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# **py-stellar-sdk Documentation**

***Release 2.4.1***

**Stellar Community**

**May 10, 2020**



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## Contents

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<b>1</b>	<b>Quickstart</b>	<b>3</b>
1.1	Installation . . . . .	3
1.2	Generate Keypair . . . . .	3
1.3	Create Account . . . . .	4
1.4	Querying Horizon . . . . .	5
1.5	Assets . . . . .	6
1.6	Building Transactions . . . . .	7
1.7	Creating a payment transaction . . . . .	9
1.8	Asynchronous . . . . .	11
1.9	Multi-signature account . . . . .	13
<b>2</b>	<b>API Documentation</b>	<b>15</b>
2.1	API Documentation . . . . .	15
<b>3</b>	<b>Links</b>	<b>97</b>
<b>4</b>	<b>Thanks</b>	<b>99</b>
<b>5</b>	<b>genindex</b>	<b>101</b>
	<b>Python Module Index</b>	<b>103</b>
	<b>Index</b>	<b>105</b>



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**Note:** This branch is about v2, click [here](#) for the v1 branch. Thank you for your patience as we transition!

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py-stellar-sdk is a Python library for communicating with a [Stellar Horizon server](#). It is used for building Stellar apps on Python. It supports **Python 3.6+** as well as PyPy 3.6+.

It provides:

- a networking layer API for Horizon endpoints.
- facilities for building and signing transactions, for communicating with a Stellar Horizon instance, and for submitting transactions or querying network history.



# CHAPTER 1

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## Quickstart

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At the absolute basics, you'll want to read up on [Stellar's Documentation Guides](#), as it contains a lot of information on the concepts used below (Transactions, Payments, Operations, KeyPairs, etc.).

## 1.1 Installation

### 1.1.1 Via pipenv or pip

To install py-stellar-sdk, use pipenv to install the module:

```
pipenv install stellar-sdk==2.4.1
```

If you're not using [pipenv](#), you should. Otherwise, you can install it via plain old [pip](#). More on installing Python and dependencies can be found over in the [Hitchhiker's Guide to Python](#).

### 1.1.2 Via Source Code

Please use the code on pypi whenever possible. The latest code may be unstable.

You can clone [the repository](#) directly, and install it locally:

```
git clone https://github.com/StellarCN/py-stellar-base.git
cd py-stellar-base
git checkout 2.4.1
pip install .
```

## 1.2 Generate Keypair

*Keypair* object represents key pair used to sign transactions in Stellar network. *Keypair* object can contain both a public and private key, or only a public key.

If *Keypair* object does not contain private key it can't be used to sign transactions. The most convenient method of creating new keypair is by passing the account's secret seed:

```
1 from stellar_sdk import Keypair
2
3 keypair = Keypair.from_secret(
4     ↪ "SBK2VIYYSVG76E7VC3QHYARNFLY2EAQXDHRC7BMXBBGIFG74ARPRMNQM")
5     ↪ "GDHMMW6QZOL73SHKG2JA3YHXFDHM46SS5ZRWEYF5BCYHX2C5TVO6KZBYL
6     ↪ "
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```

You can create a keypair from public key, but its function is limited:

```
1 from stellar_sdk import Keypair
2
3 keypair = Keypair.from_public_key(
4     ↪ "GDHMMW6QZOL73SHKG2JA3YHXFDMH46SS5ZRWEYF5BCYHX2C5TVO6KZBYL")
5 can_sign = keypair.can_sign() # False
```

You can also create a randomly generated keypair:

```
1 from stellar_sdk import Keypair
2
3
4 keypair = Keypair.random()
5 print("Public Key: " + keypair.public_key)
6 print("Secret Seed: " + keypair.secret)
```

## 1.3 Create Account

Now, in order to create an account, you need to run a `CreateAccount` operation with your new account ID. Due to Stellar's minimum account balance, you'll need to transfer the minimum account balance from another account with the create account operation. As of this writing, minimum balance is **1 XLM (2 x 0.5 Base Reserve)**, and is subject to change.

### 1.3.1 Using The SDF Testnet

If you want to play in the Stellar test network, you can ask our [Friendbot](#) to create an account for you as shown below:

```
1 import requests
2
3 from stellar_sdk import Keypair
4
5 keypair = Keypair.random()
6
7 print("Public Key: " + keypair.public_key)
8 print("Secret Seed: " + keypair.secret)
9
10 url = 'https://friendbot.stellar.org'
11 response = requests.get(url, params={'addr': keypair.public_key})
12 print(response)
```



### 1.3.2 Using The Stellar Live Network

On the other hand, if you would like to create an account on the live network, you should buy some Stellar Lumens from an exchange. When you withdraw the Lumens into your new account, the exchange will automatically create the account for you. However, if you want to create an account from another account of your own, here's an example of how to do so:

```

1  from stellar_sdk import TransactionBuilder, Server, Network, Keypair
2
3  server = Server(horizon_url="https://horizon-testnet.stellar.org")
4  source = Keypair.from_secret("SBFZCHU5645DOKRWYBXVOXY2ELGJKFRX6VGGPRYUWHQ7PMXXJNDZFMKD
   ↪")
5  destination = Keypair.random()
6
7  source_account = server.load_account(account_id=source.public_key)
8  transaction = TransactionBuilder(
9      source_account=source_account,
10     network_passphrase=Network.TESTNET_NETWORK_PASSPHRASE,
11     base_fee=100) \
12     .append_create_account_op(destination=destination.public_key, starting_balance=
   ↪"12.25") \
13     .build()
14  transaction.sign(source)
15  response = server.submit_transaction(transaction)
16  print("Transaction hash: {}".format(response["hash"]))
17  print("New Keypair: \n\taccount id: {account_id}\n\tsecret seed: {secret_seed}".
   ↪format(
18     account_id=destination.public_key, secret_seed=destination.secret))

```

## 1.4 Querying Horizon

py-stellar-sdk gives you access to all the endpoints exposed by Horizon.

### 1.4.1 Building requests

py-stellar-sdk uses the [Builder pattern](#) to create the requests to send to Horizon. Starting with a [Server](#) object, you can chain methods together to generate a query. (See the [Horizon reference](#) documentation for what methods are possible.)

