



# Smart Event Manager REST API Guide

For Synchronous Messages

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# Table of Contents

<b>Smart Event Manager REST API Guide</b> .....	1
<b>Copyright</b> .....	2
<b>Table of Contents</b> .....	3
<b>Getting Started</b> .....	5
<b>Overview</b> .....	6
Getting Started with REST .....	8
How Integration Works .....	10
How To Use this Guide .....	11
<b>Release Information</b> .....	19
<b>What's New?</b> .....	20
<b>Known Issues</b> .....	21
<b>Use Cases</b> .....	22
<b>3PL Use Cases</b> .....	23
<b>Wholesale Distributor Use Cases</b> .....	25
<b>Pharmacy Use Cases</b> .....	27
<b>Messages</b> .....	29
<b>Set Event Overview</b> .....	30
Set Event Request Guidelines .....	31
Set Event Response Guidelines .....	36
Set Event Errors .....	42
Set Event Message Examples .....	48
<b>Get Event Overview</b> .....	85
Get Event Request Guidelines .....	86

Get Event Response Guidelines .....	87
Get Event Errors .....	91
Get Event Message Examples .....	92
<b>Get Result Overview</b> .....	94
Get Result Request Guidelines .....	95
Get Result Response Guidelines .....	96
Get Result Errors .....	101
Get Result Message Examples .....	102
<b>Query Event Overview</b> .....	105
Query Event Guidelines .....	106
Query Event Errors .....	109
Query Event Message Examples .....	110
Query Event Options .....	112
<b>Enumerations</b> .....	114
CompanyType .....	115
CountryCode .....	116
EventType .....	127
ExtensionStatus .....	131
LocationType .....	132
PackagingCodeType .....	133
SerialNumberStatus .....	134
State .....	135
SerialNumberStatus .....	136
SupplyType .....	137
<b>Glossary</b> .....	138

# GETTING STARTED



# Overview

This guide outlines the message requirements for the Smart Event Manager application, which is an application that serves as an event ledger, and captures and records serial number observations on serialized objects (in whatever order they may occur) related to pharmacy, warehouse, and supply chain activities in an independent repository, without dependency on full track and trace and serial number life cycle requirements. Smart Event Manager is designed to work with other TraceLink applications that consume and leverage the serial number observations and enable workflow actions based on those observations.

Smart Event Manager provides a set of synchronous REST JSON APIs to communicate and query for serial number observations. The API enables integration with internal applications in these environments, including integration with handheld barcode scanners, pharmacy management systems, and warehouse systems.

These activities may or may not have compliance implications. For example, a Smart Event Manager message that reports the shipment of product to an Article 23 customer in an EU FMD country may result in the NMVS compliance application communicating to the appropriate NMVS to report the activity. The TraceLink NMVS Compliance application manages a set of workflows that determine when the Smart Event Manager transaction needs to communicate with the appropriate NMVS. The table below indicates the Smart Event Manager events and associated data that correlate to specific NMVS transactions:

Event Type	Market	Supply Type	NMVS Transaction
VERIFYING	EU FMD MARKET	-	Verify
SHIPPED	EU FMD MARKET	Article 23 Types	Supply
SHIPPED	EU FMD MARKET	Free Sample	Mark as Free Sample
SHIPPED	EU FMD MARKET	Export	Export from EU
UNDER_INVESTIGATION	EU FMD MARKET	-	Mark as Locked
DAMAGED	EU FMD MARKET	-	Mark as Destroyed
DESTROYED	EU FMD MARKET	-	Mark as Destroyed
DISPENSED	EU FMD MARKET	-	Supply
STOLEN	EU FMD MARKET	-	Mark as Stolen

Event Type	Market	Supply Type	NMVS Transaction
SAMPLED_BY_AUTHORITIES	EU FMD MARKET	-	Mark as Sample
UNDO_SHIPPED	EU FMD MARKET	Article 23 Types	Undo Supply
UNDO_SHIPPED	EU FMD MARKET	Free Sample	Undo Mark as Free Sample
UNDO_SHIPPED	EU FMD MARKET	Export	Undo Export from EU
UNDO_UNDER_INVESTIGATION	EU FMD MARKET	-	Undo Mark as Locked
UNDO_DISPENSED	EU FMD MARKET	-	Undo Supply
UNDO_SAMPLED_BY_AUTHORITIES	EU FMD MARKET	-	Undo Mark as Sample

# Getting Started with REST

The following information must be obtained prior to implementation:

① Development platform installation is required prior to integration.

## User Authentication and Identification

Smart Event Manager supports user based authentication using HTTP Basic Authentication. The encoded representation of the username and password is used in the header section.

1. For example, using the Base64 encoding, the following user name password combination of:
  - TL-User@gmail.com:TL-Password
2. Produces the encoded value of:
  - VEwtVXNlckBnbWFpC5jb206VEwtUGFzc3dvcmQK
3. Using the above user name and password, include the following in the Smart Event Manager header of the correlating message:
  - Content-Type = application/json
  - Authorization = VEwtVXNlckBnbWFpC5jb206VEwtUGFzc3dvcmQK

## Compliance

These activities may or may not have compliance implications. For example, a Smart Event Manager message that reports the shipment of product to an Article 23 customer in an EU FMD country may result in the NMVS compliance application communicating to the appropriate NMVS to report the activity. The TraceLink NMVS Compliance application manages a set of workflows that determine when the Smart Event Manager transaction needs to communicate with the appropriate NMVS. The table below indicates the Smart Event Manager events and associated data that correlate to specific NMVS transactions:

## HTTP Response Status Codes

Smart Event Manager presents standard response codes to indicate whether or not a specific HTTP request was successful. Response status codes may include, but are not limited to, the following:

## Successful response

200	OK. The request was successful. For GET, this means that the resource has been fetched.
-----	---

## Redirect message

307	Temporary Redirect. The client must get the requested resource at another URI with the same HTTP method that was used in the prior request.
-----	---

## Client error status codes

400	Bad Request. The server could not understand the request due to invalid syntax.
401	Unauthorized. The client is unauthenticated, not allowed access, and should re-request credentials.
403	Forbidden. The request is valid and the client is authenticated, but the client is not allowed access rights to the content for any reason.
404	Not Found. The server cannot find the requested item. This can also mean that the endpoint is valid but the resource does not exist.

## Server error status codes

500	Internal Server Error. The server has encountered an unknown error.
502	Bad Gateway. The server is working as a gateway to handle the request and received an invalid response.
503	Service Unavailable. The server is not ready to handle the request.
504	Gateway Timeout. The server is acting as a gateway and cannot get a response in time.

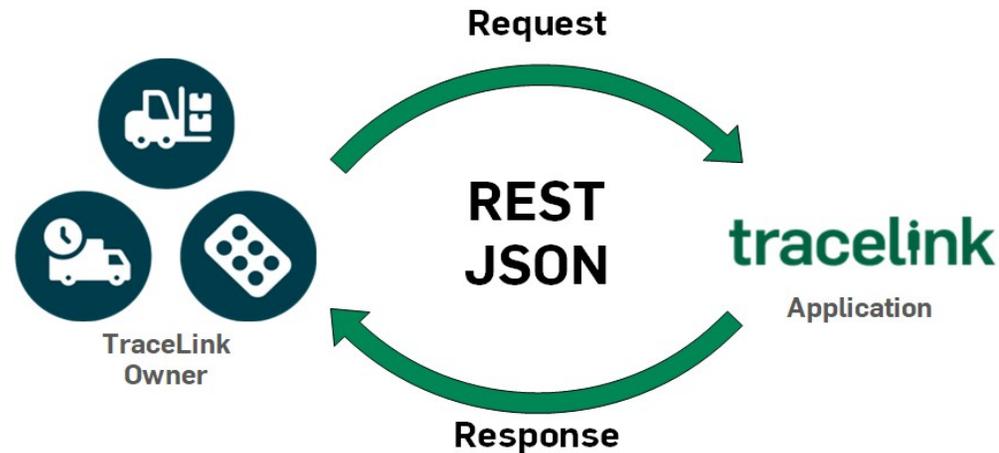
## Read Me

It is recommended that the following topics are read before proceeding through this guide:

- [How Integration Works](#)
- [How To Use this Guide](#)

# How Integration Works

TraceLink communicates with certain operating systems/programs of choice through REST JSON integration.



For example, if a Wholesale Distributor wants to record an event (e.g. verification, shipping, receiving), the Set Event Request REST message is sent from their internal system to TraceLink's REST API endpoint, which is the main request-response communication hub. The End Point extracts the JSON from the Set Event Request message and passes it to the TraceLink platform.

Smart Event Manager waits for the JSON response containing the same information that was sent in the Request along with the additional fields of eventId, status, message, and state. Smart Event Manager then sends the data back through the endpoint where the REST response generates, and sends the response back to the original system. This response also confirms whether the operation is successful or if it fails.

Go to [Message Examples](#) to see an example JSON Set Event message examples.

# How To Use this Guide

There are three main sections for each REST message that are pertinent to integration:

1. [Guidelines Table](#)
2. [Errors Table](#)
3. [Message Examples](#)

# Guidelines Table

A *Guidelines Table* contains message requirements for both the message request and response:

Data Element		Occurs	Format	Length	Enums	Req	Description
eventTime		1...1	String	1/*	-	M	The date/time of when the Set Event occurred. Specifically, this may indicate when the physical scan is performed or may indicate the date and time that the calling application has provided. This is formatted in GMT datetime format (e.g. "2018-06-05T01:33:34.711Z").
	past	0...1	String	1/*	-	O	Returns all events based upon a number and unit (e.g. minutes, hours, days):
	amount	0...1	String	1/*	-	M	The amount of time. <sup>1</sup>
	unit	0...1	String	1/*	-	M	The unit of time relating to the amount. Valid values: <sup>2</sup> <ul style="list-style-type: none"> <li>• MILLIS</li> <li>• SECONDS</li> <li>• MINUTES</li> <li>• HOURS</li> <li>• DAYS</li> <li>• WEEKS</li> </ul>
	timestamp	0...1	String	1/*	-	O	Returns all events based upon a start and end time.
	start	0...1	String	1/*	-	M	The start time in UTC Event Date Time format. <sup>3</sup>
	end	0...1	String	1/*	-	M	The end time in UTC Event Date Time format. <sup>4</sup>
	date-time	0...1	String	1/*	-	O	Returns all events based upon a start and end date.
	start	0...1	String	1/*	-	M	The start date in GMT datetime format (e.g. "2018-06-05T01:33:34.711Z").
	end	0...1	String	1/*	-	M	The end date in GMT datetime format (e.g. "2018-06-05T01:33:34.711Z").

<sup>1</sup>2

<sup>2</sup>MINUTES

<sup>3</sup>1523229645000

<sup>4</sup>1523229646000

## The following columns are included in the Guidelines Table:

### Data Element

This column indicates the source/field name included in the API call.

① Hovering over a linked footnote in the Data Element column displays sample data for that element. When using the printed version of the document, simply refer to the matching footnote at the bottom of the page.

### Occurs

This column indicates the minimum and maximum amount of times that the particular field can occur within the API call (note that repeating elements are indicated in the "Description" column). In the example above, the *@sn* field must occur a minimum of once and can only occur up to once for the maximum occurrence as indicated by the "1...1". If "\*" is indicated, the element has an unbounded maximum occurrence.

### Format

This column indicates the field's data format type (such as String, Integer, Boolean, Date, Time).

### Length

This column indicates the length of the field. For the *@sn* example above, the field must have at least one character, but does not have a maximum restriction (therefore can be any length). However, be mindful of the description column, as further criteria may be indicated that impacts the field length (such as serial number formatting).

### Enums

Certain fields are restricted to a list of specified enumeration values. A link to the enumerations and their definitions is provided in this column. For example, *EncodingType* links to the available enumerators.

### Req

Each table indicates if the field is required for the message. Use the key below to interpret the information in this column:

- **C = Conditionally:** A "C" indicates that this field is contingent on other factors. For example, a field could be required for the US but not for any other country. Therefore the field's requirement is contingent on location. Another conditional scenario is that a

field may be mandatory, but only if another related parent element is populated.

① If indicated as "C", read the "Description" column as conditional values may still be mandatory in certain cases.

- **M = Mandatory:** An "M" indicates the field must be included in the message.
- **O = Optional:** An "O" indicates that a field may be included in the message but is not required.

## Description

Any important notes regarding this section of the API call are included here (required countries, formatting notes, etc.) along with a brief description of the element/attribute.

# Errors Table

The *Errors Table* displays all potential errors that may be encountered for a certain message. The Error Code and the actual error message (Error Message) are provided to assist in troubleshooting:

Error Code	Error Messages	Description
eventTime	The Set Event Request cannot be processed. The eventTime is not specified.	The error occurs if the source is empty or null.
	The Set Event Request cannot be processed. The eventTime is not properly formatted (e.g. "2018-06-05T01:33:34.711Z").	The error occurs if the source is not in GMT dateTime format.
eventType	The Set Event Request cannot be processed. The eventType is not specified.	The error occurs if the source is empty or null.
	The Set Event Request cannot be processed. The eventType is not valid. The eventType must be one of the following: VERIFYING, SHIPPED, RECEIVED, UNDER_INVESTIGATION, AVAILABLE, DAMAGED, DESTROYED, DISPENSED, STOLEN, SAMPLED_BY_AUTHORITIES, UNDO_SHIPPED, UNDO_RECEIVED, UNDO_UNDER_INVESTIGATION, UNDO_AVAILABLE, UNDO_DAMAGED, UNDO_DESTROYED, UNDO_DISPENSED, UNDO_STOLEN, or UNDO_SAMPLED_BY_AUTHORITIES.	The error occurs if the source is present, but there is no matching entry in the lookup file.

# Message Examples

The *Message Examples* section is where fully populated message examples for both the request and response are located.

📄 Line numbers and syntax highlights are only available in the online version of the guide.

## Example

The following is an AVAILABLE Set Event Request example:

```
{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "2018-06-05T01:33:35Z",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "packagingCode": "86740665964858",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "AVAILABLE",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "SZ"
      }
    ],
    "customData": [
```

```

    {
      "extensionKey": "reason",
      "extensionValue": "Verified that product is valid for sale. Issue #394985. Approved by J. Martin."
    }
  ]
}
}

```

The following is an AVAILABLE Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem-set-event-Response-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb",
    "errc": "200_SUCCESSFUL_OPERATION",
    "errm": "Successful Operation. Request completed successfully."
  },
  "p": {
    "eventId": "671397ed-9964-41e9-8670-8ad2c743008a",
    "eventTime": "2018-06-05T01:33:34.711Z",
    {
      "serialNumber": "PK009FF8895F416984B",
      "lotNumber": "TEST2C9588146D",
      "expirationDate": "230531",
      "packagingCode": "86740665964858",
      "packagingCodeType": "GTIN-14"
    }
  },
  "eventType": "AVAILABLE",
  "locationType": "SGLN",
  "locationValue": "030058.123456.0",
  "extensionData": [
    {
      "extensionKey": "market",
      "extensionValue": "SZ",
      "extensionKey": "status",
      "extensionValue": "SUCCESS"
    }
  ]
}

```

