



# Avalara

## AvaTax Developer Guide



# Chapter 1 - Getting Started with AvaTax

Welcome to the AvaTax Developer Guide! This document will [introduce you to AvaTax](#), a powerful and easy-to-use API that provides tax calculations for financial applications. AvaTax can help your business automate the hard work of calculating, storing, auditing and reporting on transactional taxes.

The AvaTax developer guide will help you learn how to use all the powerful features of the AvaTax API to design your integration. We will teach you all the core concepts you need to understand, and a list of test cases you can use to ensure that your software behaves correctly when faced with common problems and challenges. At the end of this document, you'll have a full, accurate, responsive, and resilient implementation that handles tax correctly.

In this chapter, you will learn:

- How to obtain an AvaTax account to begin development
- What software development kits are available
- How to authenticate against the AvaTax API

Let's begin by getting you connected to AvaTax.

## 1.1 - Connecting to the API

To get started, you'll need an AvaTax account. Avalara provides free trial accounts you can use to begin developing against AvaTax. This trial account will allow you to use advanced AvaTax functionality for locations in the U.S. and Canada.

You can begin by [signing up for a free AvaTax account online](#), or you can [contact sales](#) at (877) 780-4848 to purchase an account. Once your free trial is up, you can continue using our [Free TaxRates API](#) or [contact sales to upgrade to a full account](#).

## The AvaTax Website and Tax Profiles

When your account is provisioned, you will receive an email inviting you to log onto the [AvaTax website](#). We create a basic tax profile for you when you signup for the free trial using the information you provided. If you would like to change these settings, login to the [AvaTax UI](#) and [update your tax profile](#). A tax profile helps AvaTax know where your company does business and where you have nexus.

It's important to understand the concept of [nexus](#). You can think of it as “a list of places where I must collect tax;” — this is an important concept for all AvaTax developers. If you do not declare any nexus, your account will not calculate any tax! We'll cover this topic in more detail in [Chapter 8.1 - Reasons Tax Can Be Zero](#).

This nexus concept may seem strange at first, but it helps you separate your tax software from your tax profile. When integrating tax into your program, you want to write the code once and test it once. Your code doesn't need to know where you have nexus; AvaTax takes care of that for you. As a programmer, your job is to make the software reliable and accurate; your accounting team will then manage your company's nexus settings on an on-going basis. By using a concept of nexus separate from your software, you won't have to go back and rewrite your program later when your company's nexus changes.

If you are building an AvaTax integration for your company, you'll probably need to work with your tax team to ensure that your account and tax profile are set up correctly before you start developing software. If you forget to set up a tax profile, you may find that your tax calculations keep coming back with a rate of zero, because the tax profile doesn't require you to collect tax!

If you're building an integration to an accounting system or storefront system — a connector — the companies that purchase your connector will need to set up their own tax profile. This means that you can develop your

software without having to know anything about your customers' tax profile. As long as you follow the [AvaTax certification guidelines](#) in this developer guide, a customer that purchases your connector will be able to set up their own tax profiles and get accurate tax results.

## What is Sandbox?

Next, let's explain what we mean by Sandbox. Avalara provides two different environments for AvaTax: Sandbox and Production. Each environment is completely separate, and each has its own credentials. If you have a Sandbox account, you cannot use that account to log onto Production; and vice versa.

When you receive credentials for AvaTax, it's important to write down the account's environment name. We keep Sandbox and Production credentials separate to help you test your software in Sandbox without the risk of accidentally affecting production data.

You may want to share your sandbox credentials with developers, and reserve production credentials for accountants. Keeping accounts separate helps avoid the risk of reporting test data to a tax authority.

Let's spend a few minutes explaining how Sandbox and Production relate to each other.

	SANDBOX	PRODUCTION
AvaTax API URL	<a href="https://sandbox.admin.avalara.com">https://sandbox.admin.avalara.com</a>	<a href="https://admin.avalara.com">https://admin.avalara.com</a>
Tax Content	Always kept up to date	Always kept up to date
Monitoring	24/7 Monitoring	24/7 Monitoring
Data	All Sandbox data is fully separate from Production data.	All Production data is fully separate from Sandbox data.
Credentials	Production credentials will not work on Sandbox, so you can't accidentally save a real transaction into the sandbox environment with a production account.	Sandbox credentials will not work on Production, so you can't accidentally create a test transaction in production with a sandbox account.
Tax Filing	Sandbox data is never reported to a tax authority; so you can test your transactions without worrying about accidentally reporting transactions.	Transactions that are marked <b>Committed</b> in production can be reported on a tax filing using the Avalara Managed Returns Service.
Updates	Generally updates a few days earlier than Production, so that customers can experiment with new releases before they go live.	Updated a few days to a week after Sandbox, so that customers can preview the new release on Sandbox before it is live.

For more information on Sandbox and the AvaTax release schedule, please read [The AvaTax Release Schedule](#).

## AvaTax Software Development Kits

You don't have to write all your code from scratch! Our team has built AvaTax Software Development Kits for a variety of popular programming languages to help you get started more quickly. The AvaTax SDK includes shortcuts to help set up authentication, call API methods, and parse results so you can focus on the valuable business logic.

The AvaTax SDK is fully open source, and you can download source code for a myriad of languages and frameworks. You will find officially supported libraries and those that are contributed by our community on the [AvaTax SDK page](#). We welcome your feedback. If you wish to report a bug or submit a question, please contact us using our [community support forums](#) or submit a pull request directly to the GitHub repository for each SDK.

LANGUAGE	VERSION	STATUS	GITHUB
C#			<a href="#">AvaTax-REST-V2-DotNet-SDK</a>
Java / Scala / JRE			<a href="#">AvaTax-REST-V2-JRE-SDK</a>
JavaScript			<a href="#">AvaTax-REST-V2-JS-SDK</a>
Python		<a href="#">pyavatax</a>	Supported by <a href="#">Active Frequency</a>
PHP			<a href="#">AvaTax-REST-V2-PHP-SDK</a>
Ruby			<a href="#">AvaTax-REST-V2-Ruby-SDK</a>
IBM   RPG			<a href="#">AvaTax-REST-V2-RPGLE-SDK</a>

If you choose, you can always write your own code to contact the AvaTax API directly. We publish all of our [API reference documentation online](#), and every API has an interactive 'Try-It-Now' feature so you can get familiar with our service. Our internal developers use the exact same documentation that we publish to our partners and customers, so you know you'll always see the latest information online.

Now that we've got the basics out of the way, let's set up authentication and start using the API!

## 1.2 - Authentication

AvaTax uses existing HTTP authentication standards: both [basic HTTP authentication](#) and [OAuth 2.0 bearer token authentication](#). Both of these standards are well documented and have been in existence for a long time — which also means that over the past decades, many different people have implemented the standard in many different ways. Let's describe exactly how to authenticate your API calls in AvaTax.

For HTTP Basic authentication, AvaTax supports two options:

- Your AvaTax username and password
- Your AvaTax account number and license key

Which style of authentication should you choose?

- If you are building a connector that customers will set up and use on their premises, use Account ID/License Key authentication.
- If you are building a web portal with direct AvaTax integration, please contact business development to see if bearer token authentication is the preferred approach.
- Otherwise, use Username/Password authentication.

Let's review each approach.

## Username and Password Authentication

The simplest type of authentication uses a username and a password. If you use an AvaTax SDK, this encoding is done for you transparently. Just provide your credentials and the SDK will do all the work! For example, here's how the AvaTax SDK for C# implements username/password authentication:

```
// Create a client and set up authentication
var Client = new AvaTaxClient("MyTestApp", "1.0", Environment.MachineName, AvaTaxEnvironment.Sandbox)
    .WithSecurity("MyUsername", "MyPassword");
```

If you are writing your own code, here's how to construct an authentication token for AvaTax using your username and password:

TASK	RESULT
Start with the word <b>Basic</b> followed by username, a colon, and password. There are no spaces between any values.	<b>Basic username:password</b>
Replace username with your username, and password with your password. Ensure that there are no whitespace characters unless those characters are part of your username or password.	<b>Basic bob@example.org:bobspasswordgoeshere</b>
Now use your favorite <a href="#">Base64 encoding program</a> to encode the right hand side of the string.	<b>Basic Ym9iQGV4YW1wbGUub3JnO mJvYnNwYXNzd29yZGdvZXNoZXJl</b>
Add this to the <b>Authorization</b> header in your HTTP request.	<b>Authorization: Basic Ym9iQGV4YW1wbGUub3JnO mJvYnNwYXNzd29yZGdvZXNoZXJl</b>

Basic username and password authentication has a number of advantages and disadvantages:

### Advantages

- An auditor can uniquely identify the user that executed every API call.
- Allows different users to have different privilege levels.
- Basic authentication does not expire.
- All basic authentication headers are protected by strong SSL encryption in transit to Avalara.

### Disadvantages

- Usernames and passwords can be stolen or forgotten.
- Insecure passwords can be guessed by brute force. To prevent this, Avalara enforces a limit: if you fail to authenticate multiple times in a row, your account may be locked out.

Basic username and password authentication is recommended for individual users who are calling APIs within AvaTax, or for users who have limited access rights.

It's worth restating here: A Sandbox username will not work in Production, and a Production username will not work on Sandbox. If you get a login failure, please check your username by logging onto the [AvaTax website for](#)

[sandbox](#) or [AvaTax website for production](#). That will help you determine which environment you should use.

## Legacy License Key Authentication

Each AvaTax account has one (and only one!) legacy license key. Since each account is tied to one environment, this means a customer will typically have two license keys: one license key for sandbox, and one license key for production.

A license key is generated by an account administrator on the [AvaTax website](#), or by calling the [AccountResetLicenseKey API](#). For the moment, let's focus on how to get a license key through the AvaTax website. Here's how to generate a license key:

- Log on to the AvaTax website for the appropriate environment.
- Click on Settings
- Click on Reset License Key

As you'll notice, this page is restricted to only account administrators. Keep in mind that you only have one license key and Avalara is unable to recover this key!

When you generate a new license key, all older license keys are immediately revoked and no longer usable. This is helpful because if your license key is lost or stolen you can revoke it instantly. However, generating a new key is a risk because this may affect existing systems using the AvaTax calculation engine.

Let's construct an authorization using an Avalara License Key:

TASK	RESULT
Start with the word <b>Basic</b> followed by accountid and licensekey.	<b>Basic accountid:licensekey</b>
Replace accountid with your <b>account ID</b> number, and licensekey with the <b>licensekey</b> you generated above. Ensure that there are no whitespace characters — an account ID and license key will never have whitespace characters of any kind.	<b>Basic 123456789:123456789ABCDEF123456789ABCDEF</b>
Now use your favorite <a href="#">Base64 encoding program</a> to encode the right hand side of the string.	<b>Basic MTIzNDU2Nzg5OjEyMzQ1Njc4OUFCQ0RFRjEyMzQ1Njc4OUFC-Q0RFRg==</b>
Add this to the <b>Authorization</b> header in your HTTP request.	<b>Authorization: Basic MTIzNDU2Nzg5OjEyMzQ1Njc4OUFCQ0RFRjEyMzQ1Njc4OUFC-Q0RFRg==</b>

Account ID/license key and username/password authentication are very similar in practice. So why would you choose one over the other? Let's look at the advantages and disadvantages of license key authentication.

### Advantages

- License keys have much stronger entropy when compared to a username/password, and are harder to attack.
- Account ID / License Key authentication is not user-specific and will not expire if one user resets their password.
- All basic authentication headers are protected by strong SSL encryption in transit to Avalara.

### Disadvantages

- There is only one license key for each company.
- Revoking your license key will cause all API calls with the old license key to fail.
- It is not possible to identify individual users taking an action when license key authentication is used.

Avalara recommends using account ID / License Key authentication when implementing connectors. Your software should have a configuration page or file that allows a customer to type in their account ID and license key when they set up your connector; then all API calls made through your connector will use these credentials.

### Bearer Token Authentication

AvaTax is currently implementing support for OAuth 2.0 based bearer token authentication. This feature is available to select partners. To make use of the OAuth bearer token feature, please contact your account manager.

## 1.3 - Troubleshooting

Whenever AvaTax is unable to respond to your API call, the software will present you with an AvaTax error code. Each error code contains a hyperlink to a web page with more information about the error. As you learn the AvaTax API, it's important that you understand how to read and interpret these error codes.

### Handling Error Messages

We've designed the AvaTax error messages to clearly tell you what went wrong, what you can do about it, and how to proceed. You can read a list of [all AvaTax REST error codes](#) on the developer website. Each error message contains within it a hyperlink to the page for that specific error. Our community forums team monitors all comments on the developer website, so if you see anything confusing, write us a comment — we'd love to improve our documentation!

When an AvaTax API call produces an error, it responds using the standard [HTTP error response codes](#). Response codes between 400 and 499 are called Client Errors, and they indicate that you made a mistake in your API call. Response codes between 500 and 599 refer to internal errors within AvaTax itself; each internal error is automatically logged and reported to our development team for triage.

If your program gets an HTTP response code between 400 and 499, here's how to proceed:

- Parse the error message using a JSON parsing engine.
- Display the summary of the error to the user.
- Link the user to the documentation page that explains the error.
- Allow the user to make a change to their request, or retry their action.

For example, let's examine how to handle an authentication error. If a developer forgets to pass authentication credentials to an AvaTax API, they will probably see the error message [AuthenticationIncomplete](#):

```

Request: GET /api/v2/companies/

Response: 401 Unauthorized
{
  "error": {
    "code": "AuthenticationIncomplete",
    "message": "Authentication Incomplete.",
    "target": "HttpRequestHeaders",
    "details": [
      {
        "code": "AuthenticationIncomplete",
        "number": 34,
        "message": "Authentication Incomplete.",
        "description": "You must provide an Authorization header of the type Basic or Bearer to authenticate correctly. ",
        "faultCode": "Client",
        "helpLink": "/avatax/errors/AuthenticationIncomplete",
        "severity": "Exception"
      }
    ]
  }
}

```

Your next step should be to display an error message in your product:

- Begin by displaying the value `error.message` in your user interface. This helps the user understand the context of the problem without taking up too much space.
- If your user interface has room for more details, display the value contained in `error.details[0].description` and the `error.details[0].helpLink`. This would allow the user to see the link [“You must provide an Authorization header of the type Basic or Bearer to authenticate correctly.”](#)
- Some API calls can include more than one error. For example, if a user is creating a transaction with ten invoice lines, you will receive a list of error messages, one per mistake. Depending on your user interface, you may wish to parse and display all error messages, or only display the top one.

In the case of an error, it’s critical to handle the error and enable the software to continue. If your program has a user interface, you should allow the user to retry or cancel the API call. Your customers may be working offline or with an interrupted Internet connection, and they need to get their work done even if they can’t use AvaTax at the moment. We’ll cover offline behavior more in [Chapter 11 - Calculating Tax Offline](#), but for the moment let’s review how to properly handle error messages.

Here’s a test case that causes an error message to occur. We will call the [QueryCompanies API](#) with an incorrect filter, which produces an error message. Try this API call and make sure your program can display the error message correctly:

## Test Case 1.3.1 - Handling Errors

### Setup

- Call `QueryCompanies` with the following parameters:
  - `$filter = id = 'abc'`

## Assertions

- You will receive an error message:
  - Title: “Error parsing \$include parameter.”
  - Message: “The field named ‘CompanyId’ is type System.Int32 and cannot be compared to ‘abc’”.
- Your product will display an error message showing this error message.
- The error message should make it clear to a user that they have attempted to filter on a numeric value but have instead provided an alphabetic string.

## Expected API Call

Create Transaction:

```
GET https://sandbox-rest.avatax.com/api/v2/companies?$filter=id = 'abc'w
```

Now that your software is able to display the error message correctly, let’s discuss how to solve common problems.

## Identifying a Firewall or Proxy Server Problem

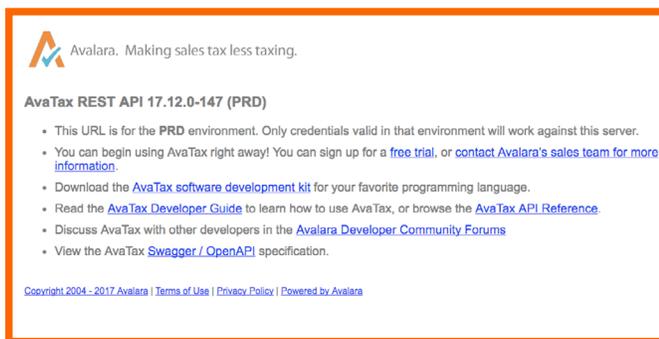
If your software is unable to contact AvaTax, pretty much any API call you make will produce an error. So let’s begin by explaining how we can identify whether a connection problem exists.

First, please visit the AvaTax API server from your desktop computer or mobile phone. You should try both of these two URLs, one for sandbox and one for production:

Sandbox Environment: <https://sandbox-rest.avatax.com>

Production Environment: <https://rest.avatax.com>

If your connection is working correctly, you should see a web page similar to the following:



If you can’t see this page on your desktop computer at work, but you can see this web page from a mobile phone on the public Internet, you may have a networking issue. There’s a chance your office has a firewall or proxy server that enforces some limits on your network connectivity. Contact your corporate IT department for more information.

## Testing Authentication

If you receive an authentication error, a good place to start is the [Ping API](#). You can call this API whenever your program starts, to check to ensure that it can contact the AvaTax server — because ping will never return an error message even if you don't provide any authentication. If your Ping call fails, you know you are having trouble with your internet connection.

Here's how to use ping:

### Test Case 1.3.2 – Ping API

#### Setup

- Call the AvaTax Ping API

#### Assertions

- The Ping API returns a JSON object with the following information:
- version: A string similar to “17.9.0.120” indicating the version of the AvaTax server.
- authenticated: A boolean value indicating whether your API call was successfully authenticated.
- authenticationType: A string with information about the authentication method you used, if any.

If your API call was successfully authenticated, information about the authenticated user will appear in the fields `authenticatedUserName`, `authenticatedUserId`, and `authenticatedAccountId`.

#### Expected API Call

Ping:

```
GET https://sandbox-rest.avatax.com/api/v2/utilities/ping
```

When your program detects that a ping call has failed, it should notify the user that it can't reach AvaTax, and ask them to check their Internet connection. If the ping call returns but the `authenticated` field is set to `false`, the user has probably mistyped their username or password and they should retry.

Before we move on, let's look at a few other common troubleshooting steps you may encounter as you begin development:

## Other Common Problems

PROBLEM TYPE	STEPS TO DIAGNOSE
Routing Problems	<p>Do your routers have the latest software? Have they been rebooted recently, or are there too many hops between your network and the outside world?</p> <ul style="list-style-type: none"> <li>• If your network is using a direct connection with a local internet service provider, does your connection reset regularly?</li> <li>• If the connection is permanent or business-class, does your ISP offer metrics to help you measure response time?</li> <li>• If you have a more advanced network using <a href="#">Border Gateway Protocol</a> routing, you would need to talk to your network engineering team. BGP issues are very challenging to review and are beyond the scope of this article.</li> </ul> <p>Due to security issues, Avalara's servers do not respond to ping requests. This means that network traces from software like <a href="#">traceroute or tracert</a> are not able to provide accurate route timings.</p>
Authentication Problems	<p>Try using the <a href="#">Ping API</a>, or switch to using an <a href="#">AvaTax SDK</a> which has prebuilt and tested authentication code.</p>
Firewall Problems	<p>To use AvaTax, you must enable access to all IP addresses identified by these DNS names:</p> <ul style="list-style-type: none"> <li>• Sandbox Environment: <a href="https://sandbox-rest.avatax.com">https://sandbox-rest.avatax.com</a></li> <li>• Production Environment: <a href="https://rest.avatax.com">https://rest.avatax.com</a></li> </ul> <p>AvaTax is a dynamic product and its IP addresses may change regularly. AvaTax does not support firewalls that filter on individual IP addresses.</p>
Ethernet Problems	<p>Check the quality of your wiring and the auto-negotiate settings on your ethernet devices. Bad wiring or devices with mismatched speed settings are easy to overlook! You can run <code>netstat -s</code> on a windows machine or <code>ifconfig -a</code> on a linux machine to detect whether an unusual number of bad packets are coming through your network. If you have a performance mismatch, try checking with your network administrator to see if the cabling can be improved.</p>
Host Files / IP Address Hardcoding / DNS Caching	<p>AvaTax does not support hard coded IP addresses or host files. To use AvaTax, you must resolve DNS names dynamically. Your DNS server should respect the DNS time-to-live (TTL) values; Avalara publishes DNS TTL values designed to permit our operations team to adjust our connectivity in response to changing network conditions.</p>
Proxy Server Problems	<p>AvaTax is not designed for environments using proxy servers. Proxy servers can cause latency and connectivity problems when calling high performance APIs like AvaTax. If your company policy requires a proxy server by policy, please consult your proxy provider for how to correctly configure the proxy to work with AvaTax.</p>

DNS Time-To-Live	Avalara makes changes to our domain name system records periodically. Your software should ensure that you respect the DNS time-to-live values, and that your software periodically contacts DNS to update its name lookups. Some software, including some Java JRE versions, may need to be updated to ensure the “ttl” or “time-to-live” values are correctly handled. If you experience problems with occasional DNS changes, please check the documentation for your operating system, programming language, or development environment to ensure your software handles TTL values correctly.
Need SSL Certificate Verification	<p>Some web clients (such as CURL for Windows) will require you to download the Avalara AvaTax SSL public keychain and install it into your client’s keychain repository. If the client program requests that you specifically accept and trust Avalara’s web certificate, here’s how to proceed:</p> <ol style="list-style-type: none"> <li>1. Go to VeriSign Root CA and follow the instructions. [PROBLEM]</li> <li>2. Save the file in your preferred directory named like “certs-ca-bundle.crt”.</li> <li>3. Register that file following your standard certificate store process.</li> </ol>

## 1.4 - Configure Your Account

To use AvaTax, you must configure your company and set up your tax profile. You can configure your company on the [AvaTax website](#) or by using the API directly.

If you are building a connector that links up to AvaTax, you don’t have to do any work to setup a company. Your customers will log onto AvaTax and follow the company setup steps themselves. No work necessary!

To continue with this developer guide, let’s set up a test company right now. This company will allow us to finish all the test cases within the AvaTax Developer Guide using a company with a known tax profile.

To set up a company quickly, AvaTax provides the [CompanyInitialize API](#) call, which does most of the work:

### Test Case 1.4.1 - Configure a Company

#### Setup

- Call [CompanyInitialize](#) with these values:
  - Name: Developer Guide Company
  - CompanyCode: DEVGUIDE
  - Taxpayer ID number: 12-3456789
- Address:
  - 2000 Main Street. Irvine, CA 92614 [one line okay?]
- Contact:
  - Name: Bob Example
  - Email: bob@example.org
  - Primary Phone: 714 555 2121
  - Mobile Phone: 714 555 2121 [Okay to add based on assertions?]

#### Assertions

- Company should be created with Bob Example with his relevant contact information:
  - Email: bob@example.org
  - Primary phone number: (714) 555-2121
  - Mobile phone number: (714) 555-1212

- Company name: “Developer Guide”
- Business location: 2000 Main Street, Irvine, CA 92614
- Tax Payer ID: 12-3456789

## Expected API Call

CompanyInitialize:

```
{
  "name": "Developer Guide Company",
  "companyCode": "DEVGUIDE",
  "taxpayerIdNumber": "12-3456789",
  "line1": "2000 Main Street",
  "city": "Irvine",
  "region": "CA",
  "postalCode": "92614",
  "country": "US",
  "firstName": "Bob",
  "lastName": "Example",
  "title": "Owner",
  "email": "bob@example.org",
  "phoneNumber": "714 555-2121",
  "mobileNumber": "714 555-1212"
}
```

After this API call has completed, you will see that this company, with the `companyCode` value set to “DEVGUIDE”, is ready for use!

Congratulations! You have successfully initialized your first AvaTax company.