```

1  from stellar_sdk import Server
2
3  server = Server(horizon_url="https://horizon-testnet.stellar.org")
4
5  # get a list of transactions that occurred in ledger 1400
6  transactions = server.transactions().for_ledger(1400).call()
7  print(transactions)
8
9  # get a list of transactions submitted by a particular account
10 transactions = server.transactions() \
11     .for_account(account_id="GASOCNHHNNLYFNMDJYQ3XFMI7BYHIOCFW3GJEOWRPEGK2TDPGTG2E5EDW
   ↪") \
12     .call()
13 print(transactions)

```

Once the request is built, it can be invoked with `call()` or with `stream()`. `call()` will return the response given by Horizon.

## 1.4.2 Streaming requests

Many requests can be invoked with `stream()`. Instead of returning a result like `call()` does, `stream()` will return an `EventSource`. Horizon will start sending responses from either the beginning of time or from the point specified with `cursor()`. (See the [Horizon reference](#) documentation to learn which endpoints support streaming.)

For example, to log instances of transactions from a particular account:

```
1 from stellar_sdk import Server
2
3 server = Server(horizon_url="https://horizon-testnet.stellar.org")
4 account_id = "GASOCNHNLYFNMDJYQ3XFMI7BYHIOCFW3GJEOWRPEGK2TDPGTG2E5EDW"
5 last_cursor = 'now' # or load where you left off
6
7
8 def tx_handler(tx_response):
9     print(tx_response)
10
11
12 for tx in server.transactions().for_account(account_id).cursor(last_cursor).stream():
13     tx_handler(tx)
```

## 1.5 Assets

Object of the `Asset` class represents an asset in the Stellar network. Right now there are 3 possible types of assets in the Stellar network:

- native **XLM** asset (`ASSET_TYPE_NATIVE`),
- issued assets with asset code of maximum 4 characters (`ASSET_TYPE_CREDIT_ALPHANUM4`),
- issued assets with asset code of maximum 12 characters (`ASSET_TYPE_CREDIT_ALPHANUM12`).

To create a new native asset representation use static `native()` method:

```
1 from stellar_sdk import Asset
2 native = Asset.native()
```

To represent an issued asset you need to create a new object of type `Asset` with an asset code and issuer:

```
1 from stellar_sdk import Asset
2 # Creates TEST asset issued by
3   ↳ GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB
4 test_asset = Asset("TEST", "GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB")
5 is_native = test_asset.is_native() # False
6 # Creates Google stock asset issued by
7   ↳ GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB
8 google_stock_asset = Asset('US38259P7069',
9   ↳ 'GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB')
10 google_stock_asset_type = google_stock_asset.type # credit_alphanum12
```

## 1.6 Building Transactions

**Transactions** are the commands that modify the state of the ledger. They include sending payments, creating offers, making account configuration changes, etc.

Every transaction has a source **account**. This is the account that pays the **fee** and uses up a sequence number for the transaction.

Transactions are made up of one or more **operations**. Each operation also has a source account, which defaults to the transaction's source account.

### 1.6.1 TransactionBuilder

The `TransactionBuilder` class is used to construct new transactions. `TransactionBuilder` is given an account that is used as transaction's **source account**. The transaction will use the current sequence number of the given `Account` object as its sequence number and increments the given account's sequence number when `build()` is called on the `TransactionBuilder`.

Operations can be added to the transaction calling `append_operation` for each operation you wish to add to the transaction. See `Operation` for a list of possible operations you can add. `append_operation` returns the current `TransactionBuilder` object so you can chain multiple calls. But you don't need to call it directly, we have prepared a lot of easy-to-use functions for you, such as `append_payment_op` can add a payment operation to the `TransactionBuilder`.

After adding the desired operations, call the `build()` method on the `TransactionBuilder`. This will return a fully constructed `TransactionEnvelope`. The transaction object is wrapped in an object called a `TransactionEnvelope`, the returned transaction will contain the sequence number of the source account. This transaction is unsigned. You must sign it before it will be accepted by the Stellar network.

```

1 from stellar_sdk import TransactionBuilder, Network, Keypair, Account
2
3 root_keypair = Keypair.from_secret(
4     ↪ "SA6XHAH4GNLRWWWF6TEVEWNS44CBNFAJWHWOPZCVZOUXSQA7BOYN7XHC")
5 # Create an Account object from an address and sequence number.
6 root_account = Account(account_id=root_keypair.public_key, sequence=1)
7
8 transaction = TransactionBuilder(
9     source_account=root_account,
10    # If you want to submit to pubnet, you need to change `network_passphrase` to_
11    ↪ `Network.PUBLIC_NETWORK_PASSPHRASE`
12    network_passphrase=Network.TESTNET_NETWORK_PASSPHRASE,
13    base_fee=100) \
14    .append_payment_op( # add a payment operation to the transaction
15        destination="GASOCNHNLYFNMDJYQ3XFMI7BYHIOCFW3GJEOWRPEGK2TDPGTG2E5EDW",
16        asset_code="XLM",
17        amount="125.5") \
18    .append_set_options_op( # add a set options operation to the transaction
19        home_domain="overcat.me") \
20    .set_timeout(30) \
21    .build() # mark this transaction as valid only for the next 30 seconds

```

### 1.6.2 Sequence Numbers

The sequence number of a transaction has to match the sequence number stored by the source account or else the transaction is invalid. After the transaction is submitted and applied to the ledger, the source account's sequence

number increases by 1.

There are two ways to ensure correct sequence numbers:

1. Read the source account's sequence number before submitting a transaction
2. Manage the sequence number locally

During periods of high transaction throughput, fetching a source account's sequence number from the network may not return the correct value. So, if you're submitting many transactions quickly, you will want to keep track of the sequence number locally.

### 1.6.3 Adding Memos

Transactions can contain a **memo** field you can use to attach additional information to the transaction. You can do this by passing a *Memo* object when you construct the `TransactionBuilder`.

There are 5 types of memos:

- `stellar_sdk.memo.NoneMemo` - empty memo,
- `stellar_sdk.memo.TextMemo` - 28-byte ascii encoded string memo,
- `stellar_sdk.memo.IdMemo` - 64-bit number memo,
- `stellar_sdk.memo.HashMemo` - 32-byte hash - ex. hash of an item in a content server,
- `stellar_sdk.memo.ReturnHashMemo` - 32-byte hash used for returning payments - contains hash of the transaction being rejected.