```
],  
  "customData": [  
    {  
      "extensionKey": "reason",  
      "extensionValue": "Verified that product is valid for sale. Issue #394985. Approved by J. Martin."  
    }  
  ]  
}
```

# RELEASE INFORMATION



# What's New?

## Release Track & Trace Services Version 2024.4

### Messages Updated in Version 2024.4:

No messages were updated in this release.

### Messages Added in Version 2024.4:

No messages were added in this release.

## Release Track & Trace Services Version 2024.3

### Messages Updated in Version 2024.3:

No messages were updated in this release.

### Messages Added in Version 2024.3:

No messages were added in this release.

## Release Track & Trace Services Version 2024.2

### Messages Updated in Version 2024.2:

No messages were updated in this release.

### Messages Added in Version 2024.2:

No messages were added in this release.

# Known Issues

## Release Track & Trace Services Version 2024.4

### Known Issues in Version 2024.4:

There are no known issues in this release.

# USE CASES



# 3PL Use Cases



## TraceLink Roles

TraceLink API Guides group messages by application. Each API Guide contains all messages available within that application. Your company's business type (e.g. CMO, Wholesale Distributor, 3PL) and role in the TraceLink Network (Owner or Partner<sup>1</sup>) determine which of these messages to develop (i.e. not all messages within this guide may fulfill your business or compliance needs).

See below to confirm which messages you should develop based on your role in the supply chain and/or the TraceLink Network.

① Configure and exchange (send or receive) each message separately as a best practice.

<sup>1</sup>See Glossary for details on Owners and Partners.

A 3PL acting on behalf of a Pharmaceutical Manufacturer can enable asynchronously notifying the relevant Pharmaceutical Manufacturer of successful Set Event requests. This requires the 3PL to own Smart Event Manager, Master Data Exchange, and Serialized Operations Manager applications. The 3PL uses this feature by enabling the Smart Event Manager Notification Workflow and the Serialized Operations Manager Update Serial Number Status Workflow in Company Administration, and by specifying the Product Master Data, including the Pharmaceutical Manufacturer ID at the target market level, only for products that require Pharmaceutical Manufacturer notification.

## Smart Event Manager Owners

### TraceLink Set Event Request/Response

3PLs send the [Set Event Request](#) to TraceLink to record events (e.g. verification, shipping, receiving) and observations, as well as to record "undo" operations when events or observations are submitted in error. TraceLink sends the [Set Event Response](#) is sent by TraceLink and includes the original Request data, plus additional response fields that include the assigned eventId and processing result information (i.e. status, message, and state).

### TraceLink Get Event Request/Response

3PLs send the [Get Event Request](#) to TraceLink returning the Request and Response from a single previously reported Set Event for a specific eventId. TraceLink generates the eventId when processing the initial Set Event Request. The [Get Event Response](#) is sent by TraceLink and includes the complete Request and Response contents from the original Set Event. The response fields vary based on the information included in each specific event.

### TraceLink Get Result Request/Response

3PLs send the [Get Result Request](#) to TraceLink using the eventQueryResponseId to determine if a bulk serial number request has been processed and what the result of the request is.

### TraceLink Query Events Request/Response

3PLs send the [Query Event Request](#) to TraceLink to retrieve previously submitted events and their results using a broad set of search criteria. The [Query Event Response](#) is sent by TraceLink and includes all of the event data from the Set Event Request and Response relating to the search criteria.

# Wholesale Distributor Use Cases



## TraceLink Roles

TraceLink API Guides group messages by application. Each API Guide contains all messages available within that application. Your company's business type (e.g. CMO, Wholesale Distributor, 3PL) and role in the TraceLink Network (Owner or Partner<sup>1</sup>) determine which of these messages to develop (i.e. not all messages within this guide may fulfill your business or compliance needs).

See below to confirm which messages you should develop based on your role in the supply chain and/or the TraceLink Network.

① Configure and exchange (send or receive) each message separately as a best practice.

<sup>1</sup>See Glossary for details on Owners and Partners.

## Smart Event Manager Owners

### TraceLink Set Event Request/Response

Wholesale Distributors send the [Set Event Request](#) to TraceLink to record events (e.g. verification, shipping, receiving) and observations, as well as to record "undo" operations when events or observations are submitted in error. TraceLink sends the [Set Event Response](#) is sent by TraceLink and includes the original Request data, plus additional response fields that include the assigned eventId and processing result information (i.e. status, message, and state).

### TraceLink Get Event Request/Response

Wholesale Distributors send the [Get Event Request](#) to TraceLink returning the Request and Response from a single previously reported Set Event for a specific eventId. TraceLink generates the eventId when processing the initial Set Event Request. The [Get Event Response](#) is sent by TraceLink and includes the complete Request and Response contents from the original Set Event. The response fields vary based on the information included in each specific event.

### TraceLink Get Result Request/Response

Wholesale Distributors send the [Get Result Request](#) to TraceLink using the eventQueryResponseId to determine if a bulk serial number request has been processed and what the result of the request is.

### TraceLink Query Events Request/Response

Wholesale Distributors send the [Query Event Request](#) to TraceLink to retrieve previously submitted events and their results using a broad set of search criteria. The [Query Event Response](#) is sent by TraceLink and includes all of the event data from the Set Event Request and Response relating to the search criteria.

# Pharmacy Use Cases



## TraceLink Roles

TraceLink API Guides group messages by application. Each API Guide contains all messages available within that application. Your company's business type (e.g. CMO, Wholesale Distributor, 3PL) and role in the TraceLink Network (Owner or Partner<sup>1</sup>) determine which of these messages to develop (i.e. not all messages within this guide may fulfill your business or compliance needs).

See below to confirm which messages you should develop based on your role in the supply chain and/or the TraceLink Network.

① Configure and exchange (send or receive) each message separately as a best practice.

<sup>1</sup>See Glossary for details on Owners and Partners.

## Smart Event Manager Owners

### TraceLink Set Event Request/Response

Pharmacies send the [Set Event Request](#) to TraceLink to record events (e.g. verification, shipping, receiving) and observations, as well as to record "undo" operations when events or observations are submitted in error. TraceLink sends the [Set Event Response](#) is sent by TraceLink and includes the original Request data, plus additional response fields that include the assigned eventId and processing result information (i.e. status, message, and state).

### TraceLink Get Event Request/Response

Pharmacies send the [Get Event Request](#) to TraceLink returning the Request and Response from a single previously reported Set Event for a specific eventId. TraceLink generates the eventId when processing the initial Set Event Request. The [Get Event Response](#) is sent by TraceLink and includes the complete Request and Response contents from the original Set Event. The response fields vary based on the information included in each specific event.

### TraceLink Get Result Request/Response

Pharmacies send the [Get Result Request](#) to TraceLink using the eventQueryResponseId to determine if a bulk serial number request has been processed and what the result of the request is.

### TraceLink Query Events Request/Response

Pharmacies send the [Query Event Request](#) to TraceLink to retrieve previously submitted events and their results using a broad set of search criteria. The [Query Event Response](#) is sent by TraceLink and includes all of the event data from the Set Event Request and Response relating to the search criteria.

# MESSAGES



# Set Event Overview

Smart Event Manager Owners use Set Event to record events (e.g. verification) and observations synchronously, as well as to record "undo" operations when events or observations are submitted in error. The API's fields and key/value pairs support supply chain and compliance objectives. The customData field supports user-defined name/value pairs and has no effect on the processing of the message. The Set Event Response includes all of the same data from the Request plus additional response fields including the TraceLink-generated eventId and processing result information (i.e. status, message, and state).

Smart Event Manager Owners who are also Consumers for Product Information Manager (Product Verification) can verify serial numbers with a Target Market in the United States or its territories. For example, if a Wholesale Distributor receives returned product from a Pharmacy, the company can verify that the serial numbers are legitimate and still saleable by sending a Set Event message with a Target Market of the United States. Smart Event Manager sends this request to the Product Information Exchange app, which verifies these serial numbers against the Pharmaceutical Manufacturer's serial numbers in Product Information Manager (Product Verification) or an external Verification Router Service (VRS).

## Main Topics

- [Request Guidelines](#)
- [Response Guidelines](#)
- [Errors](#)
- [Examples](#)

# Set Event Request Guidelines

See [How To Use this Guide](#) before interpreting the guidelines below.

The following is the Set Event Request guidelines table:

Data Element	Occurs Length	Type	Description
eventTime	1..1 1/*	String	<b>Required.</b> The date and time the Set Event occurred. Specifically, this may indicate when the physical scan is performed or the date and time provided by the calling application.
serialNumberList	1..1 1/*	String	<b>Required.</b> Indicates the serialized product associated with the Smart Event Manager Event Request. The Set Event request API supports the reporting of either one serial number (which is processed synchronously) or multiple serial numbers (which are processed asynchronously).  At minimum, the Smart Event Manager Event Request API requires the following: <ul style="list-style-type: none"> <li>• packagingCode</li> <li>• serialNumber</li> <li>• lotNumber</li> <li>• expirationDate</li> </ul>
packagingCode	1..1 1/*	String	<b>Required.</b> The packaging code of the serialized product. Supports GTIN-14, NTIN, or CN-RESCODE.  This corresponds to the GS1 Application Identifier 01 if the <b>packagingCode</b> represents a GTIN-14 or NTIN.
packagingCodeType	0..1 0/*	String	The type of the serialized product packaging code. The default value is <b>GTIN-14</b> .  See the <a href="#">PackagingCodeType</a> enumeration list for valid values.
serialNumber	1..1 1/*	String	<b>Required.</b> The serial number associated with the serialized product. This is specified in the GS1 Application Identifier format without parentheses for the AI keys. AI (01) (21) formatted serial numbers for GTINs. Non-GS1 serial numbers (e.g. China) are expressed in native format.  This corresponds to the GS1 Application Identifier 21.
lotNumber	1..1 1/*	String	<b>Required.</b> The lot or batch code associated with the serialized product.  This corresponds to the GS1 Application Identifier 10.
expirationDate	1..1 1/*	String	<b>Required.</b> Indicates the expiration date of the serialized product in YYMMDD format and corresponds to the GS1 Application Identifier 17 as originally reported in the request message. The element supports the value 00 for the DD element.

Data Element	Occurs Length	Type	Description
productionDate	0..1 0/*	Date	The production date associated with the serialized product. This is specified in YYMMDD format. This corresponds to the GS1 Application Identifier 11.
variant	0..1 0/*	String	The internal product variant associated with the serialized product. This corresponds to the GS1 Application Identifier 20.
activePotency	0..1 0/*	String	The active potency associated with the serialized product. This corresponds to the GS1 Application Identifier 7004.
nhrnPZN	0..1 0/*	String	The National Healthcare Reimbursement Number for the Germany PZN associated with the serialized product. This corresponds to the GS1 Application Identifier 710.
nhrnCIP	0..1 0/*	String	The National Healthcare Reimbursement Number for the French CIP associated with the serialized product. This corresponds to the GS1 Application Identifier 711.
nhrnCN	0..1 0/*	String	The National Healthcare Reimbursement Number for the SpainCodigo Nacional associated with the serialized product. This corresponds to the GS1 Application Identifier 712.
nhrnDRN	0..1 0/*	String	The National Healthcare Reimbursement Number for the Brasil ANVISA associated with the serialized product. This corresponds to the GS1 Application Identifier 713.
nhrnAIM	0..1 0/*	String	The National Healthcare Reimbursement Number for the Portugal AIM associated with the serialized product. This corresponds to the GS1 Application Identifier 714.
barcode	0..1 0/*	String	The full 2D barcode content of the product scan. At minimum this contains: <ul style="list-style-type: none"> <li>packagingCode</li> <li>serialNumber</li> <li>lotNumber</li> <li>expirationDate</li> </ul> <p>This field should include the full raw DataMatrix content in the native GS1 Element String, with FNC1 (codeword 232) symbol character separators preserved so the system can parse variable length data elements accurately. For more information, see <i>Section 2.2. GS1 Element Strings of GS1 Data Matrix Guide – Introduction and Implementation Guideline, version 2.2, published May 2015.</i></p>

Data Element		Occurs Length	Type	Description
	containerID	0..1 0/*	String	The container identifier for the relevant <b>serialNumber</b> .
	containerType	0..1 0/*	String	<b>Conditionally required</b> if <b>containerID</b> is present. The type of the serialized product <b>containerId</b> . This may be one of the following: <ul style="list-style-type: none"> <li>• <a href="#">GTIN-14</a></li> <li>• <a href="#">SSCC</a></li> </ul>
	eventType	1..1 1/*	String	<b>Required.</b> The nature of the Smart Event Manager event request. As a generic observation API, this Smart Event Manager message captures a variety of supply chain and compliance activities.  Valid value: <a href="#">VERIFYING</a>
	locationType	1..1 1/*	String	<b>Required.</b> The type of the associated <b>locationValue</b> for the serialized product event.  See the <a href="#">LocationType</a> enumeration list for valid values.
	locationValue	1..1 1/*	String	<b>Required.</b> The location where the reported supply chain activity takes place.
	extensionData	1..1 1/*	String	<b>Required.</b> Supports a number of name/value pairs for reporting various supply chain and compliance activities.  The <b>extensionData</b> section may contain 0-n name/value pairs. TraceLink reserves these name/value pairs for use in the subsequent synchronous processing for the event. The information in the <b>extensionData</b> section is stored in the Smart Event Manager repository.
	market	1..1 1/*	String	<b>Required.</b> The market name/value pair indicates the country where the reported event activity occurs. Must be a 2-letter ISO Code of country where event occurs.  See the <a href="#">CountryCode</a> enumeration list for valid values.
	supplyType	0..1 0/*	String	A name/value pair that indicates a description of the compliance/supply chain activity. Use this to describe shipment activity.  See the <a href="#">SupplyType</a> enumeration list for valid values.
	po	0..1 0/*	String	The Purchase Order associated with the serial numbers in <b>serialNumberList</b> .
	salesOrder	0..1 0/*	String	The Sales Order associated with the serial numbers in <b>serialNumberList</b> .
	return	0..1 0/*	String	The Return Order associated with the serial numbers in <b>serialNumberList</b> .

Data Element	Occurs Length	Type	Description
transfer	0..1 0/*	String	The Transfer Order associated with the serial numbers in serialNumberList.
asn	0..1 0/*	String	The Advance Shipped Notice associated with the serial numbers in serialNumberList.
bol	0..1 0/*	String	The Bill of Lading associated with the serial numbers in serialNumberList.
packslip	0..1 0/*	String	The Packing Slip associated with the serial numbers in serialNumberList.
invoice	0..1 0/*	String	The Invoice associated with the serial numbers in serialNumberList.
destruction	0..1 0/*	String	The Destruction Order associated with the serial numbers in serialNumberList.
notaFiscal	0..1 0/*	String	The Nota Fiscal associated with the serial numbers in serialNumberList.
scriptId	0..1 0/*	String	The Script ID associated with the serial numbers in serialNumberList.
fromBusinessParty	0..1 0/*	String	<b>Conditionally required</b> if <b>fromBusinessPartyType</b> is present. The identifier of the company where the serialized product ships to. Use with <b>fromBusinessPartyType</b> , which provides the identifier type.  The <b>fromBusinessParty</b> element is typically used with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.
fromBusinessPartyType	0..1 0/*	String	<b>Conditionally required</b> if <b>fromBusinessParty</b> is present. A name/value pair that indicates the identifier type of <b>fromBusinessParty</b> . See the <a href="#">CompanyType</a> enumeration list for valid values.
toBusinessParty	0..1 0/*	String	<b>Conditionally required</b> if <b>toBusinessPartyType</b> is present. A name/value pair that indicates the identifier of the company that receives serialized product. Use with <b>toBusinessPartyType</b> , which provides the identifier type.  The <b>toBusinessParty</b> element is typically used with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.
toBusinessPartyType	0..1 0/*	String	<b>Conditionally required</b> if <b>toBusinessParty</b> is present. A name/value pair that indicates the identifier type of <b>toBusinessParty</b> . See the <a href="#">CompanyType</a> enumeration list for valid values.
userID	0..1	String	A name/value pair that indicates the email address of the user reporting the event.

Data Element	Occurs Length	Type	Description
customData	0...* 0/*	String	<p>A number of name/value pairs to support the reporting of various supply chain and compliance activities.</p> <p>The <b>customData</b> section may contain 0-n name/value pairs. These name/value pairs are user-defined and are not used in the subsequent synchronous or asynchronous processing for the event. The information in the <b>customData</b> section is stored in the Smart Event Manager repository.</p>
context	1...1	Enum	<p><b>Required.</b> The reason the product is being verified. Valid values:</p> <ul style="list-style-type: none"> <li>• <code>dscsaStatusCheck</code> – The product is being verified for routine reasons to retrieve basic verification information, such as the product's expiration date.</li> <li>• <code>dscsaExceptionVerification</code> – The product is being verified to retrieve more information about a product.</li> <li>• <code>dscsaSuspectIllegitimate</code> – The product is being verified because it is suspected as being illegitimate.</li> <li>• <code>dscsaSaleableReturn</code> – The product is being verified to confirm that it can be resold after being returned.</li> </ul>
ctrlPossessAtt	1...1	Boolean	<p><b>Required.</b> Indicates whether the company submitting the verification request is in possession of the product they are verifying. Valid values:</p> <ul style="list-style-type: none"> <li>• <code>True</code> – The company is in possession of the product they are verifying.</li> <li>• <code>False</code> – The company is not in possession of the product they are verifying.</li> </ul>

# Set Event Response Guidelines

See [How To Use this Guide](#) before interpreting the guidelines below.

den The following is the Set Event Response guidelines table:

Data Element	Occurs Length	Type	Description
companyID	1...1 1/*	String	<b>Required.</b> The TraceLink-generated company identifier of the user reporting the supply chain activity. In a multi-tenant system, this represents the identifier of the company that owns, can report, and can query the Smart Event Manager request and response data.
userId	1...1 1/*	String	<b>Required.</b> The TraceLink-generated user identifier of the operator user reporting the supply chain activity. This user is authenticated in order to report and query Smart Event Manager request and response data.
eventQueryResponseId	1...1 1/*	String	<b>Required.</b> The TraceLink-generated identifier from the Set Event Response providing the search criteria for the Get Result Request.
eventTime	1...1 1/*	String	<b>Required.</b> The date/time the Set Event occurred. Specifically, this may indicate when the physical scan is performed or the date and time provided by the calling application.
serialNumberList	1...1 1/*	String	<p><b>Required.</b> The serialized product associated with the Smart Event Manager event request. The Set Event request API supports the reporting of either one serial number (processed synchronously) or multiple serial numbers (processed asynchronously).</p> <p>At minimum, the Smart Event Manager Event Request API requires the following:</p> <ul style="list-style-type: none"> <li>• packagingCode</li> <li>• serialNumber</li> <li>• lotNumber</li> <li>• expirationDate</li> </ul>
packagingCode	1...1 1/*	String	<p><b>Required.</b> The packaging code of the serialized product. Supports GTIN-14, NTIN, or CN-RESCODE.</p> <p>This may correspond to the GS1 Application Identifier 01 if the <b>packagingCode</b> represents a GTIN-14 or NTIN.</p>
packagingCodeType	0...1 0/*	String	<p>The type of the serialized product <b>packagingCode</b>. The default value is <a href="#">GTIN - 14</a>.</p> <p>See the <a href="#">PackagingCodeType</a> enumeration list for valid values.</p>
serialNumber	1...1 1/*	String	<p><b>Required.</b> The serial number associated with the serialized product. This is specified in the GS1 Application Identifier format without parentheses for the AI keys. AI (01) (21) formatted serial numbers for GTINs. Non-GS1 serial numbers (e.g. China) are expressed in native format.</p>

Data Element	Occurs Length	Type	Description
			This corresponds to the GS1 Application Identifier 21.
lotNumber	1...1 1/*	String	<b>Required.</b> The lot or batch code associated with the serialized product. This corresponds to the GS1 Application Identifier 10.
expirationDate	1...1 1/*	String	<b>Required.</b> Indicates the expiration date of the serialized product in YYMMDD format and corresponds to the GS1 Application Identifier 17 as originally reported in the request message. The element supports the value 00 for the DD element.
adjustedExpirationDate	1...* 1/*	String	<b>Required.</b> Provides a normalized expiration date with the day value set to the last day of the month.
productionDate	0...1 0/*	Date	The production date associated with the serialized product. This is specified in YYMMDD format. This corresponds to the GS1 Application Identifier 11.
variant	0...1 0/*	String	The internal product variant associated with the serialized product. This corresponds to the GS1 Application Identifier 20.
activePotency	0...1 0/*	String	The active potency associated with the serialized product. This corresponds to the GS1 Application Identifier 7004.
nhrnPZN	0...1 0/*	String	The National Healthcare Reimbursement Number for the Germany PZN associated with the serialized product. This corresponds to the GS1 Application Identifier 710.
nhrnCIP	0...1 0/*	String	The National Healthcare Reimbursement Number for the French CIP associated with the serialized product. This corresponds to the GS1 Application Identifier 711.
nhrnCN	0...1 0/*	String	The National Healthcare Reimbursement Number for the SpainCodigo Nacional associated with the serialized product. This corresponds to the GS1 Application Identifier 712.
nhrnDRN	0...1 0/*	String	The National Healthcare Reimbursement Number for the Brasil ANVISA associated with the serialized product. This corresponds to the GS1 Application Identifier 713.
nhrnAIM	0...1 0/*	String	The National Healthcare Reimbursement Number for the Portugal AIM associated with the serialized product. This corresponds to the GS1 Application Identifier 714.

Data Element		Occurs Length	Type	Description
barcode	0...1 0/*	String	The full 2D barcode content of the product scan. At minimum this contains: <ul style="list-style-type: none"> <li>packagingCode</li> <li>serialNumber</li> <li>lotNumber</li> <li>expirationDate</li> </ul> <p>This field should include the full raw DataMatrix content in the native GS1 Element String, with FNC1 (codeword 232) symbol character separators preserved so the system can parse variable length data elements accurately. For more information, see <i>Section 2.2. GS1 Element Strings of GS1 Data Matrix Guide – Introduction and Implementation Guideline, version 2.2, published May 2015.</i></p>	
containerID	0...1 0/*	String	The container identifier for the relevant <b>serialNumber</b> .	
containerType	0...1 0/*	String	<b>Conditionally required</b> if <b>containerID</b> is present. The type of the serialized product containerId. This may be one of the following: <ul style="list-style-type: none"> <li><a href="#">GTIN-14</a></li> <li><a href="#">SSCC</a></li> </ul>	
eventId	1...* 1/*	String	<b>Required.</b> TraceLink-generated identifier relating to the Smart Event Manager Set Event Request. Use this ID in the Get Event or Query Event (not in the Get Result message) to return all of the information related to the request.	
responseEventId	1...* 1/*	String	<b>Required.</b> TraceLink-generated identifier relating to the Smart Event Manager Set Event Response. TraceLink use only.	
status	1...* 1/*	String	<b>Required.</b> TraceLink-generated status name/value pair indicating the status of the request as determined by a called service. For example, an NMVS Service may indicate that the serial number is successfully verified. This service uses the status name/value pair to convey this result. The called service always returns a status.  See the <a href="#">SerialNumberStatus</a> enumeration list for valid values.	
message	1...* 1/*	String	<b>Required.</b> TraceLink-generated message name/value pair indicating additional information associated with the status. For example, an NMVS Service may indicate that the serial number was not successfully verified. This service uses the message name/value pair to further describe the result.	
state	1...* 1/*	String	<b>Required.</b> TraceLink-generated state name/value pair indicating the state of the serial number included in the request. For example, an NMVS Service may indicate that the serial number is in a SUPPLIED state. Expect that the called service will always return a state.	
respondingCompany	0...1 1/*	String	The GLN identifier of the company that provides the verification response.	

Data Element		Occurs Length	Type	Description
eventType		1...1 1/*	String	<b>Required.</b> The nature of the Smart Event Manager event request. As a generic observation API, the Smart Event Manager message captures a variety of supply chain and compliance activities.  See the <a href="#">EventType</a> enumeration list for valid values.
locationType		1...1 1/*	String	<b>Required.</b> The type of the associated <b>locationValue</b> for the serialized product event.  See the <a href="#">LocationType</a> enumeration list for valid values.
locationValue		1...1 1/*	String	<b>Required.</b> The location where the reported supply chain activity takes place.
extensionData		1...1 1/*	String	<b>Required.</b> Supports a number of name/value pairs for reporting various supply chain and compliance activities.  The <b>extensionData</b> section may contain 0-n name/value pairs. TraceLink reserves these name/value pairs for use in the subsequent synchronous processing for the event. The <b>extensionData</b> is stored in the Smart Event Manager repository.
market		1...1 1/*	String	<b>Required.</b> A name/value pair that indicates the country where the reported event activity occurs. Must be a 2-letter ISO Code of the country where event occurs.  See the <a href="#">CountryCode</a> enumeration list for valid values.
supplyType		0...1 0/*	String	A name/value pair that indicates a description of the compliance/supply chain activity. Use this to describe shipment activity.  See the <a href="#">SupplyType</a> enumeration list for valid values.
po		0...1 0/*	String	The Purchase Order associated with the serial numbers in serialNumberList.
salesOrder		0...1 0/*	String	The Sales Order associated with the serial numbers in serialNumberList.
return		0...1 0/*	String	The Return Order associated with the serial numbers in serialNumberList.
transfer		0...1 0/*	String	The Transfer Order associated with the serial numbers in serialNumberList.
asn		0...1 0/*	String	The Advance Shipped Notice associated with the serial numbers in serialNumberList.
bol		0...1 0/*	String	The Bill of Lading associated with the serial numbers in serialNumberList.
packslip		0...1	String	The Packing Slip associated with the serial numbers in serialNumberList.

Data Element	Occurs Length	Type	Description
invoice	0...1 0/*	String	The Invoice associated with the serial numbers in serialNumberList.
destruction	0...1 0/*	String	The Destruction Order associated with the serial numbers in serialNumberList.
notaFiscal	0...1 0/*	String	The Nota Fiscal associated with the serial numbers in serialNumberList.
scriptId	0...1 0/*	String	The Script ID associated with the serial numbers in serialNumberList.
fromBusinessParty	0...1 0/*	String	<b>Conditionally required</b> if <b>fromBusinessPartyType</b> is present. The identifier of the company where the serialized product ships to. Use with <b>fromBusinessPartyType</b> , which provides the identifier type.  The <b>fromBusinessParty</b> element is typically used with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.
fromBusinessPartyType	0...1 0/*	String	<b>Conditionally required</b> if <b>fromBusinessParty</b> is present. A name/value pair that indicates the identifier type of the <b>fromBusinessParty</b> .  See the <a href="#">CompanyType</a> enumeration list for valid values.
toBusinessParty	0...1 0/*	String	<b>Conditionally required</b> if <b>toBusinessPartyType</b> is present. A name/value pair that indicates the identifier of the company that receives serialized product. Use with the <b>toBusinessPartyType</b> , which provides the identifier type.  The <b>toBusinessParty</b> element is typically used with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.
toBusinessPartyType	0...1 0/*	String	<b>Conditionally required</b> if <b>toBusinessParty</b> is present. A name/value pair that indicates the identifier type of the <b>toBusinessParty</b> .  See the <a href="#">CompanyType</a> enumeration list for valid values.
userID	0...1 0/*	String	A name/value pair that indicates the email address of the user reporting the event.
status	0...1 0/*	String	TraceLink-generated status name/value pair indicating the status of the request as determined by a called service. For example, an NMVS Service indicates that the serial number is successfully verified. This service uses the status name/value pair to convey this result. Expect that the called service always returns a status.  See the <a href="#">ExtensionStatus</a> enumeration list for valid values.
customData	0...* 0/*	String	The <b>customData</b> section supports a number of name/value pairs to support the reporting of various supply chain and compliance activities.  The <b>customData</b> section may contain 0-n name/value pairs. These name/value pairs are user-defined and is not used in the subsequent synchronous or asynchronous processing for the event. The data in the <b>customData</b> section is stored in the Smart Event Manager repository.

Data Element		Occurs Length	Type	Description
contactPoint		1...1 1/*	String	<p><b>Required.</b> The responding company's verification contact information who can be contacted if the company requesting the product verification has questions about that response.</p> <p> TraceLink automatically includes this information in all response messages.</p>
email		1...1 1/*	String	<p><b>Required.</b> The email address of the verification contact. This information is displayed only in the <a href="#">Response</a> section of the Product Information Exchange's <a href="#">Verify Product</a> screen.</p> <p> TraceLink automatically includes this information in all response messages.</p>
telephone		1...1 1/*	String	<p><b>Required.</b> The phone number of the verification contact. This information is displayed only in the <a href="#">Response</a> section of the Product Information Exchange's <a href="#">Verify Product</a> screen.</p> <p> TraceLink automatically includes this information in all response messages.</p>

# Set Event Errors

The following errors may be encountered with the Set Event request message:

Error Code	Error Messages	Description
eventTime	The Set Event Request cannot be processed. The eventTime is not specified.	The error occurs if the source is empty or null.
	The Set Event Request cannot be processed. The eventTime is not properly formatted (e.g. "2018-06-05T01:33:34.711Z").	The error occurs if the source is not in GMT dateTime format.
eventType	The Set Event Request cannot be processed. The eventType is not specified.	The error occurs if the source is empty or null.
	The Set Event Request cannot be processed. The eventType is not valid. The eventType must be one of the following: VERIFYING, SHIPPED, RECEIVED, UNDER_INVESTIGATION, AVAILABLE, DAMAGED, DESTROYED, DISPENSED, STOLEN, SAMPLED_BY_AUTHORITIES, UNDO_SHIPPED, UNDO_RECEIVED, UNDO_UNDER_INVESTIGATION, UNDO_AVAILABLE, UNDO_DAMAGED, UNDO_DESTROYED, UNDO_DISPENSED, UNDO_STOLEN, or UNDO_SAMPLED_BY_AUTHORITIES.	The error occurs if the source is present, but there is no matching entry in the lookup file.
expirationDate	The Set Event Request cannot be processed. The expirationDate must be in YYMMDD format.	The error occurs if the source is not in YYMMDD format.
extensionData	The Set Event Request cannot be processed. The extensionData element contains invalid fields.	The error occurs if the source contains any fields other than: <ul style="list-style-type: none"> <li>• <b>market</b></li> <li>• <b>supplyType</b></li> <li>• <b>po</b></li> <li>• <b>salesOrder</b></li> <li>• <b>return</b></li> <li>• <b>transfer</b></li> <li>• <b>asn</b></li> <li>• <b>bol</b></li> <li>• <b>packslip</b></li> <li>• <b>invoice</b></li> <li>• <b>destruction</b></li> <li>• <b>notaFiscal</b></li> </ul>

Error Code	Error Messages	Description
		<ul style="list-style-type: none"> <li><b>scriptId</b></li> </ul>
locationType	The Set Event Request cannot be processed. The locationType is not specified.	The error occurs if the source is empty or null.
	The Set Event Request cannot be processed. The locationType is not valid. The eventType must be one of the following: BR_CNES, BR_CNPJ, BR_CPF, BR_PROF_REG, COMPANYSITEID, DEA, DUNS, DUNS4, GLN, HIN, IN_LOCATION_ID, KR_BUS_REG_NUMBER, KR_PROVIDER_CODE, or SGLN.	The error occurs if the source is present, but there is no matching entry in the lookup file.
locationValue	The Set Event Request cannot be processed. The locationValue is not specified.	The error occurs if the source is empty or null.
market	The Set Event Request cannot be processed. The market is not valid. The market value must be a 2 letter ISO Code of country where event occurs.	The error occurs if the source is present, but there is no matching entry in the lookup file.
productionDate	The Set Event Request cannot be processed. The productionDate must be in YYYYMMDD format.	The error occurs if the source is not in YYYYMMDD format.

Error Code	Error Messages	Description
serialNumberList	The Set Event Request cannot be processed. The serialNumberList is not specified.	The error occurs if the source is empty or null.
	The Set Event Request cannot be processed. The serialNumberList must specify a single serial number with serialNumber, lotNumber, expirationDate, and packagingCode fields.	The error occurs if the <b>serialNumber</b> , <b>lotNumber</b> , <b>expirationDate</b> , or <b>packagingCode</b> elements are empty or null.
	The Set Event Request cannot be processed. The serialNumberList element contains invalid fields.	The error occurs if the source contains any fields other than: <ul style="list-style-type: none"> <li>• <b>serialNumber</b></li> <li>• <b>lotNumber</b></li> <li>• <b>expirationDate</b></li> <li>• <b>packagingCode</b></li> <li>• <b>packagingCodeType</b></li> <li>• <b>productionDate</b></li> <li>• <b>variant</b></li> <li>• <b>activePotency</b></li> <li>• <b>nhrnPzn</b></li> <li>• <b>nhrnCip</b></li> <li>• <b>nhrnCn</b></li> <li>• <b>nhrnDrn</b></li> <li>• <b>nhrnAim</b></li> <li>• <b>barcode</b></li> </ul>
supplyType	The Set Event Request cannot be processed. The supplyType is not valid. The eventType must be one of the following: EXPORT, FREE_SAMPLE, CIVIL_PROTECTION, EMERGENCY, DENTAL_PRACTITIONER, EMERGENCY_MEDICAL_PRACTITIONER, SPECIAL_MEDICAL_CARE_FACILITY, MEDICAL_PRACTITIONER, MEDICAL_CARE_FACILITY, MILITARY, OPTICAL_PRACTITIONER, PATIENT, PRISON, UNIVERSITY_RESEARCH_INSTITUTION, SCHOOL or VETERINARY.	The error occurs if the source is present, but there is no matching entry in the lookup file.
Main Protocol Element	The Set Event Request cannot be processed. The main protocol element contains invalid fields.	The error occurs if the main protocol element contains any fields other than: <ul style="list-style-type: none"> <li>• <b>eventTime</b></li> <li>• <b>serialNumberList</b></li> </ul>

Error Code	Error Messages	Description
		<ul style="list-style-type: none"> <li>• <b>eventType</b></li> <li>• <b>locationValue</b></li> <li>• <b>locationType</b></li> <li>• <b>extensionData</b></li> <li>• <b>customData</b></li> </ul>
	<p>The Set Event Request cannot be processed. The main protocol element fields found outside of the main protocol element.</p>	<p>The error occurs if the following elements are found outside of the main protocol element:</p> <ul style="list-style-type: none"> <li>• <b>eventTime</b></li> <li>• <b>serialNumberList</b></li> <li>• <b>locationValue</b></li> <li>• <b>locationType</b></li> <li>• <b>extensionData</b></li> <li>• <b>customData</b></li> </ul>
	<p>The Set Event Request cannot be processed. The serialNumberList fields found outside of the serialNumberList.</p>	<p>The error occurs if the following elements are included outside of the <b>serialNumberList</b> element:</p> <ul style="list-style-type: none"> <li>• <b>serialNumber</b></li> <li>• <b>lotNumber</b></li> <li>• <b>expirationDate</b></li> <li>• <b>packagingCode</b></li> <li>• <b>packagingCodeType</b></li> <li>• <b>productionDate</b></li> <li>• <b>variant</b></li> <li>• <b>activePotency</b></li> <li>• <b>nhrnPzn</b></li> <li>• <b>nhrnCip</b></li> </ul>

Error Code	Error Messages	Description
		<ul style="list-style-type: none"> <li>• <b>nhrnCn</b></li> <li>• <b>nhrnDrn</b></li> <li>• <b>nhrnAim</b></li> <li>• <b>barcode</b></li> </ul>
	<p>The Set Event Request cannot be processed. The extensionData element fields found outside of the extensionData</p>	<p>The error occurs if the following elements are included outside of the <b>extensionData</b> element:</p> <ul style="list-style-type: none"> <li>• <b>market</b></li> <li>• <b>supplyType</b></li> <li>• <b>po</b></li> <li>• <b>salesOrder</b></li> <li>• <b>return</b></li> <li>• <b>transfer</b></li> <li>• <b>asn</b></li> <li>• <b>bol</b></li> <li>• <b>packslip</b></li> <li>• <b>invoice</b></li> <li>• <b>destruction</b></li> <li>• <b>notaFiscal</b></li> <li>• <b>scriptId</b></li> </ul>
	<p>The Set Event Request cannot be processed. The &lt;duplicate namespace field&gt; is specified more than once.</p>	<p>The error occurs if any of the TraceLink namespace fields are specified more than once.</p>

## HTTP Response Status Codes

Smart Event Manager presents standard response codes to indicate whether or not a specific HTTP request was successful. Response status codes may include, but are not limited to, the following:

## Successful response

200	OK. The request was successful. For GET, this means that the resource has been fetched.
-----	---

## Redirect message

307	Temporary Redirect. The client must get the requested resource at another URI with the same HTTP method that was used in the prior request.
-----	---

## Client error status codes

400	Bad Request. The server could not understand the request due to invalid syntax.
401	Unauthorized. The client is unauthenticated, not allowed access, and should re-request credentials.
403	Forbidden. The request is valid and the client is authenticated, but the client is not allowed access rights to the content for any reason.
404	Not Found. The server cannot find the requested item. This can also mean that the endpoint is valid but the resource does not exist.

## Server error status codes

500	Internal Server Error. The server has encountered an unknown error.
502	Bad Gateway. The server is working as a gateway to handle the request and received an invalid response.
503	Service Unavailable. The server is not ready to handle the request.
504	Gateway Timeout. The server is acting as a gateway and cannot get a response in time.

# Set Event Message Examples

The following is an AVAILABLE Set Event Request message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "packagingCode": "86740665964858",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "AVAILABLE",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "SZ"
      }
    ],
    "customData": [
      {
        "extensionKey": "reason",
        "extensionValue": "Verified that product is valid for sale. Issue #394985. Approved by J. Martin."
      }
    ]
  }
}
```

