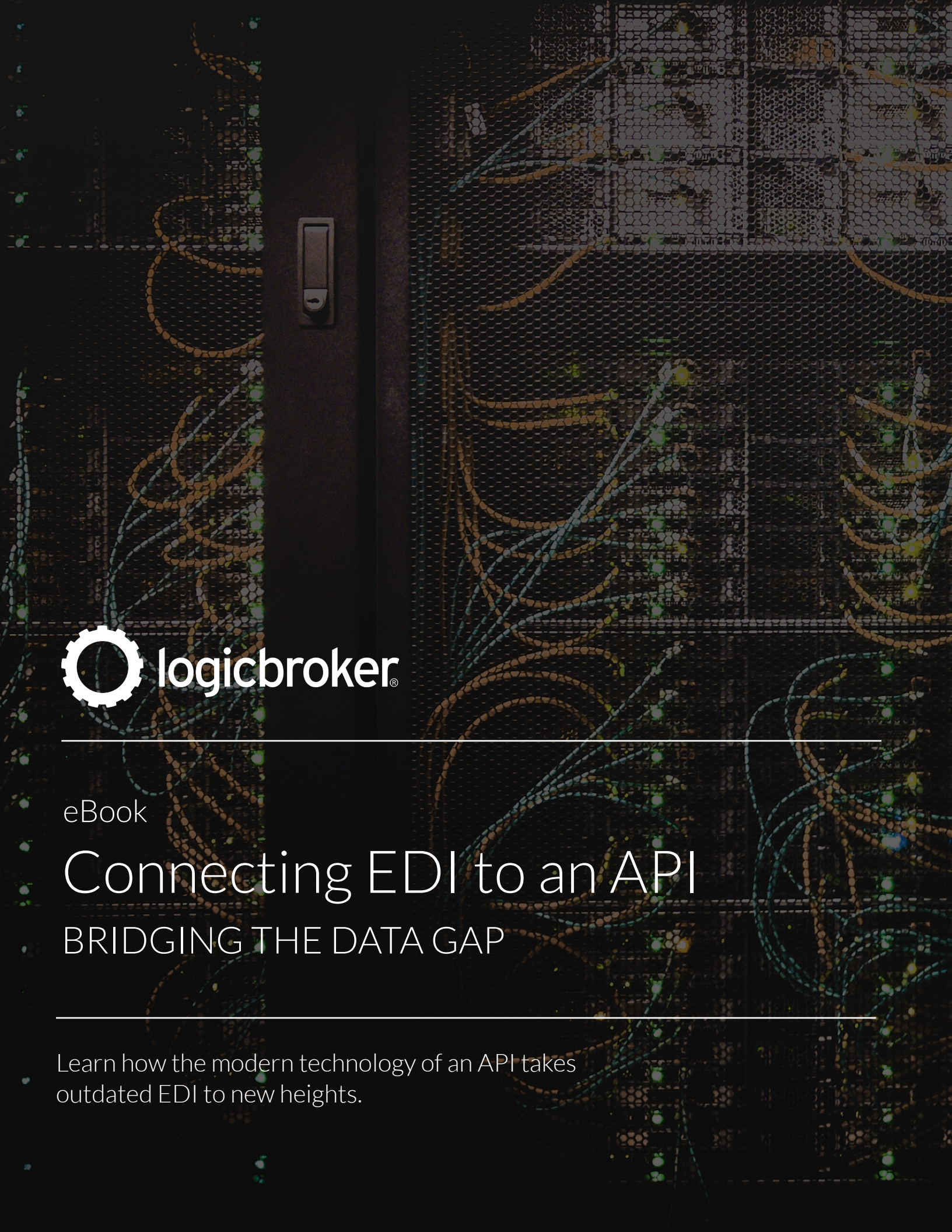


logicbroker®

eBook

Connecting EDI to an API

BRIDGING THE DATA GAP

Learn how the modern technology of an API takes outdated EDI to new heights.

What is EDI?

EDI stands for Electronic Data Interchange. This data format pioneered structured data transmission (established in the late 1960's) via computer, and many companies continue to utilize this method of data communication today. EDI provides a consistent and predictable way to transmit data between two computer systems.

