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IBM WebSphere® Data Interchange V3.3

Environment Setup

This presentation reviews the Environment setup for IBM WebSphere Data Interchange.

Agenda

- Development Environment
  - ▸ Supported message syntax and data dictionaries
  - ▸ WDI Client

- Runtime Environment
  - ▸ WDI Server

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The presentation will describe the development and runtime environments used with WebSphere Data Interchange (WDI).

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Section

Development Environment

Environment Setup

Support Syntaxes and Message Dictionaries

- EDI Standards
  - ▶ U.S. – X12
  - ▶ International – EDIFACT, ODETTE, EANCOM97, SAANA
  - ▶ Industry subsets for example UCS, VICS, RAIL,
  - ▶ HIPAA and ANSI X12 embedded HL7
- XML formats
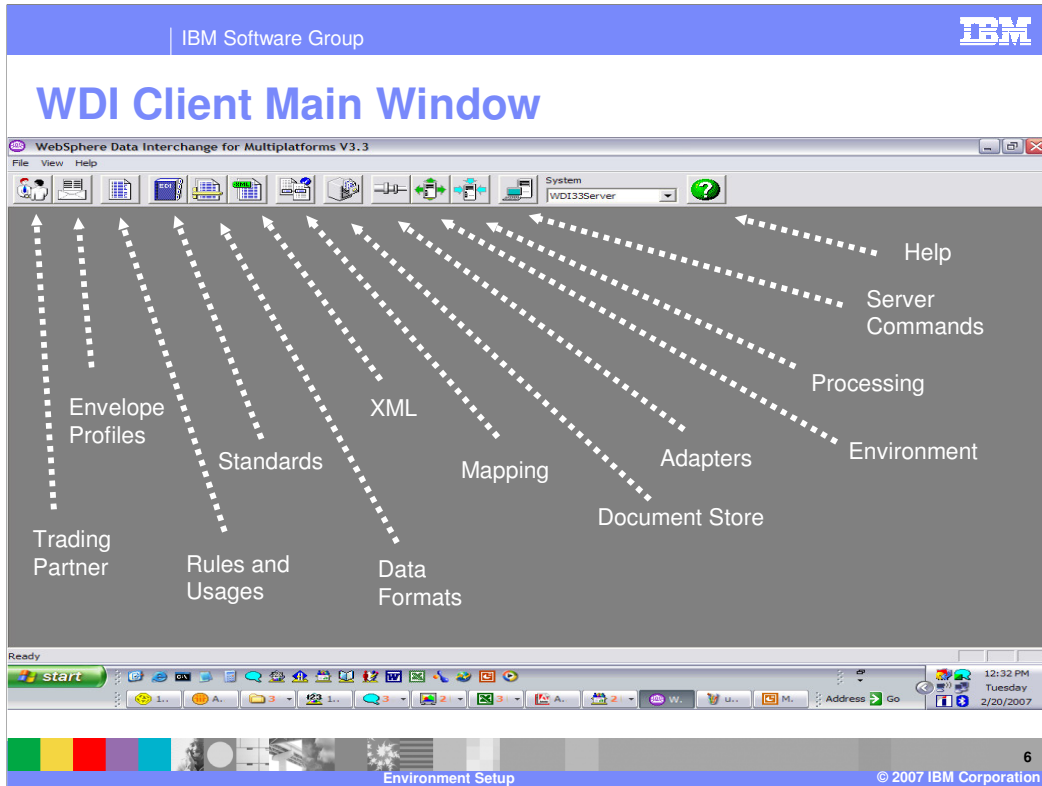 - ▶ Support for storing, displaying and mapping DTDs and Schemas

WDI supports a variety of electronic data interchange (EDI) and Industry standards for exchanging data between businesses including XML DTDs and Schemas.

Support Syntaxes and Message Dictionaries

- Record Oriented Data
  - ▶ SAP R/3 ™ certified
    - v3.1h, IDOC rel 3
    - v4.0b, IDOC rel 4
  - ▶ Fixed length field records
    - COBOL, C, and other structures
 - ▶ Comma separated value data

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Record Oriented data is data flowing to and from your application that is in flat file record structures. WDI supports Fixed length records as well as comma separated records.

WDI Client Main Window

WebSphere Data Interchange for Multiplatforms V3.3

File View Help

System WDI33Server

Help

Server Commands

Processing

Environment

Envelope Profiles

XML

Standards

Mapping

Adapters

Trading Partner

Rules and Usages

Data Formats

Document Store

Ready

Environment Setup

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This is the main window of WDI Client. This is a standard Windows screen configuration with the addition of the WDI navigation bar.

List of systems - databases accessible

System editor

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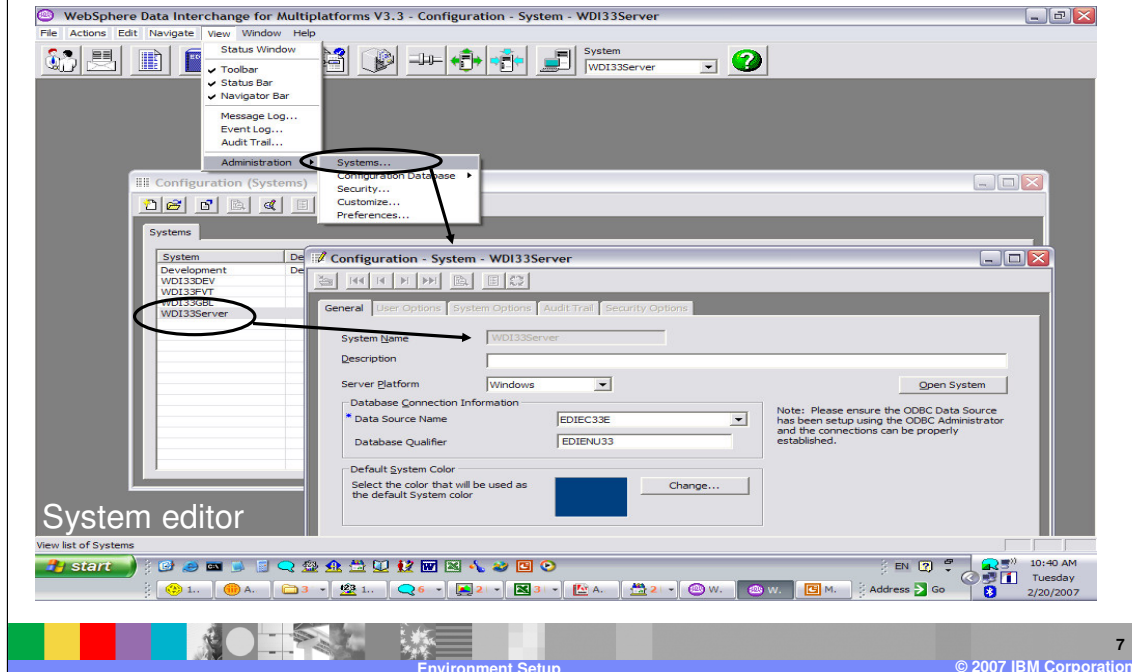
Using WDI Client you can view the database systems available for the development and runtime environments. To view a list of database systems available go to View, Administration, and select Systems. To view the details of the database, select the system from the list and double click.

