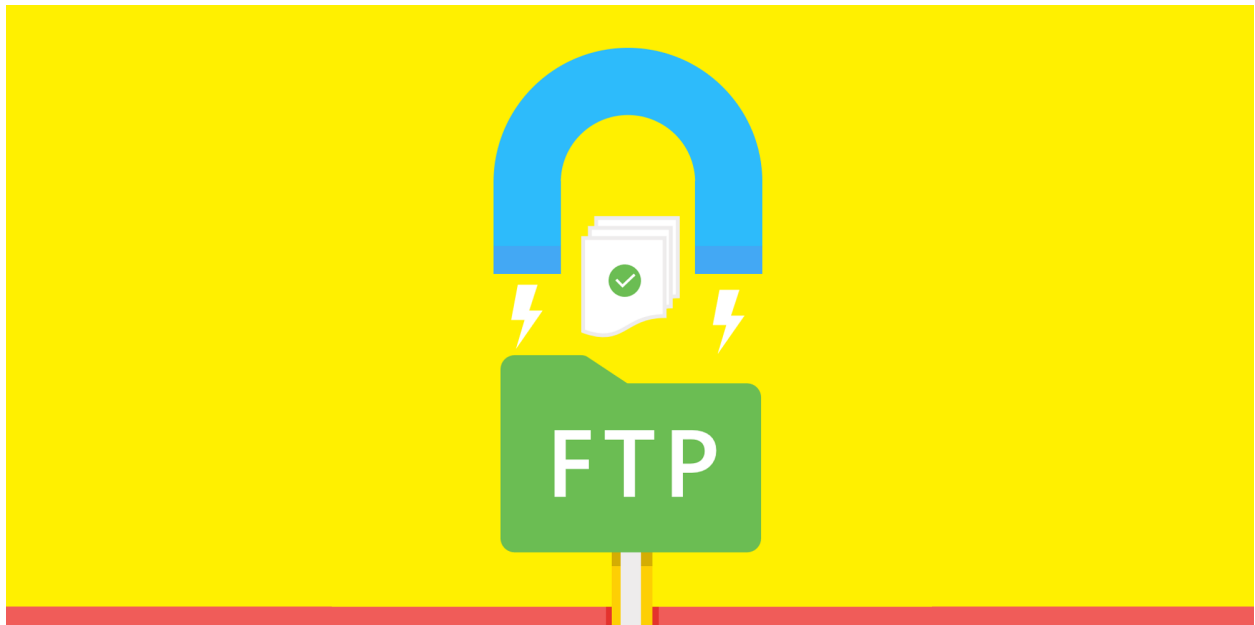cleartax

ClearTax KSA E-Invoicing FTP Magnet

Specification Document and Typical Project Plan

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1. Purpose

The purpose of this document is to provide technical specifications of the functionalities of ClearTax FTP Magnet for reporting signed simplified tax invoices in xml format under KSA E-Invoicing.

2. Overview

2.1 Use cases

ClearTax E-Invoicing has state-of-the-art restful APIs that can be used to send data from ERP / billing system to ClearTax. The Taxpayer can consume these APIs and push data to ClearTax on a real-time or scheduled basis. In some cases, Taxpayer may not be able to consume the APIs directly in the ERP / billing system for reasons like:

1. Integration required with multiple different systems/ERPs
2. Approval process complex/not received for direct API integration
3. Longer project timeline
4. Unavailability of an in-house IT team to customize the ERP
5. The high cost of development

In that case, the Taxpayer may want to go for a simpler solution with FTP mode. As a business, Taxpayer wants to extract input data of sales documents from Taxpayer's ERP/ billing systems to FTP so that ClearTax can generate e-Invoice for those documents. Further, Taxpayer also wants to read output data received from ClearTax back from FTP so that they can save the QR Code and ZATCA compliant XML back in Taxpayer's ERP / billing systems.

As the FTP integration approach works on a scheduler, the taxpayer should expect a few minutes of lag from the time a new input file is created in the FTP folder to the time the output file is received back in the FTP folder.

In case the taxpayer needs real time output, please choose the API integration approach.

