

Tungsten Invoice Workflow

Tungsten Connector for SAP

(SAP Integration with Tungsten e-Invoice Network)

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Introduction

This document describes how the Tungsten Connector for SAP works as well as key features and configuration.

Overview of Tungsten Connector for SAP

The Tungsten Connector for SAP enables communication between Tungsten e-Invoice Network (TeN), Tungsten Invoice Workflow, and the customer's SAP system. It provides two-way updates between all three systems and enables suppliers to see a real time status of their submitted invoices on the Tungsten e-Invoice Network Portal.

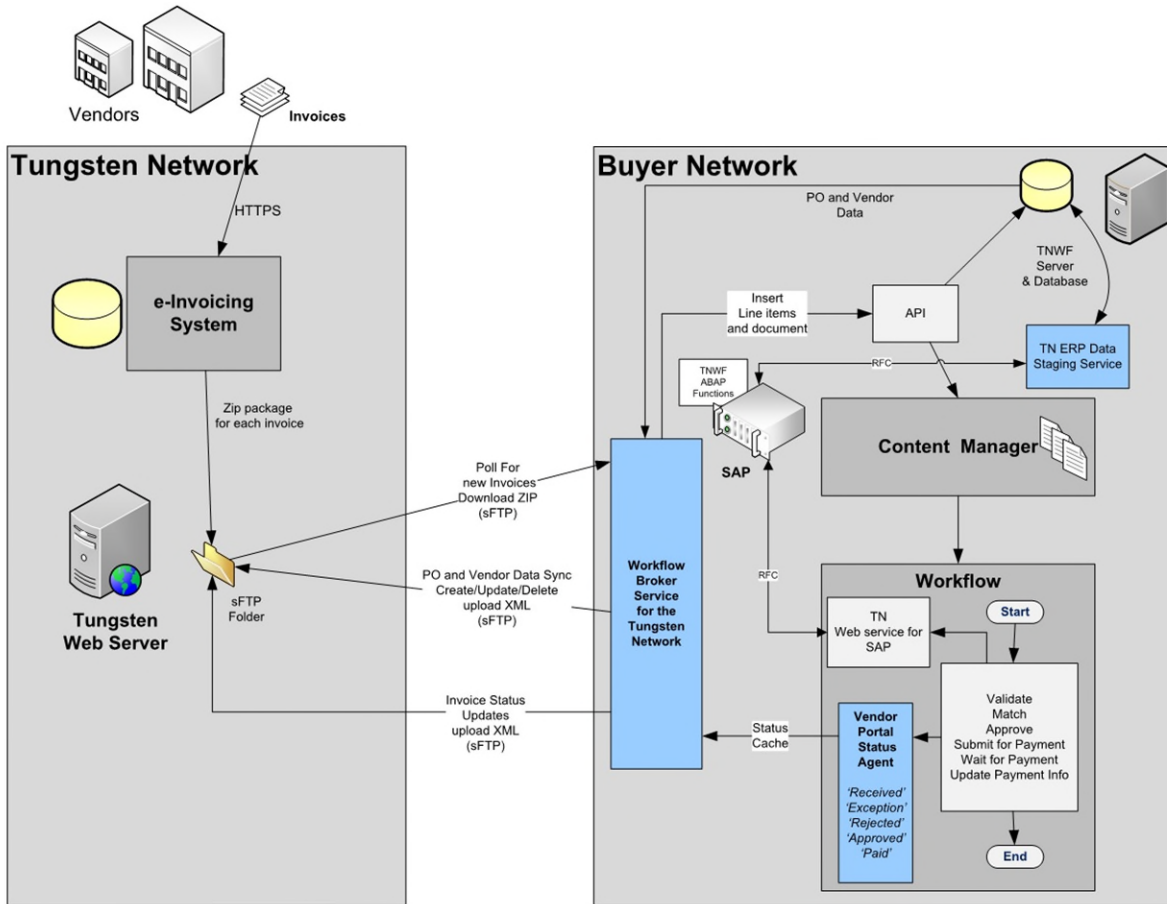
Customers can receive electronic invoices from the Tungsten Portal and process them through Workflow. At a minimum, the invoice package file will contain invoice metadata along with line item data. The invoice package may also contain image copies of the invoices along with supplementary supporting documentation. The invoice package will be provided to Workflow using a secure web server supporting the Secure File Transfer Protocol (sFTP). In turn, Workflow will provide updates to the Tungsten Portal that will allow suppliers to see the status of their invoices.

The Tungsten Broker Service polls the Tungsten e-Invoice Network web server for new invoices. Each distinct invoice package is in zip format. The Broker Service will unzip the package into individual components and then submit to Workflow, which integrates with SAP so that GL coding and PO information are retrieved and validated.

The Broker Service transmits periodic invoice status updates to the Portal, reporting the current status of the invoice as it proceeds through Workflow and SAP. The Broker Service also gathers PO information from the SAP system and then transmits that PO data to the Tungsten Purchase Order Service so it can be used as a validation point during invoice processing as well as for PO Convert functionality in the Portal, if desired.

Integration

The diagram below illustrates on a high level the integration of Workflow, Tungsten e-Invoice Network, and the customer's SAP system:



Technical Integration Architecture

This solution optionally supports a full workflow, which starts with Tungsten e-Invoice Network delivering invoice images and metadata to Workflow in a format and structure that the Workflow and Content Manager system can process.

In return, Workflow provides the following to the Tungsten Portal: invoice status, purchase order details, and vendor master data. Workflow has integration modules that facilitate data transfer with the Tungsten e-Invoice Network. These modules retrieve and upload the necessary data from the client SAP system to TeN to help with verification and to enrich the submitted invoice data.

Installation

The following shows details of the Tungsten Connector for SAP installation. This section assumes that the Workflow installation has already been completed. The sections are divided by the individual components of the installation.

There are two separate implementations available for SAP:

- SAP Full Workflow Implementation
- Invoice Status Service (ISS) only

Note: Refer to the document **Workflow Server Guide** for the proper components for each implementation to install.

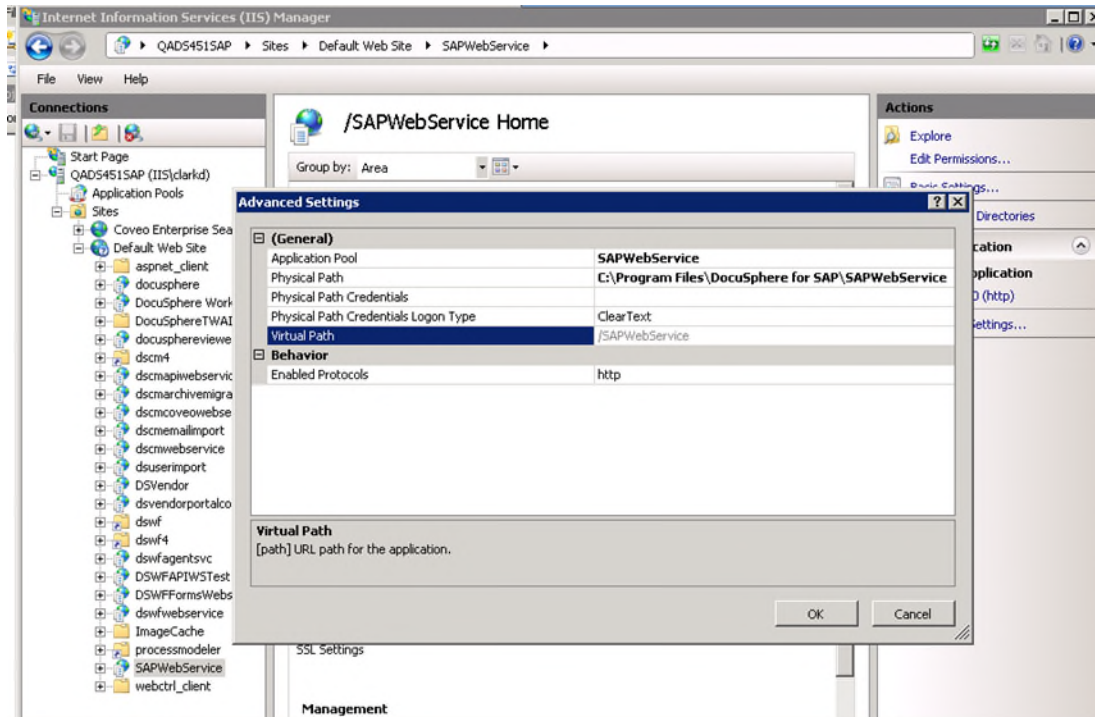
Vendor Portal Services

These services are responsible for the retrieval and transmission of data between the host SAP system and the Tungsten e-Invoice Network Portal. These services are all installed as part of the base Workflow install.

- **Broker Service:** This service handles retrieving invoice data from the Tungsten e-Invoice Network and pushing the data into Workflow. This service also handles packaging and transmission of PO data, invoice status data, and vendor cache data to TeN.
- **ERP Caching Service:** This service is responsible for gathering the PO and Vendor data from SAP according to the buyer configuration. This data is stored in Workflow for use by the broker service when transmitting the data to TeN.
- **Invoice Status Service:** This service gathers status changes for invoices and stores the data in Workflow for use by the Broker Service.
- **Invoice Status Agent:** This agent is part of Workflow and is used to report invoice status for use by the Broker Service. It is typically only used to report the “Received” status.

Web service for SAP

This web service is the interface between the Tungsten Connector for SAP and the customer’s SAP system. All RFC and BAPI calls to SAP are requested through this web service. Copy the provided web service application folder to the desired location on the server. The web service for SAP is a web service application configured in IIS and runs in the web service application pool. The application pool should be created to run against the .net V4 framework and be set to run in the classic managed pipeline. Now configure the web service as a virtual root in IIS (see figure below).



Web service for SAP

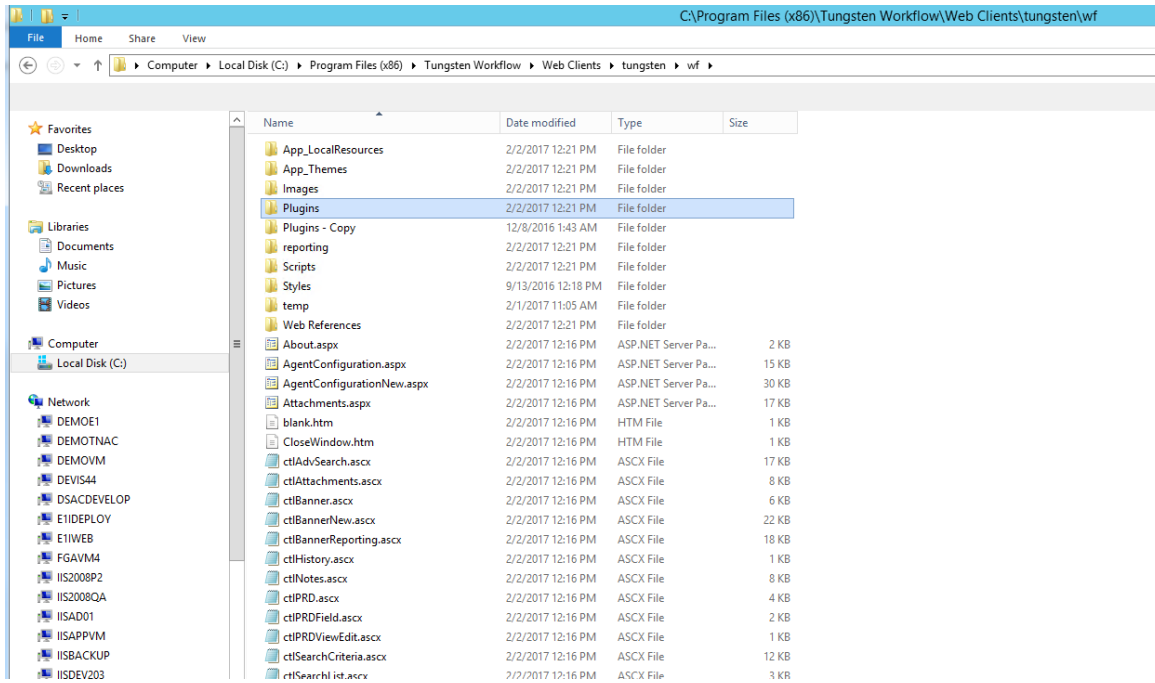
Agents

Some additional agents are used by the Workflow application in processing transactions into SAP. These agents are installed as windows services and configured through the Workflow client. Additional detail on the installation and configuration of agents can be found in the **Workflow Agents and Plug-ins Guide**. These components should already be installed with the base Workflow install.

