HIVE BDC FOR MICROSOFT DYNAMICS AX 2009

E-invoice setup guide

Document

Setup guide, version 1.2
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Content

Data Flow setup, automatic and manual sending, Hive BDC settings, SharePoint upload and e-mail delivery

Product

Hive BDC 1.13.0, by Balsoft
Microsoft Dynamics AX 2009 with the Balsoft Data Flow module

Balsoft GmbH
Herler Str. 109
51067 Köln
HRB 121678 Amtsgericht Köln, USt-IdNr. DE452983132





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1 What Hive BDC does

Hive BDC (Balsoft Data Connector) takes documents posted in Microsoft Dynamics AX 2009 and delivers them to the right place. For sales invoices it turns the posted invoice into a German electronic invoice. AX hands every posted invoice over as a pair of files, the invoice data and the invoice PDF; the Hive BDC service on your server reads them and creates the e-invoice.

Two e-invoice formats are supported, both based on the European standard EN 16931.

Format	What it is	When it is used
XRechnung	A pure data file in XML. There is no printed page inside it; the invoice is the data.	Public authorities in Germany, and customers who ask for XRechnung explicitly.
ZUGFeRD	A normal PDF invoice that carries the same invoice data inside it. A person can read the PDF, a system can read the data.	Business customers, and as the default where nothing else is agreed.

The product has two parts. The service runs in the background on a server and does the work: it watches the folders, converts the invoices, sends them by e-mail, uploads them to SharePoint and writes the log. The dashboard is the window you open to see whether everything is running, to look at the last documents and to change a setting. In the Start menu it is called Hive BDC Dashboard.

Everything runs on your own server and in your own Microsoft 365 tenant. Invoice data is not sent to Balsoft or to any other outside service. AX 2009 itself only writes files into a folder.

Note: The AX screens in this guide come from a German AX 2009. Where a form, a group or a field is named, the German label you see on screen comes first and the English meaning follows in brackets. Company, user and bank names are hidden in the pictures. Red boxes and numbers mark what the text refers to.

2 Before you start

Please make sure the following points are in place. They are set up once during installation.

- The Data Flow module is visible in your AX menu.
- The export folder is a network share that both the AX server and the Hive BDC service can reach with write permission.
- The Hive BDC service is installed on a server that is always running, and its licence is valid.
- Your customers' master data contains what the e-invoice format requires, for example address, VAT registration number, payment terms and an e-mail address for invoices.
- For e-mail delivery and SharePoint upload, the two app registrations in your Microsoft 365 tenant exist.

Your IT department creates the two app registrations in Microsoft Entra ID before Hive BDC is set up: "Hive BDC SharePoint" with the permission Sites.Selected and write access on the SharePoint sites the documents go to, and "Hive BDC Mail" with the application permission Mail.Send in Exchange Online, limited to the one mailbox the documents are sent from. You only need the ones for the features you use. Balsoft provides scripts that create both with exactly these permissions, and a guide for your IT department:

- Scripts and instructions: https://balsoft.de/en/products/hive-bdc#microsoft-365-setup
- Guide as PDF: https://balsoft.de/downloads/hive-bdc/Hive-BDC-Azure-Setup-EN.pdf

For each app registration your IT department hands over three values: the Directory (tenant) ID, the Application (client) ID and a client secret. For the mail app it also names the mailbox the documents are sent from. Chapter 6.7 shows where they are entered.

3 The way of an invoice at a glance

AX and Hive BDC exchange their information through a folder: AX writes into it and Hive BDC reads from it. Neither side calls the other directly, which is why nothing is lost when one of them is restarted.

Step	Where	What happens
1	AX: posting or An Hive DocFlow senden	The invoice is put in the queue, the table Datenexport (chapters 5.1 and 5.2).
2	AX: Data Flow Import/Export Stapel	The invoice data is collected and stored as one message in Ausgangs-Flow.
3	AX: Data Flow Senden/Empfangen Stapel	The message is written as a JSON file, together with the invoice PDF, into the export folder.
4	Hive BDC service	Reads the pair of files, creates the XRechnung or ZUGFeRD file, mails it to the customer and uploads it to SharePoint if this is set up.

Chapter 4 sets up AX 2009 once per company, chapter 5 follows one invoice from posting to the finished e-invoice, and chapter 6 explains the Hive BDC settings.

4 Setting up Dynamics AX 2009

The setup is done once per company. After that every posted sales invoice follows the steps in chapter 5 without further changes.

4.1 The Data Flow area page

All forms of this chapter are on the Data Flow Bereich (Data Flow area page). Open it from the navigation path at the top of the AX window: company, Data Flow, Data Flow Bereich. The page has these groups:

Group	Forms
Allgemeine Formulare (Common forms)	Datenexport, the queue of posted documents.
Periodisch (Periodic)	Data Flow Senden/Empfangen Stapel and Data Flow Import/Export Stapel, the two batch jobs.
Einstellungen (Setup)	Parameter, Rechnungsbankkonten, Flow, Dokumenttypen, Feldzuordnung Kundenrechnung and Fehlerprotokoll Benutzereinstellung.
Abfragen (Inquiries)	Eingangs-Flow, Ausgangs-Flow and the error logs.

4.2 Flow: creating the e-invoice flow

A flow describes one kind of data that leaves or enters AX. The e-invoice needs one outbound flow.

Open the Data Flow area page (1) and choose Flow in the group Einstellungen (2).

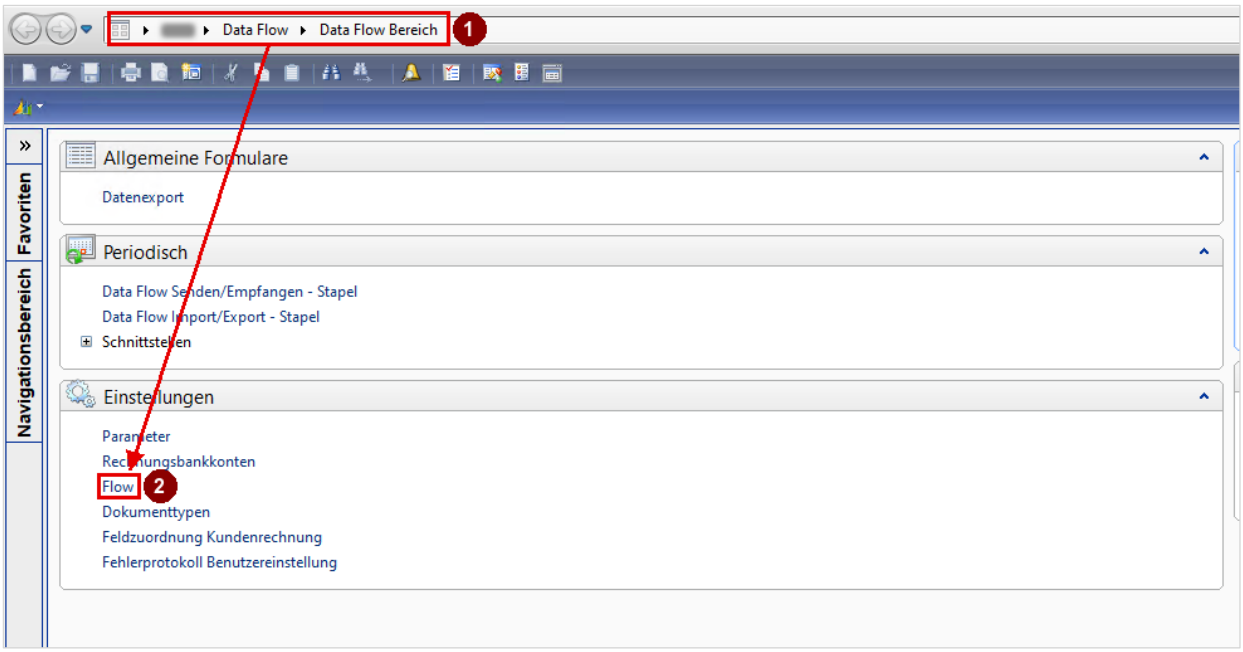

Figure 1: Data Flow Bereich, Flow in the group Einstellungen

Create a new line with Ctrl+N and enter the Flow-ID (1), for example E-InvoiceExp. Leave Gesperrt (Stopped) empty (2): as long as this check box is set, the flow takes no new invoices.

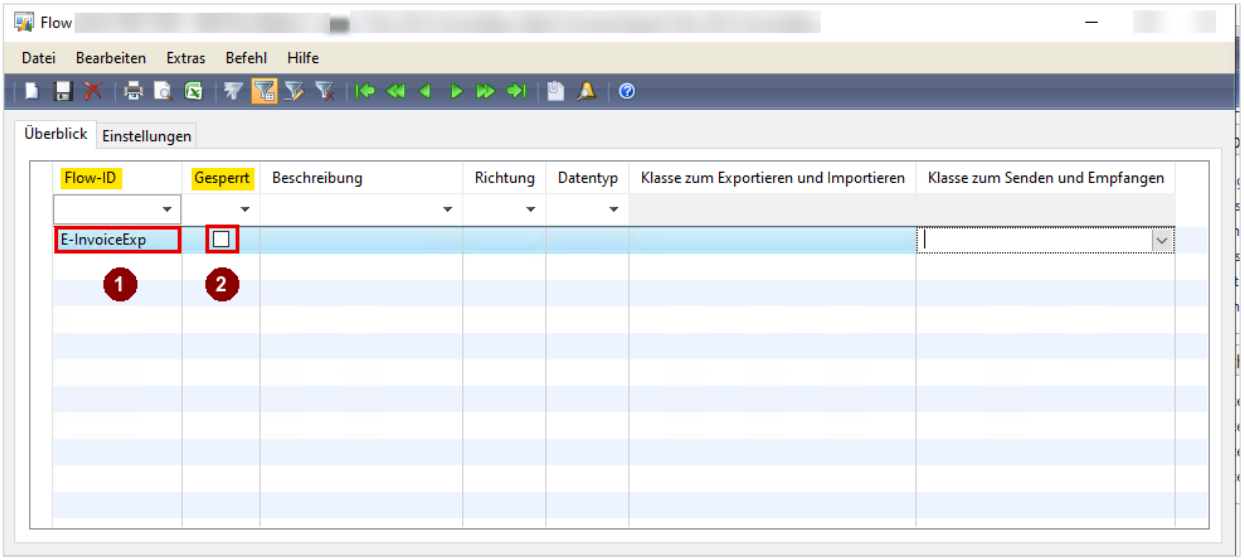

Figure 2: New flow E-InvoiceExp, Gesperrt stays empty

Enter a Beschreibung (Description). It is shown in every list where you select the flow.

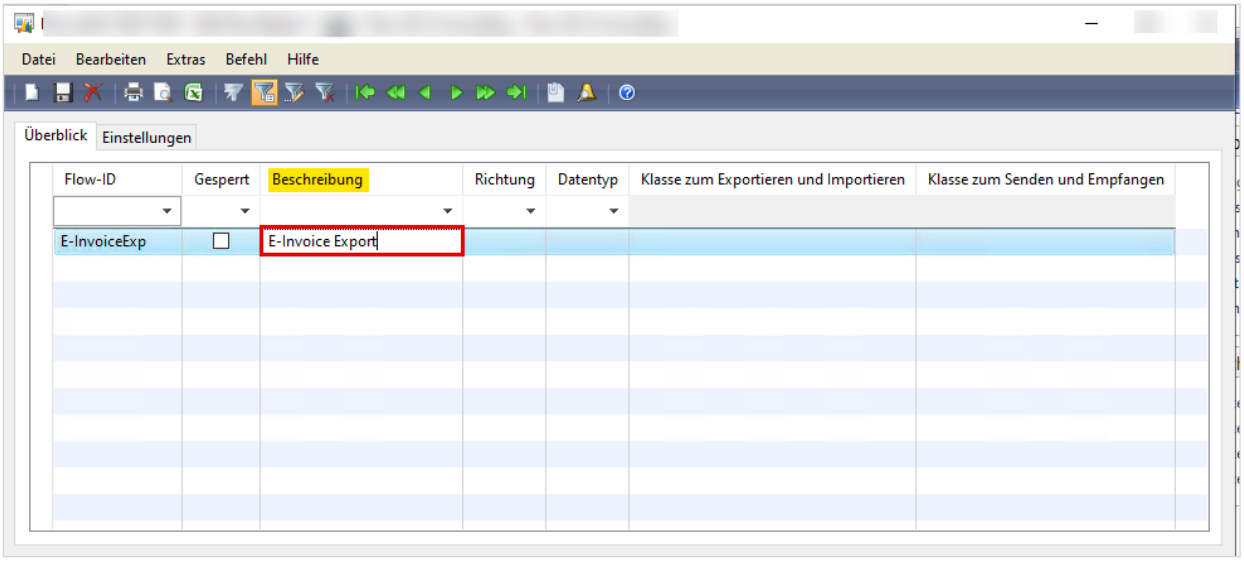

Figure 3: Beschreibung of the flow

Set Richtung (Direction) to Abgang (Outbound), because the invoices leave AX.

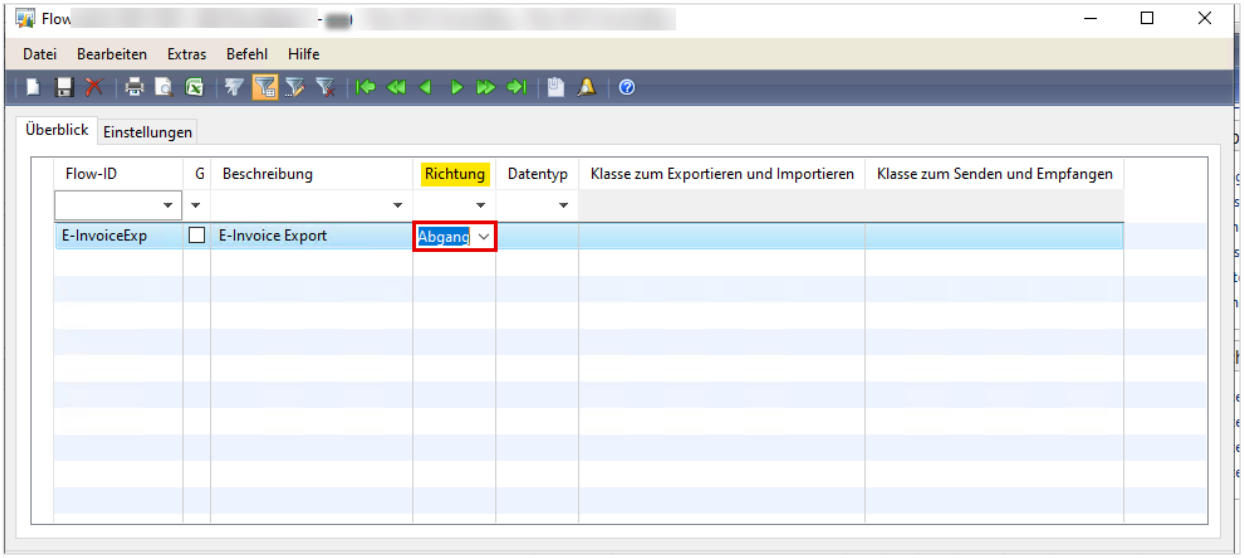

Figure 4: Richtung Abgang

Set Datentyp (Data type) to JSON. Hive BDC reads the invoice data in this format.

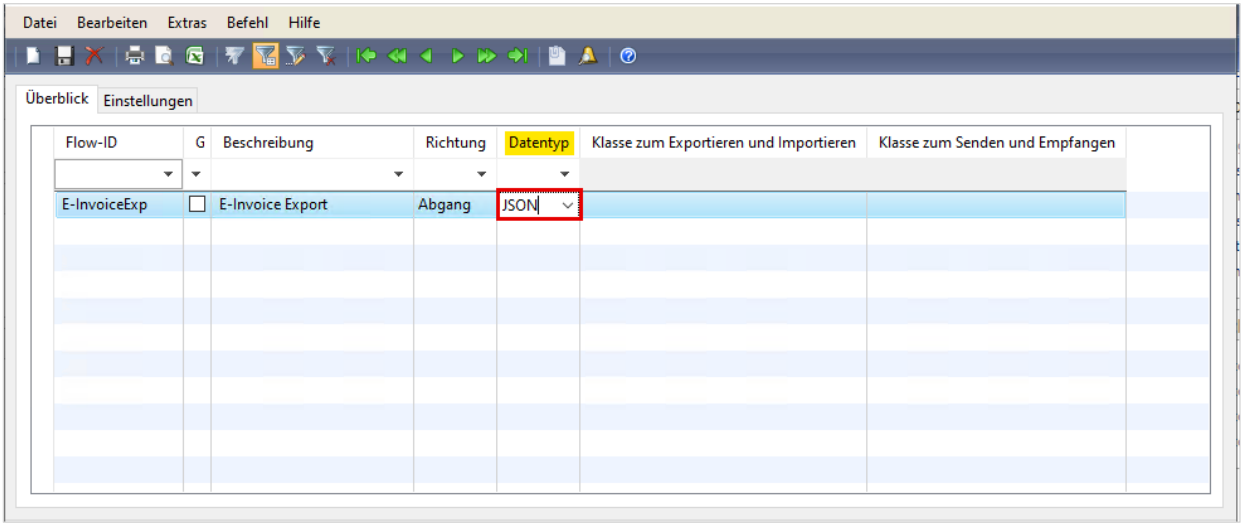

Figure 5: Datentyp JSON

In Klasse zum Exportieren und Importieren (Class to export and import) select BDC Sales Invoice JSON Export. This class collects the invoice data.

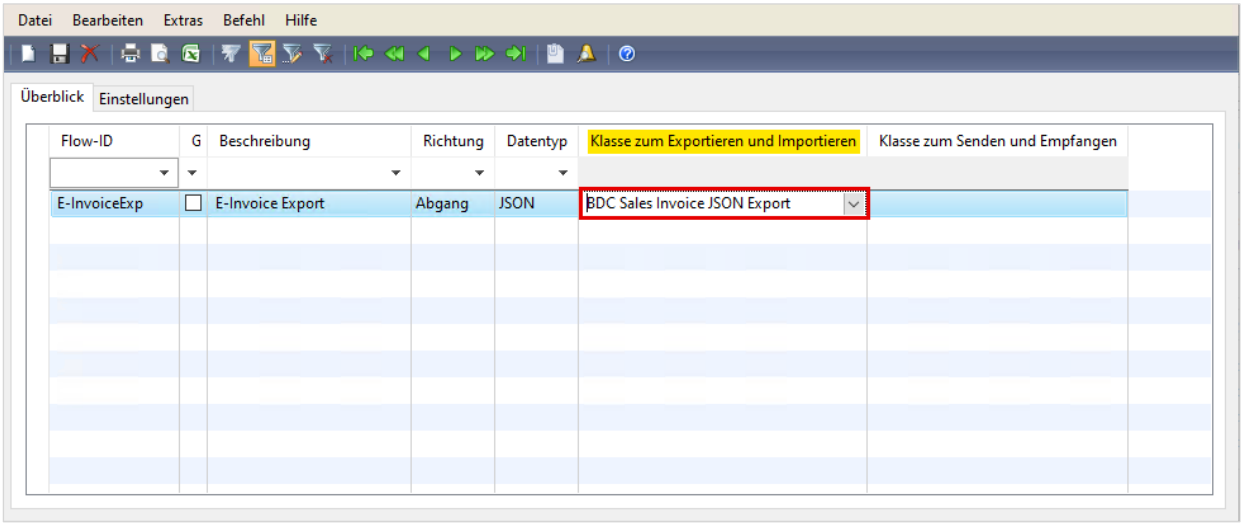

Figure 6: Klasse zum Exportieren und Importieren

In Klasse zum Senden und Empfangen (Class to send and receive) select BDC Send File. This class writes the files into the export folder.

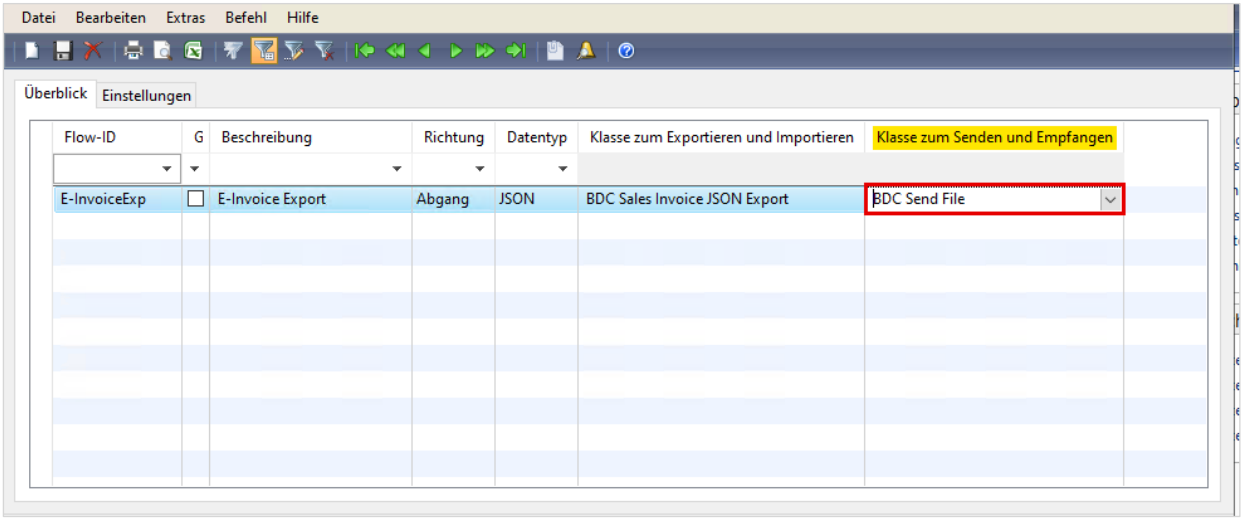

Figure 7: Klasse zum Senden und Empfangen

Field	Value for the e-invoice	Meaning
Flow-ID	E-InvoiceExp	Name of the flow. It is selected in the document types and in both batch jobs.
Gesperrt	empty	A stopped flow takes no new invoices.
Beschreibung	free text	Shown next to the Flow-ID in all selection lists.
Richtung	Abgang	Data leaves AX.
Datentyp	JSON	Format of the invoice data file.
Klasse zum Exportieren und Importieren	BDC Sales Invoice JSON Export	Builds the invoice message.

Field	Value for the e-invoice	Meaning
Klasse zum Senden und Empfangen	BDC Send File	Writes PDF and JSON into the export folder.

4.3 Flow: the export folder

Switch to the tab Einstellungen (Settings) (1). The REST-API-Einstellungen are not used for the e-invoice and stay empty. Under Dateieinstellungen (File settings) enter the export folder in Ordner für ausstehende Dateien (Folder for pending files) (2). Use a network path such as \\server\share\folder, not a local drive letter, so that the Hive BDC service can read it as well.

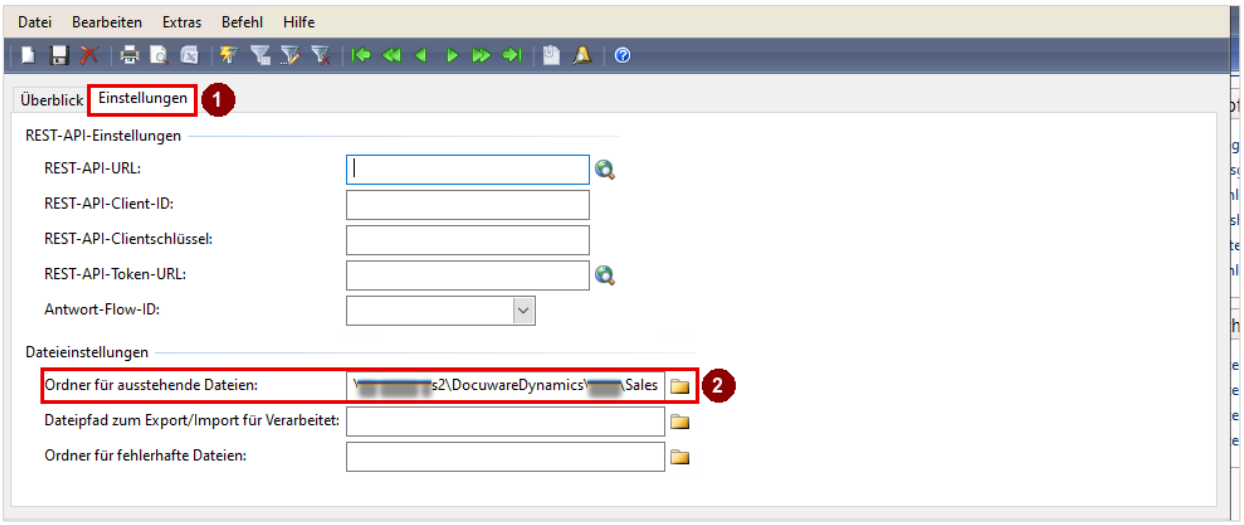

Figure 8: Export folder in Ordner für ausstehende Dateien

If the folder does not exist yet, AX creates it the first time it writes a file. The field must not be empty, and it cannot be the root of a drive such as C:\.

Note: This path must be exactly the same folder that Hive BDC reads (Folder of the company, chapter 6.3). If the two paths differ, the files are written but never converted.

4.4 Document management parameters

Choose Parameter in the group Einstellungen (1). The form Parameter der Dokumentverwaltung opens on the tab Allgemeines (General). These settings apply to every e-invoice of the company.

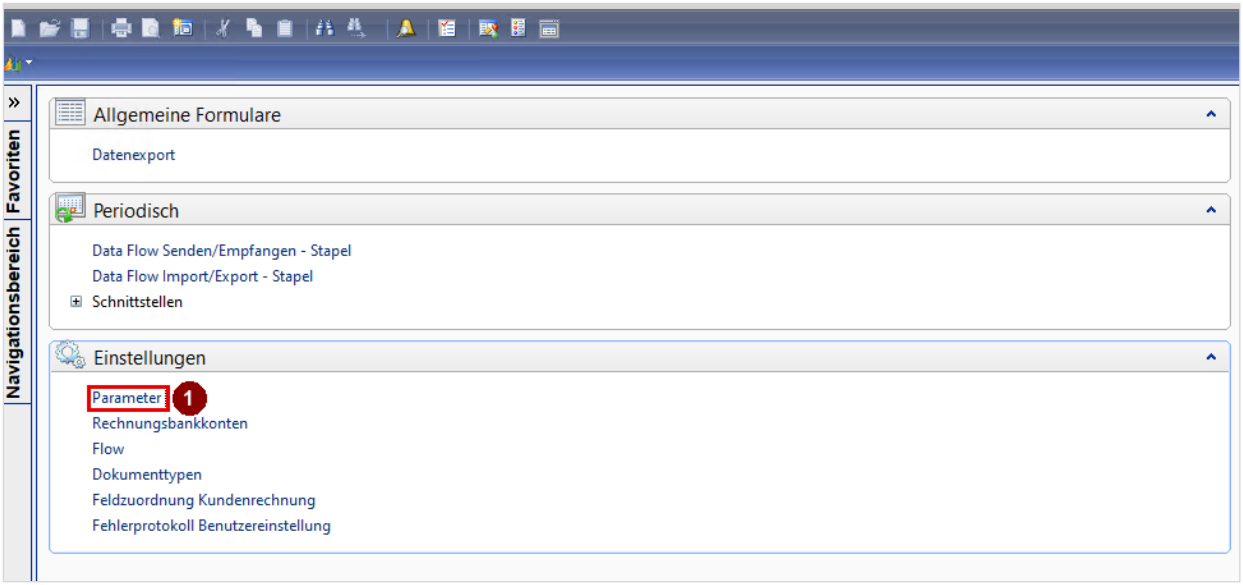

Figure 9: Parameter in the group Einstellungen

Standard-E-Rechnungstyp (default e-invoice type)

This is the format used for every customer that has no format of its own (1). The list has three values (2): Kein (None) creates no e-invoice, XRechnung creates a pure XML file, ZUGFeRD creates a PDF with embedded invoice data. If a customer has its own E-Rechnungstyp in the customer master data (chapter 4.8), that type is used instead.

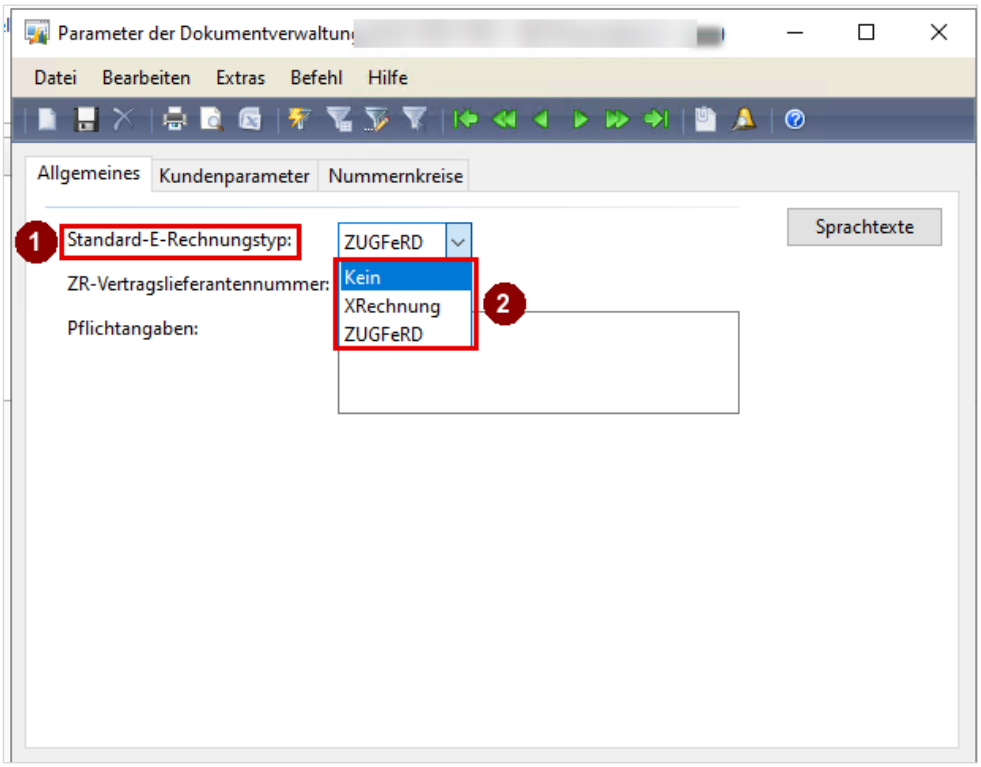

Figure 10: The three values of Standard-E-Rechnungstyp

ZR-Vertragslieferantennummer (ZR contract supplier number)

Enter the supplier number your company has at the central settlement (ZR) provider. It is passed on only with the invoices of customers that have a ZR-Code (chapter 4.8), so that the provider can assign the invoice to you. If you do not work with a ZR provider, leave the field empty.