However, due to its age, EDI suffers from many limitations, namely: it's difficult to understand/translate, a necessity for systems dedicated to processing the format, and an inability to support loosely structured/growing data needs. Nevertheless, today, many systems and companies still support this format since it meets a majority of their data needs.

What is an API?

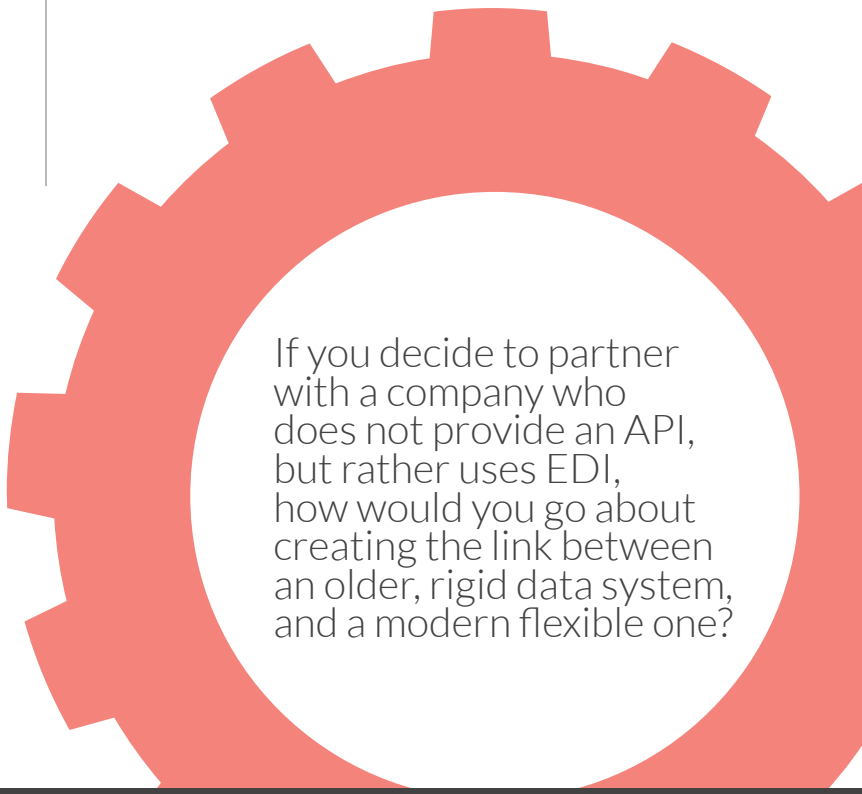
API stands for application programming interface. These interfaces can provide data in a number of structured formats. APIs and their data formats are being widely adopted by many companies to serve their complex data needs. APIs are typically well documented, and present data in a human-readable format. This enables faster data mapping, since the meaning and usage of many fields can be inferred directly from the data itself. This modern approach to data transmission enables flexible, and future-proof data storage.

Both data formats strive to support the same goal: structured data communication for computer processing. So if you are considering which you would like to support, you may be torn as to which fits your business needs.

Can I support both?

Yes, however, API's are the way of the future. Many software development teams prefer working with API's for a number of reasons. Namely, the ease by which data requirements can be understood through the data itself. Most EDI systems have thoroughly documented data requirements, but the learning curve associated with understanding those requirements presents a barrier-to-entry. Therefore, supporting both would certainly be a large technical project, but would enable data connectivity with both older and modern systems.

If you decide to partner with a company who does not provide an API, but rather uses EDI, how would you go about creating the link between an older, rigid data system, and a modern flexible one? Enabling support for both EDI systems in conjunction with an API would allow you to get over this major hurdle. This article will provide a breakdown of the major data similarities between the two formats. We'll use the following eCommerce transactions as examples: Purchase Orders and Shipments/Tracking Notifications. With the similarities between API and EDI data structures established, you may explore creating your own data bridge to handle legacy and modern data requirements.



Sending and Receiving Orders

The "trick" to mapping EDI data is understanding which elements are most important. And while each organization's EDI data specifications differ, these key elements can be used when mapping this data back into an API-friendly data structure. To exemplify this, we will use different samples of EDI orders from different organizations. For the API sample data, we will use examples from the CommerceAPI, made available by Logicbroker.

