EnableTRANS White Paper – 0.7.17 - March 15, 2023

EnableTRANS – Introduction

EnableTRANS is an Application Automation Framework for ETL (Extract, Transform, Load) and Workflow Execution and is the underlying engine for all automated processing within Enablecore's 'go-forward' solutions and custom development projects.

While EnableTRANS is a standalone software framework providing traditional ETL functionality, it also offers a high degree of integration with both Nexus and Sage 300.

EnableTRANS does not offer a design UI but is provided as pre-built automations containing highly customizable script and settings files which can be mounted in Sage, Nexus and/or Windows Services.

Existing Nexus clients have EnableTRANS already installed, providing the following features:

- Extraction of filtered Sage 300 tables to provide for Lookup Databases for Nexus Client Portable Apps.
- Syncing data between External Systems & Sage 300.
- On-boarding of CSV / TSV / XML / xslx Files to create Nexus Queue Transactions for Import to Sage 300 or SQL.
- Off-boarding and templating of Sage 300 transactions to local network or EDI/Ecommerce/3PL Partners.
- Merge and validation of Physical Inventory Counts to provide better reconciliation and validation.
- Merge of PO Receipts to provide for Import of multi-PO Receipts for better application of additional charges.
- Automated print of barcoded labels & Custom reporting, etc.

EnableTRANS – Technical Summary

EnableTRANS is a .NET C# script framework using highly declarative assets to achieve workflow automations. EnableTRANS caches dynamically compiled 'workflow packages' providing the speed of compiled programs and the declarative flexibility of scripts.

EnableTRANS core functionality includes:

- SQL Adaptors for extraction, insert & update,
- read/write of CSV/TSV flat, XML and XSLX files,
- support for File, FTP, FTP/S, SFTP endpoints with certificate and key-based authentication.
- expression and query-driven data transformation and validation,
- automated report & label generation and delivery,
- automated generation and send of html-templated transactional emails,
- broad interjection of client-driven customizations,
- complimented with logging and execution via fluent-scheduled Windows Services.

EnableTRANS is natively Nexus 'aware' and offers an optional 'Sage 300 Adaptor' for Sage 300 UI Automation, and both traditional COM and .NET Sage 300 SDK integration.

Any customizations delivered via the EnableTRANS framework leverage common pre-built adaptors, execution, logging, and scheduling components to rapidly provision a solution with advanced functionality.

> *EnableTRANS is supplied as a no-cost component of the Nexus Data Collection Suite. Non-Nexus Clients can purchase EnableTRANS separately. We welcome inquiries on any other integration, data transformation or managed file exchange projects.*

EnableTRANS – Sage 300 Integration

EnableTRANS Integration with the Nexus Host Interfaces

The Nexus Host Interfaces for Sage 300 have integrated EnableTRANS as the supported Export / Import engine, replacing the legacy Sage SDK UI-based Export / Imports. Users can still use the familiar Nexus Host Interface Export/Import panels, but the execution occurs external to Sage via EnableTRANS.

EnableTRANS-based Nexus Exports & Imports are highly declarative and customizable automations allowing for;

- accommodation for larger operations with larger databases to minimize system impacts during exports,
- more detailed filters and expressions during transaction export,
- workflows running as automated windows services,
- custom data exchanges between Sage 300 and external applications/databases and trading partners, and,
- relief for users of the manual requirement to manage or curate transaction export and / or import.

EnableTRANS - 'Sage300 Adaptor' & Generic Version Support

The EnableTRANS framework allows for 'Adaptors' to be installed to provide for program & execution integration. In the case of Sage 300 'Classic Desktop' installations, the Sage300 Adaptor provides for UI & Session integration.

The latest release of the EnableTRANS '*Sage 300 Adaptor*' provides for a dynamic load of the Sage 300 versions 2017-2023, ensuring a more stable component and integration experience.

Examples of the Sage300 Adaptor in action

Any time an EnableTRANS automation or Nexus Action needs external access to the Sage 300 Desktop UI, Session, View Business Layer, or Report, EnableTRANS leverages its Sage 300 Adaptor.

The EnableTRANS Sage300 Adaptor used to Open a Sage 300 UI from the Q Browser or Nexus Log Browser.