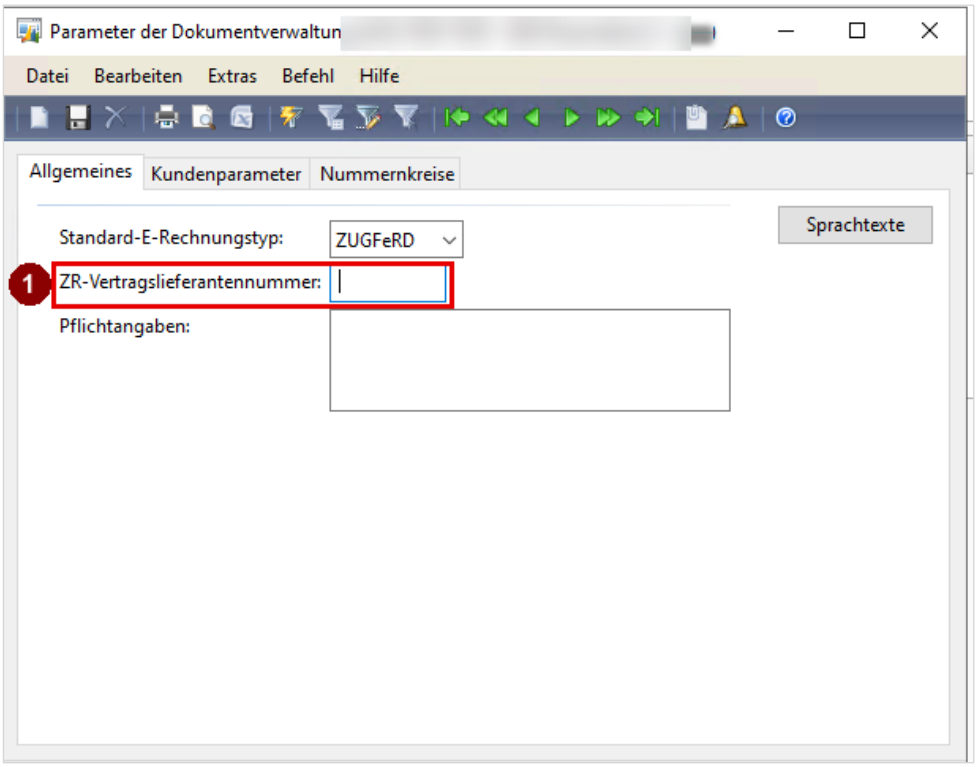

Figure 11: ZR-Vertragslieferantennummer

Pflichtangaben (legal notice)

The text in Pflichtangaben is added to every e-invoice, for example a note on the registered office, the commercial register or the managing directors. It is the default text for all languages.

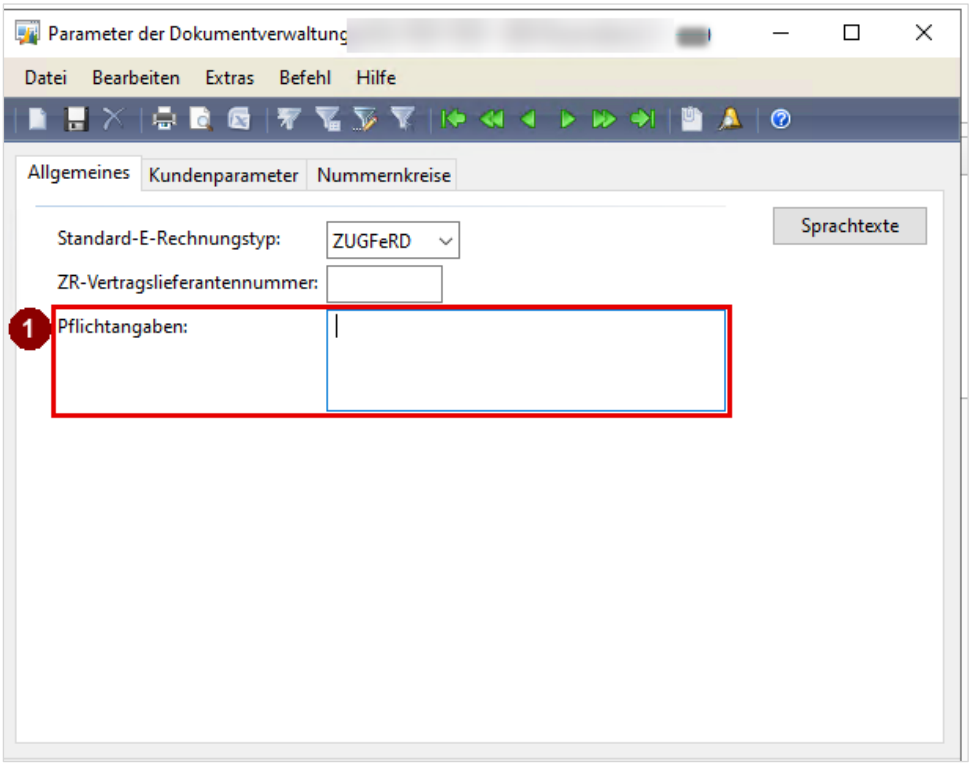

Figure 12: Pflichtangaben

If your customers need the notice in their own language, choose Sprachtexte (Language texts) (1). In the form that opens, create a line, select the Sprache (Language) (2) and enter the translated notice in Text (3). Each invoice uses the text in its language; if there is none for that language, the field Pflichtangaben is used.

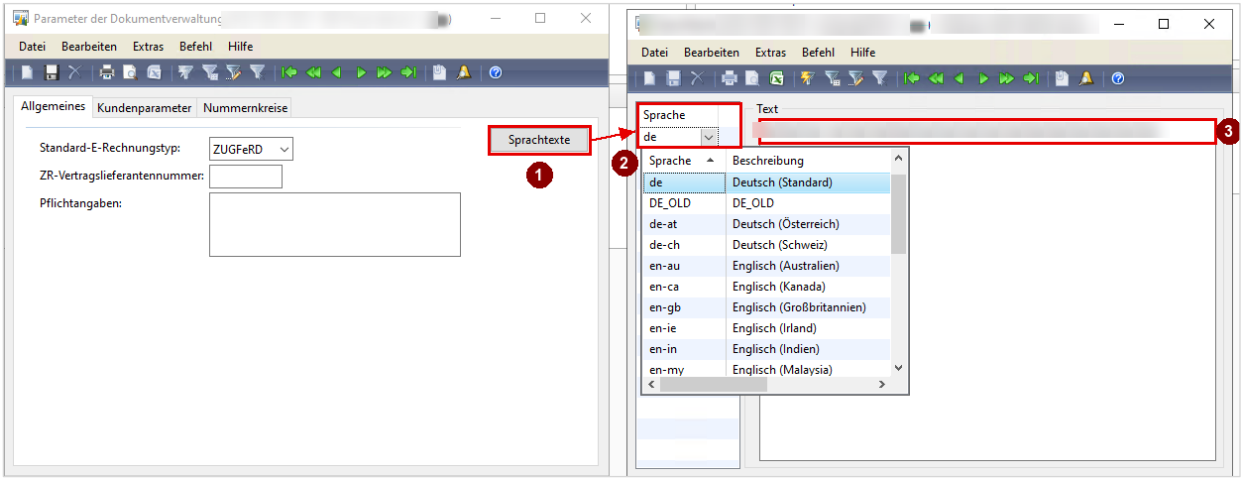

Figure 13: Sprachtexte: language and translated legal notice

Kundenparameter (customer parameters)

The tab Kundenparameter (1) holds Data Flow settings for other scenarios, for example Pfad für Bestellberichte (path for purchase order reports) (2) and the journal names for purchase invoices and transfers. They are not needed for the e-invoice. Leave them as they are.

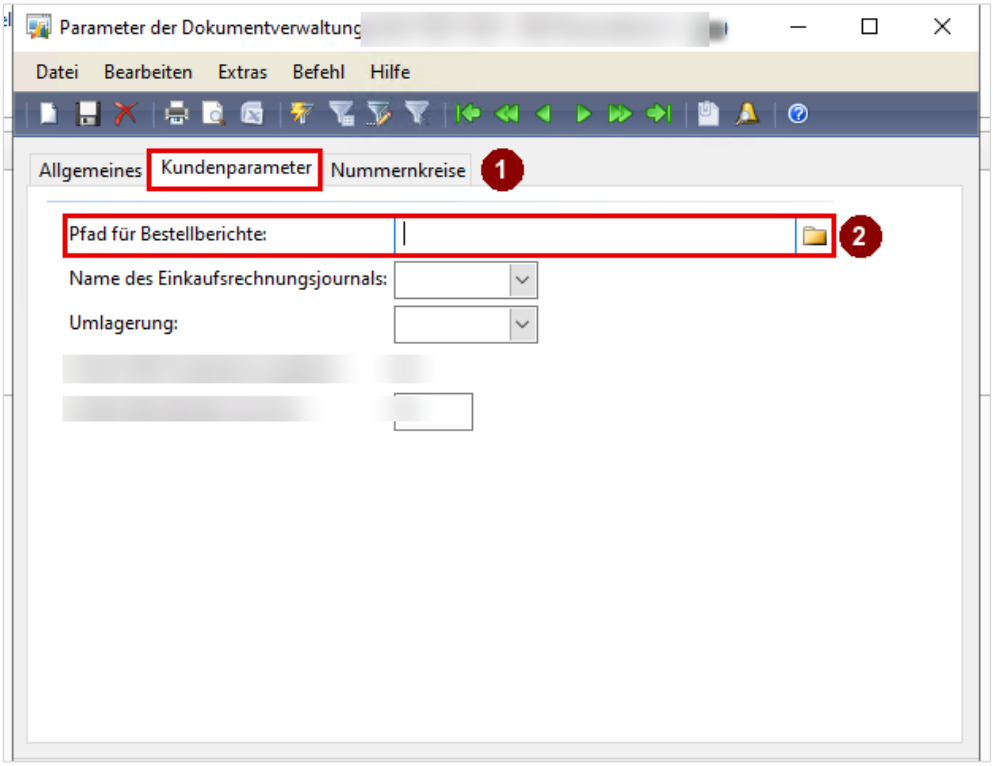

Figure 14: Tab Kundenparameter

Nummernkreise (number sequences)

Switch to the tab Nummernkreise (1). Every message the Data Flow creates gets its own number from a number sequence. Assign a number sequence code to both references (2): Eingangsdaten-ID (inbound data ID), for example DFINDID, and Ausgangsdaten-ID (outbound data ID), for example DFOUTDID.

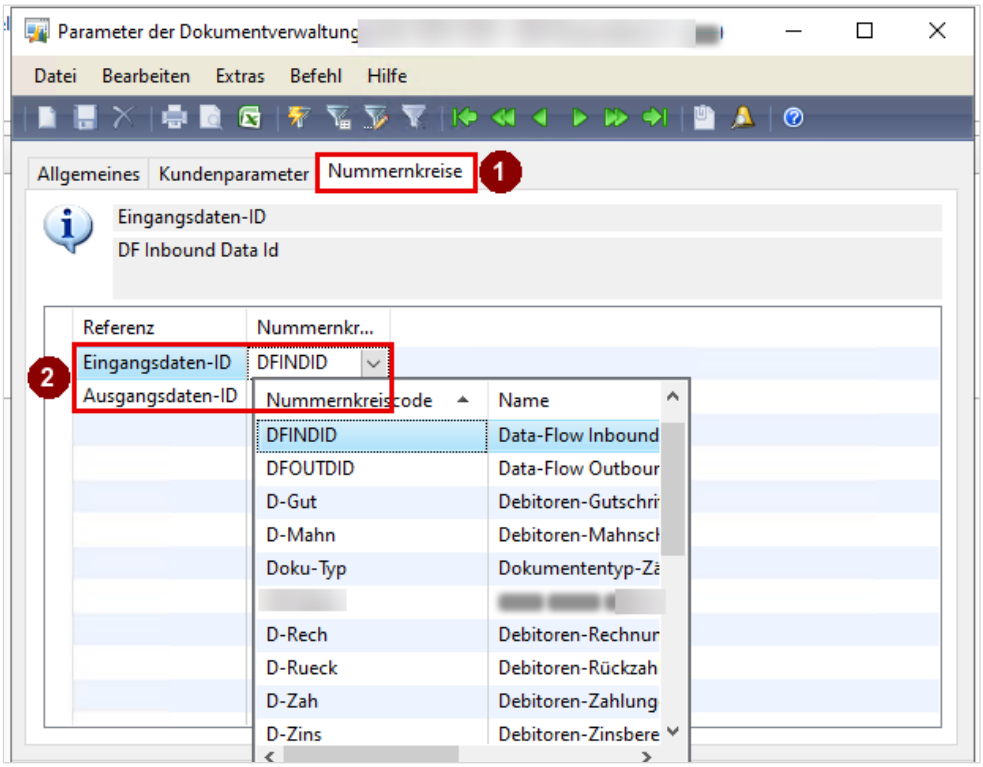

Figure 15: Tab Nummernkreise with the two references

Reference	Used for
Ausgangsdaten-ID	The number of every message in Ausgangs-Flow, for example DO0000001234. Required for sending e-invoices: without it the Data Flow Import/Export Stapel cannot create the message.
Eingangsdaten-ID	The number of every message in Eingangs-Flow. Needed when documents are received into AX.

Note: Both number sequences are set up per company, with automatic numbering. If the codes do not exist yet, create them under Grundeinstellungen > Nummernkreise.

4.5 Document types

The document types connect a kind of document to its flow. Only document types that are listed here and set to Aktiv are sent.

Open the Data Flow area page (1) and choose Dokumenttypen in the group Einstellungen (2).

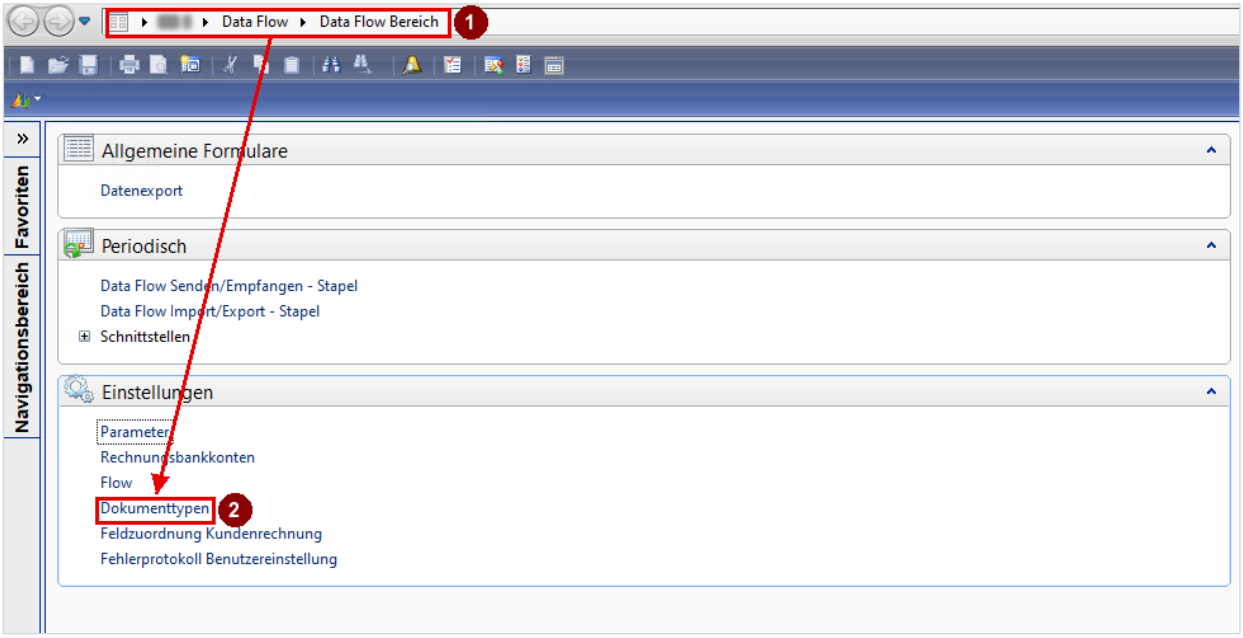

Figure 16: Dokumenttypen in the group Einstellungen

Create a new line with Ctrl+N and select Verkaufsrechnung (Sales invoice) in the column Dokumenttyp. Each document type can be listed once.

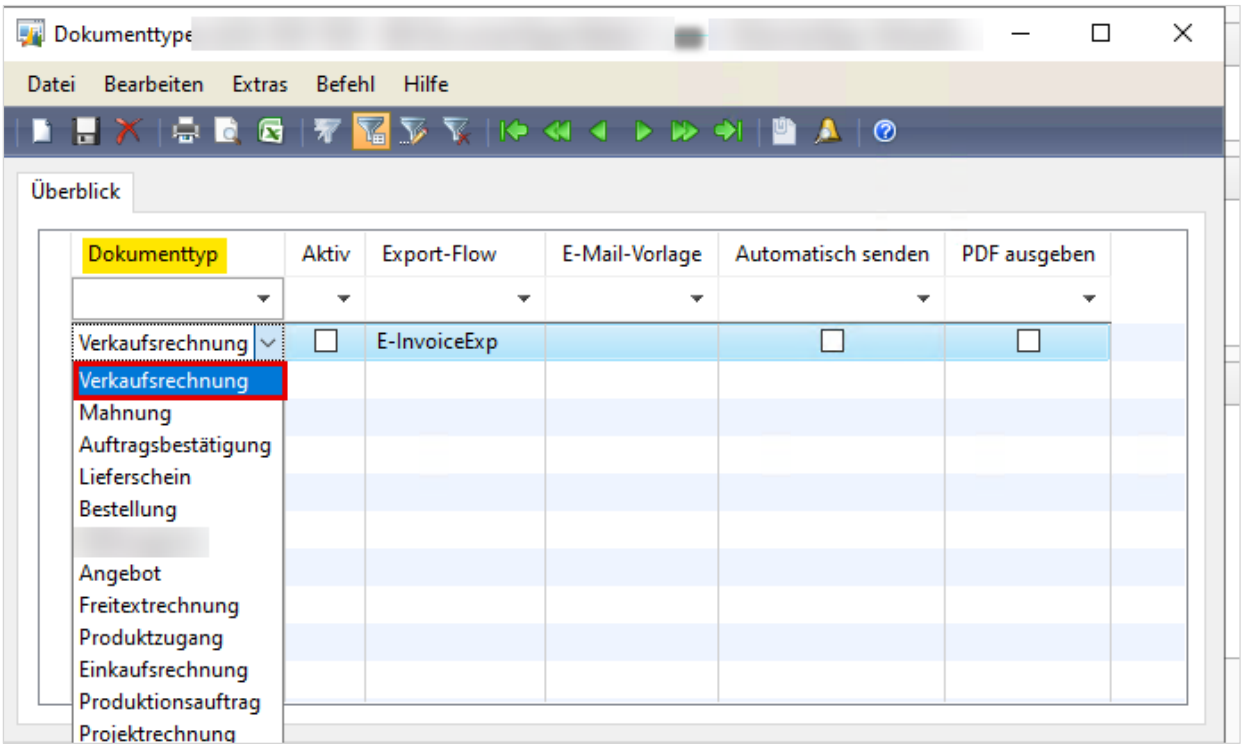

Figure 17: New line with the document type Verkaufsrechnung

Set Aktiv (Active). A document type that is not active is never sent, neither automatically nor by hand.

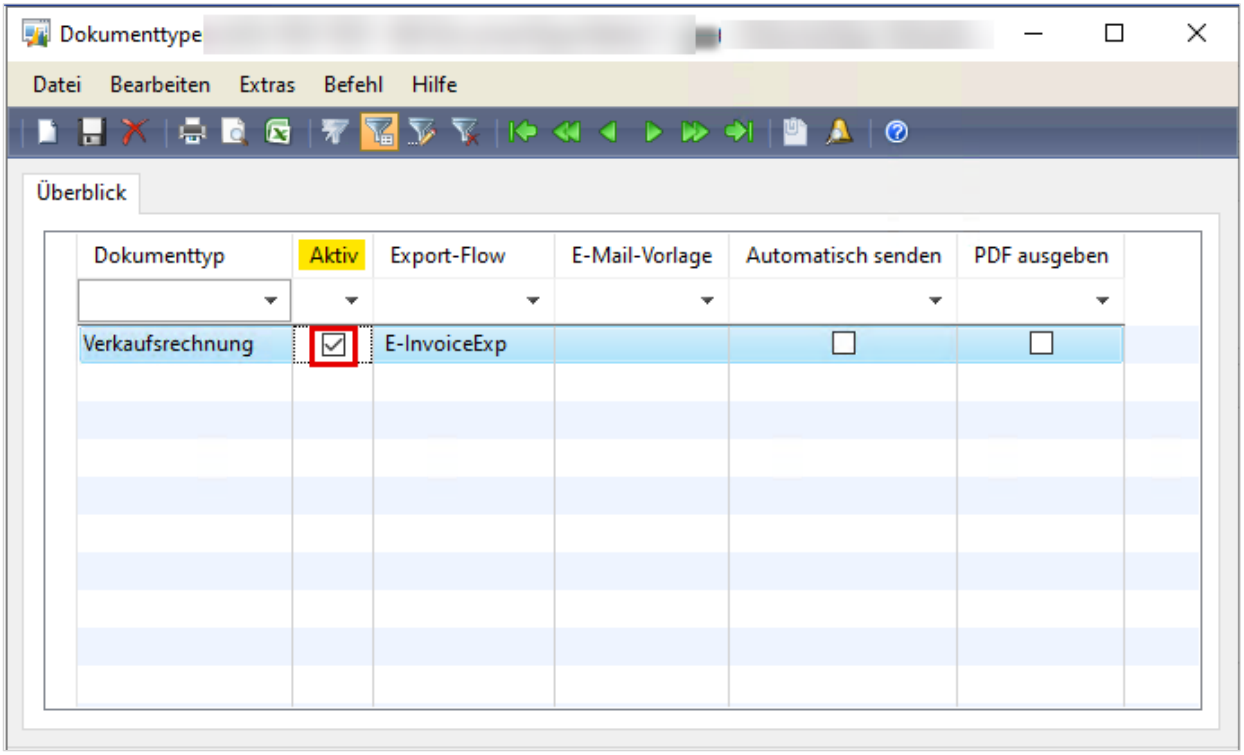

Figure 18: Aktiv is set

In Export-Flow select the flow you created in chapter 4.2, here E-InvoiceExp.

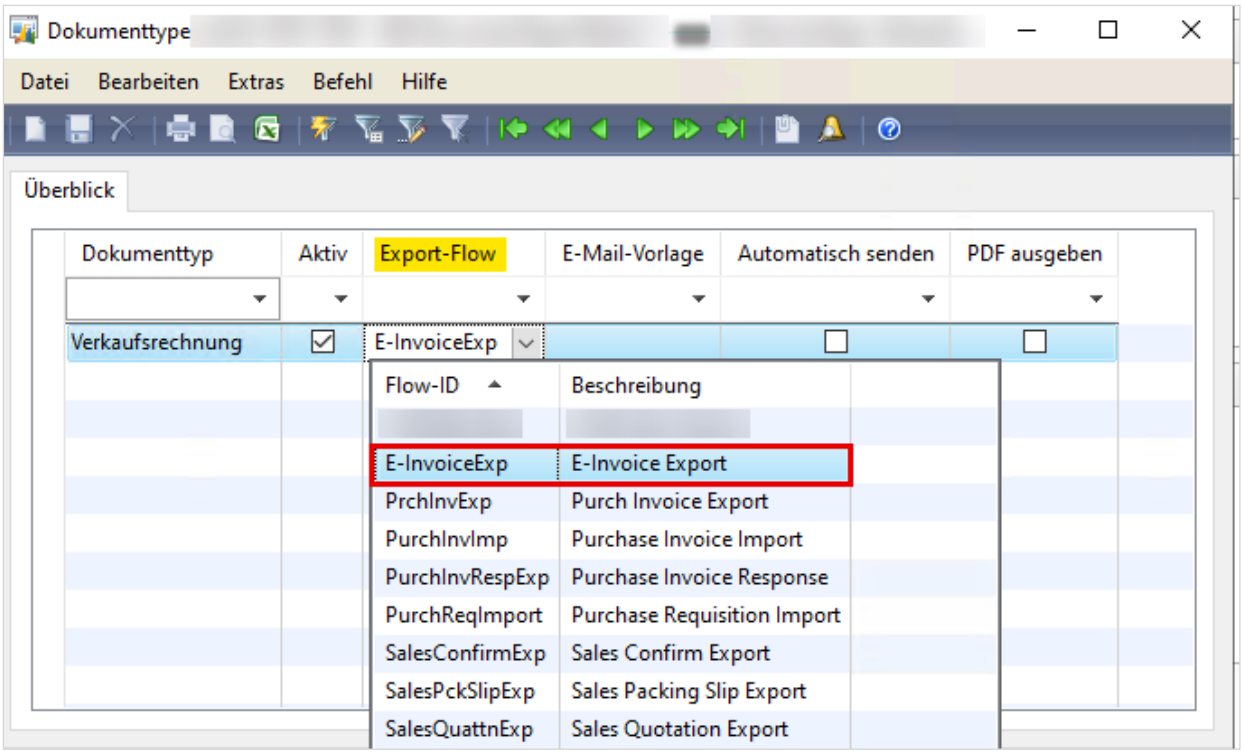

Figure 19: Export-Flow E-InvoiceExp

In E-Mail-Vorlage (E-mail template) select the AX e-mail template whose subject and text are used when the invoice is mailed to the customer. AX takes the text in the language of the customer, or of the invoice if the customer has none; if the template has no text in that language, it takes the language of the company. Leave the field empty if the e-invoice is not sent by e-mail.

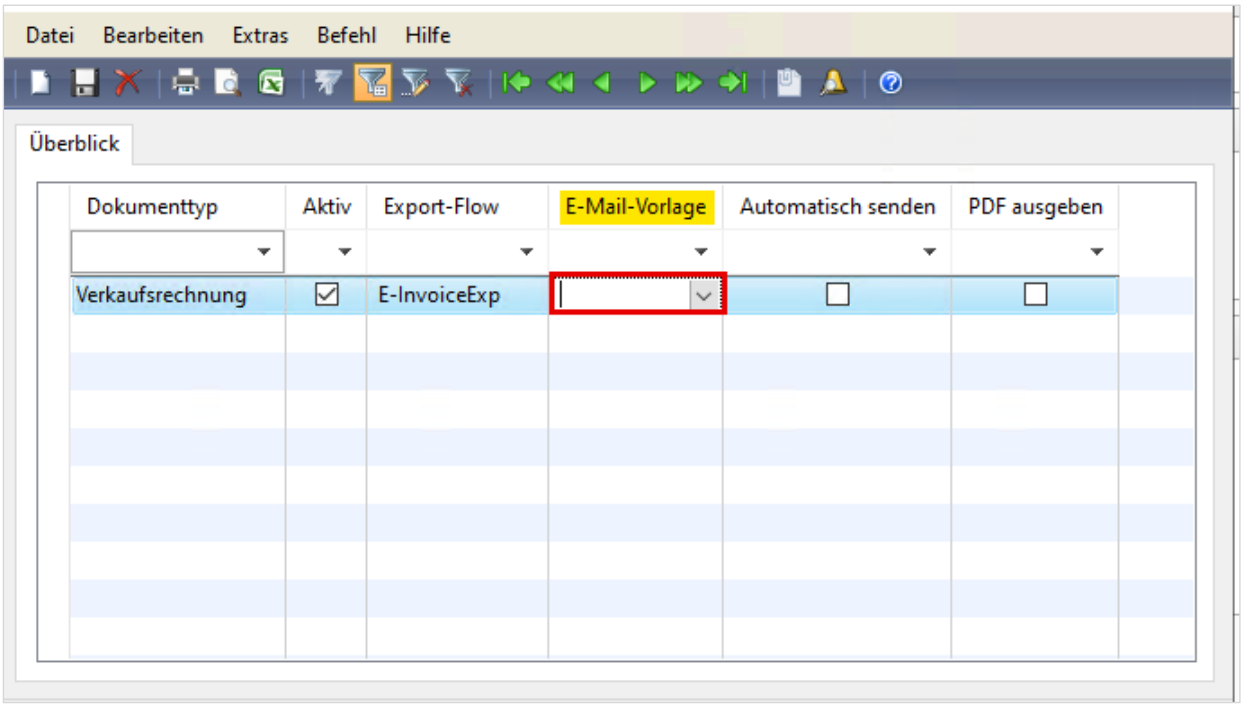

Figure 20: E-Mail-Vorlage

Set Automatisch senden (Auto send) if every invoice is to be queued automatically when it is posted (chapter 5.1). Without it, posting does not queue the invoice; it can still be sent by hand with An Hive DocFlow senden (chapter 5.2).