Within a purchase order, there is a multitude of data that may be sent, however we will focus on the following key fields: Purchase order number, ship-to address, and line-level information (i.e, which products were sent and their quantity).

When sending/receiving EDI orders (referred to as EDI850), this information can be found in the following fields:

- PO Number - BEG segment
- Ship To Address - N1, N2, N3, N4 fields
- Line Level Information
  - Product Identifier - PO1 segment (Any number of qualifiers)
  - Quantity - PO1 Segment (Typically Element number 2)

To those unfamiliar with EDI, you may immediately see an issue with the field naming: the segments are not clearly labeled ("PO1" vs "Line Information), and the specific element the data will appear in is somewhat arbitrary. As mentioned in the outset, because EDI is an older technology, keeping the data as small as possible was a high priority. Today, this breeds many of the issues technical teams have with building their own EDI solution.

While the segments are poorly named, and the elements (where each data point lives) arbitrary, once understood, these values can then be mapped to an API like so:

- PO Number = Order.PartnerPO
- Ship To Address = Order.ShipToAddress
- Line Level Information
  - Product Identifier = Order.OrderItem.ItemIdentifier.PartnerSKU

The CommerceAPI uses JSON as its standard format, which allows for programmatic use of objects to represent each of these relationships. Here is a sample order from the CommerceAPI :

```
{
  “RequestedShipDate”: “2020-01
      02T00:00:00”,
  },
  “TypeCode”: “SA”,
  “SalesRequirement”: 0,
  “OrderLines”: [
    {
      “ItemIdentifier”: {
        “SupplierSKU”: “1263673”,
        “PartnerSKU”: “1263673”
      },
      “Price”: 33.49,
      “PriceCode”: “TE”,
      “Description”: “KS PROTEIN BARS CHOC
      CHIP”,
      “Discounts”: [
        {
          “DiscountPercent”: 0.0,
          “DiscountAmount”: 0.0
        }
      ],
      “Taxes”: [],
      “IsDropShip”: false,
      “Quantity”: 1,
      “QuantityUOM”: “EA”,
      “LineNumber”: “01”,
      “Weight”: 5.0,
      “ExtendedAttributes”: [
        {
          “Name”: “PartnerLineID”,
          “Value”: “01”
        }
      ]
    }
  ],
  “OrderNumber”: “840490842”,
  “VendorNumber”: “0002165100”,
  “PartnerPO”: “00847002570589”,
  “OrderDate”: “2020-01-02T00:00:00”,
  “Taxes”: [],
  “PaymentTerm”: {},
  “ShipmentInfos”: [
    {
      “CarrierCode”: “UPSN”,
      “ClassCode”: “UPSN-3D-2”,
      “SenderClassCode”: “UPSN_3D”,
      “ServiceLevelDescription”: “UPS 3
      Day Select”
    }
  ],
  “ShipToAddress”: {
    “City”: “DELRAY BEACH”,
    “State”: “FL”,
    “Country”: “US”,
    “Zip”: “33445-5308”,
    “AddressCode”: “00011”,
  },
  “BillToAddress”: {
    “City”: “DELRAY BEACH”,
    “State”: “FL”,
    “Country”: “US”,
    “Zip”: “33445”,
    “Province”: “”,
    “StateCode”: “”,
  },

  “ExtendedAttributes”: [
    {
      “Name”: “BEG01_Purpose”,
      “Value”: “00”
    },
    {
      “Name”: “REF - Internal Control
      Number”,
      “Value”: “815837656”

  ],
  “TotalAmount”: 33.49,
  “HandlingAmount”: 0.0,
  “DropshipAmount”: 0.0,
  “Note”: “Custom Note”,
  “SenderCompanyId”: 100614,
  “ReceiverCompanyId”: 126739,
  “Identifier”: {
    “SourceKey”: “840490842”,
    “LogicbrokerKey”: “35978387”,
    “LinkKey”: “200116260198”
  },
  “DocumentDate”: “2020-01
      02T22:20:49.57”,
  “StatusCode”: 100
}
```


To view all available fields, view the CommerceAPI swagger documentation here: https://stage.commerceapi.io/swagger/ui/index#!/Order/Order_SearchSalesOrders

A Real-Life Example

We are going to take a look at the way three retailers send order information via EDI:

MACY'S - EDI 850 (Purchase Order)

ST	ST*850*0001
BEG	BEG*00*SA*64788163**20200102
CUR	CUR*X6*USD
REF	REF*X9*815836841
REF	REF*IA*0000017176
REF	REF*CO*1888489733
REF	REF*CNO*187971658
REF	REF*11*CHSHOESCREW
SAC.SAC	SAC*C*H850***427**********TAX TOTAL
ITD	ITD*08**0**0**30*00
DTM	DTM*001*20200202
TD5	TD5*****UPSN_CG
CTB	CTB*OR*IF YOU HAVE ANY PROBLEMS WITH THIS SHIPI
N9.N9	N9*SD*11
N1.N1	N1*BT*SILVA
N1.N3	N3*11432
N1.N4	N4*LAKE VIEW TERRACE*CA*91342-6503*US
N1.N1	N1*ST*SILVA
N1.N3	N3*11432
N1.N4	N4*LAKE VIEW TERRACE*CA*91342-6503*US
N1.N1	N1*SF**93*NV
N1.N1	N1*PO**93*0149
PO1.PO1	PO1*01*1*EA*28*TE*******UP*885999115139

WAYFAIR - EDI 850 (Purchase Order)

ST	ST*850*879507
BEG	BEG*00*DS*CS205469363**20200102
REF	REF*VR*19010*75126
REF	REF*2P*Wayfair
PER	PER*IC*Del Hutson Designs*FX*4697286012*TE*2143364880
CTP	CTP**WHL
ITD	ITD*01**********3% 10 Net 60
DTM	DTM*010*20200107
TD5	TD5**2*FDEG*ZZ*FDHD
N9.N9	N9*TH*346593300
N1.N1	N1*BT*Wayfair
N1.N3	N3*4
N1.N4	N4*Boston*MA*02116*US
N1.PER	PER*BJ*BT*TE*6175326815*FX*617-502-7798*EM*WayfairOps
N1.N1	N1*ST*Robin
N1.N3	N3*7226
N1.N4	N4*L *OH*43537*US*ZN*R
N1.PER	PER*DC*ST*TE*4194500603***EM*customeremail@wayfair.com
N1.N1	N1*LW*L
N1.N3	N3*7226
N1.N4	N4* *OH*43537*US
PO1.PO1	PO1*1*1*EA*29*WH*VN*DHD3118wh
PO1.PID.PID	PID*F****Treyvon Industrial Grace Wall ShelfSize:1 75 H x 24 W x 5

AMAZON - EDI 850 (Purchase Order)

ST	ST*850*0001
BEG	BEG*00*NE*8542VPSA***20191230
REF	REF*CR*WONV5
CSH	CSH*N
DTM	DTM*064*20191230
DTM	DTM*063*20200108
N1.N1	N1*ST**92*OAK3
PO1.PO1	PO1*1*3*EA*146.99*PE*UP*811225030112
CTT.CTT	CTT*1*3
SE	SE*10*0001

Between these three examples, you can see there is a high degree of variance between the fields retailers may, or may not, send on their EDI purchase orders. A generally adopted standard is putting the purchase order number in the third element of the BEG segment. However, this is still difficult to infer without having experience working with EDI purchase orders. Looking at the PO1 segment, we see the following from each retailer;

MACY'S:

*PO1*01*1*EA*28*TE*******UP*885999115139*

Macy's uses UPC codes as a product identifier, and this can be determined by their use of the UP qualifier before the UPC code. But compare to Amazon's item identifier usage:

AMAZON:

*PO1*1*3*EA*146.99*PE*UP*811225030112*

Both use UPC as a product identifier, and both use a UPC qualifier. However, they send the value in a different position, meaning that a specific map would need to be setup for each retailer that can identify where this product identifier will be sent, depending on who is trading.

As can be seen above, Wayfair does not send UPC codes, and uses a "VN" (vendor number) qualifier to identify a different type of product identifier completely.