## The following is an AVAILABLE Set Event Response message example:

```
{
  "t": {
    "v": 1,
    "m": "sem-set-event-Response-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb",
    "errc": "200_SUCCESSFUL_OPERATION",
    "errm": "Successful Operation. Request completed successfully."
  },
  "p": {
    "eventId": "671397ed-9964-41e9-8670-8ad2c743008a",
    "eventTime": "200307",
    [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "adjustedExpirationDate": "230531",
        "packagingCode": "86740665964858",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "AVAILABLE",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "SZ",
        "extensionKey": "status",
        "extensionValue": "SUCCESS"
      }
    ],
    "customData": [
      {
        "extensionKey": "reason",
        "extensionValue": "Verified that product is valid for sale. Issue #394985. Approved by J. Martin."
      }
    ]
  }
}
```

```
]
}
```

The following is a **DAMAGED Set Event Request** message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "packagingCode": "86740665964858",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "DAMAGED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ]
  }
}
```

The following is a **DAMAGED Set Event Response** message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
```

```

    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "f2bc2cdc-78ae-44d8-a3f0-24e8d6187299",
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "adjustedExpirationDate": "230531",
        "packagingCode": "86740665964858",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "DESTROYED"
      }
    ],
    "eventType": "DAMAGED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ],
    "customData": []
  }
}

```

**The following is a DESTROYED Set Event Request message example:**

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {

```

```

"eventTime":"200307",
"serialNumberList": [
  {
    "serialNumber":"PK033A0F42C2DD8AC4E",
    "lotNumber":"TEST5B5780FBEE",
    "expirationDate":"230816",
    "packagingCode":"22162151328722",
    "packagingCodeType": "GTIN-14"
  }
],
"eventType":"DESTROYED",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData":[
  {
    "extensionKey":"market",
    "extensionValue":"GB"
  },
  {
    "extensionKey":"destruction",
    "extensionValue":"002736"
  }
]
}
}
}

```

**The following is a DESTROYED Set Event Response message example:**

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime":"200307",
    "serialNumberList": [
      {

```

```

    "eventId": "fd72bc51-ea21-4263-bcf1-14aaa3f7b5b4",
    "serialNumber": "PK033A0F42C2DD8AC4E",
    "lotNumber": "TEST5B5780FBEE",
    "expirationDate": "230816",
    "adjustedExpirationDate": "230831",
    "packagingCode": "22162151328722",
    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "DESTROYED"
  }
],
"eventType": "DESTROYED",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  },
  {
    "extensionKey": "destruction",
    "extensionValue": "002736"
  }
],
"customData": []
}
}

```

**The following is a DISPENSED Set Event Request message example:**

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [

```

```

    {
      "serialNumber":"PK0342F244BD4B65D45",
      "lotNumber":"TEST5B5780FBEE",
      "expirationDate":"230816",
      "packagingCode":"22162151328722",
      "packagingCodeType": "GTIN-14"
    }
  ],
  "eventType":"DISPENSED",
  "locationType": "SGLN",
  "locationValue": "030058.123456.0",
  "extensionData":[
    {
      "extensionKey":"market",
      "extensionValue":"GB"
    },
    {
      "extensionKey":"scriptId",
      "extensionValue":"19283"
    }
  ]
}

```

**The following is a DISPENSED Set Event Response message example:**

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime":"200307",
    "serialNumberList": [
      {
        "eventId": "b0035a2b-d5f3-43b1-983e-7a8f9653e9ee",
        "serialNumber": "PK0342F244BD4B65D45",

```

```

    "lotNumber": "TEST5B5780FBEE",
    "expirationDate": "230816",
    "adjustedExpirationDate": "230831",
    "packagingCode": "22162151328722",
    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "SUPPLIED"
  ]
},
"eventType": "DISPENSED",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  },
  {
    "extensionKey": "scriptId",
    "extensionValue": "19283"
  }
],
"customData": []
}
}

```

The following is a RECEIVED Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",

```

```

        "lotNumber":"TEST2C9588146D",
        "expirationDate":"230531",
        "packagingCode":"86740665964858",
        "packagingCodeType": "GTIN-14"
    }
],
"eventType": "RECEIVED",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
    {
        "extensionKey": "market",
        "extensionValue": "SZ",
        "extensionKey": "return",
        "extensionValue": "0293947"
    }
]
}
}
}

```

**The following is a RECEIVED Set Event Response message example:**

```

{
  "t": {
    "v": 1,
    "m": "sem-set-event-Response-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb",
    "errc": "200_SUCCESSFUL_OPERATION",
    "errm": "Successful Operation. Request completed successfully."
  },
  "p": {
    "eventId": "671397ed-9964-41e9-8670-8ad2c743008a",
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",

```

```

        "adjustedExpirationDate":"230531",
        "packagingCode":"86740665964858",
        "packagingCodeType": "GTIN-14"
    }
],
"eventType": "RECEIVED",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
    {
        "extensionKey": "market",
        "extensionValue": "SZ",
        "extensionKey": "return",
        "extensionValue": "0293947",
        "extensionKey": "status",
        "extensionValue": "SUCCESS"
    }
]
}
}

```

The following is a **SAMPLED BY AUTHORITIES Set Event Request** message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK035D59D52848CB54C",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "packagingCode": "22162151328722",
        "packagingCodeType": "GTIN-14"
      }
    ]
  }
}

```

```

    ],
    "eventType": "SAMPLED_BY_AUTHORITIES",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ]
  }
}

```

The following is a **SAMPLED BY AUTHORITIES** Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "a121cee6-9720-4fd5-a042-f3501cff3aaa",
        "serialNumber": "PK035D59D52848CB54C",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "adjustedExpirationDate": "230831",
        "packagingCode": "22162151328722",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "SAMPLE"
      }
    ]
  },
  "eventType": "SAMPLED_BY_AUTHORITIES",
  "locationType": "SGLN",

```

```

    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ],
    "customData": []
  }
}

```

The following is a SHIPPED Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "packagingCode": "86740665964858",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "SHIPPED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ]
  }
}

```

```

    "extensionKey": "supplyType",
    "extensionValue": "FREE_SAMPLE"
  },
  {
    "extensionKey": "po",
    "extensionValue": "P018734"
  },
  {
    "extensionKey": "asn",
    "extensionValue": "0847465"
  }
]
}
}

```

The following is a SHIPPED Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "3ec2902e-1767-4bb4-88e7-7e7efa736ee0",
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "adjustedExpirationDate": "230531",
        "packagingCode": "86740665964858",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "FREESAMPLE"
      }
    ]
  },
}

```

```

"eventType": "SHIPPED",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  },
  {
    "extensionKey": "supplyType",
    "extensionValue": "FREE_SAMPLE"
  },
  {
    "extensionKey": "po",
    "extensionValue": "P018734"
  },
  {
    "extensionKey": "asn",
    "extensionValue": "0847465"
  }
],
"customData": []
}
]
}

```

The following is a **STOLEN** Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK0342F244BD4B65D45",
        "lotNumber": "TEST5B5780FBEE",

```

```

    "expirationDate": "230816",
    "packagingCode": "22162151328722",
    "packagingCodeType": "GTIN-14"
  }
],
"eventType": "STOLEN",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  }
]
}
}

```

The following is a **STOLEN Set Event Response** message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "0e4de6cc-f57b-421d-992b-90b8cdf7298a",
        "serialNumber": "PK0342F244BD4B65D45",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "adjustedExpirationDate": "230831",
        "packagingCode": "22162151328722",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "STOLEN"
      }
    ]
  }
}

```

```

    }
  ],
  "eventType": "STOLEN",
  "locationType": "SGLN",
  "locationValue": "030058.123456.0",
  "extensionData": [
    {
      "extensionKey": "market",
      "extensionValue": "GB"
    }
  ],
  "customData": []
}
}

```

The following is a **UNDER INVESTIGATION** Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "packagingCode": "86740665964858",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDER_INVESTIGATION",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {

```

```

        "extensionKey":"market",
        "extensionValue":"GB"
    }
]
"customData":[
    {
        "extensionKey":" reason ",
        "extensionValue":"Irregular product packaging."
    }
]
}
}

```

The following is a **UNDER INVESTIGATION** Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "f4c8441a-a0d5-4088-83e0-34d712d80cc0",
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "adjustedExpirationDate": "230531",
        "packagingCode": "86740665964858",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "LOCKED"
      }
    ],
    "eventType": "UNDER_INVESTIGATION",
    "locationType": "SGLN",

```

```

"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  }
],
"customData": [
  {
    "extensionKey": " reason ",
    "extensionValue": "Irregular product packaging."
  }
]
}
}

```

The following is a UNDO AVAILABLE Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem-set-event-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "08906084210309",
        "lotNumber": "R35307",
        "expirationDate": "231231",
        "packagingCode": "100000003493",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_AVAILABLE",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",

```

```

    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "SZ"
      }
    ],
    "customData": [
      {
        "extensionKey": "reason",
        "extensionValue": "Verified that product is valid for sale. Issue #394985. Approved by J. Martin."
      }
    ]
  }
}

```

The following is an UNDO AVAILABLE Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb",
    "errc": "200_SUCCESSFUL_OPERATION",
    "errm": "Successful Operation. Request completed successfully."
  },
  "p": {
    "eventId": "671397ed-9964-41e9-8670-8ad2c743008a",
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "08906084210309",
        "lotNumber": "R35307",
        "expirationDate": "231231",
        "adjustedExpirationDate": "231231",
        "packagingCode": "100000003493",
        "packagingCodeType": "GTIN-14"
      }
    ]
  },
}

```

```

"eventType": "UNDO_AVAILABLE",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "SZ",
    "extensionKey": "status",
    "extensionValue": "SUCCESS"
  }
]
}
}

```

The following is an UNDO DAMAGED Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem-set-event-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "08906084210309",
        "lotNumber": "R35307",
        "expirationDate": "231231",
        "packagingCode": "100000003493",
        "packagingCodeType": "GTIN-14"
      }
    ]
  },
  "eventType": "UNDO_DAMAGED",
  "locationType": "SGLN",
  "locationValue": "030058.123456.0",
  "extensionData": [
    {

```

```

        "extensionKey": "market",
        "extensionValue": "SZ"
    ]
}
}
}

```

The following is an UNDO DAMAGED Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb",
    "errc": "200_SUCCESSFUL_OPERATION",
    "errm": "Successful Operation. Request completed successfully."
  },
  "p": {
    "eventId": "671397ed-9964-41e9-8670-8ad2c743008a",
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "08906084210309",
        "lotNumber": "R35307",
        "expirationDate": "231231",
        "adjustedExpirationDate": "231231",
        "packagingCode": "100000003493",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_DAMAGED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "SZ",
        "extensionKey": "status",

```

```

        "extensionValue ": "SUCCESS"
    }
  ]
}
}

```

The following is an UNDO DESTROYED Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK033A0F42C2DD8AC4E",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "packagingCode": "22162151328722",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_DESTROYED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      },
      {
        "extensionKey": "destruction",
        "extensionValue": "002736"
      }
    ]
  }
}

```

```

}
}

```

The following is an UNDO DESTROYED Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "fd72bc51-ea21-4263-bcf1-14aaa3f7b5b4",
        "serialNumber": "PK033A0F42C2DD8AC4E",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "adjustedExpirationDate": "230831",
        "packagingCode": "22162151328722",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "ACTIVE"
      }
    ],
    "eventType": "UNDO_DESTROYED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      },
      {
        "extensionKey": "destruction",
        "extensionValue": "002736"
      }
    ]
  }
}

```

```

    ],
    "customData": []
  }
}

```

The following is an UNDO DISPENSED Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK0342F244BD4B65D45",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "packagingCode": "22162151328722",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_DISPENSED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      },
      {
        "extensionKey": "scriptId",
        "extensionValue": "19283"
      }
    ]
  }
}

```

The following is an UNDO DISPENSED Set Event Response message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "1d84c3dd-6a4a-4bf5-9aa4-0cc14bfe90bf",
        "serialNumber": "PK0342F244BD4B65D45",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "adjustedExpirationDate": "230831",
        "packagingCode": "22162151328722",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "ACTIVE"
      }
    ],
    "eventType": "UNDO_DISPENSED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      },
      {
        "extensionKey": "scriptId",
        "extensionValue": "19283"
      }
    ],
    "customData": []
  }
}
```

```

}
}

```

The following is an UNDO RECEIVED Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "08906084210309",
        "lotNumber": "R35307",
        "expirationDate": "231231",
        "packagingCode": "100000003493",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_RECEIVED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "SZ",
        "extensionKey": "return",
        "extensionValue": "0293947"
      }
    ]
  }
}

```

The following is an UNDO RECEIVED Set Event Response message example:

```

{
  "t": {

```

```

    "v": 1,
    "m": "sem-set-event-Response-v1",
    "app-id": "393C3176-6F7C-438D-B06F-DDCDA21C2E5C",
    "cid": "b6269930-b08e-44b7-b318-49238d189ffb",
    "errc": "200_SUCCESSFUL_OPERATION",
    "errm": "Successful Operation. Request completed successfully."
  },
  "p": {
    "eventId": "671397ed-9964-41e9-8670-8ad2c743008a",
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "08906084210309",
        "lotNumber": "R35307",
        "expirationDate": "231231",
        "adjustedExpirationDate": "231231",
        "packagingCode": "100000003493",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_RECEIVED",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "SZ",
        "extensionKey": "return",
        "extensionValue": "0293947",
        "extensionKey": "status",
        "extensionValue": "SUCCESS"
      }
    ]
  }
}

```

**The following is an UNDO SAMPLED BY AUTHORITIES Set Event Request message example:**

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK035D59D52848CB54C",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "packagingCode": "22162151328722",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_SAMPLED_BY_AUTHORITIES",
    "locationType": "SGLN",
    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ]
  }
}

```

The following is an UNDO SAMPLED BY AUTHORITIES Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {

```

```

"eventTime":"200307",
"serialNumberList": [
  {
    "eventId": "78beabfb-0aa8-46ef-bb3d-581473929fb7",
    "serialNumber": "PK035D59D52848CB54C",
    "lotNumber": "TEST5B5780FBEE",
    "expirationDate": "230816",
    "adjustedExpirationDate":"230831",
    "packagingCode": "22162151328722",
    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "ACTIVE"
  }
],
"eventType": "UNDO_SAMPLED_BY_AUTHORITIES",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  }
],
"customData": []
}

```

**The following is an UNDO SHIPPED Set Event Request message example:**

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime":"200307",
    "serialNumberList": [
      {

```

```

    "serialNumber":"PK009FF8895F416984B",
    "lotNumber":"TEST2C9588146D",
    "expirationDate":"230531",
    "packagingCode":"86740665964858",
    "packagingCodeType": "GTIN-14"
  }
],
"eventType":"UNDO_SHIPPED",
"extensionData":[
  {
    "extensionKey":"market",
    "extensionValue":"GB"
  },
  {
    "extensionKey":"supplyType",
    "extensionValue":"FREE_SAMPLE"
  }
]
}
]
}

```

The following is an UNDO SHIPPED Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime":"200307",
    "serialNumberList": [
      {
        "eventId": "15f90b05-a863-4542-b202-e513ae4bdb73",
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "adjustedExpirationDate":"230531",

```

```

    "packagingCode": "86740665964858",
    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "ACTIVE"
  }
],
"eventType": "UNDO_SHIPPED",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  },
  {
    "extensionKey": "supplyType",
    "extensionValue": "FREE_SAMPLE"
  }
],
"customData": []
}
]
}

```

The following is an UNDO STOLEN Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK0342F244BD4B65D45",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "packagingCode": "22162151328722",
        "packagingCodeType": "GTIN-14"
      }
    ]
  }
}

```

```

  ],
  "eventType": "UNDO_STOLEN",
  "locationType": "SGLN",
  "locationValue": "030058.123456.0",
  "extensionData": [
    {
      "extensionKey": "market",
      "extensionValue": "GB"
    }
  ]
}
]
}

```

The following is an UNDO STOLEN Set Event Response message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "0e4de6cc-f57b-421d-992b-90b8cdf7298a",
        "serialNumber": "PK0342F244BD4B65D45",
        "lotNumber": "TEST5B5780FBEE",
        "expirationDate": "230816",
        "adjustedExpirationDate": "230831",
        "packagingCode": "22162151328722",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "ACTIVE"
      }
    ]
  },
  "eventType": "UNDO_STOLEN",
  "locationType": "SGLN",

```

```

    "locationValue": "030058.123456.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ],
    "customData": []
  }
}

```

The following is an UNDO UNDER INVESTIGATION Set Event Request message example:

```

{
  "t": {
    "v": 1,
    "m": "sem--set-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "packagingCode": "86740665964858",
        "packagingCodeType": "GTIN-14"
      }
    ],
    "eventType": "UNDO_UNDER_INVESTIGATION",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ]
  }
}