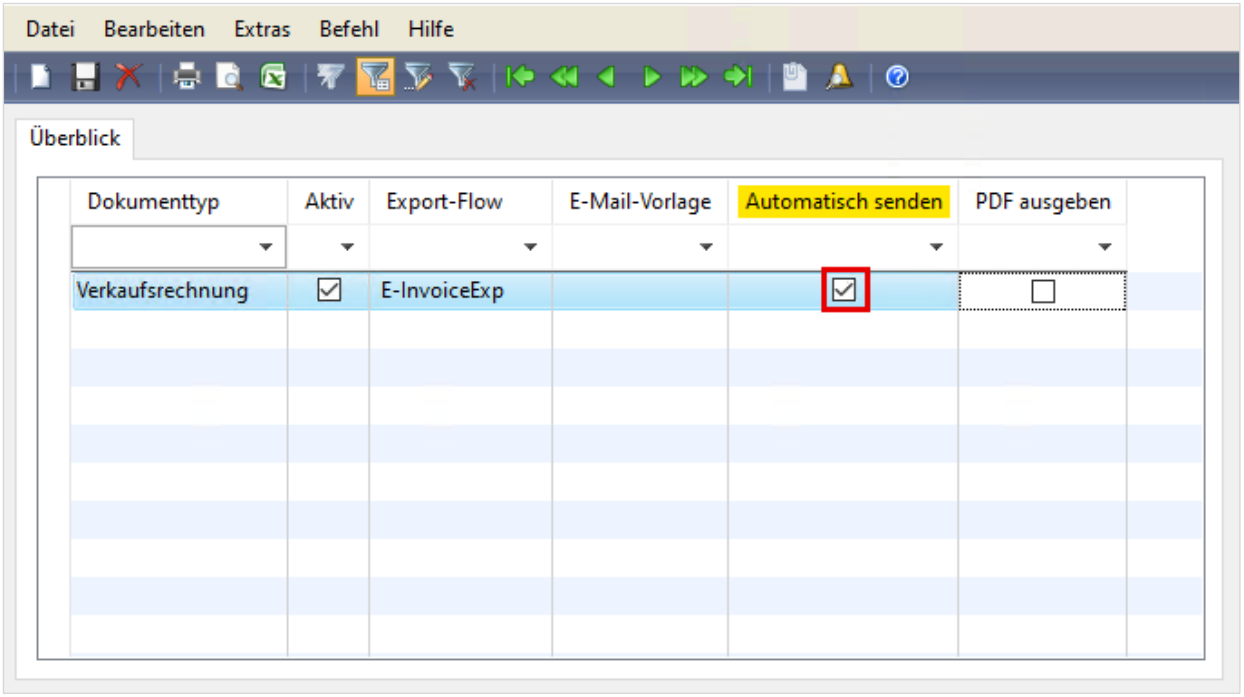

Figure 21: Automatisch senden is set

Set PDF ausgeben (Include PDF) so that the invoice PDF is written next to the invoice data. For ZUGFeRD the PDF is the basis of the e-invoice. The PDF is the normal AX invoice report.

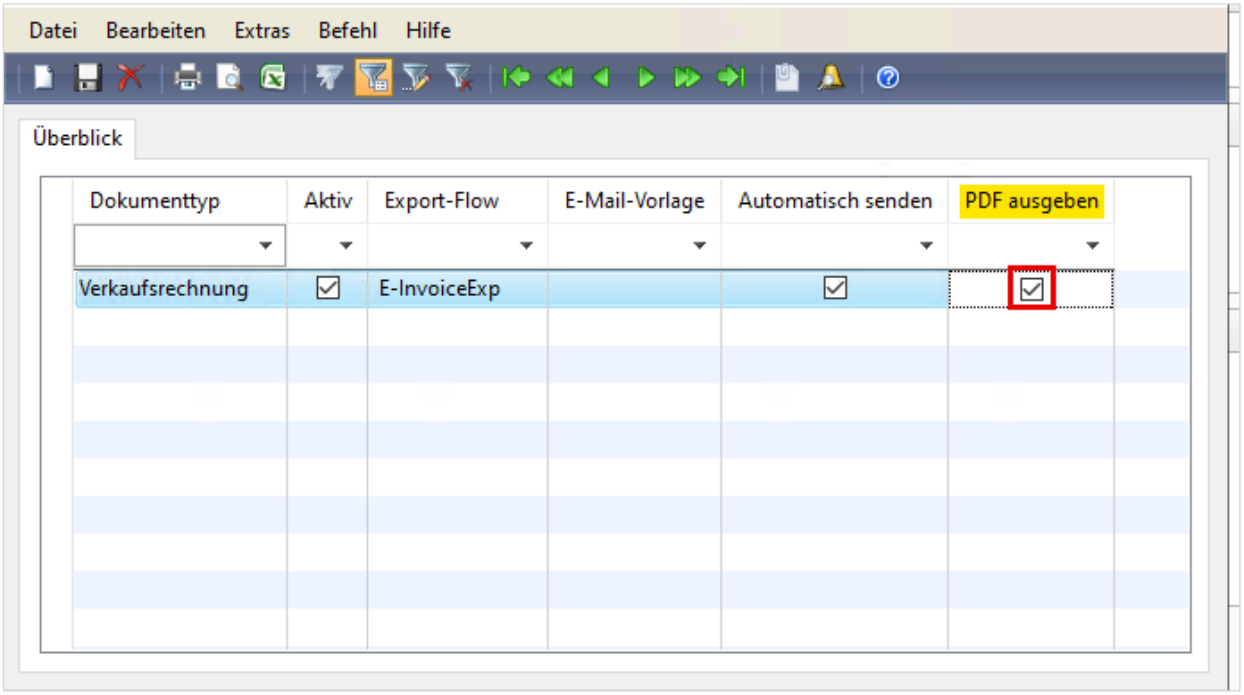

Figure 22: PDF ausgeben is set

Column	Meaning
Dokumenttyp	The kind of document, for example Verkaufsrechnung, Freitextrechnung or Projektrechnung. Each type can be listed once.
Aktiv	Switches sending for this type on and off.
Export-Flow	The flow from chapter 4.2 that carries this type.
E-Mail-Vorlage	Subject and text of the e-mail to the recipient.
Automatisch senden	Queues every posted document of this type automatically.
PDF ausgeben	Writes the document PDF together with the data file.

4.6 Invoice bank accounts

An e-invoice carries the bank account the customer pays to. In Rechnungsbankkonten you list the company bank accounts that are given on the e-invoice.

Open the Data Flow area page (1) and choose Rechnungsbankkonten in the group Einstellungen (2).

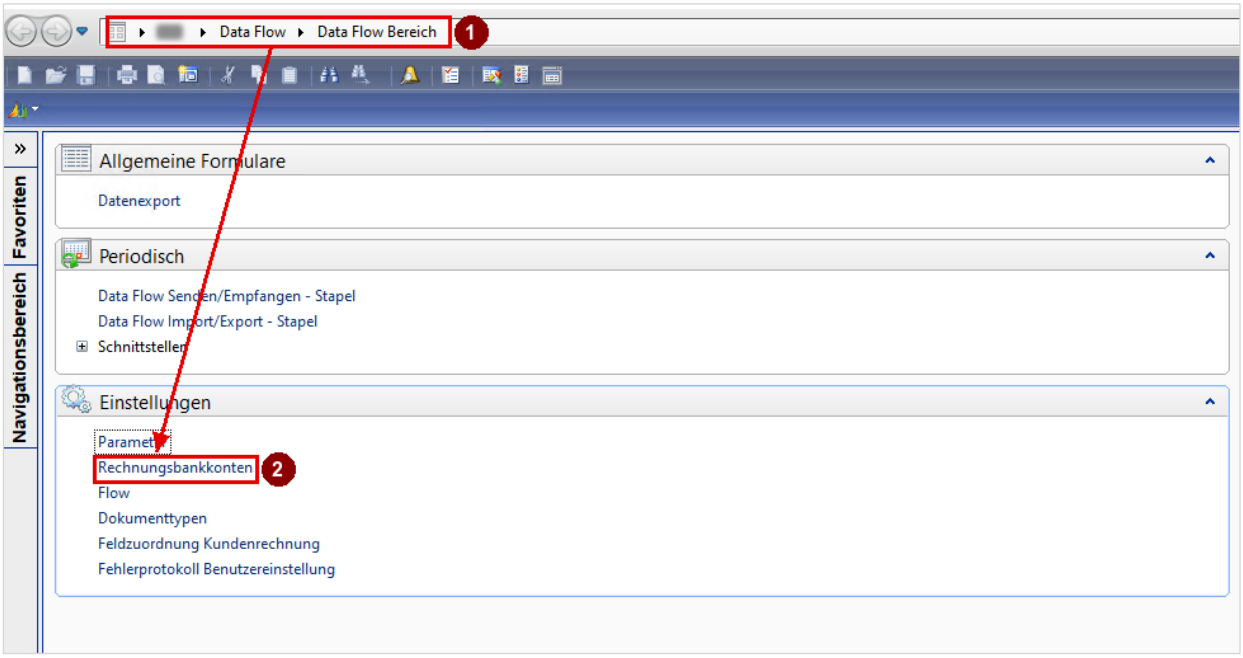

Figure 23: Rechnungsbankkonten in the group Einstellungen

Create a new line with Ctrl+N. AX fills Positionen (Position) with the next number (1).

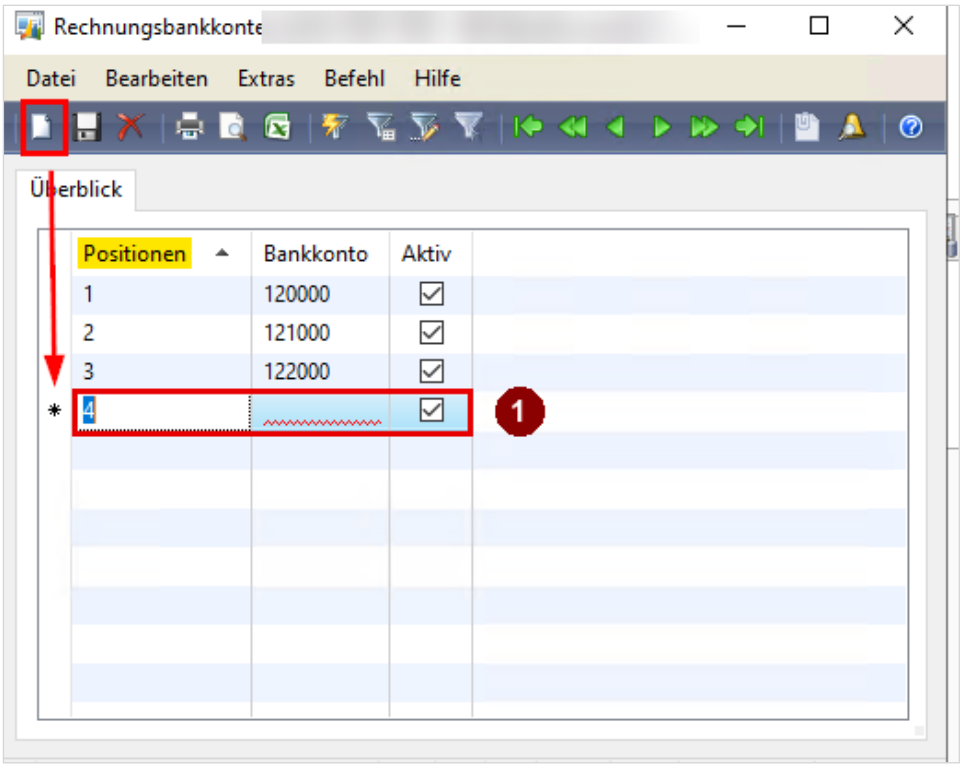

Figure 24: New line with the next position

In Bankkonto (Bank account) select the AX bank account (1). The lookup shows all bank accounts of the company with their names.

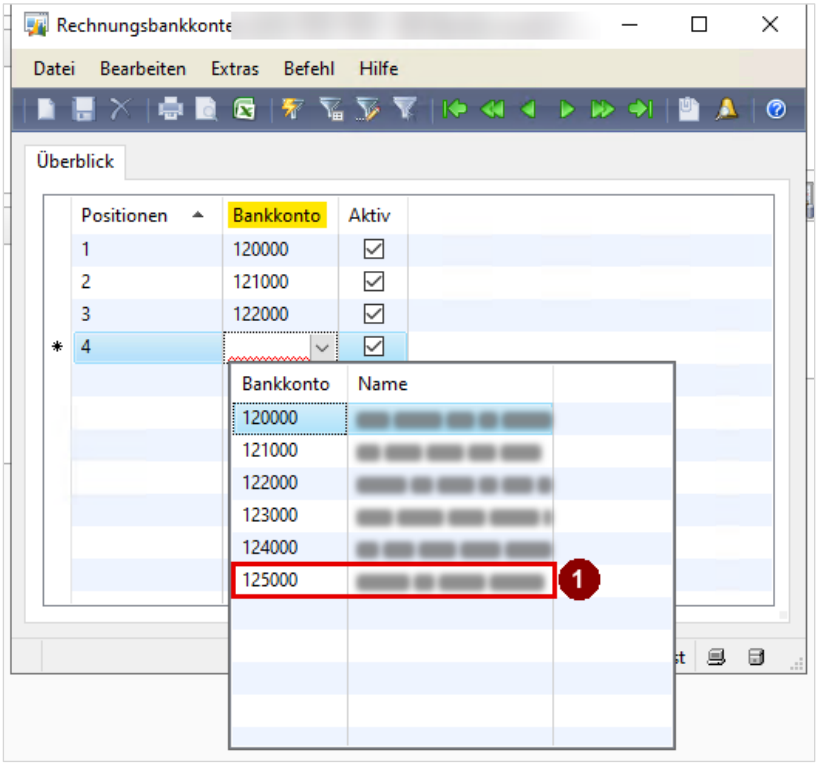

Figure 25: Bankkonto lookup

Set Aktiv for every bank account that is to be used. An account that is not active stays in the list but is not used.

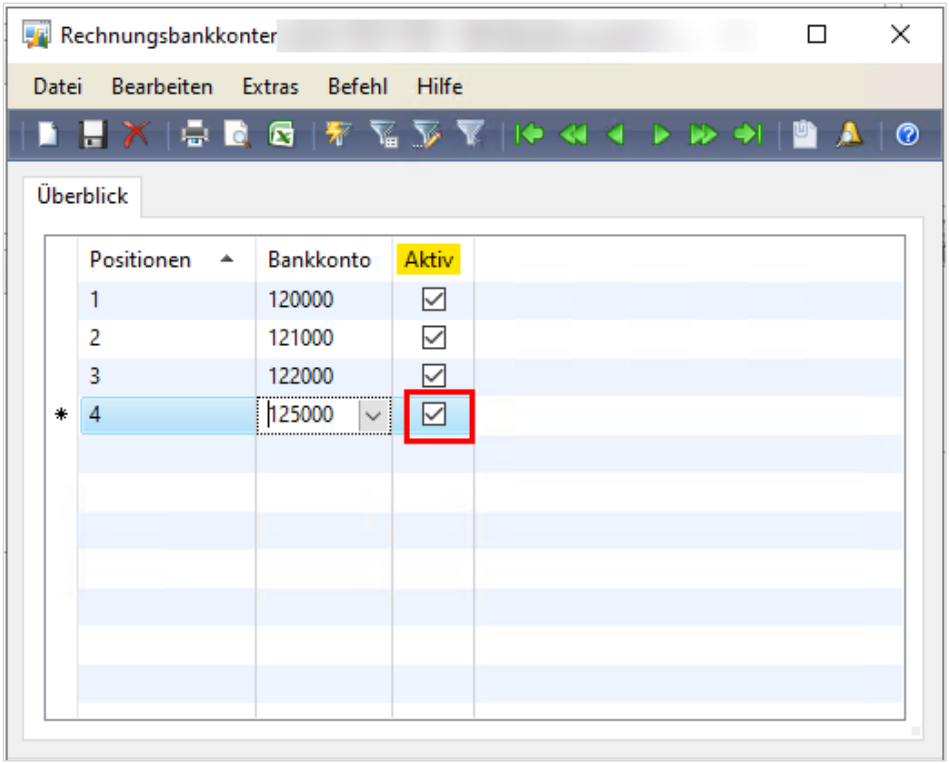

Figure 26: The new bank account is active

Column	Meaning
Positionen	The order of the bank accounts. The first active account is the main payment account of the e-invoice.
Bankkonto	The AX bank account. Its name, IBAN and BIC go into the invoice data. If the account has no IBAN, the bank account number is used.
Aktiv	Only active bank accounts are used.

All active bank accounts are written into the invoice data in the order of Positionen. If no bank account is active, AX uses the bank account of the company information (Firmendaten).

4.7 Customer invoice mapping

The invoice data that AX hands to Hive BDC holds a fixed set of fields, for example invoice number, dates, amounts, tax, bank details and recipient. With Feldzuordnung Kundenrechnung (customer invoice mapping) you add further fields of the posted invoice to this data, without development.

Open the Data Flow area page (1) and choose Feldzuordnung Kundenrechnung in the group Einstellungen (2).

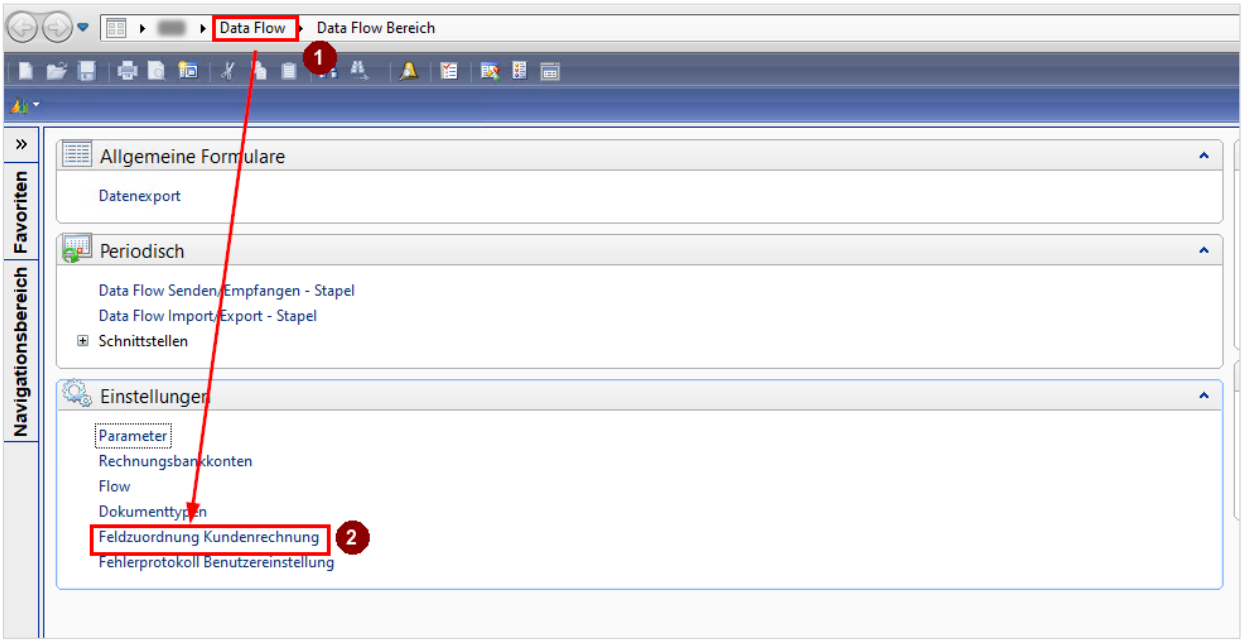

Figure 27: Feldzuordnung Kundenrechnung in the group Einstellungen

The form has two tabs. Überblick (Overview) adds fields of the invoice header, which appear once per invoice. Positionen (Lines) adds fields of the invoice lines, which appear on every line.

Adding a header field

On the tab Überblick create a new line and select the AX field in Feldname (Field name). The lookup shows the technical name and the label (Legende) of every field of the invoice header, here Qty (Menge).

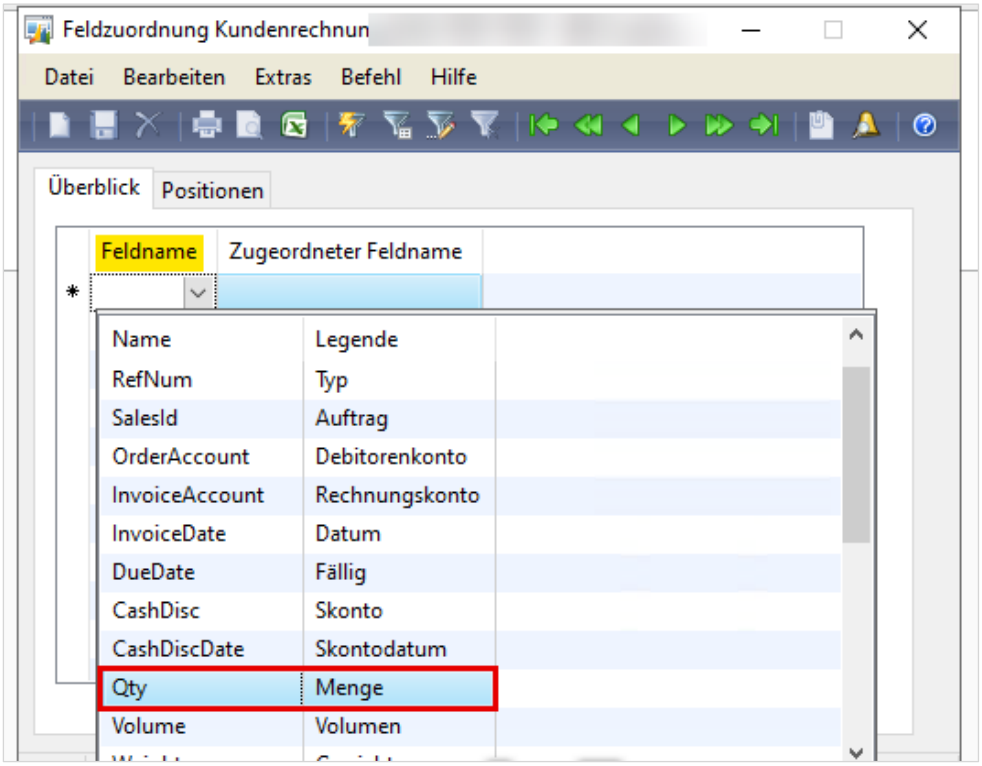

Figure 28: Header mapping: selecting the AX field

In Zugeordneter Feldname (Mapped field name) enter the name under which the value appears in the invoice data, for example totalQuantity. Hive BDC uses exactly this name, so keep it short and without spaces.

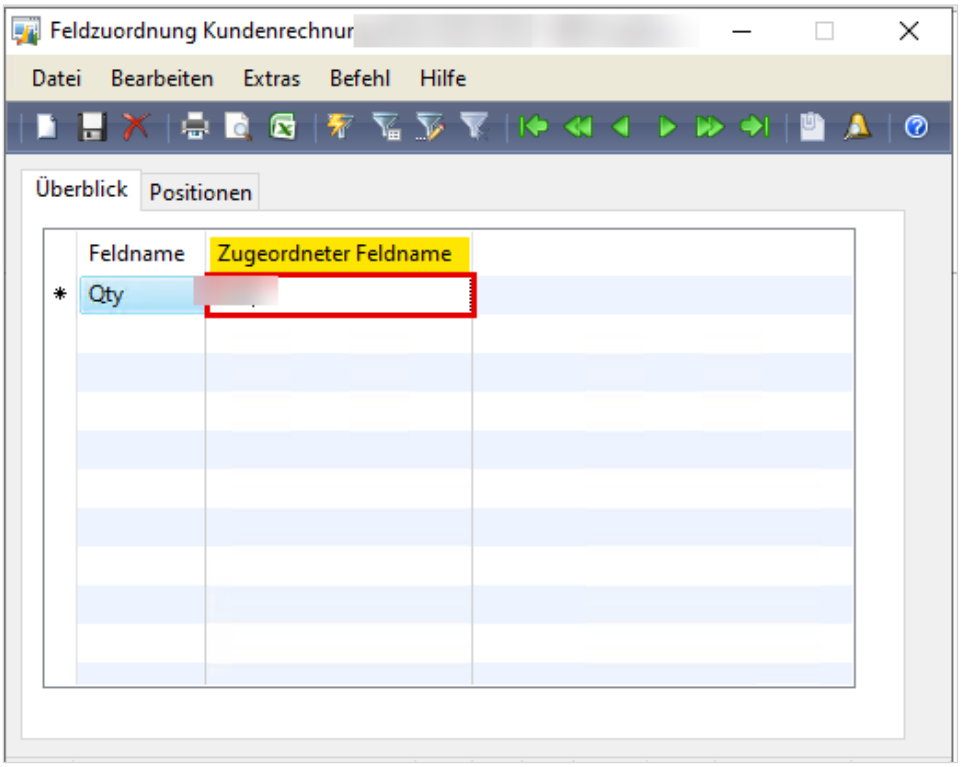

Figure 29: Zugeordneter Feldname of the header field

Adding a line field

Switch to the tab Positionen (1) and enter the Zugeordneter Feldname first (2), for example lineCurrency.

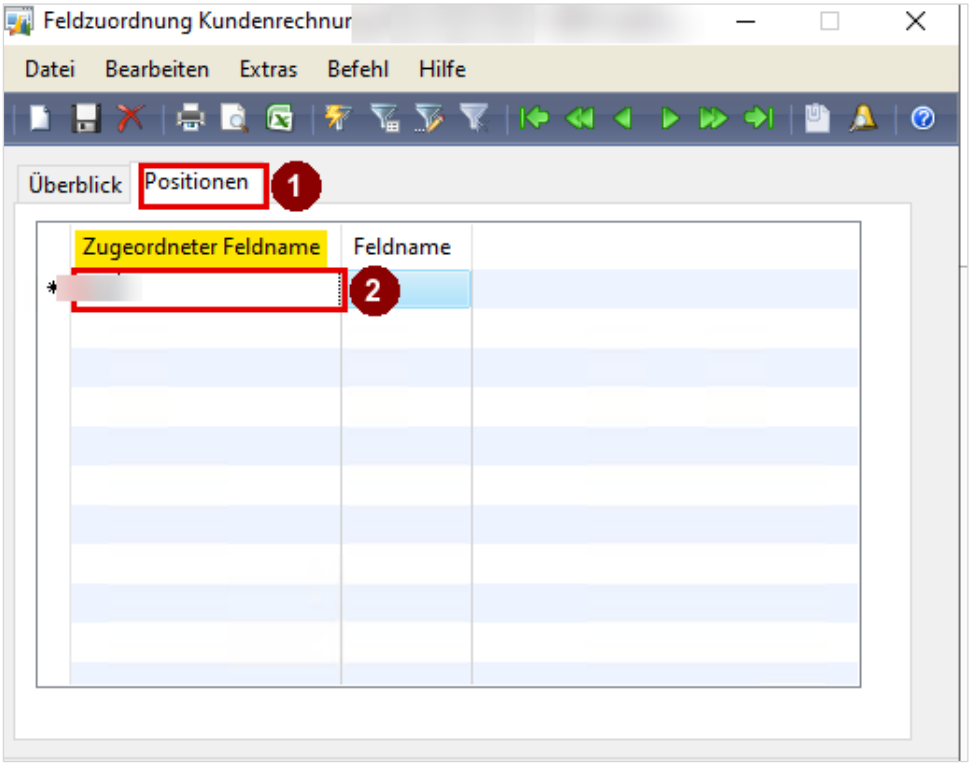

Figure 30: Tab Positionen: Zugeordneter Feldname

Then select the field of the invoice line in Feldname, here CurrencyCode (Währung).

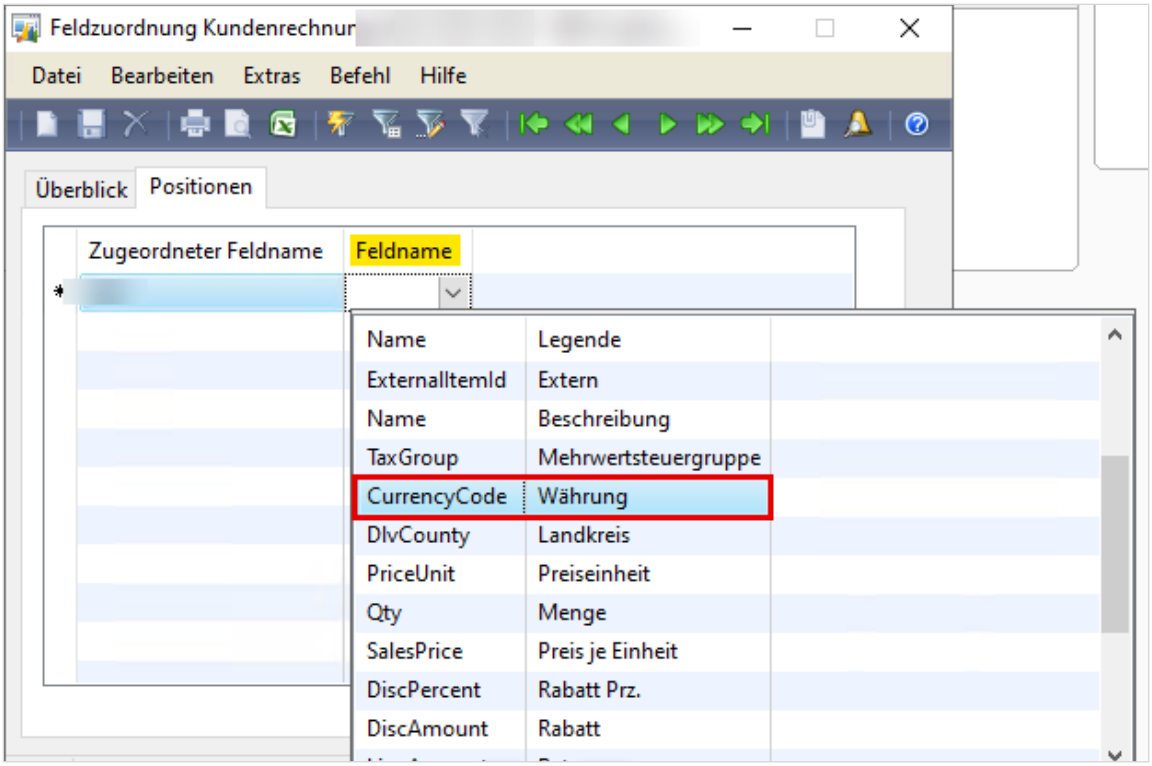

Figure 31: Tab Positionen: selecting the AX field of the line

Note: Names the invoice data already uses are reserved, for example invoiceNumber, dueDate or customerNumber in the header and lineId, quantity or unitPrice in the lines. Upper and lower case do not count, so Quantity is reserved as well. A mapping with a reserved name or with an empty Zugeordneter Feldname is ignored, so a mapping can never overwrite the standard e-invoice content.

4.8 Customer master data: e-invoice type and e-mail address

Each customer can have its own e-invoice format. Open the Debitoren Bereich (Accounts receivable area page) (1) and choose Debitorendetails (Customer details) (2). Select the customer in the list (3) and switch to the tab Allgemeines (General) (4).