EnableTRANS running a Sage 300 Report externally from the QBrowser

EnableTRANS Workflow Service initiating a Sage Session to update the Nexus Log to Log Email, DataSync or Export

A Workflow Package can engage the Sage 'Views' (Business Layer) to access calcuated fields, not available in SQL.

```
<SetView viewField="OEINVH.INVUNIQ" fromDSField="Header.InvoiceUnique" verify="false"/>
<IfRead view="OEINVH">
    <Then>
        <NewRow table="Payment" add="true" asVariable="Row">
            <SetRowField row="Row" field="InvoiceUnique" fromText="{OEINVH.INVUNIQ}"/>
            <SetRowField row="Row" field="InvoiceNumber" fromText="{OEINVH.INVNUMBER}"/>
            <SetRowField row="Row" field="OrderPaymentTotal" fromText="{OEINVH.ORDPAYTOT}"/>
            <SetRowField row="Row" field="ShipmentPaymentTotal" fromText="{OEINVH.SHIPAYTOT}"/>
            <SetRowField row="Row" field="InvoicePaymentTotal" fromText="{OEINVH.INVPAYMENT}"/>
            <SetRowField row="Row" field="InvoiceAmountDue" fromText="{OEINVH.INVDUE}"/>
            <SetRowField row="Row" field="PaymentDiscount" fromText="{OEINVH.INVPAYDISC}"/>
        </NewRow>
    </Then>
    <Else>
        <UpdateMeter message="RESULT:Skip|{Header.InvoiceNumber}||Error getting invoice payme
        <Log level="Warning" message="Error getting invoice payment totals, cancelling job"/>
        <Exit jobAction="Cancel"/>
```

EnableTRANS Execution

Windows Service

EnableTrans.ETService (Instance: DBExtract) — Extraction of flat files ... EnableTrans.ETService (Instance: ETNexusDirector) — Monitor and Manage ... EnableTrans.ETService (Instance: ExportTxsNXClient) — Export transactions fro... EnableTrans.ETService (Instance: ImportTxsSage300) — Import transactions fr... EnableTrans.ETService (Instance: OnBoardToNX) — OnBoard Transactions ... Running EnableTrans.ETService (Instance: TableSync) — SFOL to Sage 300 Tabl...	*The expected default execution method for any EnableTRANS-based Workflow Package would be primarily via a Windows Service, where a continuous automation is useful.*

QBrowser Nexus Action

Check QTx in Sage Nexus Setup OnBoard ▾ Open ▾ Auto Export ▾ Export ▾ Auto Import OE Collect ▾ Status OE Orders - WooCommerce FTP OE Orders - Local OE Orders - Local xml Sear Priority / Status / Type / QTx / AppTx / C Medium Transformed OE Raw Order 11147 RAWOrderTSVFlat12345 Medium OnBoarded OE Order 11151 1213457 1: Medium OnBoarded OE Order 11150 1213456 1:	*Package execution can also be executed from the QBrowser as a Nexus Action, typically mounted as a toolbar button.* *Some actions may be mounted as a Transaction-specific action and available from a right-click menu selection on the highlighted transaction(s).*

Host Interface Interactive Export / Import

SAMLTD - Order Import File Help Import Profile: OE Order Import (EnableTRANS) - 6.4 - 2021/06/05 Queue Tx# / App Tx# / Description / Ha 11150 1213456 RAWOrderTSVFlat12345-1213456 11151 1213457 RAWOrderTSVFlat12345-1213457 Test Import ☐ Auto Import Transactions?	*For a more user-controlled execution, the user may also engage a workflow package from the Export / Import Host Interface panels. In the case of Exports, the users will have access to criteria that they may want to adjust per execution.*

Execution Methods are not mutually exclusive. While a Windows Service is retrieving Orders from an Ecommerce site hourly, a user could also trigger an on-demand retrieval from a QBrowser Nexus Action.

On-Boarding & Importing Sage 300 Transactions from External File Source

An increasing number of projects are leveraging EnableTRANS capabilities to automate file-based transaction exchanges between disparate systems and channel partners, such as E-Commerce, EDI, Mobile Ordering solutions & 3PL Partners.

As a transactional workflow system, complete with Sage 300 Host Interfaces for Exports & Imports, Nexus allows for the source or target transactions to extend beyond its traditional handheld 'portable applications'.

Retrieve RAW transaction payload / file from local network or remote FTP(S) site (vis Widows Service or Ad hoc)

On-Boarding is the workflow that retrieves the raw transaction file from a local network or remote ftp file source.

EnableTRANS retains encrypted end-points to house credentials.

Like all EnableTRANS workflows, the On-Boarding workflow can be initiated from either a Windows Service running on a schedule, and/or manually triggered from a Nexus Action.