2.2 FTP Magnet Solution

FTP Magnet is a middleware application between Taxpayer's FTP server and the ClearTax E-Invoicing application. The Taxpayer can export data from Taxpayer's ERP to Taxpayer's own FTP server. As a part of onboarding, ClearTax configures its FTP Magnet to connect to Taxpayer's FTP server. The FTP Magnet reads the input files from Taxpayer's FTP server and uploads them to the

ClearTax e-Invoicing application. Once the uploaded files are processed, it writes the response back to Taxpayer's FTP server.

2.3 Key functionalities

Multi-VAT, Multi-Branch Data Processing - The Taxpayer can upload documents to multiple VATs and Branches on ClearTax platform with the same configuration using a defined directory structure and file naming conventions.

Customized Invoice Input Data Template - The FTP Magnet is compatible with the Standard ClearTax e-Invoicing template as well as customized invoice data upload templates. Customized invoice data upload templates will be set up and mapped to the Taxpayer's user account by ClearTax.

Failure Notification - In case of failure of upload of any file to ClearTax, the Taxpayer will receive a failure notification email in a predefined mailbox.

3. Onboarding requirements

To use ClearTax FTP Magnet, ClearTax will require the following prerequisites.

3.1 ClearTax Account

Before Taxpayer begins, the Taxpayer needs a ClearTax **Sandbox/ Production** account to sign up for ClearTax FTP Magnet. If the Taxpayer doesn't have a ClearTax account go to the below URL and sign up with their official email ID:

- Sandbox - https://app-sandbox.cleartax.com/middle-east/ksa/einvoicing/
- Production - https://app.cleartax.com/middle-east/ksa/einvoicing

For more information, please reach out to the Customer Success Manager or write to us at ksa-support@cleartax.in.

3.2 Taxpayer's FTP Server Configuration

The FTP Magnet is compatible with SFTP, FTPS and FTP protocols. Using the Taxpayer's FTP server configuration details, ClearTax FTP Magnet connects to the Taxpayer's FTP server.
- The Taxpayer needs to share the following with ClearTax.
    - FTP protocol (FTP, FTPS, SFTP)
    - host/IP

      ○ Port
- In order to ensure that connections can be established at all times, it is recommended to keep the server live always and remove any restrictions on the number of connections from the same client, if any.

3.3 FTP User Credentials

To access the files in the Taxpayer's FTP server, ClearTax needs the FTP user credentials. For the purpose of this integration,

- Taxpayer needs to create a new user and share the username and password with ClearTax. SSH keys to login are not supported.
- The new user created must have permissions on the designated directory and subdirectories recursively to:
  - List files and directories
  - Create files and directories
  - Read files
  - Write files
  - Rename files

3.4 FTP Directory Structure

ClearTax will use the directories in the Taxpayer's FTP server as a data source to the FTP Magnet as well as a way to maintain states of successful and unsuccessful uploads. Here's the required directory structure:

```
CLEARTAX/
├── GENERATE_EINV
      ├── INPUT
            ├── INIT
            ├── PICKED
            ├── PROCESSED
            ├── FAILED
            ├── RETRY
      ├── OUTPUT
            ├── GENERATION_ERROR
            ├── UPLOAD_ERROR
            ├── SUCCESS
```

The directory "GENERATE_EINV" and the subdirectories within it will be used for generation of e-Invoice. More information on these directories and how it will be used is available in the "Approach" section below.

Note - The directory names and structure are subject to change. In case of any changes in directory names, ClearTax will provide prior intimation.

3.5 File Naming Convention

ClearTax allows a user to manage multiple VATs and Branches in the same user account. At the time of uploading files to ClearTax, it is important to specify which VAT or Branch that particular document belongs to. For this purpose, ClearTax has defined a specific file naming convention.

ClearTax has different input templates for different document types. The template name helps us to identify the data type of the documents. While exporting data from the ERP / Billing system to the Taxpayer's FTP server, Taxpayer needs to follow the below file naming convention. This is very crucial as the identity of the VAT and Branch depends on the filename.