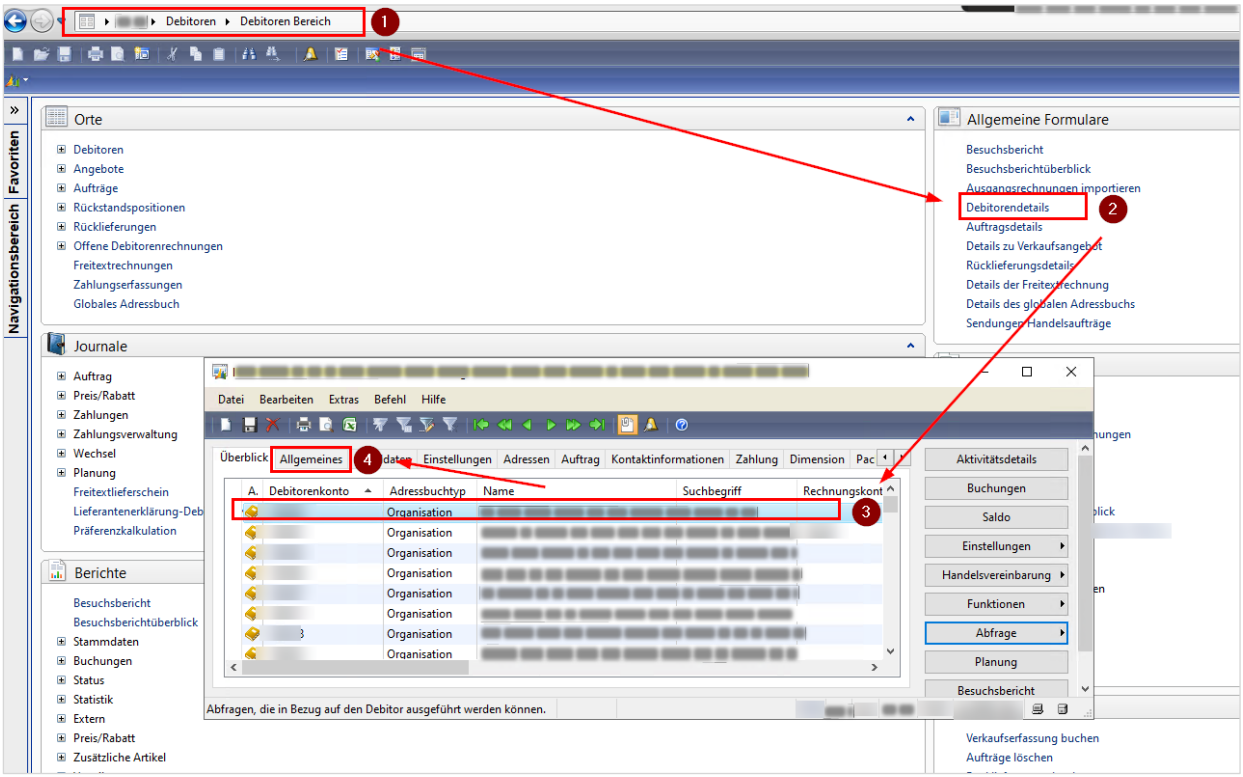

Figure 32: Opening the customer in Debitorendetails

On the tab Allgemeines (1) you find the section E Rechnung (E-invoice) (2). In E-Rechnungstyp (E-invoice type) (3) select the format for this customer (4). With Kein the Standard-E-Rechnungstyp from the parameters (chapter 4.4) is used.

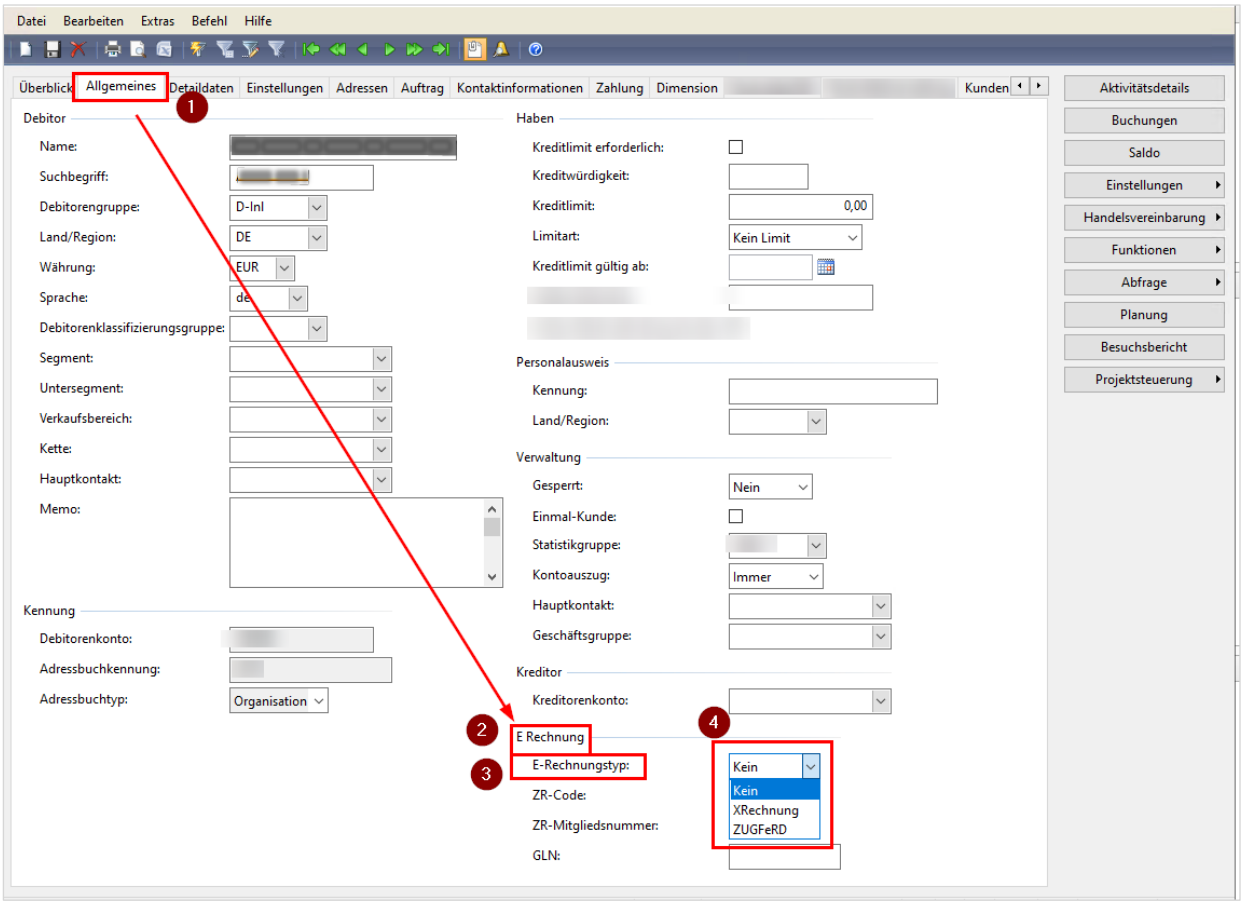

Figure 33: Customer master data, section E Rechnung

The other fields of the section are only for customers that settle through a central settlement (ZR) provider: ZR-Code (1), ZR-Mitgliedsnummer (ZR member number) (2) and GLN (Global Location Number) (3). They are passed on only when the ZR-Code is filled. Then the invoice data also carries your ZR-Vertragslieferantennummer from the parameters (chapter 4.4).

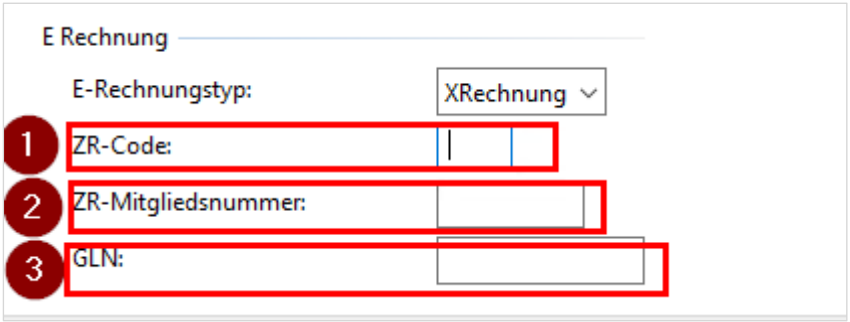

Figure 34: ZR-Code, ZR-Mitgliedsnummer and GLN

Field	Meaning
E-Rechnungstyp	Kein = use the Standard-E-Rechnungstyp from the parameters; XRechnung or ZUGFeRD = always this format for this customer.

Field	Meaning
ZR-Code	The code of the ZR provider. Only when it is filled are the ZR fields passed on.
ZR-Mitgliedsnummer	The member number of the customer at the ZR provider.
GLN	The Global Location Number of the customer. Passed on together with the ZR-Code only.

E-mail address

Hive BDC mails the e-invoice to the E-Mail of the customer, on the tab Kontaktinformationen (Contact information) in Debitorendetails. Fill it for every customer that receives e-invoices by mail.

5 Sending invoices

An invoice gets into the queue in one of two ways: automatically when it is posted (chapter 5.1), or by hand with the button An Hive DocFlow senden (chapter 5.2). From the queue on, both ways follow the same steps 1 to 6.

5.1 Automatic trigger: sending on posting

With the automatic trigger you do not have to do anything. Whenever a sales invoice is posted, AX checks whether it has to be sent and, if so, writes one line into the table Datenexport. A posted sales invoice is queued when all of these points are true:

- The document type Verkaufsrechnung is Aktiv and Automatisch senden is set (chapter 4.5).
- The Export-Flow of the document type exists, has the Richtung Abgang and is not Gesperrt (chapter 4.2).
- The invoice is a real posted invoice. Pro forma invoices are never sent.
- Sales invoices and free text invoices are separate document types. A free text invoice is only sent when Freitextrechnung has its own line in Dokumenttypen.
- The invoice is not already waiting in the queue.

Note: The trigger runs inside the posting. If something is not set up, nothing is queued and the posting itself is never stopped. If an expected invoice does not appear in Datenexport, check the points above, or send it by hand as described in chapter 5.2.

5.2 Manual trigger: An Hive DocFlow senden

Use the manual trigger to send an invoice that was posted before the setup was complete, to send an invoice again, or when Automatisch senden is switched off. Open the invoice journal from the sales order:

1. Open the Debitoren Bereich (Accounts receivable area page) (1).
2. Choose Auftragsdetails (Sales order details) under Allgemeine Formulare (2).
3. Select the sales order and choose Abfragen (Inquiries) (3).

4. Choose Rechnung (Invoice) (4).

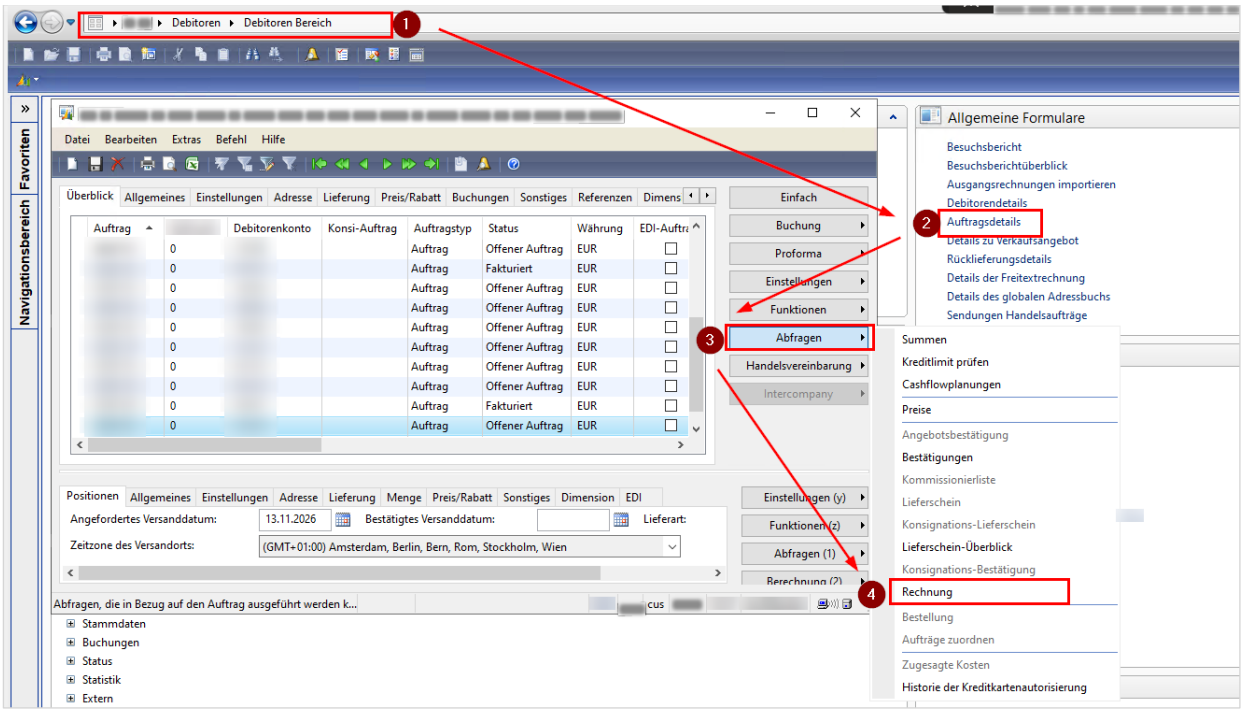

Figure 35: Opening the invoice journal of a sales order

The invoice journal opens with the posted invoices of the order. Select the invoice you want to send (1) and choose An Hive DocFlow senden (2).

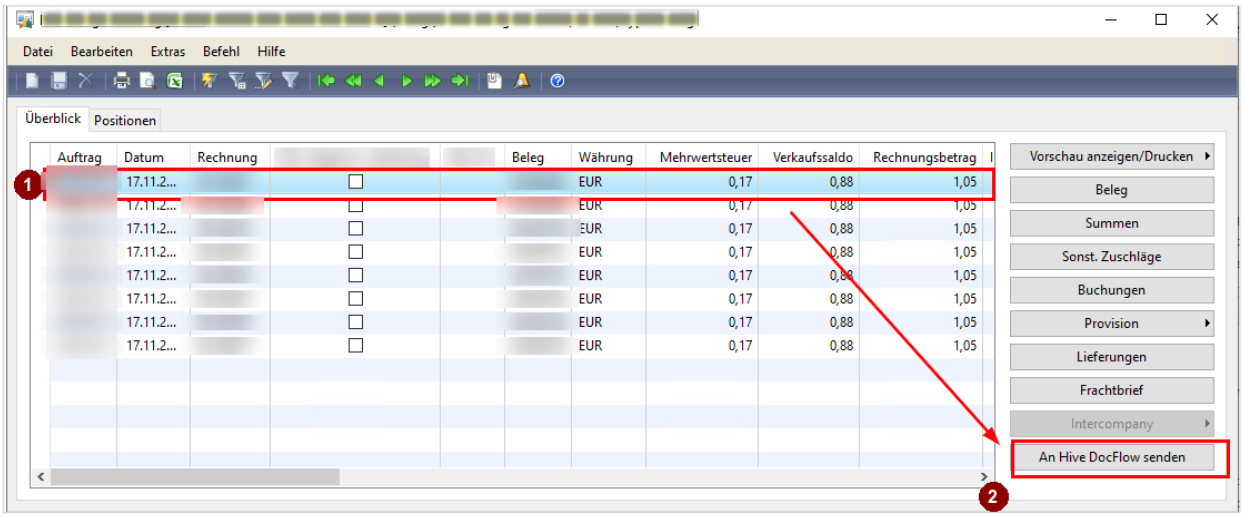

Figure 36: Manual sending from the invoice journal

AX asks you to confirm. If the invoice was sent before, the question says so. After you confirm, AX writes a line into the table Datenexport.

Situation	Result
The document type is not Aktiv or has no Export-Flow.	An error message; nothing is queued.
The invoice is still waiting in the queue.	The invoice is skipped with a message, so that it is not sent twice.

Situation	Result
The invoice was sent before.	The question says resend. After your confirmation it is queued again and sent once more.
Selected lines of another document type.	They are ignored and counted in a warning.

Note: The manual trigger ignores Automatisch senden. Aktiv and Export-Flow of the document type are still required.

5.3 Step 1: The invoice arrives in Datenexport

Open the Data Flow area page (1) and choose Datenexport (Data export) under Allgemeine Formulare (2). The new line has the status Erstellt (Created) (3): the invoice is registered for export but not processed yet. The lines below were processed already and show the status Exportiert (Exported).

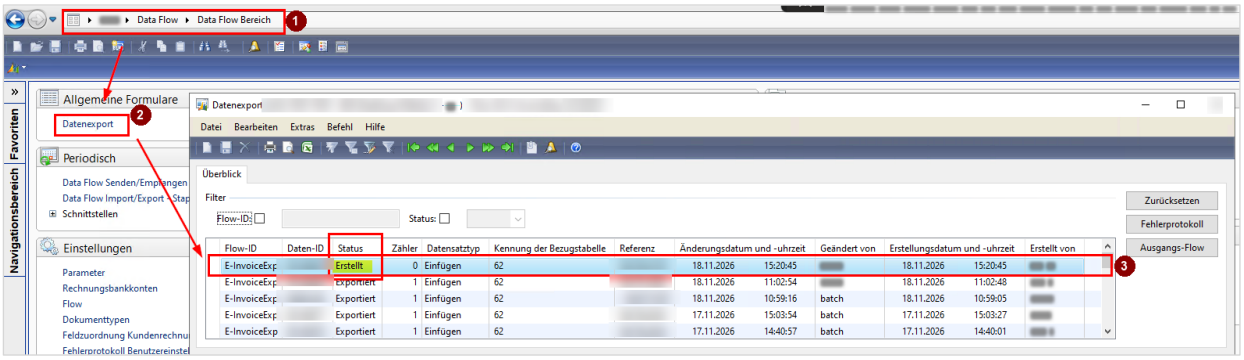

Figure 37: Datenexport with a new line in status Erstellt

Column	Meaning
Flow-ID	The flow this line belongs to, here E-InvoiceExp.
Daten-ID	The invoice number of the posted invoice.
Status	Erstellt = waiting, Exportiert = processed, Fehler (Error) = the message could not be built, see chapter 7.
Zähler	How often the line was processed.
Datensatztyp	Einfügen (Insert) for a new invoice.
Kennung der Bezugstabelle, Referenz	Technical link to the posted invoice record in AX.
Änderungsdatum, Erstellungsdatum, Geändert von, Erstellt von	When the line was written and changed, and by which user.

The buttons on the right lead further: Zurücksetzen (Reset) puts a line back to Erstellt so that it is processed again, Fehlerprotokoll (Error log) shows what went wrong for that line, and Ausgangs-Flow opens the message of the line.

5.4 Step 2: Run the Data Flow Import/Export Stapel

This job takes the waiting lines and builds the invoice message from them. Open Data Flow Import/Export Stapel (Import/Export batch) in the group Periodisch (1), select the flow E-InvoiceExp in the field Flow-ID (2) and confirm with OK (3).

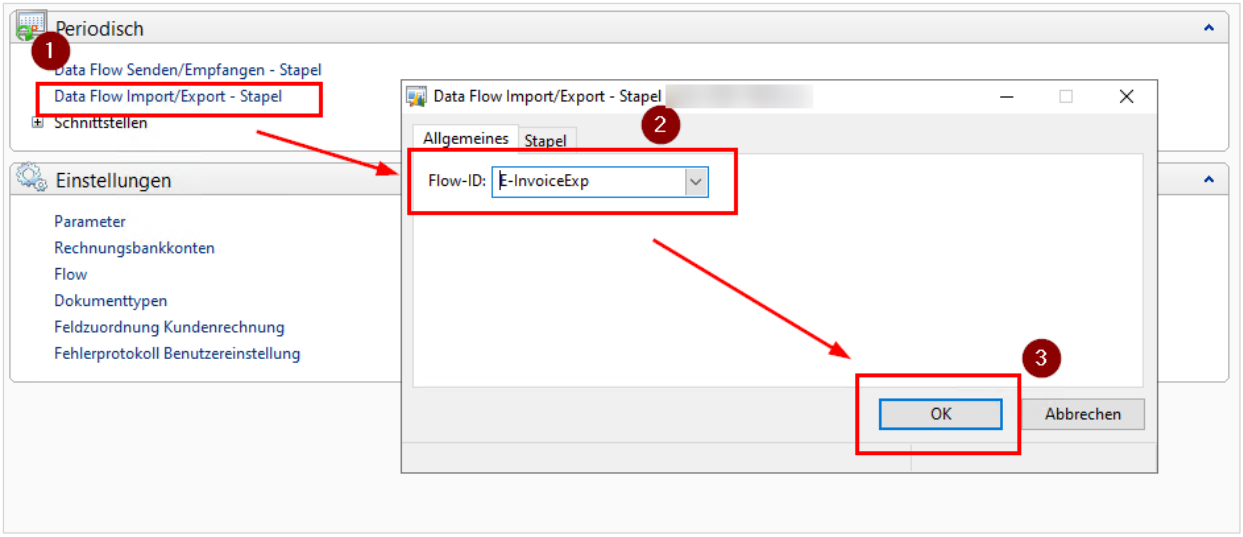

Figure 38: Data Flow Import/Export Stapel with the flow E-InvoiceExp

The job reads all data of the invoice, for example customer address, amounts, tax, payment and bank details and the fields from the Feldzuordnung Kundenrechnung, and stores it as one message. In Datenexport (1) the line changes to Exportiert (2).

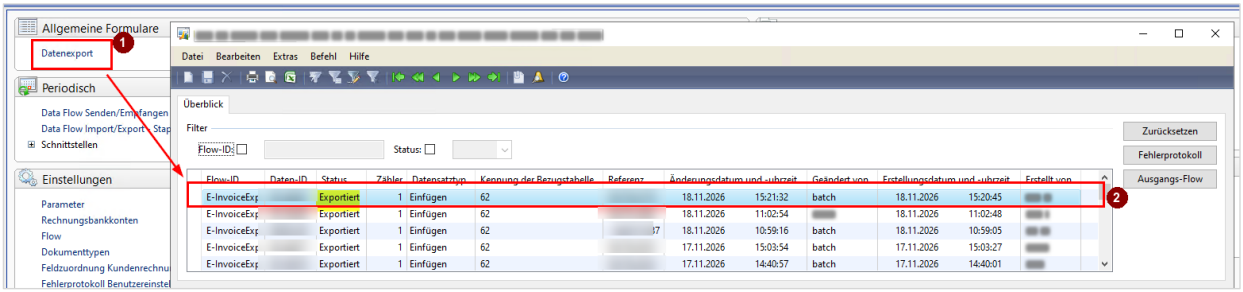

Figure 39: The line after the Import/Export Stapel, status Exportiert

5.5 Step 3: Check the message in Ausgangs-Flow

Ausgangs-Flow (Outbound flow) shows every message created for sending. Open it from the group Abfragen (1). The newest message is at the top and has the status Erstellt (2): it is prepared but not sent yet. The Ausgangsdaten-ID, for example DO000001234, is the number you use when you talk to Balsoft about a single invoice.

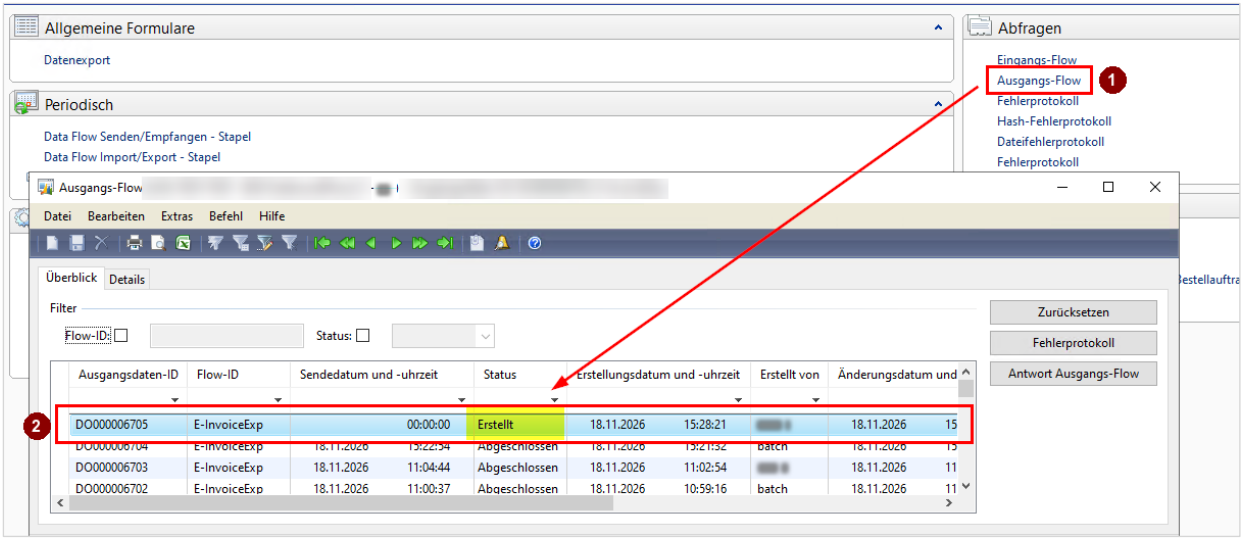

Figure 40: Ausgangs-Flow with the new message in status Erstellt

To see what will be sent, mark the line and switch to the tab Details (1), then to the sub-tab Formatiert (Formatted) (2). The field Nachricht (Message) (3) shows the invoice data in a readable form. The sub-tab Roh (Raw) shows the same content as one long line.

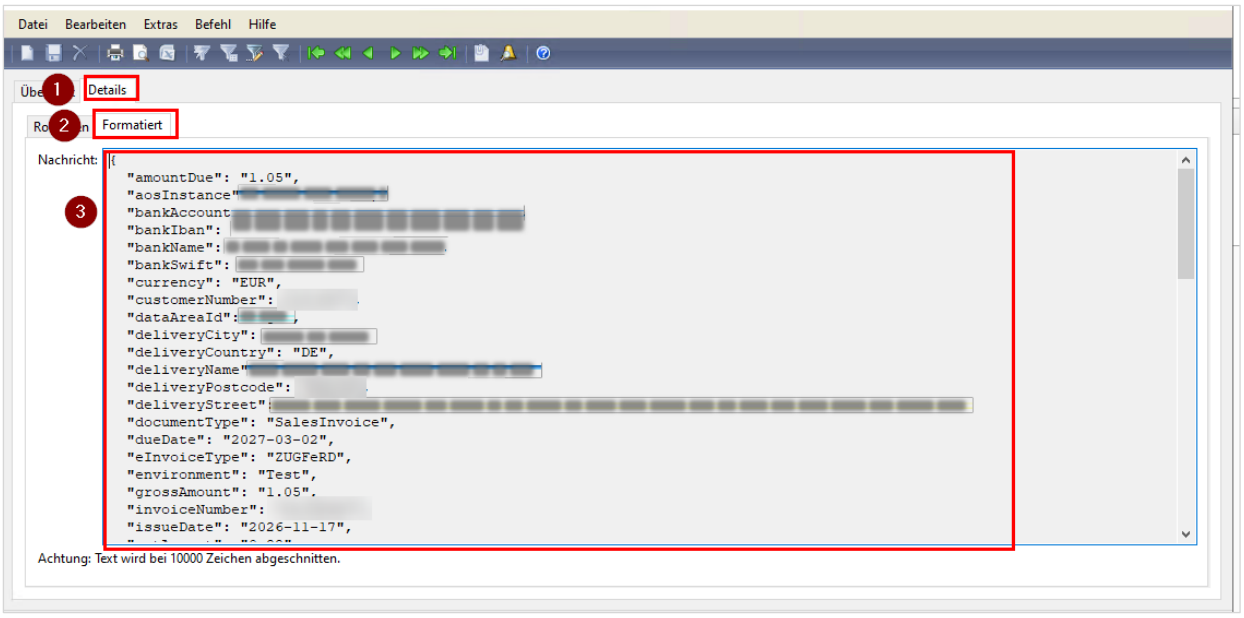

Figure 41: The invoice data of the selected message

Note: The field Nachricht shows the first 10,000 characters only. The file written to the folder always holds the full data.

5.6 Step 4: Run the Data Flow Senden/Empfangen Stapel

The second job writes the prepared message and the invoice PDF into the export folder. Open Data Flow Senden/Empfangen Stapel (Send/Receive batch) in the group Periodisch (1), select the flow E-InvoiceExp (2) and confirm with OK (3).

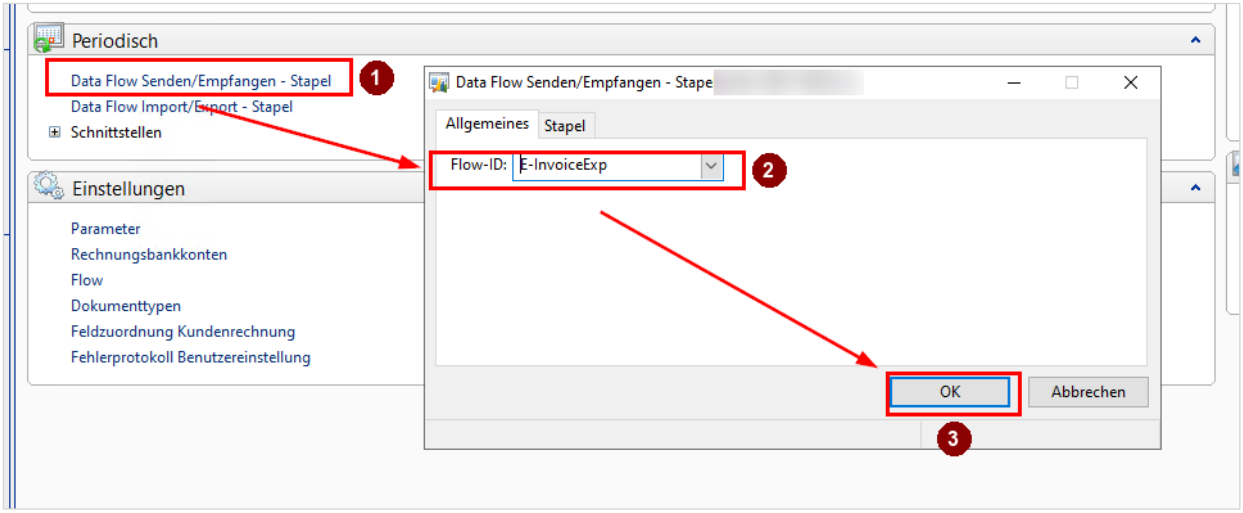

Figure 42: Data Flow Senden/Empfangen Stapel with the flow E-InvoiceExp

When the job has finished, the message in Ausgangs-Flow (1) changes from Erstellt to Abgeschlossen (Finished) and the column Sendedatum und -uhrzeit (Sent date and time) is filled (2).