Agent Name	Description
PRD Lookup Agent for SAP	Validates and enhances the data received from the Tungsten e-Invoice Network by connecting to the host SAP system.
Line Item Auto Match Agent for SAP	Compares the line items received from the Tungsten e-Invoice Network (or other sources) and attempts to match them to receipt/PO lines in SAP.
Auto Post Agent for SAP	Attempts to post or park invoices in SAP.
Payment Information Update Agent	Monitors SAP for work items to gather the payment details for invoices.

Plug-ins

Plug-ins (used only with the full Workflow install) are components of Tungsten Invoice Workflow that have a web interface. These plug-ins are installed into the Workflow client's folder structure (see figure below) and configured through Workflow Administration. Additional detail on the installation and configuration of plug-ins can be found in the **Workflow Agents and Plug-ins Guide**.



Plug-in Installation Folder

Plug-in Name	Description
Invoice Entry Plug-in	Used to simulate the functionality in SAP to manually match an invoice or code an invoice for posting/parking.
Check Request Plug-in	Used to create a work item for paying a check request.

SAP Server Transports

There are transports required for the solution. Please work with your Professional Services team to determine the correct transports for your scenario. The SAP Basis team is responsible for installing the transports into the client’s SAP system.

Components and Relationships

Broker Service

Tungsten e-Invoice Network functions as the capture solution. Invoice images are transmitted inside the zip file payload in PDF format along with the metadata in XML format with UTF-8 encoding. The format is currently fixed by using a PDF. Upon the acceptance of the zip invoice file payload (PO and non-PO invoices and credit memo transactions), the Tungsten Broker Service unzips the invoice package file, stores the PO and non-PO line item data using the Tungsten Line Item Web Service, and submits the invoice file and attachment files into Content Manager using the Content Manager API. All invoices with supplemental attachments are delivered to Workflow in a single zip file where the header record has a flag indicating attachments are available.

Additionally, the Broker Service sends updates to the Tungsten Portal as XML files for Invoice Status, Purchase Orders, and Vendor Details updates. The Broker Service transmits periodic invoice status updates to the Invoice Status Service, reporting the current status of the invoice as it proceeds through

the workflow and SAP system with supplemental information that further clarifies the invoice status. The Broker Service uploads invoice status data based on a frequency configuration setting controlled by the client.

The Broker Service is responsible for the following functions:

1. Pulls updates from the IIS_VP_PO_HDR_CACHE and IIS_VP_PO DTL CACHE tables, serializes the data to XML, and posts the data to the PO Updates remote folder.
 - PO cache tables will be populated by the ERP Caching Service.
2. Pulls updates from the IIS_VP_VENDOR_CACHE table, serializes the data to XML, and posts the data to the Vendor Update remote folder.
 - The vendor cache table will be populated by the ERP Caching Service.
3. Monitors the IIS_VP_INV_STATUS table for available status updates, serializes the data to XML, and posts the data to the Invoice Status remote folder.
 - The invoice status table will be populated by the Invoice Status Agent.

Functionality

The Tungsten Broker Service handles passing the invoice status data back to the Tungsten e-Invoice Network via sFTP. The following elements are available in the XML file sent to the network. Please note that some elements are status dependent, so not all elements will be present in a single record:

Column Name	Description	Type & Length	SAP Req?	SAP field info
STATUS_ID	Status Id	NUMBER (25-0)		
ERP_UNIQUE_ID	ERP ID	NVARCHAR (20)		
PROCESS_INSTANCE_ID	Process instance id	NUMBER (25-0)		For WF items
TRANSACTION_NUMBER	Transaction number	NVARCHAR (100)		For WF items
PROFILE_ID	Profile ID	NVARCHAR (50)		
BUYER_REF_NUM	Buyer Ref num	NVARCHAR (50)		
VENDOR_NUMBER	Vendor number	NVARCHAR (30)		
INVOICE_NUMBER	Invoice number	NVARCHAR (50)		
INVOICE_DATE	Invoice date	DATE (8)		
INVOICE_TOTAL_AMOUNT	Invoice amount	NUMBER (15-4)		
INVOICE_STATUS	status	NVARCHAR (10)		
STATUS_COMMENT	Status comment	NVARCHAR (999)		
ANTICIPATED_PAYMENT_DATE	Anticipated pay date	DATE (8)		
PAYMENT_DATE	Payment date	DATE (8)		
CHECK_NUMBER	Check number	NVARCHAR (50)		
PAYMENT_REF_NUMBER	Payment reference	NVARCHAR (50)		
SENT_TO_PORTAL	Sent to portal	CHAR (1)		
CREATEDATETIME	Create date	DATE		
STATUS_DATE	Status date	DATE (8)		
PAYMENT_AMOUNT	Payment amount	NUMBER (15-4)		
CURRENCY	Currency	NVARCHAR (5)		
INVOICE_TYPE	Invoice Type	NVARCHAR (20)		1 for invoice

Column Name	Description	Type & Length	SAP Req?	SAP field info
				2 for credit
INVOICE_STATUS_TEXT_TYPE_1	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_1	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_2	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_2	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_3	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_3	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_4	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_4	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_5	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_5	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_6	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_6	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_7	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_7	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_8	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_8	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_9	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_9	For future use	NVARCHAR (1000)		
INVOICE_STATUS_TEXT_TYPE_10	For future use	NVARCHAR (20)		
INVOICE_STATUS_TEXT_10	For future use	NVARCHAR (1000)		
REFERENCE_KEY	Ref Key	NVARCHAR (20)		
SAP_TRANSACTION_NUMBER		NVARCHAR (100)		
UNIQUE_TRANSACTION_ID	Unique trans ID	NVARCHAR (100)		For items not from Tungsten e-Invoice Network

Invoice Status

The possible invoice statuses sent to the Tungsten e-Invoice Network for a given invoice are:

Invoice Status	Required fields	Notes
RECEIVED	Transaction Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Status Comment, and Status_Date Received status indicates the invoice is in the Connector for Tungsten e-Invoice Network invoices	RECEIVED = Invoice is in Workflow but not yet posted to SAP
APPROVED	Transaction Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Anticipated Payment Date, and Status_Date	APPROVED = An Open Item was found in SAP

Invoice Status	Required fields	Notes
	Approved status indicates the invoice is posted and not blocked	
HOLD	Transaction Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Anticipated Payment Date and Status_Date Hold status indicates the invoice is parked	HOLD = A parked Item was found in SAP
PAID	Transaction Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Status Comment, Payment Date, Check Number, Remittance Advice Number, and Status_Date Paid status indicates the invoice cleared with a payment document	PAID = A cleared Item with a Clearing Document Number was found in SAP
EXCEPTION	Transaction Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status , Status Comment, Status_Date, and block reason code Exception status indicates the invoice is open and blocked	EXCEPTION = An open Item with a blocked for payment code was found in SAP
REJECTED	Transaction Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Status Comment, Status_Date Rejected status indicates the invoice is reversed	REJECTED = A cleared Item for which the Clearing Document Number field is null was found in SAP

Parked Items Status

- Parked Items – Network Status of “HOLD”
- StatusData – Output table containing the Invoice Status data.
 - All Parked Items are in VBKPF table. If an item is posted, it will then be transferred to BSIK table.
 - We should cross-check the list of Parked Items and Open Items for a corresponding supplier to ensure that no duplicate exist.
 - Once a parked document is saved, the SAP system generates and saves the date on which the Accounting Document was entered. This specifies the date on which the accounting document is entered. The system populates SAP field CPUOT; this is the value (date) we should use as the cutoff date for the data retrieval.

Open Items Status

- Open Items – Network Status of either “APPROVED” or “EXCEPTION”
- StatusData – Output table containing the Invoice Status data.

- All Open Items for vendor are in BSIK table. If an item is cleared, it will then be transferred to BSAK table.
- We should cross-check the list of Parked Items and Open Items for a corresponding supplier to ensure that no duplicate exist.
- Once a parked document is posted, the SAP system generates and saves the date on which the Accounting Document was entered. This specifies the date on which the accounting document is entered. The system populates SAP field CPUDT; this is the value (date) we should use as the cutoff date for the data retrieval.

Cleared Items Status

- Cleared Items – Network Status of either “PAID” or “REJECTED”
- StatusData – Output table containing the Invoice Status data.
 - All cleared Items for vendor are in BSAK table.
 - We should cross-check the list of Open Items and Cleared Items for a corresponding supplier to ensure that no duplicate exist.
 - Once some payment is done against an open item, the SAP system generates and saves a clearing document (AUGBL) and a clearing date (AUGDT) on which the payment was created. This specifies the date as from when the item is to be regarded as cleared. The SAP system populates SAP field (AUGBL) and (AUGDT); this is the value (date) we should use as the cutoff date for the data retrieval.

Workflow

The Broker Service unzips the package into individual components and then submits them to Workflow. Invoices and attachments are inserted into Content Manager using the API. Line item data is staged into the Workflow database for later consumption by the Workflow Auto Matching Agent. Once the invoices arrive in Content Manager, a work item is automatically created and started within Workflow using the standard built-in functionality.

The Broker Service transmits periodic invoice status updates to the Tungsten e-Invoice Network, reporting the current status of the invoice as it proceeds through the workflow. If applicable, supplemental notes can be included that further clarifies the invoice status. The Broker Service uploads the invoice status data based on a frequency configuration setting controlled by the client.

The Broker Service also gathers PO information from the SAP system and then transmits that PO data file to the Tungsten Purchase Order Service so it can be used as a validation point during invoice processing as well as for various PO service functions in the Tungsten e-Invoice Network if desired.

Communication and Transport Mechanism between Workflow and Tungsten Portal

Workflow and the Tungsten e-Invoice Network Portal communicate using secure communications across the Internet. The following sections detail the shared inbound and outbound data protocols, transport mechanism, file formats and methods used.

Tungsten Web Server

The Tungsten e-Invoice Network provides a secure web server providing access to dedicated buyer site/folders using the Secure File Transfer Protocol (SFTP).

- Secure File Transfer Protocol (SFTP) or SSH File Transfer Protocol should not be confused with “Simple File Transfer Protocol” or “FTP over SSH”.
- The TeN web server provides SFTP protocol version 3 support.
- The following folders are defined for upload/download for the e-invoicing customer:
 - Invoices outbound from Tungsten e-Invoice Network (i.e., /Outbound_Invoices).
 - Vendor Updates (i.e., /Vendor_Updates)
 - PO Updates (i.e., /PO_Updates)
 - Invoice Status Updates (i.e., /Invoice_Status_Updates)

Workflow Client

Workflow is the SFTP client to the Tungsten e-Invoice Network web server and accesses the remote folders defined above.

- List directory contents (when polling for new invoices and their metadata from TeN)
- Download files (when downloading new invoices and their metadata from TeN)
- Delete Files (after successfully downloading new invoices and their metadata from TeN)
- Upload files (when uploading PO, Vendor, and Invoice Status updates from TeN)

Transport of Invoice PDF files and metadata from Tungsten Portal to Workflow

Tungsten e-Invoice Network

Tungsten e-Invoice Network places zip files into the /Outbound_Invoices folder on their web server containing batches of invoices in PDF format along with their metadata. Contents of each Invoice batch are as follows:

1. **Document Content (PDF):** 1-n vendor invoices files uniquely named using the TeN Transaction Number.
2. **Document Headers (XML):** Invoices header data for all PDF invoices. Each PDF has a single record (1:1) in the invoice header XML.
 - a. Metadata contains TeN Transaction Number and all other invoice “header” fields as defined in the detailed design.
3. **Document Line Items (XML):** Captured line item data for each PDF invoice. Each document can have 1-n line items.
 - a. Metadata contains TeN System Profile Name, Transaction Number, and all other invoice “line item” fields.
4. **Supplementary invoices (Attachments) (PDF)**
5. **GL Data:** GL Data for non-PO invoices.

Tungsten Broker Service

Workflow periodically connects and polls the /Outbound_Invoices remote folder using sFTP. The poll timer is configurable and defaults to once per hour.

The polling process consists of the following:

1. Connect to Tungsten e-Invoice Network web server via sFTP
2. Change directory into the /Outbound_Invoices folder.
3. List contents of the /Outbound_Invoices folder
4. For each zip file found:
 - a. Download using sFTP
 - b. Unzip into components and check integrity
 - c. Process the zip file contents
 - i. Insert line items into the Workflow database using the Tungsten line item web service.
 - ii. Insert the attachment files into the Workflow database using the Content Manager API.
 1. The invoice attachment is a PDF with a file name that matches the transaction number. This document is inserted into Content Manager using the doc type configured for invoices.
 2. Supplementary attachments should be inserted into Content Manager using the doc type configured for supplemental attachments.
 - d. Log/handle errors as necessary
 - e. Update a transaction table in Workflow database showing that the zip file is received
 - f. Delete the zip file from sFTP.
 - i. If the file can't be deleted, the filename will be logged so that it is not reprocessed.
 - g. Proceed to the next zip file.
5. Disconnect the sFTP session.