Translation

There are two primary translators in WDI

    Send / Receive translator

        EDI->ADF

        ADF->EDI

        XML->ADF (XML DTD to EDIFACT with DTD converter)

        ADF->XML (XML DTD to EDIFACT with DTD converter)

        ADF->ADF (after convert ADF to "standard")

    Data Transformation Component (DTC)

        EDI->ADF

        ADF->EDI

        XML->ADF (using XML DTD)

        ADF->XML (using XML DTD)

        ADF->ADF

        XML->XML (using XML DTD)

        EDI->EDI

        EDI->XML (using XML DTD)

        XML->EDI (using XML DTD)

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The WDI server provides 2 primary ways to translate or transform data. The Send/Receive Translator which supports source and target data types of EDI and application data format (ADF) or record oriented data. And the Data Transformation with includes support for EDI, XML, and application data.

Client Mapping Screen: send receive mapping

The Send/Receive translation requires a Send or Receive Map. WDI Client Send/Receive mapping screen provides side-by-side, drag and drop mapping with the Data Format (application data) on the left and the EDI transaction on the right. Advanced mapping is also available from this screen.

Client Mapping Screen: send receive mapping

Additional mapping options are available with each field mapping.

Client Mapper
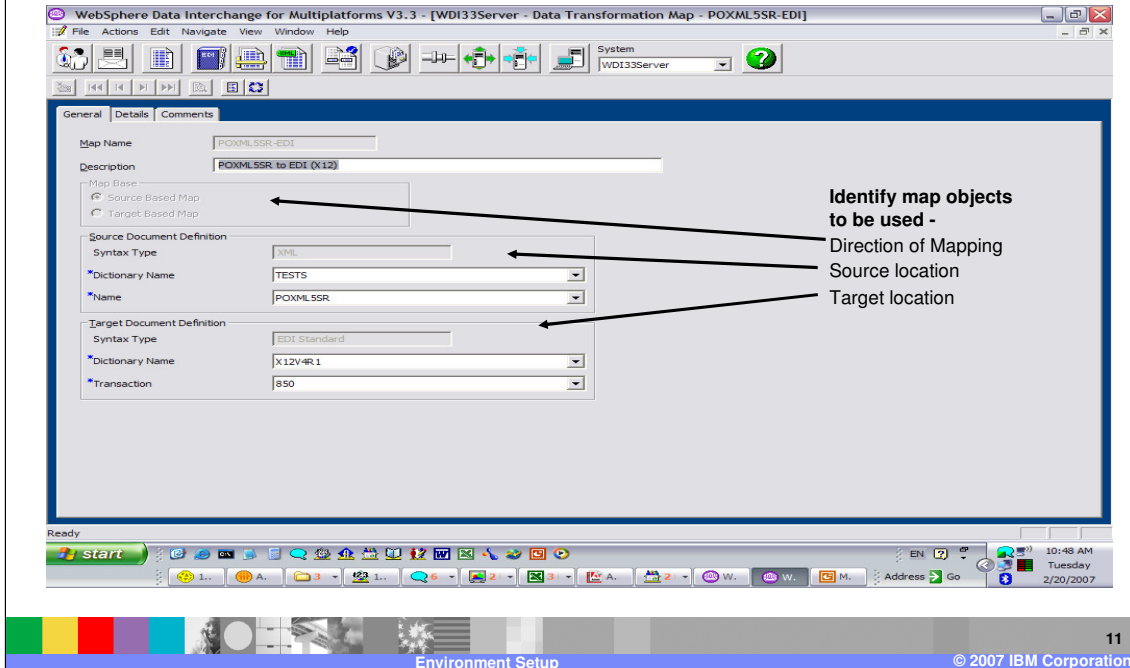
On the WDI Client Mapping dialogue, General tab, the source and target meta-data definitions are identified. With Data Transformation mapping you can choose either the source or the target display to enter your mapping commands.

Client Mapping Screen: Data Transformation

WDI also provides Any-to-Any data transformation capability also known as Data Transformation or DT. This mapping screen is divided into 4 panes: source definition, target, mapping commands (including advanced mapping support) and variables which can be applied to the entire translation session or by document.

Client Mapper

Commands:

Mapping commands perform actions that are used to instruct the WebSphere Data Interchange Server that a specific action is to occur. The commands instruct the Server on how to move data from one element to another, including how to manipulate data, how to process repeating compound elements, when to issue user specified errors, and how to perform conditional processing. Most commands require parameters, such as paths that identify where data is going to or coming from, variables, constants, and expressions.

A command name is not case sensitive. For example, the Error() command keyword could also be specified as ERROR().

An expression as a parameter in a command can resolve to any data type as long as the data type can be converted to the data type expected by the parameter. Parameters for a command are never modified by the command.

In general, Data Transformation Maps, Validation Maps, and Functional Acknowledgment Maps support most commands. Exceptions will be documented with the command. Send Maps and Receive Maps do not use these commands.

