Technical Release Notes

Version 5.12

Release Information

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Content

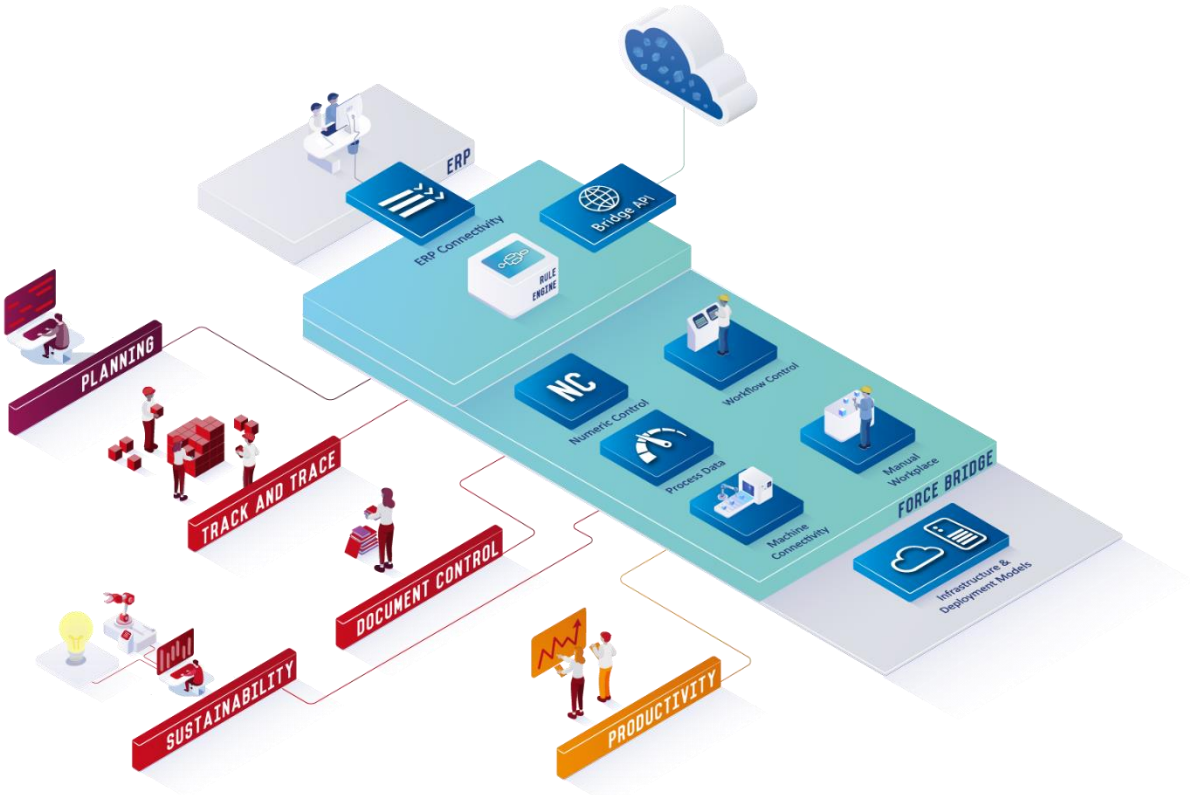
1 General

FORCAM provides companies with all the information they need to control and optimize their production. The modular IIoT solution FORCAM FORCE IIOT is as flexible as the needs of customers. With a variety of production apps, FORCAM helps companies to make their processes more transparent and improve their workflows. In this way, companies create the basis for optimization measures and sustainable success, thereby ensuring their competitiveness.

FORCAM is always endeavored to optimize the solution FORCAM FORCE IIOT further, to enrich it with functions, offering customers consistent growth and greatest possible use. For this purpose, several releases are published throughout the year.

This document lists technical changes during the **5.12** release. It provides an overview about configurations and parameters that are new or changed for FORCAM FORCE IIOT.

Detailed descriptions of the individual functions can be found in the respective product documentation.



2 FORCAM FORCE™ COMMON

2.1 New number of characters for order number and order split

Affected module	Affected area	Status
Workbench	Master Data	Changed

Database changes

The column FR_MD_ORDER.ORDER_NUMBER has changed from 255 characters to 32 characters. The column FR_MD_ORDER.ORDER_SPLIT has changed from 255 characters to 8 characters.

