

LYNQ



Integration Whitepaper

LYNQ MES Integration for SAP B1

DECEMBER 2021

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Version History

The revision history pertains only to changes in the content of this document or any updates made after distribution. It does not apply to formatting of this document.

Date	Version	Description	Author(s)	Product Versions
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Introduction

This whitepaper describes the underlying integration technology and architecture utilised in the integration between LYNQ and SAP B1. The whitepaper aims to educate customers and partners on the different integration touchpoints available and describes the purpose of the integration settings in the API component, of LYNQ. Integration to SAP B1 is designed to be plug and play, with minimal configuration steps required. However, to fully maximise the benefits of integrating LYNQ with SAP B1, this whitepaper should be referenced. The later sections in this whitepaper, detail what data must be maintained in SAP B1 for LYNQ to effectively function.

Revisions to this whitepaper will be made when integration capabilities are added or removed.

Terminology

This section explains the terminology used in this document.

Terminology	Explanation
LYNQ	Collective name for the LYNQ solution
APS or LYNQ aps	Desktop based, detailed scheduling component of LYNQ
MOM or LYNQ mom	Web based frontend of LYNQ
API or LYNQ api	Web based ERP integration component of LYNQ
Service Layer API	SAP B1 native Service Layer API

Certification

SAP B1, a global provider of ERP systems are involved in the approval of the integration design and its capabilities. Customers and partners, wishing to suggest enhancements to the integration can do so by creating an idea in the [LYNQ Support Portal](#).

LYNQ is fully certified to work with SAP B1 v 9 (HANA platform) and v 10 (both SQL and HANA platform). Certification appears on SAP Partner Directory and can be viewed [here](#).

SAP B1 Architecture Summary

This section details the supported SAP B1 architecture.

Type	Explanation
Type	Web Applications and Service Layer API
Deployment	On premise, Private Cloud, SaaS
Underlying Database	MS SQL Server, HANA
Supported Languages	
Multi Company	No. Every company requires separate SAP B1 database

Supported SAP B1 Versions

This section details the supported SAP B1 versions

Version	Supported	Limitations	Certified
SAP B1 v9	Yes	Only HANA platform	Yes
SAP B1 v10	Yes	SQL and HANA	Yes

Deployment Options

This section details the supported deployment options

ERP Deployment		LYNQ Deployment		
		On Premise	Cloud Services	SaaS
SAP B1	On Premise	Supported	Supported	N/A
	Private Cloud	Supported	Supported	N/A
	SaaS	Supported	Supported	N/A

Notes:

- Supported – Deployment is fully supported in this type of environment
- Not Supported – Deployment is not available in this type of environment
- Not recommended – Deployment may be subject to performance or security vulnerabilities in this type of environment and not recommended
- Not Viable – Deployment has limited or no commercial benefits in this type of environment
- SAP B1 SaaS is realised as containerised Private Cloud service

API Limitations

This section explains the known limitations of the API.

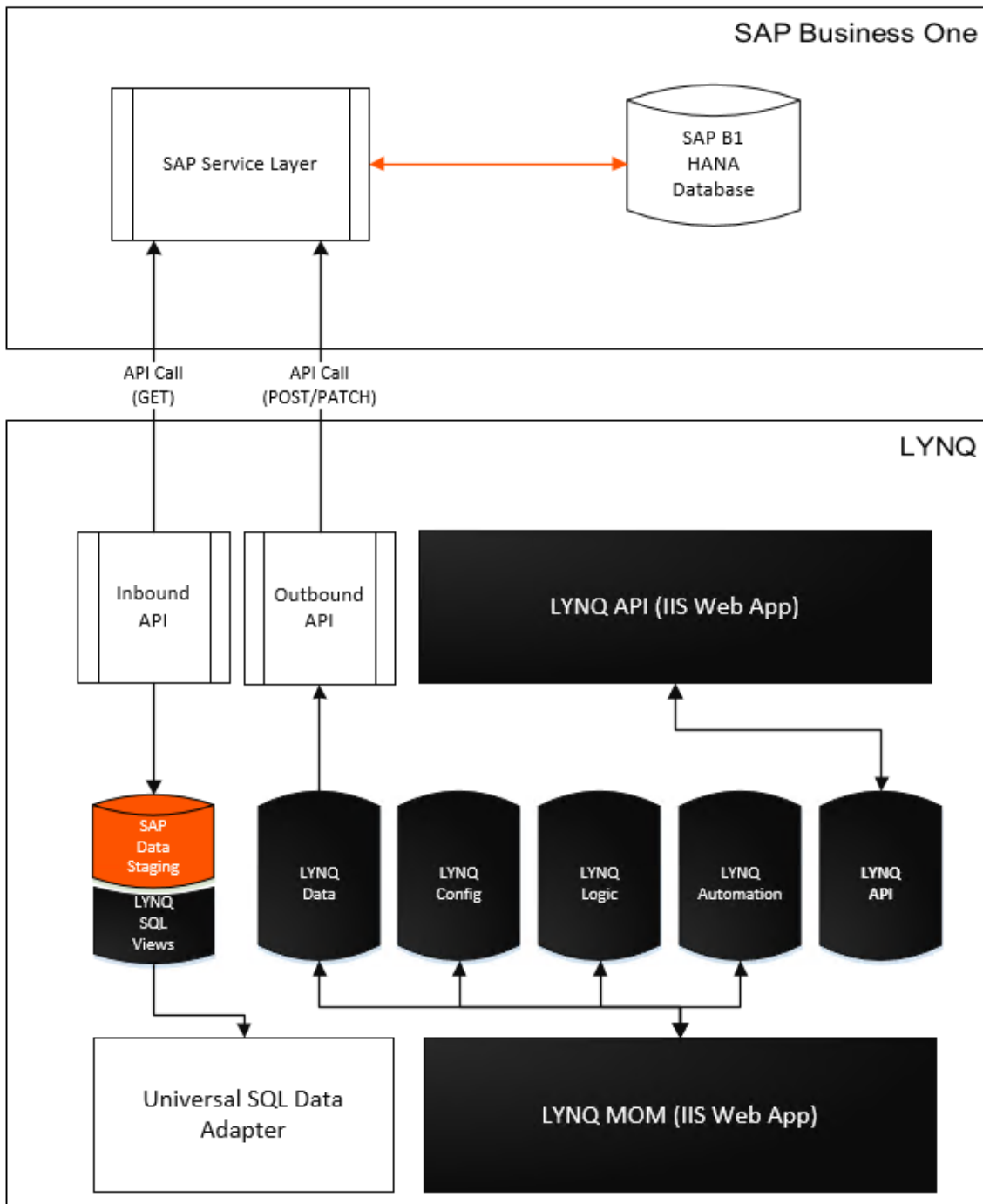
Limitation	Effects	Workaround
SAP B1 v9	LYNQ works only with HANA version	Upgrade to SAP B1 v10 for SQL

Integration Methods

This section summarises the different Integration methods utilised.