Assignment Statement	CloseOccurrence()	Default
Else	ElseIf()	EndIf
Error()	FAError()	ForEach()
HLAutoMapped	HLLevel()	If()
MapCall()	MapChain()	MapFrom()
MapSwitch()	MapTo()	Qualify()
SetProperty()		

This is a list of some of the mapping commands available for data transformation mapping. Some but not all mapping commands are automatic. For example MapTo() is automatic with a drag-drop action using a Source based map.

Client Mapping Screen: Data Transformation

To add a mapping command, right click where you want the command, select to insert before or insert after, select command. A list of commands available is listed in the command window. When you select a command the format of that command will be displayed in a mapping window.

Client Mapper

Functions:

Functions perform an action and return a result within an expression or assignment statement. All functions take 0 or more parameters as input. The number of parameters and the data type of the return value vary from one function to the next. Appropriate type conversions will be done implicitly if needed (and possible). Some functions have optional parameters. If the optional parameters are omitted from the function call, a default value will be used for that parameter.

Most functions can take an expression as an parameter, as long as the result of the expression is (or can be converted to) the correct data type. For example, the Char() function converts a value to a character string. The command:

Var1 = Char (1 + 2)

Is equivalent to:

Var1 = Char (3)

Function names are not case sensitive. The function name Char() is the same as CHAR().

In general, Data Transformation Maps, Validation Maps, and Functional Acknowledgment Maps support most functions. Exceptions will be documented with the function. Send Maps and Receive Maps do not use these functions.

Char()   Concat() Created() Date() DateCnv()   Exit()   Find()   Found() GetProperty()
HexEncode() HexDecode() IsEmpty() Left() Length()   Lower() Number()   NumFormat() Occurrence()
Overlay() Right()   Round() StrComp() StrCompI() StrCompN() StrCompNI() SubString() Time()
Translate()TrimLeft() TrimRight() Truncate() Upper() Validate()

Along with commands, there are a number of functions available to add logic and format the data values.

Client Mapping Screen: SetProperty
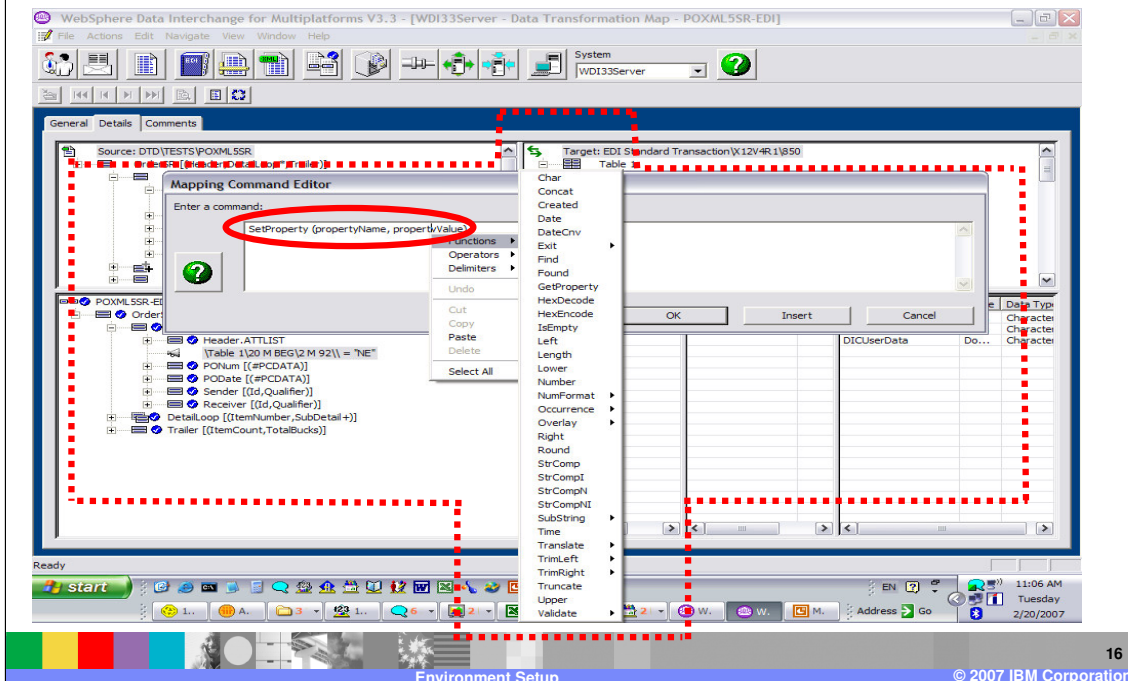
Functions perform an action and return a result. You can select the SetProperty command from the commands list to add a function as the parameters. The SetProperty command format has two parameters propertyName and propertyValue. Both parameters can be replaced with an expression.   Any mapping command that contains an expression can contain a function for that expression. If you right click on the expression and select Functions, a list of functions will be displayed.

Client Mapping Screen: Compile

WDI uses a compiled version of the map during translation execution. When mapping has been completed, you must compile control string objects for translation execution. This is true for both Send/Receive and Data Transformation maps.

