XPOLogistics
Less-Than-Truckload

API Implementation Guide — LTL Shipping Tools

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Document Owner	XPO Less-Than-Truckload IT Service Governance Team
API Name	LTL Shipping Tools
API Description	This API provides tools to plan and predict the shipment of freights. It also provides service center information.
Document Purpose	This document details the use the following Pickup Request operations: - **calculateTransitTime** - **getCustomerServiceCenterDetails** - **calculateLinealFeet** Each operation will show the request and/or response interfaces for the operation, describing mandatory and optional elements. They will also specify values permitted for a field, any formatting constraints, as well as any errors that may be encountered.
Operation Descriptions	**calculateTransitTime** – This operation returns the estimated shipment transit time, whether guaranteed delivery is available, and the earliest delivery date or last date to pick up. The information returned depends on the information entered. **getCustomerServiceCenterDetails** – This operation returns information about the service center based on the SIC code or ZIP code that the service center services. **calculateLinealFeet** – This operation calculates lineal feet and excessive length (ELS) measurements, based on entered dimensions, piece counts, and weight. It determines whether lineal feet rating or ELS is applicable.

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1 Introduction

1.1 Purpose

The purpose of this document is to provide a technical guide for the Shipping Tools JSON API service. For information on general XPO LTL API setup, including security; health check; rate limits; discovering API options; response structures; and test mode, see the API Help Center on LTL.XPO.com.

1.2 Scope

This document covers the execution environment, operation definitions, input and output descriptions, and sample inputs and outputs.

2 Shipping Tools Execution

2.1 Production Environment

Endpoint

Production: https://api.ltl.xpo.com/shippingtools/1.0 *(use production end point for testing)*

Endpoint Resource Value

Operation Name	URI Prefix	API Method
calculateTransitTimes	/transit-time-calculator	POST
getCustomerServiceCenterDetails	/service-center	GET
calculateLinealFeet	/lineal-ft-calculator	POST

3 calculateTransitTime

3.1 Description

This operation returns the estimated shipment transit time and whether guaranteed delivery is available. It also performs the following functions:

- Entering a pickup date will return an estimated delivery date
- Entering a delivery date will return the earliest and the latest date available for pick up

The information returned depends on the information entered. See the post-conditions table below for details.

Business rules:

- The origin postal code and destination postal code must both be entered.
- This operation accepts non-entry of pickup and delivery dates. If no dates are entered, then the pickup date is populated with the current date and the operation will return an earliest delivery date.

- Any date in the past or the future may be entered.

Post-conditions:

Aside from the stated outputs, the outputs also include:

- the inputs provided by the user
- the identifiers (SIC code) of the service center picking up the shipment and the service center delivering the shipment.

Inputs				Outputs				
Orig. Postal Code	Dest. Postal Code	Pickup Date	Delivery Date	Estimated Delivery Date	Standard Shipment Transit Days	Can be shipped by G!	Earliest Pickup Date	Latest Pickup Date
Y	Y	Y		Y	Y	Y		
Y	Y		Y		Y	Y	Y	Y
Y	Y			Y (current date is used as pickup date)	Y	Y		
Y	Y	Y	Y	Y (pickup date is used when both Dates are present)	Y	Y		

3.2 Request Elements

Element	Type	Cardinality	Valid Values or Sample Values	Required (Y)	Description
transitTime	Object	One to Many			
transitTime.origPostalCd	String		97209 48105	Y	The postal code of the requested shipment pickup location
transitTime.destPostalCd	String		97209 48105	Y	The postal code of the destination of the shipment
transitTime.requestedPkupDate	Date		2016-23-12 12/23/2016		The date the shipment is requested to be picked up
transitTime.requestedDlvrDate	Date		2017-01-15 01/15/2017		The date the shipment is requested to be delivered

3.3 Response Elements

Element	Type	Cardinality	Valid Values or Sample Values	Description
transitTime	Object	Zero to Many		Details about the shipment status.
transitTime.destStateCd	String		TN OR	Destination state code.
transitTime.destPostalCd	String		48105	Destination postal code requested by the customer.
transitTime.destSicCd	String		XAH	Destination service center sic code delivering the freight.
transitTime.estdDlvrDate	Date		1483084800000	Estimated delivery date.
transitTime.garntInd	Boolean			Indicates if the ltl.xpo Guaranteed Service is provided between the requested zip codes. The customer has to opt for this service.
transitTime.latestPkupDate	Date		1482434437679	Latest date by which the freight should be picked up in order to meet the requested delivery date.
transitTime.origPostalCd	String		97209	Origin postal code provided by the user.
transitTime.origStateCd	String		TN OR	Origin State Code.
transitTime.origSicCd	String		UPO	Origin service center sic code picking up the freight.
transitTime.requestedDlvrDate	Date		1484467200000	Delivery date requested by the customer; currently only used for time–date-critical shipments.
transitTime.requestedPkupDate	Date		1482480000000	Requested pickup date; if not provided, defaults to the current date
transitTime.transitDays	Integer		4	The standard number of service transit (business) days required to move from origin to destination
transitTime.earliestPkupDate	Date		1482480000000	Earliest date by which the freight should be picked up in order to meet the requested delivery date.
transitTime.note	String			Provides any special instructions, if needed.
transitTime.isPkupDateHoliday	Boolean			Indicates if the requested pickup date is a holiday.
transitTime. isrqstdDeliveryDateHoliday	Boolean			Indicates if the requested delivery date is a holiday.