2.2 FFSetup now handles the installation process

Affected module	Affected area	Status
FFSetup	5.12 Artifactory	New

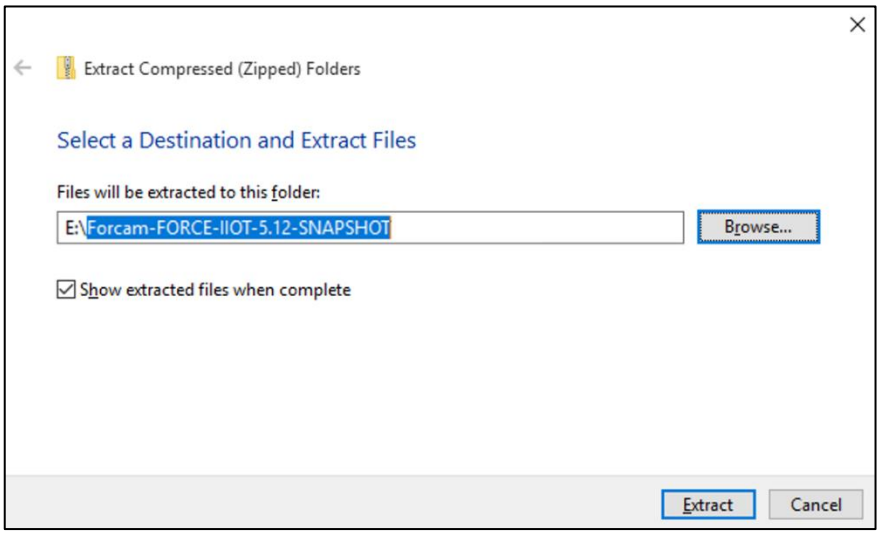
Since we are not using the IzPack framework for installer generation, the distribution package has to be extracted manually.

Installation steps

⚠ The installation routine for FORCAM FORCE IIOT changes with 5.12.0 (starting from RC8). Instead of FINSTER Base and FINSTER apps you will be provided with a bundled zip (FORCAM-FORCE-IIOT-<VERSION>.zip) which essentially contains the resources which were previously extracted by FINSTER. You extract the zip file (which contains all resources in a directory named ForcamForce/) to the destination of your choice (by default this was D:/). You can then proceed to ffsetup by starting the script ffsetup_start.ps1 as an administrator.

Unzip with Windows

If you use the “Extract all” utility from Microsoft, the following dialog will open. Please mark the last directory name and remove it from the path before you extract:



Unzip with 7-Zip

If you are using a utility like 7-Zip, you can simply use the “Extract files” option and do not have to change anything.

2.3 Artifactory support has been removed from FINSTER

Affected module	Affected area	Status
FFSetup	5.12 Artifactory	New

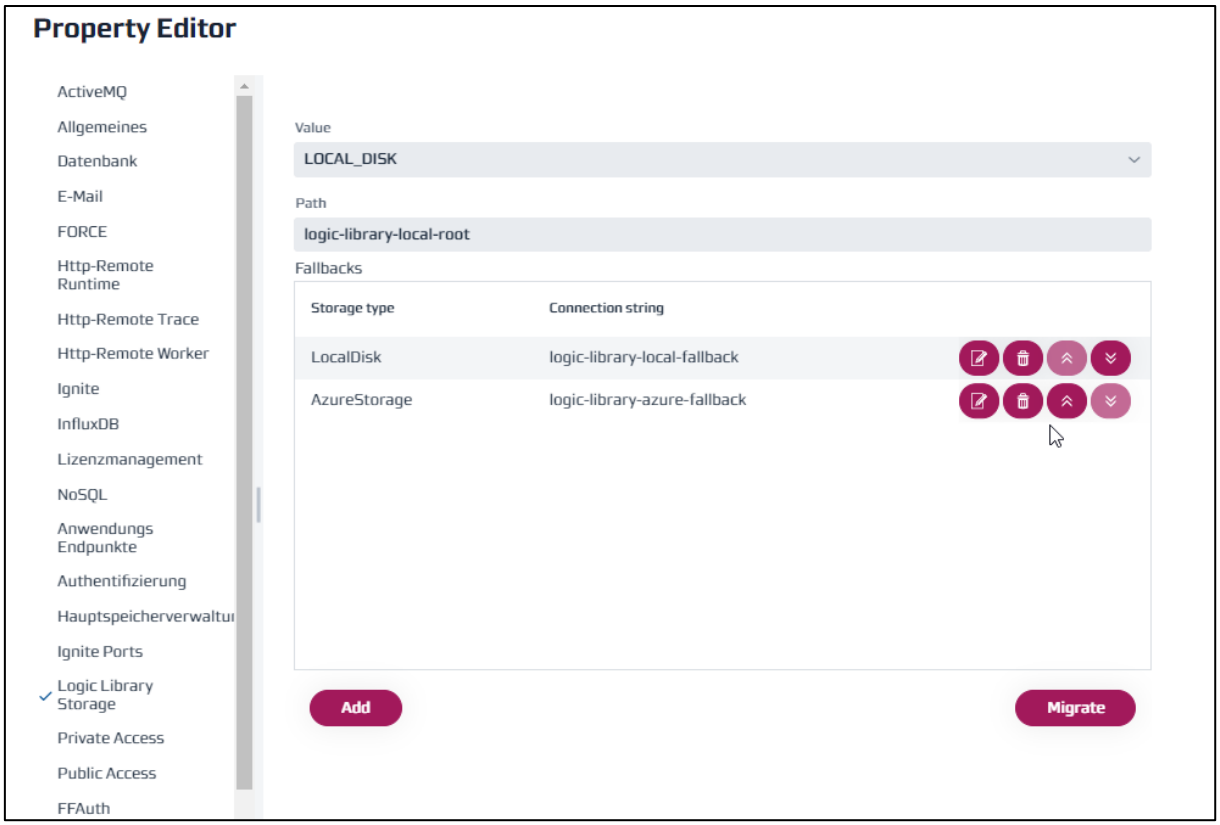
FINSTER will no longer provide an artifactory installation. Instead, FFSetup can be used to migrate the logic project to an Azure or a local storage.