```
1 from stellar_sdk import TransactionBuilder, Network, Keypair, Account
2
3 root_keypair = Keypair.from_secret(
4     ↪ "SA6XHAH4GNLRWWWF6TEVEWNS44CBNFAJWHWOPZCVZOUXSQA7BOYN7XHC")
5 # Create an Account object from an address and sequence number.
6 root_account = Account(account_id=root_keypair.public_key, sequence=1)
7
8 transaction = TransactionBuilder(source_account=root_account, network_
9     ↪ passphrase=Network.TESTNET_NETWORK_PASSPHRASE,
10     ↪ base_fee=100).add_text_memo("Happy birthday!").
11     ↪ append_payment_op(
12         ↪ destination="GASOCNHNLYFNMDJYQ3XFMI7BYHIOCFW3GJEOWRPEGK2TDPGTG2E5EDW", amount=
13         ↪ "2000",
14         ↪ asset_code="XLM").set_timeout(30).build()
```

### 1.6.4 Transaction and TransactionEnvelope

These two concepts may make the novices unclear, but the official has given a good explanation.

Transactions are commands that modify the ledger state. Among other things, Transactions are used to send payments, enter orders into the distributed exchange, change settings on accounts, and authorize another account to hold your currency. If you think of the ledger as a database, then transactions are SQL commands.

Once a transaction is ready to be signed, the transaction object is wrapped in an object called a Transaction Envelope, which contains the transaction as well as a set of signatures. Most transaction envelopes only contain a single signature along with the transaction, but in multi-signature setups it can contain many signatures. Ultimately, transaction envelopes are passed around the network and are included in transaction sets, as opposed to raw Transaction objects.

## 1.7 Creating a payment transaction

### 1.7.1 Payment

In this example, the destination account must exist. We use synchronous methods to submit transactions here, if you want, you can also use asynchronous methods.

```

1  """
2  Create, sign, and submit a transaction using Python Stellar SDK.
3
4  Assumes that you have the following items:
5  1. Secret key of a funded account to be the source account
6  2. Public key of an existing account as a recipient
7     These two keys can be created and funded by the friendbot at
8     https://www.stellar.org/laboratory/ under the heading "Quick Start: Test Account"
9  3. Access to Python Stellar SDK (https://github.com/StellarCN/py-stellar-base)
10     ↪through Python shell.
11  """
12
13  from stellar_sdk import Server, Keypair, TransactionBuilder, Network
14
15  # The source account is the account we will be signing and sending from.
16  source_secret_key = "SBFZCHU5645DOKRWYBXVOXY2ELGJKFRX6VGGPRYUWHQ7PMXXJNDZFMKD"
17
18  # Derive Keypair object and public key (that starts with a G) from the secret
19  source_keypair = Keypair.from_secret(source_secret_key)
20  source_public_key = source_keypair.public_key
21
22  receiver_public_key = "GA7YNBW5CBTJZ3ZZOWX3ZNBKD6OE7A7IHUQVWMY62W2ZBG2SGZVOOPVH"
23
24  # Configure StellarSdk to talk to the horizon instance hosted by Stellar.org
25  # To use the live network, set the hostname to 'horizon.stellar.org'
26  server = Server(horizon_url="https://horizon-testnet.stellar.org")
27
28  # Transactions require a valid sequence number that is specific to this account.
29  # We can fetch the current sequence number for the source account from Horizon.
30  source_account = server.load_account(source_public_key)
31
32  base_fee = server.fetch_base_fee()
33
34  # we are going to submit the transaction to the test network,
35  # so network_passphrase is `Network.TESTNET_NETWORK_PASSPHRASE`,
36  # if you want to submit to the public network, please use `Network.PUBLIC_NETWORK_
37  ↪PASSPHRASE`.
38
39  transaction = (
40      TransactionBuilder(
41          source_account=source_account,
42          network_passphrase=Network.TESTNET_NETWORK_PASSPHRASE,
43          base_fee=base_fee,
44      )
45      .add_text_memo("Hello, Stellar!") # Add a memo
46      # Add a payment operation to the transaction
47      # Send 350.1234567 XLM to receiver
48      # Specify 350.1234567 lumens. Lumens are divisible to seven digits past the
49      ↪decimal.
50      .append_payment_op(receiver_public_key, "350.1234567", "XLM")
51      .set_timeout(30) # Make this transaction valid for the next 30 seconds only
52      .build()
53  )

```

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```

48 # Sign this transaction with the secret key
49 # NOTE: signing is transaction is network specific. Test network transactions
50 # won't work in the public network. To switch networks, use the Network object
51 # as explained above (look for stellar_sdk.network.Network).
52 transaction.sign(source_keypair)
53
54 # Let's see the XDR (encoded in base64) of the transaction we just built
55 print(transaction.to_xdr())
56
57 # Submit the transaction to the Horizon server.
58 # The Horizon server will then submit the transaction into the network for us.
59 response = server.submit_transaction(transaction)
60 print(response)
61

```

## 1.7.2 Path Payment

In the example below we're sending 1000 XLM (at max) from *GAB-JLI6IVBKJ7HIC5NN7HHDCIEW3CMWQ2DWYHREQQUFWSWZ2CDAMZZX4* to *GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB*. Destination Asset will be GBP issued by *GASOCNHNLYFNMDJYQ3XFM17BYHIOCFW3GJEOWRPEGK2TDPGTG2E5EDW*. Assets will be exchanged using the following path:

- USD issued by *GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB*
- EUR issued by *GDTNXRLOJD2YEBPKK7KCMR7J33AAG5VZXHAJTHIG736D6LVEFLLKPD*