```

The following is an UNDO UNDER INVESTIGATION Set Event Response message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--set-event-Response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "serialNumberList": [
      {
        "eventId": "43f559a3-b005-45ef-9cc7-5d2baa10a178",
        "serialNumber": "PK009FF8895F416984B",
        "lotNumber": "TEST2C9588146D",
        "expirationDate": "230531",
        "adjustedExpirationDate": "230531",
        "packagingCode": "86740665964858",
        "status": "NMVS_SUCCESS",
        "message": "Successfully processed.",
        "state": "ACTIVE"
      }
    ],
    "eventType": "UNDO_UNDER_INVESTIGATION",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "GB"
      }
    ],
    "customData": []
  }
}
```

The following is a VERIFYING Set Event Request message example:

```
{
  "event-header": {
    "v": "1",
```

```

    "m": "sem--set-event--v1",
    "lp": "sem--set-event--v1",
    "cid": "ba929463-d9f8-43ce-acbe-31a0965bcaa3",
    "is-err": false,
    "context": {
      "sid": "2263471537323",
      "user-id": "4d145ab2-c697-4c90-ada0-b392c00caa17",
      "user-groups": [],
      "company-id": "ba929463-d9f8-43ce-acbe-31a0965bcaa3"
    }
  },
  "event-payload": {
    "eventTime": "2022-09-21T04:57:23.341Z",
    "serialNumberList": [
      {
        "serialNumber": "100000000000",
        "lotNumber": "TNN4BKB29Q",
        "expirationDate": "230918",
        "packagingCode": "64385625627039"
      }
    ],
    "eventType": "VERIFYING",
    "locationType": "SGLN",
    "locationValue": "4385625.40635.0",
    "extensionData": [
      {
        "extensionKey": "market",
        "extensionValue": "US"
      }
    ],
    "customData": [],
    "context": "dscsaSaleableReturn",
    "ctrlPossessAtt": true
  }
}

```

**The following is a VERIFYING Set Event Response message example:**

```
[
  {
    "event-header": {
      "v": "1",
      "m": "sem--set-event-response--v1",
      "lp": "sem--set-event--v1-5hX7",
      "cid": "ba929463-d9f8-43ce-acbe-31a0965bcaa3",
      "is-err": false,
      "context": {
        "from-ms": "ms-tl-app-sem",
        "time": 1666259837612,
        "eid": "9faf906b-932e-49b7-9e62-f118e00b9cc9",
        "sid": "2263471537323",
        "spid": "tracelink-semapp",
        "user-id": "4d145ab2-c697-4c90-ada0-b392c00caa17",
        "user-groups": [],
        "company-id": "ba929463-d9f8-43ce-acbe-31a0965bcaa3"
      }
    },
    "event-payload": {
      "eventQueryResponseId": "bff2f810-ec2b-40ec-8959-a2b8927b0a41",
      "eventTime": "2022-09-21T04:57:23.341Z",
      "serialNumberList": [
        {
          "eventId": "379e5981-5834-4721-9612-3f1e9c6f9b66",
          "responseEventId": "3bc5d9d9-9396-48d0-a50b-55097648a310",
          "serialNumber": "100000000000",
          "lotNumber": "TNN4BKB29Q",
          "expirationDate": "230918",
          "adjustedExpirationDate": "230918",
          "packagingCode": "64385625627039",
          "status": "PIE_SUCCESS",
          "message": "The product was verified by the manufacturer"
        }
      ],
      "eventType": "VERIFYING",
      "locationType": "SGLN",
      "locationValue": "4385625.40635.0",

```

```
"extensionData": [  
  {  
    "extensionKey": "market",  
    "extensionValue": "US"  
  },  
  {  
    "extensionKey": "status",  
    "extensionValue": "SUCCESS"  
  },  
  {  
    "extensionKey": "message",  
    "extensionValue": ""  
  }  
],  
"customData": [],  
"contactPoint": {  
  "email": "DemoProducerResponder@gmail.com",  
  "telephone": "893427987498"  
}  
}  
]
```

# Get Event Overview

The Get Event supports the retrieving of the request and response data related to a single Set Event request. TraceLink supports transport-level data that includes a eventId, which is supplied by the application that submits the request. This call specifies the eventId, which returns the Set Event Request data and Set Event Response data that share the same eventId.

## Main Topics

- [Request Guidelines](#)
- [Response Guidelines](#)
- [Errors](#)
- [Examples](#)

# Get Event Request Guidelines

See How To Use this Guide before interpreting the guidelines below.

The following is the Get Event Request guidelines table:

Data Element	Occurs Length	Type	Description
eventId	1...1 1/*	String	<b>Required.</b> TraceLink-generated identifier relating to the Smart Event Manager Set Event Request. Use this ID in the Get or Query events to return all of the information related to the request.

# Get Event Response Guidelines

See How To Use this Guide before interpreting the guidelines below.

The following is the Get Event Response guidelines table:

Data Element	Occurs Length	Type	Description
eventTime	1...1 1/*	DateTime	<b>Required.</b> The date/time when the Set Event occurred. Specifically, this may indicate when the physical scan is performed or may indicate the date and time that the calling application has provided.
packagingCode	1...1 1/*	String	<p><b>Required.</b> The packaging code of the serialized product. This is specified as a string formatted to support GTIN-14, NTIN, or CN-RESCODE.</p> <p> This may correspond to the GS1 Application Identifier 01 if the <b>packagingCode</b> represents a GTIN-14 or NTIN.</p>
packagingCodeType	0...1 0/*	String	The type of the associated <b>packagingCode</b> of the serialized product. If this is not specified, the value defaults to <code>GTIN - 14</code> . See the <a href="#">PackagingCodeType</a> enumeration list for valid values.
serialNumber	1...1 1/*	String	<p><b>Required.</b> The serial number associated with the serialized product. This is specified in the GS1 Application Identifier format without parentheses for the AI keys. AI (01) (21) formatted serial numbers for GTINs. Non-GS1 serial numbers (e.g. China) are expressed in native format.</p> <p>This corresponds to the GS1 Application Identifier 21.</p>
lotNumber	1...1 1/*	String	<p><b>Required.</b> The lot or batch code associated with the serialized product.</p> <p>This corresponds to the GS1 Application Identifier 10.</p>
expirationDate	1...1 1/*	String	<b>Required.</b> Indicates the expiration date of the serialized product in YYMMDD format and corresponds to the GS1 Application Identifier 17 as originally reported in the request message. The element supports the value <code>00</code> for the DD element.
adjustedExpirationDate	0...1 1/*	String	<p><b>Required.</b></p> <p>Provides a normalized expiration date with the day value set to the last day of the month.</p>
productionDate	0...1 0/*	Date	The production date associated with the serialized product. This is specified in YYMMDD format. This corresponds to the GS1 Application Identifier 11.
variant	0...1 0/*	String	The internal product variant associated with the serialized product. This corresponds to the GS1 Application Identifier 20.

Data Element	Occurs Length	Type	Description
activePotency	0..1 0/*	String	The active potency associated with the serialized product. This corresponds to the GS1 Application Identifier 7004.
nhrnPZN	0..1 0/*	String	The National Healthcare Reimbursement Number for the Germany PZN associated with the serialized product. This corresponds to the GS1 Application Identifier 710.
nhrnCIP	0..1 0/*	String	The National Healthcare Reimbursement Number for the French CIP associated with the serialized product. This corresponds to the GS1 Application Identifier 711.
nhrnCN	0..1 0/*	String	The National Healthcare Reimbursement Number for the Spain CN CIP associated with the serialized product. This corresponds to the GS1 Application Identifier 712.
nhrnDRN	0..1 0/*	String	The National Healthcare Reimbursement Number for the Brasil DRN associated with the serialized product. This corresponds to the GS1 Application Identifier 713.
nhrnAIM	0..1 0/*	String	The National Healthcare Reimbursement Number for the Portugal AIM associated with the serialized product. This corresponds to the GS1 Application Identifier 714.
barcode	0..1 0/*	String	The full 2D barcode content of the product scan. At minimum this contains: <ul style="list-style-type: none"> <li>packagingCode</li> <li>serialNumber</li> <li>lotNumber</li> <li>expirationDate</li> </ul> This field should include the full raw DataMatrix content in the native GS1 Element String, with FNC1 (codeword 232) symbol character separators preserved so the system can parse variable length data elements accurately. <i>For more information, see Section 2.2. GS1 Element Strings of GS1 Data Matrix Guide — Introduction and Implementation Guideline, version 2.2, published May 2015.</i>
containerID	0..1 0/*	String	The container identifier for the relevant <b>serialNumber</b> .
containerType	0..1 0/*	String	<b>Conditionally required</b> if <b>containerID</b> is populated. The type of the associated <b>containerID</b> of the serialized product. This may be one of the following: <ul style="list-style-type: none"> <li>GTIN-14</li> </ul>

Data Element	Occurs Length	Type	Description
			<ul style="list-style-type: none"> <li>SSCC</li> </ul>
status	0...1 0/*	String	<p><b>Required.</b> The status name/value pair indicates the status of the request as determined by a called service. For example, an NMVS Service may indicate that the serial number is successfully verified. This service uses the status name/value pair to convey this result. The called service always returns a status.</p> <p>See the <a href="#">Status</a> enumeration list for valid values.</p>
message	0...1 0/*	String	<p>A name/value pair that indicates additional information associated with the status. For example, an NMVS Service may indicate that the serial number was not successfully verified. This service uses the <b>message</b> name/value pair to further describe the result.</p>
state	0...1 0/*	String	<p><b>Required.</b> A name/value pair that indicates the state of the serial number included in the request. For example, an NMVS Service may indicate that the serial number is in a <a href="#">SUPPLIED</a> state. Expect that the called service always returns a state.</p> <p>See the <a href="#">State</a> enumeration list for valid values.</p>
eventType	1...1 1/*	String	<p><b>Required.</b> The nature of the Smart Event Manager event request. As a generic observation API, the Smart Event Manager message captures a variety of supply chain and compliance activities.</p>
locationType	1...1 1/*	String	<p><b>Required.</b> The type of the associated <b>locationValue</b> for the serialized product event.</p> <p>See the <a href="#">LocationType</a> enumeration list for valid values.</p>
locationValue	1...1 1/*	String	<p><b>Required.</b> The location where the reported supply chain activity takes place.</p>
market	1...1 1/*	String	<p><b>Required.</b> A name/value pair that indicates the country where the reported event activity occurs. This element must be a 2 letter ISO Code of country where the event occurs.</p> <p>See the <a href="#">CountryCode</a> enumeration list for valid values.</p>
supplyType	0...1 0/*	String	<p>A name/value pair that indicates a description of the supply chain/compliance activity. This element typically describes shipment activity.</p> <p>See the <a href="#">SupplyType</a> enumeration list for valid values.</p>
po	0...1 0/*	String	<p>The Purchase Order associated with the serial numbers in serialNumberList.</p>
salesOrder	0...1 0/*	String	<p>The Sales Order associated with the serial numbers in serialNumberList.</p>
return	0...1 0/*	String	<p>The Return Order associated with the serial numbers in serialNumberList.</p>
transfer	0...1	String	<p>The Transfer Order associated with the serial numbers in serialNumberList.</p>

Data Element	Occurs Length	Type	Description
asn	0...1 0/*	String	The Advance Shipped Notice associated with the serial numbers in serialNumberList.
bol	0...1 0/*	String	The Bill of Lading associated with the serial numbers in serialNumberList.
packslip	0...1 0/*	String	The Packing Slip associated with the serial numbers in serialNumberList.
invoice	0...1 0/*	String	The Invoice associated with the serial numbers in serialNumberList.
destruction	0...1 0/*	String	The Destruction Order associated with the serial numbers in serialNumberList.
notaFiscal	0...1 0/*	String	The Nota Fiscal associated with the serial numbers in serialNumberList.
scriptId	0...1 0/*	String	The Script ID associated with the serial numbers in serialNumberList.
fromBusinessParty	0...1 0/*	String	<b>Conditionally required</b> if <b>fromBusinessPartyType</b> is populated. The identifier of the company where the serialized product ships to. Use with <b>fromBusinessPartyType</b> , which provides the identifier type. <b>fromBusinessParty</b> is typically used with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.
fromBusinessPartyType	0...1 0/*	String	<b>Conditionally required</b> if <b>fromBusinessParty</b> is populated. The identifier type of the <b>fromBusinessParty</b> . See the <a href="#">CompanyType</a> enumeration list for valid values.
toBusinessParty	0...1 0/*	String	<b>Conditionally required</b> if <b>toBusinessPartyType</b> is populated. The identifier of the company that receives serialized product. Use with <b>toBusinessPartyType</b> , which provides the identifier type. <b>toBusinessParty</b> is typically used with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.
toBusinessPartyType	0...1 0/*	String	<b>Conditionally required</b> if <b>toBusinessParty</b> is populated. The identifier type of the <b>toBusinessParty</b> . See the <a href="#">CompanyType</a> enumeration list for valid values.
userId	0...1 0/*	String	The email address of the user reporting the event.

# Get Event Errors

## HTTP Response Status Codes

Smart Event Manager presents standard response codes to indicate whether or not a specific HTTP request was successful. Response status codes may include, but are not limited to, the following:

### Successful response

200	OK. The request was successful. For GET, this means that the resource has been fetched.
-----	---

### Redirect message

307	Temporary Redirect. The client must get the requested resource at another URI with the same HTTP method that was used in the prior request.
-----	---

### Client error status codes

400	Bad Request. The server could not understand the request due to invalid syntax.
401	Unauthorized. The client is unauthenticated, not allowed access, and should re-request credentials.
403	Forbidden. The request is valid and the client is authenticated, but the client is not allowed access rights to the content for any reason.
404	Not Found. The server cannot find the requested item. This can also mean that the endpoint is valid but the resource does not exist.

### Server error status codes

500	Internal Server Error. The server has encountered an unknown error.
502	Bad Gateway. The server is working as a gateway to handle the request and received an invalid response.
503	Service Unavailable. The server is not ready to handle the request.
504	Gateway Timeout. The server is acting as a gateway and cannot get a response in time.

# Get Event Message Examples

The following is a fully populated Get Event Request message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--get-event--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventId": "033252f8-4620-491c-8649-7c898a0e8402"
  }
}
```

The following is a fully populated Get Event Response message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--get-event-response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventTime": "200307",
    "eventType": "VERIFYING",
    "market": "GB",
    "serialNumber": "PK009FF8895F416984B",
    "lotNumber": "TEST2C9588146D",
    "expirationDate": "230531",
    "adjustedExpirationDate": "230531",
    "packagingCode": "86740665964858",
    "packagingCodeType": "GTIN-14",
    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "SUPPLIED",
    "extensionData": [],
    "customData": []
  }
}
```

```
}  
}
```

# Get Result Overview

The Get Result call supports request and response data retrieval related to a single Set Event request, which may include one or more serial numbers, using the eventQueryResponseId from the Set Event Response. The Get Result is also able to check the progress or final result of an asynchronously processed Set Event Request with multiple serial numbers.

## Main Topics

- [Request Guidelines](#)
- [Response Guidelines](#)
- [Errors](#)
- [Examples](#)

# Get Result Request Guidelines

See How To Use this Guide before interpreting the guidelines below.

The following is the Get Result Request guidelines table:

Data Element	Occurs Length	Type	Description
eventQueryResponseId	1...1 1/*	String	<b>Required.</b> TraceLink-generated identifier from the Set Event Response providing the search criteria for the Get Result Request.

# Get Result Response Guidelines

See How To Use this Guide before interpreting the guidelines below.

The following is the Get Result Response guidelines table:

Data Element	Occurs Length	Type	Description
eventTime	1...1 1/*	String	<b>Required.</b> The date/time the Set Event occurred. Specifically, this may indicate when the physical scan is performed or the date and time provided by the calling application.
eventQueryResponseId	1...1 1/*	String	<b>Required.</b> The TraceLink-generated identifier from the Set Event Response providing the search criteria for the Get Result Request.
serialNumberList	1...1 1/*	String	<p><b>Required.</b> The serialized product associated with the Smart Event Manager event request. The Set Event request API supports the reporting of either one serial number (which is processed synchronously) or multiple serial numbers (which are processed asynchronously).</p> <p>At minimum, the Smart Event Manager Event Request API requires the following:</p> <ul style="list-style-type: none"> <li>• packagingCode</li> <li>• serialNumber</li> <li>• lotNumber</li> <li>• expirationDate</li> </ul>
packagingCode	1...1 1/*	String	<p><b>Required.</b> The packaging code of the serialized product. Supports GTIN-14, NTIN, or CN-RESCODE.</p> <p>This may correspond to the GS1 Application Identifier 01 if the <b>packagingCode</b> represents a GTIN-14 or NTIN.</p>
packagingCodeType	0...1 0/*	String	<p>The type of the associated <b>packagingCode</b> of the serialized product. If this is not specified, the value defaults to <a href="#">GTIN - 14</a>.</p> <p>See the <a href="#">PackagingCodeType</a> enumeration list for valid values.</p>
serialNumber	1...1 1/*	String	<p><b>Required.</b> The serial number associated with the serialized product. This is specified in the GS1 Application Identifier format without parentheses for the AI keys. AI (01) (21) formatted serial numbers for GTINs. Non-GS1 serial numbers (e.g. China) are expressed in native format.</p> <p>This corresponds to the GS1 Application Identifier 21.</p>
lotNumber	1...1 1/*	String	<p><b>Required.</b> The lot or batch code associated with the serialized product.</p> <p>This corresponds to the GS1 Application Identifier 10.</p>

Data Element	Occurs Length	Type	Description
expirationDate	1...1 1/*	String	<b>Required.</b> Indicates the expiration date of the serialized product in YYMMDD format and corresponds to the GS1 Application Identifier 17 as originally reported in the request message. The element supports the value 00 for the DD element.
adjustedExpirationDate	0...1 1/*	String	<b>Required.</b> Provides a normalized expiration date with the day value set to the last day of the month.
productionDate	0...1 0/*	Date	The production date associated with the serialized product. This is specified in YYMMDD format. This corresponds to the GS1 Application Identifier 11.
variant	0...1 0/*	String	The internal product variant associated with the serialized product. This corresponds to the GS1 Application Identifier 20.
activePotency	0...1 0/*	String	The active potency associated with the serialized product. This corresponds to the GS1 Application Identifier 7004.
nhrnPZN	0...1 0/*	String	The National Healthcare Reimbursement Number for the Germany PZN associated with the serialized product. This corresponds to the GS1 Application Identifier 710.
nhrnCIP	0...1 0/*	String	The National Healthcare Reimbursement Number for the French CIP associated with the serialized product. This corresponds to the GS1 Application Identifier 711.
nhrnCN	0...1 0/*	String	The National Healthcare Reimbursement Number for the SpainCodigo Nacional associated with the serialized product. This corresponds to the GS1 Application Identifier 712.
nhrnDRN	0...1 0/*	String	The National Healthcare Reimbursement Number for the Brasil ANVISA associated with the serialized product. This corresponds to the GS1 Application Identifier 713.
nhrnAIM	0...1 0/*	String	The National Healthcare Reimbursement Number for the Portugal AIM associated with the serialized product. This corresponds to the GS1 Application Identifier 714.
barcode	0...1 0/*	String	The full 2D barcode content of the product scan. At minimum this contains: <ul style="list-style-type: none"> <li>packagingCode</li> <li>serialNumber</li> <li>lotNumber</li> </ul>

Data Element	Occurs Length	Type	Description
			<ul style="list-style-type: none"> <li>expirationDate</li> </ul> <p>This field should include the full raw DataMatrix content in the native GS1 Element String, with FNC1 (codeword 232) symbol character separators preserved so the system can parse variable length data elements accurately. <i>For more information, see Section 2.2. GS1 Element Strings of GS1 Data Matrix Guide – Introduction and Implementation Guideline, version 2.2, published May 2015.</i></p>
containerID	0...1 0/*	String	The container identifier for the relevant serial number.
containerType	0...1 0/*	String	<p><b>Conditionally required</b> if <b>containerID</b> is present. The type of the serialized product <b>containerID</b>. This may be one of the following:</p> <ul style="list-style-type: none"> <li>GTIN-14</li> <li>SSCC</li> </ul>
eventId	1...1 1/*	String	<b>Required.</b> TraceLink-generated identifier relating to the Smart Event Manager Set Event Request. Use this ID in the Get or Query events to return all of the information related to the request.
status	1...1 0/*	String	<p><b>Required.</b> A name/value pair that indicates the status of the request as determined by a called service. For example, an NMVS Service may indicate that the serial number is successfully verified. This service uses the status name/value pair to convey this result. The called service always returns a status.</p> <p>See the <a href="#">SerialNumberStatus</a> enumeration list for valid values.</p>
message	1...1 0/*	String	<b>Required.</b> A name/value pair that indicates additional information associated with the status. For example, an NMVS Service may indicate that the serial number was not successfully verified. This service uses the message name/value pair to further describe the result.
state	0...1 0/*	String	<p>The state name/value pair indicates the state of the serial number included in the request. For example, an NMVS Service may indicate that the serial number is in a <a href="#">SUPPLIED</a> state. Expect that the called service will always return a state.</p> <p>See the <a href="#">State</a> enumeration list for valid values.</p>
eventType	1...1 1/*	String	<p><b>Required.</b> The nature of the Smart Event Manager event request. As a generic observation API, the Smart Event Manager message captures a variety of supply chain and compliance activities.</p> <p>See the <a href="#">EventType</a> enumeration list for valid values.</p>
locationType	1...1 1/*	String	<p><b>Required.</b> The type of the associated <b>locationValue</b> for the serialized product event.</p> <p>See the <a href="#">LocationType</a> enumeration list for valid values.</p>
locationValue	1...1 1/*	String	<b>Required.</b> The location where the reported supply chain activity takes place.

Data Element	Occurs Length	Type	Description
extensionData	1...1 1/*	String	<b>Required.</b> Supports a number of name/value pairs for reporting various supply chain and compliance activities. The <b>extensionData</b> section may contain 0-n name/value pairs. TraceLink reserves these name/value pairs for use in the subsequent synchronous processing for the event. The <b>extensionData</b> is stored in the Smart Event Manager repository.
supplyType	0...1 0/*	String	A name/value pair that indicates a description of the compliance/supply chain activity. Used to describe shipment activity. See the <a href="#">SupplyType</a> enumeration list for valid values.
po	0...1 0/*	String	The Purchase Order associated with the serial numbers in serialNumberList.
salesOrder	0...1 0/*	String	The Sales Order associated with the serial numbers in serialNumberList.
return	0...1 0/*	String	The Return Order associated with the serial numbers in serialNumberList.
transfer	0...1 0/*	String	The Transfer Order associated with the serial numbers in serialNumberList.
asn	0...1 0/*	String	The Advance Shipped Notice associated with the serial numbers in serialNumberList.
bol	0...1 0/*	String	The Bill of Lading associated with the serial numbers in serialNumberList.
packslip	0...1 0/*	String	The Packing Slip associated with the serial numbers in serialNumberList.
invoice	0...1 0/*	String	The Invoice associated with the serial numbers in serialNumberList.
destruction	0...1 0/*	String	The Destruction Order associated with the serial numbers in serialNumberList.
notaFiscal	0...1 0/*	String	The Nota Fiscal associated with the serial numbers in serialNumberList.
scriptId	0...1 0/*	String	The Script ID associated with the serial numbers in serialNumberList.
fromBusinessParty	0...1	String	<b>Conditionally required</b> if <b>fromBusinessPartyType</b> is present. The identifier of the company where the serialized product ships to. Use with

Data Element	Occurs Length	Type	Description
			<p><b>fromBusinessPartyType</b>, which provides the identifier type.</p> <p>Typically use fromBusinessParty with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.</p>
fromBusinessPartyType	0...1 0/*	String	<p><b>Conditionally required</b> if <b>fromBusinessParty</b> is present. A name/value pair that indicates the identifier type of the <b>fromBusinessParty</b>.</p> <p>See the <a href="#">CompanyType</a> enumeration list for valid values.</p>
toBusinessParty	0...1 0/*	String	<p><b>Conditionally required</b> if <b>toBusinessPartyType</b> is present. A name/value pair that indicates the identifier of the company that receives serialized product. Use with the <b>toBusinessPartyType</b>, which provides the identifier type.</p> <p>This element is typically used with a SHIPPED, UNDO_SHIPPED, RECEIVED, or UNDO_RECEIVED event.</p>
toBusinessPartyType	0...1 0/*	String	<p><b>Conditionally required</b> if <b>toBusinessParty</b> is present. A name/value pair that indicates the identifier type of the <b>toBusinessParty</b>.</p> <p>See the <a href="#">CompanyType</a> enumeration list for valid values.</p>
userID	0...1 0/*	String	<p>A name/value pair that indicates the email address of the user reporting the event.</p>
customData	0...* 0/*	String	<p>Supports a number of name/value pairs to support the reporting of various supply chain and compliance activities.</p> <p>The <b>customData</b> section may contain 0-n name/value pairs. These name/value pairs are user-defined and are not used in the subsequent synchronous or asynchronous processing for the event. The <b>customData</b> is stored in the Smart Event Manager repository.</p>

# Get Result Errors

## HTTP Response Status Codes

Smart Event Manager presents standard response codes to indicate whether or not a specific HTTP request was successful. Response status codes may include, but are not limited to, the following:

### Successful response

200	OK. The request was successful. For GET, this means that the resource has been fetched.
-----	---

### Redirect message

307	Temporary Redirect. The client must get the requested resource at another URI with the same HTTP method that was used in the prior request.
-----	---

### Client error status codes

400	Bad Request. The server could not understand the request due to invalid syntax.
401	Unauthorized. The client is unauthenticated, not allowed access, and should re-request credentials.
403	Forbidden. The request is valid and the client is authenticated, but the client is not allowed access rights to the content for any reason.
404	Not Found. The server cannot find the requested item. This can also mean that the endpoint is valid but the resource does not exist.

### Server error status codes

500	Internal Server Error. The server has encountered an unknown error.
502	Bad Gateway. The server is working as a gateway to handle the request and received an invalid response.
503	Service Unavailable. The server is not ready to handle the request.
504	Gateway Timeout. The server is acting as a gateway and cannot get a response in time.

# Get Result Message Examples

The following is a fully populated Get Result Request message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--get-result--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "eventQueryResponseId": "1b7b0db1-2bfd-4305-8113-e1221398a878"
  }
}
```