3.4 calculateTransitTime Samples

Request URL:
https://api.ltl.xpo.com/shippingtools/1.0/transit-time-calculator

Request Message:

```
{
      "transitTime": [
            {
                  "origPostalCd": "97209",
                  "destPostalCd": "K1A1G4"
            },
            {
                  "origPostalCd": "97209",
                  "destPostalCd": "V5K0A1",
                  "requestedPkupDate": "2017-04-01T00:00:00-08:00"
            },
            {
                  "origPostalCd": "K1A1G4",
                  "destPostalCd": "99501",
                  "requestedDlvrDate": "2017-04-03T00:00:00-08:00"
            },
            {
                  "origPostalCd": "97209",
                  "destPostalCd": "38125",
                  "requestedPkupDate": "2017-04-05T00:00:00-08:00",
                  "requestedDlvrDate": "2017-04-09T00:00:00-08:00"
            }
      ]
}
```

Response message:

```
{
  "code": "201",
  "transactionTimestamp": 1489181215758,
  "data": {
    "transitTime": [
      {
        "destStateCd": "ON",
        "destPostalCd": "K1A1G4",
        "destSicCd": "XOI",
        "estdDlvrDate": 1489561200000,
        "garntInd": true,
        "origPostalCd": "97209",
        "origStateCd": "OR",
        "origSicCd": "UPO",
        "requestedPkupDate": 1489181216228,
        "transitDays": 5
      },
      {
        "destStateCd": "BC",
        "destPostalCd": "V5K0A1",
        "destSicCd": "XVC",
        "estdDlvrDate": 1491116400000,
        "garntInd": false,
        "origPostalCd": "97209",
        "origStateCd": "OR",
        "origSicCd": "UPO",
```

```
        "requestedPkupDate": 1491033600000,
        "transitDays": 1,
        "note": "The requested pickup date is not available. Please contact
your local Service Center to schedule Holiday or Weekend service.",
        "isPkupDateHoliday": true
      },
      {
        "destStateCd": "AK",
        "destPostalCd": "99501",
        "destSicCd": "UAK",
        "garntInd": false,
        "latestPkupDate": 1489561200524,
        "origPostalCd": "K1A1G4",
        "origStateCd": "ON",
        "origSicCd": "XOI",
        "requestedDlvrDate": 1491206400000,
        "transitDays": 13,
        "earliestPkupDate": 1489132800525,
        "isrqstdDeliveryDateHoliday": false
      },
      {
        "destStateCd": "TN",
        "destPostalCd": "38125",
        "destSicCd": "NMP",
        "estdDlvrDate": 1491634800000,
        "garntInd": true,
        "origPostalCd": "97209",
        "origStateCd": "OR",
        "origSicCd": "UPO",
        "requestedDlvrDate": 1491724800000,
        "requestedPkupDate": 1491379200000,
        "transitDays": 3
      }
    ]
  }
}
```

4 getCustomerServiceCenterDetails

4.1 Description

This operation returns information about the service center based on the SIC code or ZIP code provided. This information includes the service center's physical address and geo-coordinates for use in GIS applications as well as its contact information.

Business rules:

- Either a valid postal code or SIC code may be entered.

Post-conditions:

- If a valid postal code is entered, the operation returns information about the service center that services the postal code.
- If a valid SIC code was entered, the operation returns information about the service center identified by the SIC code.

4.2 Request Elements

Element	Type	Cardinality	Valid Values or Sample Values	Required (Y)	Description
postalCd	String		97035	Either postalCd or sicCd required	The zip code to which the service center provides service
sicCd	String		UPO	Either postalCd or sicCd required	The unique identifier of the service center

4.3 Response Elements

Element	Type	Cardinality	Valid Values or Sample Values	Description
serviceCenter	Object	Zero or One		
serviceCenter.sicCd	String		UPO	SIC code (unique identifier) of the service center
serviceCenter.address	Object	Zero or One		Address of the service center
serviceCenter.address.addressTypeCd	String		home, work, headquarters, admin offices, billing, etc.	If there is a list of addresses, what type of address it is; may be empty if there is only one address.
serviceCenter.address.name	String		Portland	The service center's name
serviceCenter.address.careOfName	String		Donny Osmond	The name of an alternate contact.
serviceCenter.address.addressLine1	String		1000 SW Broadway St.	Address line that includes street name, direction and building number
serviceCenter.address.addressLine2	String		Unit C, shipping department	Additional address
serviceCenter.address.postOfficeBox	String		PO Box 212	A PO box number