Migration steps

By adding an Azure storage connection or a path to a local storage and by clicking the “Migrate” button, it is possible to migrate the logic project to a different storage.

Only the “root” storage (configured using the input fields in the upper section) is writable. The entries below show readable fallback storages.

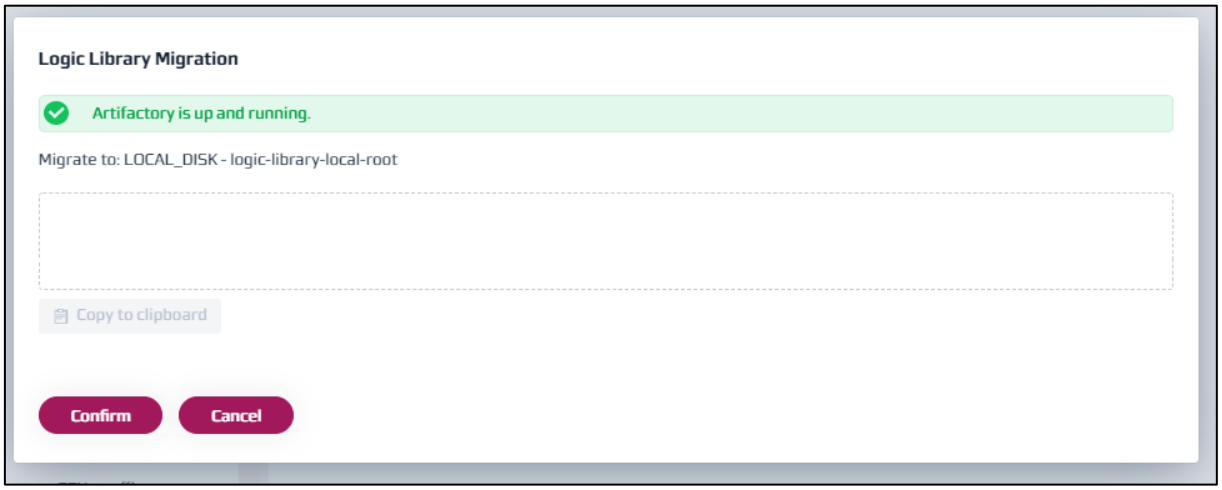
1. Add an Azure storage connection string or a path to a local storage in the root section.
2. Click “Migrate”.



3. Make sure that Artifactory is running.
   If it is not running you can start it using the “Start Artifactory” Button.

ⓘ Note: Sometimes it is necessary to reload the page and to click the “Migrate” button again for FFSetup to register that Artifactory has in fact started.

4. Click “Confirm” and Artifactory will be migrated to the storage that is defined in the root section.



Removing the old Artifactory logic project

After a successful migration, it is recommended to remove the old Artifactory logic project and to stop the Artifactory service.

Stopping the service:

1. Search for “Services” in your Windows search bar (hit “Win” and enter “Services”).
2. Look for the “_Artifactory” service.
3. Perform a right click and select “Properties”.
4. Copy the “Service name” to your clipboard or remember it.
5. Run the CMD as an administrator.
6. Enter “sc delete <service name>”.

