Electronic
Data Interchange

Introduction

- The core of the operation of any business involves:
    - Data input
    - Data storage
    - Data processing
    - Data output
- Many businesses do not create the data they process. E.g. online billpayment
- Massive amounts of data flow between various organization and it is often impossible for humans to verify them all.

Problem

- How can data be transported between 2 companies (or applications) and meet the following criteria:
  - Fast (human intervention)
  - Valid
  - Structured
  - Decoupled
  - Secure

Solution 1

- Give your clients access to your database.
  - Pros
    - Fast
    - Valid
    - Structured
  - Cons
    - Tightly coupled
    - Insecure

Solution 2

- Use a structured format agreed 2 by both parties
- This is known as EDI

EDI

- The transfer of structured data, by agreed message standards, from one computer system to another without human intervention

- There are 3 parts
  - Transport
  - Structure/Format
  - Interpreter

Transport

- This is how you send the EDI data.

- Common transport mechanisms include:
  - FTP
  - HTTP
  - SMTP (email)
  - AS1 (SMTP+), AS2 (HTTP+), AS3 (FTP+)
  - EDI VAN

Structure

- Many different types of business related data has specific EDI formats

- Replaces paper documents for a specific operation

- Each EDI document format has the following
  - 1. Specification Number
  - 2. Specification Name
  - 3. List of fields

Example

- Number: 940
- Name: Ship From Warehouse
- Use: Advises the warehouse that a shipment is to be made to the designated "ship to" on the behalf of the depositor
- Fields:
  - RECORD_TYPE=PRFX
  - PRFX_CO_ID=NA
  - PRFX_EXT_PARTNER=AMERICOLD
  - PRFX_DOC_TYPE=WHS Shipping Order
  - PRFX_DOC_NBR=1
  - PRFX_TRANS_DIR=0
  - PRFX_DATE
  - PRFX_TIME
  - PRFX_CONTROL_NBR
  - ….
  - HD_SHPTO_CUST=John Smith
  - HD_SHPTO_ADDR1=101 curl Drive
  - HD_SHPTO_ADDR2=
  - HD_SHPTO_ADDR3=
  - HD_SHPTO_CITY=Columbus
  - HD_SHPTO_STATE=OH
  - HD_SHPTO_ZIP=43210
  - …
  - HD_BLLTO_ADDR1=101 curl Drive
  - HD_BLLTO_ADDR2=
  - HD_BLLTO_ADDR3=
  - HD_BLLTO_CITY=Columbus

Software

- The reciever uses software to interpret the contents of an EDI document.

- Many companies provide software that can do this with some customization. Most ERP applications know how to consume and create EDI data.

- Often, custom software has to be written to work with EDI data

EDI Standards

- There are 4 major EDI standards:
  - UN/EDIFACT - International stanadard. Used by most countries except US
  - X12 - Use predominantly in the US
  - TRADACOMS - Used predominantly in the UK retail sector
  - ODETTE - Used within the European automotive industry

- Other smaller standards exist.

XML

- XML and 3 of its related technologies can do what EDI does
  - XML - Hold EDI data
  - XSD - Define EDI structure
  - XSLT - Map data within EDI documents
  - XQuery - Search EDI data

- So why is XML not used?
  - Creation time
  - Change is slow

XML/EDIFACT

- This is a representation of EDI data in an XML document

- Growing usage of XML in EDI (internationally)

- Benefits of XML include:
  - Easier to parse
  - Many existing software platforms
  - Stronger grammer and technologies
  - Data does not change

EDIFACT to XML/EDIFACT

NAD+BY+CST9955::91++Candy Inc+Sirup street 15+Sugar Town++55555'

Becomes

```
<NAD>
 <D1>BY</D1>
 <C1><D2>CST9955</D2><D3>91</D3></C1>
 <C2><D4>Candy Inc</D4></C2>
 <C3><D5>Sirup street 15</D5></C3>
 <D6>Sugar Town</D6><D7>55555</D7>
</NAD>
```