LYNQ Integration Type	
SAP B1 to LYNQ	Service Layer API
LYNQ to SAP B1	APS - Service Layer API MES - Service Layer API

Integration Topology



Multi-Site Support

SAP B1 multi-site support is realised via separate SAP B1 company databases. Every SAP B1 company database requires a dedicated LYNQ mom installation. The LYNQ aps and LYNQ api components support multiple companies and these components only need to be installed once.

Note: Sandbox installations of LYNQ must be isolated from production installations. This is achieved by installing a second instance of all components of LYNQ (LYNQ mom, LYNQ aps & LYNQ api).

Inbound & Outbound Integration

Inbound data is read via the Service Layer API from SAP B1 and downloaded to the LYNQ SQL staging database. The data in the LYNQ staging database is transformed by **LYNQ's proprietary Business Process Layer (BPL)**. The BPL represents a collection of SQL views which are created during installation and maintained with future software upgrades. All SQL views reside in the staging database and are prefixed **with the software author's name (LYNQ)**. The syntax used within the SQL views is optimised for performance, concurrency and is realised using no-lock data reads. LYNQ refer to this method of inbound integration as 'Service Layer API'.

Integration is performed:

- LYNQ aps
 - As per data download settings (SAP B1 to LYNQ) in the LYNQ api component
- LYNQ mom
 - As per data [caching intervals](#) settings in the LYNQ mom component

Inbound Datasets

Dataset	Sub dataset (LYNQ table)	Method
Business Partners	SAP_B1_BusinessPartner	Service Layer API
Employees	SAP_B1_EmployeeInfo	Service Layer API
Items	SAP_B1_Item SAP_B1_ItemUnitOfMeasurement SAP_B1_ItemWarehouseInfo	Service Layer API
Production Orders	SAP_B1_ProductionOrder SAP_B1_ProductionOrderLine SAP_B1_ProductionOrdersSalesOrderLine SAP_B1_ProductionOrdersStage	Service Layer API
Product Trees	SAP_B1_ProductTree SAP_B1_ProductTreeLine SAP_B1_ProductTreeStage	Service Layer API
Purchase Orders	SAP_B1_PurchaseOrder SAP_B1_PurchaseOrderLine	Service Layer API
Resources	SAP_B1_Resource SAP_B1_ResourceEmployee	Service Layer API
Resource Groups	SAP_B1_ResourceGroup	Service Layer API
Route Stages	SAP_B1_RouteStage	Service Layer API
Sales Forecasts	SAP_B1_SalesForecast SAP_B1_SalesForecastLine	Service Layer API

Sales Orders	SAP_B1_SalesOrder SAP_B1_SalesOrderLine	Service Layer API
Warehouses	SAP_B1_Warehouse	Service Layer API
Warehouse Locations	SAP_B1_WarehouseLocation	Service Layer API

Data is loaded into the staging database and preserves endpoint output terminology. Full list of SQL tables and fields referenced in the SQL views can be found within [System Insights](#) in LYNQ mom.

Inbound Integration to APS

Inbound LYNQ API settings:

To download data to the LYNQ staging database, you must configure the 'SAP B1 to LYNQ' API provider from the LYNQ api component.

The screenshot shows the LYNQ application interface. On the left is a navigation menu with categories like Instance Settings, Entity Settings, Parameter Settings, Menu Builder, User Settings, Entity User Groups Settings, Export Items, Import Items, Licensing, Roles Administration, Global Settings, and Modules. The 'API Settings' option under Modules is highlighted with a red box. The main content area is titled 'API Settings' and includes 'New', 'Edit', and 'Delete' buttons. Below these is a table with the following data:

	<input type="checkbox"/>	API Provider	Description	State			
▶	<input type="checkbox"/>	SAP B1 to LYNQ	SAP B1 to LYNQ Download API	Idle	Settings	Execute	Get Log
▶	<input type="checkbox"/>	LYNQ aps to SAP B1	LYNQ aps to SAP B1 Upload API	Idle	Settings	Execute	Get Log
▶	<input type="checkbox"/>	LYNQ mom to SAP B1	LYNQ mom to SAP B1 Upload API	Idle	Settings	Execute	Get Log

Within the settings you are able to configure the SAP B1 service settings, map any custom fields, define which data sets are downloaded and how frequently datasets are downloaded. It is recommended that you enable all datasets for download to LYNQ and the datasets are downloaded at the same interval.

ERP to LYNQ Settings:

LYNQ

ERP to LYNQ Settings

Service Layer Settings

Service address (URL)

User name

Password

Company DB

Test connection

Data Download Settings

Entity	Active?	Interval (hh:mm)	Mode	Log Days
Business Partners	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Employees	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Items	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Production Orders	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Product Trees	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Purchase Orders	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Resources	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Resource Groups	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Route Stages	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Sales Forecasts	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Sales Orders	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Warehouses	<input checked="" type="checkbox"/>	0:01	Overwrite	10
Warehouse Locations	<input checked="" type="checkbox"/>	0:01	Overwrite	10

Dynamic Fields Configuration

Production order

Production order line

Production order stage

Item master

SAP B1 Service Layer Settings

The table below, explains the different settings that are required in the SAP B1 Service Settings section.

Setting	Purpose
Service address (URL)	URL of the configured Service Layer
User name	User name used to connect to Service Layer
Password	Password used to connect to Service Layer
Company DB	Actual name of database to integrate with
Test connection	Press RUN button to test a connection. "Test connection succeeded" should appear when connection is established successfully.

Data Download Settings

The table below, explains the different settings that are required in the Data Download Settings section.

Setting	Purpose
Active	Determines whether data will be downloaded for the dataset
Interval	Determines how frequently data will be downloaded for the dataset
Mode	Determines if data will be downloaded in overwrite or append mode. Note: Due to architecture and performance limitations, append mode is NOT currently supported.
Log Days	Determines how long the log file will be retained for the dataset

Dynamics Field Configuration Settings

These settings allow the user to select whether user defined fields (UDFs) should be included in the download of data from SAP B1. LYNQ is able to recognise User Defined Fields (UDF's) created against the following SAP B1 Data Entities. There are fields reserved in LYNQ that transform the User Defined Fields, however these are not mandatory and LYNQ will function without them.

Fields for mapping should be specified in SAP native format, i.e. U_xxxx where xxxx is the field name given.