Remove Artifactory directory:

1. Open your explorer and navigate to the “ForcamForce/app/” directory.
2. Remove the “artifactory” directory.

2.4 Installer now uses the G1 garbage collector

Affected module	Affected area	Status
FFSetup	CMS garbage collector	New

The change can lead to a slight improvement in performance, otherwise no behavioral changes are expected in the product.

CMS tuning arguments (i.e., options starting with -XX:+CMS) are no longer supported in startup scripts.

For deeper debugging of unexpected pause times, an occasional investigation of the garbage collector log might be required. The format for these log files changes with G1. The pause times can still be extracted, as seen in the example below.

ⓘ Note: There are different phases in the garbage collection cycles (not just Pause Young [Normal]), but the general format stays the same.

G1 GC log example

[31.453s][info][gc] GC(155) Pause Young (Normal) (G1 Evacuation Pause) 3113M->802M(3946M) 7.471ms

Migration steps

No additional migrations steps are required.

Database changes

The database is not affected by this change.

API changes

The API is not affected by this change.

2.5 New icons for all FORCAM FORCE IIOT clients

Affected module	Affected area	Status
Global	FFWorkbench/FFNewOffice/ FFSimulation/FFUiComponents	Changed

Exchanged icons

- ffnewoffice/theme/src/main/webapp/VAADIN/themes/ffnewoffice/images and images/tiles
- ffnewoffice/visualisation/server-war/src/main/webapp/images
- ffsimuation/server/src/main/resources
- ffuicomponents/uicomponents/src/main/webapp/images (UIC)
- ffworkbench/workbench-war/src/main/webapp/images

3 Cross-platform

3.1 New configuration “Decimal format”

Affected module	Affected area	Status
Global	All	New

Database changes

The following views have been changed to provide the quantity unit. All views select DISPLAY_QUANTITY_UNIT from the operation. Additional changes are described below:

- V_TL_WORKPLACE_QUANTITY
  - Left join with FR_MD_OPERATION added: LEFT JOIN &XSCHEMA..FR_MD_OPERATION OP ON OP.ID = BASE.LEADING_OPERATION_ID
- V_TL_OPERATION_QUANTITY
- V_SC_OPERATION_QUANTITY
  - Left join with FR_MD_OPERATION added: LEFT JOIN &XSCHEMA..FR_MD_OPERATION OP ON OP.ID = S.OPERATION_ID
- V_SC_WORKPLACE_QUANTITY
  - Tables FR_DS_WORKPLACE_BASE_TL and FR_MD_OPERATION have been joined to the view:
    JOIN &XSCHEMA..FR_DS_WORKPLACE_BASE_TL BASE ON BASE.WORKPLACE_ID = S.WORKPLACE_ID AND BASE.START_TS = S.START_TS
    LEFT JOIN &XSCHEMA..FR_MD_OPERATION OP ON OP.ID = BASE.LEADING_OPERATION_ID

API changes

Manual configuration checks

- The customer / technical consultant must ensure that units of measures between machines (DCU signal for quantity) matches with “Operation quantity unit” (AKA routing of ERP system / “Arbeitsplan”); Differences of DCU signals in, for example, ML and operation reporting in L is not allowed and must be regulated organizationally.

3.2 Dynamic number of columns in the multi-level tree hierarchy

Affected module	Affected area	Status
Global	Planning/Productivity	Changed

None

4 Platform & Connectivity

4.1 External extensibility of the user fields for order, operation and workplace

Affected module	Affected area	Status
FFWebservices	BridgeAPI/CommandAPI	New

API changes

The following APIs have been added to the Bridge API and the command API and can be used to retrieve user fields:

- GET /productionOrders/{productionOrdersId}/customFields/
- GET /productionOrders/{productionOrdersId}/customFields/{customFieldId}

- GET /operations/{operationId}/customFields/
- GET /operations/{operationId}/customFields/{customFieldId}

- GET /staffMembers/{staffMemberId}/customFields/
- GET /staffMembers/{staffMemberId}/customFields/{customFieldId}

- GET /materials/{materialId}/customFields/
- GET /materials/{materialId}/customFields/{customFieldId}

The following APIs have been added to the command API and can be used to update user fields:

- PUT /productionOrders/{productionOrdersId}/customFields/{customFieldId}
- PUT /operations/{operationId}/customFields/{customFieldId}
- PUT /staffMembers/{staffMemberId}/customFields/{customFieldId}
- PUT /materials/{materialId}/customFields/{customFieldId}

4.2 New APIs to create, update or delete orders and operations

Affected module	Affected area	Status
FFWebservices	General Improvements/ BridgeAPI	New/Changed

None

4.3 Separation of ERP functionality from FFRuntime

Affected module	Affected area	Status
FFRuntime	ERP functionality	Changed

FFRuntime and FFERP

ERP up- and download moved into new fferp service.