The following is a fully populated Get Result Response message example:

```
{
  "t": {
    "v": 1,
    "m": "sem--get-response-event-response--v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
    "eventQueryResponseId": "1b7b0db1-2bfd-4305-8113-e1221398a878",
    "results": [
      {
        "eventTime": "200307",
        "serialNumberList": [
          {
            "eventId": "7f55a45c-99cf-4724-a1bf-a7896030620f",
            "responseEventId": "7767a0de-387e-4f15-a22b-56caa16aac95",
            "serialNumber": ";PK001BF8B0D85D26A4C",
            "lotNumber": "TESTD1A7CE1B73",
            "expirationDate": "230823",
            "adjustedExpirationDate": "230831",
            "packagingCode": "33788755719184",
            "packagingCodeType": "GTIN-14",
          }
        ]
      }
    ]
  }
}
```

```

    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "FREESAMPLE"
  },
  {
    "eventId": "01ae5e74-9920-4520-8106-ae7dcc8d4179",
    "responseEventId": "7fa0f938-4d4a-492f-a2b2-5db3b97a086d",
    "serialNumber": "PK007FD9C7BA54F9C4F",
    "lotNumber": "TESTD1A7CE1B73",
    "expirationDate": "230823",
    "adjustedExpirationDate": "230831",
    "packagingCode": "33788755719184",
    "packagingCodeType": "GTIN-14",
    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "FREESAMPLE"
  },
  {
    "eventId": "71813fb7-5bb6-4aea-a30c-63f2f7e2a57c",
    "responseEventId": "a679f7fa-a479-441b-9f2f-8c33e3ccb1f4",
    "serialNumber": "PK0094CBF058F7EEA47",
    "lotNumber": "TESTD1A7CE1B73",
    "expirationDate": "230823",
    "adjustedExpirationDate": "230831",
    "packagingCode": "33788755719184",
    "packagingCodeType": "GTIN-14",
    "status": "NMVS_SUCCESS",
    "message": "Successfully processed.",
    "state": "FREESAMPLE"
  }
],
"eventType": "SHIPPED",
"locationType": "SGLN",
"locationValue": "030058.123456.0",
"extensionData": [
  {
    "extensionKey": "market",
    "extensionValue": "GB"
  }
]

```

```
    },  
    {  
      "extensionKey": "supplyType",  
      "extensionValue": "FREE_SAMPLE"  
    },  
    {  
      "extensionKey": "po",  
      "extensionValue": "P018734"  
    },  
    {  
      "extensionKey": "status",  
      "extensionValue": "SUCCESS"  
    },  
    {  
      "extensionKey": "message",  
      "extensionValue": ""  
    }  
  ],  
  "customData": []  
}  
]  
}
```

# Query Event Overview

The Query Event retrieves the Request and Response data related to multiple Set Event Requests. This API supports where-like arguments to retrieve the desired set of data. The result of the Query Event returns the full set of data as captured in the Set Event Requests and Set Event Responses including:

- The full serialNumberList
- extensionData
- customData

There are three query types within the Query Event:

- Time Search Criteria
- Select Fields
- Query Filter

See [Query Event Options](#) to see all of the options with example data.

## Main Topics

- [Guidelines](#)
- [Errors](#)
- [Examples](#)

# Query Event Guidelines

See [How To Use this Guide](#) before interpreting the guidelines below.

The following is the Query Event Request/Response guidelines table:

Data Element		Occurs Length	Type	Description
time		0...1 1/*	String	Use this to query using time parameters.
	past	0...1 1/*	String	Returns all events based upon a number and unit (e.g. minutes, hours, days). <sup>1</sup>
	amount	0...1 1/*	String	<b>Required.</b> The amount of time. <sup>2</sup>
	unit	0...1 1/*	String	<b>Required.</b> The unit of time relating to the amount. Valid values: <sup>3</sup> <ul style="list-style-type: none"> <li>MILLIS</li> <li>SECONDS</li> <li>MINUTES</li> <li>HOURS</li> <li>DAYS</li> <li>WEEKS</li> </ul>

```
1"past": {
  "amount": "2",
  "unit": "MINUTES"
```

```
}
```

```
2
```

```
3MINUTES
```

Data Element		Occurs Length	Type	Description
timestamp		0..1 1/*	String	Returns all events based upon a start and end time. <sup>1</sup>
	start	0..1 1/*	String	<b>Required.</b> The start time in UTC Event Date Time format. <sup>2</sup>
	end	0..1 1/*	String	<b>Required.</b> The end time in UTC Event Date Time format. <sup>3</sup>
date-time		0..1 1/*	String	Returns all events based upon a start and end date. <sup>4</sup>
	start	0..1 1/*	String	<b>Required.</b> The start date (e.g. <code>200307</code> ).
	end	0..1 1/*	String	<b>Required.</b> The end date (e.g. <code>200308</code> ).
since		0..1 1/*	String	Returns all events since the specified timestamp or date. <sup>5</sup>
	mode	0..1 1/*	String	<b>Required.</b> The type of since query. Valid values: <ul style="list-style-type: none"> <li><code>date-time</code></li> </ul>

```
1timestamp": {
  "start": "1523229645000",
  "end": "1523229646000"
```

```
}
21523229645000
```

```
31523229646000
```

```
4date-time": {
  "start": "200307",
  "end": "200308"
```

```
}
5since": {
  "timestamp": "1523229646000",
  "mode": "TIMESTAMP"
```

```
}
```

Data Element		Occurs Length	Type	Description
				<ul style="list-style-type: none"> <li><code>timestamp</code></li> </ul>
	timestamp	0...1 1/*	String	<b>Conditionally required</b> if <code>mode</code> equals <code>timestamp</code> . The time in UTC Event Date Time format.
	date-time	0...1 1/*	String	<b>Conditionally required</b> if <code>mode</code> equals <code>timestamp</code> . The date (e.g. <code>200307</code> ).
select		0...1 1/*	String	The set of fields to return in the Query Event Response. <sup>1</sup>
	fields	0...1 1/*	String	<b>Required.</b> Grouping for desired fields.
	name	0...1 1/*	String	<b>Required.</b> Valid value: <code>data</code>
	expression	0...1 1/*	String	<b>Required.</b> A list of desired fields to retrieve. This may include any fields that were included in the Set Event Request.
query-filter		0...1 1/*	String	The name/value pairs to be used as search criteria for the Query Event Request. The select search criteria may include any fields that were included in the Set Event Request. <sup>2</sup>

```

1"select": {
  "fields": [
    {
      "name": "data",
      "expression": "$.[eventId, 'eventTime', 'eventType', 'market',
      'serialNumber', 'lotNumber', 'expirationDate',
      'packagingCode', 'packagingCodeType',
      'status','message','state']"
    }
  ]
}
2"query-filter": {
  "serialNumber": "01089060842103092110000000349317180131"
}

```

# Query Event Errors

## HTTP Response Status Codes

Smart Event Manager presents standard response codes to indicate whether or not a specific HTTP request was successful. Response status codes may include, but are not limited to, the following:

### Successful response

200	OK. The request was successful. For GET, this means that the resource has been fetched.
-----	---

### Redirect message

307	Temporary Redirect. The client must get the requested resource at another URI with the same HTTP method that was used in the prior request.
-----	---

### Client error status codes

400	Bad Request. The server could not understand the request due to invalid syntax.
401	Unauthorized. The client is unauthenticated, not allowed access, and should re-request credentials.
403	Forbidden. The request is valid and the client is authenticated, but the client is not allowed access rights to the content for any reason.
404	Not Found. The server cannot find the requested item. This can also mean that the endpoint is valid but the resource does not exist.

### Server error status codes

500	Internal Server Error. The server has encountered an unknown error.
502	Bad Gateway. The server is working as a gateway to handle the request and received an invalid response.
503	Service Unavailable. The server is not ready to handle the request.
504	Gateway Timeout. The server is acting as a gateway and cannot get a response in time.

# Query Event Message Examples

The following is a Query Event Request message example:

```
{
  "t": {
    "v": 1,
    "m": "sem-query-events-v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095"
  },
  "p": {
    "query-metadata": {
      "control": {
      },
      "select": {
        "fields": [
          {
            "name": "data",
            "expression": "$['eventType', 'serialNumber', 'lotNumber', 'packagingCode', 'state', 'status']"
          }
        ]
      }
    }
  },
  "query-filter": {
    "serialNumber": "PK009FF8895F416984B"
  }
}
```

The following is a Query Event Response message example:

```
{
  "t": {
    "v": 1,
    "m": "sem-query-events-response-v1",
    "app-id": "D29A8B05-F8A7-4F35-9C7D-84344E0BE095",
    "cid": ""
  },
  "p": {
```

```
“query-metadata-response”: {  
  “control”: {  
    “total-results”: 10,  
    “skip”: 0,  
    “limit”: 0  
  }  
},  
“results”: [  
  {  
    “data”: {  
      “eventType”: “VERIFYING”,  
      “serialNumber”: “PK009FF8895F416984B”,  
      “lotNumber”: “TEST2C9588146D”,  
      “packagingCode”: “86740665964858”,  
      “status”: “NMVS_SUCCESS”  
    },  
    “id”: “47f0b051-d01c-49de-b214-d8f8592189bc”  
  },  
  {  
    “data”: {  
      “eventType”: “SHIPPED”,  
      “serialNumber”: “PK009FF8895F416984B”,  
      “lotNumber”: “TEST2C9588146D”,  
      “packagingCode”: “86740665964858”,  
      “state”: “SUPPLIED”,  
      “status”: “NMVS_NC_PCK_22”  
    },  
    “id”: “f49aed1d-0f0c-4a64-964c-b788fd2cb6f0”  
  }  
]  
}  
}
```

# Query Event Options

The following are example components of a Query Event with parameters for each query option:

① If including an expiration date in a Query Event, and if an `adjustedExpirationDate` value is returned in the response messages, use the `adjustedExpirationDate` value not the `expirationDate` value in the query.

If including an expiration date in a Query Event, and if an **adjustedExpirationDate** value is returned in the response messages, use the **adjustedExpirationDate** value, not the **expirationDate** value in the query.

## Time Search Criteria

The `eventTime` represents the only timestamp field in the Smart Event Manager. The Query Event may use the `eventTime` search criteria in any of the following ways:

**Past** - Returns all events based upon a number and unit (e.g. minutes, hours, days, weeks):

```
"past": {
  "amount": "2",
  "unit": "MINUTES"
}
```

**Timestamp Range** - Returns all events based upon a start and end time:

```
"timestamp": {
  "start": "1523229645000",
  "end": "1523229646000"
}
```

**Date-Time Range** - Returns all events based upon a start and end date:

```
"date-time": {
  "start": "2018-04-08T23:28:50Z",
  "end": "2018-04-08T23:30:50Z"
}
```

**Since Timestamp** - Returns all events since the specified timestamp:

```
"since": {
  "timestamp": "1523229646000",
}
```

```
"mode": "TIMESTAMP"
}
```

**Since Date-Time** - Returns all events since the specified date time:

```
"since": {
  "date-time": "2018-04-08T23:30:50Z",
  "mode": "DATETIME"
}
```

## Select Fields

The select field provides the set of fields to be returned in the Query Response. The select fields may include any fields in the TraceLink namespace that were included in a Set Event Request.

### Example:

```
"select": {
  "fields": [
    {
      "name": "data",
      "expression": "$['eventId', 'eventTime', 'eventType', 'market',
        'serialNumber', 'lotNumber', 'expirationDate',
        'packagingCode', 'packagingCodeType',
        'status', 'message', 'state']"
    }
  ]
}
```

## Query Filter

The query filter provides name/value pairs to be used as search criteria for the Query Event Request. The select search criteria may include any fields in the TraceLink namespace that were included in a Set Event Request.

### Example:

```
"query-filter": {
  "serialNumber": "01089060842103092110000000349317180131"
}
```

# ENUMERATIONS



# CompanyType

Use the following enumerators:

Data Code	Description
BR_CNES	Brazil National Registry of Health Facilities Number.
BR_CNPJ	Brazil Tax ID for Legal Entities (14 digits with format 00.000.000/0001-00).
BR_CPF	Brazil Individual Taxpayer Registration Number (11 digits with format 000.000.000-00).
BR_PROF_REG	Brazil Professional Registration Number.
COMPANYID	Internal Company or Site Id in Internal ERP System.
DEA	US Drug Enforcement Agency Number (9-digit number).
DUNS	Dunn and Bradstreet Number (9-digit number).
DUNS4	Dunn and Bradstreet Number with 4-digit extension (13-digit number).
GLN	Global Location Number (13-digit number).
HIN	Health Industry Number assigned by HIBCC (9-character alphanumeric).
IN_LOCATION_ID	India company location identifier (alphanumeric).
KR_BUS_REG_NUMBER	Korea Business Registration Number (10-digit number, with format 000-00-0000).
KR_PROVIDER_CODE	Korea Provider Code (8-digit number).
SGLN	Serialized Global Location Number (for a sub-location) expressed as: [CompanyPrefix].[LocationRef].0. First two segments contain only digits.

# CountryCode

Use the following enumerators:

Data Code	Description
AD	ANDORRA
AE	UNITED ARAB EMIRATES
AF	AFGHANISTAN
AG	ANTIGUA AND BARBUDA
AI	ANGUILLA
AL	ALBANIA
AM	ARMENIA
AN	NETHERLANDS ANTILLES
AO	ANGOLA
AQ	ANTARCTICA
AR	ARGENTINA
AS	AMERICAN SAMOA
AT	AUSTRIA
AU	AUSTRALIA
AW	ARUBA
AX	ÅLAND ISLANDS
AZ	AZERBAIJAN
BA	BOSNIA AND HERZEGOVINA
BB	BARBADOS
BD	BANGLADESH

Data Code	Description
BE	BELGIUM
BF	BURKINA FASO
BG	BULGARIA
BH	BAHRAIN
BI	BURUNDI
BJ	BENIN
BL	SAINT BARTHÉLEMY
BM	BERMUDA
BN	BRUNEI DARUSSALAM
BO	BOLIVIA, PLURINATIONAL STATE OF
BR	BRAZIL
BS	BAHAMAS
BT	BHUTAN
BV	BOUVET ISLAND
BW	BOTSWANA
BY	BELARUS
BZ	BELIZE
CA	CANADA
CC	COCOS (KEELING) ISLANDS
CD	CONGO, THE DEMOCRATIC REPUBLIC OF THE
CF	CENTRAL AFRICAN REPUBLIC
CG	CONGO
CH	SWITZERLAND

Data Code	Description
CI	CÔTE D'IVOIRE
CK	COOK ISLANDS
CL	CHILE
CM	CAMEROON
CN	CHINA
CO	COLOMBIA
CR	COSTA RICA
CU	CUBA
CV	CAPE VERDE
CX	CHRISTMAS ISLAND
CY	CYPRUS
CZ	CZECH REPUBLIC
DE	GERMANY
DJ	DJIBOUTI
DK	DENMARK
DM	DOMINICA
DO	DOMINICAN REPUBLIC
DZ	ALGERIA
EC	ECUADOR
EE	ESTONIA
EG	EGYPT
EH	WESTERN SAHARA
ER	ERITREA

Data Code	Description
ES	SPAIN
ET	ETHIOPIA
FI	FINLAND
FJ	FIJI
FK	FALKLAND ISLANDS (MALVINAS)
FM	MICRONESIA, FEDERATED STATES OF
FO	FAROE ISLANDS
FR	FRANCE
GA	GABON
GB	UNITED KINGDOM
GD	GRENADA
GE	GEORGIA
GF	FRENCH GUIANA
GG	GUERNSEY
GH	GHANA
GI	GIBRALTAR
GL	GREENLAND
GM	GAMBIA
GN	GUINEA
GP	GUADELOUPE
GQ	EQUATORIAL GUINEA
GR	GREECE
GS	SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS

Data Code	Description
GT	GUATEMALA
GU	GUAM
GW	GUINEA-BISSAU
GY	GUYANA
HK	HONG KONG
HM	HEARD ISLAND AND MCDONALD ISLANDS
HN	HONDURAS
HR	CROATIA
HT	HAITI
HU	HUNGARY
ID	INDONESIA
IE	IRELAND
IL	ISRAEL
IM	ISLE OF MAN
IN	INDIA
IO	BRITISH INDIAN OCEAN TERRITORY
IQ	IRAQ
IR	IRAN, ISLAMIC REPUBLIC OF
IS	ICELAND
IT	ITALY
JE	JERSEY
JM	JAMAICA
JO	JORDAN

Data Code	Description
JP	JAPAN
KE	KENYA
KG	KYRGYZSTAN
KH	CAMBODIA
KI	KIRIBATI
KM	COMOROS
KN	SAINT KITTS AND NEVIS
KP	KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
KR	KOREA, REPUBLIC OF
KW	KUWAIT
KY	CAYMAN ISLANDS
KZ	KAZAKHSTAN
LA	LAO PEOPLE'S DEMOCRATIC REPUBLIC
LB	LEBANON
LC	SAINT LUCIA
LI	LIECHTENSTEIN
LK	SRI LANKA
LR	LIBERIA
LS	LESOTHO
LT	LITHUANIA
LU	LUXEMBOURG
LV	LATVIA
LY	LIBYAN ARAB JAMAHIRIYA

Data Code	Description
MA	MOROCCO
MC	MONACO
MD	MOLDOVA, REPUBLIC OF
ME	MONTENEGRO
MF	SAINT MARTIN
MG	MADAGASCAR
MH	MARSHALL ISLANDS
MK	MACEDONIA, THE FORMER YUGOSLAV REPUBLIC OF
ML	MALI
MM	MYANMAR
MN	MONGOLIA
MO	MACAO
MP	NORTHERN MARIANA ISLANDS
MQ	MARTINIQUE
MR	MAURITANIA
MS	MONTSERRAT
MT	MALTA
MU	MAURITIUS
MV	MALDIVES
MW	MALAWI
MX	MEXICO
MY	MALAYSIA
MZ	MOZAMBIQUE

Data Code	Description
NA	NAMIBIA
NC	NEW CALEDONIA
NE	NIGER
NF	NORFOLK ISLAND
NG	NIGERIA
NI	NICARAGUA
NL	NETHERLANDS
NO	NORWAY
NP	NEPAL
NR	NAURU
NU	NIUE
NZ	NEW ZEALAND
OM	OMAN
PA	PANAMA
PE	PERU
PF	FRENCH POLYNESIA
PG	PAPUA NEW GUINEA
PH	PHILIPPINES
PK	PAKISTAN
PL	POLAND
PM	SAINT PIERRE AND MIQUELON
PN	PITCAIRN
PR	PUERTO RICO

Data Code	Description
PS	PALESTINIAN TERRITORY, OCCUPIED
PT	PORTUGAL
PW	PALAU
PY	PARAGUAY
QA	QATAR
RE	RÉUNION
RO	ROMANIA
RS	SERBIA
RU	RUSSIAN FEDERATION
RW	RWANDA
SA	SAUDI ARABIA
SB	SOLOMON ISLANDS
SC	SEYCHELLES
SD	SUDAN
SE	SWEDEN
SG	SINGAPORE
SH	SAINT HELENA, ASCENSION AND TRISTAN DA CUNHA
SI	SLOVENIA
SJ	SVALBARD AND JAN MAYEN
SK	SLOVAKIA
SL	SIERRA LEONE
SM	SAN MARINO
SN	SENEGAL

Data Code	Description
SO	SOMALIA
SR	SURINAME
ST	SAO TOME AND PRINCIPE
SV	EL SALVADOR
SY	SYRIAN ARAB REPUBLIC
SZ	SWAZILAND
TC	TURKS AND CAICOS ISLANDS
TD	CHAD
TF	FRENCH SOUTHERN TERRITORIES
TG	TOGO
TH	THAILAND
TJ	TAJIKISTAN
TK	TOKELAU
TL	TIMOR-LESTE
TM	TURKMENISTAN
TN	TUNISIA
TO	TONGA
TR	TURKEY
TT	TRINIDAD AND TOBAGO
TV	TUVALU
TW	TAIWAN
TZ	TANZANIA, UNITED REPUBLIC OF
UA	UKRAINE