## 1.5 Chapter Summary

In this chapter you’ve learned how you can get started using the AvaTax API

- How to get Authenticated with AvaTax via the REST API.
- Where you can download AvaTax SDKs.
- How to troubleshoot connectivity issues and common problems.
- Configuring your account.

## Certification Requirements

**AvaTax Configuration:** The AvaTax Configuration Dialog window must allow the user to specify the configuration/connection information.

- Account Number
- License Key
- Service URL
- Company Code

**Test Connection button:** Tests the connection to the AvaTax service and verifies the AvaTax credentials. This is an important element to allow for successful troubleshooting of the AvaTax service. Optional – display license key expiration date upon successful connection response.

Tests in this chapter:

- [1.3.1 - Handling Errors](#)
- [1.3.2 - Ping API](#)
- [1.4.1 - Configure a Company](#)

# Chapter 2 - Transactions

Now that you've made it through [Chapter 1 - Getting Started with AvaTax](#), we're going to get into the real meat and potatoes of what AvaTax does – calculating tax on transactions.

This chapter will help you understand all the information you need to gather in order to produce accurate, fast, reliable tax calculations. At its core, AvaTax is designed to help you calculate taxes on a sales transaction between two parties; all the parameters in the API call help you ensure your tax calculation is correct. We'll show you how to interpret the results you receive back from the API, and to display them to your customer.

By the end of this chapter, you will have learned how to create a basic transaction. Don't worry, though – we'll go over some more complicated scenarios in [Chapter 3 - Customizing Your Transaction](#).

## 2.1 - A Simple Transaction

Transactions can be very simple, very complex, or anywhere in between. The AvaTax [CreateTransaction API](#) supports a wide variety of features and functionality that enables businesses of any size to accurately reflect their tax liability.

To learn AvaTax, it's best to start small — so let's look at the minimum information required to calculate a transaction, and why that information is required:

- The `companyCode` of the company that recorded the transaction. If you have multiple companies within your account, you need to specify which one is creating this transaction. For this example, we'll use the DEVGUIDE company you set up in [Chapter 1 - Getting Started with AvaTax](#).
- The `code` field or “Document Code” refers to a unique reference to a transaction. For example, an invoice number generated by your ERP would be mapped to `code`. Be careful not to use a duplicate `code`, since this could generate document collisions and return `DocStatus` errors.
- The `type` of the transaction — for example, sales are recorded as a `SalesInvoice`, which is a permanent transaction that can be reported to a tax authority. For this example, we'll get a tax estimate using the type `SalesOrder`, which is not recorded and won't be reported on a tax filing.
- The `date` when the transaction took place.
- The `customerCode` of the customer requesting the transaction. This feature is necessary to allow customers who have exemption certificates to be exempted from sales tax correctly — we'll cover that more in Chapter 8 - Exemptions.
- The list of `addresses` involved in the transaction. For this example, we'll use a `singleLocation` address element, which means our entire transaction took place at a single location and that no shipments or phone orders were included. We will cover multi-address transactions in Chapter 3 - Customizing Your Transactions.
- For each of the `lines` in the invoice, we'll need to know the total dollar `amount` of the line.

Here's what the smallest possible transaction looks like:

```

POST /api/v2/transactions/create

{
  "companyCode": "DEVGUIDE",
  "code": "1001",
  "type": "SalesOrder",
  "date": "2017-06-15",
  "customerCode": "EXAMPLECUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "amount": 100
    }
  ]
}

```

You will probably have questions about this transaction. For example, how does AvaTax know what type of product I am selling? How do I report a transaction that I shipped from a warehouse to the customer's home? How do I calculate tax on shipping and handling?

We'll begin to answer these questions over the next few chapters. For the moment, let's understand why AvaTax requires these key fields.

## Company Code

The `companyCode` value determines what tax rules govern a transaction. In AvaTax, each Company can have its own tax profile — it can declare nexus in different locations; it can create custom tax rules, overrides, and other behavior. Each AvaTax account can have as many companies as necessary to accurately reflect a business structure. Each company is identified by its own unique `companyCode` value — that's the value you specify when you call the [CreateTransaction API](#).

If you forget to identify the `companyCode`, AvaTax will automatically assume that you want to use the default company. Every AvaTax account has a default company — but since a complex business can have dozens of companies, it is considered best practice to always include the `companyCode` value.

As a connector developer, most of your users will have a simple company structure. It's considered best practice to provide a drop-down list of companies in your user interface, but to automatically display (and highlight) the company with the `isDefault` flag set to true. To retrieve the list of available companies for your user interface, call the [QueryCompanies API](#).

## Document Type

AvaTax can handle multiple different types of transactions, including Sales, Purchases, Returns, and Inventory Transfer transactions. We use the `type` field — often called `DocumentType` or `TransactionType` — to differen-

tiate between these types of transactions. Many connectors will only ever work with Sales transactions; but if you are developing a plugin for an accounting system, you should expect to handle all different types of transactions.

Some DocumentTypes are temporary estimates and others are permanent transactions that will be stored and eventually reported to the tax authority. In AvaTax, estimates are called Orders and permanent transactions are called Invoices. This means that a temporary sales estimate is a `SalesOrder`, whereas a permanent sale is a `SalesInvoice`.

If you forget to include the `type` field in the [CreateTransaction API](#), AvaTax will assume you want a temporary estimate and use the value `SalesOrder`, which will not be recorded in AvaTax.

## Document Code

In the above example, we did not provide a value for the `code` field. The `code` field is an optional code that identifies this transaction. When we do not provide one, AvaTax assigns each transaction a [Globally Unique Identifier](#), often called a GUID.

Connector developers may want to use a `code` value that ties transactions in AvaTax to the transactions in your underlying software. For example, you can use the ID field of your sale as it is known in your accounting system. These `code` values must be unique within each company — if you attempt to create two transactions with the same `code` for the same company, AvaTax will assume you want to modify the existing transaction and report an error.

After you have created the transaction, you will use this `code` value to identify it when calling [CommitTransaction](#), [AdjustTransaction](#), or [VoidTransaction](#). Whatever value you provide, make sure to store it or link to it.

## Document Date

The `date` field indicates the calendar day on which the transaction occurred. Note that transactions are calculated by the calendar day and are not affected by time zones. Whatever the calendar day is locally when you create the transaction, tax will be calculated as of the tax laws in effect on that calendar day.

Since the date value is essential to correctly determine the tax rules for a transaction, and since it is easy to misinterpret calendar days when a transaction occurs close to a time zone boundary, this field is a required field.

## Customer Code

The `customerCode` value identifies the customer who is transacting with the company. Since a transaction is legally defined as a transaction between a buyer and a seller, the `customerCode` and `companyCode` values identify the two parties involved in the transaction.

For example, if the transaction type is a `SalesInvoice`, the transaction is deemed to be a sale made by the company identified by `companyCode` sold to the buyer identified by the `customerCode`.

This determination is necessary in order for our software to correctly handle exemption certificates. AvaTax requires this field so that exemptions will work correctly when the user begins working with certificates. We'll cover this in more detail in [Chapter 8 - Exemptions](#).

## Addresses

Addresses are a crucial part of the sales tax calculation process. There are a number of factors that go into sales tax calculation, but addresses are probably the most important. The total sales tax rate that you pay is generally made up of several smaller rates, and each of those is allocated to a different taxing jurisdiction (think state, county, city).

AvaTax determines the correct taxing jurisdictions based on the addresses provided. This may seem fairly straight-

forward, but there are a huge number of different taxing jurisdictions, and the boundaries aren't always clean or simple to determine. Avalara has a content research team that does the legwork on this so you don't have to – you just need to give us the address, and we'll determine the correct taxing jurisdictions for you.

The two address types that factor into sales tax calculation are origin addresses and destination addresses. For example, if you live in Washington and you are selling a mug to someone in California, your origin address (of type `ShipFrom`) would be Washington and your destination address (of type `ShipTo`) would be California.

The simplest type of transaction is a retail point of sale transaction, where the origin address and the destination address are the same. This type of transaction uses address type `SingleLocation`, which you'll see in our example above. In this scenario, a customer makes a purchase in a retail location and takes possession of the product(s) at that location. This is the type of transaction that we'll focus on for the rest of this chapter, but we'll discuss how to calculate tax for transactions with multiple addresses in [Chapter 3 - Customizing Your Transaction](#).

While only the city, state, and postal code are required for calculation, it's best practice to provide as much address information as you have available. This will help to ensure the most accurate tax calculation possible.

## Resolving Addresses

We recommend validating/resolving addresses against Avalara's address-validation system using the [ResolveAddress API](#). When you call this API, Avalara will report back a result indicating whether the address can be found or whether any errors or typos have been detected — and your users may appreciate this help when typing in an address. Here's how to do it:

- When the user types data into an address field, call [ResolveAddress](#) with as much information as the user has provided.
- If the [ResolveAddress](#) function reports that `ResolutionQuality` is `External` or `NotCoded`, this indicates that AvaTax cannot identify the address the user has typed in. You should give your user a warning and ask if the address is correct.
- If the user chooses to accept an incorrect address, it is possible to specify `line1 = "GENERAL DELIVERY"`. This is a special code recognized by the USPS that allows non-recognized addresses to be processed even if automated address validation does not identify the correct location. For more information, see the [USPS website on General Delivery](#).

Here's how your code would use `ResolveAddress` to correct a minor error in zip codes:

## Test Case 2.1.1 - Resolving Addresses

### Setup

- Call the `ResolveAddress` API with an invalid address:
  - `Line1`: 2000 Main Street
  - `City`: Irvine
  - `State`: CA
  - `Postal Code`: 92615
    - Note that this postal code is actually for Huntington Beach.
    - The correct postal code for this address in Irvine is 92614.

### Assertions

- The `ValidatedAddresses` section of the result contains the correct zip code - 92614.
- The `ResolutionQuality` of the result is set to `"Intersection"`.
  - This indicates that AvaTax was able to find the address and you should offer to update the customer's mistyped address to match the validated address.

## Expected API Call

```
{
  "textCase": "Upper",
  "line1": "1000 Main Street",
  "city": "Irvine",
  "region": "CA",
  "country": "US",
  "postalCode": "92615"
}
```

Now that we've reviewed all the essential parts of the transaction, let's look at what information is required for each line on an invoice.

## 2.2 - Invoice Lines

To accurately calculate tax, you'll need to provide some details about what is being sold. There are a number of options which will be covered in greater detail next chapter, but at minimum you will need to send the details of one line item.

- **number**: AvaTax automatically numbers lines on your invoice starting with 1. If you prefer to use your own line numbers, please specify them in this value.
- **quantity**: This is the quantity of goods or services being sold. Note that this value does not affect any totals; to determine the price-per-each, divide the **amount** value by the **quantity** value. If you do not provide **quantity**, the value will be assumed to be one. Although this field is optional, some taxes are affected by dollar-amount thresholds and caps per item, and AvaTax uses the **quantity** and **amount** values to calculate this correctly. We strongly recommend providing the correct quantity for each line.
- **amount**: This is the total price of goods or services for this line item. This is the total, fully extended value. For example, if you specify a **quantity** of 2 and an amount of 10, this means that you have sold two \$5 items for a total price of \$10.
- **taxCode**: This is how you specify the type of good or service that is being sold. If you omit the **taxCode** value, AvaTax defaults to treating the item as taxable Tangible Personal Property using the tax code **P0000000**. We'll go into detail on tax codes in Chapter 5 - Product Taxability. For now, it's enough to know that each line defaults to tangible personal property.
- **addresses**: Each invoice line can have its own custom addresses. If we make one sale that includes multiple separate shipments, we can attach the correct address to each line. If the addresses field on a line is null or missing, the line will be assumed to use the **addresses** from the document level; but if the value is non-null, the line will have its own custom **addresses** and will not inherit any **addresses** from the document level.

Now that we've covered these additional fields, let's take a look at a more fleshed-out version of a single location transaction. You can see that we've included a **code** value at the document level and added the **number** and **quantity** for each line. The additional fields are not strictly required, but it's good practice to include them. Likewise, a full street address is not strictly required, but providing as much address information as is available helps to ensure that you receive the most accurate sales tax calculation.

### Test Case 2.2.1 - Simple Transaction

#### Setup

- In your connector, create the following transaction:

- Document Type: SalesOrder
- Document Code: Chapter-2-Test-2
- Company Code: DEVGUIDE
- Document Date: 2017-06-15
- Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, US 98110
- Lines:
  - First Line:
    - Number: A
    - Quantity: 10
    - Amount: 567.89
  - Second Line:
    - Number: B
    - Quantity: 2
    - Amount: 46.80
- Calculate tax for your transaction using AvaTax.

## Assertions

- Your transaction is created.
- The code value is set to Chapter-2-Test-2
- The date of the transaction is 2017-06-15.
- The customerCode of the transaction is TESTCUSTOMER.
- The first line of the invoice has lineNumber = A and quantity = 10.
- The second line of the invoice has lineNumber = B and quantity = 2.

## Expected API Call

```
{
  "type": "SalesOrder",
  "code": "Chapter-2-Test-2",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "A",
      "quantity": 10,
      "amount": 567.89
    },
    {
      "number": "B",
      "quantity": 2,
```

```

    "amount": 46.80
  }
]
}

```

As you can see, the [CreateTransaction API](#) grows as your transactions increase in complexity. But let's ask — how can I make a transaction permanent, and report it to the tax authority?

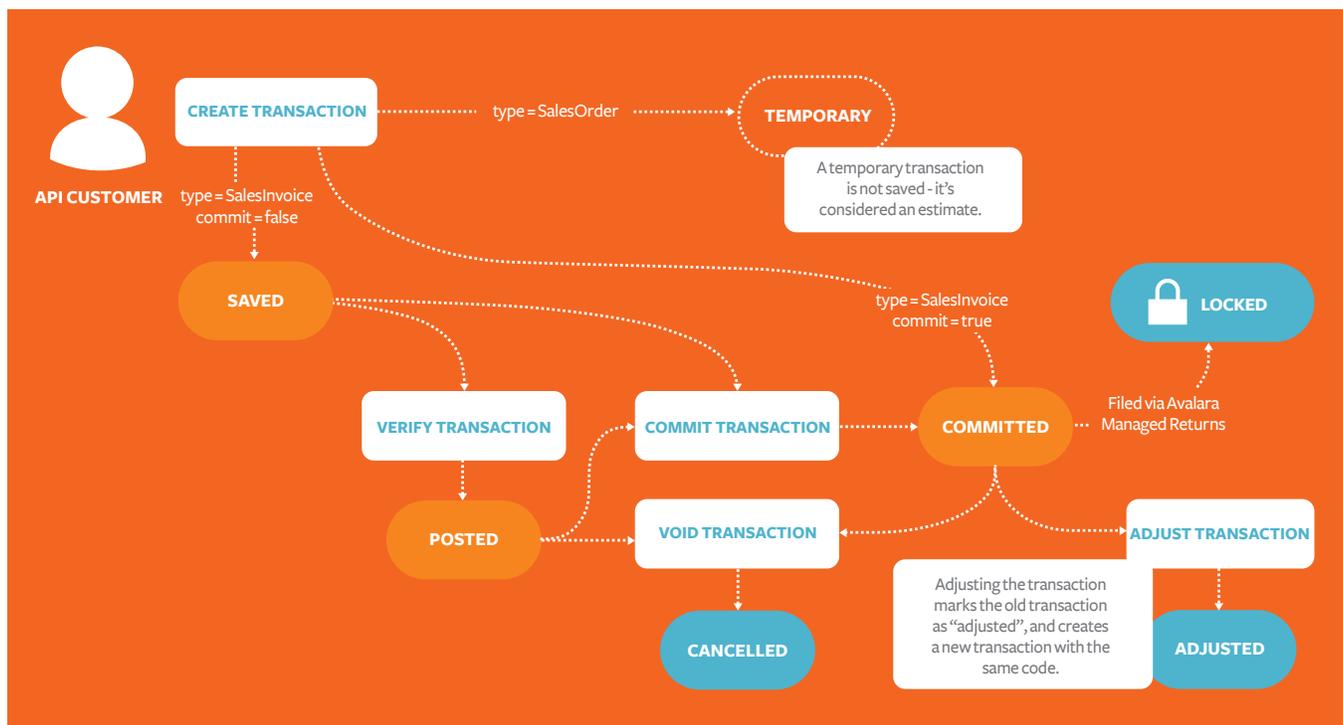
## 2.3 - Should I Commit?

Both transactions we created in the previous section were `SalesOrder` transactions, meaning they were temporary estimates that weren't recorded to the [AvaTax website](#). This is great for showing a shopping cart, are others where you'll want to actually record the transaction. In this section, we'll take a look at how the `commit` field works.

### The Transaction State Diagram

When you create a transaction, the information about that transaction is referred to as a "Document". You will see many comments or articles that refer to "Documents" rather than transactions — it helps if you think of the "Transaction" as the API call and the "Document" as the data that is stored on disk.

Once created, a document moves through a few different states before it is collected and reported on a tax return:



As you can see from the lifecycle document above, a transaction can go through a number of steps before it is finalized. We have designed these steps to be flexible enough to solve problems for a variety of different customers and different types of tax processes. Let's start with a few common use cases.

In an online store, your first task is to provide a sales tax estimate for the user casually browsing through your website. These casual visitors have not purchased anything yet, but by giving them an accurate tax estimate you

can show off your store’s high quality and commitment to accuracy. To help out this customer, you call [CreateTransaction](#) with the transaction type set to `SalesOrder`. This gives you an accurate estimate of tax (assuming the customer put in their address correctly!), but it won’t record any tax data yet because the customer hasn’t bought anything.

When the customer chooses to finish their transaction, your storefront should call [CreateTransaction](#) again, but this time you should set the transaction type to `SalesInvoice` and the `commit` value to `true`. These two values cause the transaction to be recorded into AvaTax, and it can then be collected and filed on a tax return.

The reason you have to contact the API a second time may not be immediately obvious — but the customer may have waited long enough that the tax rates might have changed, or their address may have changed, or your company configuration may have changed. Any one of these small changes can affect the accuracy of a tax calculation, especially when an online storefront is still capable of selling to customers at 11:59 PM on the night before a sales tax holiday!

Let’s take a look at an example API call to create a committed transaction:

## Test Case 2.3.1 - Create a Committed Transaction

### Setup

- In your connector, create the following transaction:
  - Document Type: `SalesInvoice`
  - Document Code: `Chapter-2-Test-4`
  - Company Code: `DEVGUIDE`
  - Document Date: `2017-06-15`
  - Customer Code: `TESTCUSTOMER`
- Addresses:
  - `SingleLocation`: 100 Ravine Lane NE, Bainbridge Island, WA, US 98110
- Lines:
  - Number: 1
  - Quantity: 1
  - Amount: 100
- Commit: `True`
- Calculate tax for your transaction using AvaTax.

### Assertions

- Since this is a ‘`SalesInvoice`’ transaction with “`Commit`” set to “`True`”, the transaction will be recorded and visible on the AvaTax website.
- You can log onto the AvaTax website and find this transaction. The transaction is in status: `Committed`.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-2-Test-4",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
```