The **path payment** will cause the destination address to get 5.5 GBP. It will cost the sender no more than 1000 XLM. In this example there will be 3 exchanges, XLM->USD, USD->EUR, EUR->GBP.

```

1 from stellar_sdk import Keypair, Server, TransactionBuilder, Network, Asset
2
3 server = Server(horizon_url="https://horizon-testnet.stellar.org")
4 source_keypair = Keypair.from_secret(
5     ↪ "SA6XHAH4GNLRWWWF6TEVEWNS44CBNFAJWHWOPZCVZOUXSQA7BOYN7XHC")
6
7 source_account = server.load_account(account_id=source_keypair.public_key)
8
9 path = [
10     Asset("USD", "GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB"),
11     Asset("EUR", "GDTNXRLOJD2YEBPKK7KCMR7J33AAG5VZXHAJTHIG736D6LVEFLLKPD")
12 ]
13 transaction = TransactionBuilder(
14     source_account=source_account, network_passphrase=Network.TESTNET_NETWORK_
15     ↪ PASSPHRASE, base_fee=100) \
16     .append_path_payment_op(destination=
17     ↪ "GBBM6BKZPEHWYO3E3YKREDPQXMS4VK35YLNUN7NFBRI26RAN7GI5POFBB",
18     send_code="XLM", send_issuer=None, send_max="1000", dest_
19     ↪ code="GBP",
20     dest_issuer=
21     ↪ "GASOCNHNLYFNMDJYQ3XFM17BYHIOCFW3GJEOWRPEGK2TDPGTG2E5EDW",
22     dest_amount="5.50", path=path) \
23     .set_timeout(30) \
24     .build()
25 transaction.sign(source_keypair)
26 response = server.submit_transaction(transaction)
27

```

## 1.8 Asynchronous

Now we have supported the use of asynchronous methods to submit transactions, py-stellar-sdk gives you the choice, rather than forcing you into always writing async; sync code is easier to write, generally safer, and has many more libraries to choose from.

`Server` has one parameter is **client**, here we need to talk about the **client** parameter, if you do not specify the client, we will use the `RequestsClient` instance by default, it is a synchronous HTTPClient, you can also specify an asynchronous HTTP Client, for example: `AiohttpClient`. If you use a synchronous client, then all requests are synchronous, if you use an asynchronous client, then all requests are asynchronous.

The following is an example of send a payment by an asynchronous method, the same example of using the synchronization method can be found [here](#):

```

1  """
2  The effect of this example is the same as `payment.py`, but this example is
   ↪ asynchronous.
3
4  Create, sign, and submit a transaction using Python Stellar SDK.
5
6  Assumes that you have the following items:
7  1. Secret key of a funded account to be the source account
8  2. Public key of an existing account as a recipient
9     These two keys can be created and funded by the friendbot at
10     https://www.stellar.org/laboratory/ under the heading "Quick Start: Test Account"
11  3. Access to Python Stellar SDK (https://github.com/StellarCN/py-stellar-base)
   ↪ through Python shell.
12 """
13 import asyncio
14
15 from stellar_sdk import Server, Keypair, TransactionBuilder, Network, AiohttpClient
16
17 # The source account is the account we will be signing and sending from.
18 source_secret_key = "SBFZCHU5645DOKRWYBXVOXY2ELGJKFRX6VGGPRYUWHQ7PMXXJNDZFMKD"
19
20 # Derive Keypair object and public key (that starts with a G) from the secret
21 source_keypair = Keypair.from_secret(source_secret_key)
22 source_public_key = source_keypair.public_key
23
24 receiver_public_key = "GA7YNBW5CBTJZ3ZZOWX3ZNBKD6OE7A7IHUQVWMY62W2ZBG2SGZVOOPVH"
25
26
27 async def main():
28     # Configure StellarSdk to talk to the horizon instance hosted by Stellar.org
29     # To use the live network, set the hostname to 'horizon.stellar.org'
30     # When we use the `with` syntax, it automatically releases the resources it
   ↪ occupies.
31     async with Server(
32         horizon_url="https://horizon-testnet.stellar.org", client=AiohttpClient()
33     ) as server:
34         # Transactions require a valid sequence number that is specific to this
   ↪ account.
35         # We can fetch the current sequence number for the source account from
   ↪ Horizon.
36         source_account = await server.load_account(source_public_key)
37
38         base_fee = await server.fetch_base_fee()
```

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```

39     # we are going to submit the transaction to the test network,
40     # so network_passphrase is `Network.TESTNET_NETWORK_PASSPHRASE`,
41     # if you want to submit to the public network, please use `Network.PUBLIC_
↪NETWORK_PASSPHRASE`.
42     transaction = (
43         TransactionBuilder(
44             source_account=source_account,
45             network_passphrase=Network.TESTNET_NETWORK_PASSPHRASE,
46             base_fee=base_fee,
47         )
48         .add_text_memo("Hello, Stellar!") # Add a memo
49         # Add a payment operation to the transaction
50         # Send 350.1234567 XLM to receiver
51         # Specify 350.1234567 lumens. Lumens are divisible to seven digits_
↪past the decimal.
52         .append_payment_op(receiver_public_key, "350.1234567", "XLM")
53         .set_timeout(30) # Make this transaction valid for the next 30_
↪seconds only
54         .build()
55     )
56
57     # Sign this transaction with the secret key
58     # NOTE: signing is transaction is network specific. Test network transactions
59     # won't work in the public network. To switch networks, use the Network object
60     # as explained above (look for stellar_sdk.network.Network).
61     transaction.sign(source_keypair)
62
63     # Let's see the XDR (encoded in base64) of the transaction we just built
64     print(transaction.to_xdr())
65
66     # Submit the transaction to the Horizon server.
67     # The Horizon server will then submit the transaction into the network for us.
68     response = await server.submit_transaction(transaction)
69     print(response)
70
71
72 if __name__ == "__main__":
73     loop = asyncio.get_event_loop()
74     loop.run_until_complete(main())
75     loop.close()
76     # asyncio.run(main()) # Python 3.7+

```

The following example helps you listen to multiple endpoints asynchronously.

```

1 import asyncio
2
3 from stellar_sdk import AiohttpClient, Server
4
5 HORIZON_URL = "https://horizon.stellar.org"
6
7
8 async def payments():
9     async with Server(HORIZON_URL, AiohttpClient()) as server:
10         async for payment in server.payments().cursor(cursor="now").stream():
11             print(f"Payment: {payment}")
12
13

```

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```

14 async def effects():
15     async with Server(HORIZON_URL, AiohttpClient()) as server:
16         async for effect in server.effects().cursor(cursor="now").stream():
17             print(f"Effect: {effect}")
18
19
20 async def operations():
21     async with Server(HORIZON_URL, AiohttpClient()) as server:
22         async for operation in server.operations().cursor(cursor="now").stream():
23             print(f"Operation: {operation}")
24
25
26 async def transactions():
27     async with Server(HORIZON_URL, AiohttpClient()) as server:
28         async for transaction in server.transactions().cursor(cursor="now").stream():
29             print(f"Transaction: {transaction}")
30
31
32 async def listen():
33     await asyncio.gather(
34         payments(),
35         effects(),
36         operations(),
37         transactions()
38     )
39
40
41 if __name__ == '__main__':
42     asyncio.run(listen())

```

## 1.9 Multi-signature account

**Multi-signature accounts** can be used to require that transactions require multiple public keys to sign before they are considered valid. This is done by first configuring your account's **threshold** levels. Each operation has a threshold level of either low, medium, or high. You give each threshold level a number between 1-255 in your account. Then, for each key in your account, you assign it a weight (1-255, setting a 0 weight deletes the key). Any transaction must be signed with enough keys to meet the threshold.

