



FedEx Web Services

Coding Best Practices Guidelines v1.1



Revision History

Date	Version	Author	Comments
09/19/2018	1.1	Beverly Goines	Updated for new security compliance and Error handling.

Best Practices

The FedEx Web Services Best practices and Developer guides are updated yearly. Please refer to these documents to ensure your applications are functioning based on the latest versions of these documents.

Please refer www.fedex.com/en-us/developer.html for more information.

To efficiently integrate with FedEx Web Services, developers should follow these best practice guidelines:

1. Use current standard modern namespace aware XML parsers that comply with W3C standards. Do not use a custom-built XML parser. Be aware, FedEx changes namespace prefixes.
2. The "Content-Type" in HTTP POST should be 'text/xml'.
3. In order to maintain compliance with the latest and most secure data encryption communication protocol, it is recommended to use Transport Layer Security (TLS) version 1.2 or higher.
4. Only use UTF-8-character encoding. Unless needed, limit usage to 7-bit ASCII characters. Test usage of non-7-bit ASCII characters for desired behavior.
5. Use the fully qualified URL that is defined in WSDL when setting the endpoint for your transactions. Failure to do so may lead to inconsistent results.
Example: In the Rate Service WSDL, endpoint may be defined as:
<s1: address location=
"https://wsbeta.fedex.com:443/web-services/rate"/>.
In this case, use
<https://wsbeta.fedex.com:443/web-services/rate> for the test endpoint or <https://ws.fedex.com:443/web-services/rate> for the production endpoint.
Do not use <https://wsbeta.fedex.com:443/web-services/>
or <https://ws.fedex.com:443/webservices/>.
6. When developing, determine how to react if a non-required reply element, such as a rate is not returned. Evaluate transaction reply for missing elements before using data.
For example, it is possible to ship a package if rating is not functional. Test transaction reply for missing elements before using data.
7. Avoid sending empty elements.
Example: <Streetlines></Streetlines> or <StreetLines/>
8. Only send data necessary to process the request. Example: For the U.S. domestic shipment, avoid sending Commercial Invoice and Commodity data that may only be required for international shipments.

9. We return detailed and actionable notification messages and it is strongly recommended not to parse the notification message verbiage. If you decide to customize your own messages, then use logic presented in the notification to present appropriate message to the user.
10. When users or developers send many decimals in their values, it can cause odd errors. For Weight, only 1 explicit decimal place is allowed (i.e., 45.3) and for currency Value/Amount, only 2 explicit decimal places are allowed (i.e., 100.52). Dimensions such as Length, Width and Height do not support decimals.
11. Be sure the code allows for handling of a reply with Highest Severity other than successful. Warnings and notes are not indications of a failure; however, the error or warning message should be logged and examined for informative content. The notifications are:
 - **Success:** Your request was processed successfully.
 - **Note:** Your request was processed successfully. The code/message contains additional information about how your request was fulfilled; you do not need to take any special action.
 - **Warning:** Your request was processed successfully. The code/message explains what was done to fulfill the request; however, some assumptions may have been made to fulfill the request and you should determine if the reply matches intent. A warning message may also be a notification of a future change.
 - **Error:** Unable to process request because either the request data was invalid or violated a business rule. Correct the request and try again.
 - **Failure:** Request could not be handled at this time because of an internal FedEx error.



11. Add Error Handling code to your project for handling unexpected results. Be careful when repeating unsuccessful transactions. If a reply is returned with Highest Severity of Failure, resend the transaction to account for an intermittent environment problem. Limit the number of times a request is resent. If a reply is returned with Highest Severity of Error, this normally means there is a problem with the request and the request needs to be corrected before being resent.

12. Log and retain the XML request and reply.
13. The optional element CustomerTransactionID is available for customer to provide a unique ID for logging purposes. This element makes it easier for the customer or FedEx to find an individual transaction for troubleshooting.
14. It is preferred that a developer, instead of the end user, contact FedEx for support. A support process between the product end user and responsible developer should be in place. Provide an account and meter number when calling technicalsupport.
15. When processing a web services transaction, it is required to provide the account details used to register to obtain a successful response. Mismatch of credential/account and combinations will result in an Authentication Failure when attempting to process the transaction.



Programming

1. In Visual Studio, updating the Track or Address Validation WSDL web reference will cause the application to fail when being compiled. The reference document (e.g., reference.vb or reference.cs) must be manually updated to resolve the problem. A typical error would be “CS0029: Cannot implicitly convert type 'fedexreq.ParsedElement' to 'fedexreq.ParsedElement[]’.” For more detail, see Technical FAQs at fedex.com/us/developer/FAQs.
2. If ‘Specified’ property is not set to “true,” .NET does not pass the value of corresponding field in serialized SOAP request. Always set “Specified” property where appropriate. Example:
 - request.RequestedShipment.Recipient.Address.ResidentialSpecified = true
 - request.RequestedShipment.Recipient.Address.Residential = true
3. Validate that required fields such as recipient postal code and package weight have data before sending the transaction. Validate the data is appropriate for the field in question (e.g. for US postal codes, verify that the field is all numeric and is in the form of a 5-digit or a ZIP+4 postal code format). This will minimize transaction errors.
4. Do not allow new meter number generation without end user intervention.

Rating/Shipping

1. Do not assume a particular service will be available for all scenarios. For example, STANDARD_OVERNIGHT (among others) is not available between all postal codes.
2. If a specific service is being requested for rating, include ServiceType in the request. This will decrease the size of reply and reduce the transaction response time.
3. For a special service to be included on a shipment, both special service type and its detail must be included. Some special services do not have a detail. There may be no indication that special services are not included.
4. The timestamp for a rate or shipment should be the time and package is expected to be tendered to FedEx or a FedEx agent. This is not necessarily the time at which ship, or rate transaction is performed. For example, a shipment generated late Friday night for a package that will not be picked up by FedEx until Monday should have a Monday timestamp. Use correct timestamp if it is known, or the delivery estimation and rates may not be correct.
5. Perform the close for FedEx Ground and FedEx SmartPost® at the end of shipping day before pickup. Perform FedEx Ground close prior to the FedEx SmartPost close.

Tracking

1. Limit the number of tracking numbers in a single-track request to 30.
2. Limit the number of times a package is tracked to what is necessary for business needs.
3. For batch tracking, remove any packages that have returned a track status of “delivered” from batch.



Address Validation

1. FedEx provides Address Validation as a suggestion and not a final determination. The end user needs to make a final determination of whether an address is usable from the data provided and their business needs. A process must be in place to handle addresses that cannot be validated so that orders can still be processed.
2. To ensure a better shipping experience, do not make the shipping process dependent on optional services such as Address Validation. For example, if Address Validation is unavailable at the time of order entry or shipping, a contingency should be in place to complete the shipment.

Additional Resources

For more about FedEx Web Services, go to www.fedex.com/us/developer/index.html to learn how to integrate FedEx into a website or application you're developing. Learn how integration with existing business systems can make shipping around the world faster and easier. This business site will provide you with Online developer resources along with feature and service information.

Customer Support

If you have questions or need assistance, please contact the FedEx Technical Support Center at 1.877.FDX.Assist 1.877.339.2774, Monday through Friday, 7 a.m. to 9 p.m. CST; and Saturday, 9 a.m. to 3 p.m. CST.