The old XML and IDoc ERP interfaces in the runtime

- host:10080/ffruntime/erp
- host:10080/ffruntime/sap

are now deprecated.

Instead, the new fferp interfaces must be used:

- host:26080/fferp/api/v1/erp
- host:26080/fferp/api/v1/sap

Migration steps

Customers using the interface must update their ERP system, for example, to communicate to the new webservice and port.

4.4 New ERP adapter for Infor ION

Affected module	Affected area	Status
ERP connectivity	BrigdeAPI	New

Migration steps

No migration needed as this is an add-on/external module to implement within Infor ION.

Database changes

No changes to the FORCAM FORCE IIOT database

API changes

The ERP adapter for Infor ION uses the FORCAM BridgeAPI ERP XML integration functions to “load” orders/operations, personnel or shifts into the FORCAM FORCE IIOT system.

4.5 Easier integration between Node-RED and FORCAM BridgeAPI

Affected module	Affected area	Status
BridgeAPI	Configuration/requests/ callbacks/logs	New

Has been tested with Node-RED 2.1.3.

Database changes

New column NAME in FF_WS_CALLBACK

API changes

The callback model has an additional optional field “name” which can be used as an external identifier for a callback. It must be unique for all callbacks which have been created by a certain API client.

4.6 CVE-2021-45046 in Log4j-Core dependency

Affected module	Affected area	Status
FFAuth	Framework	Changed

None

5 Productivity

5.1 Consolidation of table-based correction processes

Affected module	Affected area	Status
Corrections	Person-related times	Changed

None

6 Process

6.1 Consumption configuration for Track & Trace

Affected module	Affected area	Status
FFNewOffice/DACQ	Track & Trace	New

Migration steps

- MongoDB Version < 4.2
  - Execute NoSql schema migration for the new indexes on reference cache collection.
- MongoDB Version >= 4.2
  - Run the following scripts on MongoDB either Robo Mongo or Mongo console:

```
db.createCollection(“TraceLock”);
db.TraceLock.ensureIndex({
    “lockIdentifier”: 1
}, {name: “lock_id_index”});

db.createCollection(“ConsumptionQuantity”);
db.ConsumptionQuantity.ensureIndex({
    “trackingNo”: 1
}, {name: “trackNo_index”});
db.ConsumptionQuantity.ensureIndex({
    “trackingNo”: 1,
    “workplaceId”: 1,
    “operationId”: 1
}, {name: “trackNo_wp_op_index”});
```

6.2 Automatic registration, adding, editing or deleting generic components

Affected module	Affected area	Status
FFNewOffice/DACQ	Track & Trace	New

Migration steps

- MongoDB Version < 4.2
  - Execute NoSql schema migration for the new indexes on reference cache collection.
- MongoDB Version >= 4.2
  - Run the following scripts on MongoDB either Robo Mongo or Mongo console:

```
// To create generic component with indexes
db.createCollection(“GenericComponent”);
db.GenericComponent.ensureIndex({
    “workplaceId”: 1,
    “active”: 1
}, {name: “wp_active_index”});

// Index on generic flag.
db.ReferenceCache.ensureIndex({
    “workplaceId”: 1,
    “workplaceUUID”: 1,
    “references.generic”: 1
}, {name: “wp_generic_index”});
```

6.3 Consumption quantities for different workplaces or operations

Affected module	Affected area	Status
Office	Track & Trace	Changed

None

6.4 Extended SFT dialog to add, edit or book consumption

Affected module	Affected area	Status
Workbench	Shopfloor Terminal	New

None

7 Appendix

Abbreviation/Term	Meaning
7-Zip	A free packing program
API	Application Programming Interface
CMD	Windows Command Prompt
CMS	Content Management System
DACQ	Data Acquisition
DB	Database
DCU	Data Collection Unit
ERP	Enterprise Resource Planning
FFAuth	FORCAM FORCE™ Authentication (single sign-on solution from FORCAM FORCE IIOT)
IDoc	An SAP document format for business transaction data transfers
Infor ION	Infor is a global provider of business software for specific industries. ION stands for “Intelligent Open Network”.
IzPack	A software tool for packaging applications on the Java platform
MongoDB	A document-oriented NoSQL database management system
Node-RED	A graphical development tool developed by IBM
SFT	Shopfloor Terminal
XML	Extensible Markup Language