Setting	Purpose
Production Order	<p>In this section map the UDFs configured for Production Order.</p> <p>LYNQ has reserved following fields for mapping:</p> <ul style="list-style-type: none"> • Parent Order No – Alphanumeric value that specifies the Parent Order number for a Production Order.
Production Order Line	<p>In this section map the UDFs configured for Production Order Lines.</p> <p>LYNQ has reserved following fields for mapping:</p> <ul style="list-style-type: none"> • Required resources – number of resources required to perform an operation. Should be defined as numeric value in SAP B1. If not mapped, required resource quantity will default to 1. • Consumption method – Alphanumeric value limited to three options. ”PR” – proportional quantity consumption; “FX” – fixed quantity consumption; “AL” – all quantity consumption. If specified value is different from the above, then by default ”PR” would be used within LYNQ aps. • Move time – numeric value. Move time specified in hours to be applied to the operation. • Setup time – numeric value. Setup time specified in hours to be applied to the operation. • Teardown time – numeric value. Teardown time in hours to be applied to the operation.
Production Order Stage	<p>In this section map the UDFs configured for Production Order Route Stage Rows.</p> <p>LYNQ has reserved following fields for mapping:</p> <ul style="list-style-type: none"> • Operational quantity complete– this field must be defined as type ”Units and Totals” and structure ”Quantity” in SAP B1. Would be used to track operation quantity reported from LYNQ mom to SAP B1. • Operational status - Alphanumeric value limited to two options: ”Complete” and ”Open”. If not in use, LYNQ uses order status. • Parallel to previous flag – Alphanumeric value to determine if the operation should run in parallel to the previous operation. Two options: ”Y” Yes or ”N” No. When set to ”Y” the operation will start at the same time as the previous operation. • Overlap Flag - Alphanumeric value to determine if a percentage complete or a quantity complete is considered before the next operation can start. Two options: “P” Percentage, “Q” Quantity.

	<p>If left blank no overlapping will occur and the operation will be scheduled after the proceeding operation.</p> <ul style="list-style-type: none"> • Overlap Value – Numeric value to determine the percentage or quantity that must be complete before the next operation can start.
Item Master	<p>In this section map the UDFs configured for item Master Data</p> <ul style="list-style-type: none"> • String1 to String10 – use for string values • Numeric1 to Numeric5 – use for decimal values • Datetime1 to Datetime3 – use for date values

To understand how to add UDF with SAP B1, refer to the following [YouTube tutorial](#).

Global API Settings

Within LYNQ api Global Settings, the maximum number of concurrent service requests and the maximum number of service requests per minute can be configured.

API Settings

Setting	Purpose
Concurrent service request	Set the maximum number of concurrent API requests, if restricted by your SAP license.
Service request per minute	Set the maximum number of concurrent API requests. If restricted by your SAP license.

APS Task Panel Columns

Data downloaded from SAP B1 is visible in many of the LYNQ screens. The tables in this section explains the mapping between SAP B1 data and LYNQ data in the task panel grid screens in Visual APS. Use the column settings function to add any columns not visible by default. Refer to the LYNQ user guide for other default columns that are not dependent upon the integration with SAP B1.

Order Level

LYNQ Column	SAP Data
Job Order	Production Order – Production Number
Status	Production Order - Status
Location	Production Order - Warehouse
Product	Production Order – Stock Item ID
Description	Stock Item - Description
Product Group Code	Stock Item – Group Category
Ordered	Production Order - Quantity to Produce
ERP	Production Order – Start End
Date Method	Production Order - Scheduling Method
Customer	Production Order – Customer
Sales Order Number	Production Order – SO Order Number

Operation Level

LYNQ Column	SAP Data
Job Order	Production Order Details - Production Number
Operation	Production Order Details - Operation ID
Description	Production Order Details - Operation Description
In/Out	Defaults to Internal
Work Center	Production Order Details - Work Center
Work Unit	Production Order Details Resource
Operators	User Defined Field Value
Queue	Defaults to Zero
Setup (Hrs)	User Defined Field Value
Run (Unit Hrs)	Production Order Details - Run Time
Wait	Production Order Details - Wait Time
Teardown	User Defined Field Value
Move	User Defined Field Value
Required	Production Order Details - Qty to Produce
Scheduled Start	Production Order Details - Start Date
Scheduled Due	Production Order Details - End Date
ERP	Production Order Details - Start End

Outbound Integration from APS

LYNQ aps performs outbound integration of scheduling data to SAP B1 via the Service Layer.

Integrated APS Scheduling Data

Transaction	Method	Notes
Operation Start\End Dates	Service Layer API	
Production Order Start\End Dates	Service Layer API	
Production Order Status	Service Layer API	Optional, enabled via settings

SAP B1 API Methods

Data updated within SAP B1 by APS

API endpoint	Fields updated	API method request
ProductionOrder	Start Date	PATCH
ProductionOrder	End Date	PATCH
ProductionOrdersStage	Start Date	PATCH
ProductionOrdersStage	End Date	PATCH
ProductionOrder	Production Order Status	PATCH

To perform the outbound integration of APS to SAP B1 via the Service Layer, you must configure the following settings in LYNQ api.

LYNQ aps to SAP B1 Settings

The screenshot shows the LYNQ application interface. On the left is a navigation menu with categories like Instance Settings, Entity Settings, Parameter Settings, Menu Builder, User Settings, Entity User Groups Settings, Export Items, Import Items, Licensing, Roles Administration, Global Settings, and Modules. The 'API Settings' option is highlighted with a red box. The main content area is titled 'API Settings' and contains a table with columns for API Provider, Description, State, and actions (Settings, Execute, Get Log). The table lists three API providers: 'SAP B1 to LYNQ', 'LYNQ aps to SAP B1', and 'LYNQ mom to SAP B1'. The 'LYNQ aps to SAP B1' row is highlighted with a red box, and its 'Settings' button is also highlighted with a red box. The top right corner shows user information: 'ERP NRL LOCALHOSTERP NRL'.

API Settings

Service Layer Settings

Service address (URL)

User name

Password

Company DB

Test connection

General

Cut Off interval

Diagnostic info

Direct Processing Settings

Enable

Background Processing Settings

Enable statuses

- Pending Posting
- Posting Error
- Require Posting
- Excluded

Processing Production Order Settings

Update order status to released

Dynamic Fields Configuration

Production Order Line

APS Settings

Connection Settings

Server

Authentication

User ID

Password

APS database

Validate database

Upload LYNQ aps

Active?

Interval (hh:mm)

Logs saving time (days)

Service Layer Settings

Setting	Purpose
Service address (URL)	URL of the configured Service Layer
User name	User name used to connect to Service Layer
Password	Password used to connect to Service Layer
Company DB	Actual name of database to integrate with
Test connection	Press RUN button to test a connection. "Test connection succeeded" should appear when connection is established successfully.