VAT level file:
<SELLER VAT-NUMBER>_<DOCUMENT-DATE>T<DOCUMENT-TIME>_<IRN>.<XML>
Example:
312345678900003_20221124T204820_EINV16052019015401.xml

Branch level file:
<SELLER VAT-NUMBER>_<STORENAME>_<DOCUMENT-DATE>T<DOCUMENT-TIME>_<IRN>.<XML>
Example:
312345678900003_RIYADH_20221124T204820_EINV16052019015401.xml

Note:
1. ClearTax supports only XML formats for input
2. Date should be in the format specified by ZATCA i.e. YYYYMMDD. Date should not contain any hyphens, slashes or any other characters
3. Time should be in the format specified by ZATCA i.e. HHMMSS. Time should not contain any hyphens, slashes or any other characters
4. Avoid spaces or invisible characters in the filename. Instead use a hyphen "-".
5. Invoice number with all non-alphanumeric characters replaced by a dash
6. ClearTax recommends using underscore "_" as a separator in the file name. Please make sure not to use this character in the branch name or the template name

Note - The file naming convention is subject to change. In case of any changes in names, ClearTax will provide prior intimation.

3.6 Notification Email ID

- While trying to upload a file to ClearTax, if the FTP Magnet runs into an error or exception, it will send out a failure notification to the email address provided.
- This can be helpful for the Taxpayer to check the file from the corresponding status directory, review the data, and upload it again. The Taxpayer needs to share an email address to receive such notifications.
- All notifications related to the configured implementation will go to the same mailbox. In case multiple people need to receive, ClearTax recommends using a group email ID for notifications and adding all concerned people under that group.
- Sample email snapshot:
  - Subject line - *ClearTax EINV FTP SANDBOX - Validation Failed for 312345678900003_E-INVOICE-GCC-Standard_19052022105568.csv*

```
Hello,
The file 312345678900003_E-INVOICE GCC STANDARD_19052022105568.csv was uploaded to your ClearTax EINV SANDBOX account (clear-
invoicing@cleartax.in) but there were a few data validation errors. Please review the error file generated in your FTP directory
/ct-integrations-sftp/demo/STAGING/ftpjava/GENERATE_INVOICE/OUTPUT/UPLOAD_ERROR and try uploading again after fixing the data
issue

For more help contact integrations-support@cleartax.in
Thank you.
ClearTax Integrations
```

4. Approach

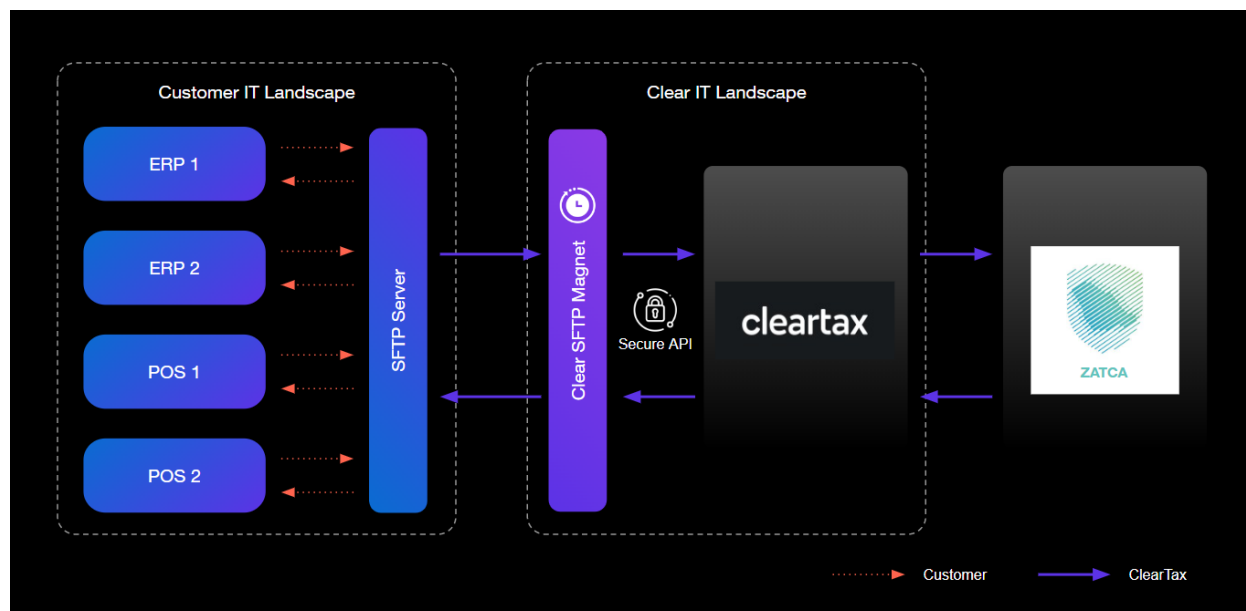Approach 1: FTP mode of integration for low invoice volume