Client Mapping Screen: Export
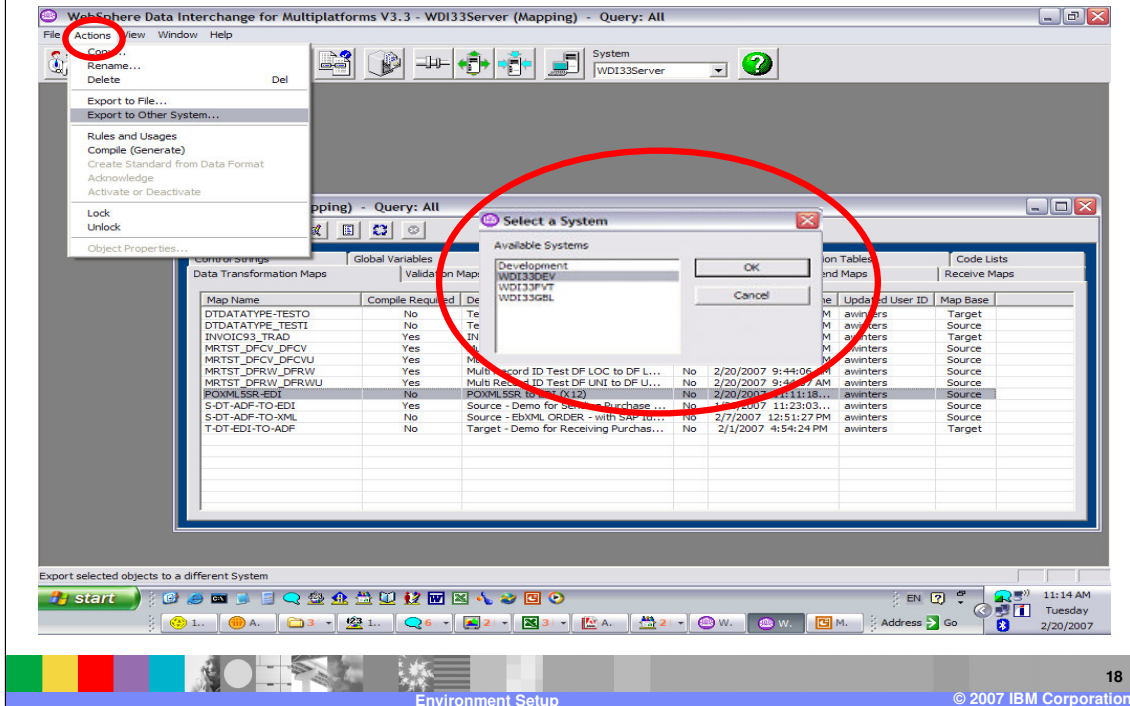
To deploy mapping, compiled control strings and other information from the development environment to the runtime environment or to another system or user you can use the Export function.

Client Mapping Screen: Export

Select the mapping or control string object you want to deploy. A window to allow selection of various associated objects is displayed.

Client Mapping Screen: Export
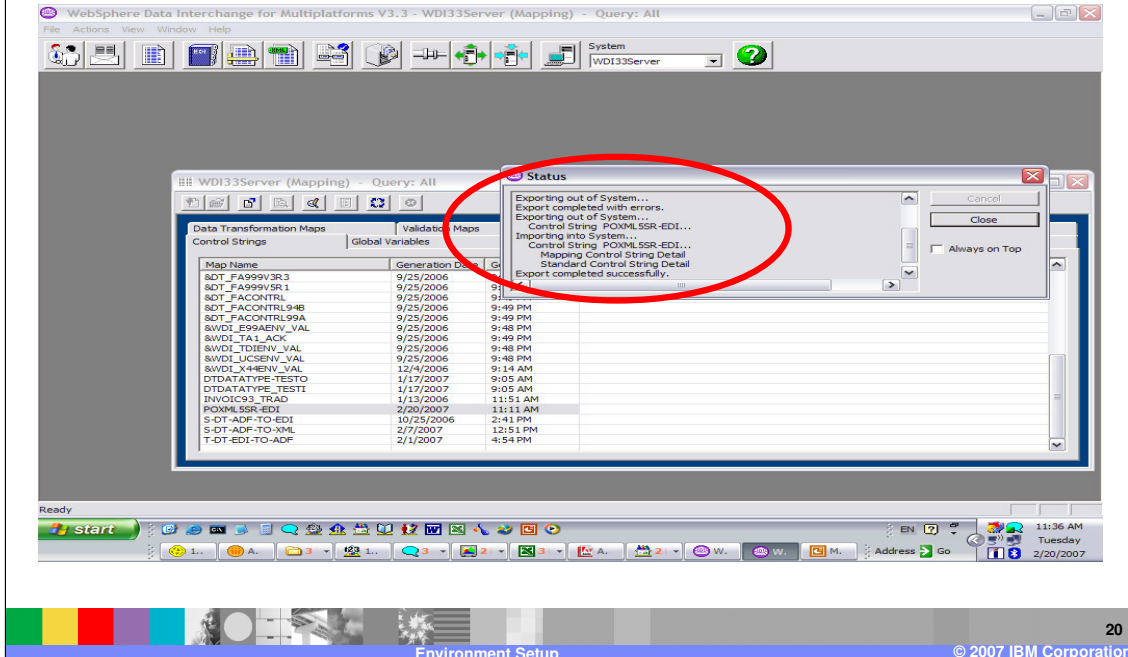
A status window will be displayed showing details of the export action.

Export / Import Flow
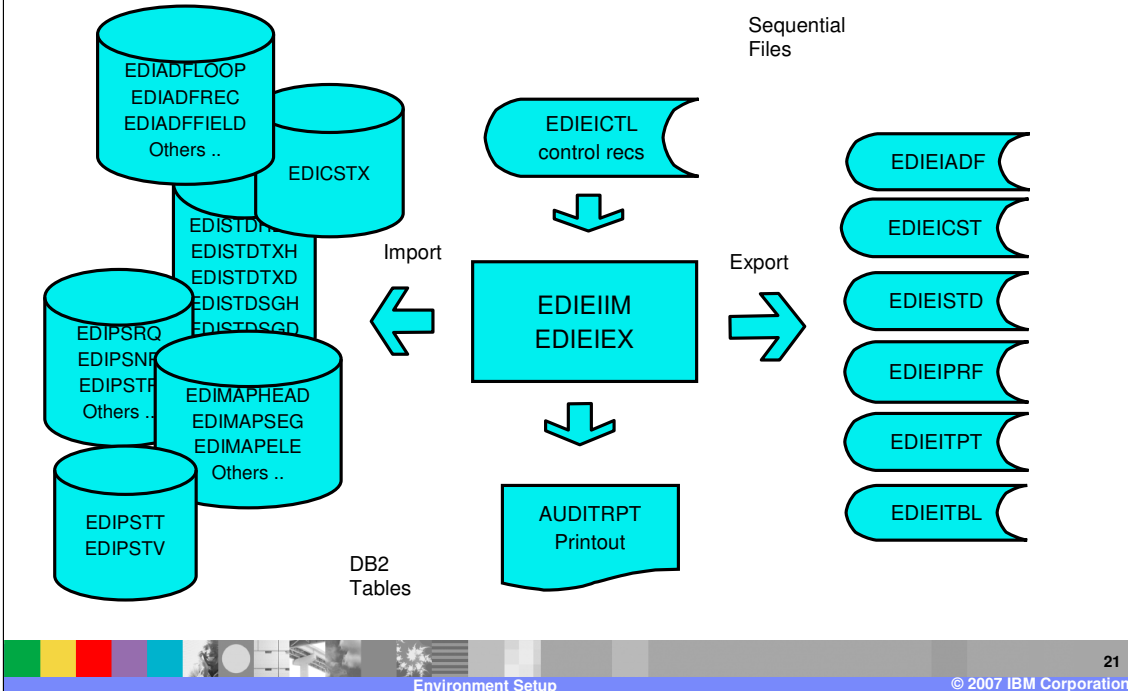
This is a diagram of the Export/Import flow.