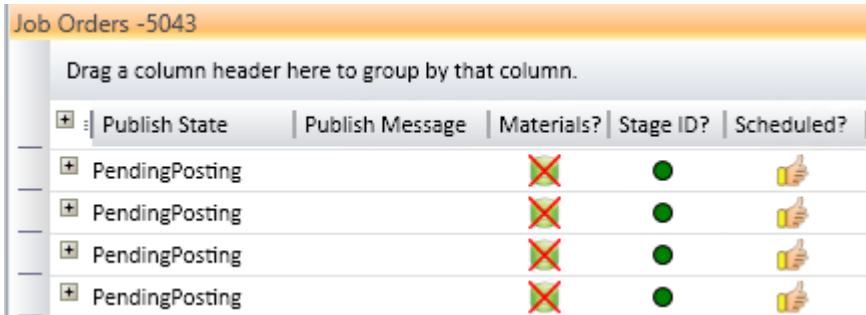
General Settings

Setting	Purpose
Cut Off interval	Specify cut Off interval for records to be processed
Diagnostic info	Legend shows connection specifics and integration diagnostics specification

Direct Processing Settings

Setting	Purpose
Enable	Enable if API provider will be triggered by APS user clicking Save and Publish. It is recommended to leave this setting turned off and use background processing instead.

Background Processing Settings

Setting	Purpose
Enable statuses	<p>Check on the status types to be included in background processing.</p> <p>Note: When enabled, the integration of scheduling data between LYNQ and SAP B1 will be active for the status types checked on.</p> <ul style="list-style-type: none"> • Pending Posting • Posting Error • Require Posting • Excluded <p>Typically, you would enable all status types except Excluded</p> <p>The Publish State column in LYNQ aps</p> 

Processing Production Order Settings

Setting	Purpose
Update order status to released	If enabled scheduled orders will have updated status to “Released”

Dynamic Fields Configuration

Setting	Purpose
Production Order Line	<p>In this section map the UDFs configured for Production Order Lines.</p> <p>LYNQ has reserved following fields for mapping:</p> <ul style="list-style-type: none"> • Scheduled Work Centre – the resource that has been schedule by APS. Should be defined as alpha value in SAP B1.

Connection Settings

Setting	Purpose
Server	Specify SQL server name
Authentication	Choose type of authentication to connect to the database (SQL or windows)
User ID	Specify user id used to connect
Password	Specify user id password

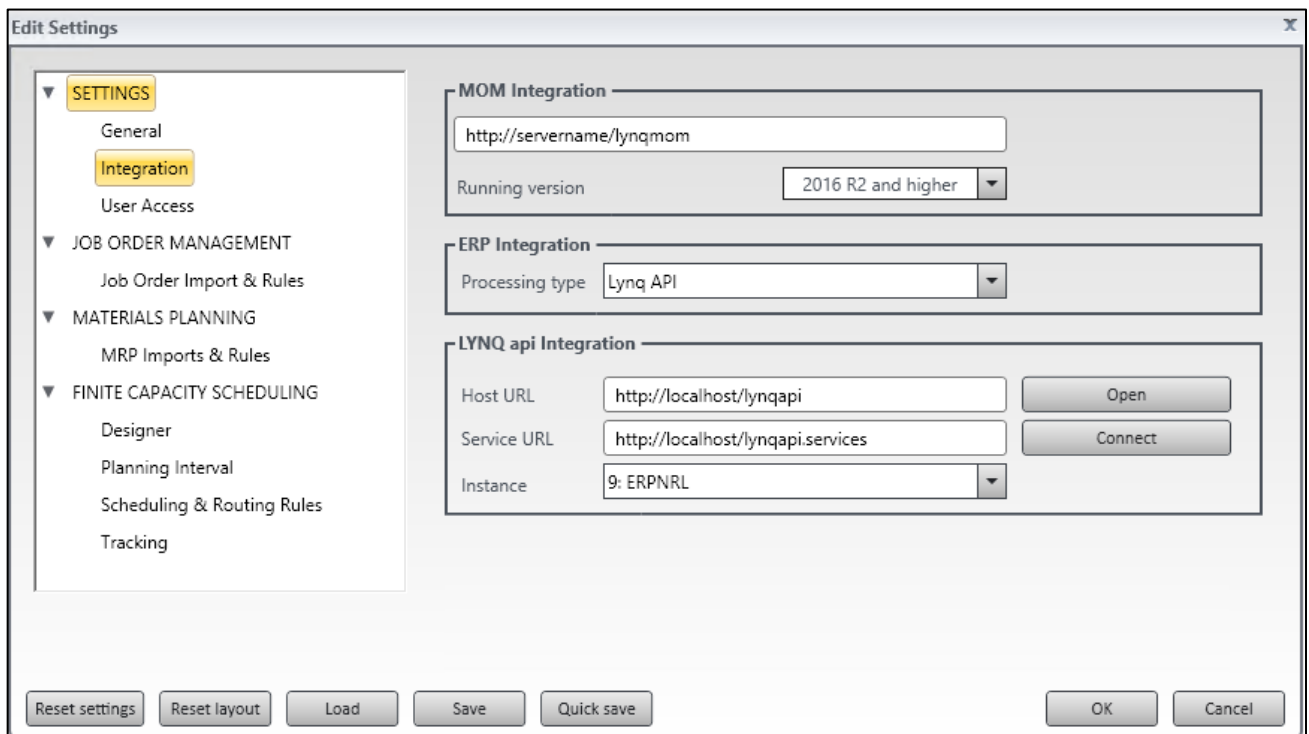
APS Database	Specify APS database (staging SQL database)
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Upload LYNQ aps Settings

Setting	Purpose
Active	Use this setting to activate or deactivate automatic processing
Interval (hh:mm)	Set the occurrence of the automatic transaction posting process. The minimum interval is 1 minute.
Log saving time (days)	Set the log history retention duration for this integration. Log history is normally used for the support and troubleshooting purposes.

APS Integration Settings

Once the LYNQ aps to SAP B1 API provider settings have been configured in LYNQ api, you will need to configure APS for integration. This is done using the Company Settings menu option in LYNQ aps.



Setting	Purpose
MOM integration	Determines the URL of the LYNQ mom installation. When set, the user will be able to open reports and dashboards in LYNQ mom directly from LYNQ aps.
Running version	Field used by Legacy installations of LYNQ. Set to 2016 R2 and higher.
Processing type	Determines the integration processing type. Set to Lynq API.
Host URL	Determines the LYNQ api URL address. Use the Tab Key to automatically populate the Service URL based upon the Host URL value provided.
Service URL	Determines the LYNQ api Services URL address
Instance	Determines the LYNQ api instance to use. Select the correct instance for the company open in APS.

Inbound Integration to MOM

Inbound LYNQ API Settings

- LYNQ api settings not required for MOM due to direct SQL read integration method

Outbound Integration from MOM

LYNQ mom performs outbound integration to SAP B1 using Service Layer API. In all cases, LYNQ uses SAP B1 endpoints to post LYNQ transactions to SAP B1.