The Incoming Invoice XML file structure contains the following tables:

IIS_VEND_PORTAL_INVOICES (Invoice Header)

Element Name	SAP Req?	Notes	In Standard Interface?
Transaction_Number	Yes		*
Profile_ID	Yes		*
Buyer_Ref_Num	Yes		*
Company_Name	Yes		*
Company_Number	Yes		*
Company_Code	Yes		*
Business_Unit	Yes		*
Supplier_OB10_No	Yes		*
Vendor_Number	Yes		*
OB10_Invoice_Type	Yes		*
PO_Number	Yes		*

Element Name	SAP Req?	Notes	In Standard Interface?
PO_Doc_Type	Yes		*
Invoice_Number	Yes		*
Invoice_Date	Yes		*
Invoice_Net_Amount	Yes		*
Invoice_Total_Amount	Yes		*
Taxable_Amount	Yes		*
Tax_VAT_Amount1	Yes		*
Currency	Yes		*
Comments	Yes		*
Multi_PO_Invoice	Yes		*
Attachment_Flag	Yes		*
Number_of_Attachments	Yes		*
Exception_Flag	Yes		*
Exception_Message	Yes		*
Transmitted_Date	Yes		*
Line_Item_Data_Unique_ID	Yes		*
TaxPointDate	Yes		*
PO_Flip	Yes		*
IDC_Invoice	Yes		*
SUPPLIER_SITE_CODE	No		
DISCOUNT_AMOUNT	No		
Tax_VAT_Amount2	No		
SHIPPING_CHARGE	No		
MISC_CHARGE1	No		
MISC_CHARGE2	No		
MISC_CHARGE3	No		
MISC_CHARGE4	No		
MISC_CHARGE5	No		
INVOICE_TERMS	No		
DOC_EXCEPTION_MESSAGE	No		
DELIVERY_DATE	No		
DELIVERY_NOTE_NUMBER	No		
TAX_ID	No		
WITHHOLDING_TAX_CAT	No		
WITHHOLDING_TAX_VAL	No		
BANK_ACCOUNT	No		
BANK_NUMBER	No		
INVOICE_TO_NAME	No		
INVOICE_TO_TAXID	No		
SHIP_TO_NAME	No		
SHIP_TO_TAXID	No		
SHIP_FROM_NAME	No		
SHIP_FROM_TAXID	No		
INVOICE_FROM_NAME	No		
INVOICE_FROM_TAXID	No		

Element Name	SAP Req?	Notes	In Standard Interface?
PREAUTHORIZED_EINVOICE	No		
USER_DEF_1	No	For customer-specific data	
USER_DEF_2	No	For customer-specific data	
USER_DEF_3	No	For customer-specific data	
USER_DEF_4	No	For customer-specific data	
USER_DEF_5	No	For customer-specific data	
USER_DEF_6	No	For customer-specific data	
USER_DEF_7	No	For customer-specific data	
USER_DEF_8	No	For customer-specific data	
USER_DEF_9	No	For customer-specific data	
USER_DEF_10	No	For customer-specific data	
USER_DEF_11	No	For customer-specific data	
USER_DEF_12	No	For customer-specific data	
USER_DEF_13	No	For customer-specific data	
USER_DEF_14	No	For customer-specific data	
USER_DEF_15	No	For customer-specific data	
USER_DEF_16	No	For customer-specific data	
USER_DEF_17	No	For customer-specific data	
USER_DEF_18	No	For customer-specific data	
USER_DEF_19	No	For customer-specific data	
USER_DEF_20	No	For customer-specific data	
USER_DEF_21	No	For customer-specific data	
USER_DEF_22	No	For customer-specific data	
USER_DEF_23	No	For customer-specific data	
USER_DEF_24	No	For customer-specific data	
USER_DEF_25	No	For customer-specific data	
USER_DEF_26	No	For customer-specific data	
USER_DEF_27	No	For customer-specific data	
USER_DEF_28	No	For customer-specific data	
USER_DEF_29	No	For customer-specific data	
USER_DEF_30	No	For customer-specific data	
USER_DEF_31	No	For customer-specific data	
USER_DEF_32	No	For customer-specific data	
USER_DEF_33	No	For customer-specific data	
USER_DEF_34	No	For customer-specific data	
USER_DEF_35	No	For customer-specific data	
USER_DEF_36	No	For customer-specific data	
USER_DEF_37	No	For customer-specific data	
USER_DEF_38	No	For customer-specific data	
USER_DEF_39	No	For customer-specific data	
USER_DEF_40	No	For customer-specific data	
USER_DEF_41	No	For customer-specific data	
USER_DEF_42	No	For customer-specific data	
USER_DEF_43	No	For customer-specific data	
USER_DEF_44	No	For customer-specific data	

Element Name	SAP Req?	Notes	In Standard Interface?
USER_DEF_45	No	For customer-specific data	
USER_DEF_46	No	For customer-specific data	
USER_DEF_47	No	For customer-specific data	
USER_DEF_48	No	For customer-specific data	
USER_DEF_49	No	For customer-specific data	
USER_DEF_50	No	For customer-specific data	

IIS_VEND_PORTAL_INVOICE_LINE_ITEMS (Invoice Line Items)

Element Name	SAP Req?	Notes	In Standard Interface?
Profile_id	Yes		*
buyer_ref_num	Yes		*
TRANSACTION_NUMBER	Yes		*
Line_Item_Data_Unique_ID	Yes		*
PO_NUMBER	No		*
PO_DOC_TYPE	No		*
PO_LINE	No		*
INVOICE_LINE	Yes		*
ITEM_NUMBER	No		*
ITEM_DESCRIPTION	Yes		*
QUANTITY	No		*
UNIT_OF_MEASURE	No		*
UNIT_COST	Yes		*
EXTENDED_COST	Yes		*
DISCOUNT_PERCENTAGE	No		
DISCOUNT_AMOUNT	No		*
TAX_CODE	No		*
TAX_AMOUNT	No		*
BILL_OF_LADING	No		*
LOT_NUMBER	No		*
CONTAINER_ID	No		
GL_NUMBER	No		*
COST_CENTER	No		*
LD1	No		*
DELIVERY_NOTE_NUMBER	No		*
USER_DEF_1	No	For customer-specific data	
USER_DEF_2	No	For customer-specific data	
USER_DEF_3	No	For customer-specific data	
USER_DEF_4	No	For customer-specific data	
USER_DEF_5	No	For customer-specific data	
USER_DEF_6	No	For customer-specific data	
USER_DEF_7	No	For customer-specific data	
USER_DEF_8	No	For customer-specific data	
USER_DEF_9	No	For customer-specific data	
USER_DEF_10	No	For customer-specific data	

Element Name	SAP Req?	Notes	In Standard Interface?
LINE_TYPE	No	1 = invoice line, 2 = unplanned delivery cost line	
SUPPLIER_REMARK	No		

IIS_VEND_PORTAL_GL_LINES (GL Lines)

Element Name	SAP Req?	Notes	In Standard Interface?
TRANSACTION_NUMBER	Yes		*
LINE_ITEM_DATA_UNIQUE_ID	No		*
INVOICE_DISTRIBUTION_LINEID	No		*
GL_ACCOUNT	No		*
SHORT_TEXT	No		*
DEBIT_CREDIT	No		*
AMOUNT	No		*
TAX_CODE	No		*
TAX_JURISDICTION	No		*
DOCTEXT	No		*
COST_CENTER	No		*
ORDER	No		*
WBS_ELEMENT	No		*
NETWORK	No		*
BUSINESS_AREA	No		*
PROFIT_CENTER	No		*
GLACCOUNT_TYPE	No		*
TAX_AMOUNT	No		*
EXPLANATION	No		*
GL_Account_Number	No		*
Line_Document_ID	No		*
REFERENCE2	No		*
SUBLEDGERCODE	No		*
SUBLEDGERTYPE	No		*
Process_Inst_ID	No		*
USER_DEF_1	No	For future use	*
USER_DEF_2	No	For future use	*
USER_DEF_3	No	For future use	*
USER_DEF_4	No	For future use	*
USER_DEF_5	No	For future use	*
USER_DEF_6	No	For future use	*
USER_DEF_7	No	For future use	*
USER_DEF_8	No	For future use	*
USER_DEF_9	No	For future use	*
USER_DEF_10	No	For future use	*

IIS_VEND_PORTAL_INVOICES_ATTACHMENTS

Element Name	SAP Req?	Notes	In Standard Interface?
Transaction_Number	Yes		*
File_Name	Yes		*
Doc_Type	Yes		*

Transport of purchase order metadata to the Tungsten e-Invoice Network

Tungsten Broker Service

Tungsten Broker Service periodically connects and uploads PO data updates to the /PO_Updates remote folder using sFTP. The upload timer is configurable and defaults to once per hour.

The PO upload process will consist of the following:

1. Connect to the Tungsten e-Invoice Network web server via sFTP
2. Change directory into the /PO_Updates folder
3. Upload an XML file with the following attributes:
 - a. Metadata contains System Profile Name, buyer entity ID and all other required PO metadata fields (add, update, close etc.)
 - b. Filename will be uniquely named with a date\time stamp
4. Disconnect the sFTP session
5. There is an option for the buyer to upload one specific PO on an ad hoc basis

Tungsten e-Invoice Network

Tungsten e-Invoice Network polls the sFTP folder designated for PO Updates and then processes the provided XML files in chronological order.

Transport of Supplier metadata to the Tungsten

Tungsten Broker Service

Tungsten Broker Service periodically connects and uploads supplier updates to the Tungsten e-Invoice Network Portal remote folder using sFTP. The upload timer is configurable and defaults to once every hour.

The Vendor upload process consists of the following:

1. Connect to the TeN web server via sFTP.
2. Change directory into the TeN folder designated for supplier updates.
3. Upload an XML file with the following attributes:
 - a. Metadata contains System Profile Name, buyer entity ID and all other Vendor metadata fields (add, update, delete, etc.).
 - b. Filename will be uniquely named with a date\time stamp.
4. Disconnect the sFTP session.
5. There is an option for the buyer to upload vendors in a specific range on an ad hoc basis.

Tungsten e-Invoice Network

The Tungsten e-Invoice Network polls the sFTP folder designated for supplier updates and then processes the Workflow-provided XML files in chronological order.

Transport of invoice status updates to Tungsten

Vendor Portal Invoice Status Service

Tungsten Broker Service periodically connects and uploads invoice status updates to the /Invoice_Status_Updates remote folder using sFTP. The upload timer is configurable and defaults to once every 30 minutes.

The Invoice Status upload process will consist of the following:

1. Connect to Tungsten e-Invoice Network web server via sFTP
2. Change directory into the /Invoice_Status_Updates folder
3. Upload an XML file with the following attributes:
 - a. Metadata contains System Profile Name, buyer entity ID and invoice status metadata (received, paid, etc.)
 - b. Filename will be uniquely named with a date\time stamp
4. Disconnect the sFTP session

Tungsten e-Invoice Network

Tungsten e-Invoice Network polls the sFTP folder designated for Invoice Status Updates and then applies the status update to the matching invoice that was created by the supplier in the Tungsten Portal.

System Profiles

For Workflow customers, there will be one or more system profiles set up by Tungsten e-Invoice Network.

- A system profile name will be assigned and created by Tungsten e-Invoice Network.
- Each profile represents a TeN customer and a set of suppliers that TeN will service.
- Each profile represents an ERP system that Workflow will interface with and send/receive data from the Tungsten Portal.

For each system profile, Workflow will contain a configuration for:

1. **Buyer Entity ID:** This ID is provided by TeN and, in conjunction with the profile ID, uniquely identifies an ERP system for Workflow/Tungsten Portal integration.
2. **ERP System Code:** This allows Workflow to fetch the proper PO, Vendor, and Invoice Status data we need to pass to the Tungsten Portal. When sending to TeN, each record will be associated with a given profile.
3. **Index Definition:** Document area to store invoices

4. **Workflow Process Name:** Workflow process definition name required to start the workflow process

ERP Caching Service

This is a Windows service responsible for caching ERP data to the Workflow ERP cache (portal staging) tables. The application can be configured to run on a scheduled basis or on demand. All lines on a PO need to be sent to the portal for any change to PO Header or any change to any PO Line Item data. All PO header and detail for a PO in which any part of the record was changed will be sent to the vendor portal. The application supports both Microsoft SQL Server and the Oracle database.

