without a space. If that is not the case, the **NoSqlMigration** utility must be run. This utility can be provided by the Track & Trace team.

To run the utility, configure the SQL and NoSQL database and make set `{{correct.customerProjectLiteral}}` flag to "true".

```
##### SQL DATABASE CONFIGURATION #####
database.name=SQLSERVER
database.jdbc.driverClassName=com.microsoft.sqlserver.jdbc.SQLServerDriver
database.jdbc.url=jdbc:sqlserver://localhost:1433;databaseName=develop
database.schema=na
database.jdbc.username=develop
database.jdbc.password=DeI81Pe5a7q+lrrxIk9DyQ==
database.poolSize=30
hibernate.dialect=org.hibernate.dialect.SQLServer2012Dialect
configuration.modulDefaultImport=true
##### NO SQL (MONGO DATABASE) CONFIGURATION #####
nosql.database.uri=localhost:27018
nosqldb.database.name=TRACE
nosqldb.user=trace
nosqldb.password=iGtFMdhOJ29ycG18kxIk7A==
```

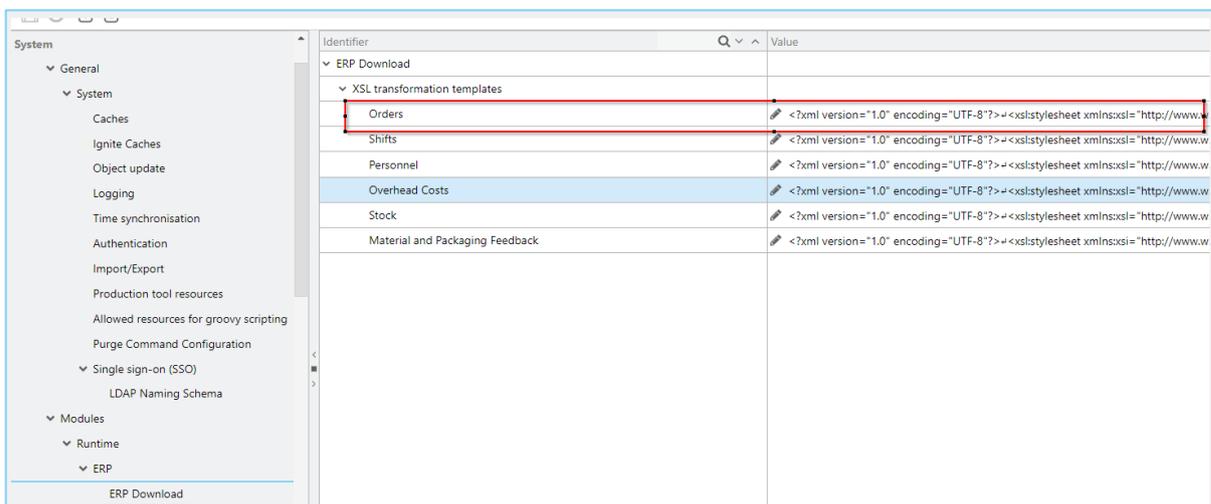
```
### This is required for the correction of customer and project with lower case ##
correct.customerProjectLiteral=true
```

6.3 Lot controlled check – ERP download

The **ERPDownload.xsd** has been changed. When using a version 5.11 or higher, add a new attribute **lotControlled** in **Operation** and **Operation Component** .

```
<xs:element name="LotControlled" type="xs:boolean" minOccurs="0" default="0">
  <xs:annotation>
    <xs:documentation>Define if lot number generate or checked in case of
container registration process.</xs:documentation>
  </xs:annotation>
</xs:element>
```

To use the IDOC for **lotControlled** field, change the **orders** xsl file in the Workbench application following the path: System → Modules → Runtime → ERP → ERP Download. Use the import functionality.



Add following attributes in **Orders** to **ord:Operation** and **ord:OperationComponent** tags.

```
<xsl:choose>
  <xsl:when test="XGCHP='X'">
    <ord:LotControlled>true</ord:LotControlled>
  </xsl:when>
  <xsl:otherwise>
    <ord:LotControlled>false</ord:LotControlled>
  </xsl:otherwise>
</xsl:choose>
```

6.4 Feedback Track & Trace object to warehouse/ERP

This feature is added to send the Track & Trace object to Warehouse by using ERP upload. Bridge API and Warehouse can also send a response for those Track & Trace objects using ERP download or Bridge API.

A user can configure a medium to send the Track & Trace object either by using Bridge API or ERP interface in the Workbench application following the path: System → Tracing → Trace booking configuration → WMS Feedback.

Number of Document Links	✓
▼ WMS Feedback	
Interface Type	Bridge API
Feedback of semi-finished single pieces (serial numbers)	<input type="checkbox"/>

Add the following configuration in the Workbench using export/import functionality:

```
<WMSFeedbackConfig>
  <interfaceType>ERP</interfaceType>
  <feedbackSemiFinished>>false</feedbackSemiFinished>
</WMSFeedbackConfig>
```

The following changes are required to send and receive Track & Trace feedback:

- Change in ERP Upload xsl:
 - Add a separate logic to send ERP upload messages via SAP.
 - Changes in the IDOC template in the Workbench are required .

XSL-Template

```
<xsl:when test="_-FFMES_-SWHENT">
...
</xsl:when>
```

Changes for Bridge API: To get the Warehouse message through Bridge API, an external system must register itself through callback mechanism using following attributes:

- Callback URL: destination URL where to send the notification to
- Event type: FEEDBACK_TO_WAREHOUSE
- Event name: FEEDBACK_TO_WAREHOUSE

6.5 Process data violation for Bridge API

A user can now configure to send the process data violation to an external system using Bridge API in the same way as an email or SFT notification. This configuration can be done in the Virtual Image configuration during the DCP configuration.

ID *	<input type="text" value="1"/>
Name *	<input type="text" value="HV Demand Too High"/>
Version *	<input type="text" value="15"/>
Colors	<input type="text" value="No Color"/>
Violation level *	<input type="text" value="Error"/>
Priority *	<input type="text" value="Blocker"/>
Base Unit	<input type="text" value="No Unit"/>
Range	<input type="text" value="Greater than or equal"/>
Signal value *	<input type="text" value="550"/>
	<input type="checkbox"/> SFT Notification
	<input type="checkbox"/> Email Notification
	<input checked="" type="checkbox"/> Bridge API Callback

In case of any violation, the Trace system will send the notification to Bridge API using a callback. To do that, the external entity must register using the callback mechanism:

- Callback URL: destination URL where to send the notification to
- Event type: PROCESS_DATA_RULE_VIOLATED
- Event name: can be null or can be the violation name (configured in the Virtual Image configuration)
- Object Filter: can be null or a filter on the Workplace ID (UUID)

7 Document History

Version	Date	Name	Lifecycle	Reason for change	Status
0.9	2020-07-30	Axel Skultety	Initial		
1.0	2020-09-04	Ali Egilmez	Design	Layouting	Final
1.1	2020-09-17	Axel Skultety	Content	Extension 5. BridgeAPI/5.2 Authentication	Final
1.2	2020-09-22	Axel Skultety	Content	Extension 1.3 Minimum technical requirements - Oracle Supported Versions	Final