```

    "city": "Bainbridge Island",
    "region": "WA",
    "country": "US",
    "postalCode": "98110"
  }
},
"lines": [
  {
    "number": "01",
    "quantity": 1,
    "amount": 100
  }
],
"commit": true
}

```

Now we'll take a look at how the transaction we just created looks in AvaTax. To view this transaction, please navigate to your development account [AvaTax website](#) and then click the **Transactions** tab. You search for the transaction by the **DocumentCode** you used. If you don't find any results, check your Date Range options.

The screenshot shows the AvaTax Transactions page. At the top, there is a 'Company' dropdown menu set to 'ODCM'. Below it are several action buttons: 'New', 'Commit', 'Void', 'View', 'Import', 'Export', and 'View Transaction Details'. The search filter section includes fields for 'Doc Code', 'Cust/Vendor Code', 'Batch Code', 'Doc Type' (set to '< All >'), 'Date Type' (set to 'Document'), and a date field set to '02/01/2014'. Below the search filters is a table of transactions.

<input type="checkbox"/>	Doc Code	Cust/Vendor Code	Batch Code	Doc Type	Doc Date	Cur	Total	Non-Taxable	T
<input checked="" type="checkbox"/>	<a href="#">101</a>	101		Sales Invoice	02/10/2015	USD	100.00	0.00	
<input type="checkbox"/>	<a href="#">1rc</a>	1rc		Purchase Invoice	05/23/2014	USD	100.00	0.00	
<input type="checkbox"/>	<a href="#">1RC1</a>	1rC1		Reverse Charge Invoice	06/18/2014	USD	100.00	0.00	

You can use the AvaTax website to review and reconcile transactions — we'll cover that topic more in [Chapter 4 - Reconciliation](#). For now, let's continue onwards to learn about other types of transactions besides sales.

## 2.4 - Document Types

We've already touched on the differences between the `SalesOrder` and `SalesInvoice` document types, but it's worth delving into more details about these and the other document types.

AvaTax is a full-service engine for calculating transactional taxes, including sales, use, VAT, and many other tax types. In order to properly calculate taxes in these different circumstances, AvaTax must also support a wide variety of transaction types. Let's continue by reviewing the differences between these transactions types and how to map them to your business processes.

### Transaction Types

AvaTax supports four basic transaction types - an inventory transfer, a purchase, a return (often called a refund or a reverse transaction), and a sale. Each transaction type is available in two forms: an invoice form that is permanent, and an order form that is a temporary estimate.

When you combine those together, you get these eight transaction types:

TRANSACTION TYPE	LIFETIME	EXAMPLE
InventoryTransferInvoice	Permanent	A finalized shipment of inventory from one location to another
InventoryTransferOrder	Temporary	An estimate for shipping inventory from one location to another
PurchaseInvoice	Permanent	A purchase made from a vendor
PurchaseOrder	Temporary	A quote for identifying estimated tax to pay to a vendor
ReturnInvoice	Permanent	A finalized refund given to a customer
ReturnOrder	Temporary	A quote for a refund to a customer
SalesInvoice	Permanent	A finalized sale made to a customer
SalesOrder	Temporary	A quote for a potential sale

Let's discuss how all these eight types are different.

### Orders vs Invoices

Our customers require both the ability to [estimate tax for a transaction](#), and to record the actual tax for that transaction. Many customers use AvaTax as a way to predict taxes before taking action — for example, showing “Estimated Tax” on a web storefront. Other customers use AvaTax to calculate taxes only at the moment the transaction occurs — for example when recording a sale in their accounting system.

In AvaTax, an “Order” represents a temporary transaction that is not saved, whereas an “Invoice” represents a permanent transaction that will be maintained. Think about these documents like you are a salesperson:

- You begin by speaking to a customer and obtaining information about what they would like to purchase. With this information, you construct a [CreateTransaction](#) request.
- First, you calculate that transaction in AvaTax using a `SalesOrder` transaction type. This becomes a quote (or lead, or opportunity) that you can share with the customer. The quote is as accurate as the information you

have on hand, but you know that the customer will review the quote before making a decision to purchase, so we do not record it in our accounting ledger yet.

- The customer then reviews the quote and may or may not request changes. It could be that the customer wants to purchase one more line item, or maybe they want the shipping address changed, or maybe they have an exemption certificate they want to provide to change their taxable use conditions. These changes can be recalculated by resubmitting the transaction to AvaTax, each time using the `SalesOrder` transaction type.
- If the customer decides to cancel the order, or not to make a purchase, no action is required. You do not need to cancel a `SalesOrder` — because it has not been recorded as a permanent transaction yet.
- When the customer does choose to make a purchase, you can then recalculate the transaction in AvaTax using the `SalesInvoice` transaction type. The `SalesInvoice` transaction type represents a transaction that has occurred, and can then be recorded, queried, reported on, and eventually filed in a tax return to a taxing authority.

Because every type of transaction must be able to follow this same pattern, AvaTax supports all transaction types as both Orders and Invoices. It's worth noting that the Invoice transaction types provide a key compatibility between Avalara's tax calculation API and the Avalara Managed Returns Service. The Managed Returns Service supports filing taxes calculated with AvaTax — but you can only file taxes that were recorded using invoice types! Anything you calculated using an order type is considered a temporary estimate and won't be reported.

Because order transaction types are temporary documents, it's also worth noting that your transaction will not be retrievable later. All order transactions will have ID numbers that are -1, indicating that they cannot be fetched back using the API. Invoice transactions have positive ID numbers and can be retrieved back.

Next, let's describe the various types of transactions and see how they work.

## Sales Transactions

A `SalesOrder` or `SalesInvoice` transaction represents a sale that your company made to a customer. This is by far the most common type of transaction that AvaTax handles. As usual, a `SalesOrder` is an estimate and a `SalesInvoice` is a record of a transaction that occurred. Sales transactions are typically used to represent web shopping cart calculations, sales recorded through an accounting or ledger system, or service contracts signed on a particular date for future delivery.

In the case of a Sales transaction, a positive currency value means that your company received money from the customer; and a negative currency value means that your company paid the customer. It is generally expected that sales transactions are reported as positive currency values.

Sales transactions are generally expected to be recorded as they occur. For example, if you calculate an estimate for a customer using a `SalesOrder` on the 11th of the month, then convert it to a `SalesInvoice` on the 20th of the month, it is customary to choose the transaction date as the 20th. The AvaTax API natively supports this date behavior — just provide the date field on the [CreateTransaction API](#) and your transaction will be recorded on that date.

## Return Transactions

When a customer changes their mind and asks for a refund, you can process that refund by specifying a `ReturnOrder` or `ReturnInvoice` transaction, or you can call the [RefundTransaction API](#). This transaction type refers to a reversal of the charges that occurred when you originally made the sale. As usual, the `ReturnOrder` can be used for estimating and the `ReturnInvoice` is a permanent record.

A return transaction with a negative currency value refers to money that your company refunded to your customer; a return transaction with a positive currency value represents money the customer gives to your company. It is generally expected that return transactions are reported as negative currency values.

Unlike sales transactions, return transactions have two dates. The first date is the date when the return occurred, and the second date is the date when the original purchase was made. Two dates are needed because the tax rate may have changed since the customer made the original purchase! Here's how to refund the customer the exact amount they paid originally:

- The `date` field of your `ReturnInvoice` is the date when the customer received the refund. If you are filing tax returns using Avalara's Managed Returns Service, this date controls when the refund will be reported to the tax authority.
- To specify the date when the original sale occurred, you use a `TaxOverride` object in the `CreateTransaction API`. Set the `type` of the tax override to `TaxDate`, and set the `taxDate` field to the date when the original purchase occurred. This will tell AvaTax to calculate the tax amount returned to the customer as of the tax override date.
- If the customer's original purchase was recorded in AvaTax as a `SalesInvoice`, you can use the `RefundTransaction API` to automatically refund the exact amount they paid originally. This API takes care of all the hard work of setting up the tax overrides for you.

## Purchase Transactions

A purchase transaction represents a purchase made by your company from a vendor. A `PurchaseOrder` represents a quote you request from a vendor, and a `PurchaseInvoice` represents a finalized purchase transaction.

In the United States, most vendors will automatically charge and remit transactional taxes on your behalf. However, some companies choose to use AvaTax to identify any discrepancies between the tax rate you were charged by a vendor and the correct tax rate for a product or service. This calculation can assist a company in recovering overpaid taxes, or in identifying any cases where their vendor relationships are not in full compliance with tax laws.

You may use a `PurchaseOrder` to get an estimate of the tax that you should pay on a transaction, and you may choose to use a `PurchaseInvoice` to record a transaction that occurred. When reporting a `PurchaseInvoice`, you may specify the tax amount that you were charged by the vendor and have Avalara calculate the actual tax discrepancy. This allows you to correctly report Consumer Use Tax via Avalara's Managed Returns Service — we'll delve further into Consumer Use Tax in [Chapter 10 - Consumer Use Tax](#).

## Inventory Transfer Transactions

Inventory transfers are another way of tracking transactions that have Consumer Use Tax implications. For companies with multiple warehouses and offices, there are tax implications involved in shifting inventory from one location to another.

As with the other document types, an `InventoryTransferOrder` represents an estimate and an `InventoryTransferInvoice` represents a permanent transaction. We'll discuss Consumer Use Tax further in [Chapter 10 - Consumer Use Tax](#).

## 2.5 Chapter Summary

In this chapter you've learned how to create basic single-location transactions, as well as the differences between the available document types. Creating transactions is the core of the AvaTax service, so it's important to have a solid understanding of the basics. You should be able to:

- Create a transaction with the minimum required fields
- Create an estimate using the `SalesOrder` transaction type
- Create a `SalesInvoice` transaction and view it in the [AvaTax website](#)
- In the event of a pop-quiz, answer questions on the differences between a `SalesInvoice` and a `PurchaseInvoice`

Tests that are in this chapter:

- [2.1.1 - Resolving Addresses](#)
- [2.2.1 - Simple Transaction](#)
- [2.3.1 - Create a Committed Transaction](#)

We'll build on this foundation and discuss the myriad other options when creating a transaction in [Chapter 3 - Customizing Your Transaction](#).

## Chapter 3 - Customizing Your Transactions

This chapter is all about customizing your transactions to expand on the capabilities of your application. By the end of this chapter, you will learn the following:

- How the document level properties apply to the transaction, and the impact of line level adjustments.
- How to use multiple addresses at both the document and line levels.
- How reference codes and other user managed meta data can be used for tracking and reporting.

There are a multitude of use cases and scenarios that exist. This chapter is about exposing ways in which you can shape your application to meet those needs.

### 3.1 - Using Address Types

Address types are used to help determine tax for a given transaction in a given situation. A retail transaction and an eCommerce transaction are not that much different: they both use addresses, but while the retail location generally uses `SingleLocation` most eCommerce transactions will use the `ShipFrom` and `ShipTo` address types.

You can specify addresses at either the document level or the line level:

- A transaction, as a whole, uses the document level `addresses` as a default. If a transaction does not have any addresses at the line level, each line will be assumed to use the addresses from the document level.
- Line level `addresses` represent individual separate shipments. Any time you set a value on the `addresses` field on an invoice line, that line will ignore all document-level `addresses`.

#### Using Document Level Addresses

When you record a single transaction and all invoice lines on the transaction have the same `addresses`, you only need to set your address values once at the root level of your transaction, no matter how many invoice lines you are calculating.

For this next test, let's create a single transaction with multiple line items that were shipped from the same origin to the same destination. Here's how to construct this transaction:

Let's try building a transaction that uses two different addresses and a single line item:

### Test Case 3.1.1 - Document Level Addresses

#### Setup

- Your DEVGUIDE company should have nexus in California and Washington.
- In your connector, create the following transactions
  - Document Type: SalesInvoice
  - Document Code: Chapter-3-Test-1
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - ShipFrom  
100 Ravine Lane NE, Bainbridge Island, WA 98110
  - ShipTo  
18300 Von Karman Ave, Irvine, CA 92612

- Line #1:
  - Amount \$100
- Line #2:
  - Amount \$50
- Calculate tax for your transaction using AvaTax.

### Assertions

- The taxable amount should be \$150.00 with a total tax amount of \$11.63.
- The document should be sourced in California with the following jurisdictions:
- California State
- Orange County
- Orange County District Tax/Special Tax
- Orange County Local Tax/Special Tax

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-3-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "shipFrom": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    },
    "shipTo": {
      "line1": "18300 Von Karman Ave",
      "city": "Irvine",
      "region": "CA",
      "country": "US",
      "postalCode": "92612"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100
    },
    {
      "number": "2",
      "amount": 50
    }
  ]
}
```

## Using Line Level Address Types

Next, let's describe how you can create a transaction where more than one separate shipment occurred. In this case, each separate line can have its own **addresses** — or they can inherit their **addresses** from the document. You can mix and match these options on as many lines as necessary.

For the next example, let's review how to sell two separate products when each must be shipped from a separate warehouse. One product will ship from a warehouse in Aberdeen, WA; the other will come from a Bainbridge Island warehouse.

- First set the Bainbridge address at the document level. With this address at the document level, all lines will automatically inherit that address as its default.
- Next set the **addresses** value for the custom line item. Because this value is set at the line level, it no longer inherits any addresses from the root document level, which means you must set both the **ShipFrom** and **ShipTo** values for that line.

Here's what a line-level transaction looks like:

## Test Case 3.1.2 - Line Level Addresses

### Setup

- Your DEVGUIDE company should have nexus in California and Washington.
- In your connector, create the following transactions:
  - Document Type: SalesInvoice
  - Document Code: Chapter-3-Test-2
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - ShipFrom  
100 Ravine Lane NE, Bainbridge Island, WA 98110
  - ShipTo  
18300 Von Karman Ave, Irvine, CA 92612
- Line #1:
  - Amount \$65
  - TaxCode P0000000
  - ShipFrom  
422 S F St., Aberdeen, WA, US 98520
  - ShipTo  
18300 Von Karman Ave, Irvine, CA 92612
- Line #2:
  - Amount \$35
  - TaxCode P0000000
- Calculate tax for your transaction using AvaTax.

### Assertions

- The taxable amount should be \$100.00 with a total tax amount of \$7.76.
- Line1 should have a total tax amount of \$5.04, while Line 2 has 2.72.
- Both lines should be sourced in California with the following jurisdictions:
  - California State
  - Orange County

- Orange County District Tax/Special Tax
- Orange County Local Tax/Special Tax

## Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-3-Test-2",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "shipFrom": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    },
    "shipTo": {
      "line1": "18300 Von Karman Ave",
      "city": "Irvine",
      "region": "CA",
      "country": "US",
      "postalCode": "92612"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 65,
      "taxCode": "P0000000",
      "addresses": {
        "shipFrom": {
          "line1": "422 S F St.",
          "city": "Aberdeen",
          "region": "WA",
          "country": "US",
          "postalCode": "98520"
        },
        "shipTo": {
          "line1": "21068 Bake Pkwy",
          "city": "Lake Forest",
          "region": "CA",
          "country": "US",
          "postalCode": "92630"
        }
      }
    },
    {
      "number": "2",
```

```

    "amount": 35,
    "taxCode": "P0000000"
  }
]
}

```

## Address Types

Most developers instinctively understand the meaning of the address types `ShipFrom` and `ShipTo`, but often have questions about the “Point Of Order” address types. It’s worth taking a brief moment to explain address types in more detail.

ADDRESS TYPE	ALSO KNOWN AS	USAGE
<code>ShipFrom</code>	Origin	The origination address where the products were shipped from, or from where the services originated.
<code>ShipTo</code>	Destination	The destination address where the products were shipped to, or where the services were delivered.
Point of Order Origin		The place of business where you receive the customer’s order. This address type is valid in the United States only and only applies to tangible personal property.
Point of Order Acceptance		The place of business where you accept/approve the customer’s order, thereby becoming contractually obligated to make the sale. This address type is valid in the United States only and only applies to tangible personal property.

In the United States, some jurisdictions have passed laws that require consideration of the point of order addresses. Please confer with your tax professional before using these address types.

If you are operating a retail point of presence, and you are physically selling goods and services in person, you can instead opt to use the `SingleLocation` address type. When you use `SingleLocation`, you are asserting that only one address was ever involved in the transaction.

## 3.2 - Using Reference Fields

AvaTax provides a number of user reference fields for your convenience. For example, the `referenceCode` field is an optional field that can be used to tie your transaction back to your accounting system or to link to another transaction.

The `referenceCode` field exists at the document level, and other fields are available at the line level. Taken together, all of these reference fields can help you store extra information about the transaction in ways that are appropriate for your accounting system.

All of these fields are optional and are not required. Some connectors make use of all of these fields, others keep transactions extremely simple. It’s really up to you how much of this functionality you wish to implement.

Let’s look at each of these fields, and some ideas for how to make use of them. As a reminder, there is no data structure to this field, you can put anything you want!

## Document Level Reference Fields

The following reference fields are available for your use at the document level. This means that they will only occur once in a transaction.

FIELD NAME	IDEAS FOR USAGE
ReferenceCode	This field can link to the unique ID number of the invoice in your existing accounting system.
PurchaseOrderNo	Intended to match to your customer's purchase order number, if one was provided.
SalespersonCode	When tracking performance by salesperson, or identifying orders written by certain sales team members, this code can help you identify the author of the invoice.
Description	A general purpose description of the invoice or transaction, or a comment explaining the transaction.
PosLaneCode	If this transaction was made at a retail cash register, this code can be used to identify which cash register made the transaction.
Email	The email address of the customer who requested the sale.

## Line Level Reference Fields

Below is a list of the available reference fields available for customizing your transaction at the line level. Each line in your transaction can have its own values for each of these fields.

FIELD NAME	IDEAS FOR USAGE
Description	Field provided to describe the item/service/shipping method for that given line. NOTE: If you participate in Streamlined Sales Tax, this field is required to be an accurate description of the product. Otherwise, it is optional and has no requirements.
RevenueAccount	If your user wished to track this line item to a specific revenue account number in their accounting system, you could specify the revenue account number here.
Ref1	A user-supplied reference code for this line.
Ref2	A user-supplied reference code for this line.

## Using Reference Fields

Let's build out final test transaction using everything that we've covered in this chapter:

## Test Case 3.2.1 - Reference Fields

### Setup

- Your DEVGUIDE company should have nexus in California and Washington.
- In your connector, create the following transactions:
  - Document Type: SalesInvoice
  - Document Code: Chapter-3-Test-3
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
  - Reference Code: SalesOrder 123456
  - Sales Person Code: SA8675309
  - Purchase Order: P06-5000
- Addresses:
  - ShipFrom: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
  - ShipTo: 18300 Von Karman Ave, Irvine, CA 92612
- Line #1:
  - Amount: \$65
  - TaxCode: P0000000
  - Description: "A bundle of assorted yarn colors"
  - Ref1: "Item out of stock in Bainbridge Island distribution center. ShipFrom Aberdeen distribution center."
  - Ref2: "Customer would like the item to ShipTo a secondary address."
  - ShipFrom: 422 S F St., Aberdeen, WA, US 98520
  - ShipTo: 21068 Bake Pkwy, Lake Forest, CA 92630
- Line #2:
  - Amount: \$35
  - TaxCode: P0000000
  - Description: "A single bolt of wool."
- Calculate tax for your transaction using AvaTax.

### Assertions

- The taxable amount should be \$100.00 with a total tax amount of \$7.76.
- Line1 should have a total tax amount of \$5.04, while Line 2 has 2.72.
- Both lines should be sourced in California with the following jurisdictions:
  - California State
  - Orange County
  - Orange County District Tax/Special Tax
  - Orange County Local Tax/Special Tax
- Sourcing destination should be 21068 Bake Pkwy, Lake Forest, CA 92630.
- Sourcing origin should be 422 S F St., Aberdeen, WA, US 98520.
- Document level properties:
  - Reference Code field should list "SalesOrder 123456"
  - Sales Person should show as SA8675309
  - PO6-5000 should be listed as the Purchase Order
- Line level properties:
  - Line 1: The Description field should state "A bundle of assorted yarn colors"
  - Line 2: The Description field should state "A single bolt of wool"

### Expected API Call

```
{
```

```

"type": "SalesInvoice",
"code": "Chapter-3-Test-3",
"companyCode": "DEVGUIDE",
"date": "2017-06-15",
"customerCode": "TESTCUSTOMER",
"referenceCode": "SalesOrder 123456",
"salespersonCode": "SA8675309",
"purchaseOrderNo": "P02376500",
"addresses": {
  "shipFrom": {
    "line1": "100 Ravine Lane NE",
    "city": "Bainbridge Island",
    "region": "WA",
    "country": "US",
    "postalCode": "98110"
  },
  "shipTo": {
    "line1": "18300 Von Karman Ave",
    "city": "Irvine",
    "region": "CA",
    "country": "US",
    "postalCode": "92630"
  }
},
"lines": [
  {
    "number": "1",
    "amount": 65,
    "taxCode": "P0000000",
    "ref1": "Item out of stock in Bainbridge Island distribution center. ShipFrom Aberdeen distribution center.",
    "ref2": "Customer would like the item to ShipTo a secondary address.",
    "description": "A bundle of assorted yarn colors",
    "addresses": {
      "shipFrom": {
        "line1": "422 S F St.",
        "city": "Aberdeen",
        "region": "WA",
        "country": "US",
        "postalCode": "98520"
      },
      "shipTo": {
        "line1": "21068 Bake Pkwy",
        "city": "Lake Forest",
        "region": "CA",
        "country": "US",
        "postalCode": "92630"
      }
    }
  }
]

```

```
    "number": "2",  
    "amount": 35,  
    "taxCode": "P0000000",  
    "description": "A single bolt of wool."  
  }  
]  
}
```

## 3.3 Chapter Summary

In this chapter you've learned ways in which you can customize your transactions.

- How document and line level properties work.
- The importance of origin and destination address, and how they apply at the line level.
- How reference fields apply and how to use them correctly.
- What other meta data can be managed and used within your transaction.

## Certification Requirements

AvaTax Certified Connectors must include the following information when calling the service for a tax calculation. The connector must show the following:

### Header level data elements

- Document number
- Customer code
- Document date
- Tax calculation date
- Document type
- Destination address
- Origin address
- Location Code

### Line level data elements

- Line number
- Item code
- Item description
- Quantity
- Amount (extended)
- Tax Code

Tests that are in this chapter:

- [3.1.1 - Document Level Addresses](#)
- [3.1.2. - Line Level Addresses](#)
- [3.2.1 - Reference Fields](#)

These items will come into play in later chapters and are critical in expanding the capabilities of your integration. Though not all accounting systems allow full use of certain fields and properties, developers are free to use the ones we make available to fit the needs of end users and customers.

## Chapter 4 - Reconciliation

Now that you've calculated tax on your transaction, your next step is to ensure that your transactions are recorded and reconciled correctly. Reconciliation is necessary in order to ensure that you report the correct transactions in each jurisdiction and on each tax form. In the event of an audit, most jurisdictions will ask you to demonstrate that your sales transaction data fully matches the data reported on your tax form, and reconciliation support will ensure that you can answer those questions.

We will look at how to address the following:

- Reporting an estimate as a transaction
- Reporting a single transaction more than once
- Reporting a transaction that should have been canceled
- Mis-reporting a transaction that was adjusted
- Refunding the wrong tax amount to a customer
- Modifying a transaction after it has been reported
- Failing to report a valid transaction

To address these challenges, AvaTax separates transactions into those that are **Uncommitted**, those that are **Committed**, and those that have been **Locked** for Reporting. Here's a brief description of how to use these statuses:

- **Uncommitted** transactions cannot be reported to a tax authority. They can be reviewed, reconciled, modified, and voided. They must be committed before they will be reported to a tax authority.
- **Committed** transactions are waiting to be reported, and can still be adjusted or voided. All committed transactions for the filing period will automatically be locked for reporting when you approve your next filing using Avalara's Managed Returns Service.
- **Locked** for Reporting transactions have been attached to an approved tax filing. They can no longer be modified, adjusted, or voided.

This chapter will explain how to make use of the reconciliation features in AvaTax to ensure that your transactions are reported correctly.

### 4.1 - Committing a Transaction

The concept of committing a transaction is necessary to separate preliminary estimates from final sales. Many types of connectors exist, for example:

- A direct sales store might commit all transactions immediately and declare that all sales are final. Adjustments are handled by refunding all or part of the transaction.
- A simple accounting system might only commit transactions after they have been verified. This allows a salesperson to quickly write transactions, which will then be double-checked by a back office employee before fulfillment. Adjustments are handled by modifying the transaction before it is locked for reporting.
- A complex accounting system might provide multiple stages of verification. A transaction can be marked **Posted** after the first verification step, and **Committed** after the second. Adjustments are handled by modifying the transaction before it is reported.

Here's how to implement **commit** for each of these scenarios.

## Direct Commit

For software that considers all transactions final, you will create a transaction directly using the `“commit”`: `“true”` flag in the [CreateTransaction API](#) call.

Creating transactions directly in `Committed` status is covered in [Chapter 2 - Transactions](#).

## One Stage Reconciliation

For software that permits transactions to be verified after creation, transactions are created with the Commit flag set to false. Transactions that have not been committed are stored with the status code `Saved`. They are considered to be provisional; they will not be reported to a tax authority until they have been verified.

Your back-end system should provide a way for your management team to review `Saved` transactions and perform reconciliation. A good way to design a verification process for a back-end systems team is to call [ListTransactionsByCompany](#) and pass in the parameter `$filter=status eq Saved`. This API call will list all transactions for your company that have not yet finished reconciliation, and you can use this to display a queue of transactions to be reconciled.

When a transaction has been reconciled and is final, your software will use the [CommitTransaction API](#) call to mark the transaction as committed. Here’s how to commit a transaction:

## Test Case 4.1.1 - Committing a Transaction

### Setup

- In your connector, create the following transaction:
  - Document Type: `SalesInvoice`
  - Document Code: `Chapter-4-Test-1`
  - Company Code: `DEVGUIDE`
  - Document Date: `2017-06-15`
  - Customer Code: `TESTCUSTOMER`
- Addresses:
  - `SingleLocation`: `100 Ravine Lane NE, Bainbridge Island, WA, 98110`
- Line #1:
  - Amount: `100`
  - TaxCode: `P0000000`
- Set the commit flag to false.
- Calculate tax for your transaction.
- Next, trigger a call to `CommitTransaction` with the following options:
  - Company Code: `DEVGUIDE`
  - Transaction Code: `Chapter-4-Test-1`
  - Commit: `“true”`

### Assertions

- The transaction’s status will be `“Committed”`.

### Expected API Call

CreateTransaction:

```
{
  "type": "SalesInvoice",
  "code": "Chapter-4-Test-1",
```

```

“companyCode”: “DEVGUIDE”,
“date”: “2017-06-15”,
“customerCode”: “TESTCUSTOMER”,
“commit”: “false”,
“addresses”: {
  “singleLocation”: {
    “line1”: “100 Ravine Lane NE”,
    “city”: “Bainbridge Island”,
    “region”: “WA”,
    “country”: “US”,
    “postalCode”: “98110”
  }
},
“lines”: [
  {
    “number”: “1”,
    “amount”: 100,
    “taxCode”: “P0000000”
  }
]
}

```

CommitTransaction:

```

{
  “commit”: “true”
}

```

## Two Stage Reconciliation

Some companies prefer to have multiple stages of reconciliation. In this case, a transaction can go through three statuses: **Saved**, **Posted**, and **Committed**.

The three stages work as follows:

- Create a transaction in the status **Saved** following the same process as for one-stage reconciliation.
- Display a queue of transactions that are in the first stage of reconciliation using [ListTransactionsByCompany](#) with the parameter `$filter=status eq Saved`.
- When a transaction is ready to move out of the first stage of reconciliation, update it by calling [VerifyTransaction](#). The transaction’s new status will be **Posted**.
- Display a queue of transactions that are in the second stage of reconciliation using [ListTransactionsByCompany](#) with the parameter `$filter=status eq Posted`.
- When a transaction is ready to move out of the second stage of reconciliation, update it by calling [CommitTransaction](#) as above. The transaction’s new status will be **Committed**.

In the two-stage reconciliation process, additional verification features are available. When you call [VerifyTransaction](#), you can optionally choose to assert that the transaction’s amount matches an amount in a different ledger. Here’s how the [VerifyTransaction API](#) call works:

```
POST https://sandbox-rest.avatax.com/api/v2/companies/DEVGUIDE/transactions/MYTRANSACTION-
CODE/verify [link still doesn't work]

{
  "verifyTransactionDate": "2017-06-15",
  "verifyTotalAmount": 100,
  "verifyTotalTax": 6.25
}
```

Your system can maintain and verify these fields if desired, but it is not required. If your system does not maintain all three values (date, amount, and tax), it is acceptable to verify only one or two of them.

When you provide this information, the API will test the transaction and report an error if any fields do not match. This feature allows you to perform automated reconciliation of transactions, and to detect discrepancies programmatically. Your software can call [VerifyTransaction](#) on all entries in your accounting system ledger every evening, and assert that the amounts match expectations. Any transactions that fail to verify can be escalated for human oversight.

The [ListTransactionsByCompany API](#) is intended to help you display a list of transactions that are in any particular stage of the reconciliation process. You can use it to examine any stage for transactions that need human review.

Let's examine how a two-stage verification process would work:

## Test Case 4.1.2 - Two-Stage Verification

### Setup

- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-4-Test-2
  - Company Code: DEVGUIDE
  - Customer Code: TESTCUSTOMER
  - Document Date: 2017-06-15
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Set the commit flag to false.
- Calculate tax for your transaction.
- Next, trigger a call to `VerifyTransaction` with the following options:
  - Company Code: DEVGUIDE
  - Transaction Code: Chapter-4-Test-1
  - `VerifyTransactionDate`: 2017-06-15
  - `VerifyTotalAmount`: 100

### Assertions

- The transaction's status will be "Posted".

### Expected API Call

CreateTransaction:

```
{
  "type": "SalesInvoice",
  "code": "Chapter-4-Test-2",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "commit": "false",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

VerifyTransaction:

```
{
  "verifyTransactionDate": "2017-06-15",
  "verifyTotalAmount": 100.00,
  "verifyTotalTax": 9.00
}
```

## Locked Transactions

The purpose of committing a transaction is to indicate that the transaction is ready to be reported to a tax authority. For customers using Avalara's Managed Returns Service, our software will automatically prepare a liability worksheet for you every filing period and notify you to approve the tax filing. When you approve the tax filing, all transactions included on that filing are automatically **Locked**. A transaction that is locked cannot be changed further — it is considered a permanent part of your company's accounting record, and must be preserved as is for audit circumstances.