Client Profile Administration

Profiles define the application environment under which WDI runs. They allow the user to customize WDI to describe the user application processing flow.

Groups are:

Trading Partner Management
Communication Profiles
Network Profile
Network Commands (VAN language interface)
Mailbox Profiles (Requestors of service)
WMQ Queue Profiles
Enveloping Profiles
Grouping Profiles
Routing Profiles
Service Profile (Command Chaining, RFH2 Headers)
MCD Profile (WBI MB header substitution)
CICS Continuous Receive (IE connection)

Profiles allow you to describe your processing flow. These are some of the associated objects that may be exported and imported.

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Section

Runtime Environment

Command Processor

The WebSphere Data Interchange Utility command language
consists of PERFORM statements,
WHERE clauses, and SELECTING clauses.
It is represented in the text as follows:

PERFORM *SAMPLE-COMMAND*
    SELECTING *SAMPLE-KEYWORD(value)*
    WHERE *SAMPLE-KEYWORD(value)*

The WebSphere Data Interchange Utility command language consists of PERFORM statements,

WHERE clauses, and SELECTING clauses.

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Command Processor

COMMANDs are:

HOLD
LOAD LOG ENTRIES
PROCESS NETWORK ACKS
PURGE
QUERY
RECONSTRUCT
RECONSTRUCT AND SEND
RELEASE
REMOVE LOG ENTRIES
REMOVE STATISTICS
REMOVE TRANSACTIONS
RESET STATISTICS
UNLOAD LOG ENTRIES
UNPURGE
UPDATE STATISTICS
UPDATE STATUS
PRINT
PRINT ACKNOWLEDGMENT IMAGE
PRINT ACTIVITY SUMMARY
PRINT EVENT LOG
PRINT STATUS SUMMARY
PRINT STATUS SUMMARY2
PRINT TRANSACTION DETAILS
PRINT TRANSACTION IMAGE
ENVELOPE DATA EXTRACT
NETWORK ACTIVITY DATA EXTRACT
TRADING PARTNER PROFILE DATA EXTRACT
TRADING PARTNER CAPABILITY DATA EXTRACT
TRANSACTION ACTIVITY DATA EXTRACT
TRANSACTION DATA EXTRACT

CLOSE MAILBOX
EXPORT
IMPORT
DELETE PROFILE
QUERY PROFILE
DEENVELOPE
DEENVELOPE AND TRANSLATE
PROCESS
RECEIVE
RECEIVE AND DEENVELOPE
RECEIVE AND PROCESS
RECEIVE AND SEND
RECEIVE AND TRANSLATE
RECVFILE
RESTART RECEIVE
RETRANSLATE TO APPLICATION
TRANSLATE TO APPLICATION
ENVELOPE
ENVELOPE AND SEND
RECVFILE AND SEND
REENVELOPE
REENVELOPE AND SEND
RESTART SEND
SEND
SENDFILE
TRANSLATE AND ENVELOPE
TRANSLATE AND SEND
TRANSLATE TO STANDARD

As you can see there is a variety of commands available for processing, reporting, and extracting information.

Command Processor

TRANSFORM command

You can use this command to translate data in any format to any other format defined in your WebSphere Data Interchange system. This command uses data transformation maps to translate the data.

Syntax

TRANSFORM

CLEARFILE(clear specified file contents)
DICTIONARY(input dictionary name)
DOCUMENT(input data document name)
IFCC(override condition codes)
INFILE(input data file name)
INTYPE(input data file type)
MAPID(map name)
OUTFILE(output data file name)
OUTLEN(maximum output record length)
OUTTYPE(output data file type)
SETCC(condition codes)
SYNTAX(input data syntax type)
TRACELEVEL(trace level)
XMLEBCDIC(EBDCDIC indicator)
XMLVALIDATE(XML validation indicator)
XMLDTDS(XML DTD path)

Typical command and options available

TRANSFORM command example

Transform the WMQ queue file PURCH1 and output the results in file PURCHTRN.

PERFORM TRANSFORM

WHERE INFILE(PURCH1)INTYPE(MQ)SYNTAX(X)OUTFILE(PURCHTRN)

You can use the PERFORM TRANSFORM command to translate data in any supported source format to any supported target format.

Translation

Feature and Function of Translator

Deenveloping of EDI headers and transactions

Enveloping of EDI headers around transactions

Functional Acknowledgment generation on input

Functional Acknowledgment Reconciliation on receipt of 997

Delayed Enveloping in conjunction with Trans Store

Delayed Translation in conjunction with Trans Store

Context based identification of map with EDI data

Customization of delimiters and such by Trading Partner,
  via TP Usage or Map Rule

API for custom solutions

Data Field exits for DTC

Variety of user exits for Send / Receive

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The features of the translation process include deenveloping and enveloping EDI data, delayed enveloping and translation, function ional acknowledgment generation and reconciliation, context based identification of the mapping to use for translation, customized delimiters by trading partner, Application Program Interfaces (APIs), and data field user exit programs.