On-Boarding identifies and navigates remote folders via 'Store Protocols' which also express whether to archive or delete at source. Once retrieved, the on-boarded raw file is archived locally as well.

All workflows can have any number of 'instances' that carry different sets of parameters. When exposed as a 'Nexus Action' in the QBrowser, the Nexus Security model allows to restrict the action to a user or group of users, and name each Action separately, based upon its unique intent.

When retrieved into the Nexus Tx Queue, inbound raw transactions are reviewed for duplicates and if found, placed on Hold with an 'Error' reason code.

The On-Boarding workflow has steps to split the raw file payload into individual transactions, validate, augment data from lookups, and finally template child transactions, ready for import.

The illustrated example on the left has generated 2 Orders from the raw inbound flat TSV file.

During the On-Boarding, there are 'Decorator' steps that transform, validate and augment the original 'raw' transaction, logging each and potentially emailing errors. Below are some of the more common examples of the script-based transformations.

```
<ForEachRow table="Detail" filter="[TxNo] = {Header.TxNo}" asVariable="Det
  <OnEach>
    <If isTrue="Option.TranslateCustomerItem">
      <ValidateDefault table="Detail"
                       dbCommand="ICITMC">
        <Defaults>
          <Default from="ItemNo" to="ItemNo"/>
        </Defaults>
        <OnFailure>
          <SetError table="Detail"
                   fromText="No translation for Customer '{Detail.Custome
          <Log level="Warning" message="Order '{DocNumber}': No translatio
               parameters="{Header.DocNumber};{Detail.CustomerCode};{Detai
```

Translation: *of Customer / Vendor / Manufacturers Item Number to I/C Item Number with Unit & Unit Conversion Factor.*

```
<If isTrue="Option.ValidateICITEM">
  <ValidateDefault table="Detail"
                   dbCommand="ICITEM">
    <Defaults>
      <Default from="FmtItemNo" to="FmtItemNo"/>
      <Default from="Description" to="Description"/>
      <Default from="StockUnit" to="OrdUnit"/>
      <Default from="InActive" to="InActive"/>
    </Defaults>
    <OnFailure>
      <SetError table="Detail" field="ItemNo"
               fromText="Order '{DocNumber}': Item '{Detail.ItemNo}' not fou
      <Log level="Warning" message="Order '{DocNumber}': Item '{ItemNo}' not
           parameters="{Header.DocNumber};{Detail.ItemNo}"/>
    </OnFailure>
    <OnSuccess>
      <If isTrue="Detail.InActive">
        <SetError table="Detail" field="InActive"
                 fromText="Order '{DocNumber}': Item '{Detail.ItemNo}' is InA
        <Log level="Warning" message="Order '{DocNumber}': Item '{FmtItemNo}'
             parameters="{Header.DocNumber};{Detail.FmtItemNo}"/>
```

Validate: *translated I/C Item, and retrieve other defaulted fields from that validated record.*

Check if I/C Item is active, and similarity validate if I/C Item is active for a given location.

```
<ForEachRow table="Detail" filter="[TxNo] = {Header.TxNo}" asVariable="D
  <OnEach>
    <If expression='DetailRow["OrdUnit"].ToString().Equals("LB")'>
      <SetRowField row="DetailRow" field="OrdUnit" fromText="KG"/>
    </If>
    <If expression='DetailRow["OrdUnit"].ToString().Equals("CA")'>
      <SetRowField row="DetailRow" field="OrdUnit" fromText="CS"/>
    </If>
```

Expressions: *can be used to evaluate and permit progress of the workflow, and/or as a test to set certain data fields.*

```
<If expression="Primary.HasErrors">
  <ForEachRow table="Header">
    <OnEach>
      <SetRowField table="Header" field="BatchErrors" fromText="tru
    </OnEach>
  </ForEachRow>
```

Success & Errors: *As the script is executed, success and error messages are collected to the log and a batch evaluation is conducted to know if the overall script is successful.*

Status	Hold	Type	QTx	Description
OnBoarded		OE Order	11158	RAWOrderTSVFlat12345-1213456
OnBoarded	Error	OE Order	11159	RAWOrderTSVFlat12345-1213457
Transformed		OE Raw Order	11147	RAWOrderTSVFlat12345

Error Marking*: If there are errors, the Transaction is marked in Error in the QBrowser, and notify, if the log is setup to send an email notification.*

Import Options: Each import will have a series of Options that govern the EnableTRANS-based import workflow.