Figure 1. High-level architecture of FTP mode of integration.

Approach 2: High-level architecture of FTP mode of integration for high volume:
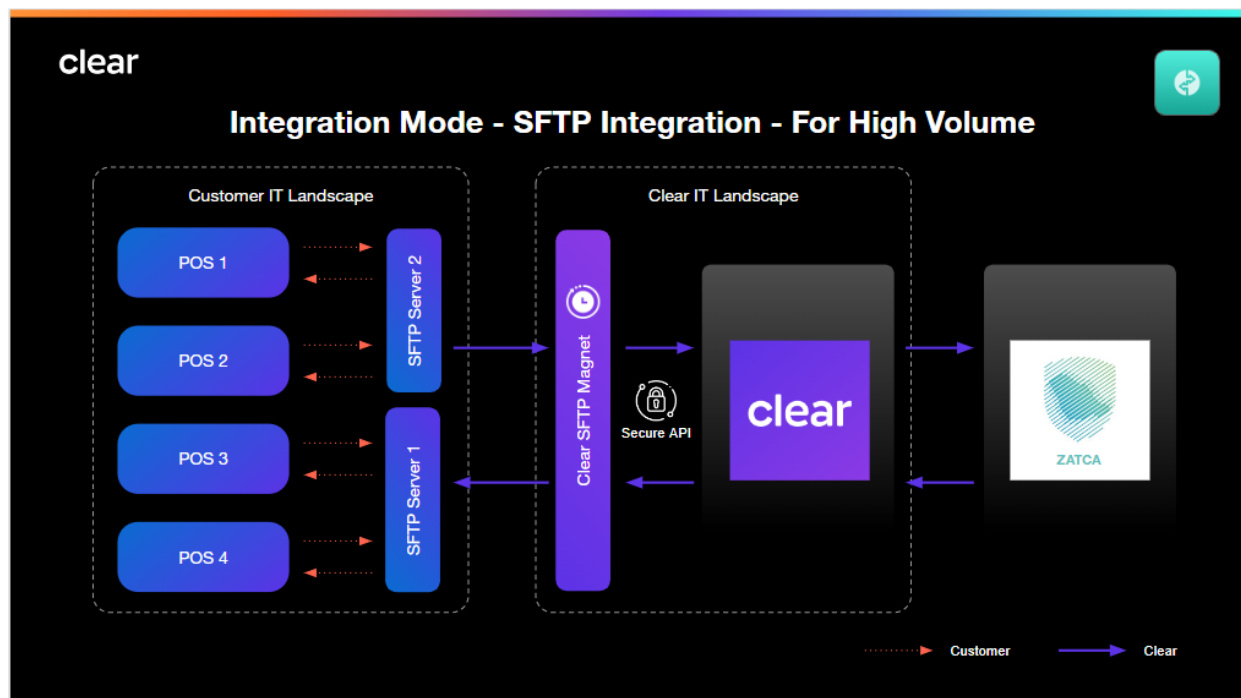

Figure 2. High-level architecture of FTP mode of integration for high volume of invoices.

4.1 Extraction of data from ERP/ Billing System

- Taxpayer will generate e-Invoice in the Taxpayer's POS/ billing system as per ZATCA's XML implementation standard in signed XML format and save it in the "INPUT/INIT" directory of Taxpayer's FTP server. This is the primary source of e-Invoices for ClearTax.
- The format of the file can be XML only
  - For the e-Invoice generated in XML format, the data should be presented in ZATCA specified UBL 2.1 schema. One XML file can contain data of only one invoice.