Single Pass Translation

WDI can be executed a transformation engine, taking input and transforming it to different data syntax (EDI, XML, ROD, CSV).
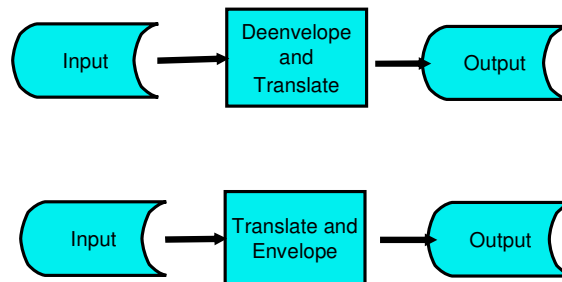
Input → Deenvelope and Translate → Output

Input → Translate and Envelope → Output

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WDI can be executed a transformation engine, taking input and transforming it to different data syntax (EDI, XML, Record Oriented Data, Comma Separated Values).

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z/OS® Basic Flow

PERFORM command

Tracking data

Reporting extract

Work files

Print

Exception data

Trace(s)

Input
VSAM File
TS Queue
TD Queue

Translator

Output
VSAM File
TS Queue
TD Queue
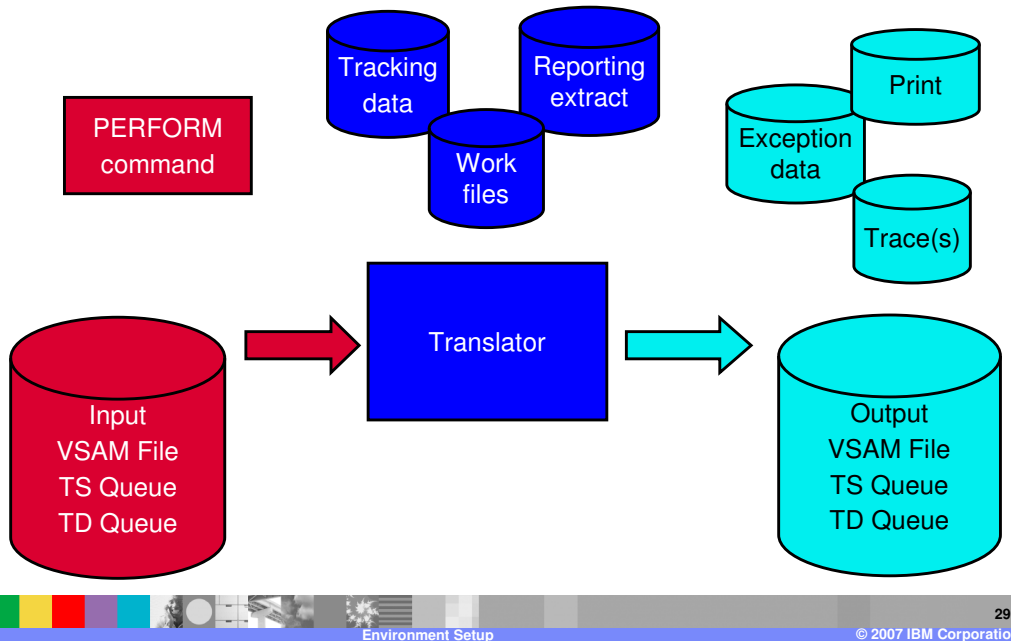
The Tracking file is an optional file into which "optional records" can be written. Optional Records can be created to provided softcopy information about the translation that could be used in user formatted costing or reporting applications. The Report file is used by select PERFORM commands to house data queried. The Work file is used by the Translator.

Document Store

The Document Store is a component of WDI. It consists of a series of DB2 tables and a set of functions to store and manipulate processed EDI data. The S/R translator stores images of EDI data. The data transformation stores images of DF, XML, and EDI data.

With the Document Store, functionality like Delaying Enveloping and FA reconciliation is permitted. The Document Store is also used to facilitate error detection and reprocessing.

```
Input  →  Deenvelope                    Translate to  →  Output
                          ↘           ↗  Application
                           Document
                             Store
                          ↗           ↘
Input  →  Translate to                   Envelope     →  Output
          Standard
```
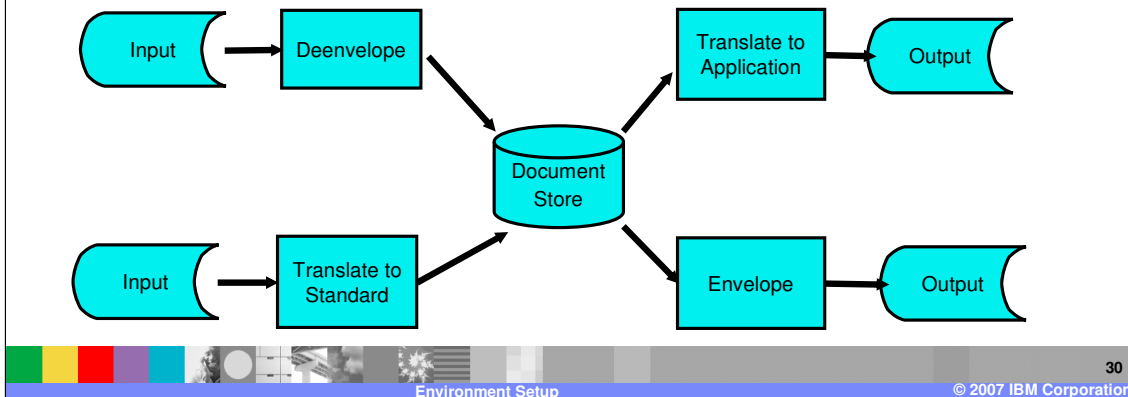
The Document Store is a component of WDI. It consists of a series of DB2 tables and a set of functions to store and manipulate processed EDI data. The S/R translator stores images of EDI data. The Data Transformation stores images of application, XML, and EDI data.

With the Document Store, functionality like Delaying Enveloping and FA reconciliation is permitted. The Document Store is also used to facilitate error detection and reprocessing.