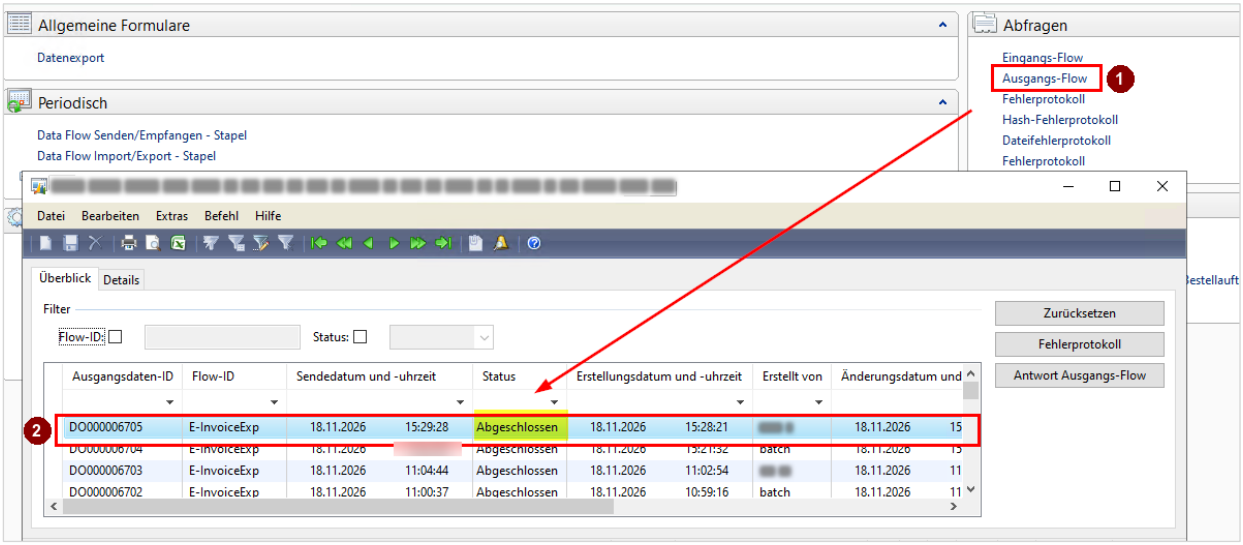

Figure 43: The message in status Abgeschlossen

Tip: In daily use both batch jobs run on a schedule, set on the tab Stapel (Batch) of each dialog, so that posted invoices leave AX without anybody starting a job by hand. Every 15 to 30 minutes is usual.

5.7 Step 5: The PDF and JSON file in the export folder

Open the folder you entered in the flow (chapter 4.3) (1). For every exported invoice you find two files with the same name, one JSON file and one PDF (2). The file name is built from the invoice number and the customer number, for example RE-260045_K-10010. This is how the Hive BDC service recognises which two files belong together.

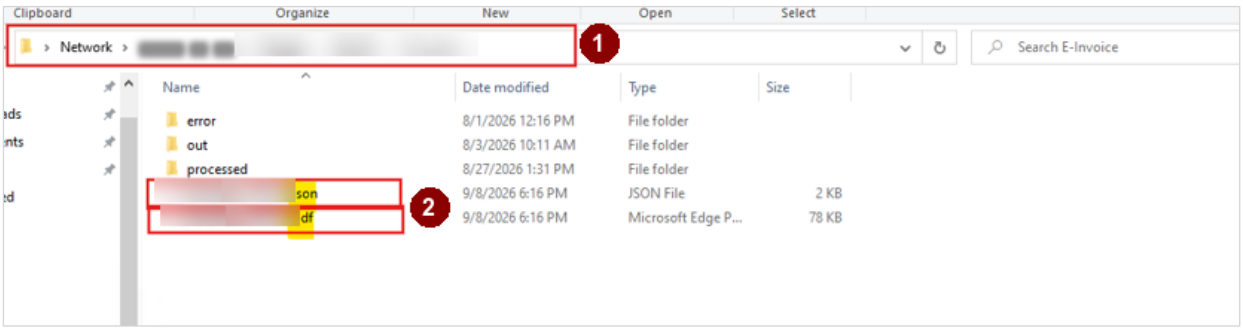

Figure 44: The export folder with the two files of one invoice

Item	Content
.json	The invoice data as text, the same content you saw in Ausgangs-Flow.
.pdf	The printed invoice document.
out folder	The finished electronic invoices that Hive BDC created.
processed folder	The original PDF and JSON files after they were converted.
error folder	Files that could not be converted. Every file here needs to be looked at.

Note: Do not delete, rename or move files in this folder by hand while the service is running. The service moves them itself as soon as it has finished with them.

5.8 Step 6: Hive BDC processes the files

Hive BDC runs as a Windows service on the server. It checks the export folder at a fixed interval, reads each new pair of files, creates the electronic invoice in the configured format, mails it to the customer and uploads it to SharePoint where this is set up.

Open Hive BDC Dashboard from the Start menu of the server. The page Overview shows the exports of today (1), whether the service is running (2) and until when the licence is valid (3). Recent exports (4) lists the last documents with type, format, time and size. All documents (5) opens the full list.

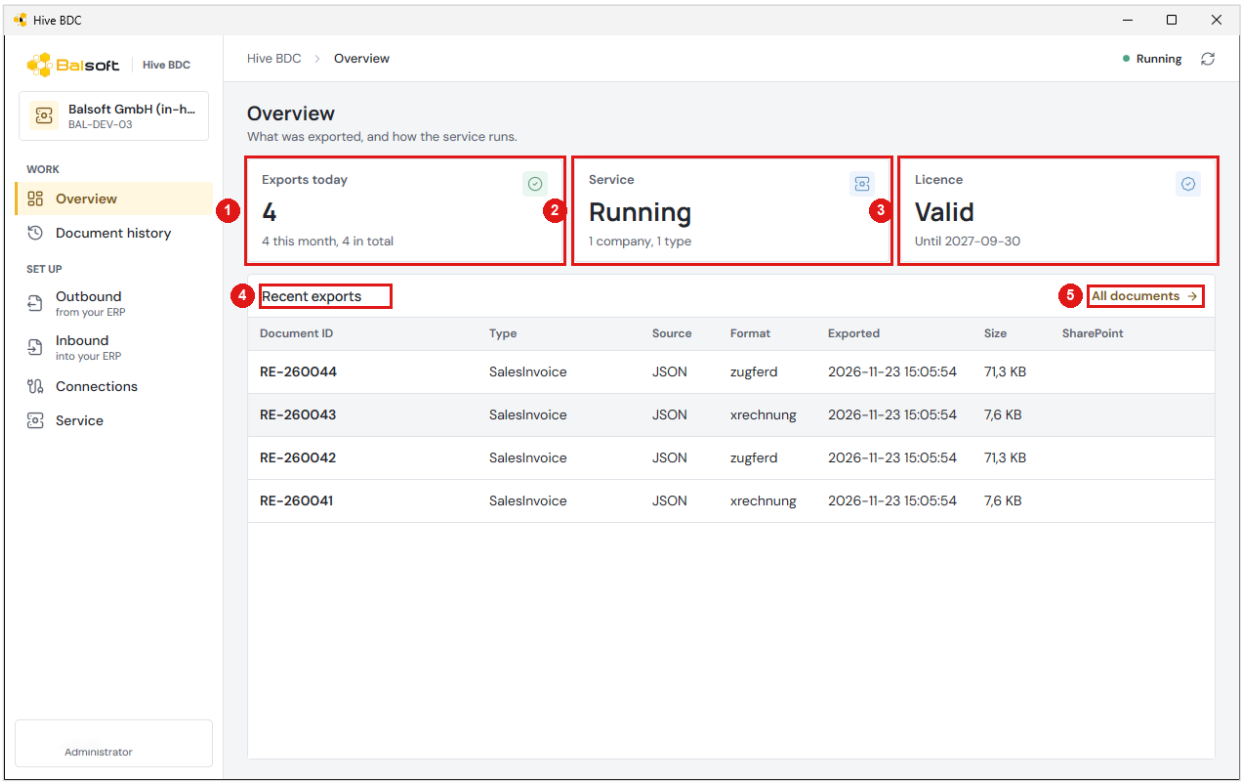

Figure 45: Overview in the Hive BDC dashboard

An invoice marked as XRechnung becomes one XML file, an invoice marked as ZUGFeRD becomes one PDF that carries the invoice data inside it. The two files that came from AX 2009 move to the processed folder afterwards. If an invoice cannot be converted, both files are moved to the error folder instead.

Document history shows every step Hive BDC took for a document: read, converted, mailed, uploaded. Search for the document number (1). Needs attention only (2) shows the documents that stopped, with the reason in What happened (3).

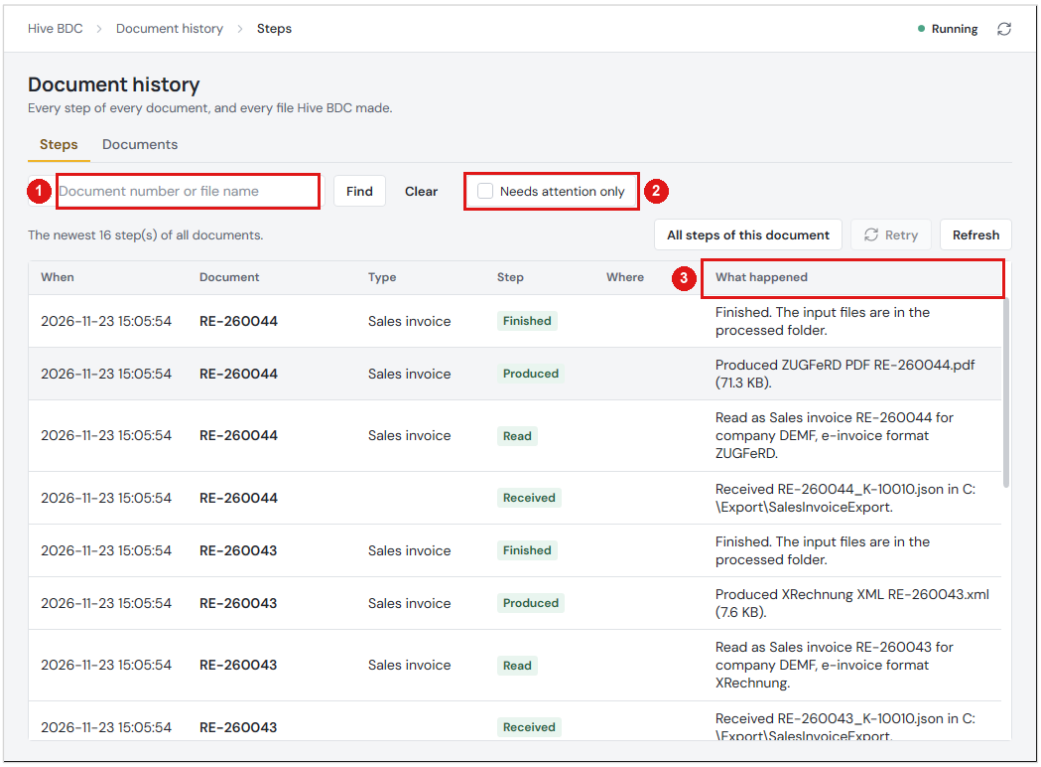

Figure 46: Document history with the steps of a document

6 Hive BDC settings

6.1 The dashboard and its settings pages

All settings are pages of the dashboard window. In the sidebar, the group SET UP holds Outbound, Inbound, Connections and Service (1). A change on these pages is kept when you choose Save changes in the bar at the bottom (2). It takes effect at once; the service does not have to be restarted.

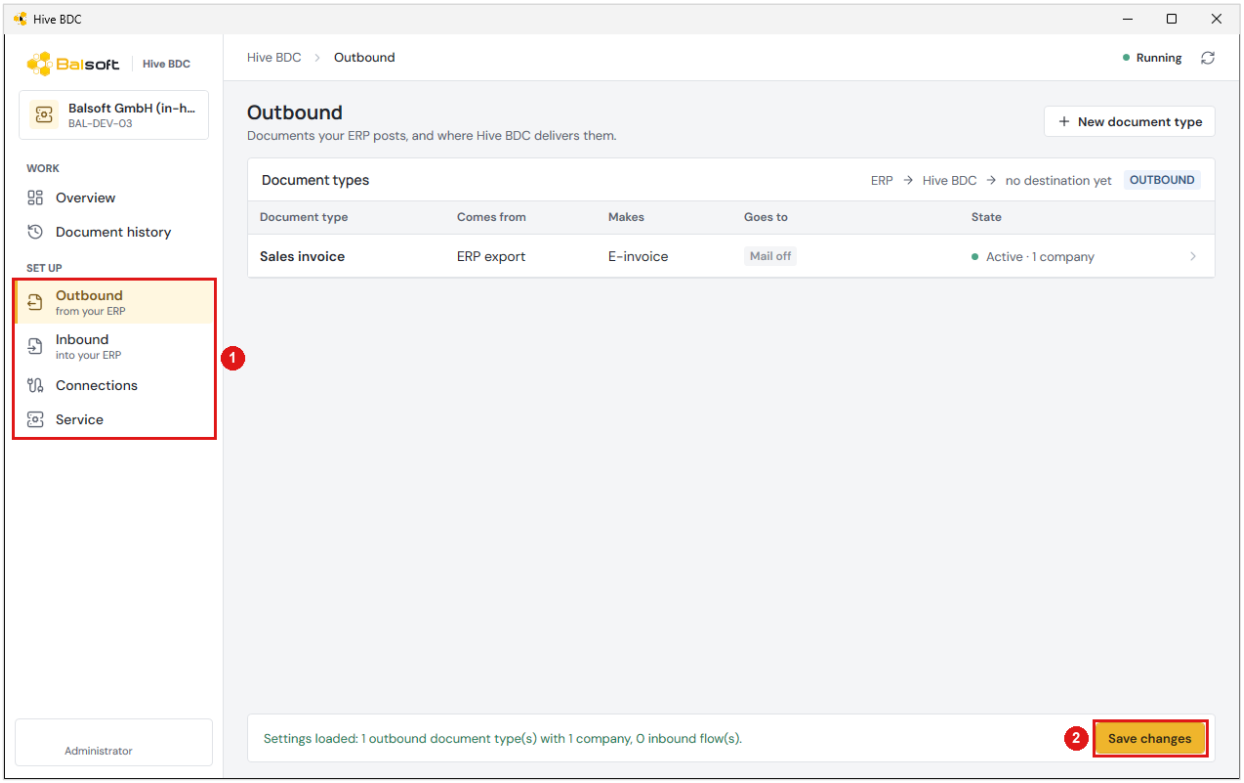

Figure 47: The settings pages under SET UP and the Save changes bar

If you leave the settings, for example for Overview, while changes are not saved yet, the dashboard asks first. Keep editing (1) returns to the page, Leave without saving (2) drops the changes.

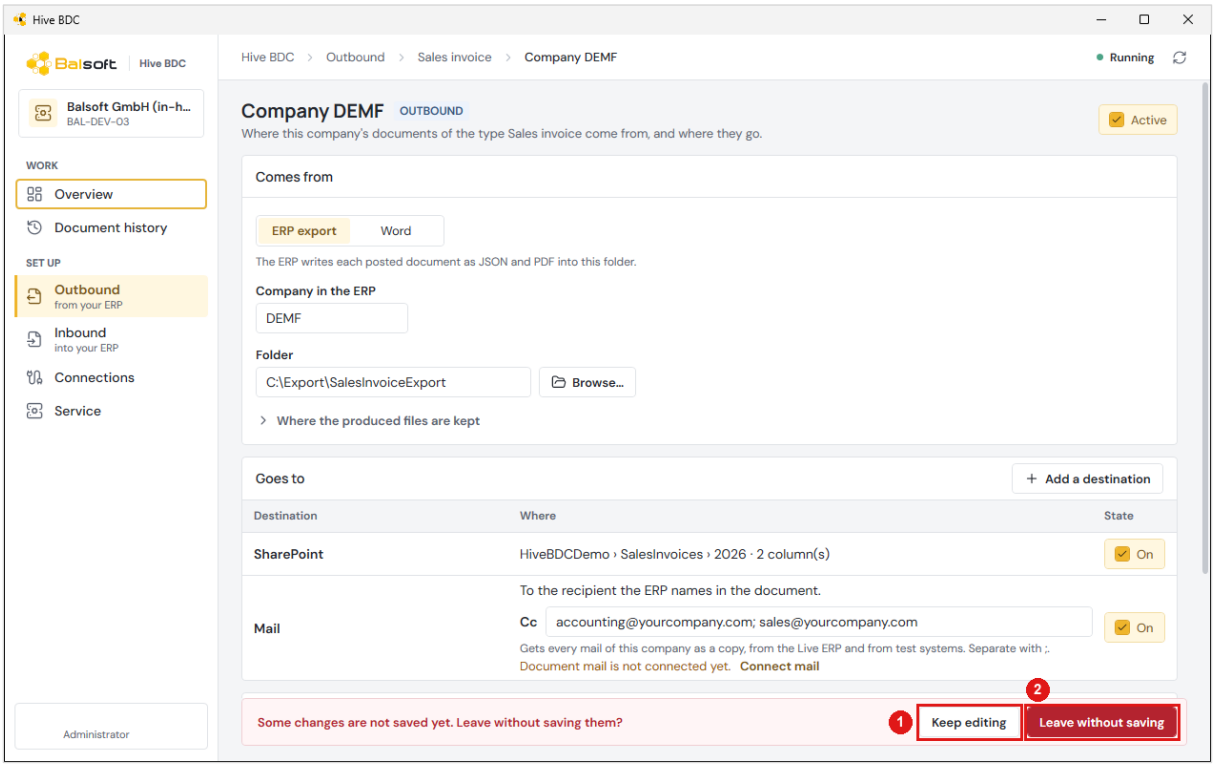

Figure 48: The question before unsaved changes are dropped

This guide uses Outbound, Connections and Service. Inbound brings documents into the ERP, for example supplier invoices, and is not needed to send invoices.

6.2 Outbound: the document type

Choose Outbound in the sidebar (1). The list shows every document type Hive BDC handles: where it comes from, what Hive BDC makes of it, where it goes and whether it is active. Select Sales invoice (2). If the list is empty, New document type (3) creates it.

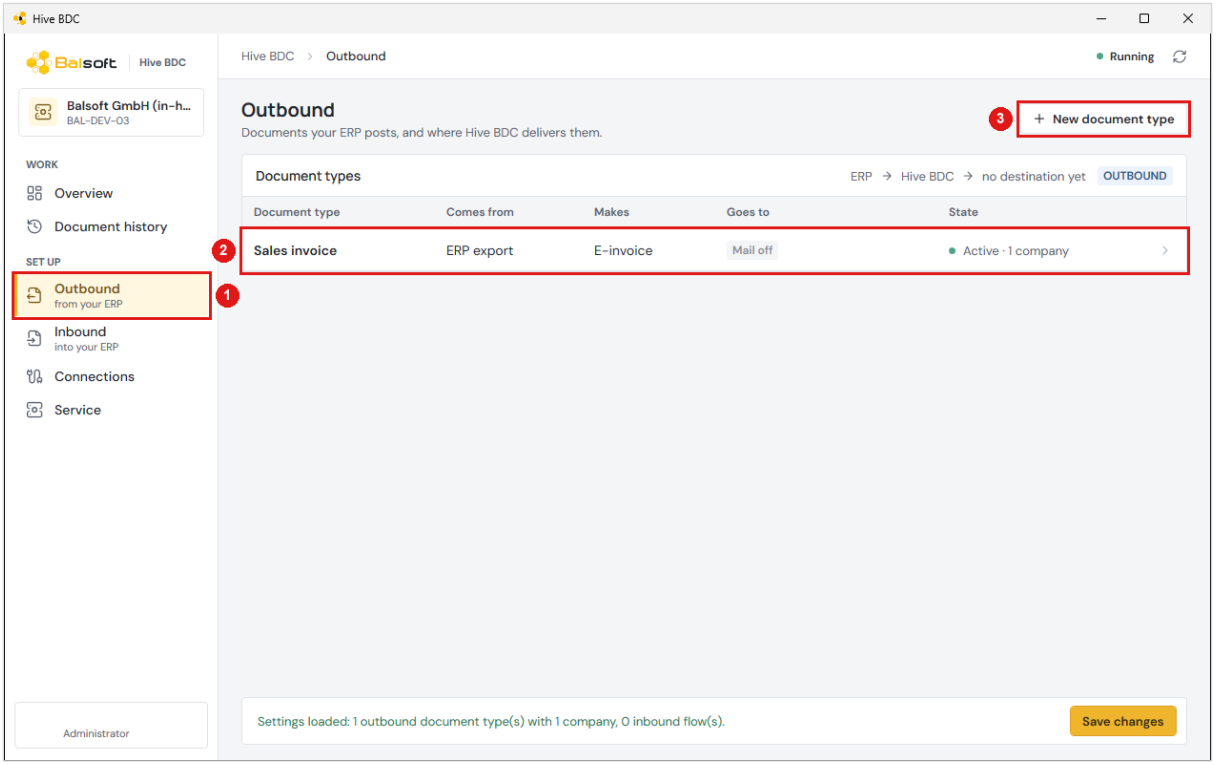

Figure 49: Outbound with the document type Sales invoice

The section Document type shows how this type is processed. Name (1) is the name in the dashboard. ID the ERP writes as documentType (2) must be SalesInvoice. Set Sent to (3) to Customers and Hive BDC makes (4) to E-invoice.

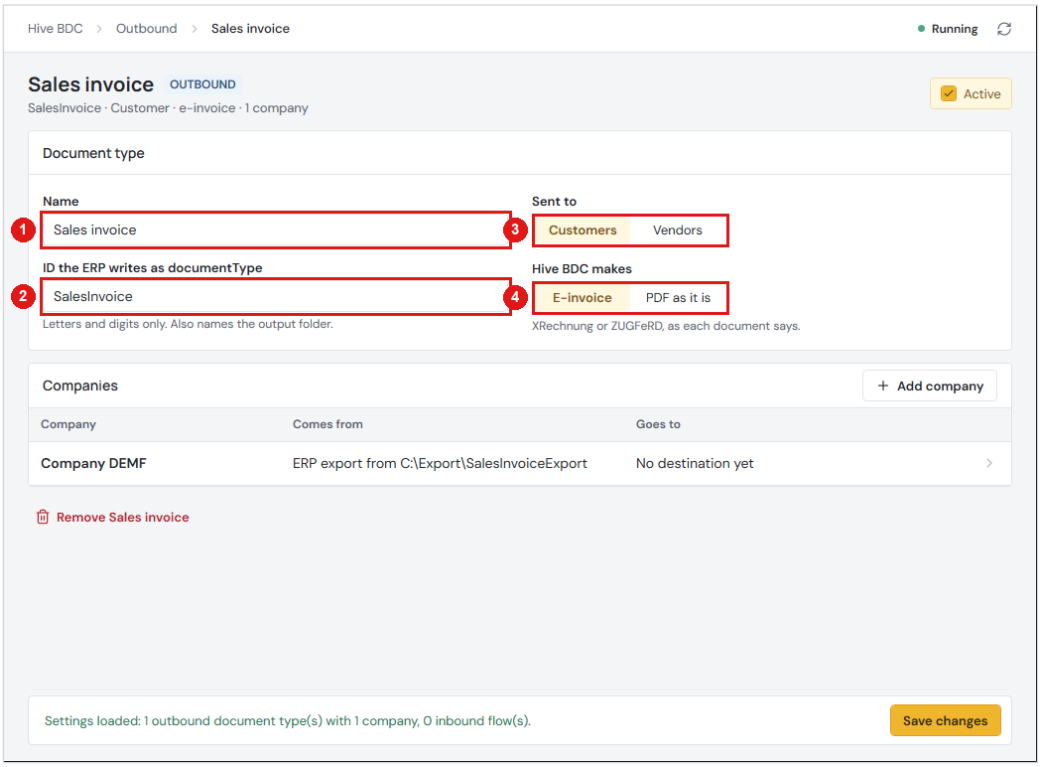

Figure 50: Section Document type

Set Active (1) at the top right so that the type is processed.

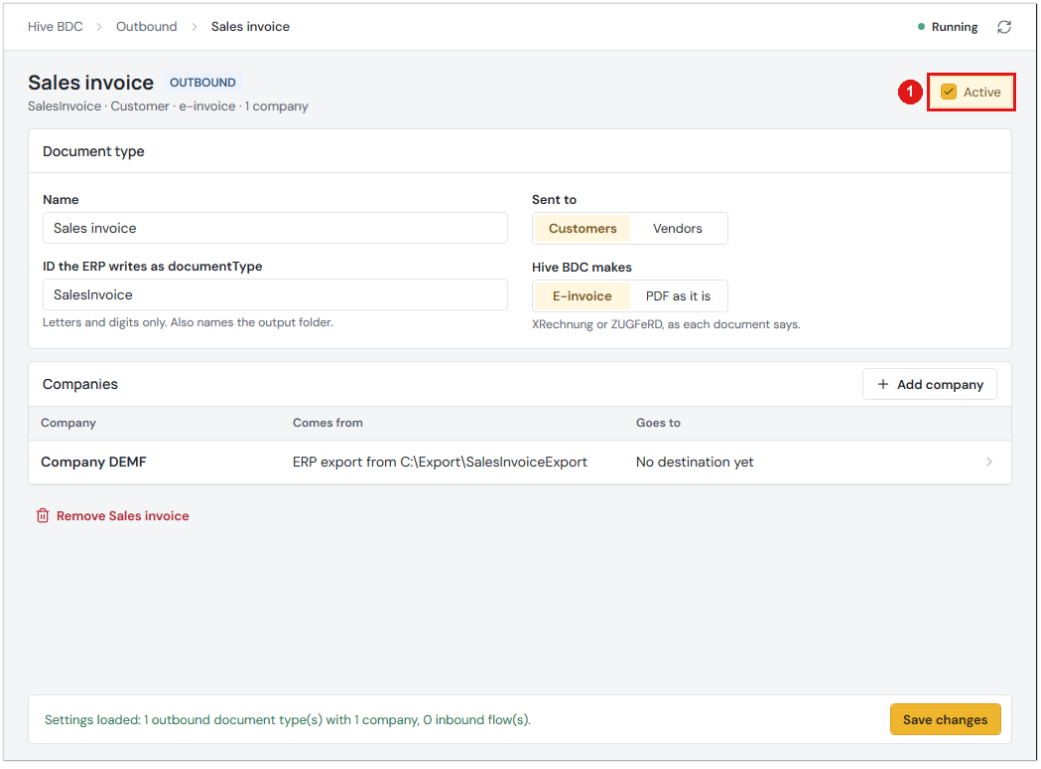

Figure 51: Active for the document type

Setting	Meaning
Name	The name shown in the dashboard.
ID the ERP writes as documentType	The document type as AX 2009 writes it into the JSON file, here SalesInvoice. It also names the output sub-folder.
Sent to	Customers or Vendors.
Hive BDC makes	E-invoice turns the JSON into XRechnung or ZUGFeRD, as each document says. PDF as it is delivers the PDF from AX 2009 unchanged.
Active	Switches processing for this type on. Files of a type that is not active are not processed.

A document type that AX 2009 sends but that is not in the list yet is added by the service when its first file arrives.

6.3 Companies and folders

Below the document type, Companies has one row per AX 2009 company the type is picked up for. Choose Add company (1) for a new one, or select the row of an existing company (2).

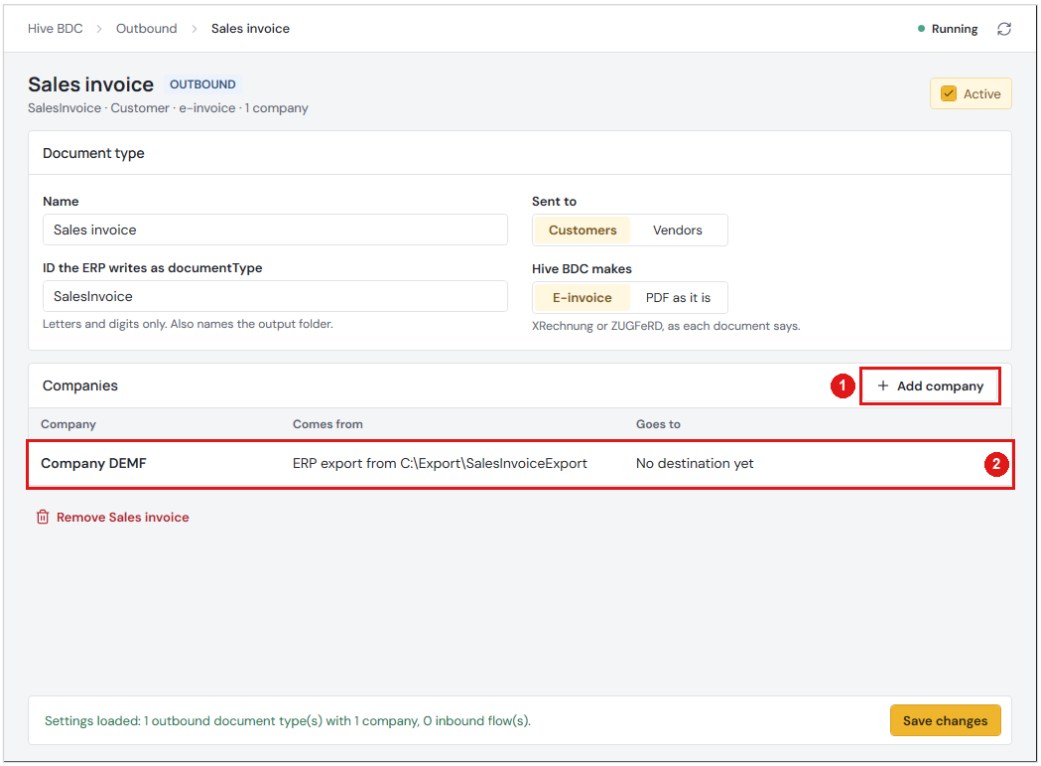

Figure 52: Companies of the document type

Under Comes from choose ERP export (1). Enter the AX 2009 company in Company in the ERP (2), here DEMF, and the export folder in Folder (3). It must be the same folder as Ordner für ausstehende Dateien in the flow (chapter 4.3).