4.2 Uploading files to ClearTax

- FTP Magnet is configured to keep looking for new files in the "INPUT/INIT" directory.
- Whenever a new file is found, the ClearTax FTP magnet will upload the file to ClearTax Cloud Platform for further processing.
- This is an asynchronous process and the final state of the upload will be available after the process is completed.
- Hence, the uploaded documents may remain in interim states until they reach the final states (Success/Failure).
- Once a file upload is initiated, the file will be automatically moved from the "INPUT/INIT" directory to the "INPUT/PICKED" directory.

- The FTP Magnet will use these subdirectories to check the processing status. As a user, there is no need to take any action on the files in interim state directories.
- **Exception Handling** :
  - If the file upload gets aborted due to any reasons (E.g., corrupted input file, wrong filename, wrong configuration, authorization failure, network error), the FTP Magnet moves the input file to the "INPUT/FAILED" subdirectory. This file will be in the same name and extension as the input file.
  - The Taxpayer would also receive a failure notification over email.
  - **User action needed :** Since ClearTax could not read the input file, ClearTax would not be able to provide an exact reason for failure. Once the failure notification is received, the user should
    - i. Check the input file and manually rectify the error.
    - ii. Save this new input file with a different filename in "INPUT/INIT'' directory for reprocessing. The timestamp field in the filename can be changed to save it with a different name.
    - iii. If the user sends a rectified file with the same filename within one hour (which was provided in the original file) then ClearTax will not process this file. This is a validation constraint added to avoid duplication of invoices.

4.3 Parsing uploaded files

- Once the upload succeeds, the uploaded file will be parsed in ClearTax and saved in ClearTax as input data. The FTP Magnet moves the input file to the "INPUT/PROCESSED" subdirectory. This file will be in the same name and extension as the input file.
- Since the input files are signed xmls the invoices will not be validated for data errors.
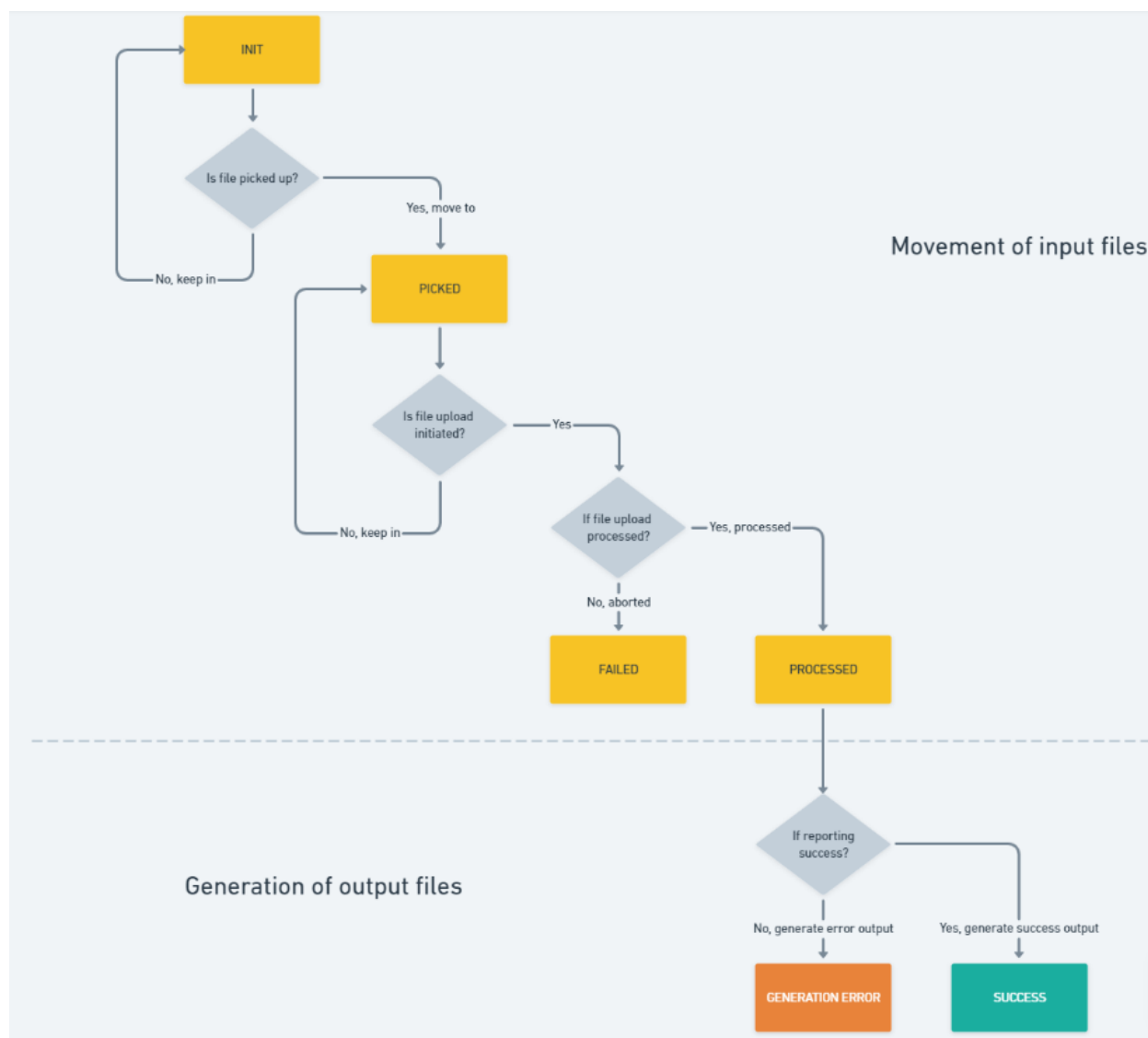
4.4 Processing parsed documents