For example, let's say you set your threshold levels; low = 1, medium = 2, high = 3. You want to send a payment operation, which is a medium threshold operation. Your master key has weight 1. Additionally, you have a secondary key associated with your account which has a weight of 1. Now, the transaction you submit for this payment must include both signatures of your master key and secondary key since their combined weight is 2 which is enough to authorize the payment operation.

In this example, we will:

- Add a second signer to the account
- Set our account's masterkey weight and threshold levels
- Create a multi signature transaction that sends a payment

```

1 from stellar_sdk import Server, TransactionBuilder, Signer, Network, Keypair
2
3 server = Server(horizon_url="https://horizon-testnet.stellar.org")

```

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```

4 root_keypair = Keypair.from_secret (
  ↳ "SA6XHAH4GNLRWWWF6TEVEWNS44CBNFAJWHWOPZCVZOUSQA7BOYN7XHC")
5 root_account = server.load_account(account_id=root_keypair.public_key)
6 secondary_keypair = Keypair.from_secret (
  ↳ "SAMZUAAPLRUH62HH3XE7NVD6ZSMTWPWGM6DS4X47HLVRHEBKP4U2H5E7")
7
8 secondary_signer = Signer.ed25519_public_key(account_id=secondary_keypair.public_key,
  ↳ weight=1)
9 transaction = TransactionBuilder(
10     source_account=root_account,
11     network_passphrase=Network.TESTNET_NETWORK_PASSPHRASE,
12     base_fee=100) \
13     .append_set_options_op(
14         master_weight=1,  # set master key weight
15         low_threshold=1,
16         med_threshold=2,  # a payment is medium threshold
17         high_threshold=2,  # make sure to have enough weight to add up to the high_
  ↳ threshold!
18     signer=secondary_signer) \
19     .set_timeout(30) \
20     .build()
21
22 # only need to sign with the root signer as the 2nd signer won't
23 # be added to the account till after this transaction completes
24 transaction.sign(root_keypair)
25 response = server.submit_transaction(transaction)
26 print(response)
27
28 # now create a payment with the account that has two signers
29 destination = "GBA5SMM5OYAOOPL6R773MV7O3CCLUDVLCWHIVVL3W4XTD3DA5FJ4JSEZ"
30 transaction = TransactionBuilder(
31     source_account=root_account,
32     network_passphrase=Network.TESTNET_NETWORK_PASSPHRASE,
33     base_fee=100) \
34     .append_payment_op(
35         destination=destination,
36         amount="2000",
37         asset_code="XLM") \
38     .set_timeout(30) \
39     .build()
40
41 # now we need to sign the transaction with both the root and the secondary_keypair
42 transaction.sign(root_keypair)
43 transaction.sign(secondary_keypair)
44 response = server.submit_transaction(transaction)
45 print(response)

```

Here you'll find detailed documentation on specific functions, classes, and methods.

## 2.1 API Documentation

### 2.1.1 Account

**class** `stellar_sdk.account.Account` (*account\_id*, *sequence*)

The *Account* object, which represents represents a single account in Stellar network and its sequence number.

Account tracks the sequence number as it is used by *TransactionBuilder*

See [Accounts](#) For more information about the formats used for asset codes and how issuers work on Stellar's network,

#### Parameters

- **account\_id** (`Union[str, MuxedAccount]`) – MuxedAccount or Account ID of the account (ex. *GB3KJPLFUYN5VL6R3GU3EGCGVCKFDS7BEDX42HWG5BWFKB3KQGJJRMA*) or muxed account (ex. *MAAAAAAAAAAJURAAAB2X52XFP6FBXLGT6LWOOWMEXWHEWBDVRZ7V5WH34Y*)
- **sequence** (`int`) – sequence current sequence number of the account

**Raises** *Ed25519PublicKeyInvalidError*: if *account\_id* is not a valid ed25519 public key.

**increment\_sequence\_number** ()

Increments sequence number in this object by one.

**Return type** `None`

**load\_ed25519\_public\_key\_signers** ()

Load ed25519 public key signers, may change in 3.0.

**Return type** `List[Ed25519PublicKeySigner]`

## 2.1.2 Asset

**class** stellar\_sdk.asset.Asset (code, issuer=None)

The *Asset* object, which represents an asset and its corresponding issuer on the Stellar network.

For more information about the formats used for asset codes and how issuers work on Stellar's network, see [Stellar's guide on assets](#).

### Parameters

- **code** (*str*) – The asset code, in the formats specified in [Stellar's guide on assets](#).
- **issuer** (*Optional[str]*) – The account ID of the issuer. Note if the currency is the native currency (XLM (Lumens)), no issuer is necessary.

### Raises

*AssetCodeInvalidError*: if code is invalid.

*AssetIssuerInvalidError*: if issuer is not a valid ed25519 public key.

**classmethod** from\_xdr\_object (asset\_xdr\_object)

Create a *Asset* from an XDR Asset object.

**Parameters** *asset\_xdr\_object* (*Asset*) – The XDR Asset object.

**Return type** *Asset*

**Returns** A new *Asset* object from the given XDR Asset object.

**guess\_asset\_type** ()

Return the type of the asset, Can be one of following types: *native*, *credit\_alphanum4* or *credit\_alphanum12*

**Return type** *str*

**Returns** The type of the asset.

**is\_native** ()

Return true if the *Asset* is the native asset.

**Return type** *bool*

**Returns** True if the Asset is native, False otherwise.

**static native** ()

Returns an asset object for the native asset.

**Return type** *Asset*

**Returns** An asset object for the native asset.

**to\_dict** ()

Generate a dict for this object's attributes.

**Return type** *dict*

**Returns** A dict representing an *Asset*

**to\_xdr\_object** ()

Returns the xdr object for this asset.

**Return type** *Asset*

**Returns** XDR Asset object

**type**

Return the type of the asset, Can be one of following types: *native*, *credit\_alphanum4* or *credit\_alphanum12*

**Return type** `str`

**Returns** The type of the asset.

## 2.1.3 Call Builder

### BaseCallBuilder

**class** `stellar_sdk.call_builder.BaseCallBuilder` (*horizon\_url*, *client*)

Creates a new *BaseCallBuilder* pointed to server defined by *horizon\_url*.

This is an **abstract** class. Do not create this object directly, use `stellar_sdk.server.Server` class.

**Parameters**

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call()**

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

*ConnectionError*: if you have not successfully connected to the server.  
*NotFoundError*: if `status_code == 404`  
*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`  
*BadResponseError*: if `500 <= status_code < 600`  
*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets *cursor* parameter for the current call. Returns the *CallBuilder* object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current *CallBuilder* instance

**limit** (*limit*)

Sets *limit* parameter for the current call. Returns the *CallBuilder* object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns****order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (*bool*) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronously, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## AccountsCallBuilder

**class** `stellar_sdk.call_builder.AccountsCallBuilder` (*horizon\_url, client*)

Creates a new `AccountsCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.accounts()`.

**Parameters**

- **horizon\_url** – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**account\_id** (*account\_id*)

Returns information and links relating to a single account. The balances section in the returned JSON will also list all the trust lines this account has set up.

See [Account Details](#)

**Parameters** `account_id` (*str*) – account id, for example: `GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD`

**Return type** `AccountsCallBuilder`

**Returns** current `AccountCallBuilder` instance

**asset** (*asset*)

Filtering accounts who have a trustline to an asset. The result is a list of accounts.

See [Account Details](#)