Processing

This service is processed according to the defined schedule or when the “run now” box is checked on the configuration application. When processing begins the service will:

1. Monitor the setting ‘Tungsten_RUN_STATUS’ in the IIS_GLOBAL_SETTINGS table on a configurable interval. If the value is set to ‘RUN’ then the service will start processing.
2. Retrieve a list of Tungsten e-Invoice Network profiles from the Workflow database using the Workflow web service connection. Each profile has an ERP system code setting assigned for use by the service. For each ERP System Code defined, the service will:
 - a. Connect to the ERP system using the connection information retrieved from the system code settings.
 - b. Get the setting for the last processing date/time.
 - c. Perform the following steps for retrieving the PO data:
 - i. Modify the configured PO query by appending the record last update checks to the where clause. This ensures that only records changed since the last processing time is retrieved.
 - ii. Run the query for retrieving the purchase order (PO) data from the ERP system. For each record retrieved:
 1. Determine if the record is a new PO, a changed PO, or a closed PO.
 2. Insert each record into the ERP Cache table settings the record type column to ‘Add’ for new POs, ‘Modify’ for changed POs, and ‘Delete’ for closed POs.
 - d. Perform the following steps for retrieving the Vendor data:
 - i. Modify the configured Vendor query by appending the record last update checks to the where clause. This will ensure that only records changed since the last processing time will be retrieved.
 - ii. Run the query for retrieving the vendor data from the ERP system. For each record retrieved:
 1. Determine if the record is a new vendor, changed vendor, or deleted vendor.
 2. Insert each record into the ERP Cache table setting, the record type column to ‘Add’ for new vendors, ‘Modify’ for changed vendors, and ‘Delete’ for deleted vendors.
3. When processing is complete update the setting record for ‘TUNGSTEN_RUN_STATUS’ to ‘CACHING_COMPLETE’.

Windows Service Name

- **Project Name/EXE/Short service name:** ERPCachingService
- **Description/Long Windows Service Name:** Tungsten ERP Caching Service

Purchase Order Details Update Processing

The ERP Caching Service inserts Purchase Orders data into the IIS_VP_PO_HDR_CACHE (PO Header details) and IIS_VP_PO_DTL_CACHE (PO Line details) tables. The service will identify PO records in the source ERP system that have been added, changed, or closed since the last processing time and create a new entry for those POs with the appropriate record type ('New', 'Modify', 'Delete'). The Tungsten Broker Service is responsible for transferring this data to the Tungsten e-Invoice Network using one XML file via sFTP. The table contains fields for all three ERP systems but only the applicable mapped fields will be populated for a specific ERP system. This data is used by TeN to validate and enrich the submitted invoices data.

IIS_VP_PO_HDR_CACHE

Column Name	Description	Type & Length	SAP Req?	SAP field info
Profile_id	TN Profile ID	NVACHAR (12)	Yes	
buyer_ref_num	Buyer TN No.	NVACHAR (12)	Yes	
order_num	Purchase Order Number	NVACHAR (20)	Yes	
doc_type	PO Doc. Type	NVACHAR (8)	No	
Currency	PO Currency	NVACHAR (5)	Yes	
vendor_num	Supplier Number	NVACHAR (30)	No	
vendor_name	Supplier Name	NVACHAR (240)	Yes	
company_num	Company Number	NVACHAR (6)	Yes	
company_name	Company Name	NVACHAR (30)	No	
org_id	Org_ID	NUM (5)	No	Only used for EBS
operation_unit	Operation Unit	NVACHAR (360)	No	Only used for EBS
business_unit	Business Unit	NVACHAR (12)	No	Only used for JDE
document_date	Document Date	DATE (8)	No	
contact_person	PO Contact Person	NVACHAR (240)	No	
contact_phone	PO Contact Phone Number	NVACHAR (30)	No	
delivery_terms	PO Terms of Delivery	NVACHAR (240)	Yes	
payment_terms	PO Terms of Payment	NVACHAR (240)	Yes	
USER_DEF_1		NVARCHAR (1000)		Contains the invoicing party
USER_DEF_2	For future use	NVARCHAR (1000)		
USER_DEF_3	For future use	NVARCHAR (1000)		
USER_DEF_4	For future use	NVARCHAR (1000)		
USER_DEF_5	For future use	NVARCHAR (1000)		

Column Name	Description	Type & Length	SAP Req?	SAP field info
USER_DEF_6	For future use	NVARCHAR (1000)		
USER_DEF_7	For future use	NVARCHAR (1000)		
USER_DEF_8	For future use	NVARCHAR (1000)		
USER_DEF_9	For future use	NVARCHAR (1000)		
USER_DEF_10	For future use	NVARCHAR (1000)		
SHIP_ADDR_NAME	Shipping Name	NVARCHAR (255)		
SHIP_ADDR_LINE_1	Shipping address 1	NVARCHAR (255)		
SHIP_ADDR_LINE_2	Shipping address 2	NVARCHAR (255)		
SHIP_ADDR_LINE_3	Shipping address 3	NVARCHAR (255)		
SHIP_ADDR_LINE_4	Shipping address 4	NVARCHAR (255)		
SHIP_ADDR_LINE_5	Shipping address 5	NVARCHAR (255)		
RECORD_TYPE	Record type	NVARCHAR (15)		

IIS_VP_PO_DTL_CACHE

Column Name	Description	Type & Length	SAP Req?	SAP Field info
Profile_id	TN Profile ID	NVACHAR (50)	Yes	
buyer_ref_num	Buyer TN No.	NVACHAR (50)	Yes	
order_num	Purchase Order Number	NVACHAR (20)	Yes	
doc_type	PO Doc. Type	NVACHAR (8)	Yes	
Currency	PO Currency	NVACHAR (5)	Yes	
vendor_num	Vendor Number	NVACHAR (30)	Yes	
Company_num	Company Number	NVACHAR (6)	Yes	
po_line	PO Line Number	NVACHAR (6)	No	
material_num	Part Number	NVACHAR (25)	No	
description_1	Description 1	NVACHAR (240)	Yes	
description_2	Description 2	NVACHAR (30)	No	
quantity	Quantity	NUMBER (18-3)	Yes	
UOM	Unit of Measurement	NVACHAR (25)	Yes	
unit_price	Unit Price	NUMBER (15-4)	Yes	

Column Name	Description	Type & Length	SAP Req?	SAP Field info
rebate_surcharge_total	Total Rebate/Surcharge	NUMBER (15-4)	No	
LINE_TOTAL	Line Net	NUMBER (15-4)	Yes	
delivery_date	Delivery Date	DATE	No	
delivery_address	Delivery Address	NVACHAR (240)	Yes	
invoice_address	Invoice Address	NVACHAR (240)	Yes	
tax_description	PO Tax/VAT	NVACHAR (50)	No	
record_type	Type of PO Records	NVACHAR (15)	Yes	
CreateDateTime	Creation time Of record	DATE	N/A	
ProcessedFlag	Flag indicating Record has been processed	Char (1byte) 'Y' or 'N'	N/A	
GL_ACCOUNT_NUMBER	GL ACCOUNT	NVACHAR (10)	No	
COST_CENTER	Cost Center	NVACHAR (10)	No	
TAX_CODE	Tax Code	NVACHAR (2)	No	
TAX_JURISDICTION_CODE	Tax Jurisdiction	NVACHAR (15)	No	
QTY_DELIVERED	Quantity Delivered	NUMBER (18-3)	No	
QTY_STILL_TO_DELIVER	Quantity to Deliver	NUMBER (18-3)	No	
QTY_STILL_TO_INVOICE	Quantity still to invoice	NUMBER (18-3)	No	
QTY_INVOICED	Quantity invoiced	NUMBER (18-3)	No	
DELIVERED_AMOUNT	Delivered amount	NUMBER (15-4)	No	
STILL_TO_DELIVER_AMOUNT	Still to Deliver amount	NUMBER (15-4)	No	
INVOICED_AMOUNT	Invoiced amount	NUMBER (15-4)	No	

Column Name	Description	Type & Length	SAP Req?	SAP Field info
DOWN_PAYMENTS_A MOUNT	Down payment amount	NUMBER (15-4)	No	
PO_CHANGE_REASON	PO Change reason	NVACHAR (4)	No	
PO_CHANGE_CODE	PO Change code	NVACHAR (1)	No	
PO_FREIGHT_CONDI TION_FLAG	PO freight condition flag	NVACHAR (1)	No	
DELIVERY_VENDOR_ NUMBER	Delivery vendor number	NVACHAR (16)	No	
CONFIRMATION_REQ UIRED_FLAG	Confirmation required	Char (1)	No	
RETURNED_INDICATO R_FLAG	Returned indicator flag	Char (1)	No	
USER_DEF_1	custom	NVACHAR (1000)	No	This field contains the price unit
USER_DEF_2	For future use	NVACHAR (1000)	No	
USER_DEF_3	For future use	NVACHAR (1000)	No	
USER_DEF_4	For future use	NVACHAR (1000)	No	
USER_DEF_5	For future use	NVACHAR (1000)	No	
USER_DEF_6	For future use	NVACHAR (1000)	No	
USER_DEF_7	For future use	NVACHAR (1000)	No	
USER_DEF_8	For future use	NVACHAR (1000)	No	
USER_DEF_9	For future use	NVACHAR (1000)	No	
USER_DEF_10	For future use	NVACHAR (1000)	No	
DELIVERY_NOTE	Delivery note	NVACHAR (1000)	No	
POVERSION	PO Version	NVACHAR (20)	No	
DEL_ADDR_NAME	Delivery address name	NVACHAR (255)	No	
DEL_ADDR_LINE_1	Delivery address 1	NVACHAR (255)	No	
DEL_ADDR_LINE_2	Delivery address 2	NVACHAR (255)	No	
DEL_ADDR_LINE_3	Delivery address 3	NVACHAR (255)	No	

Column Name	Description	Type & Length	SAP Req?	SAP Field info
DEL_ADDR_LINE_4	Delivery address 4	NVACHAR (255)	No	
DEL_ADDR_LINE_5	Delivery address 5	NVACHAR (255)	No	
INV_ADDR_NAME	Invoice address name	NVACHAR (255)	No	
INV_ADDR_LINE_1	Invoice address 1	NVACHAR (255)	No	
INV_ADDR_LINE_2	Invoice address 2	NVACHAR (255)	No	
INV_ADDR_LINE_3	Invoice address 3	NVACHAR (255)	No	
INV_ADDR_LINE_4	Invoice address 4	NVACHAR (255)	No	
INV_ADDR_LINE_5	Invoice address 5	NVACHAR (255)	No	

The following table defines the fields as output value for the Type of PO Records for each PO on the staging table. Tungsten Utility Service uses the defined business logic (Usage) to report the Type of PO Records.

PO message type	Usage
New	<ul style="list-style-type: none"> First instance of a PO sent to Tungsten e-Invoice Network TeN will create a distribution item and a validation item in the TeN database Message will contain all PO information
Modify	<ul style="list-style-type: none"> Completely replaces an existing PO Tungsten will update the distribution item and a validation item in the TeN database Message will contain all PO information Changes an existing PO status to Modify
Close	<ul style="list-style-type: none"> Changes an existing PO status to Closed Only updates the validation item in the TeN database

Vendor Data Details Update Processing

The ERP Caching Service also gathers vendor data and stores it in the IIS_VP_VENDOR_CACHE table for SAP, JDE, and EBS. The Tungsten Broker Service uses this data to upload an XML file containing Customer's ERP vendor details to the Tungsten e-Invoice Network Vendor Load Service. This information is used for validation purposes in selecting the correct Supplier for non-PO invoices. The Broker Service transfers the data in the IIS_VP_VENDOR_CACHE table to TeN as an XML file using sFTP.

This table holds the Vendor details for validation and display on the Tungsten Portal. The Broker Service transmits all the data available on the table to Tungsten e-Invoice Network, leaving TeN to choose which

data field to map and display on the Tungsten Portal screen. This table will contain fields for all three ERP systems but only the applicable mapped fields for the specific ERP system will be populated. The ERP Caching Service will populate the Vendor Details Upload table, which contains the fields listed in the table below.