You can determine which transactions are locked by calling the [ListTransactionsByCompany API](#) with the parameter `$filter=locked eq true`.

Any attempt to modify a locked transaction will fail with an error.

## 4.2 - Modifying a Transaction

During the reconciliation process, if you discover that a transaction is not correct, you can fix the transaction in one of three ways: you can Adjust, Void, or Refund the transaction.

### Adjust

To keep a transaction intact, but make a change or correction, you would adjust the transaction using the [AdjustTransaction API](#). When you call the API, two things will happen:

- The existing transaction will be marked as **Adjusted**, and
- A new transaction will be created in the appropriate status (either **Saved** or **Committed**).

A commonly asked question about the Adjust API is “Why can’t I just change one field on the transaction object?” Unfortunately, tax laws often have complex interdependencies, and it is not guaranteed that a transaction would still be valid if only one field changes. Tax authorities occasionally create tax laws that affect the behavior of line items based on the presence of other line items in the same transaction, on the classification of items, on the quantity of items, or on threshold values. As a result, the [AdjustTransaction API](#) call will re-create your transaction completely in order to ensure that it meets the AvaTax standard of accuracy.

If you need to make a small change to your transaction, you may choose to reconstruct the original data you submitted to the [CreateTransaction API](#) call using the [AuditTransaction API](#). This API allows you to rebuild the [CreateTransactionModel](#) data structure that you used when you originally created the object. You can then make a small change to the transaction and submit it to the [AdjustTransaction API](#).

If you are looking to make a small change to an existing transaction, you can consider calling [AddLines](#) or [DeleteLines](#). These methods will allow you to add lines to an existing transaction or remove lines from an existing transaction. Internally, these API calls use the same method as [AdjustTransaction](#) and they will still behave the same as if you called [AdjustTransaction](#) directly.

Here’s how you can modify a transaction to correct an error:

### Test Case 4.2.1 - Modifying a Transaction to Correct an Error

#### Setup

- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-4-Test-3
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 1000000000000000 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Set the commit flag to false.
- Calculate tax for your transaction.
- Next, trigger a call to AdjustTransaction with all information the same, except using the corrected address:
  - line: 100 Ravine Lane NE, Bainbridge Island, WA, 98110

## Assertions

Two transactions exist:

- Chapter-4-Test-3
  - status: Adjusted
  - line1: 1000000000000000 Ravine Lane NE
- Chapter-4-Test-3
  - status: Committed
  - line1: 100 Ravine Lane NE
  - “adjustmentReason”: “Other”
  - “adjustmentDescription”: “Correct shipping address”

## Expected API Call

CreateTransaction:

```
{
  "type": "SalesInvoice",
  "code": "Chapter-4-Test-3",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "commit": "true",
  "addresses": {
    "singleLocation": {
      "line1": "1000000000000000 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

AdjustTransaction:

```
{
  "adjustmentReason": "Other",
  "adjustmentDescription": "Correct shipping address",
  "newTransaction": {
    "type": "SalesInvoice",
    "code": "Chapter-4-Test-3",
    "companyCode": "DEVGUIDE",
    "date": "2017-06-15",
    "customerCode": "TESTCUSTOMER",
    "commit": "true",
```

```
    "addresses": {
      "singleLocation": {
        "line1": "100 Ravine Lane NE",
        "city": "Bainbridge Island",
        "region": "WA",
        "country": "US",
        "postalCode": "98110"
      }
    },
    "lines": [
      {
        "number": "1",
        "amount": 100,
        "taxCode": "P0000000"
      }
    ]
  }
}
```

Note that transactions that are locked cannot be adjusted.

## Void

To remove a transaction that is not valid, you use the [VoidTransaction API](#). When you call this API, the transaction will be moved to the status **Cancelled**. Transactions in the **Cancelled** status will no longer be used for reporting purposes and will not be included in reports unless specifically requested.

To void a transaction, you must provide a reason code. The reasons available are:

- Unspecified
- PostFailed
- DocDeleted
- DocVoided
- AdjustmentCancelled

These codes are available for you to use to help distinguish between a variety of different types of reasons for voiding a transaction, but they do not have different behavior within AvaTax. You are free to use whichever reason code is appropriate for your task.

Here's how to void a transaction:

## Test Case 4.2.2 - Voiding a Transaction

### Setup

- In your connector, create the following transaction:
  - Transaction Type: SalesInvoice
  - Transaction Code: Chapter-4-Test-4
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15

- Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
  - Set the commit flag to false.
- Calculate tax for your transaction.
- Next, trigger a call to VoidTransaction with the following reason:
  - code: DocVoided

### Assertions

- One transaction exist: Chapter-4-Test-4
  - status: Cancelled
  - Amount: 100

### Expected API Call

CreateTransaction:

```
{
  "type": "SalesInvoice",
  "code": "Chapter-4-Test-4",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "commit": "true",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

VoidTransaction:

```
{
  "code": "DocVoided"
}
```

Note that transactions that are locked cannot be voided.

## Refund

A transaction refund is sometimes called a return or a reverse charge invoice. To match commonly used language, we have chosen to call this the [RefundTransaction API](#).

When you refund a transaction, you are technically creating a **ReturnInvoice** with values that are the negative. These negative values indicate that money is being returned from the seller to the purchaser. This corresponds to the accounting concept of a positive and negative journal entries that cancel each other out.

You can choose to use the [RefundTransaction API](#) in a few different ways:

- You can refund the entire transaction by setting **“refundType”**: **“Full”**.
- You can refund specific lines from a transaction by specifying **“refundType”**: **“Partial”**, and setting a list of lines to refund using the refundLines parameter to the list of line numbers of the lines that are being refunded.
- If your customer originally paid sales tax on the transaction, and they later provided a resale exemption certificate, you can call set the **“refundType”**: **“TaxOnly”**.
- If you wish to give a customer a percentage refund, perhaps for a discount, you can specify **“refundType”**: **“Percentage”**.

You should ensure that the **refundDate** value is set to the correct date for the refund. The tax rates that will be used are the correct rates from the previous transaction.

Here’s how to use RefundTransaction to return a customer’s money:

## Test Case 4.2.3 - Refunding a Customer’s Money

### Setup

- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-4-Test-5
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation  
100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Set the commit flag to false.
- Calculate tax for your transaction.
- Next, trigger a call to RefundTransaction with the following reason:
  - refundTransactionCode: Chapter-4-Test-5-Refund
  - refundType: Full
  - refundDate: 2017-06-22
  - referenceCode: Refund of Chapter-4-Test-5 - Returned after 7 days.

### Assertions

One transaction exist:

- Chapter-4-Test-5
  - status: Committed
  - Amount: 100

- Chapter-4-Test-5-Refund
  - status: Committed
  - Amount: -100

## Expected API Call

CreateTransaction:

```
{
  "type": "SalesInvoice",
  "code": "Chapter-4-Test-5",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "commit": "true",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

VoidTransaction:

```
{
  "refundTransactionCode": "Chapter-4-Test-5-Refund",
  "refundType": "Full",
  "refundDate": "2017-06-22",
  "referenceCode": "Refund of Chapter-4-Test-5 - Returned after 7 days."
}
```

For customers using Avalara's Managed Returns Service, it may not always be possible to report ReturnInvoice transactions on every tax filing. Avalara works with tax authorities around the world to ensure that we handle negative values correctly in each jurisdiction; some jurisdictions have requirements that must be met in order to correctly report a ReturnInvoice transaction. This means that a ReturnInvoice transaction may potentially be "carried-forward" from one filing to another until it meets the tax authority's requirements for filing.

To list all ReturnInvoice transactions that have not yet been reported to a tax authority, please call the [ListTransactionsByCompany API](#) with the parameter `$filter=type eq ReturnInvoice and status eq Committed`. If a return invoice transaction has not been able to be reported for more than six months, we recommend contacting Avalara's Compliance department to request an amended tax return which will allow the refund value to be claimed directly.

## 4.3 Chapter Summary

In this chapter, you've seen all the features available in AvaTax for designing a transaction reconciliation process. You can choose which process best fits your company.

- For a simple web store, you may prefer to use a direct-commit process, and refund any transaction if an error is discovered. This process only uses two API calls: [CreateTransaction](#) and [RefundTransaction](#).
- For a small accounting system, you may prefer to use a one-stage commit process, and void any transactions when an error is discovered. This process would also use [CommitTransaction](#) and [VoidTransaction](#).
- More complex processes will use all available APIs, including [VerifyTransaction](#), [ListTransactionByCompany](#), and [AdjustTransaction](#).

## Certification Requirements

AvaTax Certified Connectors must ensure that transactions are processed through a logical document lifecycle.

- Ensure that invoices are posted/committed for reporting appropriately.
- When invoices are deleted/cancelled, the transaction is updated to reflect the status.
- Ensure that Credit Memos are posted/committed for reporting appropriately.
- When Credit Memos are deleted/cancelled, the transaction is updated to reflect the status.

Tests in this chapter:

- [4.1.1 - Committing a Transaction](#)
- [4.1.2 - Two-Stage Verification](#)
- [4.2.1 - Modifying a Transaction to Correct an Error](#)
- [4.2.2 - Voiding a Transaction](#)
- [4.2.3 - Refunding a Customer's Money](#)

Connector developers are free to customize the use of the reconciliation API suite to match their business processes.

# Chapter 5 - Product Taxability

Now that you've learned all the ins and outs of a transaction, let's discuss how to handle more complex types of tax. When certain types of products are taxed at different rates, how does AvaTax know which rate to use?

In AvaTax, we represent different types of products using a `TaxCode`. This `TaxCode` is a short string that uniquely identifies a type of product and helps to classify it for tax purposes. Here are a few sample tax codes:

- TaxCode `PF050112` represents carbonated soft drinks
- TaxCode `PC040413` represents ski boots
- TaxCode `SB070700` represents boat repairs

You can find many more examples through [Avalara's online tax code website](#). Try searching through to find something you like to buy — Avalara has a full list of tax codes covering nearly all variants on the products and services you purchase every day.

Inside AvaTax, these `TaxCodes` have built in logic to represent the applicable sales tax regulations for each state. This means you can get the correct tax rates for boat repairs by adding an invoice line item with the property `"taxCode": "SB070700"` within the transaction. The tax code helps to identify what tax rules and rates apply to the transaction. Our content team monitors governments around the world and tracks whenever the tax rate changes and taxability rules for each particular type of product or service.

In this chapter, you'll learn how to find the appropriate tax code for your product, and how to use that tax code correctly in an AvaTax transaction.

## 5.1 - Finding a Tax Code

So far in the developer guide, your code has left the `taxCode` field empty. In this case, AvaTax assumes you are creating transactions that refer to general Tangible Personal Property, which is represented by the default tax code `P0000000`.

As long as you continue using a null tax code, AvaTax will treat your products the same. However, many products are taxed differently in different jurisdictions. Finding the correct tax code will ensure that AvaTax treats your product correctly everywhere.

You can find the correct tax code for your product in one of two ways:

- Look on Avalara's [tax code site](#)
- Or you could call the [ListTaxCodes API](#) to list available tax codes

When you use tax codes correctly in AvaTax, you will get the correct tax rate for your transaction. Some customers will choose to enter a tax code directly when creating a transaction.

Other customers may wish to search for tax codes directly through the [ListTaxCodes API](#). A common use case is to show a drop down text box. When a customer starts typing the word `C`, your program can call [ListTaxCodes](#) to find all tax codes that begin with the letters that the customer has typed. Here's how to call [ListTaxCodes](#):

```
GET /api/v2/definitions/taxcodes/$filter=description startswith C

{
  "id": 56789,
  "companyId": 12345,
  "taxCode": "PF050101",
  "taxCodeTypeId": "P",
  "description": "Carbonated beverages",
  "parentTaxCode": "PF050001",
  "isPhysical": true,
  "goodsServiceCode": 0,
  "entityUseCode": "",
  "isActive": true,
  "isSSTCertified": true
}
```

## Adding TaxCodes to your Transaction

On the document line level you can pass via the [CreateTransactionModel](#). There are a few properties that allow you to identify your line categories of **ItemCode**, **Quantity**, **Amount**, **Description**, and **TaxCode**. The **ItemCode** are generally the value passed by your integration or web service to represent a part number, SKU or product ID for the said products or services.

Here's what a transaction looks like when you add tax codes to a line:

## Test Case 5.1.1 - Finding a Tax Code

### Setup

- Carbonated Beverages are considered exempt in Washington State.
- The TaxCode for a Carbonated Beverage is PF050101.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-5-Test-1
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: PH405370 (gift items)
- Calculate tax for your transaction using AvaTax.

### Assertions

- The tax for line 1 should be \$9.00.
- The Taxable amount for line 1 should be \$100.00.

## Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-5-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "PH405370"
    }
  ]
}
```

As you can see, this transaction now has different taxability rules based on the type of product being sold.

## 5.2 - TaxCodes and Exemptions

Tax codes can change the rates charged on a transaction — but did you know they also affect a product’s taxability?

Some jurisdictions choose not to tax certain types of products or services. In those cases, the transactions will flag certain line items as **nontaxable**.

Generally speaking, items are **nontaxable** and customers are **exempt**. When a tax authority has decided that a type of product is “exempt” from a tax, this actually means this type of product is **nontaxable**. Transactions are only **exempt** when a customer has provided an exemption certificate and flagged as exempt.

The word “exempt” is often confusing here. Some jurisdictions use the terminology “exempt” when referring to products and services, whereas others use the word “deductible” or “non-taxable”, or they may simply say that the tax rate is zero for that particular product. In each case, the end result is the same: this product or service does not have transactional tax applied to it.

### Jurisdiction Taxability

Some jurisdictions may have regulations pertaining to quantity and amount values. For example, in certain jurisdictions in New York clothing items under \$110.00 can be non-taxable.

In Tennessee, a special tax applied when the value of a single physical item (Quantity of 1) has a value exceeding

\$1,600, up to the value of \$3,200.

Examples:

- No [sales tax](#) on an item of clothing or footwear that costs less than \$110
- Tennessee [single article tax cap](#)

Keep in mind that items and tax codes represent the production taxability. Other factors like the exempt status of customer and the client's tax profile generally would place higher in a hierarchy sense to the product. Meaning if your customer is exempt, referencing a taxable tax code will still generate a zero tax result. Same of nexus and tax rules. If you are getting a gettax result for a jurisdiction that you have not identified in the Avalara Nexus settings, regardless of the item or tax code passed the result will be non-taxable. The application of these three levels results in the tax calculation you see returned by the API and/or recorded in AvaTax.

Let's examine how two different jurisdictions handle carbonated beverages.

## Carbonated Beverages in Washington

The state of Washington does not have a tax for carbonated juice beverages as of June 15th, 2017. This tax rule may change in the future! Even if you know that a particular product is exempt from tax, it is important to provide the correct tax code. Many states will choose to audit companies that fail to report exempt transactions correctly; so please encourage your customers to correctly categorize and report all lines on the transaction.

## Test Case 5.2.1 - TaxCodes and Exemptions - Washington State

### Setup

- Carbonated Beverages are considered exempt in Washington State.
- The TaxCode for a Carbonated Beverage is PF050101.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-5-Test-2
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Line #2:
  - Amount: 75
  - TaxCode: PF050101
- Calculate tax for your transaction using AvaTax.

### Assertions

- The tax for line 1 should be \$9.00.
- The Taxable amount for line 1 should be \$100.00.
- The Exempt amount for line 1 should be \$0.00.
- The tax for line 2 should be \$0.00.
- The Taxable amount for line 2 should be \$0.00.
- The Exempt amount for line 2 should be \$75.00.

## Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-5-Test-2",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    },
    {
      "number": "2",
      "amount": 75,
      "taxCode": "PF050101"
    }
  ]
}
```

## Carbonated Beverages in New York

Let's now try that same transaction in a different address. The state of New York has taxes for carbonated juice beverages, so this time we will see the transaction producing tax for both lines.

## Test Case 5.2.2 - TaxCodes and Exemptions - New York

### Setup

- Re-create the transaction in step 2, but this time change it as follows:
  - Transaction Code: Chapter-5-Test-3
- Addresses:
  - SingleLocation: 14 Wall Street, New York, NY 10005
- Calculate tax for your transaction using AvaTax.

### Assertions

- The tax for line 1 should be \$8.88.
- The Taxable amount for line 1 should be \$100.00.

- The Exempt amount for line 1 should be \$0.00.
- The tax for line 2 should be \$6.66.
- The Taxable amount for line 2 should be \$75.00.
- The Exempt amount for line 2 should be \$0.00.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-5-Test-3",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "14 Wall Street",
      "city": "New York",
      "region": "NY",
      "country": "US",
      "postalCode": "10005"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    },
    {
      "number": "2",
      "amount": 75,
      "taxCode": "PF050101"
    }
  ]
}
```

## 5.3 - Mapping Items to TaxCodes

Some customers prefer to go further — to actually create a product catalog and use AvaTax’s ItemCode feature to classify their products and link them with TaxCodes. Using this feature, it’s possible to build your connector or website without worrying about mapping products to TaxCodes at all.

This feature is entirely optional and is not required for certification of your AvaTax connector — but it may be useful if you prefer not to allow users to select tax codes in your product. Using Items, you can send your users directly to the AvaTax website and have them do their own data entry.

Here’s how it works:

- AvaTax contains a database called the Item database. Any user of AvaTax can define a list of items using the [Createltems API](#) or on the AvaTax website.

- Each **Item** in the AvaTax database can be linked to a **TaxCode** or to custom **TaxRule** using a friendly web interface.
- Your connector can simply identify each line on the invoice using an **ItemCode** in the [CreateTransaction API](#) call - AvaTax will look up its tax codes and tax rules for you.

You can read more about [mapping items to tax codes on the Avalara Help Center](#).

## Using the Items API

AvaTax includes a suite of APIs to manage your items database: for example, a good place to start is the [Create-Items API](#). Here's how to call the [CreateItems API](#) to create a single custom item — note that the API allows you to create as many items as you want with a single API call:

```
POST /api/v2/companies/1345/items

[
  {
    "companyId": 1345,
    "itemCode": "8987987",
    "taxCode": "DC010500",
    "description": "My Custom Item"
  }
]
```

Once you have created items, you can then use the **ItemCode** from each item in your [CreateTransaction API](#) call. AvaTax will lookup each item and use the corresponding tax code at the time of your [CreateTransaction API](#) call. This means that the user can visit the AvaTax website anytime and modify their item catalog — the changes will take effect without any code changes.

It's worth mentioning that, if your business is part of the Streamlined Sales Tax (SST) program, you will be required to send both an **ItemCode** and **Description** for each product line on your orders. The **Description** is an SST requirement — it's not listed as a required field for the API. Yet, sending a description is a best practice for all clients, not just those companies participating in SST program. In general, the **Description** field is used to specify additional details about the product, like a name, color, size, etc.

## 5.4 Chapter Summary

In this chapter, you've learned how to identify your products by type and ensure that customers get the correct tax rate and taxability regardless of what products or services they sell.

### Certification Requirements

As a connector developer, you are required to do the following:

- **Item Code:** Identify item/service/charge code (number, ID) to pass to the AvaTax service. If the customer has access to UPC, they should be able to prepend UPC to the code and have it come across in the item code field. If there is no UPC, it should fall back to SKU.
- **Item Description:** Identify item/service/charge description to pass to the AvaTax service with a human-readable description or item name.
- **AvaTax tax code mapping (Item Code/SKU):** Association of an item or item group to an AvaTax Tax Code to describe the taxability group (e.g. Clothing-Shirts – B-to-C). If possible, this should be assigned at the item category level as well as the item level.

You may optionally also allow your customers to search through TaxCodes interactively using the [List-TaxCodesbyCompany API](#). This is considered a best practice, but is not required of all connector developers.

Tests in this chapter:

- [5.1.1 - Finding a Tax Code](#)
- [5.2.1 - TaxCodes and Exemptions - Washington State](#)
- [5.2.2 - TaxCodes and Exemptions - NewYork](#)

# Chapter 6 - Discounts and Overrides

In this chapter, we'll explain how to use Overrides and Discounts in AvaTax.

- An override is used when your transaction overrides normal behavior of the AvaTax engine. It can be used to change the tax amount or tax date for a transaction.
- Discount is a reduction of the price on your item/service. There are several ways you can handle a discount with the AvaTax engine.

By the end of this chapter, you will be familiar with how to process both `TaxAmount` and `TaxDate` overrides as well as understand the various methods used to handle discounts.

## 6.1 - Tax Overrides

There are two types of overrides supported in AvaTax: `TaxAmount` and `TaxDate`. The `TaxAmount Override [check]`, will do just that, override the tax amount on the transaction. This is particularly helpful if you need to record transactions to AvaTax which had the tax calculated in another system. The `TaxDate` override, allows you to specify what tax date to use in the calculation. By default, the AvaTax engine will use the document date as the `TaxDate`. The common use-case for this override is processing refunds, as you want to calculate the refund tax credit using the same information that the original sale used. Let's take a closer look at each method.

### Overriding the Tax Amount

A tax amount override is when you override the tax amount of a transaction rather than having AvaTax calculate it.

This feature is available so that you can import transactions where you've already calculated the tax amount prior to using AvaTax. An example would be when you are importing data from an older system so that you can keep all your data in AvaTax. Other customers may choose to use this feature to import data from partner sales — for example, if you were selling via a merchant platform and you want to import your data into AvaTax.

Tax amount overrides can also be used to determine the difference between tax paid to a vendor and consumer use tax due to an authority. This is covered in more detail in [Chapter 10 - Consumer Use Tax](#).