- Once parsing succeeds, the successfully parsed documents will be submitted to ZATCA for reporting.
- For all the documents which are approved by ZATCA, the FTP Magnet creates and saves a single output file in csv format in the "OUTPUT/SUCCESS" subdirectory. One csv file is created against each invoice xml received in the input.
- This output file will contain some basic fields in CSV format and will have an additional column for InvoiceStatus received from the ZATCA etc. To download a sample success file template, go to the documentation page. The output file will also contain warning messages for those invoices where the status returned by ZATCA is 'Accepted with Warnings'

- **Exception Handling**:
    - For all the documents which are not approved by ZATCA, the FTP Magnet creates and saves an error file for each document in the "OUTPUT/GENERATION_ERROR" subdirectory.
    - This file will contain some basic fields in CSV format and will have additional columns in the end for "Errors" and "InvoiceStatus" as per ZATCA. To download a sample processed failure error template, go to the documentation page.
    - **User action needed :**
        - Check the output file in the "OUTPUT/GENERATION_ERROR" directory for "InvoiceStatus" column.
        - "InvoiceStatus" can have 3 values (a) NOT_REPORTED (b) FAILED
        - If "InvoiceStatus" = NOT_REPORTED then
            - Check the output file for the "Error" column for a detailed error description.
            - Make corrections to the invoice as per the error and save this new input file with a different filename in "INPUT/INIT'' directory for reprocessing. The timestamp field in the filename can be changed to save it with a different name.
            - If the user sends a rectified file with the same filename (which was provided in the original file) then ClearTax will not process this file for one hour from the time the first file was added. This is a validation constraint added to avoid duplication of invoices.
            - The InvoiceStatus can be captured in the db and correction can be attempted from ClearTax web portal or user ERP also.
        - "InvoiceStatus" = FAILED means ClearTax has shared data with ZATCA but did not receive any response from ZATCA (even after multiple automatic retries from ClearTax). In such scenario
            - ClearTax will continue to retry this document till the window of reporting of 24 hours is not over. If the invoice is approved/not approved by ZATCA then the "InvoiceStatus" will be updated accordingly. Otherwise the document will be marked as 'FAILED' if ZATCA systems are continuously non-responsive for more than 24 hours

4.5 Writing response back to ERP

- The Taxpayer will read the file from the "OUTPUT" subdirectories and update the generated InvoiceStatus and other metadata back in the Taxpayer's ERP/ billing system.
- Please note that the responsibility of ClearTax will end once the response files are updated in the output FTP folder.