Integrated MOM Transactions

LYNQ Transaction	Transaction Type	Post	Unpost	Comments
Labour	Productive Time	Yes	Yes	Posting a Labour transaction from LYNQ will generate an issue for production transaction in SAP B1
	Non Productive Time	No	No	N/A
Equipment Time	Productive Time	Yes	Yes	Posting a Labour transaction from LYNQ will generate an issue for production transaction in SAP B1
	Non Productive Time	No	No	N/A
Quantity	Operation Good Quantity	No	No	N/A
	Job Receipt (Last Operation)	Yes	No	Posting a Labour transaction from LYNQ will generate an issue for production and a Receipt from Production transaction in SAP B1
Scrap	Operation Scrap Quantity	No	No	N/A
	Production Scrap	Yes	Yes	Posting a Scrap transaction from LYNQ will generate a Receipt from Production transaction in SAP B1
Material Issue	Material Issue	Yes	Yes	Posting a Material Issue from LYNQ will generate an issue for production transaction in SAP B1
Material Reject	Material Reject	No	No	N/A
Status	Operation Status	No	No	As UDF mapped in Dynamics Field Configuration in LYNQ api
	Job Status	No	No	As UDF mapped in Dynamics Field Configuration in LYNQ api
Production Issues	Production Issue	No	No	N/A

Note: Transaction Unposting is realised via posting of the same transaction with the opposite (negative) value.

SAP B1 API methods:

SAP B1 API	API method
InventoryGenExit	POST
InventoryGenEntries	POST

Outbound LYNQ API Settings

Outbound integration settings can be enabled or disabled for each instance of LYNQ mom. In situations where the SAP B1 environment has multiple companies, multiple instances of MOM are required. The integration settings are configured within the LYNQ api component. LYNQ api can support multiple instances of LYNQ mom and each instance can have different settings.

Service Layer Settings

Setting	Purpose
Service address (URL)	URL of the configured Service Layer
User name	User name used to connect to Service Layer
Password	Password used to connect to Service Layer
Company DB	Actual name of database to integrate with
Test connection	Press RUN button to test a connection. "Test connection succeeded" should appear when connection is established successfully.

General Settings

Setting	Purpose
Cut Off interval	Number of days cut off range that LYNQ api should post transactions, (i.e. post transactions where accounting date is within last 30 days).
Decimals count	Number of decimals that LYNQ api should round transaction values to
Legend	Technical field, enabled for troubleshooting purposes

Transaction Types to Process Settings

Setting	Purpose
Labour time	<p>Enable this setting to post labour time transactions to SAP B1.</p> <p>It is important to understand how labour time is integrated. LYNQ cannot post to a resource that differs from the one setup within the route stage.</p> <p>When performing an issue for production (for resources) it is not possible to specify an employee number. Therefore, regardless of the employee number in the LYNQ transaction, LYNQ api would look up a relevant resource number of a labour type for the production order and stage specified. Postings would be made to that resource only. If a labour type resource is not found an error message is provided and the transaction is marked as error.</p> <p>LYNQ mom operates in hours and maps the hours spent to the quantity to issue. Therefore, a ratio is defined from the value set in Time per resource Units. (Resource Master Data in SAP B1). Decimal hours logged in LYNQ are multiplied by that ratio which determines the quantity to issue.</p>
Equipment time	<p>Enable this setting to post machine time transactions to SAP B1.</p> <p>Every equipment transaction generated by LYNQ would have a machine associated with it. LYNQ api validates whether the machine in the LYNQ transaction is setup as a resource for the route stage in SAP B1. If the machine resource is found, the transaction will post. If the machine resource is not found, the transaction is marked as error.</p> <p>LYNQ converts machine times to quantity, similar to the logic described for labour time.</p>
Operation quantity	Enable this setting to post quantity transactions to SAP B1.

	Note: This is only possible on the condition that a User Defined Field (UDF) is created in SAP B1 and mapped properly within Inbound and Outbound Data Settings, i.e. in Dynamic Field Configuration.
Material issue	Enable this setting to post Material Issue transactions to SAP B1.
Operation status	Enable this setting to post Status transactions to SAP B1. Note: This is only possible on the condition that a User Defined Field (UDF) is created in SAP B1 and mapped properly within Inbound and Outbound Data Settings, i.e. in Dynamic Field Configuration.
Production reporting	Enable this setting to post completed quantity for the production order to SAP B1. Note: Receipt from production is performed when entering quantity completed for the last operation (stage). Good quantity is posted as a transaction type “complete”.
Production scrap	Enable this setting to post scrapped quantity for the production order to SAP B1. Note: Receipt from production is performed when entering quantity scrapped for the last operation (stage). LYNQ takes into consideration scrap entered and posts it as transaction type “reject” .

Receipt from Production Settings

Setting	Purpose
Serial number to populate	This setting defines which serial number field is updated in SAP B1 when performing a Receipt from Production. Available Options: <ul style="list-style-type: none"> • Manufacturer Serial Number • Internal Serial Number Note: Use the Serial Number field in LYNQ to specify the Mfg. Serial No or the Serial No value.
Batch number processing	The setting defines whether the batch number specified in the LYNQ transaction or the production order number is posted as the batch number. Available Options: <ul style="list-style-type: none"> • Use Batch Number specified in the transaction • Use Production Order number to Batch Number Note: Use the Serial Number field in LYNQ to specify the batch number value.
Serial number processing	This setting forces LYNQ to use serial numbers captured within transaction (entered in LYNQ Workbench, Timesheets or Transaction review).

Serial number for range	<p>This field defines whether the serial number entered in the LYNQ transaction will define the start or end range value.</p> <p>Available Options:</p> <ul style="list-style-type: none"> • Defines Start of Range • Defines End of Range <p>For example, if this setting is set to Defines Start of Range and 10 units are specified with the serial number Serial15, LYNQ will generate 10 unique serials from Serial15 to Serial24. If this setting is to Defines End of Range, the serial numbers will decrease the number portion of the entered value.</p>
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Issue for Production Settings

Setting	Purpose
Serial number to populate	<p>This setting defines which serial number field is updated in SAP B1 when performing an Issue for Production.</p> <p>Available Options:</p> <ul style="list-style-type: none"> • Manufacturer Serial Number • Internal Serial Number <p>Note: Use the Serial Number field in LYNQ to specify the Mfg. Serial No or the Serial No value. Lot Numbers are not supported.</p>
Serial number for range	<p>This field defines whether the serial number entered in the LYNQ transaction will define the start or end range value.</p> <p>Available Options:</p> <ul style="list-style-type: none"> • Defines Start of Range • Defines End of Range <p>For example, if this setting is set to Defines Start of Range and 10 units are specified with the serial number Serial15, LYNQ will generate 10 unique serials from Serial15 to Serial24. If this setting is to Defines End of Range, the serial numbers will decrease the number portion of the entered value.</p>

Scrap Settings

Setting	Purpose
Post scrap to specific warehouse	Enable this setting to post scrap to the specified warehouse.
Reason code for blank value	Enable this setting to specify a default scrap reason value. The scrap reason value specified in this field will be applied only when the LYNQ transaction does not contain a scrap reason value.