## Test Case 6.1.1 - Tax Override

### Setup

- You calculated tax for a transaction using your old tax software, and you are importing this transaction into AvaTax.
- The tax calculated by your old tax software was \$5.67.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-6-Test-1
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000

- Add a TaxOverride to set the TaxAmount to \$5.67, and specify the reason as “Importing tax calculated by previous tax software”
- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTax amount for the transaction should be \$5.67. This is the amount you calculated in your previous tax software.
- The totalTaxCalculated amount should be \$9.00. This is the amount that AvaTax determined is correct.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-6-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ],
  "taxOverride": {
    "type": "taxAmount",
    "taxAmount": 5.67,
    "reason": "Importing tax calculated by previous tax software"
  }
}
```

## Overriding the Tax Date

**TaxDate** overrides are used when you want to calculate tax on a date different than the date of a document. For example, if you are returning a product, the tax date of the transaction would be the date of the original transaction, rather than the date of the refund.

Let’s say Alice purchases a new chair from the store on May 1st. She discovers that the chair doesn’t fit in her home office, and she decides to return the chair on June 1st. If you calculate tax on the June 1st date, you might refund a different amount of tax to Alice than she paid on May 1st. So you use a TaxDate override to ensure that the tax rates are calculated as of May 1st.

## Test Case 6.1.2 - TaxDate Override

### Setup

- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-6-Test-2
  - Document Date: 2017-06-15
  - Company Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Add a TaxOverride to set the TaxAmount to \$5.67, and specify the reason as “Importing tax calculated by previous tax software”
- Calculate tax for your transaction using AvaTax.

### Assertions

- The document level TaxDate should now show 5/01/2017
- The totalTaxCalculated amount should be \$9.00. This is the amount that AvaTax determined is correct.

### Expected API Call

```
{
  "type": "ReturnInvoice",
  "code": "Chapter-6-Test-2",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ],
  "taxOverride": {
    "type": "taxDate",
    "taxDate": "2017-05-01",
    "reason": "Refund for purchase of chair"
  }
}
```

## Line Level Overrides

The examples we have used so far have all shown the `TaxAmount/TaxDate` overrides at the document level. It is also important to note that these overrides can also be applied at the line level.

### Test Case 6.1.3 - Line Level Tax Override

#### Setup

- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-6-Test-3
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Add a TaxOverride to the line object and set the TaxDate to 2017-05-01 and specify the reason as “Refund for purchase of chair”
- Calculate tax for your transaction using AvaTax.

#### Assertions

- The Line 1 TaxDate should now show 5/01/2017.
- The totalTaxCalculated amount should be \$9.00. This is the amount that AvaTax determined is correct.

#### Expected API Call

```
{
  "type": "ReturnInvoice",
  "code": "Chapter-6-Test-3",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000",
      "taxOverride": {
        "type": "taxDate",
```

```

    "taxDate": "2017-05-01",
    "reason": "Refund for purchase of chair"
  }
}
]
}

```

## Consumer Use Tax Overrides

The Tax Override function is also used for verification of merchant charged tax in a Use Tax scenario. This will be explained in more detail in [Chapter 10 - Consumer Use Tax](#).

## 6.2 - Discounting a Transaction

You have several options for handling discounts with AvaTax. However, before we get to into the details we need to call out the different types of discounts you can apply as each is handled differently. Vendor discounts are simply a price reduction in the sale amount of an item or service. Whereas 3rd party (manufacturer) discounts are, generally speaking, a price reduction sponsored by the manufacturer where the vendor is compensated for the reduced price.

When dealing with discounts, there are four basic ways to represent a discount:

- A reduction in the sale price
- A line item with a negative amount
- A discount to distribute among lines
- A line item using the Manufacturer Discount TaxCode

Let's review each of these in turn.

### Price Reduction Discounts

For this first discount exercise, we are going to perform the discount before sending the request to AvaTax for a tax calculation. So, if the item has a cost of \$100 and you are applying a \$10 discount, the GetTax request should have an amount of \$90. This is the simplest method for handling a discount as it does not involve any additional fields or lines in the GetTax request.

## Test Case 6.2.1 - Price Reduction Discount

### Setup

- You would like to provide a \$10 discount on a \$100 chair.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-6-Test-4
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:

- Amount 100
- TaxCode P0000000
- Calculate tax for your transaction using AvaTax.

### Assertions

- The `totalTaxCalculated` amount should be \$8.10. This is the amount that AvaTax determined is correct.
- Notice that, in the transaction, there is no way to determine that a discount has been applied — you only know the discounted sale price of the transaction.
- Some customers may choose to use Reference Fields to keep track of discounts applied as a price reduction. See [Chapter 3 - Customizing Your Transaction](#) for more information about reference fields.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-6-Test-4",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 90,
      "taxCode": "P0000000"
    }
  ]
}
```

### Negative Amount Line Items

With this, exercise you will simply add an additional line that contains the discounted amount as a negative extended amount. Please be sure to use the same `taxCode` on the discount line as the item being discounted. This will ensure that any taxability rules applied to the product/service are also applied to the discount.

## Test Case 6.2.2 - Negative Amount Line Items

### Setup

- You would like to provide a \$10 discount on a \$100 T-Shirt.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-6-Test-5
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - CustomerCode: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: PC040100
- Line #2:
  - Amount: -10
  - TaxCode: PC040100
  - Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTaxCalculated amount should be \$8.10. This is the amount that AvaTax determined is correct.
- The taxCode for the discount line should match the line being discounted.

### Expected API Call

```
{
  "type": "ReturnInvoice",
  "code": "Chapter-6-Test-5",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    },
    {
      "number": "2",
      "amount": -10,
      "taxcode": "P0000000"
    }
  ]
}
```

```

}
]
}

```

## Automatically Distributed Discounts

With this exercise you will pass the complete discounted amount in the `discount` field then identify the lines that are participating in the discount by setting the `discounted` field to 'True'. Unlike the other methods, you will enter the total discount as a positive integer with this approach. If no lines have the discounted set to 'True', then the discount will NOT be applied.

## Test Case 6.2.3 - Automatically Distributed Discounts

### Setup

- You would like to provide a \$10 discount on a \$100 T-Shirt only.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-6-Test-6
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - CustomerCode: TESTCUSTOMER
  - Discount: 10
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: PC040100
  - Discounted: True
- Line #2:
  - Amount: 75
  - TaxCode: P0000000
  - Discounted: False
- Calculate tax for your transaction using AvaTax.

### Assertions

- The discountAmount for Line 1 should be \$10.
- The taxableAmount for Line 1 should be \$90
- The TaxCalculated for Line 1 should be \$8.10. This is the amount that AvaTax determined is correct.
- The discountAmount for Line 2 should be \$0.
- The taxableAmount for Line 2 should be \$75
- The TaxCalculated for Line 2 should be \$6.75. This is the amount that AvaTax determined is correct.

### Expected API Call

```

{
  "type": "SalesInvoice",
  "code": "Chapter-6-Test-6",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",

```

```

“customerCode”: “TESTCUSTOMER”,
“discount”: “10”,
“addresses”: {
  “singleLocation”: {
    “line1”: “100 Ravine Lane NE”,
    “city”: “Bainbridge Island”,
    “region”: “WA”,
    “country”: “US”,
    “postalCode”: “98110”
  }
},
“lines”: [
  {
    “number”: “1”,
    “amount”: 100,
    “taxCode”: “P0000000”,
    “discounted”: “true”
  },
  {
    “number”: “2”,
    “amount”: 75,
    “taxcode”: “P0000000”,
    “discounted”: “false”
  }
]
}

```

## Manufacturer Discount TaxCode

When working with discounts provided by a 3rd party (ex. manufacturer coupon) the process is very similar to the discount method of adding a line with a negative amount. However in this case, instead of using the same tax code as the item being discounted, you will use the tax code for Coupons (third party) - **0C030000**. Check out [Chapter 5 - Product Taxability](#) for more information on tax codes and their function.

## Test Case 6.2.4 - Manufacturer Discount TaxCode

### Setup

- You would like to provide a \$10 discount on a \$100 T-Shirt.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-6-Test-7
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100

- TaxCode: PC040100
- Line #2:
  - Amount: -10
  - TaxCode: 0C030000
- Calculate tax for your transaction using AvaTax

### Assertions

- The totalTaxCalculated amount should be \$9.00. This is the amount that AvaTax determined is correct.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-6-Test-7",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    },
    {
      "number": "2",
      "amount": -10,
      "taxcode": "0C030000"
    }
  ]
}
```

## 6.3 Summary

In summary, you should be able to:

- Create a transaction with a **TaxAmount** Override.
- Create a transaction with a **TaxDate** Override.
- Create a transaction with either a **TaxAmount** or **TaxDate** override at the line level.
- Create a transaction with a post discount amount.
- Create a transaction with a discount line item.
- Create a transaction with a discount at the header level.

- Create a transaction with a 3rd party (Manufacturer) discount.

## Certification Requirements

AvaTax Certified Connectors must handle discounts appropriately by using one of the methods outlined in this chapter. To have your integration certified AvaTax for Refunds/Credit Memos: you will need to demonstrate that credit memo transactions send the current transaction date as the document date, as well as the original transaction sale date as the TaxOverride/TaxDate. Please note, the [RefundTransaction API](#) automates much of this process.

### Tests in this chapter

- [6.1.1 - Tax Override](#)
- [6.1.2 - TaxDate Override](#)
- [6.1.3 - Line Level Tax Override](#)
- [6.2.1 - Price Reduction Discount](#)
- [6.2.2 - Negative Amount Line Items](#)
- [6.2.3 - Automatically Distributed Discounts](#)
- [6.2.4 - Manufacturer Discount TaxCode](#)

# Chapter 7 - Shipping and Handling

In this chapter we will take a look at how you can incorporate shipping and handling charges into your transaction. We will build on the lessons learned in [Chapter 3 - Customizing Your Transaction](#) and [Chapter 5 - Product Taxability](#).

Often relegated to a single notation on an invoice, shipping and handling charges play an important role in the tax calculation of a document. So, how should you include the shipping/handling charge in a tax request? The answer may surprise you, shipping/handling is treated just like any other line item on an invoice.

## 7.1 - Taxability of Shipping Charges

Because we treat freight/shipping just like any other line item on the document, you can associate a tax code to your freight/shipping line item. The taxability of freight/shipping will vary from jurisdiction to jurisdiction. Depending on how you ship your goods, via USPS, FedEx or UPS may have different taxability than if you ship via your own company truck. We have quite a few different freight tax codes to choose from, make sure that you select a code that is representative of how you ship your goods. Take a look at our [tax code lookup utility](#).

### Address Types

By now, you've become familiar with `SingleLocation`, `ShipTo`, and `ShipFrom` address types. Let's recap what each address type means and introduce two additional address types that are available for use within AvaTax, `PointOfOrderOrigin` and `PointOfOrderAcceptance`:

- `SingleLocation` – Origin and Destination in which an item was purchased and accepted.
- `ShipFrom` – Origin location from where the item is being shipped
- `ShipTo` – Destination location where the item is being delivered
- `PointOfOrderOrigin` – Origin location from which the order was placed
- `PointOfOrderAcceptance` – Destination location from which the seller accepted the order

For most users, including `ShipFrom` and `ShipTo` in your transactions will be sufficient. You'll want to consider what will benefit your needs and your customers' needs and address them as needed.

### Putting It All Together

Now, let's take a look at a simple transaction with shipping charges included. We will be using the taxability code `FR020100` for our shipping charge. This code is defined as "Shipping via common carrier FOB destination".

## Test Case 7.1.1 - Simple Transaction Including Shipping Charges

### Setup

- You are shipping an item from Washington to Florida.
- In your connector, create the following transaction:
  - Document Type: `SalesInvoice`
  - Document Code: `Chapter-7-Test-1`
  - Company Code: `DEVGUIDE`
  - Document Date: `2017-06-15`
  - Customer Code: `TESTCUSTOMER`
- Addresses:
  - `ShipFrom`: 100 Ravine Lane NE, Bainbridge Island, WA 98110

- ShipTo: 3500 Pan American Dr., Miami FL 33133
- Line #1:
  - Quantity: 10
  - Amount 100
  - TaxCode P0000000
  - Item Code: Widgets
  - Description: Taxable Gizmo
- Line #2:
  - Quantity: 1
  - Amount 5
  - TaxCode FRO20100
  - Item Code: Shipping
- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTax should be \$7.35.
- The tax amount for Shipping should be \$0.35.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-7-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "shipFrom": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    },
    "shipTo": {
      "line1": "3500 Pan American Dr.",
      "city": "Miami",
      "region": "FL",
      "country": "US",
      "postalCode": "33133"
    }
  },
  "lines": [
    {
      "number": "1",
      "quantity": 10,
      "amount": 100,
      "taxCode": "P0000000",
      "itemCode": "Widgets",
      "description": "Taxable Gizmo"
    }
  ]
}
```

```

    "number": "2",
    "quantity": 1,
    "amount": 5,
    "taxCode": "FR020100",
    "itemCode": "Shipping"
  }
]
}

```

So you can see that adding a freight charge to a transaction is no different from adding another item to the transaction. One item to consider is how you will associate the freight tax code with the freight charge within your application. For certified integrations, the merchant must be able to update this tax code, depending on how they ship their goods.

Now let's take a look at the transaction when we ship an item that is non-taxable in Florida:

## Test Case 7.1.2 – Shipping a Non-taxable Transaction

### Setup

- You are shipping an item from Washington to Florida.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-7-Test-2
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - ShipFrom: 100 Ravine Lane NE, Bainbridge Island, WA 98110
  - ShipTo: 3500 Pan American Dr., Miami FL 33133
- Line #1:
  - Quantity: 10
  - Amount: 100
  - TaxCode: NT
  - Item Code: Widgets
  - Description: "Non-Taxable Gizmo"

### Line #2:

- Quantity: 1
- Amount: 5
- TaxCode: FR020100
- Item Code: Shipping
- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTax amount for the transaction should be \$0.
- The tax of the shipping line item followed the taxability of the items being shipped.

### Expected API Call

```
{
```

```
    "type": "SalesInvoice",
    "code": "Chapter-7-Test-2",
    "companyCode": "DEVGUIDE",
    "date": "2017-06-15",
    "customerCode": "TESTCUSTOMER",
    "addresses": {
      "shipFrom": {
        "line1": "18300 Von Karman Ave",
        "city": "Irvine",
        "region": "CA",
        "country": "US",
        "postalCode": "92612"
      },
      "shipTo": {
        "line1": "3500 Pan American Dr.",
        "city": "Miami",
        "region": "FL",
        "country": "US",
        "postalCode": "33133"
      }
    },
    "lines": [
      {
        "number": "1",
        "quantity": 10,
        "amount": 100,
        "taxCode": "NT",
        "itemCode": "Widgets",
        "description": "Non-Taxable Gizmo"
      },
      {
        "number": "2",
        "quantity": 1,
        "amount": 5,
        "taxCode": "FR020100",
        "itemCode": "Shipping"
      }
    ]
  }
```

In the previous example the freight was taxable, however this time the freight was exempt. This is because in this particular jurisdiction the taxability of the freight will follow the taxability of the items on the invoice. So, if the items being shipped are exempt, so is the freight.

Now, let's take a look at the behavior when we have more than one item being shipped and the taxability of the items is different:

## Test Case 7.1.3 – Shipping Items with Different Taxability

### Setup

- You are shipping an item from Washington to Florida.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-7-Test-3
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - ShipFrom: 100 Ravine Lane NE, Bainbridge Island, WA 98110
  - ShipTo: 3500 Pan American Dr., Miami FL 33133
- Line #1:
  - Quantity: 100
  - Amount: 100
  - TaxCode: P0000000
  - Item Code: Widgets
  - Description: Taxable Gizmo
- Line #2:
  - Quantity: 10
  - Amount: 100
  - TaxCode: NT
  - Item Code: Widgets
  - Description: Non-Taxable Gizmo
- Line #3:
  - Quantity: 1
  - Amount: 5
  - Tax Code: FR020100
  - Item Code: Shipping
- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTax amount should be \$7.18.
- Line 2 should have a tax amount of \$0.00.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-7-Test-3",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "shipFrom": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
```

```
    },
    "shipTo": {
      "line1": "3500 Pan American Dr.",
      "city": "Miami",
      "region": "FL",
      "country": "US",
      "postalCode": "33133"
    }
  },
  "lines": [
    {
      "number": "1",
      "quantity": 10,
      "amount": 100,
      "taxCode": "P0000000",
      "itemCode": "Widgets",
      "description": "Taxable Gizmo"
    },
    {
      "number": "2",
      "quantity": 10,
      "amount": 100,
      "taxCode": "NT",
      "itemCode": "Widgets",
      "description": "Non-Taxable Gizmo"
    },
    {
      "number": "3",
      "quantity": 1,
      "amount": 5,
      "taxCode": "FR020100",
      "itemCode": "Shipping"
    }
  ]
}
```

## 7.2 - Taxability of Handling Charges

Depending on how you show the handling charge on your document, it may be included with your freight/shipping line item, or it can be a line itself on the transaction. In the case where your handling charge is combined with freight/shipping, you do not need a separate line, there is a tax code that covers this scenario, **FR030000**. When your handling charge is separately stated from the freight/shipping charge, you just need to treat the handling charge as another line. Let's take a look at our transaction again, this time with handling separately stated:

## Test Case 7.2.1 – Handling Charges Taxability

### Setup

- You are shipping an item from Washington to Florida.
- In your connector, create the following transaction:
  - Document Type: SalesInvoice
  - Document Code: Chapter-7-Test-4
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - ShipFrom: 100 Ravine Lane NE, Bainbridge Island, WA 98110
  - ShipTo: 3500 Pan American Dr., Miami FL 3133
- Line #1:
- Quantity
  - Amount: 100
  - TaxCode: P0000000
  - Item Code: Widgets
  - Description: Taxable Gizmo
- Line #2:
  - Quantity: 10
  - Amount: 100
  - TaxCode: NT
  - Item Code: Widgets
  - Description: Non-Taxable Gizmo
- Line #3:
  - Quantity: 1
  - Amount: 5
  - TaxCode: FR020100
  - Item Code: Shipping
- Line #4:
  - Quantity: 1
  - Amount: 3
  - Tax Code: 0H010000
  - Item Code: Handling
- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTax amount should be \$7.29
- Line 2 should have a tax amount of \$0.00
- Your 4th line should now include your handling

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-7-Test-4",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
```

```
    "shipFrom": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    },
    "shipTo": {
      "line1": "3500 Pan American Dr.",
      "city": "Miami",
      "region": "FL",
      "country": "US",
      "postalCode": "33133"
    }
  },
  "lines": [
    {
      "number": "1",
      "quantity": 10,
      "amount": 100,
      "taxCode": "P0000000",
      "itemCode": "Widgets",
      "description": "Taxable Gizmo"
    },
    {
      "number": "2",
      "quantity": 10,
      "amount": 100,
      "taxCode": "NT",
      "itemCode": "Widgets",
      "description": "Non-Taxable Gizmo"
    },
    {
      "number": "3",
      "quantity": 1,
      "amount": 5,
      "taxCode": "FR020100",
      "itemCode": "Shipping"
    },
    {
      "number": "4",
      "quantity": 1,
      "amount": 3,
      "taxCode": "OH010000",
      "itemCode": "Handling"
    }
  ]
}
```

## 7.3 Chapter Summary

In this chapter you've learned how to account for shipping and handling charges, as well the implication they can have on tax determinations depending on the jurisdictions you're shipping to and from.

We recommend that a connector provide the following functionality:

- If you have a native built-in function for shipping or freight charges for the user interface to allow for that section of the platform to show a tax code box where a customer can input any of our shipping tax codes.
- If your platform doesn't have a native built-in function for shipping and the customer is instructed to simply add shipping as a separate charge or line of the order, they should be able to create a misc charge item or freight item within their inventory/services management and map it to a shipping tax code so that they can select the appropriate shipping method when invoicing their clients.

Optionally, you can include additional features if you choose:

- Use the [GET Tax Code Definitions](#) method of the API in order to build a search of our tax codes within the application, so that the customer can search by keyword within the application for the appropriate shipping tax code without having to exit the application itself.

These optional features are available but are not required for certified connectors.

### Certification Requirements

Freight Items must be transmitted separately — Freight Items must be sent to AvaTax as a separate line item with appropriate tax code.

Tests you can use to verify that your connector is working correctly:

- [7.1.2 - Shipping a Non-taxable Transaction](#)
- [7.1.3 - Shipping Items with Different Taxability](#)
- [7.2.1 - Handling Charges Taxability](#)

# Chapter 8 - Exemptions

This chapter is about exemptions - in other words, the reasons that certain transactions are not taxed. By the end of this chapter, you will learn the following:

- All the factors that could cause tax on a transaction to be zero
- Which factors are company-related, which are product-related, and which are transaction-related
- How to allow a customer to choose these factors correctly in your user interface
- Test cases that must be understood to correctly handle tax exemptions

One of the most common questions asked about tax software is, “Why is there no tax on this transaction?” Since a tax calculation involves many different factors, let’s begin by analyzing all the reasons that a transaction could be calculated to have zero tax. In some cases, the tax on a transaction is correctly zero; in other cases, a customer is considered exempt from tax.

Let’s begin by looking at the reasons why tax could be zero on a transaction.

## 8.1 - Reasons Tax Can Be Zero

There are a few key reasons why the tax on a transaction can be zero.

- In the United States, a company may not be compelled to collect tax. For example, this will occur if the company is selling a product in a jurisdiction where they do not have Nexus. In this case, it is legally the responsibility of the buyer to remit Consumer Use Taxes, but the seller is not required to charge taxes on the transaction.
- Some states in the United States have zero sales or use tax rates.
- A product may be non-taxable, or exempt, or have its tax rate set to zero. Some jurisdictions use the phrase “Nontaxable” to refer to product-taxability, while others refer to this as an “Exemption” or a “Zero-Rate”. This use case is fully described in Chapter 5 - Product Taxability.

## Companies Without Nexus

The most common reason that tax could be zero is if your company does not have Nexus, and is not obligated to collect tax.

This definition of the word Nexus comes from the United States, where a legal ruling by the Supreme Court established that a company must only collect tax if they have sufficient “Nexus” in a jurisdiction. Unfortunately, the specific definition of Nexus is complex and changes when new laws are passed or when new legal precedents are established.

When using AvaTax, your company must decide where it has nexus, and where it does not. This selection is used to determine whether you are obligated to collect taxes. For example, if your company has nexus in the state of Massachusetts, but you do not have nexus in the state of Rhode Island, in general a tax calculation for a customer in Rhode Island will result in zero tax. According to legal precedents in the United States, this zero tax means that it is the responsibility of the buyer, instead, to determine the correct tax to pay to the taxing authority. This tax obligation is called “Consumer Use Tax”.

Please be careful not to misuse information about nexus. Even if a company does not have nexus in a jurisdiction, that company must still call AvaTax to record its transactions. The Avalara Managed Returns Service reports transactions as well as exempt dollar amounts based on legal filing requirements. Even jurisdictions where a company does not have nexus may sometimes require tax reporting. Additionally, companies can change their nexus declarations at any time — so you must always call [CreateTransaction](#) even if you believe the company has not declared nexus in a particular jurisdiction.

Here's a test that helps show how a company's nexus settings affect tax calculations:

## Test Case 8.1.1 – Companies without Nexus

### Set Up

- Your DEVGUIDE company should have nexus in Washington State, but not in Rhode Island.
- In your connector, create the following transaction:
  - Transaction Type: SalesInvoice
  - Transaction Code: Chapter-8-Test-1
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses:
  - SingleLocation: 468 Angell Street, Providence, RI 02906
- Line #1
  - Amount: 100
  - TaxCode: P0000000
  - Calculate tax for your transaction using AvaTax.

### Assertions

- The tax for line 1 should be \$0.00.
- The Taxable amount for line 1 should be \$0.00.
- The Exempt amount for line 1 should be \$100.00.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-8-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "singleLocation": {
      "line1": "468 Angell Street",
      "city": "Providence",
      "region": "RI",
      "country": "US",
      "postalCode": "02906"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

## States Without Sales Tax

Some states or tax authorities in the United States do not collect sales, use, or transactional taxes. In this case, transactions will correctly show zero tax, unless they trigger special excise taxes or other functionality.

Let's look briefly at the status of sales tax in a few notable states. These states are often called the "NOMAD" states, after an acronym that lists the state names: New Hampshire, Oregon, Montana, Alaska, and Delaware.