Data Code	Description
UG	UGANDA
UM	UNITED STATES MINOR OUTLYING ISLANDS
US	UNITED STATES
UY	URUGUAY
UZ	UZBEKISTAN
VA	HOLY SEE (VATICAN CITY STATE)
VC	SAINT VINCENT AND THE GRENADINES
VE	VENEZUELA, BOLIVARIAN REPUBLIC OF
VG	VIRGIN ISLANDS, BRITISH
VI	VIRGIN ISLANDS, U.S.
VN	VIET NAM
VU	VANUATU
WF	WALLIS AND FUTUNA
WS	SAMOA
XK	KOSOVO
YE	YEMEN
YT	MAYOTTE
ZA	SOUTH AFRICA
ZM	ZAMBIA
ZW	ZIMBABWE

# EventType

Use the following enumerators:

Data Code	Description
AVAILABLE	<p>Supports the ability to report a serialized product is in the available or active status. Based upon the market specified in this request, the system communicates with the appropriate system of record.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
DAMAGED	<p>Supports the ability to report a serialized product is damaged and is being removed from circulation. Based upon the market specified in this request, the system communicates with the appropriate system of record.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
DESTROYED	<p>Supports the ability to report a serialized product is destroyed and is no longer in circulation. Based upon the market specified in this request, the system communicates with the appropriate system of record.</p> <p>It is common to include the following extensionData element when performing a DESTROYED event:</p> <ul style="list-style-type: none"> <li>• destruction</li> </ul> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
DISPENSED	<p>Supports the ability to report a serialized product is dispensed and may not be valid for shipment and other supply chain activities.</p> <p>It is common to include the following extensionData element when performing a DISPENSED event:</p> <ul style="list-style-type: none"> <li>• scriptId</li> </ul> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
RECEIVED	<p>Supports the ability to report the receipt of serialized products.</p> <p>It is common to include the following extensionData element when performing a RECEIVED event:</p> <ul style="list-style-type: none"> <li>• po</li> </ul>
SAMPLED_BY_AUTHORITIES	<p>Supports the ability to report a serialized product has been given to government authorities for sampling purposes. Based upon the market specified in this request, the system communicates with the appropriate system of record.</p>

Data Code	Description
	<p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
SHIPPED	<p>Supports the ability to report the shipment of serialized products. Based upon the market specified in this request, the system communicates with the appropriate system of record.</p> <p>It is common to include the following extensionData elements when performing a SHIPPED event:</p> <ul style="list-style-type: none"> <li>• supplyType (strongly encouraged)</li> <li>• po</li> <li>• asn</li> </ul> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
STOLEN	<p>Supports the ability to report a serialized product is stolen. Based upon the market specified in this request, the system communicates with the appropriate system of record.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDER_INVESTIGATION	<p>Supports the ability to report a serialized product being under investigation.</p> <p>Suggested to use the customData field to include a reason why the serial number is under investigation.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDO_AVAILABLE	<p>Supports the ability to report that a serialized product previously reported as available is incorrect and should be returned to its prior state.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDO_DAMAGED	<p>Supports the ability to report that a serialized product previously reported as damaged is incorrect and should be returned to its prior state.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDO_DESTROYED	<p>Supports the ability to report that a serialized product previously reported as destroyed is incorrect and should be returned to its prior state.</p> <p>It is common to include the following extensionData element when performing an UNDO_DESTROYED event:</p>

Data Code	Description
	<ul style="list-style-type: none"> <li>• destruction</li> </ul>
UNDO_DISPENSED	<p>Supports the ability to report that a serialized product previously reported as dispensed is incorrect and should be returned to its prior state. It is common to include the following extensionData element when performing an UNDO_DISPENSED event:</p> <ul style="list-style-type: none"> <li>• scriptId</li> </ul> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDO_RECEIVED	<p>Supports the ability to report that a serialized product previously reported as received is incorrect and should be returned to its prior state. It is common to include the following extensionData element when performing an UNDO_RECEIVED event:</p> <ul style="list-style-type: none"> <li>• po</li> </ul>
UNDO_SAMPLED_BY_AUTHORITIES	<p>Supports the ability to report that a serialized product previously reported as sampled by authorities is incorrect and should be returned to its prior state.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDO_SHIPPED	<p>Supports the ability to report that a serialized product previously reported as shipped is incorrect and should be returned to its prior state. It is common to include the following extensionData elements when performing an UNDO_SHIPPED event:</p> <ul style="list-style-type: none"> <li>• supplyType (strongly encouraged)</li> <li>• po</li> <li>• asn</li> </ul> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDO_STOLEN	<p>Supports the ability to report that a serialized product previously reported as stolen is incorrect and should be returned to its prior state.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>
UNDO_UNDER_INVESTIGATION	<p>Supports the ability to report that a serialized product previously reported as under investigation is incorrect and should be returned to its prior state. Suggested to use the customData field to include a reason why the serial number was under investigation.</p> <p> For NMVS Compliance, the status is reported to the appropriate NMVS based on the market specified.</p>

Data Code	Description
VERIFYING	<p>Requests the verification of a serial number. Based upon the market specified in this request, the system communicates with the appropriate system of record. It is common to include the following extensionData element when performing a VERIFYING event:</p> <ul style="list-style-type: none"><li>• return</li></ul>

# ExtensionStatus

Use the following enumerators:

Data Code	Description
ERROR	All serial numbers failed processing.
INCOMPLETE	At least one serial number in the batch is still being processed.
PARTIAL_SUCCESS	At least one serial number in the batch failed processing.
SUCCESS	All serial numbers were successfully processed.

# LocationType

Use the following enumerators:

Data Code	Description
BR_CNES	Brazil National Registry of Health Facilities Number.
BR_CNPJ	Brazil Tax ID for Legal Entities (14 digits with format 00.000.000/0001-00).
BR_CPF	Brazil Individual Taxpayer Registration Number (11 digits with format 000.000.000-00).
BR_PROF_REG	Brazil Professional Registration Number.
COMPANYSITEID	Internal Location or Site Id in Internal ERP (Enterprise Resource Planning) System.
DEA	US Drug Enforcement Agency Number (9-digit number).
DUNS	Dunn and Bradstreet Number (9-digit number).
DUNS4	Dunn and Bradstreet Number with 4-digit extension (13-digit number).
GLN	Global Location Number (13-digit number).
HIN	Health Industry Number assigned by HIBCC (9-character alphanumeric).
IN_LOCATION_ID	India company location identifier (alphanumeric).
KR_BUS_REG_NUMBER	Korea Business Registration Number (10-digit number, with format 000-00-0000).
KR_PROVIDER_CODE	Korea Provider Code (8-digit number).
SGLN	Serialized Global Location Number (for a sub-location) expressed as: [CompanyPrefix].[LocationRef].0. First two segments contain only digits.

# PackagingCodeType

Use the following enumerators:

Data Code	Description
CN-RESCODE	China item number format.
GTIN-14	GTIN-14 product code type.
NTIN	National Trade Item Number.
PPN	Germany 12-digit Pharmacy Product Number.

# SerialNumberStatus

Use the following enumerators:

Data Code	Description
NMVS_FAILURE	An NMVS workflow was found, but the system was unable to connect to the appropriate NMVS system. The NMVS Compliance application returned a negative response.
NMVS_SUBMISSION_FAILURE	An NMVS workflow was found and the system connected to the appropriate NMVS. The NMVS Compliance application returned a negative response from the NMVS.
NMVS_SUCCESS	An NMVS workflow was found and the system connected to the appropriate NMVS. The NMVS Compliance application returned a positive response from the NMVS.
PIE_FAILURE	A Product Information Exchange workflow is found, but TraceLink is unable to connect to the Product Verification application. Product Information Exchange returns a negative response.
PV_SUBMISSION_FAILURE	A Product Information Exchange workflow is found, and TraceLink connects to the Product Verification application. Product Information Exchange returns a negative response from Product Information Manager Product Verification.
PIE_SUCCESS	A Product Information Exchange workflow is found, and TraceLink connects to the Product Information Manager Product Verification application. Product Information Exchange returns a positive response from Product Information Manager Product Verification.
SEM_NO_COMPLIANCE_IMPACT	Neither an NMVS workflow nor a Product Information Exchange workflow was found so there is no compliance implication.

# State

Use the following enumerators:

Data Code	Description
ACTIVE	Indicates the product is active.
CHECKED_OUT	Indicates the product has been repackaged or relabeled under new ownership by a repackager or parallel importer that is not the original authorization holder.
DESTROYED	Indicates the product has been destroyed or is damaged.
EXPIRED	Indicates the product is expired.
EXPORTED	Indicates the product has been exported from the market.
FREESAMPLE	Indicates the product has been given as a free sample distribution.
LOCKED	Indicates the product is under a blocked inventory status for investigation purposes.
RECALLED	Indicates the product has been recalled from the market.
SAMPLE	Indicates the product has been given to the authorities for sampling purposes.
STOLEN	Indicates the product has been stolen or is suspected to be stolen.
SUPPLIED	Indicates the product has been supplied to a patient.
SUSPECT	Indicates the product has been identified as suspect.
UNKNOWN	Indicates the product status is not known.
WITHDRAWN	Indicates the product has been withdrawn from the market.
VALID	Indicates the product is valid.

# SerialNumberStatus

Use the following enumerators:

Data Code	Description
NMVS_FAILURE	An NMVS workflow was found, but the system was unable to connect to the appropriate NMVS system. The NMVS Compliance application returned a negative response.
NMVS_SUBMISSION_FAILURE	An NMVS workflow was found and the system connected to the appropriate NMVS. The NMVS Compliance application returned a negative response from the NMVS.
NMVS_SUCCESS	An NMVS workflow was found and the system connected to the appropriate NMVS. The NMVS Compliance application returned a positive response from the NMVS.
PIE_FAILURE	A Product Information Exchange workflow is found, but TraceLink is unable to connect to the Product Verification application. Product Information Exchange returns a negative response.
PV_SUBMISSION_FAILURE	A Product Information Exchange workflow is found, and TraceLink connects to the Product Verification application. Product Information Exchange returns a negative response from Product Information Manager Product Verification.
PIE_SUCCESS	A Product Information Exchange workflow is found, and TraceLink connects to the Product Information Manager Product Verification application. Product Information Exchange returns a positive response from Product Information Manager Product Verification.
SEM_NO_COMPLIANCE_IMPACT	Neither an NMVS workflow nor a Product Information Exchange workflow was found so there is no compliance implication.

# SupplyType

Use the following enumerators:

Data Code	Description
CIVIL_PROTECTION	Supply to authorized parties (e.g. police) for civil protection and disaster control.
DENTAL_PRACTITIONER	Supply to a dental practitioner.
EMERGENCY	Supply in response to a medical emergency.
EMERGENCY_MEDICAL_PRACTITIONER	Supply to paramedics and emergency medical practitioners.
EXEMPTED_DISPENSER	Supply to a dispenser who is exempt from compliance reporting.
EXPORT	Supply to a customer outside of the compliance jurisdiction.
FREE_SAMPLE	Supply for sample distribution.
MEDICAL_CARE_FACILITY	Supply to a hospital, clinic, or health center.
MEDICAL_PRACTITIONER	Supply to a doctor or other medical practitioner.
MILITARY	Supply to a military facility.
OPTICAL_PRACTITIONER	Supply to an optometrist or optician.
PATIENT	Supply directly to patient.
PRISON	Supply to a prison.
SCHOOL	Distribution to a school.
SPECIAL_MEDICAL_CARE_FACILITY	Distribution to a nursing home or hospice.
UNIVERSITY_RESEARCH_INSTITUTION	Supply to a research university.
VETERINARY	Supply to veterinarians and veterinary retailers.

# GLOSSARY



# A

## Administration

An application utility that includes tools for configuring global company settings for use across all TraceLink applications. Users that have access to this utility are considered Administrators.

## Advance Ship Notice (ASN)

A notification of pending deliveries, usually in an electronic format.

## Aggregation

The process of recording the serial number of a container along with the serial numbers of its contents; often referred to as a parent/child relationship, or a serialized container to content relationship.

## Agile Process Teams (APT)

A multienterprise application that enables cross-enterprise teams to digitally execute, manage, and track shared processes to increase speed and improve effectiveness of the supply chain.

## Alphanumeric

Character set made up of digits and letters of the alphabet.

## Applicability Statement 2 (AS2)

The protocol used to securely transmit data over the internet in the preferred method for exchanging Electronic Data Interchange (EDI) transactions.

## Application Administration

An Opus enterprise app, provided by TraceLink, that supports the routing of event handlers and message handlers to the correct app.

## Application Administrator

A member of a Network Company that has the permissions to perform administration functions, specific to an app. App Administrators can be members of app Owner companies to manage their apps and can also be members of app Partner companies to manage the partner side of the app, typically with limited capabilities.

## Application Identifier (AI)

A GS1 term for numeric prefixes used in barcodes and Electronic Product Code (EPC)/Radio Frequency Identification (RFID) tags to define the meaning and format of encoded data elements.

## Application Master

The master metadata store for all of the application metadata.

## Application Metadata

Defines the metadata of an application or platform service. The goals of accelerating application development, facilitating the management of apps, and presenting a developer with a visual Solution Builder require that much of the behavior of an application be defined via metadata. See: Solution Builder

## Application Program Interface (API)

The interface that allows other software programs to interact with applications. Members on the Network can generate a series of request and response messages corresponding to various TraceLink applications (whether synchronously or asynchronously).

## Application Repository

Defines where application images are stored so they can be deployed as running code.

## Application(s)/App(s)

A product offering that includes one or more functions to fulfill customer/market needs. Applications are offered in various forms including, but not restricted to, web applications, mobile apps, APIs, and SDKs to appeal to different user needs.

### **APT App Administrator / Business Technology Specialist**

A member of APT with permissions to configure the app, data models, workflows, and Experiences in support of the company's business processes. They also define Process Teams, create additional roles, assign process team admins, and add/remove user access to the APT app.

### **Asynchronous Message**

An integration message (formerly known as transaction) is used as an interface to exchange data between two companies. Asynchronous messages do not fully process in real-time.

### **Attribute**

One of the three primitive building blocks used to create the data model. (The others are object type and relationship.) An attribute is a characteristic or inherent part of an object type or relationship. The specific object instance of an attribute is known as a property. Example attributes include: Username, Serial Number, Product Identifier.

### **Authenticate**

The practice of checking a unique identifier against a set of captured serialized data to determine its authenticity.

### **Authorization Service**

An Opus system app, provided by TraceLink, that governs what authenticated users are authorized to do within the context of an app through enforcement points and policies.

### **Authorized Distributor of Record (ADR)**

A wholesale distributor that a manufacturer designates or authorizes to distribute its products.

### **Auto ID**

Method of automatically capturing data encoded on items and containers, and entering that data directly into computer systems without human involvement.

## **B**

### **Bahrain Compliance**

A TraceLink compliance reporting app that searches, views, and generates reports required by the Bahrain National Health Regulatory Authority (NHRA).

### **Base Solution**

The solution created and released by the app developer, which serves as the default solution that is automatically applied to the network when a company licenses an app (e.g. TraceLink created and released the Supply Chain Work Management solution for the Agile Process Teams app).

### **Batch**

A group of products associated with a manufacturing or packaging operation. Synonymous with lot.

### **Bill of Lading (BoL)**

A document issued by a carrier which details a shipment of merchandise and gives the shipment title to a specified party.

### **Bootstrapping**

A process in which the kernel is installed and made operational for the first time so that the rest of the system can be built using the TDE.

### **Brazil Compliance**

A TraceLink compliance reporting app that searches, views, and generates reports required by ANVISA.

### **Brazilian Health Surveillance Agency (ANVISA)**

The Brazilian Regulatory Agency responsible for the approval and supervision of food, cosmetics, tobacco, pharmaceuticals, health services, and medical devices.

**Bright Stock**

An approach to labeling and packaging operations in which products are produced in large batches, stored in unlabeled containers, and then labeled just prior to shipment.

**Build Pipeline**

Defines a module's build and deploy processes in the TDE to enable continuous delivery.

**Bundle**

A group of items held together, usually by shrink wrap. Synonymous with Inner Pack.

**Business-to-Business (B2B)**

Interactions that support the transfer of standardized interchange files up to an enterprise's EDI system. B2B interactions are not integrated with manufacturing, warehouse, or other backend business systems.

**C****Cadastro Nacional da Pessoa Jurídica (National Registry for Legal Entities) (CNPJ)**

An identification number issued to Brazilian companies by the Secretariat of the Federal Revenue of Brazil.

**Cardinality**

How many instances of a type may exist on either the FROM or TO ends of a relationship. The cardinality key defines the relationship as one to one, one to many, many to one, or many to many.

**Case**

A container of product eases (e.g. cartons, packages, bottles) which may or may not be bundled.

**Catalog Exchange Manager**

An Opus system app used to manage global catalog items available to all companies on all environments.

**Change Management**

A TraceLink app that allows the users to manage and view supplier changes.

**Check Digit**

Redundancy check used for error detection of identification numbers, used in National Drug Code (NDC) numbers, US Drug Enforcement Administration (DEA) numbers, Global Trade Item Number (GTIN-14) identifiers, and Serial Shipping Container Codes (SSCC).

**China Compliance**

A TraceLink compliance reporting app that integrates with the National Medical Products Administration (NMPA) reporting system directly or through a local partner.

**China Electronic Data Monitoring Code (CN\_EDMC)**

The encoding format for serial numbers, issued by the Chinese government, used for products sold in China.

**China Food and Drug Administration (CFDA)**

Former organization in China responsible for ensuring pharmaceutical quality. Replaced by National Medical Products Administration in 2018. See NMPA.

**Cluster**

A logical grouping of containers that you can place tasks on. A cluster represents an instance of an AWS EKS controller.

**Collection**

A group of objects.

**Commissioning**

Process of associating a serial number to a particular object (product or container).

**Community**

A TraceLink app that allows companies within the TraceLink Network to connect and engage with each other. The Community Hub also allows non-TraceLink Members to search, verify, and track specific products.

**Company Administration**

An Opus enterprise app, provided by TraceLink, that supports various administrative functions for System Administrators. These functions include user and role management across applications, network-level user and role management, partner management, location management, and maintaining company information.

**Company Administrator**

A member of a Network Company that has the permissions to perform system administration functions for apps to which the company has access.

**Compliance Reporting**

Each TraceLink product app that corresponds to a specific country, retains compliance data, and allows users to search and review the details of that data in compliance reports.

**Compliance Reports**

Reports that display specific country compliance data.

**Component**

A visual element in the Design Studio that is used for building screens. A component is defined by its Properties. There are two types of components: UI components and Data components.

**Container**

A standardized unit of TraceLink code. A container is created from a Docker image at runtime.

**Content Area**

A section of the Foundation layer. Screens are displayed in the content area.

**Contract Manufacturing Organization (CMO)**

A company providing manufacturing and sometimes packaging services for one or more pharmaceutical manufacturers based on contracts or service agreements.

**Contract Packaging Organization (CPO)**

A third-party organization that manufacturers subcontract to package products.

**Core Business Vocabulary (CBV)**

Vocabulary elements agreed upon by trading partners who will exchange data.

See: <http://www.gs1.org/epcis>

**Corrective and Preventive Action (CAPA)**

Improvements to an organization's processes taken to eliminate quality failures.

**Counterfeit**

An imitation usually created with the intent of fraudulently passing it off as genuine, often to take advantage of the established worth of the imitated product. The word counterfeit frequently describes the forgeries of currency and documents, and the imitations of clothing, software, pharmaceuticals, jeans, watches, electronics, and company logos and brands. In the case of goods, it results in patent or trademark infringement.

**Crypto code**

Encrypted identification numbers generated by the Tsentr Razvitiya Perspektivnykh Tekhnologiy (CRPT) for use in Russia. Provides additional security and allows Russian pharmacies without internet access to verify products. A crypto code is associated to a serial number and consists of a key portion and a code portion.

# D

## Data Carrier

A GS1 term for the different kinds of media, such as barcodes, that can hold GS1 identification keys and application identifiers.

## Data Component

A special type of a UI component in the XD Studio that has been preconfigured with an Opus Query. Included as part of a Screen Template section and configured to have specific behavior based on the Properties setting. To use a Data component, apps must be licensed so they can provide an API that responds to the Opus Query.

## Data Mesh Pipeline Manager

An Opus system app, provided by TraceLink, that provides a set of standard processing steps as well as the ability for an application to define custom processing steps that can be used to transform, enrich, and combine data in various ways to create data products that can be used in applications for analytics and reporting purposes.

## Data Model

The event interface for the schema store that allows authorized users to retrieve schemas. Kernel and platform developers create object types, relationships, and attribute definitions directly in the system. These items make up the Logical Data Model that an application manages.

## Data Studio

A part of the Solution Builder. Customers and Solution Partners use the data studio to configure data validations and actions.

## Decommission

To disassociate a serial number from a product or container so that it is no longer tracked. In TraceLink, decommissioned serial numbers can be reused, whereas destroyed serial numbers cannot be reused.

## Delivery

In TraceLink, a delivery is considered a sale, transfer, or return.

## Design Studio

A part of the Opus Solution Builder. Customers and Solution Partners use the Design Studio to create and modify experiences, create and modify screen/field layout, and configure data and actions.

## Destroy

To disassociate a serial number from a product or container so that it is no longer tracked. In TraceLink, destroyed serial numbers cannot be reused, whereas decommissioned serial numbers can be reused.

## Disaggregate

To remove products or containers from a parent container. The serial numbers of the contained product or container are no longer associated as children of the parent container.

## Dispenser

A retail pharmacy, hospital pharmacy, group of chain pharmacies, or any other person authorized by law to dispense or administer prescription drugs. Under DSCSA (United States), an entity is not considered a dispenser if it acts as a wholesale distributor or dispenses products only used for animals.

## Disposition

The state of a serial number. TraceLink updates serial number disposition states after provisioning, encoding, commissioning, aggregating, decommissioning, and destroying serial numbers.

## Distribution Center (DC)

A warehouse stocked with goods to be redistributed to retailers, wholesalers, or customers.

## Docker Image

A file that includes the code, runtime, tools, libraries, and settings needed to execute code for an app. A Docker image becomes a container at runtime.

**Double Byte Character Set**

A character encoding that contains a large number of unique characters or symbols that is used to express languages such as Japanese, Korean, and Chinese.

**Downstream**

The direction of product flow, e.g. pharmaceuticals travel first through the manufacturers, then downstream to repackagers, then downstream to wholesaler distributors, and finally downstream to dispensers.

**Drug Quality and Security Act (DQSA)**

US Federal Legislation passed in November 2013.

**Drug Supply Chain Security Act (DSCSA)**

An Act signed into law in 2013, which dictates the governance of pharmaceutical distribution and traceability in the US. See <https://www.fda.gov/DrugSafety/DrugIntegrityandSupplyChainSecurity/DrugSupplyChainSecurityAct/> for details.