Status Settings

Setting	Purpose
Production order closure on final operation	<p>Enable this setting to update the Production Order status to “Closed”.</p> <p>When enabled, the Production Order Status will be set to Closed if a status transaction is posted against the last route stage from LYNQ.</p> <p>Note: works only if operational status transaction type is checked (implemented via UDF and mapped in Dynamic fields configuration).</p>

Dynamic Field Configuration

These settings allow the user to select whether user defined fields (UDFs) should be included in the upload of data from LYNQ to SAP B1. LYNQ is able to recognise User Defined Fields (UDF's) created against the following SAP B1 Data Entities. There are fields reserved in LYNQ that transform the User Defined Fields, however these are not mandatory and LYNQ will function without them.

Fields for mapping should be specified in SAP native format, i.e. U_xxxx where xxxx is the field name given.

Setting	Purpose
Production order stage	<p>In this section map the UDFs configured for Production Order Stage.</p> <p>LYNQ has reserved following fields for mapping:</p> <ul style="list-style-type: none"> Operational quantity complete – Numeric value that specifies the quantity completed for the route stage Operational status – Alpha value that specifies the status of the route stage <p>Fields for mapping should be specified in SAP native format, i.e. U_xxxx where xxxx is the field name given.</p>
Transaction Entry	<p>In this section map the UDFs configured for Market Documents.</p> <p>LYNQ has reserved following fields for mapping:</p> <ul style="list-style-type: none"> Scrap Reason – Alphanumeric value that specifies the scrap reason value Lynq ID – Alphanumeric value that specifies to LYNQ Transaction ID value Transaction Type – Alpha value that specifies the transaction activity (i.e. setup. runtime) <p>Fields for mapping should be specified in SAP native format, i.e. U_xxxx where xxxx is the field name given.</p>

MOM Settings

MOM settings define which MOM database, LYNQ api should read from when posting transactions to SAP B1. From the MOM Settings area, integration can be enabled or disabled from scheduled synchronisations to SAP B1.

Connection Settings

Setting	Purpose
Server	SQL Server Name (where LYNQ Data resides)
Authentication	Method for authenticating with the SQL Server
User ID	SQL Login Name
Password	SQL Password
MOM Data Database	LYNQ MOM Data Database

Post Transactions Settings

Setting	Purpose
Active	Use this setting to activate or deactivate automatic transaction posting to SAP B1. Note this setting is ignored when you manually select the Sync button from the Transaction Review Screen in LYNQ or when you manually select Execute from the LYNQ api API Providers screen.
Interval	Set the occurrence of automatic transactions posting process. The minimal value is 1 minute.
Log Saving Days	Set the log history retention duration for this integration. Log history is normally used for the support and troubleshooting purposes.

Data Management

This section details data that must be maintained in SAP B1 and why it is required by LYNQ. Inaccurate or missing data will affect how LYNQ functions and how LYNQ integrates with SAP B1.

The best overview of production process in SAP B1 can be found [here](#).

Resource Management

SAP B1 Resource Group Data

Resource Groups are used to group commodities such as machine and labour resources used to produce goods and services.

It is important that resource groups are created and maintained in SAP B1 and resources are created within the resource group to support scheduling and data collection activities in LYNQ. Resource Groups are downloaded by the Service Layer and stored in the LYNQ staging database.

Resource Groups - Setup

Resource Group Name:

Resource Type:

Unit of Measure Text:

Resource Std Cost	User-Definable Name	Default Std Cost
Resource Std Cost 1	Resource Std Cost 1	15
Resource Std Cost 2	Resource Std Cost 2	
Resource Std Cost 3	Resource Std Cost 3	
Resource Std Cost 4	Resource Std Cost 4	
Resource Std Cost 5	Resource Std Cost 5	
Resource Std Cost 6	Resource Std Cost 6	
Resource Std Cost 7	Resource Std Cost 7	
Resource Std Cost 8	Resource Std Cost 8	
Resource Std Cost 9	Resource Std Cost 9	
Resource Std Cost 10	Resource Std Cost 10	

OK Cancel

Important fields to maintain for Resource Group Data

SAP B1 Setting	Reason
Resource Group Name	The Resource Group Name
Resource Type	The Type of Resource (i.e. Machine, Labour)
Resource Std Cost	The default standard cost of the resource group

SAP B1 Resource Master Data

LYNQ requires at least one resource to be created for every resource group. Resources are downloaded by the Service Layer and stored in the LYNQ staging database. Integration between SAP B1 resources and LYNQ machines involves a two stage of resource **import** process:

1. LYNQ aps
 - To support machine extended properties for calendar and shift changes
 - To support planning and scheduling
2. LYNQ mom
 - To support extended properties for execution management and data collection

Note: You must import machines into LYNQ aps prior to importing into LYNQ mom.

The screenshot shows the 'Resource Master Data' dialog box in SAP. The 'General' tab is selected. Fields include: Resource No. (Manual, R300005), Bar Code, Description (Assembly Machine), Foreign Name, Resource Type (Machine), Resource Group (Resources), Unit of Measure Text, Time per Resource Units (1:00:00), and Res. Units per Time Period (1). Below these are tabs for Capacity Data, Planning Data, Fixed Assets, Properties, Attachments, and Remarks. The 'Issue Method' is set to 'Backflush' and 'Resource Allocation' is 'On Start Date'. A 'Linked to Item' button is present. A table shows 'Resource Std Cost' and 'Default Std Cost' with values: Resource Std Cost 1 (50.00), Resource Std Cost 2 (30.00), Resource Std Cost 3 (0.00), Resource Std Cost 4 (0.00), Resource Std Cost 5 (0.00), Resource Std Cost 6 (0.00), Resource Std Cost 7 (0.00), Resource Std Cost 8 (0.00), Resource Std Cost 9 (0.00), Resource Std Cost 10 (0.00), and Total Std Resource Cost (80.00). Radio buttons for 'Active', 'Inactive', and 'Advanced' are at the bottom left, with 'Active' selected. 'From' and 'To' date fields and a 'Remarks' field are at the bottom right. 'OK' and 'Cancel' buttons are at the bottom.

Important fields to maintain for Resource Master Data

SAP B1 Setting	Reason
Resource Type	Labour, Machine or Other Determines how run time would be read by LYNQ aps
Time per resource units	Time per Resource Units is a time field and can be set to anything (i.e. seconds, minutes or hours) LYNQ is designed to work with hours as it's time unit of measure . This field is used to define a ratio during labour and machine time postings.
Res. Units per Time Period	Must be set to a value (not blank)

Note: changing the Time Per Resource Unit field, the resources on all production orders will be updated.

Note: LYNO does not utilise SAP B1 capacity data. You must setup [shifts](#) for each machine in LYNO aps, to define (finite) capacity.