- The state of Alaska does not have a state sales tax. However, Alaska is also what is known as a ["Home Rule"](#) state, where individual cities and counties are granted the authority to levy and administer their own sales taxes. This means that, although you will generally not calculate state sales tax in Alaska, local jurisdictions within Alaska may request that you pay sales, seller's use, or consumer use tax if you have nexus within that jurisdiction. Because of this Home Rule designation, it is necessary for companies to correctly declare their nexus within Alaska and within local jurisdictions within the state of Alaska even though the state itself does not charge sales tax.
- Delaware doesn't have a sales tax, but it does impose other taxes on businesses based on their gross sales. These taxes are not calculated transactionally, which means they will not show up on your AvaTax transactions.
- Montana, New Hampshire, and Oregon prohibit local jurisdictions within the state from levying sales taxes. As a result, these three states do not have any sales tax either at a local or state level.

Although these states do not charge sales tax, it is important that your connector still record tax correctly. Avalara Certified Connectors must record transactions in AvaTax even if the transaction is within these NOMAD states. This is necessary because:

- **Laws can change** – Avalara continually researches tax laws and updates our software promptly as soon as any changes affect correct tax calculation. If any state changes its tax laws, your customers should not have to update their connector.
- **Sourcing rules can change** – Some states can change their tax rules to determine the origin or destination of a transaction differently based on other factors such as the billing address or the call center address of a transaction. In this case, a transaction that was previously nontaxable based on a NOMAD state law may become taxable based on the origination of the shipment.
- **Tax types can change** – Depending on your customer's subscriptions, Avalara provides support for excise, telecommunications, E-Waste, bottle taxes, and more. These tax types may not always be exempt in NOMAD states.

To ensure that your connector correctly sends NOMAD tax, you must be able to demonstrate that the tax transaction in the test case below is correctly recorded in AvaTax.

## Test Case 8.1.2 - NOMAD Tax

### Set Up

- In your connector, create the following transaction:
  - Transaction Type: SalesInvoice
  - Transaction Code: Chapter-8-Test-1
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
- Addresses
  - SingleLocation: 720 SW Broadway, Portland, OR 97205
- Line #1
  - Amount: 100
  - TaxCode: P0000000

- Commit set to “true”
- Calculate tax for your transaction using AvaTax.
- Calculate tax for your transaction using AvaTax.

### Assertions

- The tax for line 1 should be \$0.00.
- The Taxable amount for line 1 should be \$0.00.
- The Exempt amount for line 1 should be \$100.00.
- The transaction’s Status should be “Committed”.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-8-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "commit": "true",
  "addresses": {
    "singleLocation": {
      "line1": "720 SW Broadway",
      "city": "Portland",
      "region": "OR",
      "country": "US",
      "postalCode": "97205"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

## Tax Rate of Zero for a Product

Transactions can also have zero tax if they involve products that are not taxable. Some jurisdictions may choose not to tax certain products, or to tax them only in certain conditions. The jurisdiction may choose to call the product “exempt from tax”, or “nontaxable”, or simply a product with a zero tax rate. AvaTax will determine the taxability of the product based on the [TaxCode](#) you provide.

Product taxability and [TaxCode](#) are discussed in more detail in [Chapter 5 - Product Taxability](#).

## Tax Override of Zero

If you are using a tax override to import tax calculated by a different tax engine, AvaTax may assign zero tax to your transaction in order to match the functionality of your older software.

Tax Overrides are discussed in more detail in [Chapter 6 - Discounts and Overrides](#).

## 8.2 - Exemption Certificate

An Exemption Certificate provides information about the buyer or customer, and their tax status. The two most common reasons why a customer might be exempt from collecting sales tax are

- If they have a resale exemption certificate; or
- If they have a direct pay certificate.

In these cases, the seller must document the exemption certificate and be able to produce information about that certificate in the event of an audit. The [AvaTax Certificate APIs](#) provide an easy way to manage exemption certificates — and they will automatically link to your CertCapture and CertExpress accounts!

### Exemption Certificate User Interface

In the B2B world, salespeople need to enter exemption certificates all the time! Let's make their user interface as easy as possible. Our goals are to:

- Help the salesperson find the right **Customer** record.
- Tell the salesperson whether the **Customer** has a **Certificate** on file.
- If the salesperson sees that no **Certificate** is on file, we'll offer to send the customer a **CertExpressInvite**. CertExpress is a friendly web site that allows a customer to upload their exemption certificates directly - it can save the salesperson a lot of work!
- If the salesperson wants to enter a **Certificate** while they're writing the sales invoice, your software can upload a PDF or JPG file directly to the API.

Exemption Certificates are commonly used in accounting software sales order entry, but are not often seen in a web storefront. A web storefront may want to provide a **CertExpress** link on their "Account Profile" page, for example.

Let's look at the APIs available to help with each of these tasks.

### Find or Create Customer Records

First, when a user fills out a **SalesOrder** or **SalesInvoice** document, they will be expected to select the **customerCode** of the customer placing the transaction. This **customerCode** value was first explained in [Chapter 2 - Transactions](#)— but here is where we discover how it works.

You can call the ListCustomers API [check] to review a list of all the customers that have been entered. Many accounting systems prefer to provide a drop-down list of customers to choose from to help the user select the correct customer code. You might want to filter the list of customers by using the pagination features of the ListCustomers API [check] to show a small number of customers at a time, or to allow the user to search for a customer by its name.

When a salesperson user selects a customer from the drop-down list, you may want to offer to load the customer's address into the "**ShipTo**" address. This should be considered optional; many businesses have different shipping addresses for every transaction.

If the user doesn't find the customer they want, you can call the [CreateCustomers API](#) to define a customer record directly in your user interface. This customer record is necessary in order to allow the customer to upload an exemption certificate.

## Test Case 8.2.1 - Finding and Creating Customer Records

### Setup

- Call CreateCustomers with the following options:
  - CompanyId set to the company ID of your DEVGUIDE company
  - CustomerCode: RESELLER
  - Name: Alice Example
  - Address: 100 Ravine Lane, Bainbridge Island, WA 98110
  - Phone number: 949 555 1212
  - Email address: alice@example.org

### Assertions

- Customer record is created.
- The record has a valid ID number.
- The record has the customer code RESELLER.

### Expected API Call

```
[
  {
    "companyId": 12345,
    "customerCode": "RESELLER",
    "name": "Alice Example",
    "line1": "100 Ravine Lane",
    "city": "Bainbridge Island",
    "region": "WA",
    "postalCode": "98110",
    "country": "US",
    "phoneNumber": "(206) 555-1212",
    "emailAddress": "alice@example.org"
  }
]
```

## Test Case 8.2.2 - No Certificate

### Setup

- Call CreateCustomers with the following options:
  - CompanyId set to the company ID of your DEVGUIDE company
  - CustomerCode:NOCERTIFICATE
  - Name: Bob Example
  - Address: 1000 Main Street, Irvine, CA 92614
  - Phone number: 949 555 1212
  - Email address: bob@example.org

### Assertions

- Customer record is created.
- The record has a valid ID number.

- The record has the customer code NOCERTIFICATE.

### Expected API Call

```
[
  {
    "companyId": 12345,
    "customerCode": "NOCERTIFICATE",
    "name": "Bob Example",
    "line1": "1000 Main Street",
    "city": "Irvine",
    "region": "CA",
    "postalCode": "92614",
    "country": "US",
    "phoneNumber": "(949) 555-1212",
    "emailAddress": "bob@example.org"
  }
]
```

## Certificate Status

When the user has selected a **Customer** and a **ShipTo** address for the transaction, you can check to see if the customer has an exemption certificate on file. Once a customer has been selected, you can determine if the customer has an exemption certificate on file by calling **ListValidCertificatesForCustomer** using the **Country** and **Region** values from the **ShipTo** address. This API determines if a customer has an exemption certificate on file for that state.

If the API reports that a certificate is on file, you can call the **DownloadCertificateImage** API to retrieve a JPG or PDF of the certificate if the user wishes to preview the document.

If there is no certificate on file, you have two options to help the customer correctly report their certificate: you can send them an invitation to CertExpress, or you can allow the salesperson to upload a certificate image directly.

## Test Case 8.2.3 – Certificate Status

### Setup

- Call **ListValidCertificatesForCustomer** with the following options:
  - CustomerCode: RESELLER
  - Country: US
  - Region: WA

### Assertions

- The result has the value Status: NotExempt.
- The “Certificates” array in the result should be null.

### Expected API Call

```
GET /api/v2/companies/12345/customers/RESELLER/certificates/US/WA
```

## CertExpress Invitations

The [CertExpress](#) website is a friendly, step-by-step method of reporting an exemption certificate. When you send an invitation to CertExpress, the customer making a purchase can visit the website on their own time and upload an exemption certificate and all the necessary information themselves.

Unfortunately, if the customer doesn't respond to the `CertExpressInvitation` quickly enough, the certificate won't be available when they make a purchase; which is why a salesperson working hard to close a sale should always be able to choose either a CertExpress invitation or a direct upload of a certificate.

To send a CertExpress invitation to a customer, call `CreateCertExpressInvitation`. You will be asked to choose whether you want an email, download, or facsimile invitation. You can check the status of an invitation, or load an invitation you created previously, by calling `ListCertExpressInvitations`.

When creating a CertExpress invitation, you are free to select a cover letter from the available list of prebuilt cover letters. A cover letter will make an email or facsimile invitation more readable to a customer. You can either choose the value `STANDARD_REQUEST`, or call the [ListCoverLetters API](#) for a list of available prebuilt cover letters.

If you wish, you can display the hyperlink from the CertExpress invitation directly in your user interface. This allows a salesperson or customer to click the link and directly jump to the friendly introduction page on CertExpress so that they can begin uploading an exemption certificate directly.

Note that CertExpress invitations take a few moments to build a custom welcome page for your customer. When you create a CertExpress invite, check the status value of the result. If the value says "InProgress," the welcome page is currently being built. You must delay for a few seconds and fetch back the invitation using `GetCertExpressInvitation` before the URL will be ready.

## Test Case 8.2.4 - CertExpressInvitation

### Setup

- Call `CreateCertExpressInvitation` with the following options:
  - `CustomerCode`: RESELLER
  - `Recipient`: `alice@example.org`
  - `CoverLetterTitle`: `STANDARD_REQUEST`
  - `Delivery method`: `EMAIL`

### Assertions

- The status value of the invitation is `InProgress`.
- The invitation has an ID number.
- The recipient email address is `alice@example.org`.
- The `DeliveryMethod` value of the result is set to "email".

### Expected API Call

```
[
  {
    "recipient": "alice@example.org",
    "coverLetterTitle": "STANDARD_REQUEST",
    "deliveryMethod": "Email"
  }
]
```

## Uploading Certificates

If a salesperson chooses, they can take a snapshot or a scanned image of an exemption certificate and create one or more certificate directly using the [CreateCertificates API](#). Certificates created by this API are available for exemption use after a short processing delay; please make sure to accommodate a short time between creating a certificate and using the certificate.

## Test Case 8.2.5 - Uploading Certificates

### Setup

- Call the CreateCertificates API using the following information:
  - SignedDate: 2016-02-01
  - ExpirationDate: 2020-12-31
  - Filename: “exemptCert.pdf”
  - Valid: “true”
  - ExemptPercentage: 100
  - IsSingleCertificate: false
  - ExemptReason: EXPOSURE
- Customers record
  - Set the CompanyId to the ID of your DEVGUIDE company
  - CompanyCode value: RESELLER

### Exposure Zone

- Set the name of the exposure zone to Washington

### Assertions

- The exemption certificate is created and is valid in Washington

### Expected API Call

```
[
  {
    "signedDate": "2016-02-01",
    "expirationDate": "2020-12-31",
    "filename": "exemptCert.pdf",
    "valid": true,
    "exemptPercentage": 100,
    "isSingleCertificate": false,
    "exemptionReason": {
      "name": "EXPOSURE"
    },
    "customers": [
      {
        "companyId": 7370914,
        "customerCode": "RESELLER"
      }
    ],
    "exposureZone": {
      "name": "Washington"
    }
  }
]
```

## Test Case 8.2.6 - Reseller Exemption

### Setup

- Call ListValidCertificatesForCustomer with the following options:
  - CustomerCode: RESELLER
  - Country: US
  - Region: WA

### Assertions

- The result has the value Status: Exempt.
- The “Certificates” array in the result should contain the certificate created in step #1.

### Expected API Call

```
GET /api/v2/companies/12345/customers/RESELLER/certificates/US/WA
```

## Testing Exemption Certificates

Once you have created a customer and uploaded an exemption certificate, you can create a transaction and apply this exemption certificate to the transaction:

## Test Case 8.2.7 - Testing an Exemption Certificate

### Setup

- In your connector, create the following transaction:
  - Transaction Type: SalesInvoice
  - Transaction Code: Chapter-8-Test-7
  - Document Date: 2017-06-15
  - CompanyCode, Date set to reasonable default values.
  - CustomerCode set for RESELLER
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount 100
  - TaxCode P0000000
- Calculate tax for your transaction using AvaTax.
- Assertions
  - The tax for line 1 should be \$0.00.
  - The Taxable amount for line 1 should be \$0.00.
  - The Exempt amount for line 1 should be \$100.00.

## Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-8-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "RESELLER",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

## Test Case 8.2.8 - Testing an Exemption Certificate

### Setup

- Repeat the above transaction:
- All values are the same, except
  - Use the CustomerCode NOCERTIFICATE

### Assertions

- The tax for line 1 should be \$0.00.
- The Taxable amount for line 1 should be \$100.00.
- The Exempt amount for line 1 should be \$0.00.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-8-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "NOCERTIFICATE",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
```

```

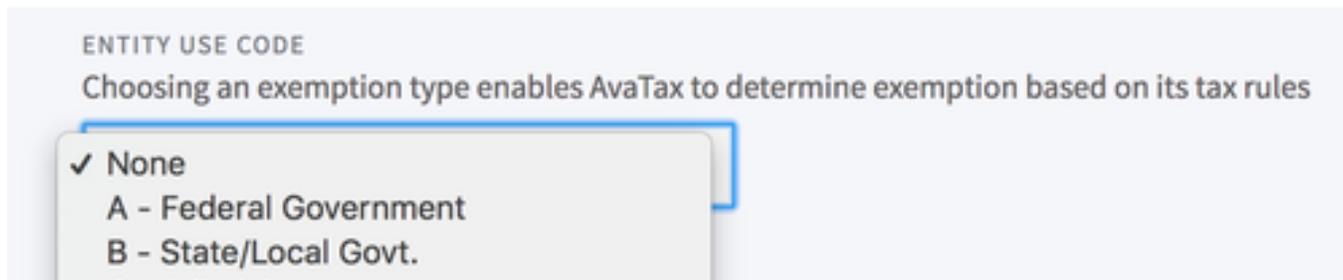
    "city": "Bainbridge Island",
    "region": "WA",
    "country": "US",
    "postalCode": "98110"
  }
},
"lines": [
  {
    "number": "1",
    "amount": 100,
    "taxCode": "P0000000"
  }
]
}

```

## 8.3 - Exemptions for Usage

In AvaTax, the `EntityUseCode` field provides information about how a transaction will be used by the customer, and information about the type of customer making the purchase. For example, a purchase made by the US federal government would be designated for government use, and it would generally be exempt or non-taxable for that specific use.

Entity Use Codes are generally displayed in the user interface of a connector as a dropdown, combo box, or selection element. This element uses the [ListEntityUseCodes API](#) to retrieve the list of available choices, and displays it as a list of values in a dropdown. The default value should be NULL, indicating that by default a transaction does not have a custom entity use code.



The value of the customer's choice is placed in the `customerUsageType` field in the [CreateTransactionModel](#) element. Here's how to find the values and put them into your transaction.

First, call the [ListEntityUseCodes API](#). The field `code` is the value you will use, and the field `name` is the description you will show to the customer. You can either show `code - name`, like `A - FEDERAL GOV`, or you can just show the name field.

First, call the [ListEntityUseCodes API](#). The field `code` is the value you will use, and the field `name` is the description you will show to the customer. You can either show `code - name`, like `A - FEDERAL GOV`, or you can just show the name field.

```

{
  "@recordsetCount": 17,
  "value": [
    {
      "code": "A",
      "name": "FEDERAL GOV",
      "description": "",
      "validCountries": [
        "US"
      ]
    },
    {
      "code": "B",
      "name": "STATE GOV",
      "description": "",
      "validCountries": [
        "US"
      ]
    }
  ]
}

```

If the customer makes a choice, put that value in the `customerUsageType` field on the [CreateTransactionModel](#) element:

```

{
  "type": "SalesInvoice",
  "companyCode": "DEFAULT",
  "date": "2017-06-16",
  ...
  "customerUsageType": "A",
  ...
}

```

If the customer does not make a choice, omit the `customerUsageType` element entirely, or set its value to null.

Since changing this value can make an entire transaction exempt, this field is not generally displayed when building a web storefront. Developers are encouraged instead to ask their customers for an exemption certificate or other documentation that can validate the claim that the customer is an exempt buyer.

## Custom Integration

It's suggested for a custom integration to implement entity use codes, if the application supports Tax Exempt sales.

## Test Case 8.3.1 - Custom Integration

### Setup

- Transactions sold with an EntityUseCode of "D" are considered sold for foreign diplomatic use.
- In the United States, foreign diplomatic sales are legally exempt from sales taxes.
- In your connector, create the following transaction:

- Transaction Type: SalesInvoice
- Transaction Code: Chapter-8-Test-2
- Document Date: 2017-06-15
- CompanyCode, Date set to reasonable default values.
- CustomerCode Set to DEF
- CustomerUsageType: D
- Addresses:
  - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA, 98110
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Calculate tax for your transaction using AvaTax.

### Assertions

- The tax for line 1 should be \$0.00.
- The Taxable amount for line 1 should be \$0.00.
- The Exempt amount for line 1 should be \$100.00.

### Expected API Call

```
{
  "type": "SalesInvoice",
  "code": "Chapter-8-Test-2",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "customerUsageType": "D",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "amount": 100,
      "taxCode": "P0000000"
    }
  ]
}
```

## 8.4 Chapter Summary

Because you have read this chapter, you should now know:

- All the factors that could cause tax on a transaction to be zero

- Which factors are company-related, which are product-related, and which are transaction-related
- How to allow a customer to choose these factors correctly in your user interface

## Document Management Requirements

**Customer Code:** Identify customer code (number, ID) to pass to the AvaTax service. Typically this is an account name, customer name, or email address on file for the customer.

**Customer Creation:** Creation of an exempt customer record triggers the creation of a customer record in CertCapture.

**Customer Updates:** When exempt customer records are updated in the application, those same updates are applied to the customer record in CertCapture.

**Request new Certificate:** As exemption certificates expire, a function to send the customer a request for a new exemption certificate is required.

**Retrieve Customer Exemption Status:** Retrieve and display exemption certificate information associated with a customer record.

**View Exemption Certificate:** View an exemption certificate associated with customer record.

## Certification Requirements

- **Exemption Number** – Customer record field populating exemption number in an AvaTax transaction. This is used for tracking those customers who have tax exempt transactions.
- **Entity/Use Code** – This is a group of codes that indicate the type of exemption. See the standard codes, but be aware that users are able to create custom codes as well. It is best to manage this value in your application's Customer record and pass it to AvaTax as CustomerUsageType at either the document or line level, whichever is applicable. Note that either Exemption Number or Entity/Use code is required (not both). Entity/Use Code is preferred.

Test cases that must be understood to correctly handle tax exemptions, including testing for:

- [8.1.1 - Companies without Nexus](#)
- [8.1.2 - NOMAD Tax](#)
- [8.2.1 - Finding and Creating Customer Records](#)
- [8.2.2 - No Certificate](#)
- [8.2.3 - Certificate Status](#)
- [8.2.4 - CertExpressInvitation](#)
- [8.2.5 - Uploading Certificates](#)
- [8.2.6 - Reseller Exemption](#)
- [8.2.7 - Testing an Exemption Certificate](#)
- [8.2.8 - Testing an Exemption Certificate](#)
- [8.3.1 - Custom Integration](#)

# Chapter 9 - Locations

Some companies with many different places of business within a state are required to participate in location-based reporting. In general, a small business will often not need to make use of location-based reporting, however, this feature becomes very critical for large businesses or franchised businesses with many retail locations.

Because this feature is required by many tax authorities for larger businesses, Avalara-certified connectors must support location-based reporting. Online storefronts and custom web shopping carts only need to implement location-based reporting if they have been requested to file location-based tax returns by a tax authority.

In this chapter, we'll discuss Locations - which in AvaTax are a record of the physical presence of a company or its personnel. By the end of this chapter, you will learn the following:

- What is location-based reporting
- How to create and manage locations
- Using location codes in transactions

Let's begin by understanding location-based reporting.

## 9.1 - About Location Based Reporting

Over time, tax authorities have gradually added more reporting requirements for businesses filing sales and transactional taxes. These reporting requirements have gradually grown to include such information as transactions by location. Some states such as California and Texas require that sellers file information about the volume of transactions that occur at each place of business where the company has a presence within the state. These forms are considered location-based reporting forms.

In order to file these forms correctly, you must set up your company as follows:

1. Define all places of business within the jurisdiction that has the location-based reporting requirement.
  - If there is any doubt as to the boundaries of this jurisdiction, it's safest to define all locations within that state.
2. Define a Default Location, which will be used to report any transactions that are not tagged to a location.
  - Your connector must indicate, on each transaction, which location will be used for reporting purposes.
3. This is done by filling out the field `reportingLocationCode` on the transaction.

Based on the laws and rules of your tax authority, you may need to consider storefronts, offices, retail locations, warehouses, field sales offices, or home offices locations. For more information on requirements, please check with your tax authority. Once you have this list it's time to begin editing - please consult the Avalara Help Center on how to add, edit, or import locations into AvaTax using the AvaTax website.

As you edit locations in the web portal, you will be asked to uniquely identify each location with a unique location code. This location code is for your convenience; it does not need to follow any state issued format. When you create locations within AvaTax, you will be prompted to answer additional questions if the state requires any additional information about each location.

Once you have added company locations in AvaTax and tagged transactions with the correct `reportingLocationCode`, the Avalara Managed Returns service will use those location codes during tax calculation to report on sales by individual location.

## 9.2 - Using Locations

To use the [Location API](#) in your connector, you must first identify what your system considers “locations”. Does your accounting system or tax platform store any of the following:

- **Addresses of warehouses** – If your platform tracks warehouses, this would be a natural fit for locations in AvaTax. It’s typically a short code that represents a specific warehouse that is managed within the platform itself.
- **Addresses of retail sales locations or field sales team members** – Many platforms track locations where sales occur. These are also a good fit for locations.
- **Manual Data Entry** – Avalara Certified connectors do not need to allow manual data entry for locations. If you would like to allow your users to enter locations for reporting purposes, we encourage you to provide a link to the Avalara AvaTax administration website where the customer can enter their locations directly.

If your platform stores information about locations and you wish to sync this data with AvaTax, you can use the [CreateLocations API](#) and the [UpdateLocation API](#) to store and maintain this data in AvaTax.

For the purposes of this chapter, let us create a new location within Texas, a state that sometimes requires location based reporting via the TX 01-115 form. Here’s how to use the [CreateLocations API](#) call to create a location within Texas:

### Test Case 9.2.1 – Creating a New Location

#### Setup

- Call the CreateLocations API call with the following information:
  - locationCode: TEXASWAREHOUSE
  - Description: “Texas Warehouse Chapter-9-Test-1”
  - addressTypeId: “Location”
  - addressCategoryId: “Warehouse”
- Addresses:
  - 600 Congress Avenue, Austin, TX 78101
  - dbaName: Developer Guide Texas Warehouse
  - outletName: Texas Warehouse
  - registeredDate: Jan 1 2015

#### Assertions

- Your location is created.
- The location code matches the value you sent in.
- The address matches the value you sent in.

#### Expected API Call

```
[
  {
    "locationCode": "TEXASWAREHOUSE",
    "description": "Chapter-9-Test-1",
    "addressTypeId": "Location",
    "addressCategoryId": "MainOffice",
    "line1": "600 Congress Avenue",
    "city": "Austin",
    "region": "TX",
```