IIS_VP_VENDOR_CACHE

Column Name	Description	Type & Length	SAP req?	XML Version
Profile_id	TN Profile ID	NVARCHAR (50)	Yes	All
buyer_ref_num	Buyer TN No.	NVARCHAR (50)	Yes	All
company_num	Company Number	NVARCHAR (6)	No	All
company_name	Company Name	NVARCHAR (40)	No	All
org_id	Org_ID	NUM (18)	No	All
operation_unit	Operation Unit	NVARCHAR (10)	No	All
company_code	Company Code	NVARCHAR (4)	Yes	All
vendor_num	Vendor Number	NVARCHAR (30)	Yes	All
vendor_name	Vendor Name	NVARCHAR (240)	Yes	All
Vendor_phone	Vendor Phone Number	NVARCHAR (30)	No	All
Address_line_1	Vendor Address 1	NVARCHAR (240)	Yes	All
Address_line_2	Vendor Address 2	NVARCHAR (240)	No	All
Address_line_3	Vendor Address 3	NVARCHAR (240)	No	All
Address_line_4	Vendor Address 4	NVARCHAR (240)	No	All
Address_line_5	Vendor Address 5	NVARCHAR (40)	No	All
COUNTRY_ISO_CODE	Country Code	NVARCHAR (5)	Yes	All
Tax_reg_num	TAX/VAT Registration Number	NVARCHAR (50)	No	All
Comp_reg_num	Company Registration Number	NVARCHAR (40)	No	All
DUNS_num	DUNS Number Required for US vendors	NVARCHAR (30)	No	All
Remit_company_name	Remit Company Name	NVARCHAR (40)	No	All
Remit_Contact_Name	Remit Contact Name	NVARCHAR (50)	No	All
Remit_Address_Line_1	Remit Address Line 1	NVARCHAR (240)	No	All
Remit_Address_Line_2	Remit Address Line 2	NVARCHAR (240)	No	All
Remit_Address_Line_3	Remit Address Line 3	NVARCHAR (240)	No	All
Remit_Address_Line_4	Remit Address Line 4	NVARCHAR (240)	No	All
Remit Bank Name	Remit Bank Name Required for each Vendor record that has a defined Payment method of bank transfer (ACH or EFT).	NVARCHAR (240)	No	All
Remit_bank_address	Remit Bank Address	NVARCHAR (240)	No	All
Remit_Sort_Code	Remit Sort Code	NUMBER (15,0)	No	All

Column Name	Description	Type & Length	SAP req?	XML Version
Remit_Bank_Account_Num	Remit Bank Account Number Required for each Vendor record that has a defined Payment method of bank transfer (ACH or EFT).	NVACHAR (30)	No	All
Remit_Account_Name	Remit Account Name	NVACHAR (100)	No	All
Remit_Swift_Num	Remit Swift Number Required for each Vendor record that has a defined Payment method of bank transfer (ACH or EFT).	NVACHAR (11)	No	All
Remit_Iban	Remit Iban Required for each Vendor record that has a defined Payment method of bank transfer (ACH or EFT).	NVACHAR (50)	No	All
Bank_Country	Bank Country Required for each Vendor record that has a defined Payment method of bank transfer (ACH or EFT).	NVACHAR (3)	No	All
Bank_Key	Bank Key Required for each Vendor record that has a defined Payment method of bank transfer (ACH or EFT).	NVAHAR (20)	No	All
Acct_Holder	Acct Holder Required for each Vendor record that has a defined Payment method of bank transfer (ACH or EFT).	NVACHAR (240)	No	All
CreateDateTime	Creation time Of record	DATE	Yes	All

Column Name	Description	Type & Length	SAP req?	XML Version
ProcessedFlag	Flag indicating Record has been processed	Char (1byte)	Yes	All
record_type	Type of Vendor Records	NVACHAR (15)	Yes	All
REMIT_ADDRESS_LINE_5	Remit Address Line 5	NVACHAR (240)	No	2.0
REMIT_ADDRESS_LINE_6	Remit Address Line 6	NVACHAR (240)	No	2.0
ADDRESS_LINE_6	Address Line 6	NVACHAR (240)	No	2.0

The following table defines the available record types for the Vendor Records of the staging table. Tungsten Utility Service should use the defined business logic (Usage) to report the Type of Vendor Records:

Vendor Record Type	Usage
New	<ul style="list-style-type: none"> • First instance of a Vendor Details record sent to Tungsten e-Invoice Network • Creates a validation item in the TeN database • Message will contain all Vendor Details information
Modify	<ul style="list-style-type: none"> • Completely replaces an existing Vendor • Updates a validation item in the TeN database • Message will contain all Vendor details information • Changes an existing Vendor status to Modify
Delete	<ul style="list-style-type: none"> • Changes an existing Vendor status to Delete • Only updates the validation item in the TeN database

Here is a list of required fields for each status:

Invoice Status	Required Fields
New	First instance of a Vendor Details record sent to TeN with all the applicable fields defined on the table above.
Modify	Completely replaces existing Vendor details with all the applicable fields defined on the table above.
Delete	Only upload: Tungsten Profile ID, Buyer Tungsten No., Vendor Number

Vendor Portal Configuration

Configuration Settings

The Vendor Portal Configuration screen (found under **Workflow Administration > Vendor Portal**) can be used to enter and maintain all Broker Service and ERP Caching Service process configuration settings. This application is the configuration component of the connector. The connector enables communication between Tungsten e-Invoice Network, Tungsten Invoice Workflow, and the customer's ERP system. It provides two-way updates between all three systems and enables suppliers to see a real-time status of their submitted invoices on the Tungsten Portal.

Define each setting by selecting the interval time for each individual service from the applicable dropdown, or enter in the valid setting. When all settings have been defined, be sure to click the **Update** button to save all settings.

Broker Service Settings

Setting Name	Description
Invoice Status Update Processing Interval	Defines how often (in minutes) the Broker Service will pass new Invoice Status updates from the ERP system and Invoice Status Agent up to Tungsten e-Invoice Network.
Invoice Download Processing Interval	Defines how often (in minutes) the Broker Service will process new invoices downloaded from Tungsten e-Invoice Network into Workflow
Poll Interval	Defines how often (in seconds) the Broker Service “wakes up” to check for the next scheduled interval for processing Invoice Status Updates, Invoice Downloads, PO Updates, and Vendor Updates. <i>Note: This setting should be set to a shorter duration than the shortest processing interval configuration to ensure that each of the different processing intervals runs on a consistent schedule.</i>
PO Update Processing Interval	Defines how often (in minutes) the Broker Service will pass new PO Updates from the ERP system up to Tungsten e-Invoice Network.
Vendor Updates Processing Interval	Defines how often (in minutes) the Broker Service will pass new Vendor Updates from the ERP system up to the Tungsten e-Invoice Network.
Purge Invoice Status Records Older than	Defines how many days the Broker Service will wait before purging Invoice Status data from the related Workflow Vendor Portal tables.
Base Temp Folder	Location for the set of “Buyer specific” transitional folders used in transporting Invoice, Invoice Statuses, PO, and Vendor data between Tungsten e-Invoice Network and Workflow.
Transaction Debug	Optional setting to enable Vendor Portal Broker Service transaction activity to the Vendor Portal Transaction Log under the Vendor Portal Configuration in Workflow <i>Note: It is advised to leave this setting unchecked unless actively troubleshooting an issue.</i>
COA Changes Run Now	Check the box to immediately upload any new Chart of Account changes.

ERP Caching Service Settings

Setting Name	Description
Number of days to load POs for new vendors	Defines how far back (in days) from the current date that the ERP Caching Service will check for new or existing PO Updates related to each new Vendor that has been uploaded to Tungsten e-Invoice Network.
Purge Closed PO Older than	Defines how many days the ERP Caching Service will wait before purging PO data from the related Workflow Vendor Portal tables once a PO has been defined as “closed” in the ERP system.
Schedule Interval	Defines how often (in minutes) the ERP Caching Service will check the ERP system for new PO and Vendor updates.



Setting Name	Description
Number of Days to Process	Defines the number of days the ERP Caching Service will be limited to when caching PO and Vendor data for brand new customers uploading their initial data loads to Tungsten e-Invoice Network for the first time. This setting was instituted to limit the enormous amounts of PO and Vendor data into smaller more manageable amounts during each ERP Caching interval to prevent system timeout and overload failures.
Max Rows	Defines the maximum number of table rows that will be returned during each applicable PO and Vendor update processing interval.
Transaction Debug	Optional setting to enable ERP Caching Service transaction activity to the Vendor Portal Transaction Log under the Vendor Portal Configuration in Workflow. Note: <i>It is advised to leave this setting unchecked unless actively troubleshooting an issue.</i>
Enable PO Caching	Global setting to enable and disable PO Caching for all active Buyers. Note: <i>Enabling and disabling PO Caching for specific Buyers is controlled within the individual Buyer configurations. However, unless this box is checked (like a master “on” switch), the selection within each individual buyer configuration will not be recognized.</i>
Enable Vendor Caching	Global setting to enable and disable Vendor Caching for all active Buyers. Note: <i>Enabling and disabling Vendor Caching for specific Buyers is controlled within the individual Buyer configurations. However, unless this box is checked (like a master “on” switch), the selection within each individual Buyer configuration will not be recognized.</i>
PO Cache Run Now	Check this box then click the Update button to immediately retrieve and process any new PO Updates from the ERP system.
Vendor Cache Run Now	Check this box then click the Update button to immediately retrieve and process any new Vendor Updates from the ERP system.

General Settings

Setting Name	Description
Debug	<p>This will enable informational messages related to database queries and timing of events to be inserted into the Workflow Application Log for all the Vendor Portal services.</p> <ul style="list-style-type: none"> ● Invoice Status Service ● Invoice Status Agent ● Vendor Portal Broker Service ● ERP Caching Service <p>Note: <i>It is advised to leave this setting unchecked unless actively troubleshooting an issue.</i></p>

Profile Settings

Tungsten e-Invoice Network will create a Profile ID for each TeN customer and set of suppliers that the TeN will service. Each profile represents an ERP system that TeN will interface with to send/receive data from the Vendor Portal.

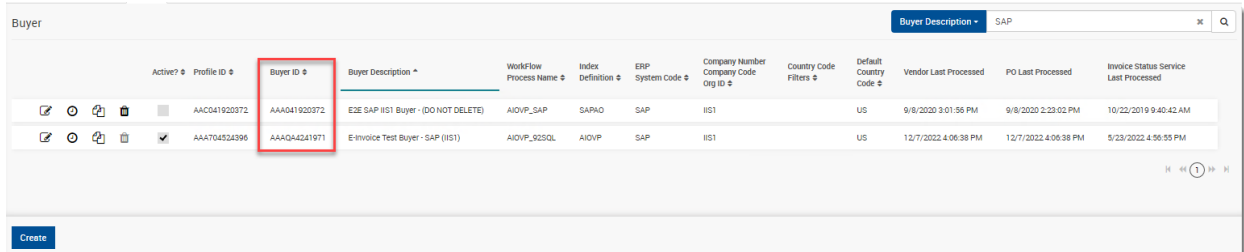
To edit an existing profile or change the sFTP password, click the **Edit** icon . To delete an existing profile, click the Delete icon ; a message will ask to verify the deletion.

To add a new profile, click **Create**.

Setting Name	Req?	Description
Profile Type	Yes	Choice of Normal or Key File; refer to your project manager for details on this.
Profile ID	Yes	Enter the system profile name created by Tungsten e-Invoice Network
sFTP Server	Yes	Enter the secure web server (IP address or hostname of sFTP server) provided by TeN
sFTP Port	Yes	Enter the Port to connect on for the sFTP connection
sFTP Username	Yes	Enter the sFTP username. Available only with Profile Type Normal.
sFTP Password and Confirm Password	Yes	Enter the password for the sFTP username. Available only with Profile Type Normal.
Upload Key File	Yes	Click Choose File to upload the SSH Secret Key File. Available only with Profile Type Key File.
Passphrase	Yes	Enter the SSH Secret Key Passphrase. Available only with Profile Type Key File.
Vendor Output Format	Yes	Choice of XML Version 1.0 or XML Version 2.0; refer to your project manager for which setting should be selected
Consolidate Vendor Data for all Buyers	No	Master Buyer ID for vendor updates that links the uploaded vendor information for all active Buyer IDs. Consult with your Workflow project leader for recommended setting. Available only with XML Version 2.0.
Enable Email Notification on Error	No	Select checkbox to send email notifications to specified email addresses when a Vendor/Supplier Upload transaction has failed.
Email Address(es)	No	Designated person(s) who will be notified when a Vendor/Supplier Upload transaction has failed. Use a semicolon (;) to separate email addresses when more than one is entered. Available only when "Enable Email Notification on Error" is selected.
Email Subject	No	The text entered here will appear in the subject line of a notification email sent to specified email address(es) when a Vendor/Supplier Upload transaction has failed. Max character limit of 50. Available only when "Enable Email Notification on Error" is selected.