- The Taxpayer can use this information from output files to update the status of the document and take further actions as necessary.

4.6 Archiving files

Context on duplicate file handling

In an FTP server's file system, there are 2 types of configurations for managing duplicate files (files with the same name as an existing one in a specific directory):

1. **Overwrite Mode**: In this configuration, when a duplicate file is added, the new file with the same name as an existing one in the directory will overwrite the existing file.

2. **Non-Overwrite Mode**: In this configuration, adding a duplicate file with the same name as an existing one in the directory is not allowed. File writes with identical filenames are prohibited.

Maintenance of FTP folders

The maintenance of FTP folder for both of these types would be similar as below:

1. FAILED - In case any file is failed, then it could be due to file format or file naming convention issues. Make necessary corrections, and move the corrected file to the "INIT" folder for processing.

2. PROCESSED - For all files which have a corresponding output file in GENERATION_SUCCESS, archive the input files from the PROCESSED folder as they have been already processed and generated successfully. In case a file does not have a corresponding output file in the GENERATION_SUCCESS folder, then probably it has an upload error or generation error. In such a case, correct the error and retry as per below steps.

3. UPLOAD ERROR - To resolve an upload error, identify the error message, locate the corresponding XML file in the "PROCESSED" folder, make necessary corrections, and move the corrected file to the "INIT" folder for processing. Once the action is taken, archive the files from the UPLOAD_ERROR folder.

4. GENERATION_ERROR - To resolve a generation error, identify the error message, locate the corresponding XML file in the "PROCESSED" folder, make necessary corrections, and move

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the corrected file to the "INIT" folder for processing. Once the action is taken, archive the files from the GENERATION_ERROR folder.

5. GENERATION_SUCCESS - Archive all files older than T-2 days.

6. INIT - This is an initial state folder. If files are stuck here, it could be due to FTP server problems or duplicates in subsequent folders (PICKED). To prevent issues with duplicate files or invoices, it is crucial to avoid adding them in the first place. If duplicate files are inadvertently added and the FTP server doesn't support overwriting, they may become stuck in the same folder or subsequent folders. This can result in unnecessary retries, potentially delaying the processing of new files. In such cases, it's advisable to check for any files that are stuck, identify if they are duplicates, and remove them as needed to maintain a clean and efficient file system. However, if overwriting is allowed, attempting to add a duplicate document will trigger a duplicate document error.

7. PICKED - This is an intermediate state folder. If files are stuck here, it could be due to FTP server problems or duplicates in subsequent folders (PROCESSING). Check the "PROCESSED" folder to determine if these files have been processed. If processed, archive them. If not, move them back to the "INIT" directory. Unprocessed files will continue processing, while processed ones will trigger a duplicate error.

8. PROCESSING - This is an intermediate state folder. If files are stuck here, it could be due to FTP server problems or duplicates in subsequent folders (PROCESSED, FAILED). Check the "PROCESSED" and "FAILED" folder to determine if these files have been processed. If processed, archive them. If not, move them back to the "INIT" directory. Unprocessed files will continue processing, while processed ones will trigger a duplicate error.

5. System Configuration

The Taxpayer's FTP server will have to be hosted in the Taxpayer's environment.

3. **Storage** - This depends on the number of files and the size of Taxpayer's input data extracted from the ERP/ billing system. It is recommended that multiple root folders are created at the taxpayer side in case of high volumes so that parallel processing can be achieved. This may also require separate user access or user credentials for concurrent connections.
4. **Processing** - There is no requirement of processing capacity.