Element	Type	Cardinality	Valid Values or Sample Values	Description
serviceCenter.address.cityName	String		Portland	City where the service center is located
serviceCenter.address.stateCd	String		OR	State code of the city where the service center is located
serviceCenter.address.countryCd	String		USA	Country code of the country where the service center is located
serviceCenter.address.postalCd	String		97229	Postal code (ZIP) where the service center is located
serviceCenter.address.usZip4	String		3323	A 4-digit extension to the US 5-digit ZIP code.
serviceCenter.coordinates	Object	Zero or One		The GIS coordinates of the service center.
serviceCenter.coordinates.latitude	Double		45.511598	The positive or negative number that represents the latitude of the coordinate.
serviceCenter.coordinates.longitude	Double		-122.678651	The positive or negative number that represents the longitude of the coordinate.
serviceCenter.custServicePhoneNbr	String		(503) 555-1212	The phone number of customer service at the service center.
serviceCenter.tollFreePhoneNbr	String		(503) 555-1212	The toll-free phone number for the service center.
serviceCenter.faxNbr	String		(503) 555-1212	The fax telephone number for the service center.
serviceCenter.contact	Object	Zero to Many	Andrew Orchard	Contains the names and contact information for staff at the service center.
serviceCenter.contact.contactTitle	String		Manager	The job title of the contact.
serviceCenter.contact.contactFullName	String		Andrew Orchard	The full name of the contact
serviceCenter.contact.email	Object	Zero or One		The email of the contact.
serviceCenter.contact.email.emailAddr	String		andrew.orchard2@abc.com	The email address
serviceCenter.contact.email.emailTypeCd	String		work	The type of email address e.g. home, work, etc.

4.4 getCustomerServiceCenterDetails Samples

Request URL:
https://api.ltl.xpo.com/shippingtools/1.0/service-center?sicCd=UPO

Response message:


```
{
  "code": 200,
  "transactionTimestamp": 1494971212621,
  "data": {
    "serviceCenter": {
      "sicCd": "UPO",
      "address": {
```

```
        "addressLine1": "CON-WAY FREIGHT",
        "addressLine2": "12250 SE FORD ST.",
        "cityName": "CLACKAMAS",
        "stateCd": "OR",
        "countryCd": "US",
        "postalCd": 97015,
        "usZip4": 9107
      },
      "custServicePhoneNbr": 5036839888,
      "tollFreePhoneNbr": 8005470423,
      "faxNbr": 5036839893,
      "contact": [
        {
          "contactTitle": "Manager",
          "contactFullName": "Andrew Ord",
          "email": {
            "emailAddr": "andrew.ord2@abc.com"
          }
        },
        {
          "contactTitle": "Account Executive",
          "contactFullName": "Jolanda Terl",
          "email": {
            "emailAddr": "jolanda.terl@abc.com"
          }
        },
        {
          "contactTitle": "Account Executive",
          "contactFullName": "David Fitter",
          "email": {
            "emailAddr": "david.fitter@abc.com"
          }
        },
        {
          "contactTitle": "Account Executive",
          "contactFullName": "Daniel Bint",
          "email": {
            "emailAddr": "dan.bint@abc.com"
          }
        },
        {
          "contactTitle": "Account Executive",
          "contactFullName": "Emily Cha",
          "email": {
            "emailAddr": "emily.cha@abc.com"
          }
        }
      ]
    }
  }
}
```

5 CalculateLinealFeet

5.1 Description

This operation calculates lineal feet and determines the longest width or length of all packages entered for excessive length (ELS) determination. Other dimension and volume information is also calculated and returned.
To use this operation in context of a rate quote:
If you expect to incur charges due to lineal foot, excessive length, or cubic capacity charges, use this operation, and add the resulting following information to call the getXpoLtlRateQuote operation in the LTLRating API:

- totalLinealFt
- excessiveLength
- cubicCapacity

Business rules:

- All information for at least one package is required

Post-conditions:

- Entered information is returned, along with volume, density, lineal foot and excessive length related information.