Buyer Settings

Tungsten e-Invoice Network will create a Buyer ID. Each Buyer represents a company code in the customer SAP system and a set of vendors that the portal will service. When an SAP ERP system code is selected, the Vendor Portal configuration page shows an SAP-specific tab control for the remaining SAP-specific configuration settings.



Active?	Profile ID	Buyer ID	Buyer Description	Workflow Process Name	Index Definition	ERP System Code	Company Number Company Code Org ID	Country Code Filters	Default Country Code	Vendor Last Processed	PO Last Processed	Invoice Status Service Last Processed
	AAC041920372	AAA041920372	E2E SAP IIS1 Buyer - (DO NOT DELETE)	AIOVP_SAP	SAPAD	SAP	IIS1	US	9/8/2020 3:01:55 PM	9/8/2020 2:23:02 PM	10/22/2019 9:40:42 AM	
	AA4704524396	AAA044241971	E-Invoice Test Buyer - SAP (IIS1)	AIOVP_925DL	AIOVP	SAP	IIS1	US	12/7/2022 4:06:38 PM	12/7/2022 4:06:38 PM	5/23/2022 4:56:55 PM	

Buyer Configuration

Click the **Edit** icon to edit an existing Buyer. Don't forget to click **Update** to save any changes.

Click the **Modify Last Processed Date** icon to modify dates for **PO Last Processed**, **Vendor Last Processed**, and **Invoice Status Service Last Processed**. The Last Processed dates can also be modified from within the Edit screen by clicking the **Modify Last Processed Date** button.

This feature is used to prompt the system to re-upload certain values that need to get to the Tungsten e-Invoice Network without having to go into the database. The modified date can be moved backward (earlier than the current Last Processed date) but cannot be moved forward in time from the current Last Processed date. The timestamp is automatically changed to 00:00:00 for the date selected and cannot be edited. Don't forget to click **Update** to save any changes.

Once modified, changing the Last Processed date will be disabled for that service and cannot be modified again until the ERP Catching Service or Invoice Status Service has run and cached the data up to the selected date; if you see the error message "Cannot update last processed dates for buyer as caching services are running", wait a few seconds and click Update again.

Click the **Copy** icon to create a copy of the buyer settings configuration for a new Buyer ID. Click **Add** when finished making changes.

Click the **Delete** icon to delete the Buyer. A message will provide a warning and ask to the user to verify the deletion. **Note:** *When deleting a Buyer, all related cache tables (PO, Vendor, Invoice Status, etc.), configuration, and transaction log history related to the buyer will be purged. A Buyer should only be deleted when a Buyer ID is never to be used again for Tungsten e-Invoice Network transactions.*

To create a new Buyer, click **Create**. When finished configuring, click **Add**.

General Configuration

Setting Name	Required?	Description
Profile ID	Yes	Enter the system Profile ID created by Tungsten e-Invoice Network
ERP System Code	Yes	Define the ERP System Code from which to connect and integrate for the defined Buyer entity
Company Number	Yes	Define the Company Number associate to the defined Buyer entity
Buyer ID	Yes	Enter the system Buyer Entity ID created by Tungsten e-Invoice Network
Buyer Description	No	Enter a description for the Buyer
Default Country Code	No	If Country Code is not defined in the ERP, this will be used as the default
County Code Filter	No	Click Add/Modify Country Code Filter to define the Country Code value(s) to be used for PO Updates associated with the Buyer. This button brings up all available Country Code values in alphabetical order to select from.
Invoices Outbound Folder	Yes	Define the remote folder from which to poll the invoice outbound for the defined Buyer entity
Invoice Status Updates Folder	Yes	Define the remote folder from which to push the invoice status updates for the defined Buyer entity
Vendor Updates Folder	Yes	Define the remote folder from which to update the Vendor Updates for the defined Buyer entity
PO Updates Folder	Yes	Define the remote folder from which to push the PO updates for the defined Buyer entity
PO Last Processed, Vendor Last Processed, Invoice Status Service Last Processed	N/A	<p>Last Processed times are for server time zone (UTC +/- Offset hours). Whenever a new buyer is copied or created as new, the following fields in the IIS_VP_BUYERS table are set as default:</p> <ul style="list-style-type: none"> ● PO_LAST_PROCESSED: Default set for back 365 days from current date. It will filter closed POs, so this should pick up all open POs. ● VENDOR_LAST_PROCESSED: Default set for back 20 years from current date, to pick up all vendors. ● INVOICE_LAST_PROCESSED: Default set for back 60 days from current date. This is used for IIS for All.
Active?	Yes	If checked, all configured processing for the buyer will occur at scheduled intervals. If unchecked, all processing for the buyer will be skipped. Note: A buyer cannot be deleted unless it's marked inactive.

E-Invoice Configuration

The page contains an e-Invoice configuration tab to configure settings used for incoming invoices.

Setting Name	Required?	Description
Workflow Process Name	Yes	Define the Workflow Process Definition name from which to process the incoming invoices for the defined Buyer entity
Index Definition	Yes	Define the Content Manager Index Definition from which to map the inbound field name for the defined Buyer entity
Doc Type for Inserting Invoice	Yes	Define the Document Type for the incoming invoices
Doc Type for Inserting Credit Memo	Yes	Define the Document Type for the incoming credit memos
Doc Type for Inserting Supplement	Yes	Define the Document Type for the incoming supplement documents

Tungsten Vendor Portal Buyer Mappings

Setting Name	Required?	Description
Index Key Mapping		Define each index key mapping setting by selecting the related index key value from the applicable dropdown. The elements available to map to the Content manager fields are listed in the IIS VEND PORTAL INVOICES elements described earlier in this document.
Line Item Mapping		Define each Line Item mapping setting by selecting the related index key value from the applicable dropdown. These fields will default and should not normally be changed. The elements available to map to the Captured Line Item table fields are listed in the IIS VEND PORTAL INVOICE LINE ITEMS elements described earlier in this document.
GL Mapping		Define each GL mapping setting by selecting the related index key value from the applicable dropdown. These fields will default and should not normally be changed. The elements available to map to the Captured GL Data table fields are listed in the IIS VEND PORTAL GL LINES elements described earlier in this document.

PO Caching Configuration

The POs uploaded to the network are limited by the company number and country code (optional) specified for the buyer. Additionally, the PO Caching configuration tab may be used to configure settings used to further control which POs (if any) are sent to the Tungsten e-Invoice Network.

Setting	Description
PO Caching Enabled	POs for vendors that are in groups where 'PO Cache Enabled' is checked will be processed and POs for vendors that are in groups where 'PO Cache Enabled' is NOT checked will be ignored. If a vendor is in multiple groups where some of the groups have 'PO Cache Enabled' and some of them don't, then POs will be cached for that vendor.
Local Cache Only	In the case of a scanning customer, the system can store data at the local level in Workflow tables for Tungsten Network Advanced Capture (TNAC) / Kofax use. The data will be stored in the local cache instead of uploading to DX folders. When this option is used, do not use the transfer.tungsten-network.com hostname for the sFTP site connection; enter a "dummy" hostname (doesn't have to be valid\online). When a Profile has a cache-only Buyer, the connection to the host will not be attempted.
Preview Result	Performs the PO caching based on the current configuration and displays the results in a grid for review. The data retrieved is not sent on to the network but are for review only. The number of items retrieved will be controlled by the Maximum Results setting, which defaults to 300. The top of the window lists how many purchase orders were found and the last run date.
PO Doc Types	Only POs that have a PO Doc Type specified in the configuration will be processed for the specified buyer.
Purchasing Orgs	Only POs that have a Purchasing Org in the range of configured Purchasing Orgs that are set to 'include' will be processed. Any Purchasing Org set to not 'Include' will be skipped
PO Number Ranges	Only POs that have a PO Number in the range of configured PO Number Ranges that are set to 'include' will be processed. Any PO Numbers set to not 'Include' will be skipped.

ISS Configuration

The page contains an ISS (Invoice Status Service) configuration tab to configure settings used to control which invoice statuses (if any) are sent to the Tungsten e-Invoice Network.

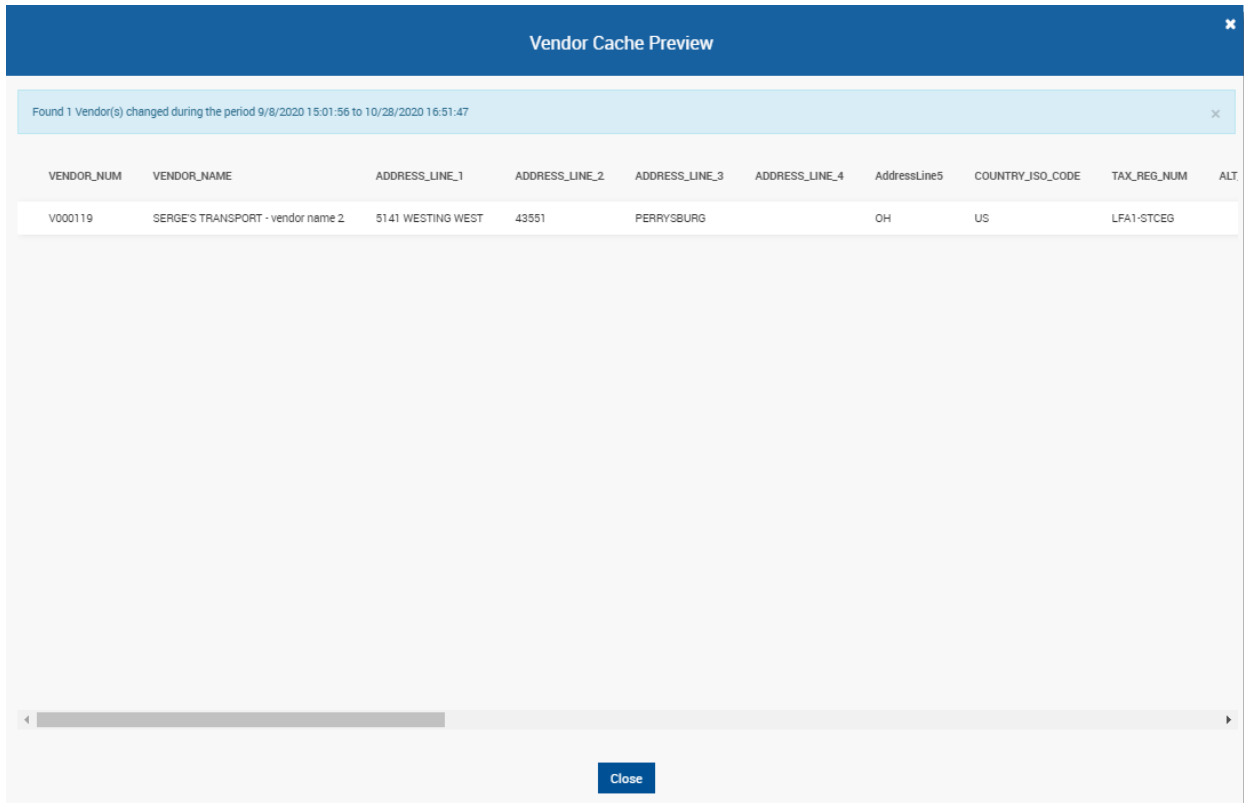
Setting	Description
Invoices to load to the Network	Used to control if all invoices, e-invoices only, or no invoices have their statuses sent to the Tungsten e-Invoice Network
Doc Types	List of SAP document types to be uploaded to TeN

Vendor Caching Configuration

The processing of Vendor Cache is controlled by configuration on the Vendor Caching Configuration tab.




Setting	Description
Vendor Cache Enabled	Vendor caching can be enabled or disabled using the buyer level setting. If vendor caching is enabled at the buyer level then the Vendor cache can be filtered using the vendor group configuration. Vendor groups are listed in the tab and

Setting	Description
	<p>configuration of a group is done through a sub-screen. Vendors that are in groups where 'Vendor Cache Enabled' is checked are processed and vendors that are in groups where 'Vendor Cache Enabled' is NOT checked are ignored. If a vendor is in multiple groups where some of the groups have 'Vendor Cache Enabled' and some of them don't, then the vendor will be cached. The cache process normally only processes records that have changed since the last processing cycle. However, the Vendor Cache process retrieves vendor information for vendors that have been added to the group regardless of how long it's been since the record was updated.</p>
Local Cache Only	<p>In the case of a scanning customer, the system can store data at the local level in Workflow tables for TNAC/Kofax use. The data will be stored in the local cache instead of uploading to DX folders. When this option is used, do not use the transfer.tungsten-network.com hostname for the sFTP site connection; enter a "dummy" hostname (doesn't have to be valid/online). When a Profile has a cache-only Buyer, the connection to the host will not be attempted. Cached local zip files will be purged by default after 180 days. The Broker Service configuration can be edited to include the setting PurgeSavedZipsAfterXDays to change the number of days.</p>
Preview Result	<p>Will perform the Vendor caching based on the current configuration and display the results in a grid for review. The number of items retrieved are controlled by the Maximum Results setting which defaults to 300. The data retrieved is not sent on to the network but are for review only. The top of the window lists how many vendors were found and the last run date.</p>



Vendor Cache Preview

Vendor Groups

To edit an existing vendor group, click the **Edit** icon . To delete an existing vendor group, click the **Delete** icon ; a message will ask to verify the deletion. To add a new vendor group, click the **Add Group** icon  to display the Vendor Group Configuration window.