LYNO aps Shift Definition

Shift Name Shift Description

Please left-click anywhere on day calendar range and drag with mouse to create new shift change. Please press right-click on day rule to edit it.

Shift Change Code: **Total: Wrk 0:00 - NWrk 24:00**

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
StdNonWorking 12:00 AM - 12:00 AM																							

Shift Change Code: **Total: Wrk 9:00 - NWrk 15:00**

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
StdNonWorking 12:00 AM - 8:00 AM								StdWorking 8:00 AM - 1:00 PM		StdL		StdWorking 1:00 PM - 6:00 PM						StdNonWorking 6:00 PM - 12:00 AM					

SAP B1 Secondary Constraints

SAP B1 supports secondary constraints (tools) definition per operation. See operation secondary constraint section for additional details.

SAP B1 Employee Data

SAP B1 supports manufacturing employee definition as part of its core WIP module. SAP B1 employee can be [imported](#) from SAP B1 using the Seat Maintenance screen in LYNO. Once imported, employees are extended with execution management and data collection properties. It is also possible to manually create employees in LYNO. This may be used in cases where you do not want to maintain temporary employees in SAP B1. However, to post transactions from LYNO to SAP B1, a SAP B1 employee code must be set against the employee seat in LYNO.

HOME | **PLANNING** | WORKFORCE | FACTORY

Seat Maintenance

SEATS | RIGHTS | ROLES | GROUPS | CREWS

Named resources: Users Employees Equipment

NEW | EDIT | DELETE | **IMPORT** | ACTIVATE | DEACTIVATE | EXPORT | FILTERS

<input type="checkbox"/>	Category	Name	Workbench ID	Source	Seat type	Active?	Licensed?
<input type="checkbox"/>	Employee	Bill Levine	5	ERP	Manual	Active	Named resource
<input type="checkbox"/>	Employee	Fred Buyer	8	ERP	Manual	Active	Named resource
<input type="checkbox"/>	Employee	George Keeng	1	ERP	Manual	Active	Named resource
<input type="checkbox"/>	Employee	James Chan	6	ERP	Manual	Active	Named resource
<input type="checkbox"/>	Employee	Julie Bowens	7	ERP	Manual	Active	Named resource
<input type="checkbox"/>	Employee	Kate Milton	4	ERP	Manual	Active	Named resource
<input type="checkbox"/>	Employee	Michael Jackson	13	ERP	Manual	Active	Named resource

First Name	George	Employee No.	1
Middle Name		Ext. Employee No.	
Last Name	Keeng	<input checked="" type="checkbox"/> Active Employee	
Job Title	WH manager	Office Phone	
Position		Ext.	
Department	Purchase	Mobile Phone	
Branch		Pager	
Manager		Home Phone	
User Code	George	Fax	
Sales Employee	-No Sales Employ	E-Mail	
Cost Center		Linked Vendor	

Address	Membership	Administration	Personal	Finance	Remarks	Attachments
---------	------------	----------------	----------	---------	---------	-------------

<u>Work Address</u>		<u>Home Address</u>	
Street		Street	
Street No.		Street No.	
Block		Block	
Building/Floor/Room		Building/Floor/Room	
Zip Code		Zip Code	
City		City	
County		County	
State		State	
Country		Country	

Personal Data Protection

Natural Person

Status: None

OK Cancel

Important fields to maintain for Employee data

SAP B1 Setting	Reason
Employee No.	The employee code used throughout LYNO
First/Last Name	The employee name is used for informational purposes in LYNO

SAP B1 Capacity Definition Data

LYNO is not utilising SAP B1 capacity definition.

Machine capacity is driven by the LYNO aps capacity definition and includes:

- Calendars
- Default calendar resource quantity
- Shift changes
- Production schedule

Definition Management

SAP B1 Production Order Data

Manufacturing demand is presented as a single production job record, producing a definitive product (no multiple products per order). The order structure consists of a list of operations and a list of components (materials). The order quantity is defined as a gross or net quantity to produce. Gross quantity factors in potential operational or order scrap probability. SAP B1 does not support job batching or job split functionality.

Job definition data is used extensively in detailed scheduling, dispatching, execution management, data collection, tracking and performance analysis.

New or updated jobs will appear or be updated in LYNQ when the data is refreshed or re-cached. Refer to the 'Inbound and Outbound Integration' section for technical information.

Important fields to maintain for Production Order data

SAP B1 Setting	Reason
Product No.	LYNQ supports both stocked and non-stocked items
Description	Read into LYNQ for informational or filtering purposes
Warehouse	Specific warehouse to be used for LYNQ Job Receipts
Customer/Sales Order	Read into LYNQ for informational or filtering purposes
Planned Quantity	A positive quantity of the stock item that is required to be made
Start Date	The default scheduled start date until scheduled in LYNQ
End Date	Used to determine the optimal scheduling start date when scheduling backwards. Read into LYNQ for information purposes and filtering purposes.

Job Status

SAP B1 Jobs progress through a defined workflow of statuses:

- Planned
- Released
- Cancelled
- Complete
- Closed
- On hold

LYNQ supports all listed statuses. **Note:** for the purpose of performance, LYNQ operates with jobs that are closed no longer than 30 days ago (limitation on the SQL view level).

Parent & Sub Jobs

If defined and mapped as a User Defined Field, LYNQ understands the relation between parent and sub jobs and will automatically show the relationship in LYNQ.

Note: from version 10.00.140 and above of SAP B1, there is an ability to link production orders using the header dialog screen. LYNQ checks for the linked definition in SAP B1 first but will show the User Defined Field value for versions prior to 10.00.140.

Co-Products

SAP B1 supports co-products definition. Co-products are defined as negative BOM components. LYNQ supports issuing of negative co-products (receipt into stock) as part of Material Data Collection.

Scrap Reasons

SAP B1 does not support scrap reason codes.

SAP B1 Bill of Material Data

LYNQ reads the operation details from the production job in SAP B1 and not directly from the Bill of Material. When a production job is entered in SAP B1, the relevant operations are copied to the job based on the route stages defined in the Bill of Material. Users may amend the operation details for any particular job and refresh data in LYNQ to reference the latest operation details.