**Parameters** `asset` (*Asset*) – an issued asset

**Return type** `AccountsCallBuilder`

**Returns** current `AccountCallBuilder` instance

**call** ()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if `status_code == 404`

*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`

*BadResponseError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**for\_asset** (*asset*)

Filtering accounts who have a trustline to an asset. The result is a list of accounts.

See [Account Details](#)

**Parameters** **asset** (`Asset`) – an issued asset

**Return type** `AccountsCallBuilder`

**Returns** current `AccountCallBuilder` instance

**for\_signer** (*signer*)

Filtering accounts who have a given signer. The result is a list of accounts.

See [Account Details](#)

**Parameters** **signer** (`str`) – signer's account id, for example: `GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD`

**Return type** `AccountsCallBuilder`

**Returns** current `AccountCallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** **desc** (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**signer** (`signer`)

Filtering accounts who have a given signer. The result is a list of accounts.

See [Account Details](#)

**Parameters** **signer** (`str`) – signer's account id, for example: `GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD`

**Return type** `AccountsCallBuilder`

**Returns** current `AccountCallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## AssetsCallBuilder

**class** `stellar_sdk.call_builder.AssetsCallBuilder` (`horizon_url`, `client`)

Creates a new `AssetsCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.assets()`.

See [All Assets](#)

### Parameters

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call** ()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

### Raises

`ConnectionError`: if you have not successfully connected to the server.

`NotFoundError`: if `status_code == 404`

`BadRequestError`: if `400 <= status_code < 500` and `status_code != 404`

`BadResponseError`: if `500 <= status_code < 600`

`UnknownRequestError`: if an unknown error occurs, please submit an issue



**cursor** (*cursor*)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `cursor` (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**for\_code** (*asset\_code*)

This endpoint filters all assets by the asset code.

**Parameters** `asset_code` (`str`) – asset code, for example: `USD`

**Return type** `AssetsCallBuilder`

**Returns** current `AssetCallBuilder` instance

**for\_issuer** (*asset\_issuer*)

This endpoint filters all assets by the asset issuer.

**Parameters** `asset_issuer` (`str`) – asset issuer, for example: `GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD`

**Return type** `AssetsCallBuilder`

**Returns** current `AssetCallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## DataCallBuilder

**class** stellar\_sdk.call\_builder.DataCallBuilder (horizon\_url, client, account\_id, data\_name)

Creates a new *DataCallBuilder* pointed to server defined by horizon\_url. Do not create this object directly, use *stellar\_sdk.server.Server.data()*.

See [Data for Account](#)

### Parameters

- **horizon\_url** (str) – Horizon server URL.
- **client** (Union[BaseAsyncClient, BaseSyncClient]) – The client instance used to send request.
- **account\_id** (str) – account id, for example: *GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD*
- **data\_name** (str) – Key name

### call()

Triggers a HTTP request using this builder's current configuration.

**Return type** Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return Coroutine.

### Raises

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if status\_code == 404

*BadRequestError*: if 400 <= status\_code < 500 and status\_code != 404

*BadResponseError*: if 500 <= status\_code < 600

*UnknownRequestError*: if an unknown error occurs, please submit an issue

### cursor(cursor)

Sets cursor parameter for the current call. Returns the CallBuilder object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (Union) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** BaseCallBuilder

**Returns** current CallBuilder instance

### limit(limit)

Sets limit parameter for the current call. Returns the CallBuilder object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (int) – Number of records the server should return.

**Return type** BaseCallBuilder

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (*bool*) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## EffectsCallBuilder

**class** `stellar_sdk.call_builder.EffectsCallBuilder` (*horizon\_url, client*)

Creates a new `EffectsCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.effects()`.

See [All Effects](#)

**Parameters**

- **horizon\_url** (*str*) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call** ()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

`ConnectionError`: if you have not successfully connected to the server.

`NotFoundError`: if `status_code == 404`

`BadRequestError`: if `400 <= status_code < 500` and `status_code != 404`

`BadResponseError`: if `500 <= status_code < 600`

`UnknownRequestError`: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `cursor` (*Union*) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**for\_account** (*account\_id*)

This endpoint represents all effects that changed a given account. It will return relevant effects from the creation of the account to the current ledger.

See [Effects for Account](#)

**Parameters** `account_id` (`str`) – account id, for example: `GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD`

**Return type** `EffectsCallBuilder`

**Returns** this `EffectCallBuilder` instance

**for\_ledger** (*sequence*)

Effects are the specific ways that the ledger was changed by any operation. This endpoint represents all effects that occurred in the given ledger.

See [Effects for Ledger](#)

**Parameters** `sequence` (`Union[int, str]`) – ledger sequence

**Return type** `EffectsCallBuilder`

**Returns** this `EffectCallBuilder` instance

**for\_operation** (*operation\_id*)

This endpoint represents all effects that occurred as a result of a given operation.

See [Effects for Operation](#)

**Parameters** `operation_id` (`Union[int, str]`) – operation ID

**Return type** `EffectsCallBuilder`

**Returns** this `EffectCallBuilder` instance

**for\_transaction** (*transaction\_hash*)

This endpoint represents all effects that occurred as a result of a given transaction.

See [Effects for Transaction](#)

**Parameters** `transaction_hash` (`str`) – transaction hash

**Return type** `EffectsCallBuilder`

**Returns** this `EffectCallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream()**

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## FeeStatsCallBuilder

**class** `stellar_sdk.call_builder.FeeStatsCallBuilder` (`horizon_url`, `client`)

Creates a new `FeeStatsCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.fee_stats()`.

See [Fee Stats](#)

**Parameters**

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call()**

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

`ConnectionError`: if you have not successfully connected to the server.

`NotFoundError`: if `status_code == 404`

`BadRequestError`: if `400 <= status_code < 500` and `status_code != 404`

`BadResponseError`: if `500 <= status_code < 600`

`UnknownRequestError`: if an unknown error occurs, please submit an issue

**cursor** (`cursor`)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## LedgersCallBuilder

**class** `stellar_sdk.call_builder.LedgersCallBuilder` (*horizon\_url, client*)

Creates a new `LedgersCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.ledgers()`.

See [All Ledgers](#)

**Parameters**

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call** ()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

`ConnectionError`: if you have not successfully connected to the server.

`NotFoundError`: if `status_code == 404`

`BadRequestError`: if `400 <= status_code < 500` and `status_code != 404`