Setting	Req'd	Description
Group Name	Yes	Select a name for the new group
Apply to PO Cache	No	Apply this Vendor Group to PO Cache uploads
Apply to Vendor Cache	No	Apply this Vendor Group to Vendor Cache uploads
Apply to ISS	No	Apply this Vendor Group to ISS uploads
Preauthorized for E-Invoicing	No	Used to indicate to the network that a vendor is available for E-Invoicing. When any adjustments are made to the vendor group configuration that adjust the E-Invoicing status of a vendor then vendor information is sent with the next cache upload with the adjusted value.

Vendors

Setting	Req'd	Description
Vendor - From	No	Enter the From Vendor number

Setting	Req'd	Description
Vendor - To	No	Enter the To Vendor number
Include	No*	If yes, the filter will include the records that match the entered Group value. If no, the filter will exclude the records that match the entered Group value. *Required if Group is configured

Vendor Account Groups

Setting	Req'd	Description
Group	No	Enter the Group
Include	No*	If yes, the filter will include the records that match the entered Group value. If no, the filter will exclude the records that match the entered Group value. *Required if Group is configured

Vendor Account Classifications

Setting	Req'd	Description
Category	No	Enter the Category
Include	No*	If yes, the filter will include the records that match the entered Vendor (Address Number) value. If no, the filter will exclude the records that match the entered Vendor value. *Required if Vendor is configured

Note: If there is more than one Vendor Group, the filter will utilize OR logic. It will find the results from each Vendor Group and combine them.

Vendor Blocks / Vendor Deletions

When the vendor cache is created to be sent to Tungsten e-Invoice Network or used for OCR, there is configuration for the desired behavior of blocked and deleted vendors. During the initial load of vendors, the deleted vendors are not sent, but a client could choose to send blocked vendors. This depends on how vendor blocks are used, such as a temporary block for a dispute or a longer-term block not delete.

The ongoing vendor cache can notify the network that the vendor has been deleted or put on a block so that it could prevent a user from selecting that vendor. If a vendor is selected that is marked for deletion, Workflow will notify the user that the vendor is “flagged for deletion”. Similarly, if the vendor selected is blocked for posting, then Workflow will notify the user the vendor is “blocked for posting”.

Deleted vendors should never be sent in the initial load, so when the Initial Load checkbox is selected, LOEVN is disabled while SPERR and SPERM can be selected. Once the initial load is completed, the administrator should return to this screen and deselect the Initial Load checkbox. At this point, any of the three checkboxes may be selected.

UI Field	DB Field
Initial Load	SEND_DELETED_VENDORS
LOEVM	DELETED_VENDORS_CLOSED
SPERR	INV_BLK_VENDORS_CLOSED
SPERM	PUR_BLK_VENDORS_CLOSED

Initial Load

1. Do not create any deleted vendors, or vendors with a posting block or purchasing block.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

2. Only create vendors with a posting block; do not create deleted vendors or vendors with a purchasing block.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

3. Only create vendors with a purchasing block; do not create deleted vendors or vendors with a posting block.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

4. Create vendors with a purchasing block and posting block; do not create deleted vendors.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

Ongoing Maintenance

1. Send deleted vendors and those with a posting block or purchasing block as CLOSED.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

2. Send deleted vendors as CLOSED; send vendors with a posting or purchasing block as MODIFY.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

3. Send deleted vendors and those with a posting block as CLOSED; send vendors with a purchasing block as MODIFY.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

4. Send deleted vendors and those with a purchasing block as CLOSED; send vendors with a posting block as MODIFY.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

- Send vendors with a posting block as CLOSED; send deleted vendors or vendors with a purchasing block as MODIFY.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

- Send vendors with a purchasing block as CLOSED; send deleted vendors or vendors with a posting block as MODIFY.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

- Send vendors with a purchasing block and posting block as CLOSED; send deleted vendors as MODIFY.

Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

- Send deleted vendors and those with a posting block or purchasing block as MODIFY.

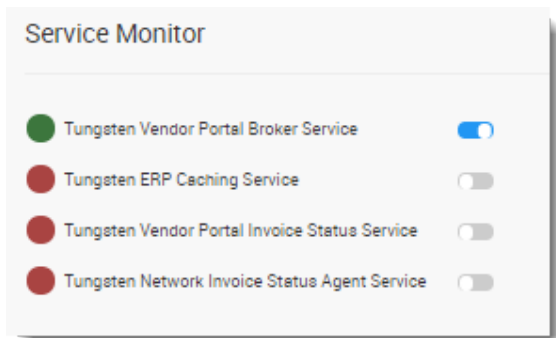
Initial Load Consider Vendor Closed when : LOEVM SPERR SPERM

Transaction Log

This tab shows every transaction running through the Broker Service. The max rows to retrieve for the search is defaulted to 100 and will show the top 100 rows. The max rows to retrieve can be edited to display up to 99,999 lines. The results list can be filtered by Profile ID, Buyer ID, Event, or Transaction Number (where the transaction number begins with the value entered in the textbox), or Event. The transaction log can be truncated or purged of older transactions to help manage the large amount of transaction data that will accumulate over time. From the **Purge transaction log records older than** dropdown list, select the amount of time to be purged (6 months, 9 months, 1 year, 2 year, 3 year, 5 year, or 7 year) and click the **Purge** button.

Service Monitor

The Service Monitor page offers the ability to view the current state of the vendor portal services and start/stop them as needed.



Service Monitor

Reload on Demand

Reload on Demand allows an administrator to review the results of previous processing of vendor caching, PO caching, and invoice status caching, including the number of records processed.

Job ID	Buyer	Service	PO Number	PO Doc Type	Vendor Number	Invoice Number	Days To Process	Status	Message	Requested By	Requested Date	Processed Date	Items Processed	Error Status Options
69	AAA021920372	Vendor Caching			V000119			Completed		DEBBIE MCDOWELL	9/8/2020 2:22:29 PM	9/8/2020 10:22:59 AM	1	
68	AAA50E19209A	PO Caching					15	Completed		JASON WAGNER	8/25/2020 9:23:48 PM	8/28/2020 10:01:36 AM	10	
67	AAAJDEB1250L	Invoice Status				03042015		Error	Skipping Buyer AAAJDEB1250L because it is not active	SARAH GROVER	5/29/2020 1:03:15 PM		0	Retry Abort
66	AAAJDEB1250L	Vendor Caching					3	Error	Could not locate data in table	SARAH GROVER	5/29/2020 10:42:22 AM		0	Retry Abort
65	AAAJDEB1250L	Invoice Status				03042015		Completed		JASON NICOLLODI	5/16/2020 10:31:33 AM	5/19/2020 12:20:09 PM	6	

Reload on Demand

Click the **Filter** icon to filter the results list by Buyer, Reload Type, PO Number, Vendor Number, Invoice Number, Status, Requested By, Requested Date, or Processed Date. When finished, click **Apply Filters**. A green message stating “Filter applied successfully” will appear. Close the Filters window to return to the list screen. The Filters icon will turn blue when a filter has been applied. Filters can also be turned off temporarily without clearing the filter by using the **Reload on Demand Filtering On/Off** toggle next to the Filters icon. To clear a filter, open the Filters window and click the **Clear Filters** button. When all filters are cleared, the toggle is inactive and the Inbox Filters icon returns to black.

To process a specific or targeted range of Vendor, Purchase Order, or Invoice Status data, click **Create Job**. Select a **Reload Type** and **ERP System Code**. Enter a **Vendor Number** (for Vendor Caching), **PO Number / PO Doc Type** (for PO Caching), or **Invoice Number** (for Invoice Status), then select Buyer(s) from the list displayed. Adjusting the number of **Days to Process** (for Vendor Caching and PO Caching) will allow the services to process historical data and can be used for initial data loading. **Note:** *The associated buyer profile configuration will also be used, including the filtering and vendor group setup.* When finished, select the job and click **Add**. Multiple jobs can be queued at once, but the jobs will still process one at a time.

Some notes on the Reload on Demand functionality:

- For Vendor and PO uploads, the Reload on Demand job requests work only when the ERP Caching Service is enabled and running.
- For Invoice Status uploads, the Reload on Demand job requests work only when the Invoice Status Service is enabled and running.
- If a Reload on Demand job request is attempting to be processed when the required service is not running, the Reload on Demand page becomes locked and no further Reload on Demand requests can be made until the current job has been processed or cleared.
- Only active Buyers are displayed based on the ERP System Code selected on the Reload on Demand page.
 - For Vendor Caching only: If the Profile ID is configured for a Consolidated Buyer, then only that Buyer will be displayed on the Reload on Demand page.

Vendor Cache Reload

If a specific Vendor Number is provided, the reload first ensures that the targeted vendor falls within the Vendor Groups configuration parameters for the buyer profile, if enabled. Each selected profile will be processed. If the vendor does fall within the parameters of a Vendor Group, the database (vendor cache RFC) will be queried, but the vendor group data is replaced with a vendor group definition that starts and ends with the specified vendor. This vendor, if valid, will be uploaded to the network regardless of your Search Types for Exclusion configuration. If it is normally excluded, future updates for this vendor will not be automated.

PO Cache Reload

If a specific PO Number is provided, the PO Doc Type filter will be a required entry and the reload database is queried for each selected buyer profile passing in the provided PO number and PO Doc Type. The FromDate provided to the RFC will be today's date minus the number of days specified in the Days to process textbox.

Invoice Status Reload

If a specific Invoice Number is provided, the database is queried for each selected buyer profile passing in the provided Invoice Number. Typically, an invoice only applies to one specific Buyer profile.

Error Troubleshooting

Common reasons why invoices end up in the Error folder

- **Invalid Buyer:** Buyer AAA number from Tungsten e-Invoice Network does not match any configured buyers in the Workflow configuration.
- **Could not process the invoice:**
 - Duplicate invoice detected – same invoice with same transaction number was received from the Tungsten Portal.
 - Problem with validating invoice payload zip file (xml, invoice pdf, attachments)
 - > No primary attachment provided
 - > XML data is not sent formatted as expected
 - Can't insert PO line items via the web service (Workflow will not start)
 - Can't insert attachments into Content Manager (Workflow will not start)

- No attachments with any of the invoices that are attempting to be inserted into Content Manager (see figures below).

```
<?xml version="1.0" encoding="UTF-8"?>
- <NewDataSet>
  - <IIS_VEND_PORTAL_INVOICES>
    <Transaction_Number>AAA000088136602</Transaction_Number>
    <Profile_ID>AAA153165444</Profile_ID>
    <Buyer_Ref_Num>AAA703817718</Buyer_Ref_Num>
    <Company_Name>Vanderlande Industries B.V. - </Company_Name>
    <Company_Number>00110</Company_Number>
    <Company_Code>00110</Company_Code>
    <Business_Unit>11000</Business_Unit>
    <Supplier_OB10_No>AAA485699813</Supplier_OB10_No>
    <Vendor_Number>2100110</Vendor_Number>
    <OB10_Invoice_Type>INV</OB10_Invoice_Type>
    <PO_Number>11079884</PO_Number>
    <PO_Doc_Type>ZZ</PO_Doc_Type>
    <Invoice_Number>3368</Invoice_Number>
    <Invoice_Date>2014/10/29</Invoice_Date>
    <Invoice_Net_Amount>125</Invoice_Net_Amount>
    <Invoice_Total_Amount>125</Invoice_Total_Amount>
    <Taxable_Amount>125</Taxable_Amount>
    <Tax_VAT_Amount1>0</Tax_VAT_Amount1>
    <Currency>EUR</Currency>
    <Comments/>
    <Multi_PO_Invoice>N</Multi_PO_Invoice>
    <Attachment_Flag>N</Attachment_Flag>
    <Number_of_Attachments>0</Number_of_Attachments>
    <Exception_Flag>N</Exception_Flag>
    <Exception_Message/>
    <Transmitted_Date>2014/11/07</Transmitted_Date>
    <Line_Item_Data_Unique_ID>AAA000088136602</Line_Item_Data_Unique_ID>
    <TaxPointDate>2014/10/29</TaxPointDate>
  </IIS_VEND_PORTAL_INVOICES>
</NewDataSet>
```