- What Transaction (Tx) Type in Queue to import?
- What Tx Type in Queue to set after import?
- Use Sage 300 or Source Transaction #?
- Deposit Source Transaction # or other into Ref?
- Manual and Auto Processing Action Save | Post?
- Use Session or System Date for Save | Post?
- Insert to Nexus Log as Reviewed?
- Print a report upon Import?
- Repeat attempt to Save | Post? # of retries?
- Credit Override Credentials?
- Log Level to report?
- EnableTRANS workflow instance to use?

Any number of customizations can be made to these options or the underlying EnableTRANS Instance.

Import Execution: Any part of the On-Boarding and subsequent Import workflow can be automated, either completely or partially to achieve your organizations best operational workflow.

Using the service schedule, the automation may also be restricted to only running during certain hours, and/or only on certain days.

You may prefer to run the On-Boarding as a service, but manually trigger the import as a batch, or individually.

Import Logging

All Imports to Sage 300 are logged to the Nexus Log. Other workflows such as Exports, Emails or Syncs can optionally be logged. The Log will advise whether the workflow was successful or resulted in Errors / Warnings. The Nexus Log is highly useful where transactions are automatically On-Boarded and Imported and users leverage the 'Reviewed' flag.

Reviewed	Processed	Log Date	Log Time	Q Type	AppTx	Method	Action	Module	ERP Type	Document	Rev	QTx	Warn...	Errors	Criticals	User ID
No	Saved	7/27/2021	10:04:52	OE Order	1213456	Manual	Import	OE	ORDER	ORD0000122	0	11158	0	0	0	ADMIN
Auto	Sent	7/20/2021	16:51:54	ORDEML1	ORD0000114	Manual	Email	OE	ORDER	ORD0000114	0		0	0	0	ADMIN
Auto	No	7/20/2021	16:10:48	ORDEML1	ORD0000114	Test	Email	OE	ORDER	ORD0000114	0		0	0	0	ADMIN
Auto	Updated	7/13/2021	11:23:19			Auto	Sync	IC	ICIOTH		0		0	0	0	ADMIN
Auto	Updated	7/13/2021	11:23:18			Auto	Sync	IC	ICUNIT		0		0	0	0	ADMIN
No	No	7/12/2021	10:10:12	OE Shipm...	ORD0000112-1	Manual	Import				0	11107	2	0	0	ADMIN
No	No	7/12/2021	10:09:17	OE Shipm...	ORD0000112-1	Manual	Import				0	11107	2	0	0	ADMIN

EnableTRANS-based, Transactional Html-templated Emails

Since their initial introduction, ***OE Order Confirmations, Shipment Notices, Invoice Delivery and Order Action*** Email Workflows continue to advance providing greater functionality, provide easier deployment and allow client customizations.

All Email workflows can optionally include a Sage Report PDF and transactional html content, and can be run from the Export panels in the Host Interfaces, a Nexus Action button in the QBrowser, or as a Windows Service.

Full access and usage of to Customer Bill To, Ship To and Multi-Contact Email Addresses

Broader support for source of Tracking Number(s)

All core OE transactions, (Orders / Shipments & Invoices), can house Tracking Numbers on the Header, Detail and in some cases the Misc Charge Comments.

All of these sources are now supported.

Streamlined Carrier lookups for building dynamic Carrier-specific Package Tracking URL

Emailer 'Options', provide a Sage optional field for use as a lookup between the Sage 300 Ship Via code and Carrier.

*** While your Ship Via may express different classes of carrier service, the carrier tracking URL tends to be generic across service levels and the optional field lookup translation facilitates to flatten this relationship.*

As illustrated below, the client can maintain what carriers are going to be used to produce a tracking link, and the Emailer package has an underlying URL template resource which can be augmented or customized for additional carriers.

```
<CarrierToUrlTemplate>
··<Carrier>FEDEX</Carrier>
··<TrackingURLTemplate>http://www.fedex.com/Tracking?track
</CarrierToUrlTemplate>
<CarrierToUrlTemplate>
··<Carrier>UPS</Carrier>
··<TrackingURLTemplate>http://wwwapps.ups.com/WebTracking/
</CarrierToUrlTemplate>
<CarrierToUrlTemplate>
·Carrier>USPS</Carrier>
··<TrackingURLTemplate>https://tools.usps.com/go/TrackConf
</CarrierToUrlTemplate>
```

Optionally include Sales Reps, as 'Cc' or 'Bcc'

It's often desirable to include the Sales Rep(s) for OE-related transactional emails. EnableTRANS email workflows now support inclusion of either the first, or all Sales Reps on a specific transaction as a 'Cc' or 'Bcc'.