6. Activities and Timeline

Sl	Particulars	Responsible	Best Case Efforts Estimation	Dependencies
1	Commissioning FTP Server with the defined directory structure and configuring the FTP user with required permissions.	Taxpayer	Minimum 2 days	No dependencies on ClearTax
2	Extracting data from ERP / Billing system to the FTP server in the ClearTax template and defined naming convention.	Taxpayer	Minimum 7 days	#1
3	Sharing prerequisites with ClearTax: 1. ClearTax Account details. 2. FTP Server Configuration. 3. FTP User Credentials. 4. Notification Email ID.	Taxpayer	Minimum 3 days	#1
4	Configuring FTP Magnet	ClearTax	Minimum 2 days	#3
5	UAT	Taxpayer	Minimum 7 days	#4
6	Go-live	Taxpayer	Minimum 2 days	#5

7. RAID Log

7.1 Risks

1. Any delays in the development effort from Taxpayer team may impact the project implementation timelines
2. No other known risks

7.2 Assumptions

1. The ClearTax account used for integration with Taxpayer's FTP server has an Account Admin role so that all communication required for upload and generation are accessible.
2. The files in the "INPUT/INIT" directory are in ZATCA specified UBL 2.1 xml schema.
3. Every input file has a unique filename. Taxpayers can change filenames using the timestamp field in filename.
4. There are no duplicate VATs in the same user account on ClearTax platform. In case there are duplicates, then the files will be uploaded to one of the entities based on the response sequence.

7.3 Issues

1. No issues are known as of date.

7.4 Dependencies

1. The integration can be started once the onboarding prerequisites mentioned in this document are provided to ClearTax.

8. FAQ

1. **Where can the Taxpayer find sample Input and Output files from ClearTax?**

   - **Input File :** This is the file extracted from Taxpayer's ERP / Billing system. Please download sample files here - https://docs.cleartax.in/cleartax-docs/e-invoicing-ksa-api/e-invoicing-ksa-api-reference/generating-e-invoice/send-signed-e-invoice-xml-to-zatca#1.7-sample-request

   - **Output File**

     - GENERATION_ERROR - [KSA_Einv_FTP_Generation Error](#)

     - SUCCESS - [KSA_Einv_FTP_Generation Success](#)

2. **What is the taxpayer expected to do after receiving a successful Output File from ClearTax?**

   Once the data has been processed, the Taxpayer can pick up data in a CSV file (output file from ClearTax) from the taxpayer FTP server and consume it as per the invoice status of the invoice. Taxpayer should design a utility on Taxpayer side to perform following steps :

   - Based on status, **extract following information** from the output file and update these fields against respective invoice in ERP or Billing system.
     - InvoiceStatus
     - ErrorList
     - WarningList
     - Message

   - This is to ensure that the data in the billing system and ClearTax is in sync. Also, if the status of invoice is failed then right corrective actions can be taken by the user.

   - **Generation of PDF A/3 (XML embedded) files**

     - Customize the ERP or billing system's internal invoice layout to PDF A/3 (Xml embedded) format

3. **What is the taxpayer expected to do after receiving a failed/ error from ClearTax?**

   - Taxpayer should read the output CSV file from the taxpayer SFTP server
   - Refer to following information from the output file to understand the reason for failure.
     - InvoiceStatus

- ○ ErrorList
- ○ WarningList
- ○ Message

- **In order to fix the failed invoices**
  1. Canceling original invoice in ERP:
     a. Taxpayer may issue a credit note to nullify this invoice in the source ERP/ billing system (based on accounting processes)
     b. **In case Credit note is issued for internal accounting purpose, it should not be shared with ZATCA**
  2. Issue new invoice :
     a. Taxpayers should understand the list of error messages provided in the Output file
     b. The Taxpayer should issue a new invoice with all errors fixed and share this invoice with ClearTax. Please refer to "Exception Handling" flows as the detailed document above.

9. Need more help?

Write to integrations-support@cleartax.in or ksa-support@cleartax.in

1. All files in PICKED and Processing which are more than 1 day old then move it to INIT
   a. Try this twice and if it is still not moving then delete the files as they are duplicate
2. Another new folder in INIT side called NOT Reported which will have the copy of the xmls that are unsuccessful so that taxpayer can pick them and retry from their end
   a. In case the invoice is already reported through retries from E-Inv side then it will move to processed and no double reporting

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