No attachment on any invoices

AAA000088164124	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:06 PM
AAA000088164125	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:06 PM
AAA000088164133	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:12 PM
AAA000088164160	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:22 PM
AAA000088164162	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:21 PM
AAA000088164165	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:16 PM
AAA000088164688	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 9:25 PM
AAA000088165624	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 9:15 PM
AAA000088166172	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:06 PM
AAA000088168648	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:32 PM
AAA000088176932	Compressed (zipped) Fol...	47 KB	No	47 KB	0%	11/18/2014 8:25 PM
AAA000088200887	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:26 PM
AAA000088205563	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:32 PM
AAA000088205872	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:16 PM
AAA000088217573	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:26 PM
AAA000088219335	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:26 PM
AAA000088220619	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:32 PM
AAA000088221733	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:36 PM
AAA000088222617	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:32 PM
AAA000088222655	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:16 PM
AAA000088227044	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:55 PM
AAA000088277905	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:41 PM
AAA000088279906	Compressed (zipped) Fol...	1 KB	No	1 KB	0%	11/18/2014 8:06 PM

There are no invoice document attachments with any of the zip files with a size of 1 KB

Zip files with small file size, indicating no attachment

To find out more info about the zip files in the folder:

- The zip file name is the Tungsten e-Invoice Network Transaction Number; use the Workflow Vendor Portal Transaction log to search by transaction number.
 - This will give basic info about the transaction and if it was accepted or not.
 - If it is found and shown in the transaction log as “Could not process invoice”, it falls into one of the above scenarios.
 - > To get more data about the failure, look at the Windows Application Event log at the time the invoice was processed.
 - Unfortunately, if the event logs are long gone, we have lost the details about the failure.
 - However, the invoice zip files can be copied back up to the sFTP site and reprocessed so the events can be captured again.
 - The configuration for the buyer sFTP folder can be referenced in your vendor portal configuration. The Invoices Outbound Folder that you need to place the zip file in can be identified there (default folder name is DX202).

Agents

Workflow agents are components that automatically process transactions in the Tungsten Invoice Workflow and can update SAP data and status. They require no user interface.

Additional information can be found in the **Workflow SAP Agents and Plug-ins Guide** and **Workflow JDE Integration Guide**, where specific details are provided regarding the configuration requirements to establish this integration.

SAP Captured GL Agent

This agent assigns incoming GL data received from Tungsten e-Invoice Network to the invoice work item in Workflow. It also validates the data received (i.e., checks if GL account is valid, cost center is valid, etc.)

It takes GL data captured for the invoice and moves it to the IIS_WF_SAP_INV_DISTRIBUTION. The captured GL data is assigned to the appropriate invoice by matching the Line_Item_Data_Unique_ID field from process data to the Line_Item_Data_Unique_ID in the IIS_WF_CAPTURED_GL_DATA table. Each GL line is validated prior to being added. The following validations should be performed if a corresponding value exists:

- GL account
- Tax code
- Tax jurisdiction
- Cost center
- WBS element
- Network
- Business area

If validations are successful, then the records should be added to the IIS_WF_SAP_INV_DISTRIBUTION table. If any of the validations fail, the agent status will be updated to 'ERROR' and a descriptive agent message is updated to PRD.

Additionally, a validation compares the invoice amount with the sum of the amount fields in the IIS_WF_SAP_INV_DISTRIBUTION table. If they match, the agent status will be set to 'SUCCESS'. If the amounts do not match, the agent status will be set to 'FAIL' and the error message will be set to 'Coding does not balance to invoice'.

Vendor Portal Status Agent

The Vendor Portal Status Agent provides invoice status information throughout the workflow. This agent automatically updates the work item invoice status to Tungsten Broker Service. This provides the Tungsten e-Invoice Network suppliers with visibility to their Invoice status throughout the workflow cycle from the time the work item leaves the Start activity to the customer approval and payment information update processes.

This agent has the following features:

- The ability to update the Tungsten Broker Service with the current status of the work item invoice as it moves through Workflow with the supplemental information that clarifies the invoice status.
- Sends all notes that have been flagged as vendor notes to the Invoice Status service. The free-form text messages are limited to 999 characters and are entered as the work item moves through various Workflow activities.
- An option to configure the agent to update specific PRD fields such as Invoice Status or Status Comment.

Status Codes

To provide consistency for Tungsten e-Invoice Network Suppliers, the following standard set of statuses can be configured in Tungsten e-Invoice Network.

Invoice Status	Required fields	Circumstances
RECEIVED	Profile ID, Buyer No., Transaction Number, Supplier No., Vendor Number, PID Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Status Comment, and Date/Time Stamp	Indicating that the work item invoice has initiated its workflow business process.
APPROVED	Profile ID, Buyer No., Transaction Number, Supplier No., Vendor Number, PID Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Anticipated Payment Date, and Date/Time Stamp	Indicating that the work item invoice has been approved for payment.
PAID	Profile ID, Buyer No., Transaction Number, Supplier No., Vendor Number, PID Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Status Comment,	Indicating that the work item invoice payment information has been updated into Tungsten e-Invoice Network.

Invoice Status	Required fields	Circumstances
	Payment Date, Check Number, Payment Reference Number, and Date/Time Stamp	
EXCEPTION	Profile ID, Buyer No., Transaction Number, Supplier No., Vendor Number, PID Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Status Comment, and Date/Time Stamp	Indicating that the work item invoice has been sent to a manual exception activity for a Workflow user to rectify.
REJECTED	Profile ID, Buyer No., Transaction Number, Supplier No., Vendor Number, PID Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Status Comment, and Date/Time Stamp	Indicating that the work item invoice has been rejected.
HOLD	Transaction Number, Invoice Number, Invoice Date, Invoice Total Amount, Invoice Status, Payment Due Date, and Status Date	A parked item was found in SAP.

Configuration Settings

Agent settings must be configured in the Workflow Administration client. Refer to the ***Workflow Agents and Plug-ins Administration Guide*** in the section [Registering and Configuring an Agent](#) for a step-by-step guide to arrive at this point. When finished configuring settings, click **Update** to save all the settings to the database.

Setting Name	Required?	Description
Transaction Number PRD	Yes	PRD field name that holds the Transaction Number
Unique Transaction ID PRD	Yes	PRD field name that holds the Unique Transaction ID
Vendor Number PRD	Yes	PRD field name that holds the Vendor Number
Invoice Number PRD	Yes	PRD field name that holds the Invoice Number
Invoice Date PRD	Yes	PRD field name that holds the Invoice Date
Invoice Total Amount PRD	Yes	PRD field name that holds the Invoice Total Amount
Invoice Status	Yes	Invoice Status text to be sent to the Vendor Portal
Invoice Status PRD	Yes	PRD field name that holds the Invoice Status
Status Comment	Yes	Status Comment text to be sent to the Vendor Portal when there are no External Notes
Anticipated Payment Date PRD	No	PRD field name that holds the Anticipated Payment Date
Payment Date PRD	No	PRD field name that holds the Payment Date
Check Number PRD	No	PRD field name that holds the Check Number
Payment Ref Number PRD	No	PRD field name that holds the Payment Reference Number
Profile ID PRD	Yes	PRD Field name that holds the Profile ID
Buyer ID PRD	Yes	PRD Field name that holds the Buyer ID

Setting Name	Required?	Description
Company Number/Org ID PRD	Yes	Select the Company Number/Org ID field; in the case of SAP use this for Company Code
Status Date PRD	Yes	PRD field name that holds the Status Date
Payment Amount PRD	No	PRD field name that holds the Payment Amount (optional)
Currency PRD	Yes	PRD field name that holds the currency
Invoice Type PRD	Yes	PRD field name that holds the Invoice Type
Invoice Status Text Type 1	No	Invoice Status Text Type 1 to be sent to the Vendor Portal
Invoice Status Text 1	No	Invoice Status Text 1 to be sent to the Vendor Portal
Invoice Status Text Type 2	No	Invoice Status Text Type 2 to be sent to the Vendor Portal
Invoice Status Text 2	No	Invoice Status Text 2 to be sent to the Vendor Portal
Invoice Status Text Type 3	No	Invoice Status Text Type 3 to be sent to the Vendor Portal
Invoice Status Text 3	No	Invoice Status Text 3 to be sent to the Vendor Portal
Invoice Status Text Type 4	No	Invoice Status Text Type 4 to be sent to the Vendor Portal
Invoice Status Text 4	No	Invoice Status Text 4 to be sent to the Vendor Portal
Invoice Status Text Type 5	No	Invoice Status Text Type 5 to be sent to the Vendor Portal
Invoice Status Text 5	No	Invoice Status Text 5 to be sent to the Vendor Portal
Invoice Status Text Type 6	No	Invoice Status Text Type 6 to be sent to the Vendor Portal
Invoice Status Text 6	No	Invoice Status Text 6 to be sent to the Vendor Portal
Invoice Status Text Type 7	No	Invoice Status Text Type 71 to be sent to the Vendor Portal
Invoice Status Text 7	No	Invoice Status Text 7 to be sent to the Vendor Portal
Invoice Status Text Type 8	No	Invoice Status Text Type 8 to be sent to the Vendor Portal
Invoice Status Text 8	No	Invoice Status Text 8 to be sent to the Vendor Portal
Invoice Status Text Type 9	No	Invoice Status Text Type 9 to be sent to the Vendor Portal
Invoice Status Text 9	No	Invoice Status Text 9 to be sent to the Vendor Portal
Invoice Status Text Type 10	No	Invoice Status Text Type 10 to be sent to the Vendor Portal
Invoice Status Text 10	No	Invoice Status Text 10 to be sent to the Vendor Portal
Agent Status PRD	Yes	PRD field name that holds the Agent Status
Agent Message PRD	Yes	PRD field name that holds the Agent Message

Database Table

This agent updates the current status of the work item invoice as it moves through Workflow with the supplemental information that clarifies the invoice status into the **IIS_VP_INV_STATUS** table, in the Tungsten e-Invoice Network database.

IIS_VP_INV_STATUS

The agent will update the following field values to IIS_VP_INV_STATUS table in real time:

Field Name	Required	PRD Field	Business Rules
STATUS_ID	Yes/Auto	No	Used to UPDATE and DELETE records. No case has been found to DELETE records at this time.
PROCESS_INSTANCE_ID	Yes	Yes	Used to query status by Process Instance Relation. Notes will be retrieved using this process instance ID by the Vendor Portal Broker service that consumes this table.
TRANSACTION_NUMBER	Yes	Yes	This indicates to TeN which transaction to update the status. Mandatory data field that must be presented for all the invoice status records.
PROFILE_ID	Yes	Yes	Mandatory data field that must be presented for all the invoice status records. This is the TeN buyer corporation unique identifier which should indicate the ID.
BUYER_ID	Yes	Yes	Mandatory data field that must be presented for all the invoice status records. This is the TeN buyer unique identifier.
VENDOR_NUMBER	Yes	Yes	Mandatory data field that must be presented for all the invoice status records.
INVOICE_NUMBER	Yes	Yes	Mandatory data field that must be presented for all the invoice status records.
INVOICE_DATE	Yes	Yes	Mandatory data field that must be presented for all the invoice status records.
INVOICE_TOTAL_AMOUNT	Yes	Yes	Mandatory data field that must be presented for all the invoice status records.
INVOICE_STATUS	Yes	Yes	Mandatory data field that must be presented for all the invoice status records.
Status_Comment	Yes	Yes	Mandatory data field that must be presented for all the invoice status records.
ANTICIPATED_PAYMENT_DATE	Conditional (Status = APPROVED)	Yes	Mandatory data field that must be presented for each "APPROVED" invoice status record.
PAYMENT_DATE	Conditional (Status = PAID)	Yes	Mandatory data field that must be presented for each "PAID" invoice status record.
CHECK_NUMBER	Conditional (Status = PAID and By Check)	Yes	Optional data field that can be presented based on if the invoice payment was made by Check.
PAYMENT_REF_NUMBER	Conditional	Yes	Mandatory data field that must be presented for each "PAID" invoice status record.

Field Name	Required	PRD Field	Business Rules
	(Status = PAID)		
SENT_TO_PORTAL	Default to 'N' when inserting the status record	No	Used by the Vendor Portal Broker service to keep track of the status messages sent to the vendor portal. All statuses with a value of 'N' will be sent. Once the Vendor Portal Broker service sends to the portal, each status record sent will be updated to a 'Y'.
CREATEDATETIME		Yes	Creation time of record