**Drug Track and Trace System (DTTS)**

The Saudi Arabia compliance reporting repository, which supports Saudi Food & Drug Authority serialization and traceability regulations.

**Drugs Authentication and Verification Application (DAVA)**

India's web portal where manufacturers and exporters upload the compliance reports required for Indian pharmaceutical regulations.

**Dun & Bradstreet (D&B)**

A company that publishes a business directory of other companies and assigns and maintains a unique identifier for each company within the directory.

**DUNS® Number**

D&B's copyrighted, proprietary means of identifying business entities on a location-specific basis. Assigned and maintained solely by D&B, this unique nine-digit identification number has been assigned to over 100 million businesses worldwide.

**DUNS® Number+4**

The DUNS Number plus a 4-digit extension (13-digit total) created by assignees when there is a need for more than one bank/Electronic Funds Transfer (EFT) account for a location. D&B does not create or maintain the +4 number.

**E****Each**

The smallest saleable unit of product, the secondary package level. Synonymous with item.

**Elastic Container Registry (ECR)**

A fully managed Docker container registry from AWS that makes it easy for developers to store, manage, and deploy Docker images.

**Electronic Data Interchange (EDI)**

The electronic transfer of data between computer systems in a standardized message format.

**Electronic Drug Monitoring Code (EDMC)**

A unique identifier provided by the Chinese government for serialized product.

**Electronic Product Code (EPC)**

A unique number that identifies a specific item in the supply chain. Also known as a serial number.

**Electronic Product Code Information Services (EPCIS)**

See: [www.gs1.org/epcis](http://www.gs1.org/epcis) for the definition.

**Encoding**

The process of preprinting labels for serial numbers after they are provisioned. Once the labels are affixed to the products, the serial numbers enter the

"commissioned state."

### **Enterprise Application**

An application used only by the owning company, much like their enterprise systems. Enterprise apps do not have linked partners, however they can be linked to the owning company and/or its locations to support integration with the company's other enterprise systems. Examples of Enterprise Applications are Master Data, Administration, Audit Trail, Compliance Apps, TDE, and Opus Solution Builder.

### **Enterprise Resource Planning (ERP)**

Business process management software used to manage and automate back-office operations.

### **Enterprise Serialization Manager (ESM)**

A term used for a serialization system that a customer may use as its System of Record (SOR) for serial numbers instead of TraceLink's serialization services. The ESM system provides serial numbers to TraceLink for serialization operations and global compliance reporting. Synonymous with External Serialization Manager.

### **Environment**

A namespace that contains a group of Kubernetes deployments.

### **EPC Global**

An organization sponsored by GS1. Develops the standards for Electronic Product Code (EPC) and for Radio-Frequency Identification (RFID) systems that store and manage EPCs.

### **Error Correction Coding (ECC)**

A code applied to transferred data for error control. The ECC provides redundancy and allows the receiver to recover the original data.

### **Essential Drug List (EDL)**

A country-specific list of drugs that satisfies the healthcare needs of the population majority. In China, serial number file structures differentiate whether or

not a drug is on or off the EDL and is known as Provincial Reimbursement Essential Drug List (PEDL).

### **EU Compliance**

TraceLink app. Generates EU required reports regarding Serialization and Product Verification.

### **European Hub**

A cloud-based gateway for EU compliance reporting. Provides interoperability between different national systems in the EU, and manages product status (e.g. decommissioning, recalls) and exceptions throughout the life cycle of a product. The hub does not store serialization data like a repository – instead it acts as a single point of entry.

### **European Medicines Verification System (EMVS)**

Pan-European system that implements the Falsified Medicines Directive (FMD). Verifies the authenticity of a medicinal product.

### **Event**

Any action that is triggered in the TraceLink system becomes an "event" once processed in the system.

### **Event Gateway**

An Opus system app, provided by TraceLink, that includes libraries for Route Manager. Event Gateway also includes GraphQL.

### **Event Repository**

A computer system designed to store serial number information and events relating to serialized products.

### **Exchange Transaction**

A DSCSA term that describes the movement of a product where a change of ownership occurs.

### **Exclusive Distributor**

A wholesale distributor that purchases directly from a manufacturer and is the sole distributor of that manufacturer's product.

**Experience Manager**

An Opus system app, provided by TraceLink, that provides APIs that enable the creation of experiences in Customize for companies that own Solution Builder.

**Experiences**

Experiences enable access to app functionality in a responsive web user interface (UI) accessible across devices (PC, mobile, etc). Experiences are defined using the Solution Builder Design Studio using low-code, UI-driven configuration. Experiences can include functionality within a single app or functionality that spans across apps. For example, an experience can be created that provides access to features of two different apps in an integrated user experience (when the customer has licensed both apps). Different Experiences can be created for different classes of users that may use the same app. For example, one app can contain a Dispenser Experience, a Manufacturer Experience, and a Partner Experience.

**Expiry**

Date of expiration or the last day an item should be used.

**Extensible Markup Language (XML)**

A set of rules that allows documents to be readable by both humans and machines.

**Extension Digit**

A one-digit segment used to extend the serial reference segment of a Serial Shipping Container Code (SSCC) identifier. The SSCC format is: urn:epc:id:sscc:"[company prefix].[extension digit + serial number]."

**External Product Identifier**

A standards-based product code, e.g. Global Trade Item Number (GTIN) or a market-specific product code, used to identify the product. Note that this is not a manufacturer Stock Keeping Unit (SKU), as SKUs are not regulated or standardized.

**F****Falsified Medicines Directive (FMD)**

A pan-European directive intended to protect patients from counterfeit medicines in the regulated pharmaceutical supply chain. The European Medicines Verification System (EMVS) was developed to implement the FMD.

**Federal Law No. 425-FZ**

A law enacted in 2017 that dictates the governance of pharmaceutical distribution and traceability in Russia.

**File Manager**

An Opus app, provided by TraceLink, that supports the ability to import and export files to and from an app.

**Filter Value**

A digit in the 0-9 range that is used in certain EPC and coding formats, as part of the RFID control information, to specify the packaging level associated with the serial number (e.g. each, case, pallet).

**Foundation**

Foundation layer of the platform. Experiences are built on top of the Foundation, which is always visible.

**G****Global Catalog Administration**

An Opus enterprise app that allows authorized administrators to approve or reject requests to promote catalog items from a company's catalog into the

global catalog. UI access to the Global Catalog Administration app is provided by the Global Catalog Administration solution.

### **Global Company Prefix (GCP)**

The Company Prefix of the GS1 Identification Key. The Company Prefix is used for any location (physical, operational, or legal) that needs to be identified for use in the supply chain.

### **Global Identifier**

A unique reference number used to identify a legal entity (e.g. company, location) to support the secure exchange of business information.

### **Global Location Number (GLN)**

A unique 13-digit number containing a GS1 company prefix, a location reference, and a check digit, used to uniquely identify a physical location or legal entity in the supply chain. The GLN makes possible the unique and unambiguous identification of those locations and entities.

### **Global Trade Item Number (GTIN)**

A globally unique product identifier used by a company to identify its trade items at all item and package levels. To ensure the identifier is globally unique, GTINs contain the company's GS1 Company Prefix which is assigned by GS1.

### **Good Practice (GxP)**

A general term, usually referring to quality and regulations, in which "x" serves as a variable (e.g. GMP is "Good Manufacturing Practice").

### **GS1**

A leading global organization dedicated to the design and implementation of global standards and solutions, to improve the efficiency and visibility of supply and demand chains globally. The GS1 system of standards is the most widely used supply chain standards system in the world (more at [www.gs1.com](http://www.gs1.com)).

### **GS1-128**

Formerly known as Code-128. A linear barcode used by organization members of GS1.

### **GS1 Company Prefix**

A 4-12 digit globally unique company identifier assigned and administered by GS1 Global. A component of Global Location Number (GLN), Global Trade Item Number (GTIN), and Serial Shipping Container Code (SSCC) identifiers.

### **GS1 Datamatrix**

A two-dimensional matrix barcode, also called a 2D matrix, consisting of black and white cells arranged in either a square or rectangular pattern. The information to be encoded can be text or raw data. Usage granted by the GS1 standards organization.

## **H**

### **Handler**

A mechanism that executes one or more actions in response to an event. Handlers can be organized into modules.

### **Header**

Headers comprise the prefixes used in Human Readable Interpretation of variable data. Common headers include GS1 Application Identifiers (AIs) or GS1 recommended field labels.

### **Headless App**

In software development, a headless application architecture leverages an API-first approach that is focused on the data model, workflow, business logic, and APIs. The APIs are at the center for exposing information that can be consumed by user experiences and used for integration with other systems and applications. All Opus applications are headless apps built using the API-first paradigm.

### **Health Industry Number (HIN)**

9-character alphanumeric unique identifier that is assigned to every facility, delivery location, and business activity in the healthcare supply chain.

### **Healthcare Distribution Alliance (HDA)**

US National Association representing primary, full-service healthcare distributors. Formerly the Healthcare Distribution Management Alliance (HDMA).

### **Homogenous Case**

Defined under DSCSA as a sealed case containing only product that has a single National Drug Code number belonging to a single lot.

### **Human Readable Interpretation (HRI)**

Characters (e.g. letters, numbers) which can be read by persons and are encoded in data carriers. HRI is a one-to-one illustration of the encoded data.

### **Illegitimate Product**

Defined under DSCSA as a product for which credible evidence shows that the product is counterfeit, diverted, or stolen; is intentionally adulterated such that the product would result in serious adverse health consequences or death to humans; is the subject of a fraudulent transaction; or appears otherwise unfit for distribution such that the product would be reasonably likely to result in serious adverse health consequences or death to humans.

### **Importer**

A company that oversees the importation of product to a specific country.

### **India Compliance**

TraceLink app. Searches and views reports required by the Indian government.

### **Individual Saleable Unit**

Defined under DSCSA as the smallest container of product introduced into commerce by the manufacturer or repackager that is intended by the manufacturer or repackager for individual sale to a dispenser.

### **Industry 4.0**

The digital transformation of manufacturing/production and related industries and value creation processes. It refers to the intelligent networking, automation, and data exchange of machines and processes, including cyber-physical systems, the Internet of Things, cloud computing, and cognitive computing.

### **Inference**

The recognition of the serial numbers within a sealed container based on previous observation, and not by directly reading each serial number. Inference is accomplished using data systems or documents and is controlled through validated procedures.

### **Info Exchange**

A TraceLink B2B monitoring tool. Allows certain users to review data that is moving in and out of TraceLink. Monitors and logs file exchanges, errors, search details, and raw files.

### **Info Express**

A TraceLink app that allows for B2B transaction exchanges between Trade Partners in custom formats.

### **Inspection**

The process of reviewing an item, either manually or using automated systems.

### **Installation Qualification (IQ)**

Demonstrates that a process or equipment meets all specifications, is installed correctly, and all required components and documentation needed for continued operation are installed and in place.

### **Internal Material Number**

A number assigned to a product for internal use and not for identifying the product externally.

### **Internal Partner**

A location within the Owner Company that has been granted specified access to a TraceLink app.

**Interoperability**

The ability of technology systems and software to communicate, exchange data and/or information, and make use of the information that has been exchanged.

**Item**

The smallest saleable unit of product, the secondary package level. Synonymous with each.

**K****Kernel Developer**

Responsible for maintaining the verticle, which serves as the starting point of every app. The kernel developer maintains code that defines default behavior for every pod in the system.

**Korean Pharmaceutical Information Service (KPIS)**

The South Korea compliance reporting repository, which supports serialization and traceability regulations.

**Kubernetes (k8s)**

Enables dynamic deployment of a group of apps so they can be accessed at runtime. A Helm chart describes how Kubernetes deployments are grouped together in an environment.

**L****L1-L5**

The 5 levels of serialization and information management, which include: L1 – Device, L2 – Packaging line software, L3 – Site-level serialization, L4 – Enterprise serialization system, and L5 – Network-level serialization system.

**Lightweight Directory Access Protocol (LDAP)**

An industry standard protocol for accessing and maintaining distributed directory information services.

**Line Management System (LMS)**

A system that manages a production line and interfaces with a company's Enterprise Resource Planning (ERP) system.

**Link**

The representation of the relationship between an Owner and a Partner within the context of an app. A Link creates the shared context within the app and defines the permissions for data exchange and access. A Link can be initiated by the app Owner or by a Member of the TraceLink Network, based on the app configuration. Links can be made at the company or location level, depending on what is appropriate for the given app.

**Local Library**

A company's local storage for solution packages. Each company can maintain their collection of packages in their local library. In a future release, companies will be able to download solution packages and add to their local library, save their local solution customizations as packages to their local library, and use their local library to move packages between environments (i.e. from Validation to Production).

**Logistics Labeling**

Comprises the data and process of printing labels for use on all containers above the secondary packaging level (e.g. shipper and pallet labels).

**Lot**

A group of products associated with a manufacturing or packaging operation. Synonymous with batch.

**M****Management**

An application utility that includes tools for managing application settings and Partners. Users that have access to this utility are considered Managers.

**Manufacturer**

An entity or organization responsible for producing a product.

**Manufacturing Execution System (MES)**

A control system for managing and monitoring work-in-process on a factory floor.

**Marketing Authorization Holder (MAH)**

The license holder (brand owner) of a pharmaceutical product.

**Markirovka (MDLP)**

The Russia compliance reporting repository, which supports serialization and traceability regulations. MDLP is controlled by the Tsentrazvitiya Perspektivnykh Tekhnologiy (CRPT).

**Master Data**

The collection of data representing a company's details, global identifiers, products, and trading partners. Particular types of data are required for serialization and global compliance reporting.

**Master Data Exchange (MDX)**

TraceLink app for managing Company Master Data, Partner Master Data, and Product Master Data.

**Master Data Manager**

An Opus multienterprise app, provided by TraceLink, that provides read-only access to Master Data Exchange (MDX) from Track & Trace Services.

**Member**

Any company, location, or person on the TraceLink Network.

**Message**

An integration message (formerly known as transaction) which is used as an interface to exchange data between two companies. Messages process in real-time.

**Message Hub**

An Opus system app, provided by TraceLink, that enables notifications and inbox messages, based on the triggering of certain application events.

**Message Processing Framework**

An Opus infrastructure app, provided by TraceLink, that is used by app developers to define message processing flows and branching, which support asynchronous message processing via message handlers.

**Metadata**

Defines an app or platform service. The goals of accelerating app development, facilitating the management of apps, and presenting a developer with a visual development experience require that much of the behavior of an app be defined via metadata. The metadata repository contains object types, associations, and attributes.

**Metadata Manager**

An Opus system app, provided by TraceLink, that is responsible for managing data models, which consist of object types, relationships, and attributes. This app generates the schema that apps use to persist the data and navigate the data model.

**Mobile App**

A mobile instance of a customer's application run on a tablet or phone.

**Module**

Organizes a set of event handlers. Modules have their own Git repositories and their own build pipelines. In TDE, a developer selects which modules to include in the app they are building.

**Multienterprise Application**

An app used by the owning company that enables the company to share the app and data with supply chain partners on the TraceLink Network. Support for integrated supply chain partners is inherent to the app. Data can be exchanged via the user interface or message exchange with a linked Partner on the TraceLink Network. Examples of multienterprise apps are Agile Process Teams (APT), Serial Number Exchange (SNX), Product Track, and Product Information Manager (PIM).

**Multienterprise Process Connect**

An app that allows companies to share financial information, product movement, serialized data, and production information about commercial activities with upstream and downstream supply chain partners.

**N****Namespace**

A term used by Kubernetes as a mechanism to support multiple virtual clusters backed by the same physical cluster. These virtual clusters are called namespaces and can be thought of as an abstract container or environment created to hold a logical grouping of apps and data stores.

**National Association of Boards of Pharmacy (NABP)**

A nonprofit organization that promotes safe pharmacy practices.

**National Drug Code (NDC)**

A unique three-segment numeric identifier assigned to each medication prepared for commercial distribution in the United States. The three segments of the NDC identify the labeler, the product, and the commercial package size. The NDC is used as the Item Code in Product Master Data for products distributed in the US.

**National Essential Drug List (NEDL)**

A list of drugs that a country specifies that satisfies the healthcare needs of the majority of the population.

**National Medical Products Administration (NMPA)**

The organization in China responsible for ensuring pharmaceutical quality. Replaced China Food and Drug Administration (CFDA) in 2018.

**National Medicines Verification Systems (NMVS)**

A country-specific product verification system that implements the Falsified Medicines Directive (FMD). NMVS systems verify the authenticity of a medicinal product by leveraging information sent through NMVS Compliance.

**National Medicines Verification Systems (NMVS) Compliance**

A TraceLink app that generates searchable reports about pack verification and status update events across all European national systems.

**National System**

An information system set up and governed by national stakeholders to ensure a medicine's authenticity by verifying its safety features. This prevents falsified products from entering the supply chain.

**National Trade Item Number (NTIN)**

A product identifier that adopts the structure of a Global Trade Item Number (GTIN) and is assigned by a third-party national agency. An NTIN contains a country-specific drug registration number.

**Navigation Drawer**

Provides access to app destinations as the side menu of the Design Studio. The navigation drawer allows a user to navigate content by selecting different objects to perform actions on.

**Network**

A business ecosystem is composed of networks. A single network is owned by a company and enables the execution of one or more processes. Networks can have linked entities, which can include Partner companies, Partner locations, and Owner locations based on the nature of the business processes the app supports and the requirements of the specific business context.

**Network Administration**

An Opus system app, provided by TraceLink, which is responsible for arranging entities on the TraceLink Network, including companies, locations, users and roles, and their associations. Other end-user apps such as Network Operations, Company Administration, Application Administration, and User Administration all leverage this application's capabilities to facilitate the administration of their companies and networks.

**Network Administrator**

A member of a network that has the permissions to perform administration functions specific to a network (e.g. adding users at the network level, linking Partners and internal locations). Only apps that support multiple networks have Network Administrators.

**Network Integration**

A Business-to-Business (B2B) connection between a company's ERP system and TraceLink that allows the company to exchange files with other companies from the TraceLink Network. Once a company is integrated to the Network, they can access TraceLink through an Applicability Statement 2 (AS2) mailbox, Secure File Transfer Protocol (SFTP) directories, or HTTP Post web upload location (in addition to the web browser application).

**Network Onboarding**

Defining the company on the Network. TraceLink onboards a company once by adding a Company Profile to the TraceLink Network. The company's Network profile defines the company so that TraceLink can always interact with it. The profile uniquely identifies each company on the Network to distinguish it from all other parties.

**Network Resource Planning (NRP)**

An analytics-based application that will allow customers to plan and optimize demand and supply across the end-to-end supply chain.

**Node**

A server that hosts the platform for a consumer application. A node represents a physical location, a logical location, sub-location, organization, legal entity, or even specific system. Network nodes could be a plant, warehouse, or logical subdivision of a warehouse. For example, a 3PL facility that services multiple customers could have a different Network node representing a logical warehouse for each customer serviced at that location, a business unit or line of business, a geographic organization, a specific ERP system, or a corporate entity.

**Node Pool**

Namespaces can be mapped to node pools to control the placement of pods on physical devices.

**O****Object Type**

One of the three primitive building blocks used to create the data model. (The others are attribute and relationship.) A reusable component for managing data in applications. Examples include: Purchase Order, Company, Project.

**Operation**

A function that can be performed using an API. Referred to as an action in the platform data model.

**Operational Qualification (OQ)**

Formal testing of the TraceLink Life Sciences Cloud (TL-LSC) system performed by the TraceLink software quality assurance team. This formal testing is required by TraceLink's Software Development Lifecycle procedures for all changes to the

system before a version is approved for release to customers. All OQ testing is documented and reviewed, with objective evidence filed with the test results.

### Operational Reporting

Within TraceLink, operational reporting allows TraceLink members to pull existing product data from the system into a CSV file.

### Opus Development Environment (ODE)

An Opus enterprise solution, provided by TraceLink, that provides the user interface for programmers, business analysts, professional services, customer IT staff, and third-party developers to build business process applications using the TraceLink Development Environment (TDE).

### Opus Digital Network Platform

A multi-tenant cloud environment for developing and hosting extensible mobile and web apps.

### Orchestration

A multienterprise app that coordinates the processes made up of various discrete orchestration tasks across supply stakeholders. Orchestration tracks the key dates, responsible parties, and other information for those tasks and can recalibrate the process based on defined contingencies. Orchestrated processes are created from templates and each orchestrated process has specific information defined.

### Overall Equipment Effectiveness (OEE)

Evaluation of the effectiveness of a manufacturing operation.

### Owner

A TraceLink Member who has purchased a particular TraceLink application (a.k.a TraceLink Customer). Once purchased, the Owner establishes a Link to one or more Members, which makes that Member a Partner within that application's instance.

## P

### Pack Marking

Data and process for printing on primary and secondary product packaging.

### Package

A portable version of a solution that preserves the functionality of the solution and the assets the solution uses (e.g. role or policy configurations, data model or workflow customizations, user experience tasks). Each package has a unique combination of package name and version number.

### Package Transfer Service (PTS)

Track and trace system that transfers serialization data between entities when products are sold in Saudi Arabia. A component of the Drug Track and Trace System (DTTS).

### Packaging and Labeling

Physical material, artwork, and printing used for all levels of product and logistics containers.

### Packaging Code

A code that can be assigned at multiple levels of the packaging aggregation. The code type is chosen by the user. Packaging codes do not have to be the same code type between packaging levels.

### Pallet

Largest of the TraceLink defined packaging levels. A flat transport structure that supports goods while being lifted by a forklift or other jacking device. Goods or shipping containers are often placed on a pallet secured with strapping, stretch wrap, or shrink wrap and shipped.

**Parallel Importer**

An organization that buys a product on the open market with the intention to repackage or relabel, and then distributes the product to a different market.

**Park and Retry**

A practice for pausing the processing of a message if certain prerequisite conditions have not been met. If a prerequisite for a message has not been met, TraceLink stops processing that task, returns the task to the queue, and then tries to process the task again every 15 minutes for a predetermined amount of time (the default amount is two hours).

**Partner**

A company on the TraceLink Network that is linked to an app controlled by another company for the purpose of collaborating with the app Owner in the context of a business process. A partner may or may not be a TraceLink customer for the app. When a Partner is also a TraceLink customer of the app, the information exchange is app to app.

**Partnership for DSCSA Governance (PDG)**

A collaborative forum and FDA public-private partnership dedicated to developing, advancing, and sustaining an effective and efficient model for interoperable tracing and verification of prescription pharmaceuticals in the US.

**Pedigree**

A certified record that contains information about each distribution of a prescription drug. It records the sale of an item by a manufacturer, any acquisitions and sales by wholesalers or repackagers, and final sale to a pharmacy or other entity administering or dispensing the drug. The process generally begins with the serialization of a product, and then continues through the supply chain as the product is received by each trading partner.

**Performance Qualification (PQ)**

The documented evidence that the system, equipment, or process is capable of consistently producing a safe product of high quality.

**Pharmaceutical Manufacturer**

An entity or organization that is the license holder of the pharmaceutical product. This includes Brand Owners, Generics, MAHs, and other Specialty Companies.

**Picking**

Process of collecting articles in a warehouse to fulfill a customer order.