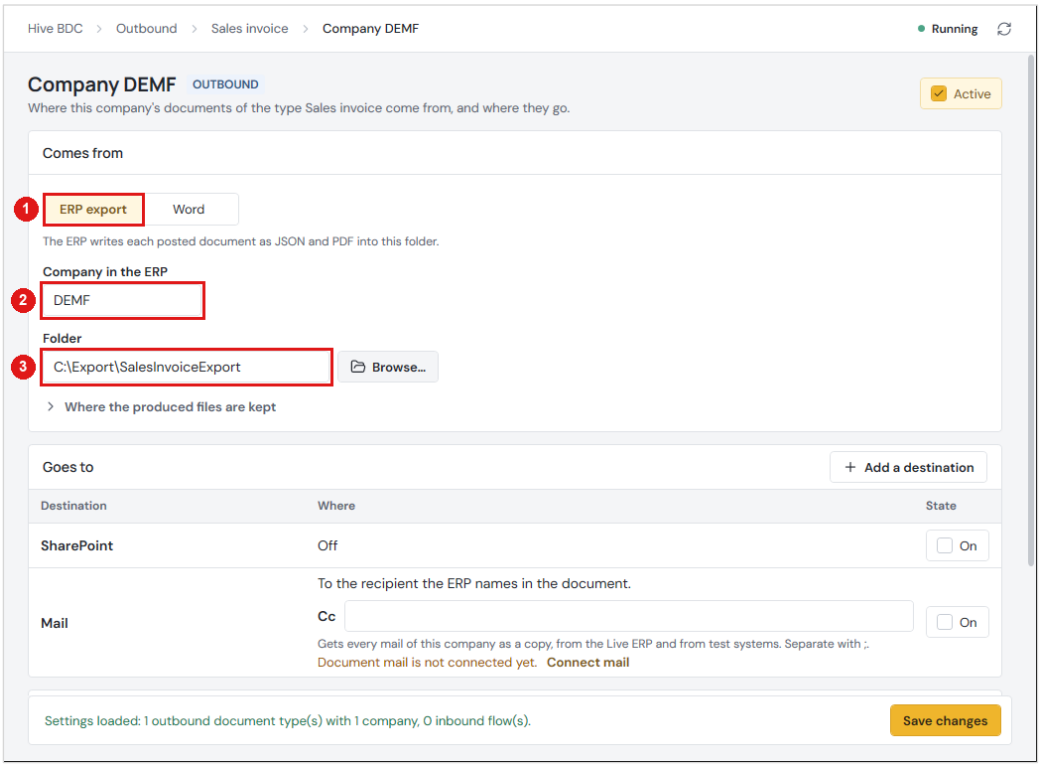

Figure 53: Company with Comes from, Company in the ERP and Folder

Where the produced files are kept (1) is optional. If it stays empty, the finished e-invoices are written to out\SalesInvoice in the folder above.

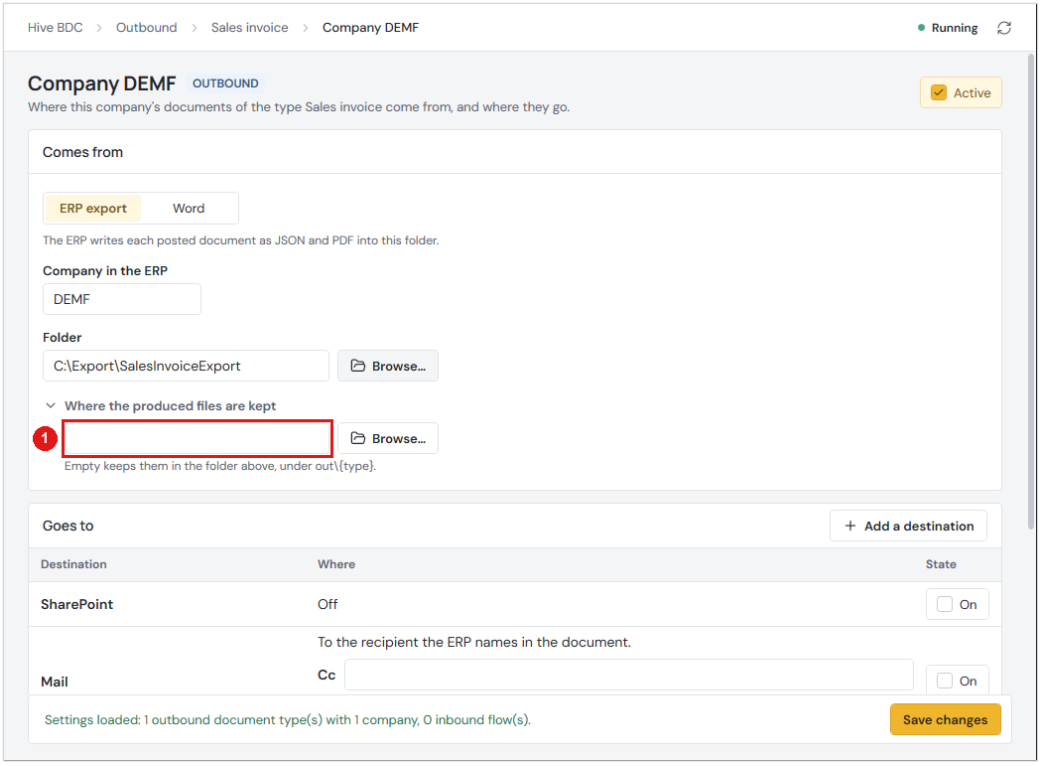

Figure 54: Optional folder for the produced files

Set Active (1) at the top right so that the documents of this company are processed.

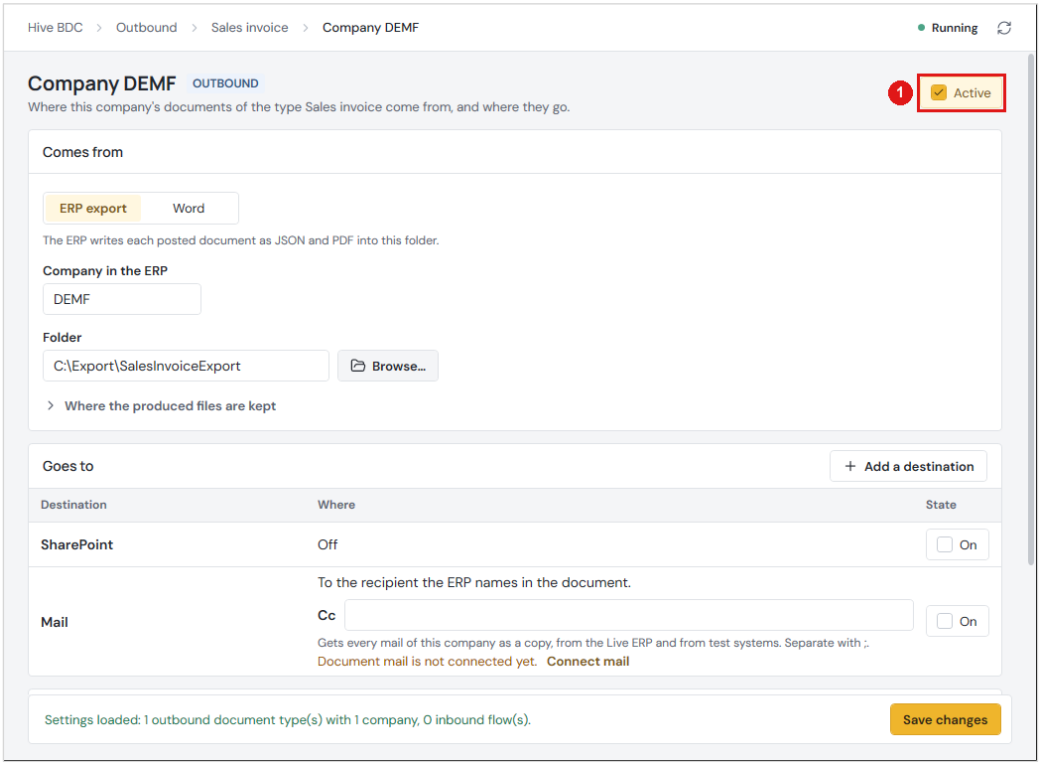

Figure 55: Active for the company

Setting	Meaning
Comes from	ERP export reads the pairs of JSON and PDF files that AX 2009 writes. Word reads invoices written in Word from the Hive BDC template instead.
Company in the ERP	The AX 2009 company (dataAreaId) whose documents this entry handles.
Folder	Where AX 2009 drops the JSON and PDF files. The same folder as Ordner für ausstehende Dateien in the flow (chapter 4.3).
Where the produced files are kept	Where the finished e-invoices are written. Empty means out\SalesInvoice in the folder above.
Active	Switches processing for this company on.

6.4 Where the documents go: mail and SharePoint

Goes to lists where the documents of this company are delivered. Set On for Mail (1) so that every produced e-invoice is mailed to the customer. The address is the E-Mail of the customer (chapter 4.8), subject and text come from the e-mail template of the document type (chapter 4.5). As long as Document mail is not connected, the row says so, and Connect mail (2) opens the page where it is set up (chapter 6.7). Cc (3) takes addresses of your company that get every mail of this company as a copy, from the live system and from test systems, for example the accounting team; separate them with ;. An address that is also the recipient gets the mail once.

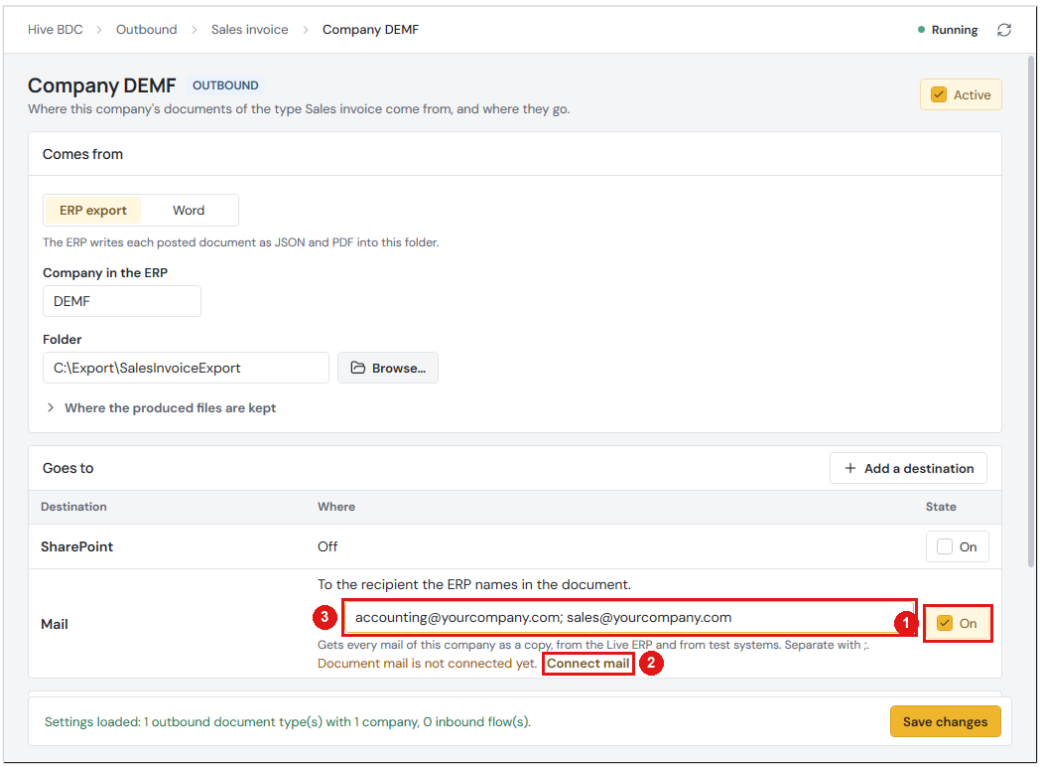

Figure 56: Goes to with Mail and SharePoint

Each company can also upload the produced documents to a SharePoint document library. Choose SharePoint in Goes to and set Upload to SharePoint (1) on the page that opens.

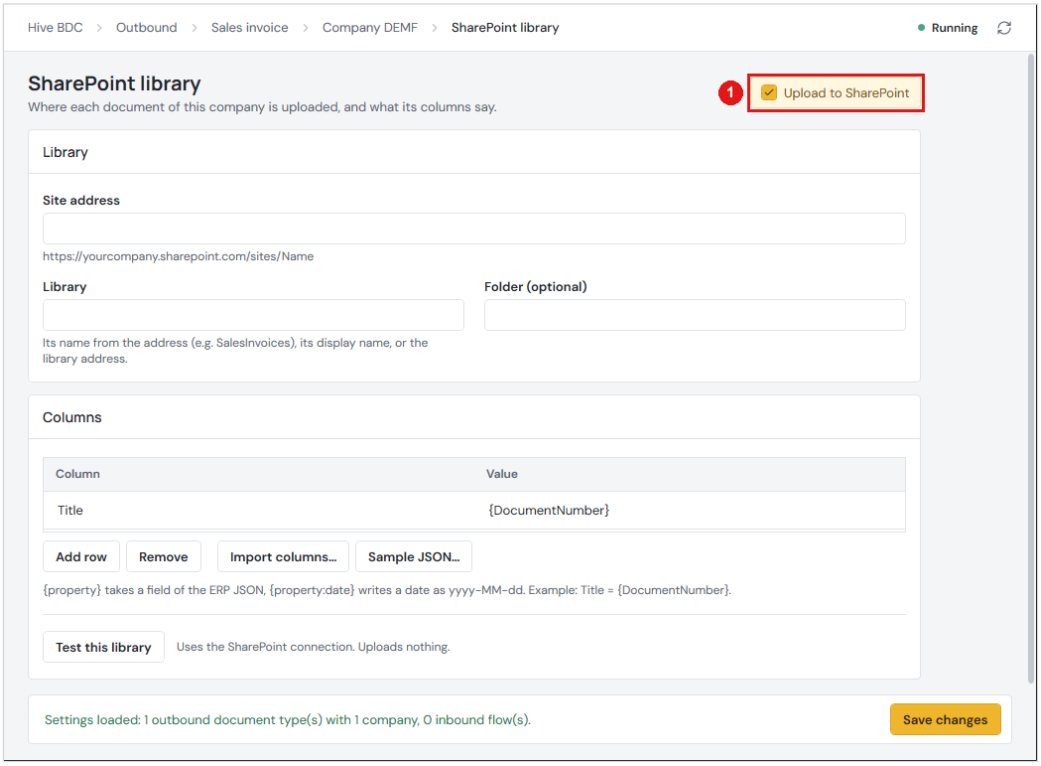

Figure 57: SharePoint library page with Upload to SharePoint

Site address

Open the target library in your browser. The part of the address up to and including the site name is the site address, in the form https://tenant.sharepoint.com/sites/Name.

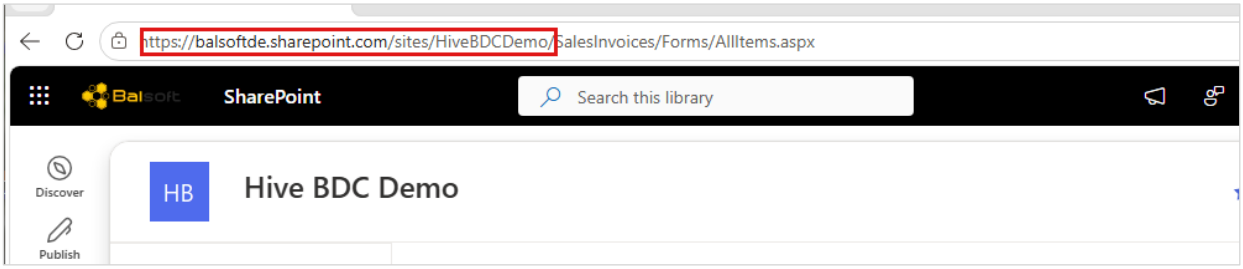

Figure 58: The site part of the SharePoint address

Paste it into Site address (1).

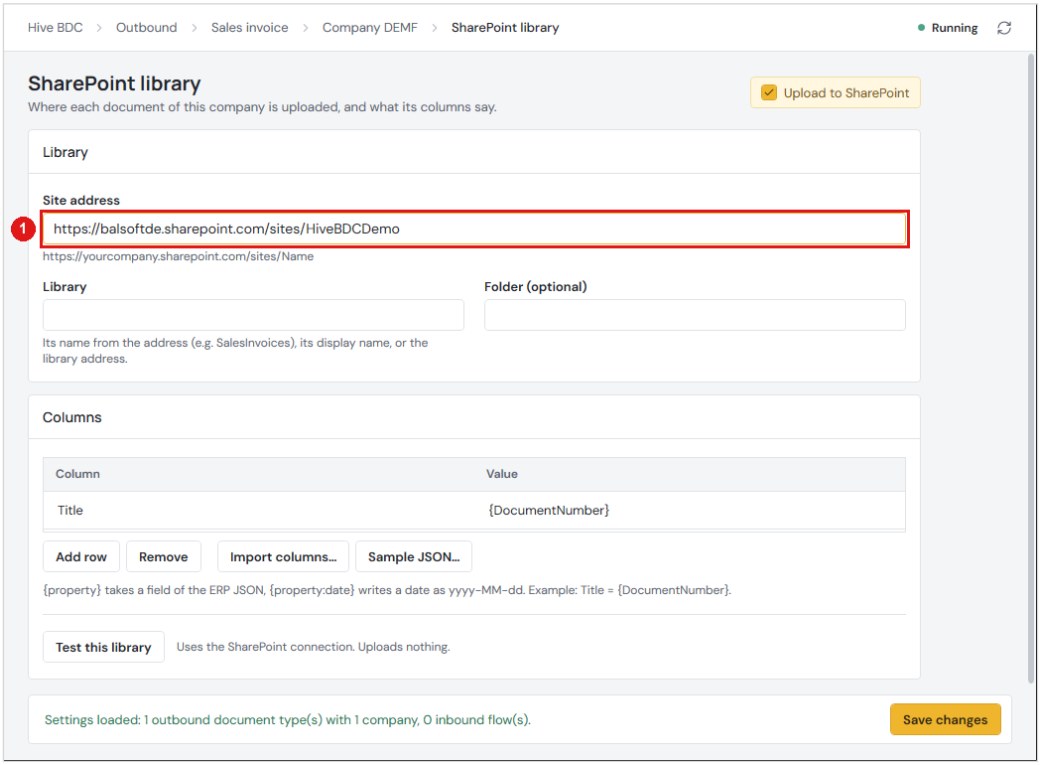

Figure 59: Site address entered

Library

The part of the address right after the site name is the name of the library.

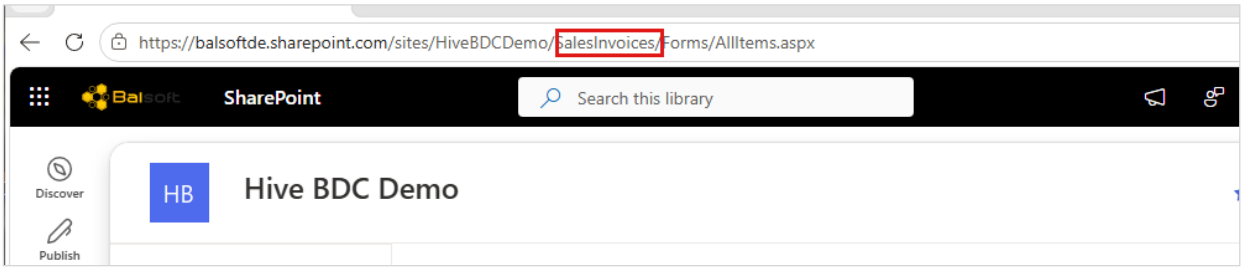

Figure 60: The library part of the SharePoint address

Enter it in Library (1). The display name of the library or the full library address work as well.

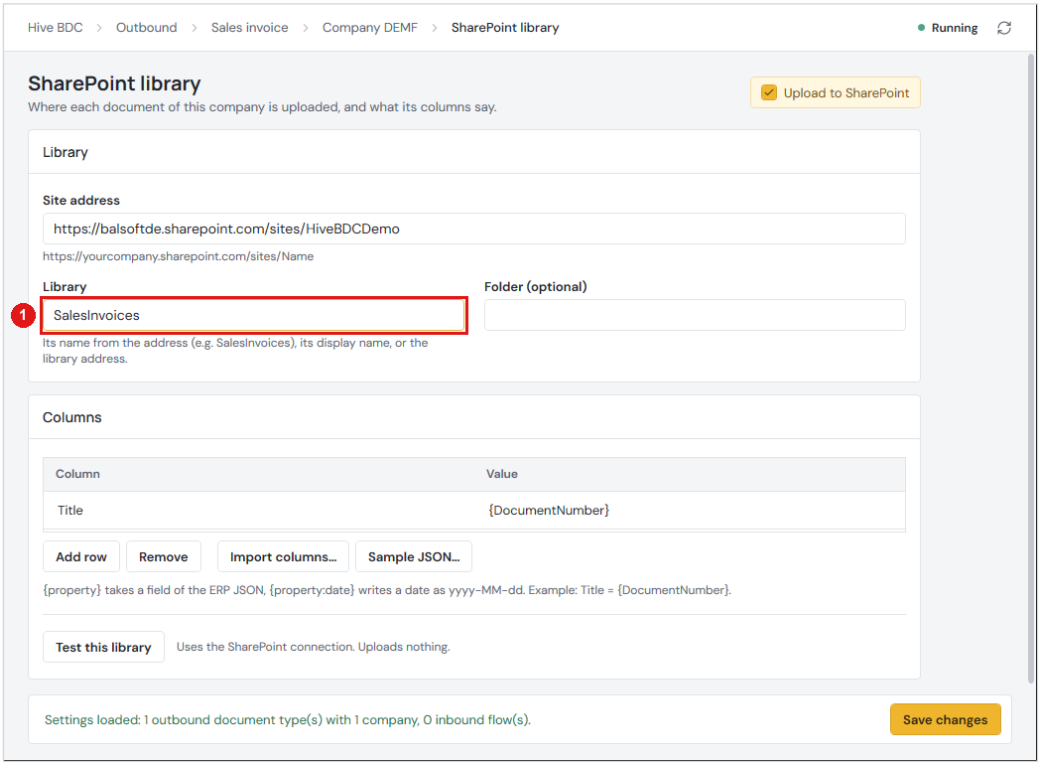

Figure 61: Library entered

Folder (optional)

If the documents are to go into a folder inside the library, enter it in Folder (optional) (1). Leave the field empty to upload into the top level of the library.

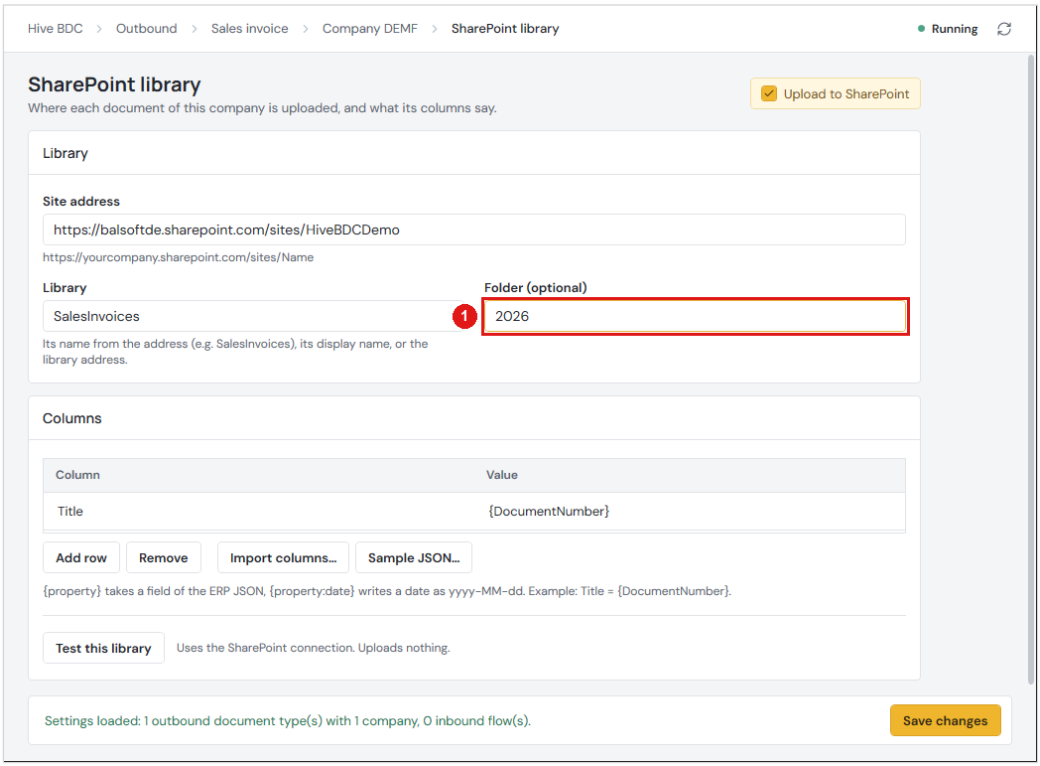

Figure 62: Optional folder inside the library

Test this library (1) checks the SharePoint connection and the library. It uploads nothing.

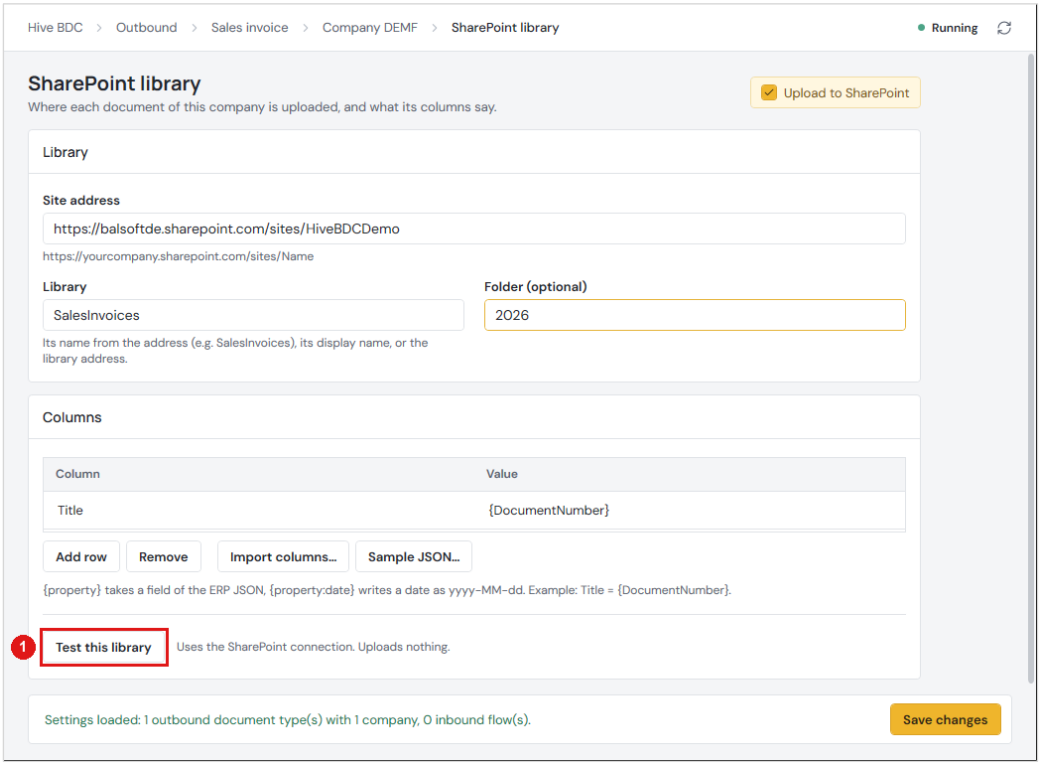

Figure 63: Test this library

Add a destination on the company page offers further destinations (1): a DocuWare file cabinet, an Azure Blob container, an HTTPS endpoint or Azure Service Bus. Each needs its connection on the page Connections first.

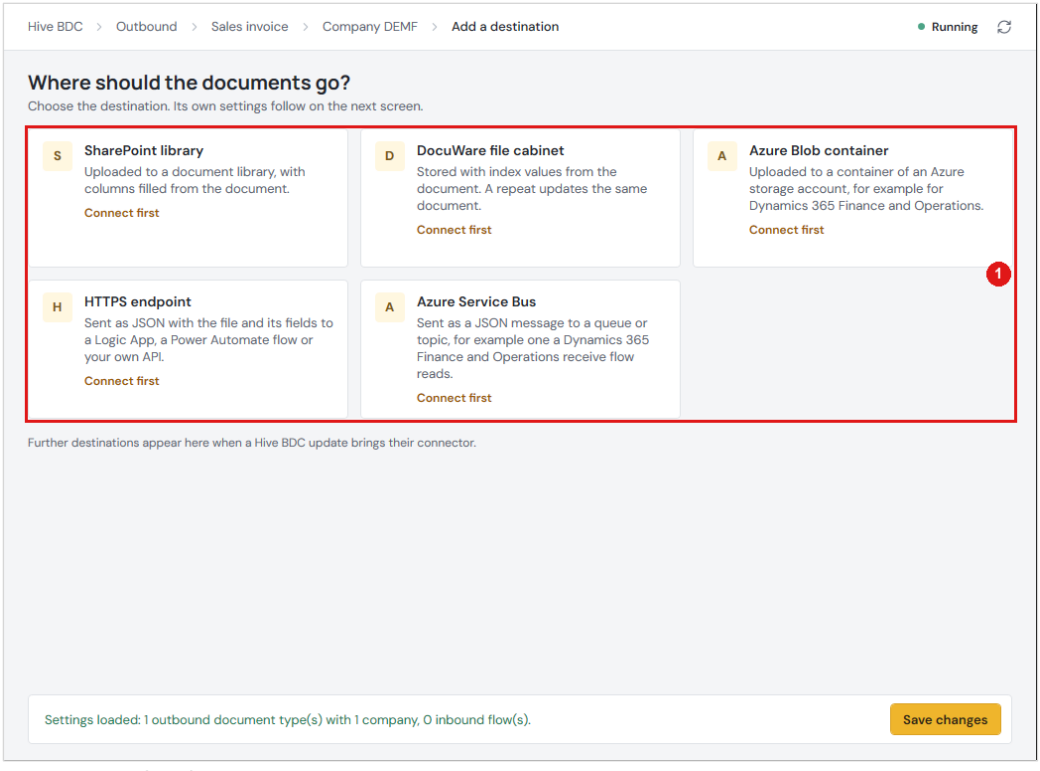

Figure 64: Further destinations

6.5 SharePoint columns

Under Columns on the SharePoint library page you fill the columns of the library from the invoice data. Every row connects one SharePoint column (Column) with a value from the JSON file (Value) (1).