When leveraging an API, these differences can be minimized by using clear line-level specific names. Take for instance how these fields are mapped in Logicbroker using the CommerceAPI:

```
"OrderLines": [
    {
      "ItemIdentifier": {
        "SupplierSKU": "1263673",
        "PartnerSKU": "1263673",
        "UPC": "888126367311"
      },
```

Logicbroker uses EDI mapping technology to map "UP" EDI qualifiers to the UPC field, and supports vendors who send more than one qualifier via EDI i.e. sending a "VN," in addition to a "UP" qualifier would mean that both the "SupplierSKU" and "UPC" item level fields are mapped as needed.

A final example of the variances on EDI 850 Purchase Orders would be the N1-N4 segments, which describe address information. Taking a look at the examples from above:

MACY'S - Shipping Address Information

*N1*BT*First Last~*
*N3*123 Address Way~*
*N4*City*CA*91342-6503*US~*
*N1*ST*First Last~*
*N3*123 Address Way~*
*N4*City*CA*91342-6503*US~*
*N1*SF**93*NV~*
*N1*PO**93*0149~*

Note the additional "N1*SF" and "N1*PO" segments indicating special instructions for the vendor and the way they will ship.

WAYFAIR - Shipping Address Information

*N1*BT*Wayfair*
*N3*4 Copley Place, Floor 7*
*N4*Boston*MA*02116*US*
*PER*BJ*BT*TE*6175326815*FX*617-502-7798*EM*WayfairOps5@wayfair.com*
*N1*ST*First Last*
*N3*123 Address Way*
*N4*City*OH*43537*US*ZN*R*

Note how Wayfair includes information to contact the customer in the "PER" segment. Additionally, there is an N1/Address loop that uses an "LW" qualifier. LW is another way to identify the customer, but if you had never seen it before, you may not know what it represents.

AMAZON - Shipping Address Information

*N1*ST**92*OAK3*

Amazon sends simply an address code for where products need to be sent.

EDI retailers may use the following qualifiers to identify different address types: Bill To Address (BT), Ship From Address (SF), and Ship To Address (ST). However, we see in the above examples that Amazon sends their address using an address code (a code that represents the entire address), another variance that would need to be accounted for in an address/EDI map.

Logicbroker's API handles these variances by having a clearly labeled object for each address type, as well as allowing for specific address codes within each address, that can be mapped later during the order lifecycle.

```
"ShipToAddress": {
    "CompanyName": "string",
    "FirstName": "string",
    "LastName": "string",
    "Title": "string",
    "Address1": "string",
    "Address2": "string",
    "City": "string",
    "State": "string",
    "Country": "string",
    "Zip": "string",
    "Province": "string",
    "AddressCode": "string",
    "StateCode": "string",
    "CountryCode": "string",
    "Phone": "string",
    "ContactID": "string",
    "ContactType": 0,
    "Email": "string",
    "TaxNumber": "string",
    "FaxNumber": "string",
    "Note": "string",
    "ExtendedAttributes": [
      {
        "Name": "string",
        "Value": "string",
        "Section": "string"
      }
    ]
  },
  "BillToAddress": {
    "CompanyName": "string",
    "FirstName": "string",
    "LastName": "string",
    "Title": "string",
    "Address1": "string",
    "Address2": "string",
    "City": "string",
    "State": "string",
    "Country": "string",
    "Zip": "string",
    "Province": "string",
    "AddressCode": "string",
    "StateCode": "string",
    "CountryCode": "string",
    "Phone": "string",
    "ContactID": "string",
    "ContactType": 0,
    "Email": "string",
    "TaxNumber": "string",
    "FaxNumber": "string",
    "Note": "string",
    "ExtendedAttributes": [
      {
        "Name": "string",
        "Value": "string",
        "Section": "string"
      }
    ]
  },
```


Although we have touched on three commonly used EDI segments, how retailers may send entirely different data in completely different ways (i.e. REF segments, DTM, etc.) A key takeaway regarding EDI is that each piece of information may live in a different data point, but it is up to your EDI system/provider to map these values in a way that your system can handle them.

APIs provide a human-readable format to this data, which in turn will allow for quicker system mapping, greatly reducing the amount of time needed to onboard and transact data with your partners.

In Part 2 of this article, coming Q2 2020, we will take a look at the way different APIs handle transacting shipment data, and how Advance Shipment Notifications (EDI 856) are used to communicate this information as well. In the meantime, we invite you to check out additional information about channel integrations via API.