```

    "country": "US",
    "postalCode": "78101",
    "isDefault": false,
    "isRegistered": false,
    "dbaName": "Developer Guide Texas Warehouse",
    "outletName": "Texas Warehouse",
    "registeredDate": "2015-01-01T00:00:00"
  }
]

```

## Designating Transactions for a Reporting Location

For companies that must use location-based reporting, all transactions must be tied to either a reporting location code or to a default location.

You should allow your customer to choose a reporting location code using a drop-down or multi-select interface. You can retrieve a list of valid locations by calling the [ListLocationsByCompany API](#). You should present the friendly name of the location in the drop-down or multi-select box. If your user interface permits multi-line select boxes, please also include the address of the location. The user interface box for this drop-down or multi-select box should be "Reporting Location". The default value of this box should be "None".

If the user chooses "None", you should set the `reportingLocationCode` value of your transaction to `null`. If the user selects a location, you should instead set the `reportingLocationCode` value to be the location code value from the location object.

Here's how to create a transaction tied to a reporting location:

## Test Case 9.2.2 - Designating a Reporting Location

### Setup

- In your connector, create the following transaction:
  - Document Date: 2017-06-15
  - Customer Code: TESTCUSTOMER
  - reportingLocationCode: TEXASWAREHOUSE
- Addresses:
  - SingleLocation: Send only the ZIP code 92612
- Lines:
  - Amount: 100
  - Calculate tax for your transaction using AvaTax.
  - Assertions
- The created transaction should have `reportingLocationCode = TEXASWAREHOUSE`. [Correct or need #]

### Expected API Call

```

{
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "reportingLocationCode": "TEXASWAREHOUSE",
  "addresses": {
    "singleLocation": {

```

```

    "postalCode": "92612"
  }
},
"lines": [
  {
    "amount": 100
  }
]
}

```

## Shortcut for Addresses

Optionally, you can present your customers with a convenient shortcut for choosing addresses for their transactions. Similar to choosing a value for reporting location code, you can allow customers to choose an address location code as follows.

- The customer can either hand-type an address, or they can select an existing location.
- If the customer selects an existing location, the location's address will be used instead of whatever you type in.

Now that you've created a Locations successfully it's time to use that Location data for reporting purposes on a transaction.

## Test Case 9.2.3 – Creating Address Shortcuts

### Setup

- Create a transaction using the following settings:
  - Type: SalesInvoice
  - Code: Chapter-9-Test-3
  - Addresses:
    - Type: SingleLocation
    - LocationCode: TEXASWAREHOUSE
- Lines:
  - 1 line with amount: 100
  - Create the transaction using your connector.

### Assertions

- The transaction is created as follows:
  - Address: 600 Congress Avenue, Austin, TX 78101

### Expected API Call

```

{
  "type": "SalesInvoice",
  "code": "Chapter-9-Test-3",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "TESTCUSTOMER",
  "addresses": {
    "SingleLocation": {

```

```
    "locationCode": "TEXASWAREHOUSE"  
  },  
  "lines": [  
    {  
      "amount": 100  
    }  
  ]  
}
```

## 9.3 Chapter Summary

In this chapter, you've learned how to use location codes to enable your software to use locations for tax transaction reporting.

### Certification Requirements

Avalara-certified connectors must support the ability to set a reporting location code on a transaction.

We recommend that a connector provide the following functionality:

- A link from your connector to launch the Avalara AvaTax website so that the customer can quickly review and edit locations online.
- A drop-down user interface that allows a customer to select a reporting location code from a list of defined locations.

Optionally, you can include additional features if you choose:

- You can allow customers to synchronize their location database between your platform and the AvaTax database using the [CreateLocations / UpdateLocation API](#).
- You can allow customers to fill out addresses for their transactions rapidly using the locationCode parameter of the [CreateTransaction Model](#).

These optional features are available but are not required for certified connectors.

### Tests in this chapter

- [9.2.1 - Creating a New Location](#)
- [9.2.2 - Designating a Reporting Location](#)
- [9.2.3 - Creating Address Shortcuts](#)

# Chapter 10 - Consumer Use Tax

In the previous chapters, we have been looking at transactions from the perspective of the sellers. With consumer use tax we are taking the role of the purchaser. This chapter will be of interest to you if you are creating an integration to the Accounts Payable module of your accounting software. Don't worry, the lessons you learned in the previous chapters still apply to calculating Consumer Use Tax. In fact, the API request is not altogether much different from a regular sales tax calculation.

## What is Use Tax?

In general, use tax is imposed on transactions that are subject to sales tax, but for which sales tax is not charged. The intent is to capture tax on tangible items and certain services that are sold or purchased by a company or person located out-of-state, particularly if that person or company plans to use, donate, store or consume those items out of state.

Unlike sales tax, which is normally paid by the consumer, use tax can be levied against a seller or consumer.

Why should you worry about calculating tax on purchases? Companies may have a Direct Pay Certificate, which authorizes the holder to purchase any tangible personal property, digital property, or certain services without payment of sales and use tax to vendors. Instead, a business with a direct pay permit assumes responsibility for payment of all applicable taxes directly to the tax authority. Additionally, not all vendors use AvaTax to calculate their sales tax, by verifying the tax on your vendor invoices will ensure that you are remitting the correct amount.

## 10.1 - Consumer and Sellers Use Tax

Sales tax is collected from the buyer at the point of sale and paid by the retailer to the state government that has authority over the area in the transaction is located.

Sellers use tax is the same as sales tax, the distinction here is that sellers use tax is imposed on vendors located outside of the state, but are registered to collect tax in the state. This may also be referred to as retailers use or vendors use tax.

Consumer use tax (sometimes called compensating use tax) applies to your purchase, even if sales tax does not. You'll need to pay and report the use tax when you file state income tax returns.

In addition, a use tax needs to be paid on inventory purchased sans sales tax if that inventory is later used or bartered by the company that bought it. For example, ACME computer sales purchased a lot of keyboards and did not pay sales tax on the purchase. ACME will, however, collect sales tax when the keyboards are sold to customers. If ACME takes a keyboard intended for retail sale off its shelves and either uses it during the course of daily operations or uses the keyboard to barter with the company next door, ACME will need to self-assess a use tax.

## 10.2 - Putting It All Together

In this section we will look at three of the most common use tax transactions:

- How to calculate Use Tax on a PurchaseOrder
- How to calculate Use Tax for a PurchaseInvoice sent to a vendor where no tax was calculated
- How to calculate/verify Use Tax for a PurchaseInvoice sent to a vendor with a tax calculation

### Creating a Purchase Order

In this first example, we are working in the procurement department and we need to purchase some widgets for our business to use in the office. We will provide our vendor with a purchase order, which will include an estimated

tax calculation. You'll notice that the structure of the request looks very similar to the Sales Tax requests from the previous chapters. That's because when providing a Purchase Order to a vendor we want to simulate the sales order that your vendor would send to you. There are some key differences that you should take into consideration:

- The Origin Address on the transaction should represent the address of your Vendor.
- The Destination Address on the transaction should represent the location where the goods will be consumed.
- The Document Type should be set to **SalesOrder**

## Test Case 10.2.1 - Creating a Purchase Order

### Setup

- In your connector, create the following transaction:
  - Document Type: SalesOrder
  - Document Code: Chapter-10-Test-1
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: ACME
  - Commit: False
- Addresses:
  - ShipFrom (Vendor Address): 18300 Von Karman Ave, Irvine, CA 92612 US
  - ShipTo (Location where product will be consumed): 100 Ravine, Bainbridge Island, WA 98110 US
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTaxCalculated amount should be \$9.00. This is the amount that AvaTax determined is correct.

### Expected API Call

```
{
  "type": "SalesOrder",
  "code": "Chapter-10-Test-1",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "ACME",
  "commit": "false",
  "addresses": {
    "shipFrom": {
      "line1": "18300 Von Karman Ave",
      "city": "Irvine",
      "region": "CA",
      "country": "US",
      "postalCode": "92612"
    },
    "shipTo": {
      "line1": "100 Ravine",
      "city": "Bainbridge Island",
      "region": "WA",
```

```

    "country": "US",
    "postalCode": "98110"
  }
},
"lines": [
  {
    "number": "1",
    "quantity": 10,
    "amount": 100,
    "taxCode": "P0000000",
    "itemCode": "Widget",
    "description": "Test Widget"
  }
]
}

```

With the calculated tax amount, you can send your vendor a complete purchase, including the expected sales tax. When sales tax is properly charged by vendor/supplier on its invoice, the buying company fulfills its statutory obligation to local and state taxing authorities.

### Purchase Invoice - No Vendor Assessed Tax

Ok, so let's jump ahead to when you've received your widgets along with the invoice from your vendor. Looking at the invoice, you note that tax was not assessed on the order and this item is to be consumed at your location so UseTax is applicable. So, let's take a look at how to calculate Use Tax on this transaction. Again, here are some key differences that you should take into account:

- The Origin Address on the transaction should represent the address of your Vendor.
- The Destination Address on the transaction should represent the location where the goods will be consumed.
- The Document Type should be set to **PurchaseInvoice**

## Test Case 10.2.2 - Purchase Invoice - No Vendor Assessed Tax

### Setup

- In your connector, create the following transaction:
  - Document Type: PurchaseInvoice
  - Document Code: Chapter-10-Test-2
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: ACME
  - Commit: False
- Addresses:
  - ShipFrom (Vendor Address): 18300 Von Karman Ave, Irvine, CA 92612 US
  - ShipTo (Location where product will be consumed): 100 Ravine, Bainbridge Island, WA 98110 US
- Line #1:
  - Amount: 100
  - TaxCode: P0000000

- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTaxCalculated amount should be \$9.00. This is the amount that AvaTax determined is correct.

### Expected API Call

```
{
  "type": "PurchaseInvoice",
  "code": "Chapter-10-Test-2",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "ACME",
  "commit": "false",
  "addresses": {
    "ShipFrom": {
      "line1": "18300 Von Karman Ave",
      "city": "Irvine",
      "region": "CA",
      "country": "US",
      "postalCode": "92612"
    },
    "ShipTo": {
      "line1": "100 Ravine",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  },
  "lines": [
    {
      "number": "1",
      "quantity": 10,
      "amount": 100,
      "taxCode": "P0000000",
      "itemCode": "Widget",
      "description": "Test Widget"
    }
  ]
}
```

Payment of sales/use tax is the responsibility of the company making any taxable purchase. When the buying company makes a purchase and the supplier/vendor does not charge sales tax on a taxable purchase, it becomes the buying company's responsibility to assess/calculate, verify, accrue, and file/remmit the tax due in the form of use tax.

### Purchase Invoice - With Vendor Assessed Tax

This time, let's imagine that your widget vendors invoice did note some sales tax. However, it may not be the value you are expecting, let's take a look at how you can check the calculation to determine if it is correct. Like the previous example, here are the key differences that you should take into account:

- The Origin Address on the transaction should represent the address of your Vendor.
- The Destination Address on the transaction should represent the location where the goods will be consumed.
- The Document Type should be initially set to **PurchaseOrder**
- The Vendor Assessed Tax should be noted as a **TaxOverride/TaxAmount**.

## Test Case 10.2.3 - Purchase Invoice with Vendor Assessed Tax

### Setup

- In your connector, create the following transaction:
  - Document Type: PurchaseInvoice
  - Document Code: Chapter-10-Test-3
  - Company Code: DEVGUIDE
  - Document Date: 2017-06-15
  - Customer Code: ACME
  - Commit: False
- Addresses:
  - ShipFrom (Vendor Address): 18300 Von Karman Ave, Irvine, CA 92312 US
  - ShipTo (Location where product will be consumed): 100 Ravine, Bainbridge Island, WA 98110 US
- Line #1:
  - Amount: 100
  - TaxCode: P0000000
  - TaxOverride/TaxAmount -\$8 [Is this negative \$8 or \$8?]
- Calculate tax for your transaction using AvaTax.

### Assertions

- The totalTax returned is \$8
- This is the tax charged by the vendor on the Invoice
- The totalTaxCalculated is \$9
- This is the tax amount calculated by AvaTax for this transaction.
- The documentType is set to PurchaseOrder, meaning this is a temporary document and not recorded to AvaTax

### Expected API Call

```
{
  "type": "PurchaseOrder",
  "code": "Chapter-10-Test-3",
  "companyCode": "DEVGUIDE",
  "date": "2017-06-15",
  "customerCode": "ACME",
  "commit": "false",
  "addresses": {
    "ShipFrom": {
      "line1": "18300 Von Karman Ave",
      "city": "Irvine",
      "region": "CA",
      "country": "US",
      "postalCode": "92612"
    },
  },
}
```

```

“ShipTo”: {
  “line1”: “100 Ravine”,
  “city”: “Bainbridge Island”,
  “region”: “WA”,
  “country”: “US”,
  “postalCode”: “98110”
}
},
“lines”: [
  {
    “number”: “1”,
    “quantity”: 10,
    “amount”: 100,
    “taxCode”: “P0000000”,
    “itemCode”: “Widget”,
    “description”: “Test Widget”,
    “taxOverride”:{
      “type”: “taxAmount”,
      “taxAmount”: 8,
      “reason”: “Vendor assessed tax”
    }
  }
]
}

```

Now, let’s take a closer look at the returned results, here we can get a good look at the accuracy of your vendor’s tax calculation:

There are two key fields that we need to look at in the returned results, `totalTax` and `totalTaxCalculated`. The `totalTax` field will display the tax that was assessed by the vendor, in our case this was \$8. The `totalTaxCalculated` will display the tax amount calculated by AvaTax, in our case AvaTax returned \$9 in tax.

Now, with this information the user can make an informed decision. They can either accept the AvaTax calculated Use Tax in total, accept the difference between AvaTax calculated Use Tax and the vendor charged tax (only if the AvaTax Calculated amount is larger than the vendor charged tax) or edit the Use Tax amount to a desired amount, including \$0.00.

Once the user has determined the correct Use Tax to be applied to this order, the transaction can be recorded to AvaTax. Similar to the sales document workflow, you will need to update the `Type` field from `PurchaseOrder` to `PurchaseInvoice` for the transaction to be recorded to AvaTax.

Once again, payment of sales/use tax is the responsibility of the company making any taxable purchase. When the buying company makes a purchase and the supplier/vendor does not charge the appropriate sales tax on a taxable purchase, it becomes the buying company’s responsibility to assess/calculate, verify, accrue, and file/remittance the tax due in the form of use tax.

## 10.3 Chapter Summary

In summary, you should be able to:

- Identify the difference between Consumer Use Tax and Sellers Use tax.

- Calculate tax correctly on a Purchase Order.
- Calculate tax on a vendor invoice that does not have tax.
- Verify the tax on a vendor invoice and make an informed decision recording the liability.

## Certification Requirements

Please see the following link for a comprehensive listing of requirements for [Use Tax Certification](#).

### Tests

- [10.2.1 - Creating a Purchase Order](#)
- [10.2.2 - Purchase Invoice - No Vendor Assessed Tax](#)
- [10.2.3 - Purchase Invoice with Vendor Assessed Tax](#)

# Chapter 11 - Calculating Tax Offline

Designing robust software means planning for every eventuality. To create a world-class product using AvaTax, you need to be prepared for when things go wrong - and one of the problems you may face is the loss of your Internet connection. Fortunately, there are ways to write your software to gracefully handle a dropped connection.

It's first important to identify a few different types of connection issues:

- **Temporary Outage** – Your connection has gone offline, and you need to be able to process transactions for a short period of time until the connection is restored. In this case, the biggest challenge is ensuring that your software keeps track of all calculations handled offline and reconciles them when you come back online. An example of a temporary outage would be when your network router loses power and needs a few minutes to reboot.
- **Intermittent Connection**– Your connection works most of the time, but its behavior is unpredictable. In this case, you need to be able to handle a timeout problem or a connection interruption problem gracefully and still perform tax calculation as precisely as possible. An example of an intermittent connection would be mobile cellular internet service for a remote cash register at a city park.
- **Unable to Reach AvaTax** – If your connection is up, but you are unable to reach AvaTax, there may be a more complex problem - there could be a routing problem, or a denial-of-service attack on an Internet service provider, or AvaTax could be temporary offline due to an outage. In this case, you need to continue to provide tax determination for your customers and store transactions for later reconciliation.

These three types of outages have similar characteristics, so it's straightforward to design a single process to handle all of them. Here is how we handle a broken connection:

- Detect the dropped connection and prevent a crash
- Retry the transaction, or fallback to a default tax rate
- Reconcile offline transactions after the outage

Let's look at each of these challenges separately.

## 11.1 - Detecting a Dropped Connection

In [Chapter 1.3 - Troubleshooting](#), we briefly explained how to handle AvaTax error messages. Errors related to offline tax calculation can be more complex because sometimes you may receive an error from AvaTax and in other times you may receive an error from your operating system or software development suite indicating that a connection has been dropped.

When you receive an error message from AvaTax, the best practice is to display that error to the operator or visitor and allow them to determine how to proceed. For example, if you receive the error [EntityNotFoundError](#) from the API, you have searched for a document that does not exist. This error should be shown to the user; it will help them determine how to proceed. They may have mistyped the document code.

```
{
  "error": {
    "code": "EntityNotFoundError",
    "message": "Document with ID 'TESTINGCO - 100' not found.",
    "target": "HttpRequest",
    "details": [
      {
        "code": "EntityNotFoundError",
        "number": 4,
        "message": "Document with ID 'TESTINGCO - 100' not found.",
        "faultCode": "Client",
        "helpLink": "/avatax/errors/EntityNotFoundError",
        "severity": "Error"
      }
    ]
  }
}
```

If you receive an error message that indicates that your API call has failed, or your connection has been broken, or there has been a timeout, your error message may come from the operating system rather than AvaTax. For example, using the AvaTax SDK in C#, this code will catch errors sent from AvaTax:

```
TransactionModel t;
try {
    t = Client.CreateTransaction(model);
} catch (AvaTaxError err) {
    ... code to respond to the error ...
}
```

A dropped connection will produce a different kind of error - for example, ASP.NET Core produces a `WinHttpException` when a connection is dropped using `HttpClient`. Our task is to identify how our operating system or programming language exposes a connection error. Once you have identified this error, your code must trap the exception and ensure that you can respond correctly and prevent the exception from being exposed to the end user.

But how do we test this code? If a connection interruption is an unpredictable occurrence, how can you evaluate it? AvaTax provides an interesting feature called `ForceTimeout`. This feature is intended to allow you to fine-tune your client-side timeout logic, and reliably cause a timeout that you can use for integration testing.

When you use the `ForceTimeout` feature, AvaTax will do the following:

- Delay for 30 seconds
- Throw an error of type `ForceTimeoutError`

We recommend that your application should select an appropriate timeout value for your needs. We cannot tell you exactly what timeout value is best for you; but in our experience, interactive web applications tend to have a shorter timeout and desktop accounting programs tend to have a longer timeout. Here's the test you should be able to execute:

## Test Case 11.1.1 - Detecting a Dropped Connection

### Setup

- Call CreateTransaction with the option `$include=ForceTimeout`

### Assertions

- If your code has a timeout value selected, you should receive an operating system or programming language specific error message related to the timeout of this API call.

Now that you've simulated a timeout in your application, the next step is to decide whether to retry your transaction or fallback to a default tax rate calculation.

## 11.2 - Retry or Fallback

After your application detects a timeout, it must next make a decision whether to retry the transaction or fallback to a default tax rate. We cannot recommend which specific approach will be right for your program, but we can encourage you to consider a few key risks when retrying a transaction:

- Some programs attempt to reuse HTTP connections. In the event that you experience a connection disruption, we encourage you to create a completely new connection for the next attempt.
- If you experienced a timeout, you don't know whether AvaTax received your original API call. The API call may have been received and processed successfully, but the response was not received by your code. If you were creating a permanent document such as a **SalesInvoice**, you should retry your transaction using [CreateOrAdjustTransaction](#). This API call will work correctly in either case: if the original API call failed, the document will be created; if the original API call succeeded, the transaction will be adjusted.

If you decide instead to fallback to a default rate, you have a different set of concerns:

- For transactions shipped around the country, a customer may not be obligated to collect tax in each jurisdiction if they do not have nexus in a jurisdiction. If you collect tax in a jurisdiction, you are legally obligated to remit it.
- Tax rates vary by product type, sourcing rules, and other considerations. If you use a default tax rate that happens to be higher than the actual final tax rate, you are obligated to remit the "OverCollected" amount.

AvaTax provides the [TaxContent APIs](#) for you to determine sensible default tax rates for your locations. These TaxContent APIs will give you more precise tax rates for a variety of locations around the United States and is especially useful for programmers developing a retail point-of-sale (POS) based solution. The API produces a file that contains tax rates and rules for items and locations that can be used to correctly calculate tax in the event a POS device is not able to reach AvaTax.

Here's how the TaxContent API works:

- Use the [CreateLocation API](#) to create one location record for each physical retail presence you have.
- Determine all the TaxCodes appropriate to products sold by your business.
- On startup, your program should call the [BuildTaxContentFile API](#) to download default tax rates for the matrix of locations and tax codes for today.

This data file will help ensure more accuracy in your tax calculation. It is not a perfect substitute for calling CreateTransaction directly, but it is more precise than using a default rate for a postal code.

## Test Case 11.2.1 - Retry or Fallback

### Setup

- Create a location using `CreateLocation`
  - `LocationCode`: 01
  - `Address`: 100 Ravine Lane, Bainbridge Island, WA 98110
- Create a location using `CreateLocation`
  - `LocationCode`: 02
  - `Address`: 18300 Von Karman Ave, Irvine, CA 92612
- Call the `BuildTaxContentFile` API
  - `TaxCodes`: PC040100 (Clothing) and PF050112 (Soft Drinks)
  - `LocationCodes`: 01 and 02

### Assertions

- You should receive back four lines:
  - Tax rates for clothing in Irvine, CA
  - Tax rates for soft drinks in Irvine, CA
  - Tax rates for clothing on Bainbridge Island, WA
  - Tax rates for soft drinks on Bainbridge Island, WA

### Expected API Call