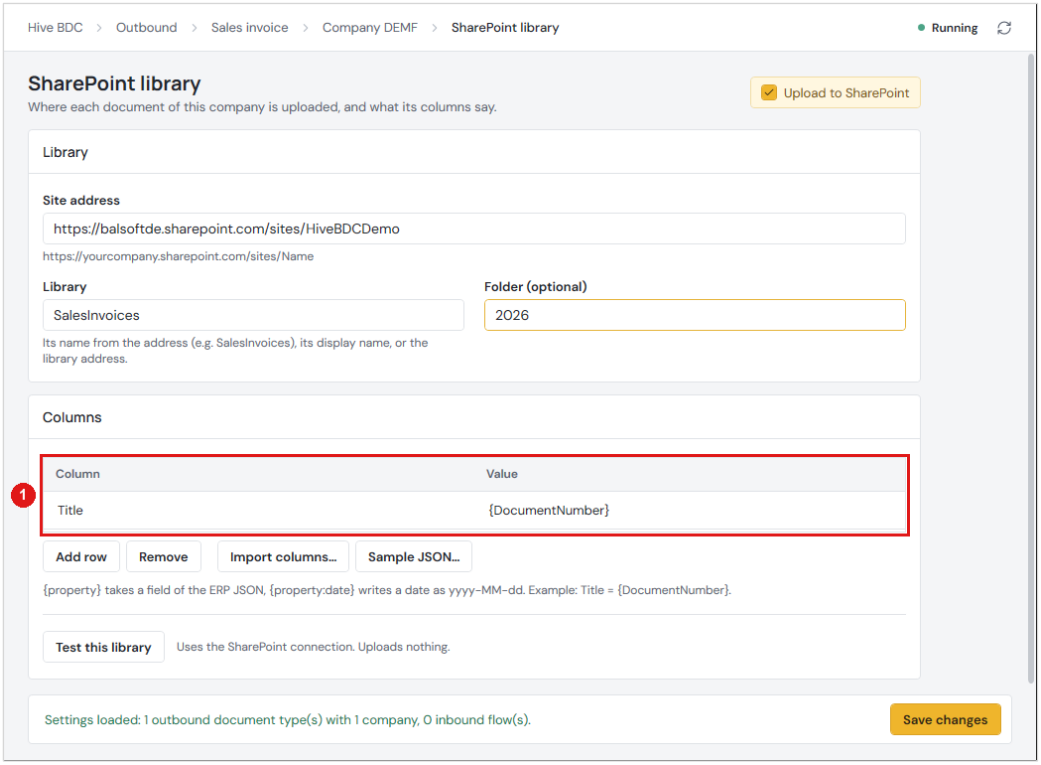

Figure 65: Columns of the SharePoint library

Choose Add row (1). The new row has two cells: Column for the internal name of the SharePoint column and Value for the value.

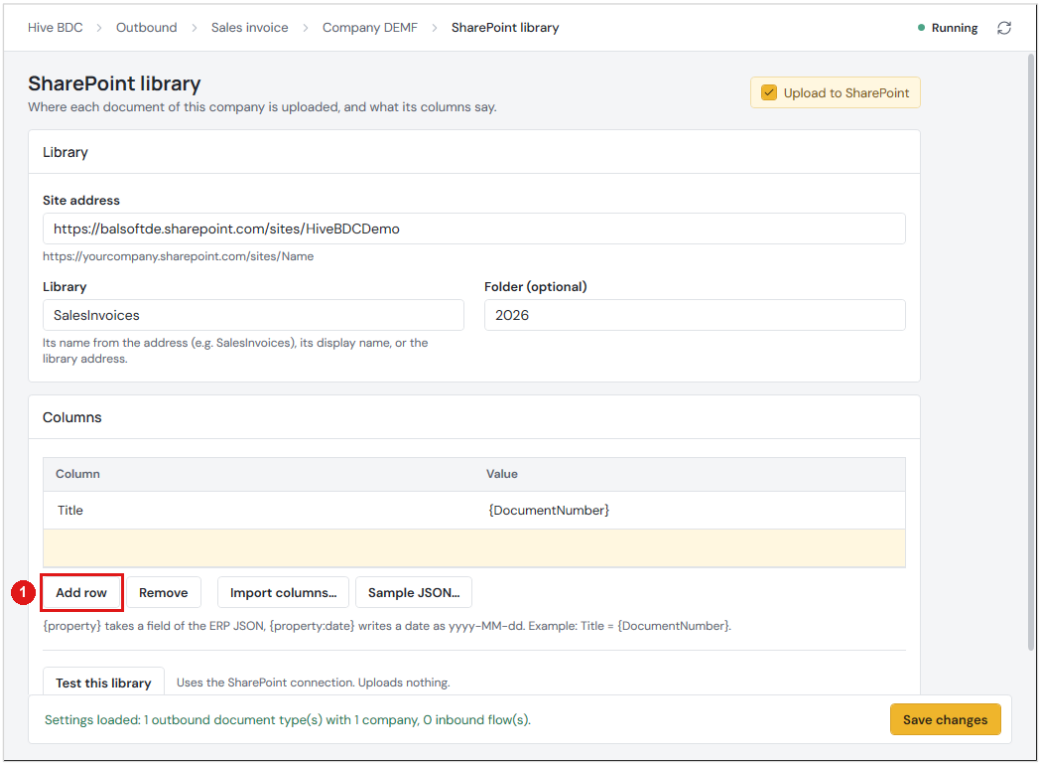

Figure 66: Add row

Finding the internal column name in SharePoint

SharePoint needs the internal name of a column, which can differ from the name you see in the library. In SharePoint open Site contents (1), open the menu of the library (2) and choose Settings (3).

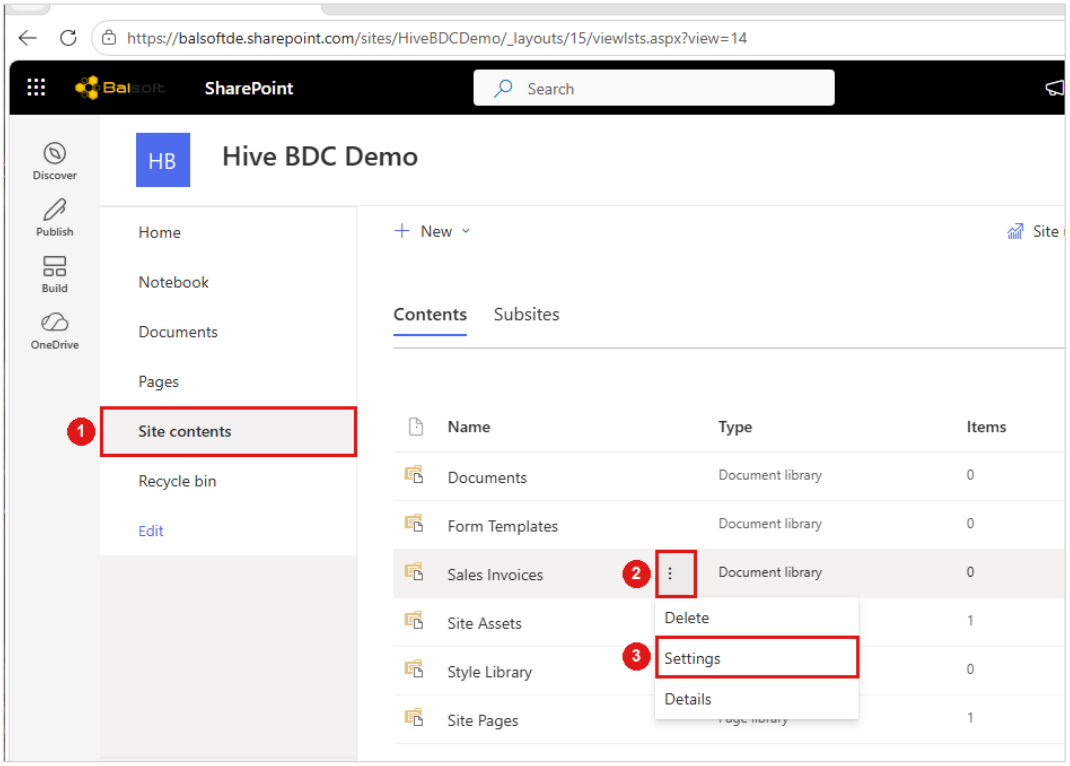

Figure 67: Site contents: Settings of the library

Scroll down to the section Columns.

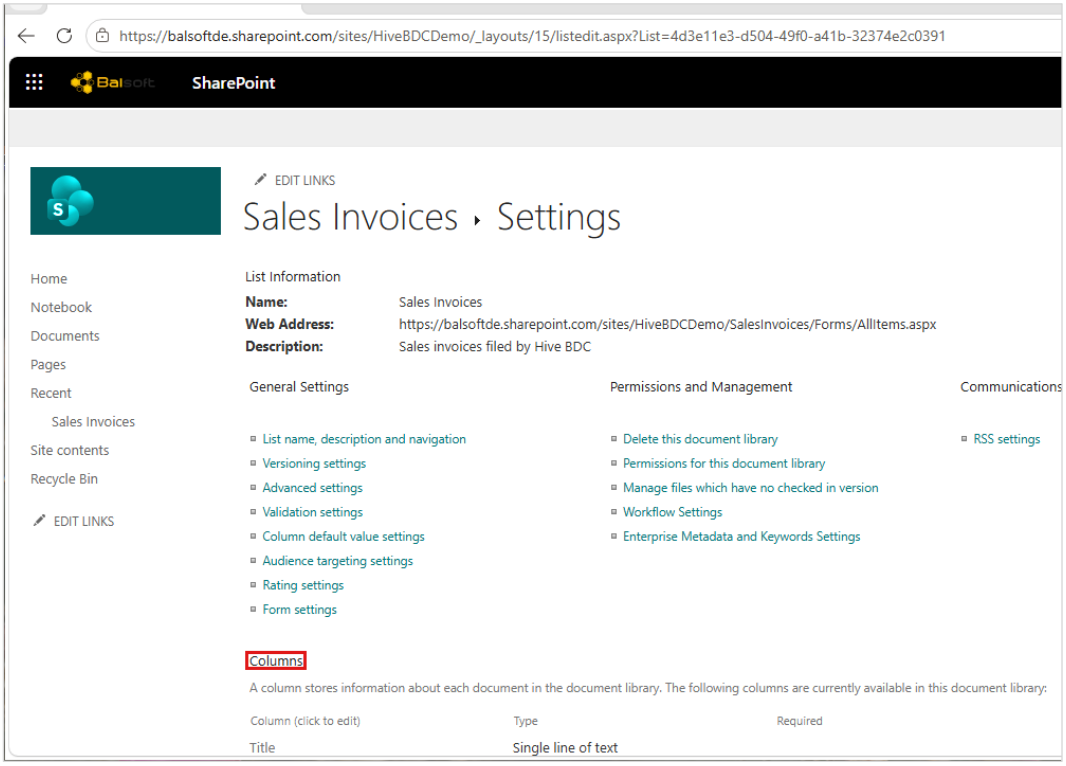

Figure 68: Library settings: section Columns

Click the column you want to fill, here Address.

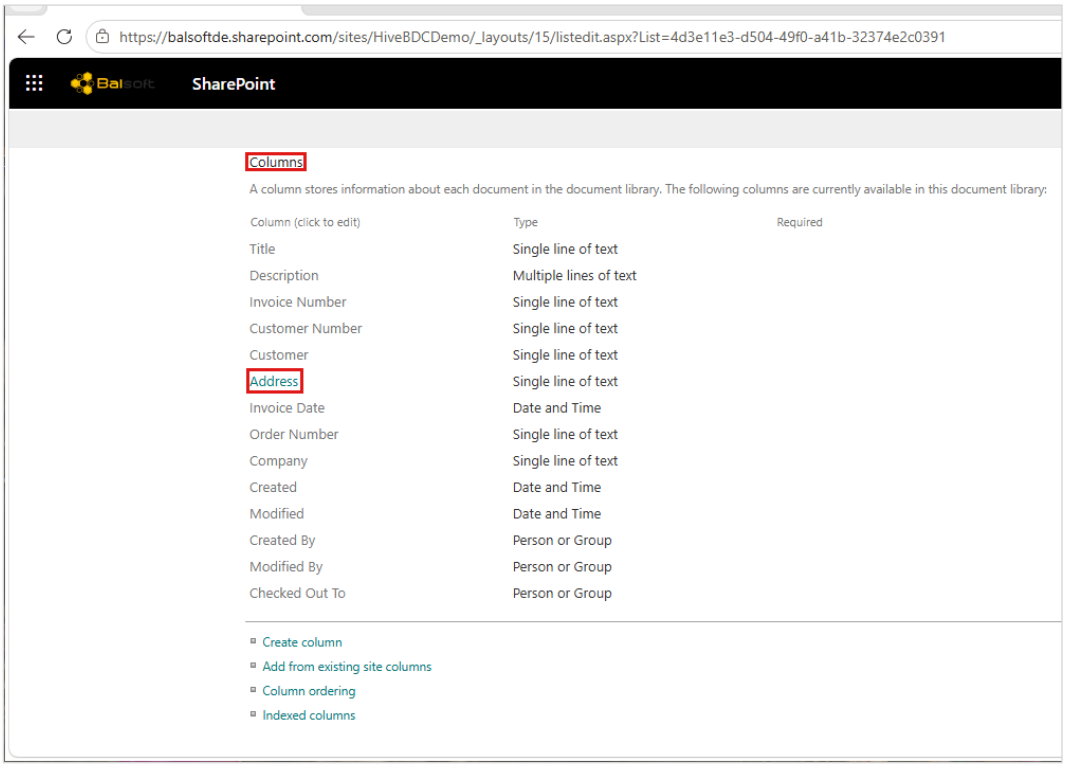

Figure 69: Selecting the column

The address bar now ends with Field= followed by the internal name, here CustomerStreet. Copy only this part.

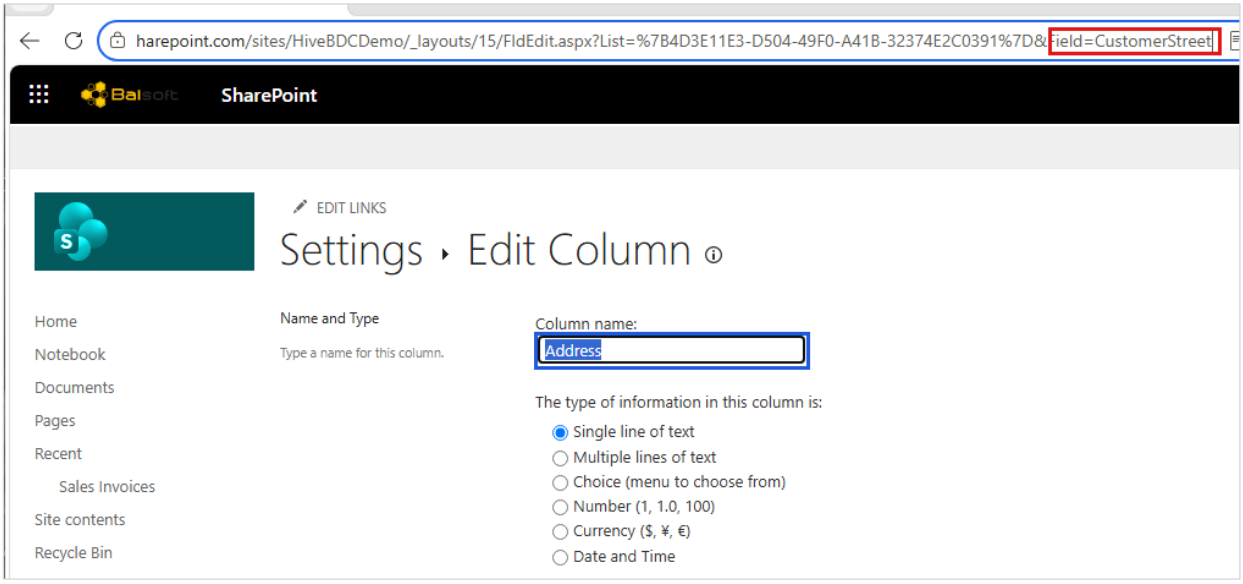

Figure 70: Internal column name at the end of the address

Paste it into the Column cell of the new row (1).

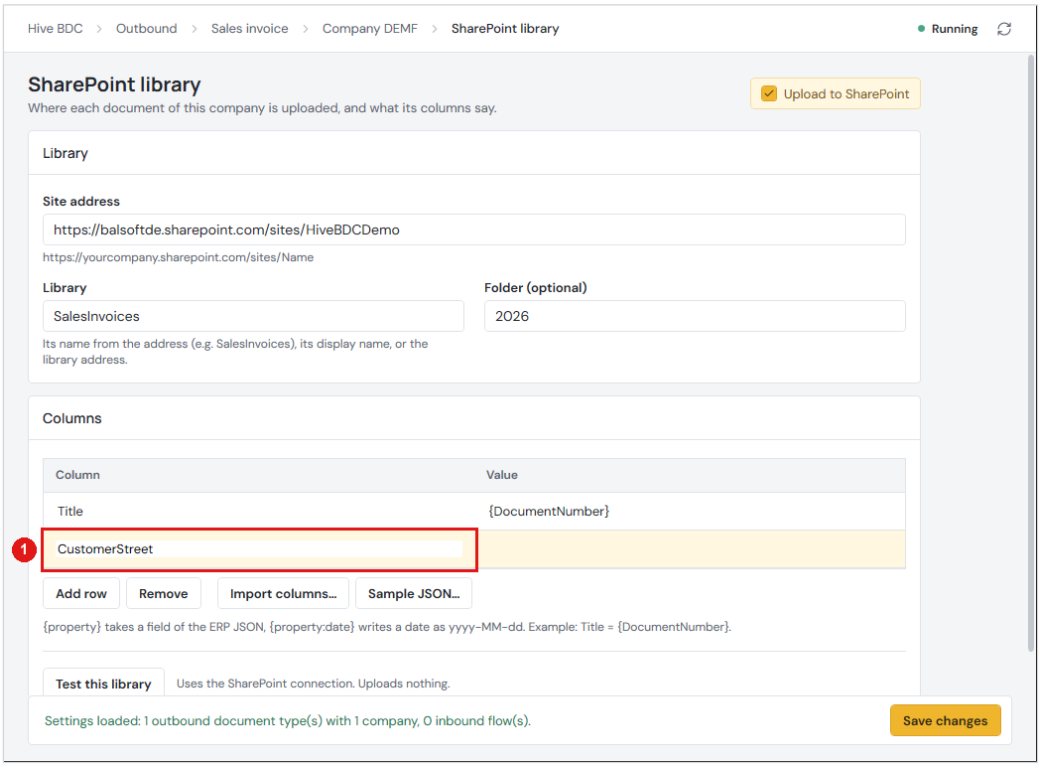

Figure 71: Internal name in the Column cell

Choosing the value from the invoice data

Open a JSON file of the same document type, for example in the processed folder, and look for the key that holds the value you need. Here the street of the recipient is in recipientStreet. Fields you added in chapter 4.7 appear here under the name you gave them.

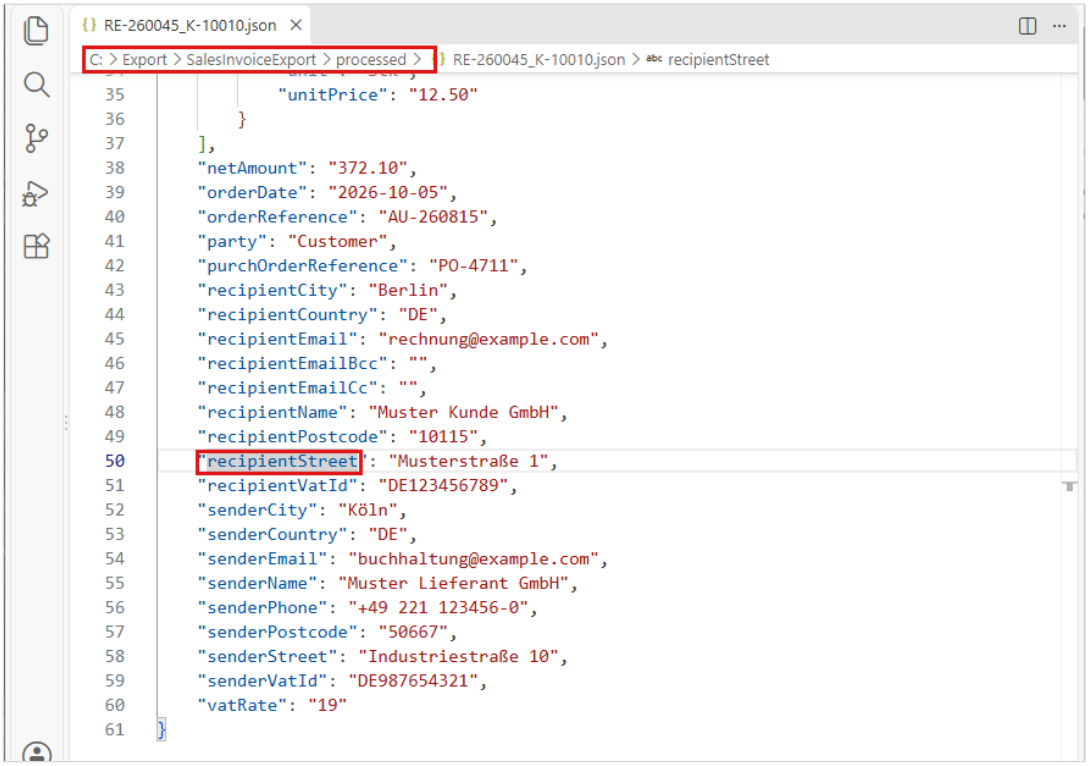

Figure 72: The key recipientStreet in the JSON file

Write the key into the Value cell between two curly brackets, here {recipientStreet} (1). A value can also combine fixed text and several keys. {key:date} writes a date in the form yyyy-MM-dd.

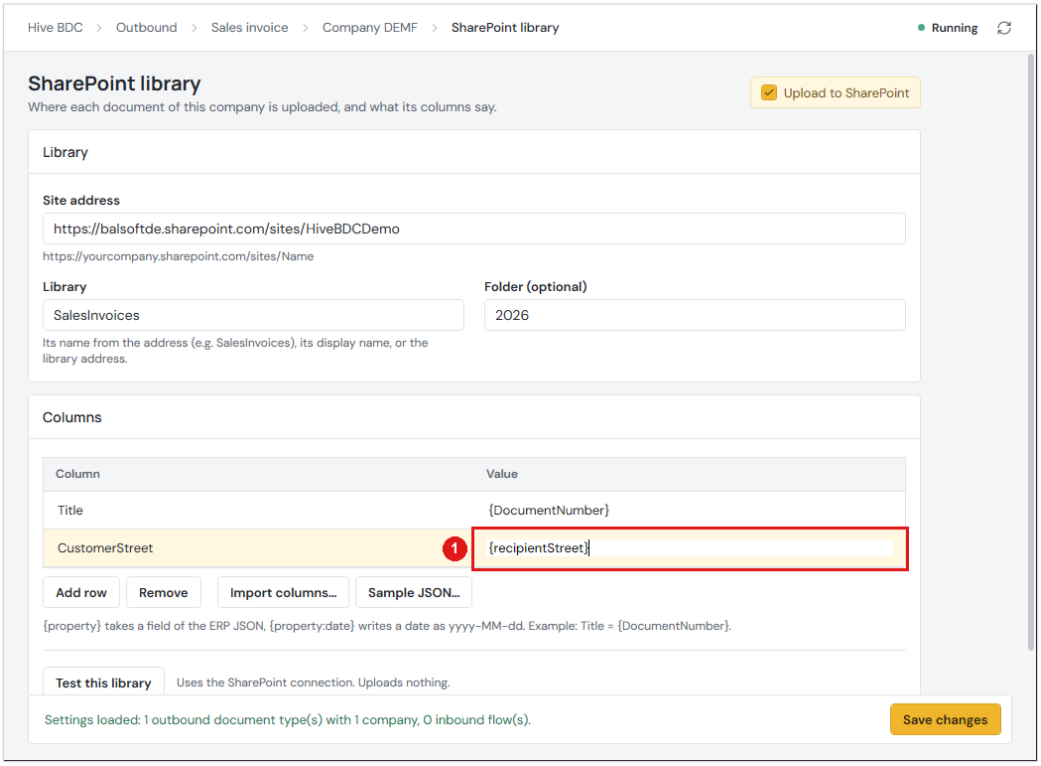

Figure 73: Value {recipientStreet}

Choose Save changes (1). The next uploaded document fills the column.

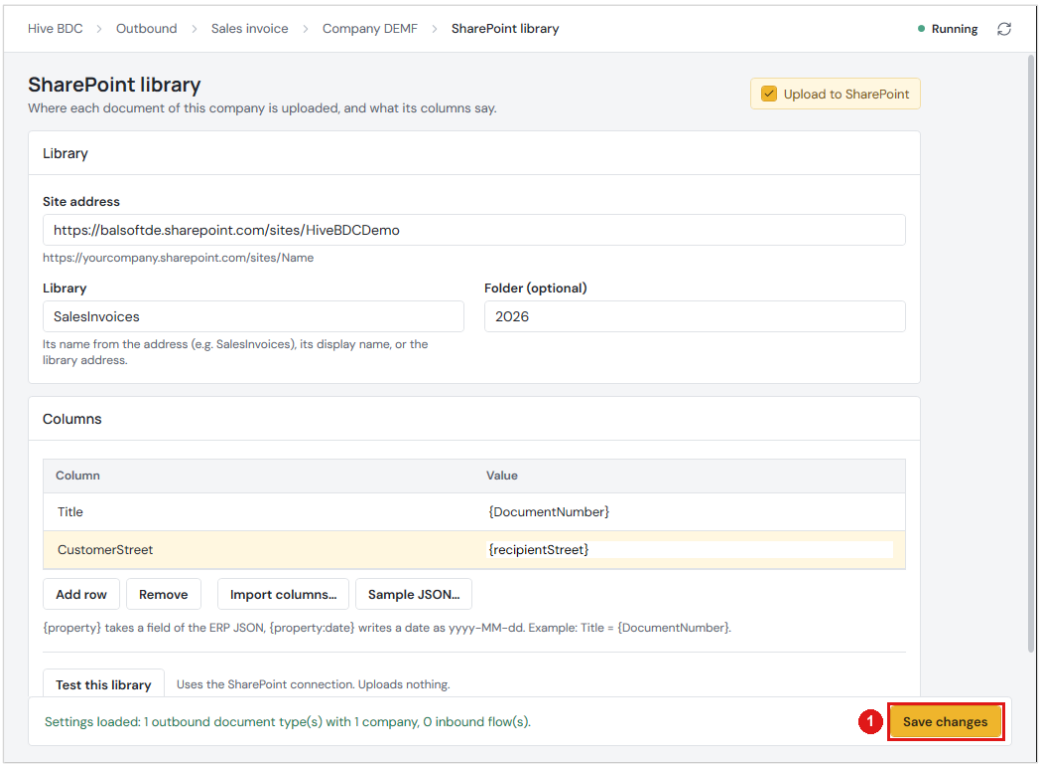

Figure 74: Save the settings

Import columns… fills the rows from a column file that Balsoft prepares for your library. Sample JSON… saves such a file with the current rows, as a starting point.

6.6 Smaller PDFs: Compress PDF

Before delivery on the company page has Compress PDF (1). With it on, Hive BDC makes each PDF of this company smaller once, before it goes to any destination, so the mail, SharePoint and the output folder get the same file. Fonts keep only the letters the document shows, and lossless images placed above 300 ppi are scaled to 200 ppi. JPEG pictures, text and lines are not changed, so the pages look the same. The PDF from the ERP stays as it was in the folder processed.

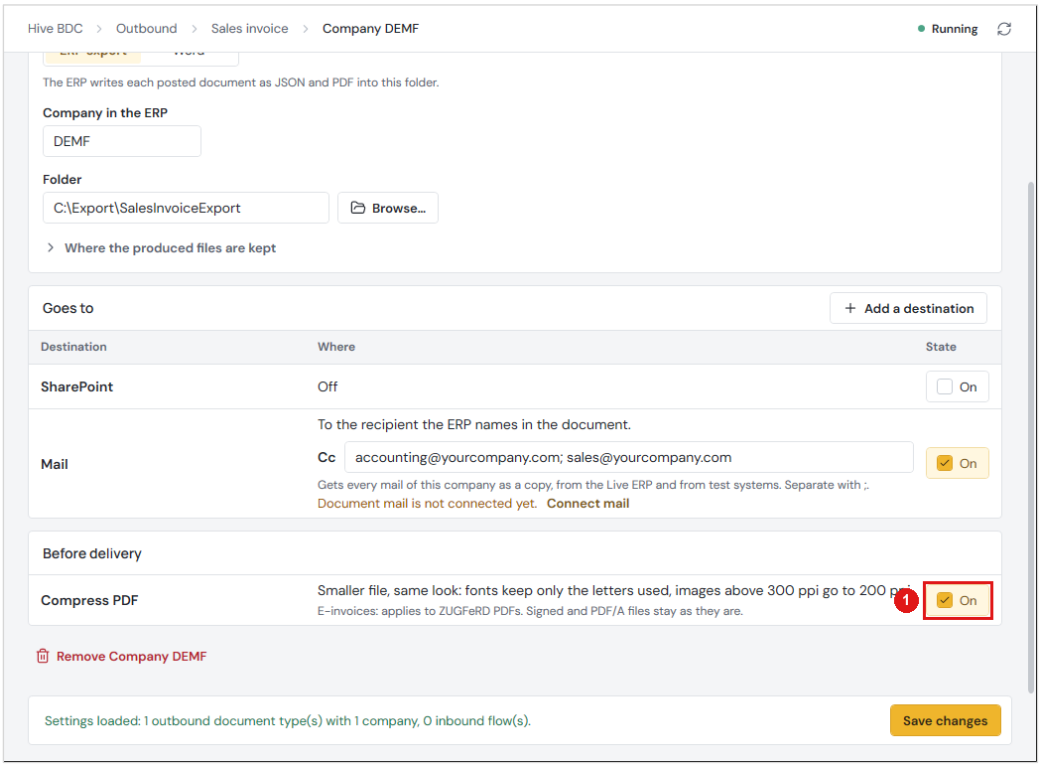

Figure 75: Compress PDF under Before delivery

For e-invoices it applies to ZUGFeRD: the fonts Hive BDC embeds for PDF/A then carry only the letters used. An invoice whose ERP PDF only names Arial becomes several hundred KB smaller; in a test, 945 KB became 138 KB. XRechnung is XML and is not changed. Signed, encrypted and PDF/A documents, and PDFs that would not get smaller, are delivered as they are. Document history shows the result for each document, for example "Compressed 945 KB to 138 KB (85% smaller)" or "Not compressed: signed PDF".