WDI z/OS Batch JCL

z/OS batch execution is accomplished by executing the WDI Utility in a Job Step. Multiple PERFORM commands can be processed in a single step execution. Customers normally surround the WDI step with other actions that process the input data files and output data.

```
//RUNDI   EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=0M,COND=(0,NE)
//STEPLIB DD DSN=DB98.DSNEXIT,DISP=SHR          DB2
//        DD DSN=DB98.DSNLOAD,DISP=SHR          DB2
//        DD DSN=EDI.V3R2MCD.SEDILMD1,DISP=SHR     FVT
//        DD DSN=EDI.SNA131.LOADLIB,DISP=SHR     EXPEDITE
//        DD DSN=EDI.XMLV1R4.SIXMMOD1,DISP=SHR     XML4C PARSER
//        DD DSN=MQ65.SCSQANLE,DISP=SHR         MQSERIES
//SYSPRINT DD SYSOUT=*
//EDIQUERY DD DSN=RPOPE.TE51.EDIQUERY,DISP=MOD
//FFSTRAK  DD DSN=RPOPE.TE51.TRACK,DISP=MOD
//FFSEXCP  DD DSN=RPOPE.TE51.EXCPT,DISP=MOD,DCB=BUFNO=20
//EDIPAGE  DD DSN=&&EDIPAGE,DISP=(NEW,DELETE),
//         DCB=(RECFM=V,BLKSIZE=32760),
//         UNIT=SYSDA,SPACE=(CYL,(20,300))
//EDIWORK  DD DSN=&&EDIWORK,DISP=(NEW,DELETE),
//         DCB=(RECFM=V,BLKSIZE=32760),
//         UNIT=SYSDA,SPACE=(CYL,(20,300))
//EDIDTTRC DD SYSOUT=*              DT TRACE
//EDITRACE DD DSN=RPOPE.TE51.DITRACE,DISP=SHR
//XMLWORK  DD DSN=RPOPE.TE62.XMLWORK,DISP=OLD
//XMLERR   DD SYSOUT=*
//XMLTRC   DD SYSOUT=*
//XMLEXCP  DD DSN=RPOPE.TE62.XMLEXCP,DISP=OLD
//XMLDICT  DD DSN=RPOPE.TE62.XMLDICT,DISP=SHR     XML PP PDS
//XMLDTDS  DD DSN=RPOPE.TE62.XMLDTDS,DISP=SHR     XML DTD PDS
//ADFFILE  DD DSN=RPOPE.P8010717.APPLIN,DISP=SHR   P8010717
//QDATA    DD DSN=RPOPE.TE51.QDATA,DISP=MOD,DCB=BUFNO=20
//SYSIN    DD *
 PERFORM TRANSFORM WHERE
   DICTIONARY(CA_DMV_14970) DOCUMENT(CA_DMV_14970DF)
   SYNTAX(D) INFILE(ADFFILE) OUTFILE(QDATA)
   PAGETHRESHOLD(1000) PAGE(Y)
   TRACELEVEL(C1)
/*
```

z/OS batch execution is accomplished by executing the WDI Utility in a Job Step. Multiple PERFORM commands can be processed in a single step execution. Customers normally surround the WDI step with other actions that process the input data files and output data.

Section

Monitoring

Monitoring

Statistics Capture

    Management Reporting

        records usage by TP as translation occurs

    Document Store Service

        records data about transactions

Statistical Reporting

    Optional Records

    Transaction Data Extracts

        provides data record with translation information

    Trading Partner Capability

        provides data record with Trading Partner usage info
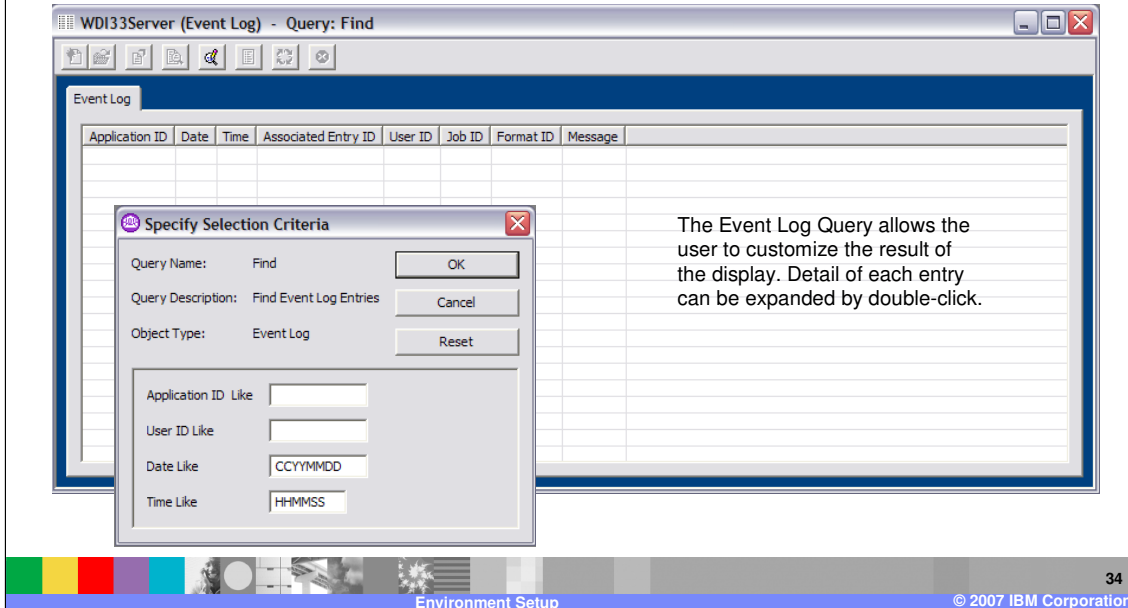
    Network Activity Analysis

        provides data record with Network usage info

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WDI provides monitoring capabilities by capturing statistics. The information and statistics may be extracted and or used to create reports.

Client Operational View

Two type of operation data can be monitored in WDI - Event Log, normally error messages, and Document Store data - data used in transformations.

WDI33Server (Event Log) - Query: Find

Event Log

Application ID	Date	Time	Associated Entry ID	User ID	Job ID	Format ID	Message

Specify Selection Criteria

Query Name:	Find	OK
Query Description:	Find Event Log Entries	Cancel
Object Type:	Event Log	Reset

Application ID Like

User ID Like

Date Like CCYYMMDD

Time Like HHMMSS

The Event Log Query allows the user to customize the result of the display. Detail of each entry can be expanded by double-click.