5.2 Request Elements

Element	Type	Cardinality	Valid Values or Sample Values	Required (Y)	Description
package	Object	1 or more		Y	One set of “package” information must be entered for each commodity line item in the rate quote.
package.weight	Decimal				Weight of package in lbs
package.pieceCnt	Integer				Number of commodity items
package.length	Decimal				Length of the package
package.width	Decimal				Width of the package
package.height	Decimal				Height of the package

5.3 Response Elements

Element	Type	Cardinality	Valid Values or Sample Values	Description
package	Object			This is the package information entered in the operation input.
package.weight	Decimal			Weight of package in lbs
package.pieceCnt	Integer			Number of commodity items
package.length	Decimal			Length of the package
package.width	Decimal			Width of the package
package.height	Decimal			Height of the package
package.volume	Decimal			Volume of the package in cubic feet
package.area	Decimal			Area of the package in square feet
package.linealFt	Decimal			Lineal feet of the package
package.density	Decimal			Density of the package (weight/volume)
package.adjustedHeight	Decimal			Adjusted height of the package. If package height is >75 then it gets adjusted to 96.
package.adjustedVolume	Decimal			Adjusted volume of the package in cubit feet, based on adjusted height.
totalPieceCount	Integer			Total of all the piece counts in all the packages.
totalWeight	Decimal			Total of all the weight for all the packages.
isLinealFeetApplicable	String			***not used***
totalVolume	Decimal			Total volume in Cu. Ft for the package details provided
totalDensity	Decimal			Total density for the package details provided
totalLinealFt	Decimal			Total Lineal Ft for the package details provided
totalArea	Decimal			Total area in Sq. Ft for the package details provided
linealFtComment	String			Comments provided for the Lineal feet
excessLengthComment	String			Comments provided for excessive length
isCriteria1	Boolean			Criteria 1 is applicable when lineal feet is calculated using the Dimensions of the skid.
isCriteria2	Boolean			Criteria 2 is applicable when lineal feet is calculated using the area of all the pieces combined
totalAdjustedDensity	Decimal			Adjusted Density of the package based on adjustedVolume
totalAdjustedVolume	Decimal			Adjusted Volume of the package in Cu. Ft based on Adjusted Height
adjustedWeight	Decimal			Adjusted Weight based on Item 233 cubic capacity rule

Element	Type	Cardinality	Valid Values or Sample Values	Description
isConditionB	Boolean			Condition B is applicable when there is 1 piece with width and height = 96 in
cuCapacityRemarks	String			Comments for the Cubic Capacity

5.4 calculateLinealFeet Samples

Request Message:

https://api.ltl.xpo.com/shippingtools/1.0/lineal-feet-calculator

POST /shippingtools/1.0/lineal-feet-calculator HTTP/1.1

Host: api.ltl.xpo.com

Content-Type: application/json

Authorization: Bearer 56bb38c3fb8cd94bb3778285bf6ba651

Cache-Control: no-cache

Postman-Token: 0cb2245e-0a80-eade-4c85-74771078358a

```
{
  "package": [
     {
     "pieceCnt": "15",
     "length": "99",
     "width": "90",
     "weight": "90",
     "height": "102"
    },
    {
     "pieceCnt": "15",
     "length": "90",
     "width": "90",
```

```
      "weight": "90",
      "height": "90"
    }
     ]
}
```


Response Message:


```
{
    "code": 201,
    "transactionTimestamp": 1509994377959,
    "data": {
        "totalPieceCount": 30,
        "totalWeight": 180,
        "isLinealFeetApplicable": "Yes",
        "totalVolume": 14217.19,
        "totalDensity": 0.013,
        "totalLinealFt": 236,
        "totalArea": 1771.88,
        "adjustedWeight": 85050,
        "package": [
            {
                "volume": 7889.063,
                "area": 928.13,
                "linealFt": 123.75,
                "density": 0.012,
                "pieceCnt": 15,
                "length": 99,
                "width": 90,
```

```
            "adjustedVolume": 7425,
            "weight": 90,
            "adjustedHeight": 96,
            "height": 102
         },
         {
            "volume": 6328.125,
            "area": 843.75,
            "linealFt": 112.5,
            "density": 0.015,
            "pieceCnt": 15,
            "length": 90,
            "width": 90,
            "adjustedVolume": 6750,
            "weight": 90,
            "adjustedHeight": 96,
            "height": 90
         }
      ]
   }
}
```

6 Document Revision History

API Version	Document publication date	Description of Implementation Guide Changes
1.0	11/01/2016	Initial version
1.0	6/08/2017	Added getCustomerServiceCenterDetails
1.0	7/31/2017	Corrected Endpoint Resource Value; Corrected URL in sample to point to production environment (not DEV)
1.0	9/11/2017	CalculateTransitTime: Added the rule that the dates entered can be up to 30 days in the future from the current date.
1.0	9/29/2017	CalculateTransitTime: Removed the rule that the dates entered can be up to 30 days in the future from the current date. Clarified any dates can be entered.
1.0	11/02/2017	Extracted the following sections into a common API page on LTO.XPO.com: • API security • Rate limits • Health Check • Options • Structure
1.0	12/08/2017	Added instructions on how to use the lineal foot calculator operation in conjunction with the rate quote API.