6.7 Connections

Choose Connections in the sidebar (1). The page lists every sign-in Hive BDC can use. This guide needs SharePoint (2) and Document mail (3). Your IT department creates the two app registrations and hands over their values (chapter 2). The figures show placeholder values.

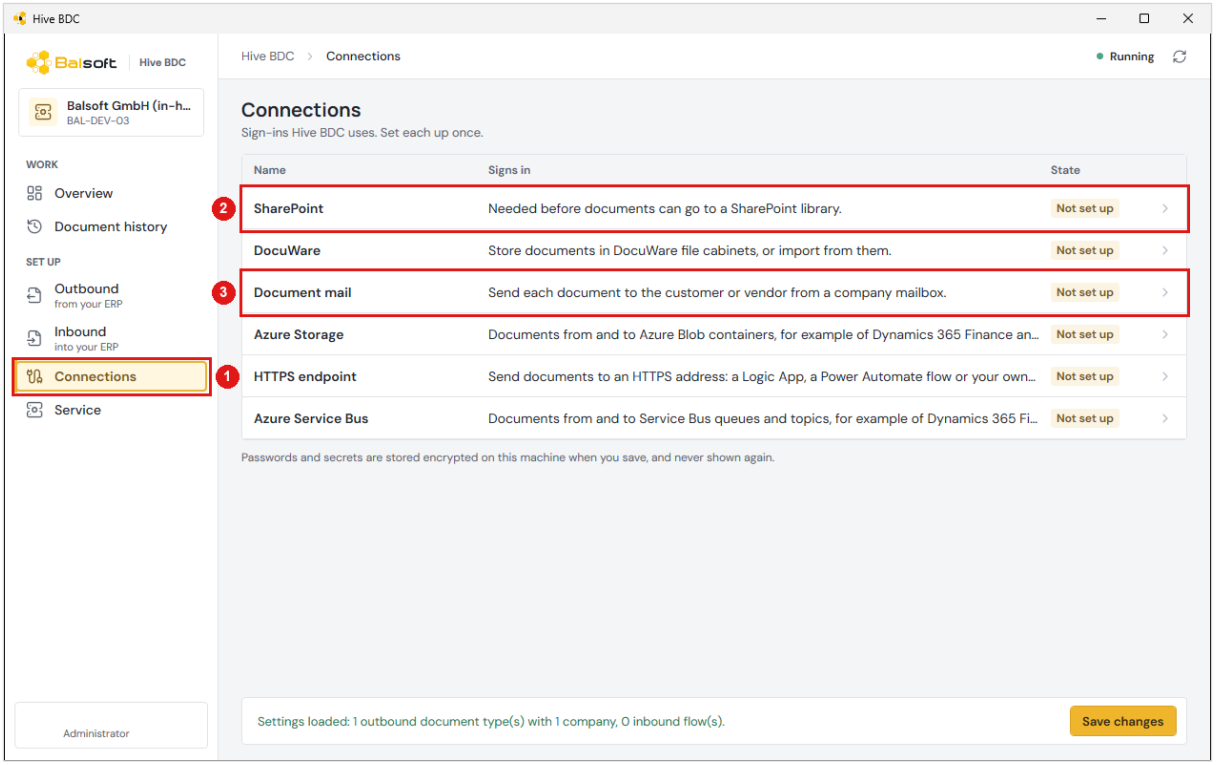

Figure 76: Connections

Choose SharePoint and enter the values of the app registration "Hive BDC SharePoint": the Tenant ID of your Microsoft 365 tenant (1), the Client ID of the app (2) and its Client secret (3). The Tenant ID must be the tenant the licence was issued for.

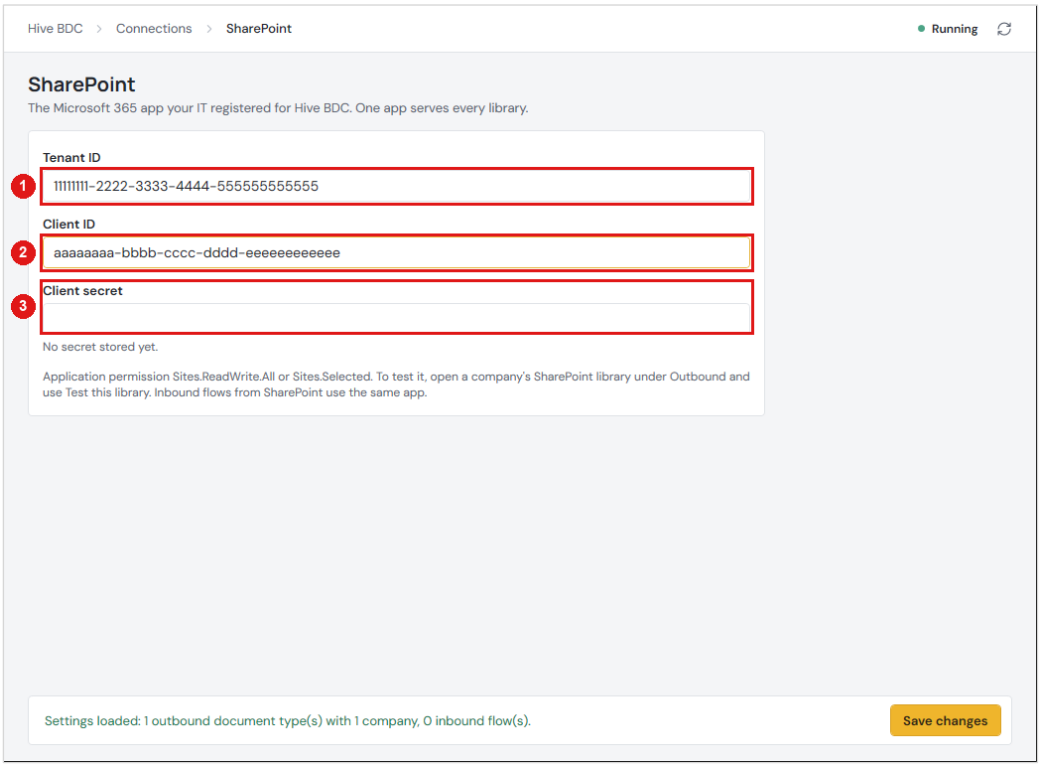

Figure 77: SharePoint: Tenant ID, Client ID and Client secret

Choose Document mail. Set Send document mails (1) to switch e-mail delivery on for the whole service. In Send from (2) enter the mailbox the documents are sent from, for example finance@yourcompany.com. Enter the Client ID (3) and the Client secret (4) of the app registration "Hive BDC Mail". Tenant ID (5) can stay empty if the mail app is in the same tenant as the SharePoint app. Test recipients (6) receive every document that comes from a test or development AX 2009 instead of the real customer, for all document types; the Cc addresses of a company get these mails as well. Set Keep a copy in the sender's Sent Items (7) to keep every sent mail in the sender mailbox.

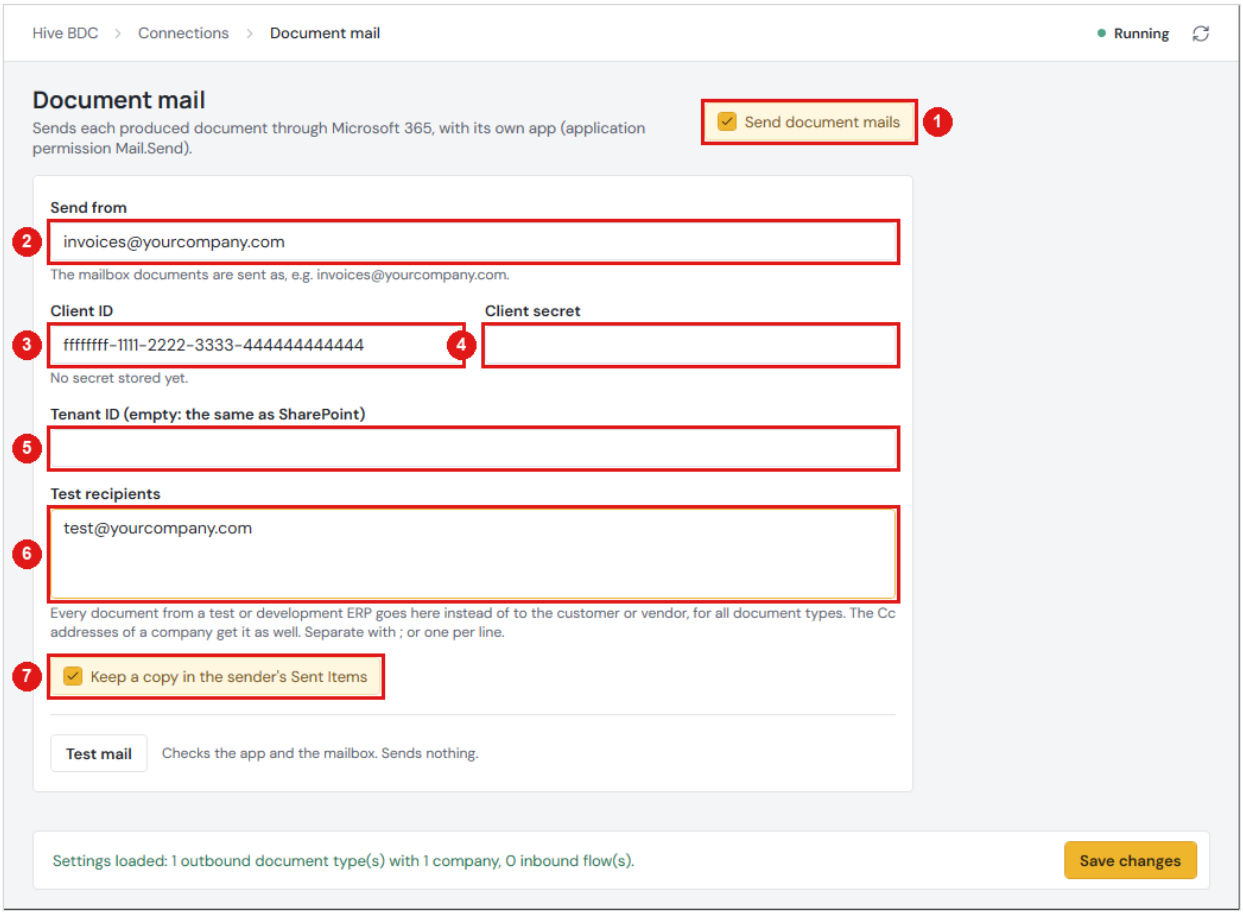

Figure 78: Document mail

Test mail (1) checks the app and the mailbox and sends nothing. Then choose Save changes (2).

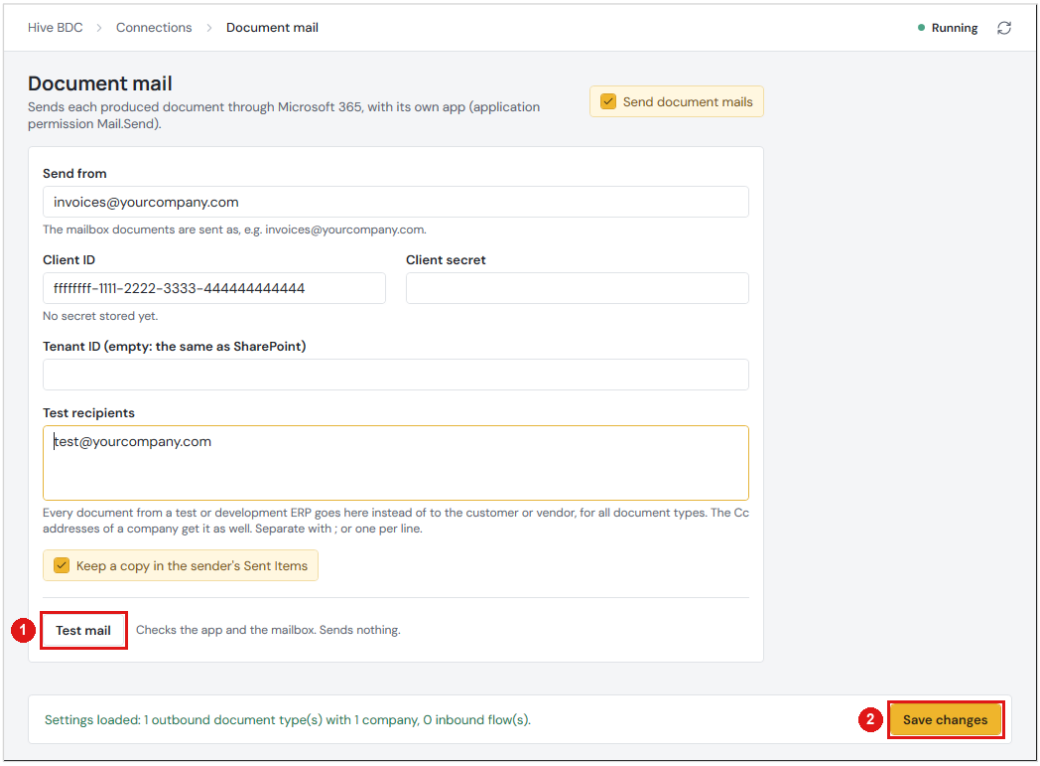

Figure 79: Test mail and Save changes

Setting	Meaning
SharePoint	Tenant ID, Client ID and Client secret of the app that uploads to SharePoint. One app serves all libraries.
Send document mails	Switches e-mail delivery on for the whole service.
Send from	The mailbox the documents are sent from.
Client ID, Client secret	The app that sends the mails. If Tenant ID stays empty, the SharePoint tenant is used.
Test recipients	Documents from a test or development AX 2009 go to these addresses instead of the real customer, for all document types. The Cc addresses of a company get them as well.
Keep a copy in the sender's Sent Items	Stores every sent mail in the sender's Sent Items.

Note: Secrets are stored encrypted on the server and never shown again. A secret field left empty keeps the stored secret.

6.8 Service and licence

Choose Service in the sidebar. The tab Status shows whether the Hive BDC service is running; Start and Stop (1) pause the processing, for example during maintenance. Check for new documents every (2) sets how often every folder is checked: 30 seconds is the normal value, 5 the minimum. Log folder (3) can stay empty; the logs are then kept in %ProgramData%\HiveBDC\logs, one file per day.

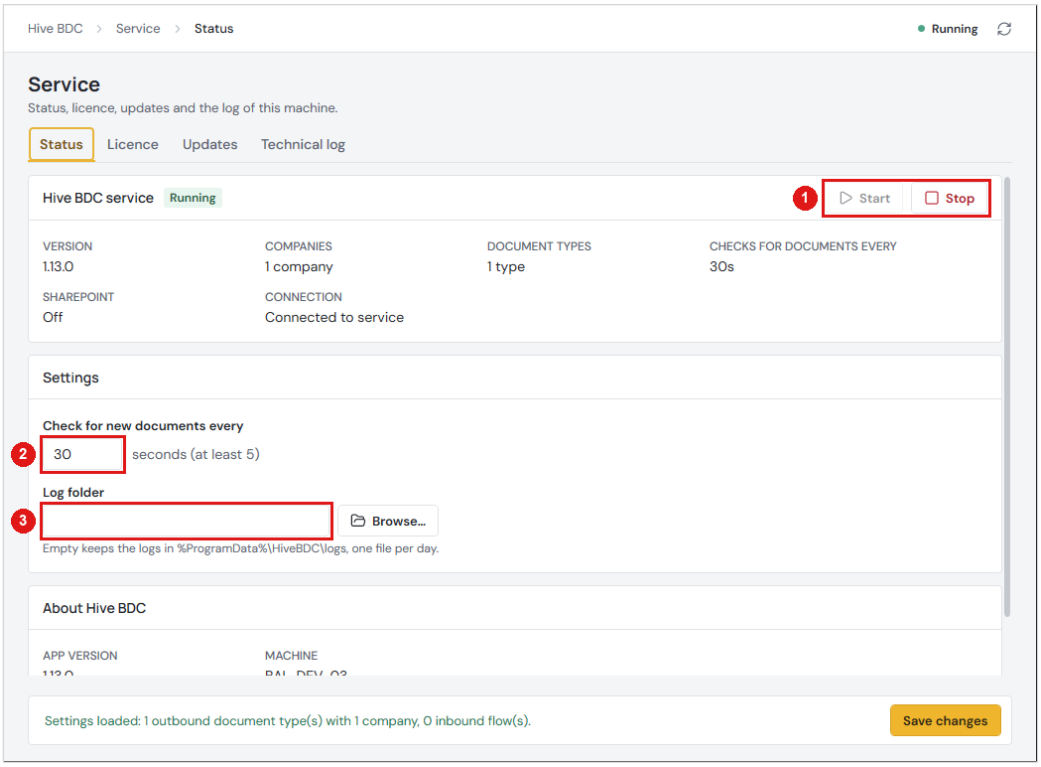

Figure 80: Service, tab Status

The tab Licence shows the licensed customer and the expiry date (1). Renew licence… (2) imports the new .lic file from Balsoft. Without a valid licence, or seven days after it has expired, processing stops.

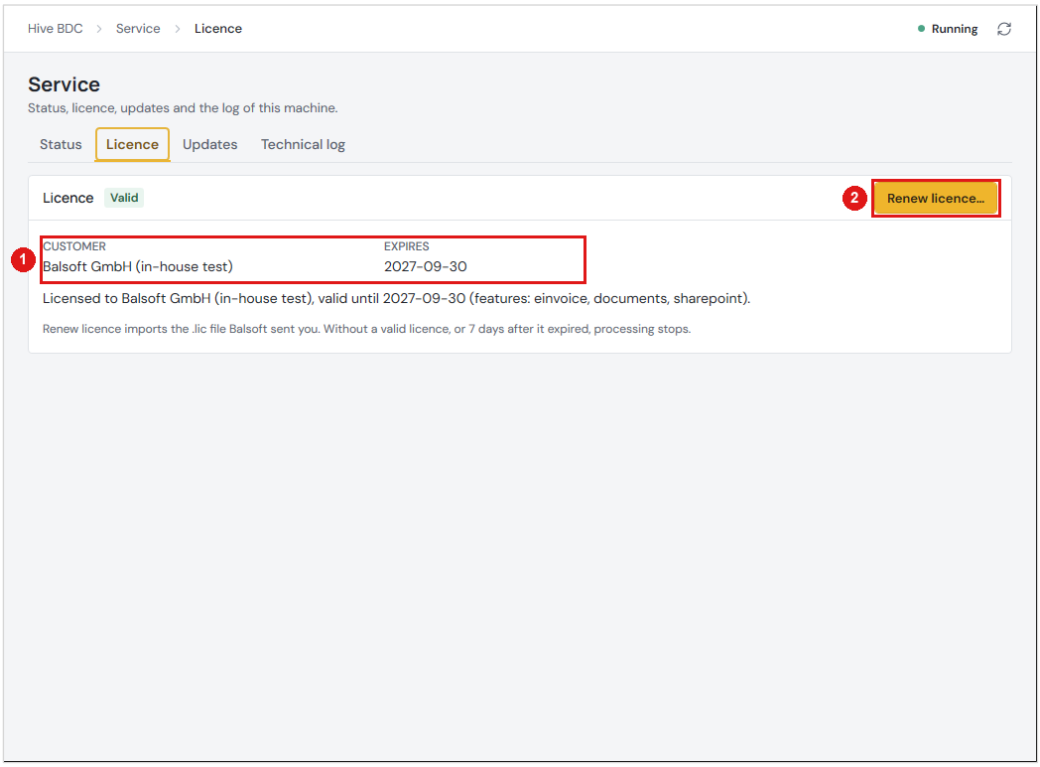

Figure 81: Service, tab Licence

The tab Updates shows this version. Check for updates (1) looks for a newer version of Hive BDC, Release notes (2) shows what changed.

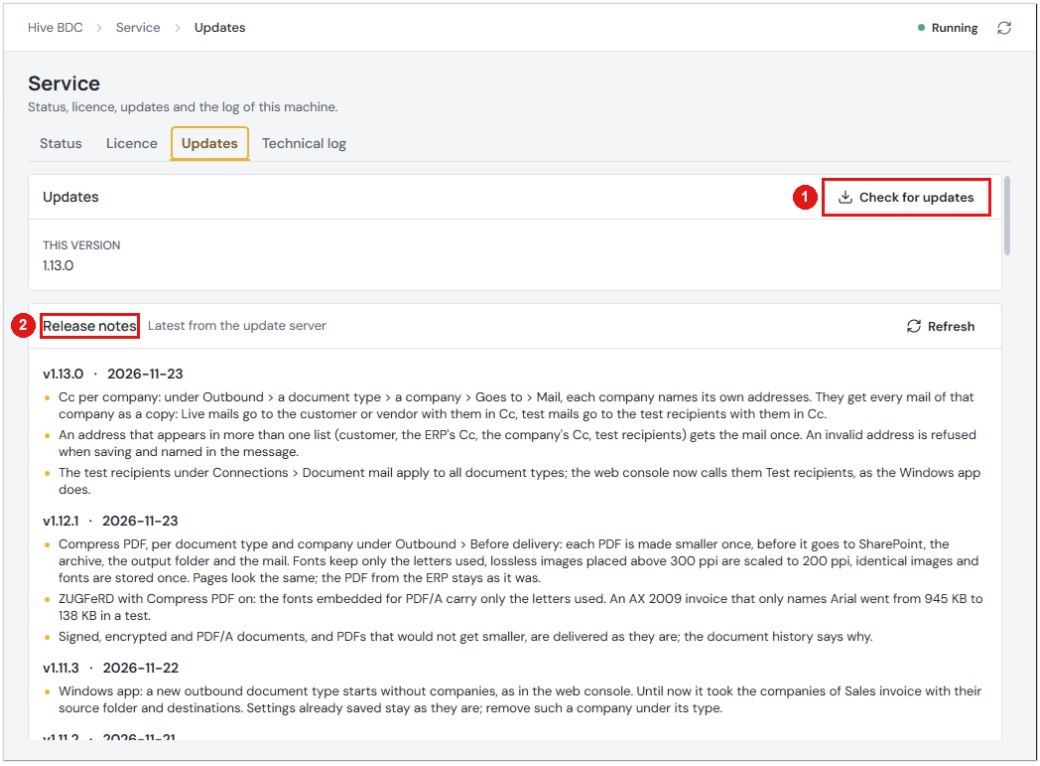

Figure 82: Service, tab Updates

The tab Technical log shows what the service did, line by line, newest first; the colour of a line shows its level (1). Open log folder (2) opens the folder with the log files.

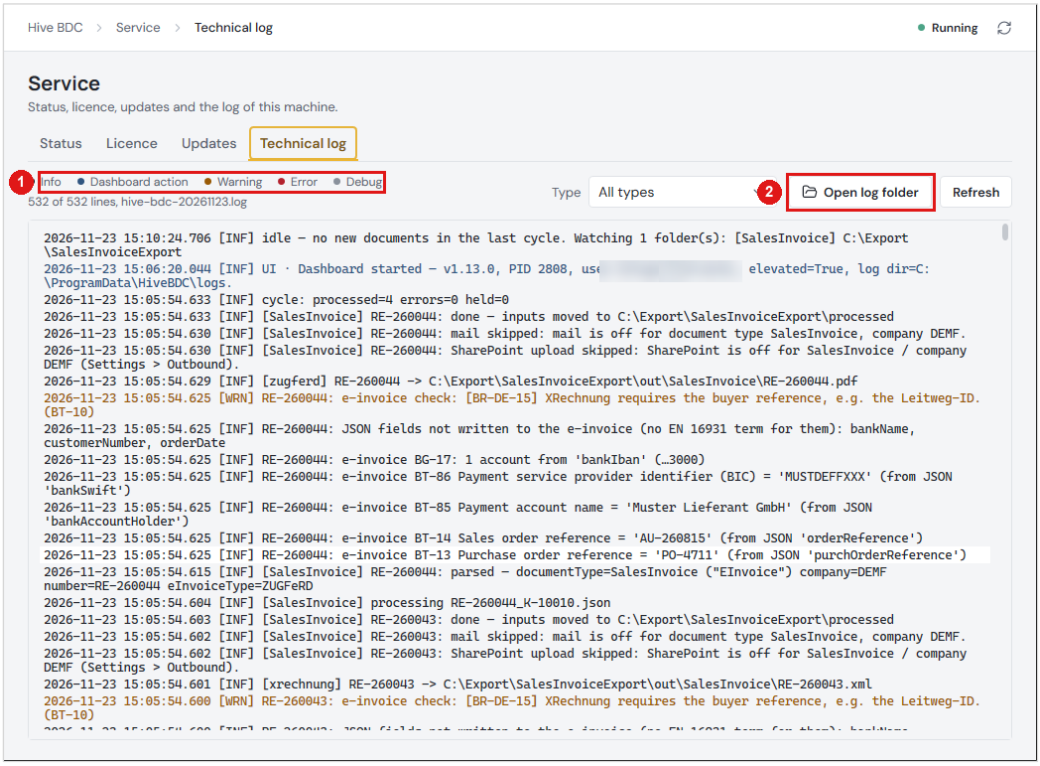

Figure 83: Service, tab Technical log

7 When an invoice is not processed

Nothing is thrown away. An invoice that cannot be processed stays as a line in AX or as a file in the export or error folder, and the reason is in the log. Check in this order:

What you see	What to check
The posted invoice does not appear in Datenexport.	Is Verkaufsrechnung Aktiv with Automatisch senden and an Export-Flow (chapter 4.5)? Is the flow Gesperrt (chapter 4.2)? Send it by hand (chapter 5.2).
The line in Datenexport has the status Fehler.	Open Fehlerprotokoll in Datenexport to see the reason. Fix it, then choose Zurücksetzen so that the next Import/Export Stapel builds the message again.
The line stays in Erstellt.	Has the Data Flow Import/Export Stapel run for E-InvoiceExp? Is the number sequence of Ausgangsdaten-ID set (chapter 4.4)? Open Fehlerprotokoll in Datenexport.
The message stays in Erstellt in Ausgangs-Flow.	Has the Data Flow Senden/Empfangen Stapel run? Can the AX server write into the export folder (chapter 4.3)?
The batch stops with "No report is set up" or "The PDF was not written".	PDF ausgeben is set for a document type that has no invoice report, or the export folder cannot be written. Check chapters 4.5 and 4.3.
The e-invoice has the wrong format.	Check the E-Rechnungstyp of the customer (chapter 4.8) and the Standard-E-Rechnungstyp (chapter 4.4).

What you see	What to check
The bank details on the e-invoice are wrong or missing.	Check Rechnungsbankkonten: is the right account listed and Aktiv (chapter 4.6)?
A mapped field is missing in the JSON.	Is the Zugeordneter Feldname a reserved name or empty (chapter 4.7)? Was the invoice exported after the mapping was created?
The ZR or GLN data is missing in the JSON.	Is the ZR-Code of the customer filled (chapter 4.8)?
The files are in the export folder but nothing is converted.	Are Ordner für ausstehende Dateien in the flow and Folder of the company in Hive BDC exactly the same folder? Does the dashboard show Running at the top right? Are the document type and the company Active?
The files went to the error folder.	Search for the invoice number in Document history or look in Service > Technical log. The reason usually names one missing piece of data, for example a missing VAT registration number.
The customer did not receive a mail.	Is Mail On for the company and Send document mails set under Connections > Document mail? Does the customer have an E-Mail address (chapter 4.8)? From a test AX 2009 the mail goes to the test recipients.
A SharePoint column stays empty.	Is the internal column name used (chapter 6.5)? Does the key in Value exist in the JSON file, written between curly brackets?
The dashboard says the licence has expired.	Ask Balsoft for a new licence file and install it under Service > Licence with Renew licence…. Invoices keep waiting in the folder until then.

When you contact Balsoft, the invoice number and the Ausgangsdaten-ID are enough to find the case in the log.

8 Glossary

Term	Meaning
EN 16931	The European standard that describes what an electronic invoice has to contain. XRechnung and ZUGFeRD are both built on it.
XRechnung	A pure data invoice in XML, without a printed page.
ZUGFeRD	A PDF invoice that carries the same invoice data inside the file.
ZR	Zentralregulierung, central settlement. A provider settles invoices on behalf of its member customers.
Data Flow	The AX module that moves data in and out of AX.
Flow-ID	The name of one data flow, for example E-InvoiceExp.
Dokumenttyp	The kind of document, for example Verkaufsrechnung. Links the document to its flow.
Automatisch senden	Automatic trigger: a posted document is queued without user action.

Term	Meaning
An Hive DocFlow senden	Manual trigger: a button in the invoice journal that queues the selected invoices.
Feldzuordnung Kundenrechnung	Adds further invoice fields to the invoice data.
Rechnungsbankkonten	The company bank accounts given on the e-invoice.
Datenexport	The AX table that collects the posted documents waiting to be exported.
Ausgangs-Flow	The AX form that lists the messages prepared for sending.
Stapel	Batch job. Runs once or on a schedule.
Column and Value	One row under Columns that fills a SharePoint column from the invoice data.
Check interval	How often the service looks into the folders, in seconds.
Licence file	The .lic file from Balsoft that allows the processing to run.

Balsoft GmbH, Herler Str. 109, 51067 Köln. For questions about this guide write to support@balsoft.de. Please include the version under Service > Status and the log file of the day.