**Platform**

A group of TraceLink-developed technologies that are used as a base upon which other applications, processes, or technologies are developed.

**Platform Webapp**

An Opus app, provided by TraceLink, that provides the basic UI framework for Opus Platform applications including the header, utilities menu, side menu, footer, and the content explorer. These major aspects of the UI framework are always present within any Opus app.

**Pod**

A Kubernetes term for a group of containers deployed together.

**Policies**

A policy defines the underlying expression that needs to be evaluated to determine whether the user with role X is permitted to perform the given action specified in role X (e.g. user can perform that action on that object in that environment). The policy expression is evaluated at the time the user initiates an action and responds in sub-millisecond time. The data model defines which attributes are available for policies to evaluate. TraceLink provides a set of policies with each app and Company Admins have permissions to update policies for apps they license. (See: Roles)

**Portal**

TraceLink web application particularly for Trading Partners as opposed to TraceLink Customers.

**Primary Package**

The packaging material in direct contact with a product's contents, usually the smallest unit of distribution or use (e.g. blisters, bottles).

**Primitive Building Blocks**

The three building blocks used to create the data model: object type, attribute, and association.

**Process**

A Process can be a base business object or custom business object. Solutions can only have a single instance of a specific object type. For example, if we have a base business object customized in 3 different ways, out of 4 variations of the base business object only one can be part of the solution.

**Process Team**

An organizing construct used by the Agile Process Teams (APT) app that provides the ability to configure team workspaces dedicated to specific groups of users and Partners that will use the solution to execute processes while maintaining separate data access and visibility within each Process Team. This enables a delegated usage model by multiple organizations or business units in the same company and their respective supply chain ecosystems. This enforces the same process across the enterprise while permitting each business unit to manage its partners, users, role assignments, and data visibility independently. See: Agile Process Teams (APT)

**Process Team Administrator**

A member of the APT app and one or more Process Teams with permissions to add/remove user access to the Process Team, link/unlink Partners to the Process Team, and assign the Process Team user roles to users and Partners.

**ProcessLink**

A TraceLink term that describes a one-to-one B2B relationship between a TraceLink customer and its Trade Partners.

**ProcessLink Workspaces**

A collaborative workspace that includes all active product apps as a B2B toolset for a TraceLink customer and its Trade Partners.

**Product**

A prescription drug that is fully manufactured and is in its intended dosage. Synonymous with Medicine.

**Product Code**

A unique identifier assigned to each finished manufactured product that is ready to be marketed or sold. Synonymous with Universal Product Code.

**Product Information Exchange**

A TraceLink app that routes Consumer verification requests to Product Information Manager (Product Verification). This app also stores a history of verification requests and responses.

**Product Information Manager - Master Data Share**

A TraceLink app that allows users to exchange product master data with any of their supply chain partners.

**Product Information Manager - Product Verification**

A TraceLink app that enables direct and indirect trading partners to manage product verification requests in real time across any party in the supply chain, without a need for preexisting relationships between the requesting and responding parties.

**Product Verification**

Allows a user to verify the status of a serial number against a pharmaceutical manufacturer's data.

**Production Cluster**

Each region has one production cluster and one test cluster.

**Project**

A collaboration space for developers to create versions of a set of apps. A project is used to develop one or more versions of one or more apps. A company in a namespace creates a project. A client must address events to the TDE app to create a new project.

**Property**

The specific object instance of an attribute (i.e. the value of the attribute).

**Provisioned**

A serial number state in which the serial number has been created and reserved for a product, but has not yet been commissioned.

## Q

### Quarantine

The storage or identification of a product, to prevent distribution or transfer of the product, in a physically separate area clearly identified for such use or through other procedures.

## R

### Radio-Frequency Identification (RFID, RFID tag)

The use of an object applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves.

### Recall

The removal of a drug product from the market. In the US, recalls fall under three classifications: Class I is for drug products that can probably lead to adverse health effects or death; Class II is for drug products that can cause temporary or reversible health effects; and, Class III relates to instances where the drug product is not likely to cause adverse health effects.

### Receipt

An inbound purchase, return, or transfer within TraceLink.

### Reconcile

The process of verifying that information in a digital system accurately reflects the state of objects in the real world (e.g. comparing a label on a package with the same label in TraceLink).

### Region

Company data is stored in a data center in one of two regions: US East or EU Central. For data residency and privacy, a company can only have their data in one region. Companies can exchange data with companies in other regions, but a company cannot move data to another region. If a company needs to migrate data from one region to another, TraceLink creates a new company in the other region. Migration happens only on the production cluster.

### Relabel

To assign a new serial number to a container (preserving existing aggregations) within TraceLink.

### Relationship

One of the three primitive building blocks used to create the data model. (The others are object type and relationship.) A relationship is how business objects can be connected to each other; relationships represent "why" two objects are connected.

### Roles

Roles govern permissions to screens, functions, and data within an app, whether performed via the user interface or integration. Roles are managed by the Business Technology Specialists that configure and customize the app and by the Company Admins (users with Role Management access). An app can have many roles (to permit and restrict what different classes of members can do within the app). Roles are defined, named, and assigned to members of the app, including Partners. Every enterprise app must have roles for at least an Admin and a Member. Every multienterprise app must have roles for at least an Admin, Member, Partner Admin, and Partner Member. TraceLink will provide a set of default roles with each app that include the above, but may also include standard business use roles.

### Roszdravnadzor

Also known as the Federal Service for Surveillance in Healthcare. An executive body responsible for the control and supervision of the healthcare system in Russia. Part of the Ministry of Health. See <http://www.roszdravnadzor.ru/en> for more information.

**Runtime Model**

Currently placed under the metadata model.

**Russia Biologically Active Food Supplements Compliance (Russia BAFS Compliance)**

An Opus enterprise application that allows Marketing Authorization Holders (MAHs) who sell products in Russia to meet the reporting requirements of Federal Law No. 29-FZ of 2000 regarding the quality of food products and supplements and their safety for human health. Also refers to the Opus enterprise solution that provides the user interface for the Russia BAFS Compliance application.

**Russia Compliance**

A TraceLink application that allows Marketing Authorization Holders (MAHs) who sell products in Russia to meet the reporting requirements of Federal Law No. 425-FZ.

**Russia Crypto Codes**

A TraceLink application that enables Marketing Authorization Holders (MAHs) and their CMOs to manage encrypted identification numbers with the Tsentr Razvitiya Perspektivnykh Tekhnologiy Order Management Station (CRPT OMS).

**S****Safety Features**

Elements (e.g. anti-tampering devices, barcodes) carrying product and pack data, that are incorporated into a medicine product's packaging and identification to facilitate verification. Under FMD, for instance, safety features contain a unique identifier encoded in a 2D barcode and anti-tampering technologies.

**Saudi Arabia Compliance**

A TraceLink application that enables Pharmaceutical Manufacturers and Wholesale Distributors to comply with Saudi Food & Drug Authority (SFDA) regulations.

**Saudi Food & Drug Authority (SFDA)**

Saudi Arabia federal agency that oversees the regulation of food and health products within Saudi Arabia.

See <https://www.sfda.gov.sa/en/pages/default.aspx> for more information.

**Schema**

The physical database instantiation of the Logical Data Model that defines the detailed definition (i.e. attributes) of a particular object type or association, as opposed the metadata model, which is used when referencing the object types, associations, and attributes of the system.

**Screen**

Divides the content area into sections that contain UI components and data components. The Screen template is based on the Flexbox (or "Flexible Box") layout mode, which provides a responsive, device-independent content flow.

**Screen Template**

Defines physical and behavioral boundaries of a specific area in the UI, such as whether it spans across the entire screen or only part of the screen. A Screen template is composed in the XD Studio and can be reused across different devices.

**Script**

Defines a user's company-specific behavior. A script can insert pre-processing or post-processing steps to an event, or even override an event's defined behavior.

**Section**

An area within the XD Studio screen. A section contains UI components, Data components, or both.

**Secure File Transfer Protocol (SFTP)**

A network protocol that provides file access, transfer, and management over a secure channel.

**Segment**

A section of a market or industry. The pharmaceutical supply chain includes segments such as Manufacturer, Wholesale Distributer, Dispenser, Contract

Manufacturing Organization (CMO), Third-Party Logistics (3PL) companies, and Repackagers (also known as Third-Party Packagers or 3PPs).

### Serial Number

The distinctive portion or component of a Unique Identifier (UID), also known as a Serial Reference.

### Serial Number Exchange (SNX)

The TraceLink app used to exchange and track serial numbers during the manufacturing and packaging stages of the product.

### Serial Number Manager (SNM)

The TraceLink app used to generate serial numbers. Manufacturers define the types and formats of the serial numbers and can assign them to packaging sites.

### Serial Shipping Container Code (SSCC)

The number used to identify shipping pieces such as pallets and cases. See the "GS1 Glossary" at <http://gddold.gs1.org> for more information.

### Serialized Global Location Number (SGLN)

A unique identifier to a physical location (e.g. a specific building or bin within a warehouse). Where the Global Location Number (GLN) is a GS1 format, the SGLN is an Electronic Product Code (EPC) format, and is represented in Uniform Resource Identifier (URI) format (e.g. `urn:epc:id:sgln:0030001.12345.400`).

### Serialized Global Trading Item Number (SGTIN)

The combination of a Global Trade Identification Number (GTIN) and serial number which uniquely identify an item.

### Serialized National Drug Code (sNDC)

The accepted format of unique identifier as defined by the US Food and Drug Administration (FDA) for serialization of US marketed products. The sNDC is comprised of the National Drug Code (NDC) and a serial number.

### Serialized Operations Manager (SOM)

The TraceLink app that manages and reports on serial numbers and their corresponding products and containers.

### Settings

An application utility that configures app notification settings and TraceLink default settings.

### Shared Catalog Manager

An Opus system app used to add, edit, and delete catalog items in a company's catalog in a specific environment.

### Simple Object Access Protocol (SOAP)

A messaging protocol for exchanging structured (XML) information in the implementation of web services.

### Single Sign-On (SSO)

A session and user authentication service that allows software system users to log in with a single username and password to access connected systems.

### Site Server

A computer system responsible for a location-specific function. In traceability systems, site servers usually refer to local servers that allocate serial numbers to packaging control systems and manage serial number data before it is transmitted to an enterprise traceability event repository.

### Smart Event Manager

A TraceLink app that serves as an event ledger to capture and record serial number observations on serialized objects (in whatever order they may occur) related to pharmacy, warehouse, and supply chain activities in an independent repository, without depending on full track and trace and serial number life cycle requirements.

### Smart Inventory Tracker

A TraceLink app that operates on a handheld device or smartphone that assists with warehouse and distribution functions.

### Smart Rx Manager

A TraceLink mobile app that allows Pharmacies and Hospitals in the European Union to meet verification and reporting requirements. Smart Rx Manager leverages Smart Event Manager to store all events and National Medicine Verification

System (NMVS) Compliance to communicate with the appropriate European national system.

### Snapshot

Represents the state of metadata and code at a particular point in time. Developers can choose to take a snapshot at any time. Snapshots are identified by snapshot numbers. Test companies can be configured to use a specific snapshot number of an app's specific version, or to always use the latest snapshot. The latter is useful in development, as the developer makes changes without having to continually change the settings for their test company.

### Software Development Kit (SDK)

A set of developer tools that allows other software programs to interact with the TraceLink Platform. Members on the Network can generate a series of request and response messages corresponding to various TraceLink applications (whether synchronously or asynchronously).

### Solution Builder

An Opus enterprise app, provided by TraceLink, that allows TraceLink, Customers, and Solution Partners (SP) to create and customize solutions in a low-code environment. Design Studio, Workflow Studio, and Data Studio are all part of the Solution Builder.

### Solution Catalog

The global catalog where authorized solution providers can publish approved solution packages to be distributed to TraceLink customers. Companies can download packages from the catalog for the apps they have licensed, which they can then install as a solution and customize if needed.

### Solution(s)

Once a bundle of applications (from a one or more Solution Areas) are chosen to meet a customer's needs, that customer's Solution is established.

### Solutions

Solutions package configurations of data models, workflows, user experiences, and roles to create the functionality that a customer will use in support of a business requirement. The data model, workflow, and APIs come from the app. The user experiences and roles are associated in the context of the Solution.

TraceLink offers default Solutions that can be used out of the box by customers. Configuring and managing solutions is done using the Solution Builder. Customers can also clone and customize solutions with the Solution Builder.

### South Korea Compliance

TraceLink app. Searches and views reports required by the South Korean government.

### Standard Carrier Alpha Code (SCAC)

Code used to identify transportation companies.

### Standardized Numerical Identifier (SNI)

A standard identifier affixed to a prescription drug package.

### State License

Within the US, a particular state's license as a wholesale drug distributor, e.g. Indiana issues a wholesale drug distributor license number, in the format 4800XXXXA (including the "4800" prefix and the "A" suffix).

### Stock Keeping Unit (SKU)

Specifies a distinct type of item for sale. SKUs are not regulated or standardized and thus are not used for serialization.

### Storage Area Network (SAN)

A network that provides access to consolidated, block level data storage.

### Supplier Issue Tracking

TraceLink app. Tracks external and internal supplier issues.

### Supply Chain Issue Management (SCIM)

A multienterprise collaboration solution for Tracelink's Agile Process Teams (APT) app that allows capturing, analyzing, resolving, correcting, and preventing supply chain issues.

### Supply Chain Work Management (SCWM)

A multienterprise work management Solution for digitalizing supply chain business processes and enabling structured execution cross-functionally and cross-

company with supply chain partners.

**Suspect Product**

A product for which there is reason to believe that such product is potentially counterfeit, diverted, or stolen; potentially intentionally adulterated such that the product would result in serious adverse health consequences or death to human; potentially the subject of a fraudulent transaction; or appears otherwise unfit for distribution such that the product would result in serious adverse health consequences or death to humans.

**Synchronous Message**

An integration message (formerly known as transaction) is an interface where data exchanges between two or more entities. Synchronous messages fully process in real-time.

**Synchronous Processing**

Type of processing that provides an immediate response to a query. Simple Object Access Protocol (SOAP) and REST web services provide synchronous processing.

**System Administrator**

A member of a company that has the permissions to perform system administration functions for apps to which the company has access (e.g. company configuration, adding users to the company).

**System Application**

An application that enables fundamental capabilities of the Opus Platform and makes these available to end-user applications. Examples of System Applications are Metadata Manager, Application Manager, Workflow Manager, Message Processing Framework, and Application Version Manager.

**System of Record (SOR)**

A data storage system that is the authoritative source for a particular data element when there are multiple sources of the same element.

**T**

**T3**

Under DSCSA, the combination of Transaction Information (TI), Transaction History (TH), and the Transaction Statement (TS) for a product as it moves through the drug supply chain.

**Team**

A team is composed of users from the company that owns the network and users from the linked entity who have access to the Link. Each Link within the network represents a single team.

**Team Administrator**

A member of an app or network that has permission to perform administration functions for that app or network (e.g. adding users at the network level, linking Partners and internal locations). Only apps that allow linking have Team Administrators.

**Telepresence**

For rapid development work, platform developers can use Telepresence to allow code to be run on their local machine and proxied to the cloud.

**Templates - Serial Number**

Using the Serial Number Manager (SNM) app, manufacturers define the formats of the serial numbers for particular products using serial number templates, which are defined presets for correlated serial number data.

**Test Cluster**

Contains the company namespace, QE, namespace, and other namespaces for QA/testing in a runtime environment for debugging. Each region has one production cluster and one test cluster.

**Theme**

Defines the visual branding information and applies to all screens hosted in the XD Studio. A theme can be modified by companies and users. Examples: color, font, spacing, and other visual aspects not affecting functionality.

**Third-Party Logistics (3PL)**

A contracted company that provides distribution services of finished goods on behalf of another company. A 3PL provides distribution services, but never takes ownership of the product although the product is in its possession.

**Third-Party Manufacturer (TPM)**

A company contracted to manufacturer products for a pharmaceutical manufacturer.

**Third-Party Organization (TPO)**

Term used to refer to any Third-Party Manufacturer (TPM), Third-Party Logistics (3PL), Contract Manufacturing Organization (CMO), or other externally contracted organization.

**Third-Party Packager (3PP)**

An organization that is contracted to package product.

**Third-Party Printer (3PP)**

An organization that is contracted to print serial numbers onto packaging containers.

**TL Runtime**

The set of implementations for the interface provided by the API package in the Opus SDK. It is part of the TL kernel verticle, and is shared by all subordinate verticles located in the container.

**TLDB**

A logical database built by TraceLink (based on RocksDB) to provide data persistence for Opus applications. An Opus application communicates with a TLDB instance through the Worldview data access layer.

**TraceLink Application (App)**

A TraceLink product offering which includes a fixed set of functions. For example, SNX is an app which includes provisioning, commissioning, and aggregation functions.

**TraceLink Customer**

The company or organization that enters into a commercial relationship with TraceLink, purchasing a TraceLink product offering, such as Product Track.

**TraceLink Development Environment (TDE)**

An Opus enterprise app, provided by TraceLink, that enables programmers, business analysts, professional services, customer IT staff, and third-party developers to quickly build business process applications in a low-code, cloud-scale environment.

**TraceLink Network**

The foundation of the TraceLink product offerings (i.e. TraceLink at the highest level). Members join the TraceLink Network and access applications either as Owners (if they purchased the application) or Partners (if Linked to the application).

**TraceLink Web Experience**

A responsive web experience that is accessed from <http://opus.tracelink.com> and will replace the tracelink.com website. The TraceLink Web Experience provides a Foundation layer of the platform UI that is always visible.

**Track and Trace**

A group of systems and processes used to determine the status and location (past and present) of a unique item.

**Trading Partner**

An on-going business-to-business relationship where a product transfer and change of ownership occurs (e.g. Customer, Supplier, 3PL).

**Transaction History (TH)**

A Drug Supply Chain Security Act (DSCSA) term. A statement in paper or electronic form that includes the Transaction Information (TI) for each prior change of

ownership, going back to the manufacturer of the product.

### Transaction Information (TI)

A Drug Supply Chain Security Act (DSCSA) term. Information that documents the change in ownership of a product including drug product information, dates, and business party details.

### Transaction Statement (TS)

A DSCSA term that refers to a statement, in paper or electronic form, that provides a legal attestation that the entity transferring ownership complies with DSCSA requirements. The Transaction Statement is included with the Transaction Information and History.

### Transform Service

An Opus enterprise app, provided by TraceLink, which is responsible for transferring data from one format to another (e.g. JSON to CSV).

### Tsentr Razvitiya Perspektivnykh Tekhnologiy (CRPT)

The public-private organization in Russia responsible for generating crypto codes via their Order Management Station (OMS). See <https://crpt.ru/> for more information.

## U

### UI Component

Included as part of a screen template section in the XD Studio and configured to have specific behavior based on the Properties setting.

### Uniform Product Code (UPC)

The US standard article number. A form of GTIN data carrier or barcode.

### Unique Identifier (UID)

A string of numbers and characters relating to a product that is unique within a given system.

### Universal Product Code (UPC)

A unique identifier assigned to each finished manufactured product that is ready to be marketed or sold. Synonymous with Product Code.

### Upstream

The opposite of the normal product flow in a supply chain (i.e. moving back up the supply chain). Generally speaking, the pharmaceutical product flows, and transactions occur, through the supply chain from manufacturers, to repackagers, to wholesaler distributors, to dispensers.

### US Center of Veterinary Medicine (CVM)

An FDA Organization that regulates some products that are administered by veterinarians but can also be consumed by humans.

### US Drug Enforcement Administration (DEA)

Federal Agency which enforces federal drug laws within the US.

### US Drug Enforcement Administration Number (DEA Number)

A registration number assigned to an entity that has to be authorized by the US Drug Enforcement Administration (DEA) to manufacture, distribute, research, prescribe, or dispense a controlled substance for the purpose of tracking controlled substances. A valid DEA number consists of: 2 letters, 6 numbers, and 1 check digit. The first letter of the code identifies the type of registrant (P/R-Manufacturer/Distributor). The second letter is the first letter of the registrant's last name.

### US Food and Drug Administration (FDA)

US Federal Agency that oversees the regulation of food and health products within the US.

### US Product Track

TraceLink app. Tracks movement of products within the US supply chain.

**User**

An individual associated with an entity or organization responsible for making use of product, process, or systems. A user must be an Owner or Partner (i.e. "Linked" within the context of an app).

**User Application**

A set of apps that enable general functionality, such as receiving notifications and setting preferences. These apps are available to any registered user on TraceLink without the need to own or link to an app.

**User Interface (UI)**

TraceLink web application for TraceLink customers.

**V****Validation**

The documented procedure for obtaining, recording, and interpreting the results required to establish that a process will consistently yield product complying with predetermined specifications.

**Value Added Network (VAN)**

A hosted service that acts as an intermediary between business partners sharing standards based on proprietary data via shared business processes.

**Verification**

Defined under DSCSA as a means of determining (i.e. verifying) whether the product identifier affixed to, or imprinted upon, a package or homogeneous case corresponds to the standardized numerical identifier or lot number and expiration date assigned to the product by the manufacturer or the repackager.

**Verified-Accredited Wholesale Distributors (VAWD)**

An accreditation for pharmaceutical wholesale distribution facilities. Those wholesale distributors that achieve accreditation are in compliance with state

and federal laws, and NABP's VAWD criteria.

**Vert.x**

An open-source toolkit for building asynchronous apps on the JVM using reactive design patterns.

**Verticle**

A unit of deployment of code for one or more event handlers. Each Jar corresponds to a verticle. Jars can dynamically load multiple verticles when an app or microservice starts up.

**Virtual (Manufacturer or CMO)**

A company that outsources services to a Manufacturer/CMO.

**W****Warehouse Management System (WMS)**

A software application that supports the day-to-day operations in a warehouse. Enables centralized management of tasks such as tracking inventory levels and stock locations.

**Web Application (Apps)**

Web-based applications are accessed over a network connection and run inside of a web browser.

**Web Service Definition Language (WSDL)**

An XML-based interface used to describe the functionality of a web service. In TraceLink, WSDLs are typically used to implement synchronous serial number requests and responses.

**Wholesale Distribution**

The movement of a drug where the recipient is not a consumer/patient.

### **Wholesale Distributor**

A company that purchases products from manufacturers and then sells them to an entity other than a consumer or patient.

### **Workflow**

Actions that are enabled in TraceLink based on particular events. For example, these events may trigger government reports (e.g. shipping, receipt).

### **Workflow Manager**

An Opus system app, provided by TraceLink, that executes base state transition conditions and transition actions as well as the custom transitions and actions for a given business object (e.g. Incidents).

### **Workflow Studio**

A part of the Solution Builder. Extends workflows and add business logic and conditions. Customers or Solution Partners use the Workflow Studio to extend workflows by adding business logic and conditions, and sub-states and transitions to the base workflow states and transitions to the base workflow states (e.g. Review step, Approval step) and add logic conditions and handlers.

### **Worldview**

A collection of lightweight data access APIs that Opus apps can use to interact with data services, including S3, Dynamo, EBS, RDS, Memcache, Redis, and TLDB. The Worldview API is part of the TL Runtime, and is available to every Opus app.

## **X**

### **XSD**

Describes the structure/schema of an XML document.