The Emailer Package can include the Sales Rep, and the Options provide for the identification of the Sage 300 Optional Field to be used for the Sales Reps email, as per below.

As Sage 300 does not provide for an email field for the Sales Rep, use of an optional table provides the email address for use in the email workflow.

Result Example:

Test mode for Emailer runs

Each Emailer Package provides a 'Production Mode' option that can restrict execution to 'Test Runs' only, or 'Production'.
When in Production mode, optional Test runs from the UI are still available, but execution is 'production' by default.

Each emailer package requires a 'TEST To Email Address' if operating in 'Test' mode.

When in 'Test' mode, the email will execute but redirect the email to the provided 'TEST To Email Address', and include a 'Test Data Block' that will confirm proper evaluation of intended recipients, subject, salutation, body data, etc.

Test runs will also be logged and can be used to validate duplicate resends will be blocked.

Processed	Log Date	Log Time	Q Type	AppTx	Method	Action	Module	ERP Type	Document
Sent	7/20/2021	16:12:23	ORDEML1	ORD0000114	Manual	Email	OE	ORDER	ORD0000114
No	7/20/2021	16:10:48	ORDEML1	ORD0000114	Test	Email	OE	ORDER	ORD0000114

Once in Production, the Test method can still be used from the Host Interface export panel to occasionally test before sending.

Execution Guards to protect against sending errant emails and providing throttle for server

(NEW) *Transactional emails tend to be triggered by an event such as a Post. Post, update and/or system audit dates can provide for a 'minimum date floor' to evaluate against on whether to send and email. These dates values may / may not be available for all transaction types.*

The 'Max Emails to Process per Batch' provides a throttle on the number of emails being sent from your email server, thus protecting against getting blocked by a provider.

The 'Cancel Batch if Emails Exceeds' provides a number that will cancel the Batch from running if the number of email jobs to be sent is beyond your expectations and probably indicates a problem with the criteria.

In both '0' will indicate that there is no limit.

Combined Access to SQL Query, Transformation & Sage 300 Views for Template Data

'Most' Header & Detail data is available via the SQL queries provided in the Emailer Package, and is extremely fast as the workflow is executed externally from Sage, even though you may have triggerred the emailer from the Host Interface.

In addition to SQL, emailers workflows have access to a transformation steps that can modify data based on rules or expressions, and/or augment data from other external sources.

Lastly, while most data is available via SQL, some calculated data is only or more readily available via the Sage 300 Views (Business Logic Layer) and the Transformation steps have the ability to query the Sage Views and augment specific View Field data.

Sat 18/07/2020 4:48 PM
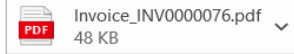
Enablecore Test <Invoices@enablecore.
Your Enablecore Invoice # INV0000076

To   Mr. Ronald Black
Cc   Enablecore Admin

📄 Invoice_INV0000076.pdf
PDF 48 KB   ⌄

Hello Mr. Black,

Thank you, your order has been shipped. Please see the attached invoice.

Order   **ORD000000000083**
Invoice **INV0000076**

Item	Description	Qty	Unit
A1-400/0	Desk Note Book	2	Ea.

Track Your Shipment by clicking on a tracking number below:

CROSS-COUNTRY TRUCKING LINES   123456789

Thank You! Enablecore Technologies Inc.

enable.core

↩ Reply   ↩ Reply All   → Forward

D   dkellock@enablecore.com   support@enablecore.com
    TEST Order ORD0000113

Sold To   **Ship To**
Mr. Ronald Black   Home office
2820 Wabash Road   12 Elegant Drive
Los Angeles, CA   Los Angeles, CA
USA 90048   USA 90055

Contact Mr. Black 2135550274

Item	Description	Qty Ord	Shipped	Outstanding	Unit	Price	Extd
A1-103/0	Fluorescent Desk Lamp	2	0	2	Ea.	$59.99	$119.98
A1-105/0	13W Mini Fluorescent Bulb	1	0	1	Ea.	$7.10	$7.10
						Sub Total	$127.08
						Total Sales Tax	$10.48
					STATE	$7.94	
					COUNTY	$2.54	
					Total Amount	$137.56	