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There are two types of operation data that can be monitored. The WDI Event log which contains error messages and the Document Store data which contains an audit trail of translation activity. To view the event log using WDI Client, select View then Event Log. A window to identify filtering values or selection criteria is displayed.

Client Operational View

Specify Selection Criteria

Query Name:	Find
Query Description:	Find Data Format Documents
Object Type:	Data Format Document

Document Store data - data used in transformations

OK
Cancel
Reset

Document Name Equal To

Source or Target Equal To

Application Control Field 1 Equal To

Application Control Field 2 Equal To

Application Control Field 3 Equal To

The Document Store Log Query allows the user to customize the result of the display. Detail of each entry can be expanded by double-clicking.

WDI33Server (Document Store) - Query: Find

Transactions | Enveloped Transactions | Groups | Interchanges | Data Format Documents | XML Documents | Submissions

Date Added to Store	Time Added to Store	Usage Indicator	Source or Target	EDI Standard Transaction	Application Control Number	Trading Partner Profile	In
2/1/2007	5:03:06 PM	Test	Source Docum...	850		D53TSA2	
2/1/2007	5:03:06 PM	Test	Target Docum...	997		D53TSA2	
2/1/2007	5:00:36 PM	Test	Target Docum...	997		D53TSA2	
2/1/2007	5:00:35 PM	Test	Source Docum...	850		D53TSA2	
2/1/2007	4:58:28 PM	Test	Source Docum...	850		D53TSA2	
2/1/2007	4:58:28 PM	Test	Target Docum...	997		D53TSA2	
2/1/2007	4:57:12 PM	Test	Target Docum...	997		D53TSA2	

The Document Store Log Query allows you to customize the result of the display. Detail of each entry can be expanded via double-click.

Client Reporting

There are a predefined set of Reports for WDI Objects.

This is a Transaction Status Report.

Client Reporting
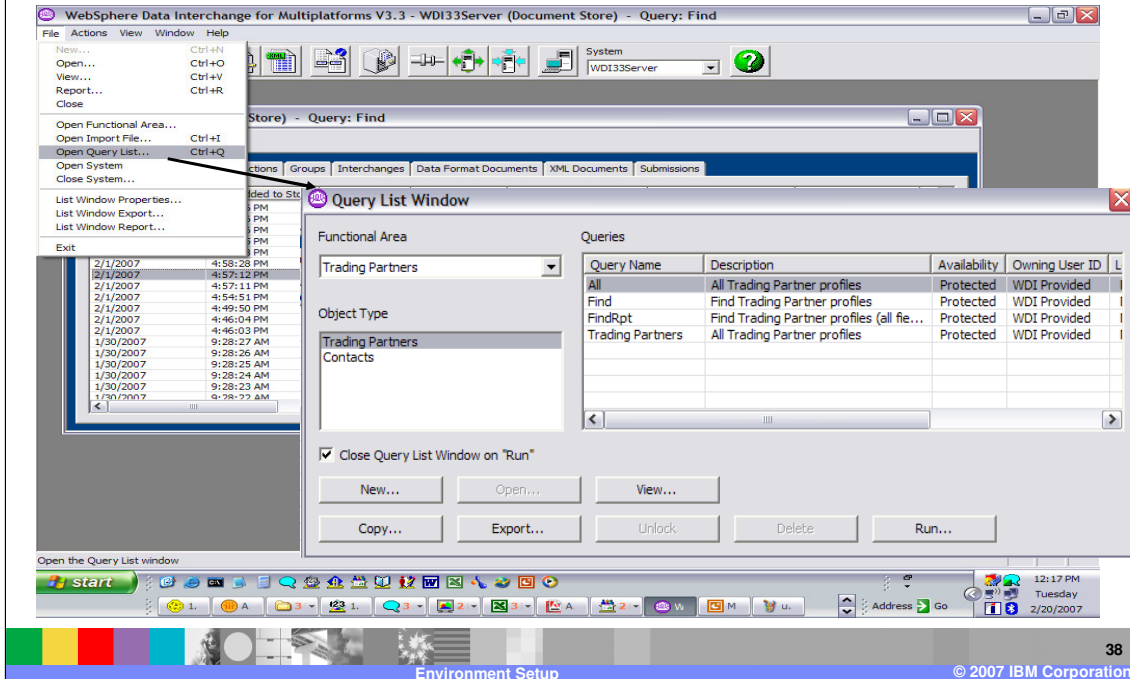
Queries are used to customize the way the WDI Object lists are presented.

Reporting

Client and Document Store (DS)

WebSphere Data Interchange Client provides the ability to view
the document store, which is created and maintained by
WebSphere Data Interchange server.

Application defaults
Code list detail
Constant detail
Data element detail
Data format detail
Data format dictionary detail
Data format record detail
Data format structure detail
EDI standard detail
EDI standard segment detail
EDI translation detail (DS)
Envelope detail (DS)
Interchange detail (DS)
Interchange status summary (DS)
Interchange list (DS)
List of transactions in Store (DS)

Mailbox profile detail
Map variable detail
MQ Series queue detail
Network commands detail
Network security detail
Pending Functional Acknowledgements (DS)
Services profile detail
Trading partner detail
Transaction Status Summary (DS)
Transaction detail (DS)
Translation table detail
User exit detail
User interface log report
XML dictionary
XML DTD detail

Document Store (reporting and audit facility) is included with WDI.
Reports may be accessed using WDI Client when configured as
Client/Server.

Administration

Export / Import

Provides a means of extracting metadata from WDI

EDI Standards,
XML DTDs
Data Formats,
Maps,
Map Rules,
Trading Partner definitions,
Profile specifications

Purge of Operational Data

REMOVE TRANSACTIONS   document store

REMOVE LOG ENTRIES   event log

REMOVE STATISTICS   management reporting

Administrative functions to move your metadata definitions and customized processing options are provided using export and import. Operation data administration can be performed using the WDI Utility command interface.

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