*BadRequestError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `cursor` (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**ledger** (*sequence*)

Provides information on a single ledger.

See [Ledger Details](#)

**Parameters** `sequence` (`Union[int, str]`) – Ledger sequence

**Return type** `LedgersCallBuilder`

**Returns** current `LedgerCallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## OffersCallBuilder

**class** stellar\_sdk.call\_builder.OffersCallBuilder(*horizon\_url*, *client*)

Creates a new *OffersCallBuilder* pointed to server defined by *horizon\_url*. Do not create this object directly, use *stellar\_sdk.server.Server.offers()*.

See [Offer Details](#) See [Offers](#)

### Parameters

- **horizon\_url** (*str*) – Horizon server URL.
- **client** (*Union*[*BaseAsyncClient*, *BaseSyncClient*]) – The client instance used to send request.

**account** (*account\_id*)

Returns all offers where the given account is the seller.

See [Offers for Account](#)

**Parameters** **account\_id** – Account ID

**Returns** this OffersCallBuilder instance

**call** ()

Triggers a HTTP request using this builder's current configuration.

**Return type** *Union*[*Dict*[*str*, *Any*], *Coroutine*[*Any*, *Any*, *Dict*[*str*, *Any*]]]

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return *Coroutine*.

### Raises

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if *status\_code* == 404

*BadRequestError*: if  $400 \leq \text{status\_code} < 500$  and *status\_code* != 404

*BadResponseError*: if  $500 \leq \text{status\_code} < 600$

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets *cursor* parameter for the current call. Returns the CallBuilder object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (*Union*) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** *BaseCallBuilder*

**Returns** current CallBuilder instance

**for\_buying** (*buying*)

Returns all offers buying an asset.

People on the Stellar network can make offers to buy or sell assets. This endpoint represents all the current offers, allowing filtering by *seller*, *selling\_asset* or *buying\_asset*.

See [Offers](#)

**Parameters** **buying** (*Asset*) – The asset being bought.

**Returns** this OffersCallBuilder instance



**for\_seller** (*seller*)

Returns all offers where the given account is the seller.

People on the Stellar network can make offers to buy or sell assets. This endpoint represents all the current offers, allowing filtering by *seller*, *selling\_asset* or *buying\_asset*.

See [Offers](#)

**Parameters** **seller** (*str*) – Account ID of the offer creator

**Returns** this OffersCallBuilder instance

**for\_selling** (*selling*)

Returns all offers selling an asset.

People on the Stellar network can make offers to buy or sell assets. This endpoint represents all the current offers, allowing filtering by *seller*, *selling\_asset* or *buying\_asset*.

See [Offers](#)

**Parameters** **selling** (*Asset*) – The asset being sold.

**Returns** this OffersCallBuilder instance

**limit** (*limit*)

Sets *limit* parameter for the current call. Returns the CallBuilder object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (*int*) – Number of records the server should return.

**Return type** BaseCallBuilder

**Returns**

**offer** (*offer\_id*)

Returns information and links relating to a single offer.

See [Offer Details](#)

**Parameters** **offer\_id** (*Union[str, int]*) – Offer ID.

**Returns** this OffersCallBuilder instance

**order** (*desc=True*)

Sets *order* parameter for the current call. Returns the CallBuilder object on which this method has been called.

**Parameters** **desc** (*bool*) – Sort direction, *True* to get desc sort direction, the default setting is *True*.

**Return type** BaseCallBuilder

**Returns** current CallBuilder instance

**stream** ()

Creates an EventSource that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** *Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]*

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## OperationsCallBuilder

**class** `stellar_sdk.call_builder.OperationsCallBuilder` (*horizon\_url*, *client*)

Creates a new `OperationsCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.operations()`.

See [All Operations](#)

### Parameters

- **horizon\_url** – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call()**

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

### Raises

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if `status_code == 404`

*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`

*BadResponseError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**for\_account** (*account\_id*)

This endpoint represents all operations that were included in valid transactions that affected a particular account.

See [Operations for Account](#)

**Parameters** **account\_id** (`str`) – Account ID

**Return type** `OperationsCallBuilder`

**Returns** this `OperationCallBuilder` instance

**for\_ledger** (*sequence*)

This endpoint returns all operations that occurred in a given ledger.

See [Operations for Ledger](#)

**Parameters** `sequence` (`Union[int, str]`) – Sequence ID

**Return type** `OperationsCallBuilder`

**Returns** this `OperationCallBuilder` instance

**for\_transaction** (`transaction_hash`)

This endpoint represents all operations that are part of a given transaction.

See [Operations for Transaction](#)

**Parameters** `transaction_hash` (`str`) –

**Return type** `OperationsCallBuilder`

**Returns** this `OperationCallBuilder` instance

**include\_failed** (`include_failed`)

Adds a parameter defining whether to include failed transactions. By default only operations of successful transactions are returned.

**Parameters** `include_failed` (`bool`) – Set to *True* to include operations of failed transactions.

**Return type** `OperationsCallBuilder`

**Returns** current `OperationsCallBuilder` instance

**join** (`join`)

`join` represents `join` param in queries, currently only supports *transactions*

**Parameters** `join` (`str`) – `join` represents `join` param in queries, currently only supports *transactions*

**Return type** `OperationsCallBuilder`

**Returns** current `OperationsCallBuilder` instance

**limit** (`limit`)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**operation** (`operation_id`)

The operation details endpoint provides information on a single operation. The operation ID provided in the `id` argument specifies which operation to load.

See [Operation Details](#)

**Parameters** `operation_id` (`Union[int, str]`) – Operation ID

**Return type** `OperationsCallBuilder`

**Returns** this `OperationCallBuilder` instance

**order** (`desc=True`)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**`stream()`**

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## OrderbookCallBuilder

**class** `stellar_sdk.call_builder.OrderbookCallBuilder` (`horizon_url`, `client`, `selling`, `buying`)

Creates a new `OrderbookCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.orderbook()`.

See [Orderbook Details](#)

### Parameters

- **`horizon_url`** (`str`) – Horizon server URL.
- **`client`** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.
- **`selling`** (`Asset`) – Asset being sold
- **`buying`** (`Asset`) – Asset being bought

**`call()`**

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

### Raises

`ConnectionError`: if you have not successfully connected to the server.

`NotFoundError`: if `status_code == 404`

`BadRequestError`: if `400 <= status_code < 500` and `status_code != 404`

`BadResponseError`: if `500 <= status_code < 600`

`UnknownRequestError`: if an unknown error occurs, please submit an issue

**`cursor`** (`cursor`)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `cursor` (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**limit** (`limit`)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (`desc=True`)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## PathsCallBuilder