```
{
  "companyCode": "DEFAULT",
  "documentDate": "2017-06-27T18:18:44.8781843Z",
  "responseType": "Json",
  "taxCodes": [
    "PC040100",
    "PF050112"
  ],
  "locationCodes": [
    "01",
    "02"
  ],
  "includeJurisCodes": true
}
```

Another approach to fallback tax is to use a postal code rates table. Avalara provides the [DownloadTaxRatesByZipCode API](#) which you can use to determine the sales tax rate for tangible personal property in a jurisdiction. This approach produces a very simple rate value, however it overlooks much of the complexity of tax law.

Whatever approach you select, please be aware that the cardinal rule of tax auditors is what whatever amount of tax you collect, you must remit. If you accidentally overcollect tax you must still remit the amount you collected. If you collect tax in a jurisdiction where you are not registered as a business, you must choose to either register your business and begin filing taxes or refund the tax collected to the customer. For specific advice on tax over-collection policies, please contact [Avalara's Professional Services](#) team for advice suitable to your business - this developer guide is not a substitute for obtaining professional compliance advice.

Next, let's look at how you can reconcile a transaction after your outage is resolved and you are back online.

## 11.3 - Tax Content API

### The Tax Content API Response

Avalara's Tax Content API provides businesses with the content required to calculate tax locally in a disconnected environment. The Content API response includes tax jurisdiction, tax rate, and product/service taxability information for each Tax Code and storefront Location configured in your AvaTax account. To begin, let's take a look at the fields included in a Tax Content API response.

Here are the details for each field included in a Tax Content API response:

SCENARIOID	FIELD DESCRIPTION	SAMPLE DATA
ScenarioId	This field is used to group tax scenarios together. A tax scenario will consist of a single Location and single Tax Code	1
EffDate	The date the tax information becomes effective	4/1/2011 12:00:00 AM
EndDate	The date the tax information is no longer effective. Tax data is effective on this date, but is not effective on the following date	12/31/9999 12:00:00 AM
LocationCode	Unique location identifier	001
TaxCode	Avalara System Tax Code or Custom Tax Code	P0000000
ShipToCity	The ship-to city	Durham
ShipToCounty	The ship-to county	DURHAM
ShipToState	The ship-to state	NC
ShipToPostalCode	Postal code associated with the location address	27707-1764
ShipToCountry	The ship-to country	US
JurisType	The jurisdiction type. There are five supported values - Country, State, County, City, Special	State
JurisCode	Unique numeric, alpha, or alphanumeric code identifying a jurisdiction. This field is optional	001, EKTFO
JurisName	The name of the jurisdiction that corresponds to this tax record	NORTH CAROLINA
TaxType	The tax type associated with the rate	Sales
Tax_Description	The description of the tax	NC STATE TAX
Tax_Rate	The tax rate. "0.03" corresponds to 3%. Exempt records will have a rate of 0.	0.03

Cap	Applies a cap to the taxable amount. Amounts up to the cap are taxable. Amounts over the cap are non-taxable. The tax rate applies to the taxable amount.	0
Threshold	Applies a threshold to the taxable amount. Amounts up to and including the threshold are non-taxable. Amounts over the threshold are taxable. The tax rate applies to the taxable amount.	100
TaxRuleOptions	Applies a special tax scenario rule to the transaction. There is only one supported value at this time: TaxAll. With a threshold, this rule taxes the entire amount once the total is over the threshold	TaxAll
TaxApplicationLevel	This field is not used at this time, but will be leveraged for tax-on-tax scenarios in the future. This field will define the order in which taxes are applied in a tax-on-tax scenario and the tax base for each individual tax	N/A

## Consuming Tax Content

In order to calculate tax locally, you'll need to implement logic in your native POS application that can correctly interpret and calculate tax using the data from the Tax Content API. The next sections will review common use cases for leveraging the Tax Content API results to calculate tax locally.

## Thresholds & Caps

This section is about interpreting Cap & Threshold values included in Tax Content API results. By the end of this section, you will learn the following

- How to interpret Threshold and Cap values
- How to interpret TaxRule Options associated with Cap and Threshold values

## Assertions

- Address: 82 Smith St, Providence, RI 02903-1105
- Tax Code(\$): PC040100

## Expected API Result

```
[
  {
    "ScenarioId": 1,
    "EffDate": "12/1/2013 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "RI001",
    "TaxCode": "PC040100",
    "ShipToCity": "Providence",
    "ShipToCounty": "PROVIDENCE",
    "ShipToState": "RI",
    "ShipToPostalCode": "02903-1105",
    "ShipToCountry": "US",
    "JurisType": "State",
    "JurisName": "RHODE ISLAND",
    "TaxType": "Sales",
    "Tax_Description": "RI STATE TAX",
    "Tax_Rate": 0.07,
    "Cap": "0",
    "Threshold": "250.000000",
    "TaxRuleOptions": "",
    "TaxApplicationLevel": ""
  }
]
```

As noted in [Chapter 1](#), the Threshold field applies a threshold to the taxable amount. Amounts up to and including the threshold are non-taxable. Amounts over the threshold are taxable. The tax rate included in the API response applies to the taxable amount. In this example, the Threshold value is \$250, meaning the products you associate with Tax Code PC040100 for this Location would not become taxable until they were sold for more than \$250.

Let's look at a transaction where the LineAmount is \$200.00

JURISDICTIONNAME	LINEAMOUNT	TAX BASE	RATE	TAX
RHODE ISLAND	\$200.00	\$0.00	0.07	\$0.00

No tax should be calculated because the LineAmount is below the \$250.00 threshold state in the Tax Content API results.

Now, let's look at a transaction where the LineAmount is \$300.00

JURISDICTIONNAME	LINEAMOUNT	TAX BASE	RATE	TAX
RHODE ISLAND	\$300.00	\$50.00	0.07	\$3.50

Tax was calculated against \$50.00 of the LineAmount because that is the amount that exceeded the \$250.00 threshold stated in the Tax Content API results.

## Thresholds and TaxAll TaxRuleOption

### Assertions

- Location Address: 50 5th Ave, New York, NY 10118  
Tax Code(s): PC040100

## Expected API Result

Assuming nexus is configured for the state of New York, the Tax Content API will produce the following response for the asserted Address and Tax Code. The Tax Content API will return three records that share a single ScenarioId. These results represent the taxing jurisdictions and their associated tax rules and rates that are applicable to the Location and TaxCode specified in the results. These results should be used in conjunction with one another for the specified LocationCode and TaxCode.

```
[
  {
    "ScenarioId": 1,
    "EffDate": "4/1/2011 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "NY001",
    "TaxCode": "PC040100",
    "ShipToCity": "New York",
    "ShipToCounty": "NEW YORK",
    "ShipToState": "NY",
    "ShipToPostalCode": "10118-0110",
    "ShipToCountry": "US",
    "JurisType": "City",
    "JurisName": "NEW YORK CITY",
    "TaxType": "Sales",
    "Tax_Description": "NY CITY TAX",
    "Tax_Rate": 0.045,
    "Cap": "0",
    "Threshold": "110.000000",
    "TaxRuleOptions": "TaxAll",
    "TaxApplicationLevel": ""
  },
  {
    "ScenarioId": 1,
    "EffDate": "4/1/2012 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "NY001",
    "TaxCode": "PC040100",
    "ShipToCity": "New York",
    "ShipToCounty": "NEW YORK",
    "ShipToState": "NY",
    "ShipToPostalCode": "10118-0110",
    "ShipToCountry": "US",
    "JurisType": "State",
    "JurisName": "NEW YORK",
    "TaxType": "Sales",
    "Tax_Description": "NY STATE TAX",
    "Tax_Rate": 0.04,
    "Cap": "0",
    "Threshold": "110.000000",
    "TaxRuleOptions": "TaxAll",
    "TaxApplicationLevel": ""
  },
  {
```

```

    "ScenarioId": 1,
    "EffDate": "4/1/2012 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "NY001",
    "TaxCode": "PC040100",
    "ShipToCity": "New York",
    "ShipToCounty": "NEW YORK",
    "ShipToState": "NY",
    "ShipToPostalCode": "10118-0110",
    "ShipToCountry": "US",
    "JurisType": "Special",
    "JurisName": "METROPOLITAN COMMUTER TRANSPORTATION DISTRICT",
    "TaxType": "Sales",
    "Tax_Description": "NY SPECIAL TAX",
    "Tax_Rate": 0.00375,
    "Cap": "0",
    "Threshold": "110.000000",
    "TaxRuleOptions": "TaxAll",
    "TaxApplicationLevel": ""
  }
]

```

In this example, the Threshold value is \$110 for all three records meaning the products associated with PC040100 for this LocationCode would not become taxable until they were sold for \$110.00 or more. Additionally, TaxRuleOptions field includes the "TaxAll" value. With TaxAll, the entire LineAmount becomes taxable once the threshold is met. This is different from the Rhode Island example in the previous section where the amount up to and including the Threshold was bucketed as exempt, while any amount over the Threshold was bucketed as taxable.

Let's look at a transaction where the LineAmount is \$100.00.

JURISDICTIONNAME	LINEAMOUNT	TAX BASE	RATE	TAX
NEW YORK	\$100.00	\$0.00	0.04	\$0.00
NEW YORK CITY	\$100.00	\$0.00	0.045	\$0.00
METROPOLITAN COMMUTER TRANSPORTATION DISTRICT	\$100.00	\$0.00	0.00375	\$0.00

No tax was calculated because the LineAmount was below the \$110.00 threshold state in the Tax Content API results.

Now, let's look at a transaction where the LineAmount is \$125.

JURISDICTIONNAME	LINEAMOUNT	TAX BASE	RATE	TAX
NEW YORK	\$125.00	\$125.00	0.04	\$5.00
NEW YORK CITY	\$125.00	\$125.00	0.045	\$5.63
METROPOLITAN COMMUTER TRANSPORTATION DISTRICT	\$125.00	\$125.00W	0.00375	\$0.47

Tax was calculated against the entire LineAmount because the LineAmount exceeded the Threshold value and the

TaxAll TaxRuleOption was applicable.

## Caps

### Assertions

- Location Address: 201 Criser Hall, Gainesville, FL 32611  
Tax Code(s): P0000000

### Expected API Result

Assuming nexus is configured for the state of Florida, the Tax Content API will produce the following response for the asserted Address and Tax Code. The Tax Content API will return two records that share a single ScenarioId. These results represent the taxing jurisdictions and their associated tax rules and rates that are applicable to the Location and TaxCode specified in the results. These results should be used in conjunction with one another for the specified LocationCode and TaxCode.

```
[
  {
    "ScenarioId": 1,
    "EffDate": "1/1/2017 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "FL",
    "TaxCode": "P0000000",
    "ShipToCity": "GAINESVILLE",
    "ShipToCounty": "ALACHUA",
    "ShipToState": "FL",
    "ShipToPostalCode": "32611-4000",
    "ShipToCountry": "US",
    "JurisType": "County",
    "JurisName": "ALACHUA",
    "TaxType": "Sales",
    "Tax_Description": "FL COUNTY TAX",
    "Tax_Rate": 0.005,
    "Cap": "5000.000000",
    "Threshold": "0.000000",
    "TaxRuleOptions": "",
    "TaxApplicationLevel": ""
  },
  {
    "ScenarioId": 1,
    "EffDate": "1/1/2017 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "FL",
    "TaxCode": "P0000000",
    "ShipToCity": "GAINESVILLE",
    "ShipToCounty": "ALACHUA",
    "ShipToState": "FL",
    "ShipToPostalCode": "32611-4000",
    "ShipToCountry": "US",
    "JurisType": "State",
    "JurisName": "FLORIDA",
    "TaxType": "Sales",
```

```

    "Tax_Description": "FL STATE TAX",
    "Tax_Rate": 0.06,
    "Cap": "0.000000",
    "Threshold": "0.000000",
    "TaxRuleOptions": "",
    "TaxApplicationLevel": ""
  }
]

```

JURISDICTIONNAME	LINEAMOUNT	TAX BASE	RATE	TAX
FLORIDA	\$4,500.00	\$4,500.00	0.06	\$270.00
ALACHUA	\$4,500.00	\$4,500.00	0.005	\$22.50

Tax was calculated on the full LineAmount for the State because there was no Cap stated in the Tax Content API results.

Tax was calculated on the full LineAmount for the County because the LineAmount was below the \$5,000 Cap stated in the Tax Content API results.

Now, let's look at a transaction where the LineAmount is \$7,000.

JURISDICTIONNAME	LINEAMOUNT	TAX BASE	RATE	TAX
FLORIDA	\$7,000.00	\$7,000.00	0.06	\$420.00
ALACHUA	\$7,000.00	\$5,000.00	0.005	\$25.00

Tax was again calculated on the full LineAmount for the State because there was no Cap stated in the Tax Content API results.

Tax was only calculated on the first \$5,000 for the county because the LineAmount exceeded the \$5,000 Cap stated in the Tax Content API results.

## Sales Tax Holidays

Many states offer annual sales tax holidays, providing a reduction or elimination of sales tax on specific categories of products for a short period of time. This section is about interpreting Tax Content API results for Sales Tax Holidays. By the end of this section, you will learn the following:

- How to interpret Sales Tax Holidays results
- How to differentiate between Sales Tax Holiday results and normal tax content results

## Sales Tax Holiday Results

### Assertions

- Address: 2501 4th Ave, Canyon, TX 79016-0001
- Tax Code(s): PC040100
- DocumentDate: 8/10/2017, 8/11/2017

### Expected API Result

Assuming nexus is configured for the state of Texas, the Tax Content API will produce the following responses for the asserted Address, Tax Code, and DocumentDates. The Tax Content API will return two records in each response that share a single Scenarioid. These results represent the taxing jurisdictions and their associated tax rules

and rates that are applicable to the Location and TaxCode specified in the results. These results should be used in conjunction with one another for the specified LocationCode and TaxCode.

DocumentDate: 8/10/2017

```
[
  {
    "ScenarioId": 1,
    "EffDate": "8/1/2010 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "TX",
    "TaxCode": "PC040100",
    "ShipToCity": "Canyon",
    "ShipToCounty": "RANDALL",
    "ShipToState": "TX",
    "ShipToPostalCode": "79016-0001",
    "ShipToCountry": "US",
    "JurisType": "City",
    "JurisName": "CANYON",
    "TaxType": "Sales",
    "Tax_Description": "TX CITY TAX",
    "Tax_Rate": 0.02,
    "Cap": "0",
    "Threshold": "0",
    "TaxRuleOptions": "",
    "TaxApplicationLevel": ""
  },
  {
    "ScenarioId": 1,
    "EffDate": "8/1/2010 12:00:00 AM",
    "EndDate": "12/31/9999 12:00:00 AM",
    "LocationCode": "TX",
    "TaxCode": "PC040100",
    "ShipToCity": "Canyon",
    "ShipToCounty": "RANDALL",
    "ShipToState": "TX",
    "ShipToPostalCode": "79016-0001",
    "ShipToCountry": "US",
    "JurisType": "State",
    "JurisName": "TEXAS",
    "TaxType": "Sales",
    "Tax_Description": "TX STATE TAX",
    "Tax_Rate": 0.0625,
    "Cap": "0",
    "Threshold": "0",
    "TaxRuleOptions": "",
    "TaxApplicationLevel": ""
  }
]
```

DocumentDate: 8/11/2017

```
[
  {
    "ScenarioId": 1,
    "EffDate": "8/11/2017 12:00:00 AM",
    "EndDate": "8/13/2017 12:00:00 AM",
    "LocationCode": "TX",
    "TaxCode": "PC040100",
    "ShipToCity": "Canyon",
    "ShipToCounty": "RANDALL",
    "ShipToState": "TX",
    "ShipToPostalCode": "79016-0001",
    "ShipToCountry": "US",
    "JurisType": "City",
    "JurisName": "CANYON",
    "TaxType": "Sales",
    "Tax_Description": "TX CITY TAX",
    "Tax_Rate": 0.02,
    "Cap": "0",
    "Threshold": "100.000000",
    "TaxRuleOptions": "TaxAll",
    "TaxApplicationLevel": ""
  },
  {
    "ScenarioId": 1,
    "EffDate": "8/11/2017 12:00:00 AM",
    "EndDate": "8/13/2017 12:00:00 AM",
    "LocationCode": "TX",
    "TaxCode": "PC040100",
    "ShipToCity": "Canyon",
    "ShipToCounty": "RANDALL",
    "ShipToState": "TX",
    "ShipToPostalCode": "79016-0001",
    "ShipToCountry": "US",
    "JurisType": "State",
    "JurisName": "TEXAS",
    "TaxType": "Sales",
    "Tax_Description": "TX STATE TAX",
    "Tax_Rate": 0.0625,
    "Cap": "0",
    "Threshold": "100.000000",
    "TaxRuleOptions": "TaxAll",
    "TaxApplicationLevel": ""
  }
]
```

In this example, we have two API calls, one with a DocumentDate of 8/10/2017 and another with a DocumentDate of 8/11/2017. You'll notice, the results of these API calls are different. Specifically, the range of the Effective and End Dates of the second API result fall in between the Effective and End Dates of the first.

If a transaction occurred on or before 8/10/2017, the first response would be applicable because it falls outside of the date range for the SalesTax Holiday Content.

EFFDATE	ENDDATE	JURISNAME	TAX_RATE	CAP	THRESHOLD	TAXRULEOPTIONS
8/1/2010	12/31/9999	TEXAS	0.0625	0	0	
8/1/2010	12/31/9999	CANYON	0.002	0	0	
8/11/2017	08/13/2017	TEXAS	0.0625	0	100.00	TaxAll
8/11/2017	08/13/2017	CANYON	0.0625	0	100.00	TaxAll

If a transaction occurred between 8/11/2017 and 8/13/2017, the second response would be applicable and the Threshold and TaxRuleOptions should be applied.

EFFDATE	ENDDATE	JURISNAME	TAX_RATE	CAP	THRESHOLD	TAXRULEOPTIONS
8/1/2010	12/31/9999	TEXAS	0.0625	0	0	
8/1/2010	12/31/9999	CANYON	0.002	0	0	
8/11/2017	08/13/2017	TEXAS	0.0625	0	100.00	TaxAll
8/11/2017	08/13/2017	CANYON	0.0625	0	100.00	TaxAll

If a transaction occurred after 8/14/2017, the first response would again be applicable because it falls outside of the date range for the SalesTax Holiday Content.

EFFDATE	ENDDATE	JURISNAME	TAX_RATE	CAP	THRESHOLD	TAXRULEOPTIONS
8/1/2010	12/31/9999	TEXAS	0.0625	0	0	
8/1/2010	12/31/9999	CANYON	0.002	0	0	
8/11/2017	08/13/2017	TEXAS	0.0625	0	100.00	TaxAll
8/11/2017	08/13/2017	CANYON	0.0625	0	100.00	TaxAll

The Tax Content API only supports a single DocumentDate per API call, but users are able to call the API with a post-dated DocumentDate to retrieve content that will be effective in the future.

## 11.4 - Reconcile Transactions After Outage

If you used a fallback tax rate for a permanent transaction, you must reconcile the transaction after your application comes back online. Temporary transactions such as [SalesOrder](#) tax estimates do not need to be reconciled; similarly, if you retry a transaction one or more times using [CreateOrAdjustTransaction](#) and the API call eventually succeeds, you also do not need to reconcile the transaction.

The necessary steps to reconcile transactions after an outage is as follows:

- Save the original API call (e.g the [CreateTransactionModel](#) object), along with the tax amount you used as a fallback.
- Apply a [TaxOverride](#) of type [TaxAmount](#) to your [CreateTransactionModel](#).

- Call the [CreateOrAdjustTransaction API](#) to reconcile the transaction correctly regardless of whether the original API call succeeded.

Here's how this task works:

## Test Case 11.4.1 - Reconcile Transactions After Outage

### Setup

- Call CreateOrAdjustTransaction with these parameters:
  - Date: 2017 06 15
  - Address - SingleLocation: 100 Ravine Lane NE, Bainbridge Island, WA 98110
- Lines
  - qty: 1
  - TaxCode: P0000000
  - amount: 100
- TaxOverride
  - Type: TaxAmount
  - Amount: 10

### Assertions

- There is a difference between the TaxCollected and Tax value
- The Tax value is 10
- The TaxCalculated value is 9.
- The difference between Tax and TaxCalculated means that AvaTax determined that you overcollected by \$1.
- For customers using Avalara Managed Returns, this overcollect amount will be automatically reported on your next tax filing.
- Customers filing returns outside of Avalara must ensure that this overcollection amount is correctly reported.

### Expected API Call

```
{
  "lines": [
    {
      "amount": 100,
      "taxCode": "P0000000"
    }
  ],
  "type": "SalesInvoice",
  "companyCode": "DEFAULT",
  "date": "2017-06-15",
  "customerCode": "ABC",
  "addresses": {
    "singleLocation": {
      "line1": "100 Ravine Lane NE",
      "city": "Bainbridge Island",
      "region": "WA",
      "country": "US",
      "postalCode": "98110"
    }
  }
}
```

```
},  
  "taxOverride": {  
    "type": "taxAmount",  
    "taxAmount": 10.0,  
    "reason": "Tax calculated offline"  
  }  
}
```

You have now enabled your software to respond gracefully to a temporary outage in connectivity, and to prepare your transaction correctly.

Consuming sales tax related services can be considered mission-critical, especially when making calculation queries through the AvaTax product. As a cloud-based Software-as-a-Service provider, Avalara understands the need to ensure that our services are available continuously and respond in a timely manner. Avalara's Server Status can be viewed publicly at [status.avalara.com](https://status.avalara.com). This page outlines the availability of the service, current performance in terms of response time and a historical view of the availability for the past week.

## Certification Requirements

Your software must be able to handle a timeout and retry the transaction.

If your software allows fallback to a default tax rate, your program must store transactions for later reconciliation using a TaxOverride.

Your software should be able to pass these integration tests:

- [11.1.1- Detecting a Dropped Connection](#)
- [11.2.1 - Retry or Fallback](#)
- [11.4.1 - Reconcile Transactions After Outage](#)

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## Special Thanks

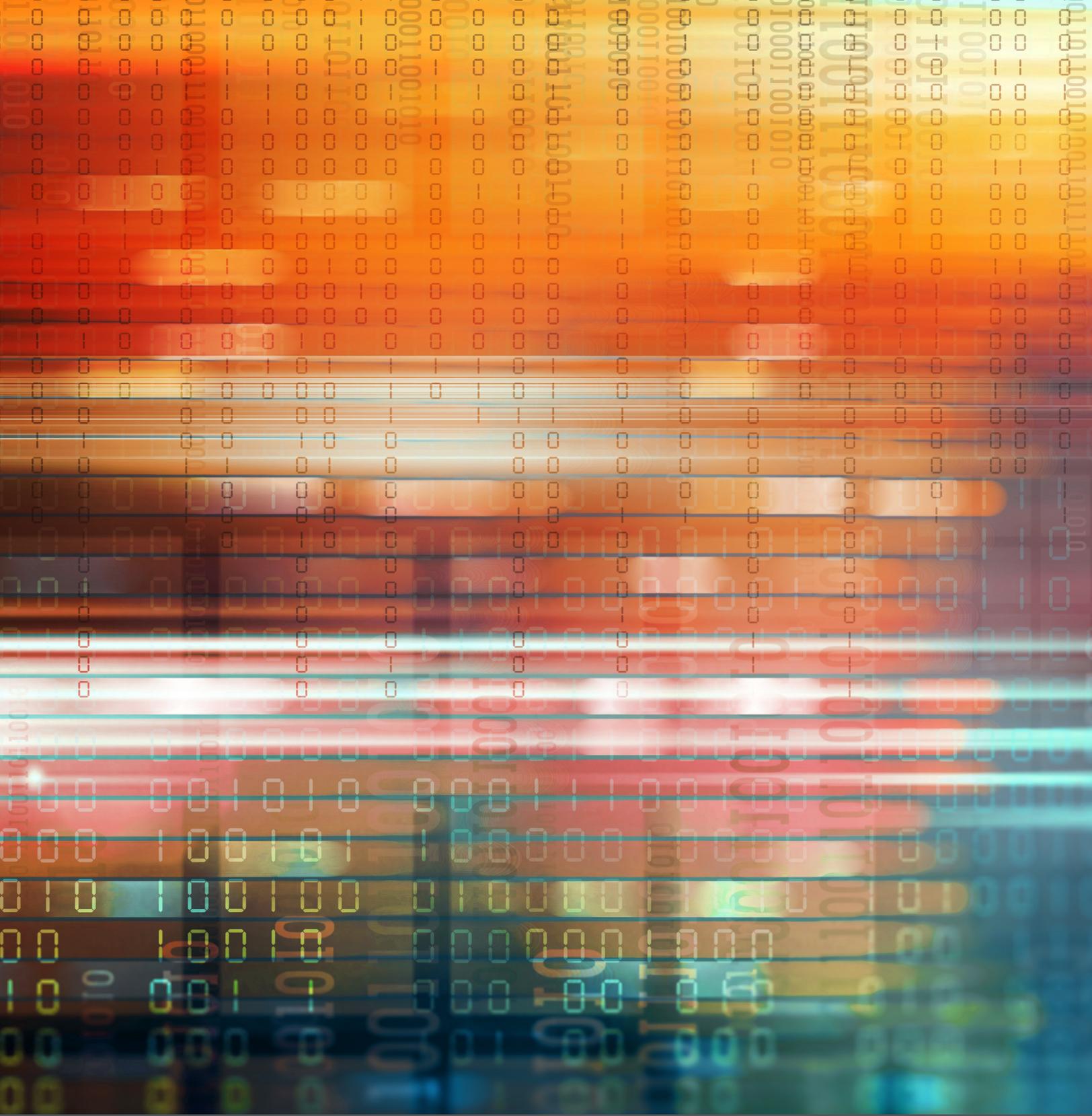
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