Bill of Materials

Product No. P10001 X Quantity 1 Warehouse 01
 Product Description PC - P4 2.4G, DDR 512M, 400G HD Price List Base Price
 BOM Type Production Distr. Rule
 Production Std Cost Project
 Planned Average Production Size 1.00

#	Type	No.	Description	Quantity	UoM ...	Warehouse	Issue Method	Price List
1	Route Stage	1	Assembly					
2	Resource	R300005	Assembly Machine	1		01	Backflush	
3	Item	C00001	Motherboard P4 Turbo	1		01	Backflush	Base Price
4	Item	C00003	Quadcore P4 2.4 GhZ	1		01	Backflush	Base Price
5	Item	C00004	Tower Case with Power supply	1		01	Backflush	Base Price
6	Item	C00005	WLAN Card	1		01	Backflush	Base Price
7	Route Stage	2	packing					
8	Item	C00006	Network Card10/100	1		01	Backflush	Base Price
9	Item	C00007	Hard Disk Seagate 400 GB	1		01	Backflush	Base Price
10	Item	C00008	Monitor 19" TFT	1		01	Backflush	Base Price
11	Item	C00009	Keyboard Comfort USB	1		01	Backflush	Base Price
12	Item	C00010	Mouse USB	1	Eac	01	Backflush	Base Price
13	Item	C00011	Memory DDR RAM 512 MB	1	Eac	01	Backflush	Base Price
14	Item	L10001	Labour	4		01	Backflush	Base Price
15	Text		ybygggygyu					
16	Item							Base Price

Product Price GBP 730.00

Note: due to the functional limitations of SAP B1, these features are not supported in LYNQ aps:

- Multiple constraints planning
- Queue Time
- Setup Time (Supported by User Defined Field)
- Move Time (Supported by User Defined Field)
- Teardown Time (Supported by User Defined Field)
- Subcontract Operations
- Parallel operations planning (Supported by User Defined Fields)

It is mandatory to have a route stage specified on the bill of material, for LYNQ to function. Route stages provide a description of the production process and potential wait time. The resource determines run time for the route. In order to plan the route accordingly, both should be provided.

Currently LYNQ supports only one resource per route stage of type labour and machine. In the event of having both, machine takes priority. If a route stage includes more than 1 resource of the same type, the first resource listed in the bill of material is read for scheduling purposes.

Important fields to maintain for Bill of Material data

SAP B1 Setting	Reason
BOM Type	Production
Type	Route Stage, Resource, Item lines are used to define the production process in LYNQ
No.	Route Stage No, Resource No or Item No
Quantity	Quantity or Resource or Item
Warehouse	Warehouse for the Item
Issue Method	Manual or Backflush
Waiting Days	No of Waiting Days

SAP B1 Stock Code Data

LYNQ observes the maximum number of decimals field value in LYNQ api, when posting material issue and other quantity transactions from LYNQ to SAP B1. **Note:** ensure that the number of decimals you set in LYNQ api is sufficiently large enough to meet the maximum number of decimals set against the stock codes. Refer to the 'Outbound LYNQ api settings' section for further information.

Stock Code Traceability

SAP B1 offers three options for stock code traceability. All methods are supported in LYNQ.

- None: No tracking of the batch or serial numbers will be performed
- Serial Numbers: Tracking will be performed by serial number
- Batch Number: Tracking will be performed by batch number

If any of two last methods are chosen you must enter a valid serial or batch number using material issues and or job receipts in LYNQ.

SAP B1 Projects

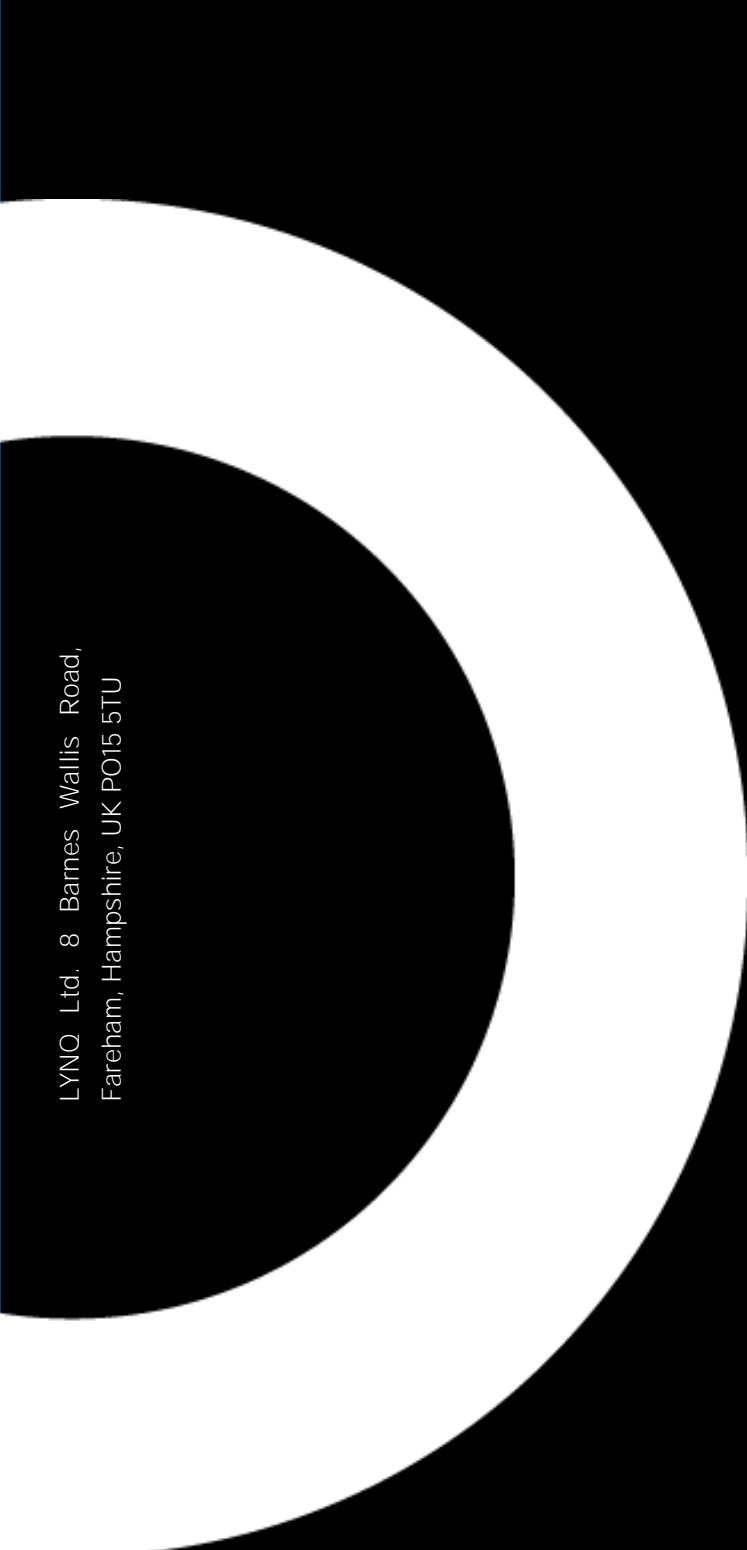
SAP B1 supports 'multiple to one' jobs to project relation. LYNQ understands this relation.

SAP B1 Non-Productive Codes

SAP B1 does not support Non-Productive Codes.

SAP B1 Other Data

LYNQ downloads Sales & Purchase Data to determine the material availability of a stock code. This data is used during the calculate material function in LYNQ aps.



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