```
class stellar_sdk.call_builder.PathsCallBuilder(horizon_url, client, source_account,
                                                destination_account, destination_asset, destination_amount)
```

Creates a new `PathsCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.paths()`.

The Stellar Network allows payments to be made across assets through path payments. A path payment specifies a series of assets to route a payment through, from source asset (the asset debited from the payer) to destination asset (the asset credited to the payee).

See [Find Payment Paths](#)

**Parameters**

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

- **source\_account** (*str*) – The sender’s account ID. Any returned path must use a source that the sender can hold.
- **destination\_account** (*str*) – The destination account ID that any returned path should use.
- **destination\_asset** (*Asset*) – The destination asset.
- **destination\_amount** (*str*) – The amount, denominated in the destination asset, that any returned path should be able to satisfy.

**call** ()

Triggers a HTTP request using this builder’s current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if `status_code == 404`

*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`

*BadResponseError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (*Union*) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (*int*) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** **desc** (*bool*) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream()**

Creates an EventSource that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## PaymentsCallBuilder

**class** `stellar_sdk.call_builder.PaymentsCallBuilder` (*horizon\_url*, *client*)

Creates a new *PaymentsCallBuilder* pointed to server defined by *horizon\_url*. Do not create this object directly, use `stellar_sdk.server.Server.payments()`.

See [All Payments](#)

### Parameters

- **horizon\_url** (*str*) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call()**

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

### Raises

*ConnectionError*: if you have not successfully connected to the server.  
*NotFoundError*: if `status_code == 404`  
*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`  
*BadResponseError*: if `500 <= status_code < 600`  
*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets *cursor* parameter for the current call. Returns the CallBuilder object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current CallBuilder instance

**for\_account** (*account\_id*)

This endpoint responds with a collection of Payment operations where the given account was either the sender or receiver.

See [Payments for Account](#)

**Parameters** `account_id` (`str`) – Account ID

**Return type** `PaymentsCallBuilder`

**Returns** current `PaymentsCallBuilder` instance

**for\_ledger** (`sequence`)

This endpoint represents all payment operations that are part of a valid transactions in a given ledger.

See [Payments for Ledger](#)

**Parameters** `sequence` (`Union[int, str]`) – Ledger sequence

**Return type** `PaymentsCallBuilder`

**Returns** current `PaymentsCallBuilder` instance

**for\_transaction** (`transaction_hash`)

This endpoint represents all payment operations that are part of a given transaction.

See [Payments for Transaction](#)

**Parameters** `transaction_hash` (`str`) – Transaction hash

**Return type** `PaymentsCallBuilder`

**Returns** current `PaymentsCallBuilder` instance

**include\_failed** (`include_failed`)

Adds a parameter defining whether to include failed transactions. By default only payments of successful transactions are returned.

**Parameters** `include_failed` (`bool`) – Set to `True` to include payments of failed transactions.

**Return type** `PaymentsCallBuilder`

**Returns** current `PaymentsCallBuilder` instance

**limit** (`limit`)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (`desc=True`)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)



**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## RootCallBuilder

**class** `stellar_sdk.call_builder.RootCallBuilder` (*horizon\_url*, *client*)

Creates a new *RootCallBuilder* pointed to server defined by *horizon\_url*. Do not create this object directly, use `stellar_sdk.server.Server.root()`.

### Parameters

- **horizon\_url** (*str*) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

### call()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

### Raises

*ConnectionError*: if you have not successfully connected to the server.  
*NotFoundError*: if `status_code == 404`  
*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`  
*BadResponseError*: if `500 <= status_code < 600`  
*UnknownRequestError*: if an unknown error occurs, please submit an issue

### cursor(cursor)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

### limit(limit)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

### order(desc=True)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** **desc** (*bool*) – Sort direction, *True* to get desc sort direction, the default setting is *True*.

**Return type** *BaseCallBuilder*

**Returns** current *CallBuilder* instance

**stream()**

Creates an *EventSource* that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** *Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]*

**Returns** If it is called synchronously, it will return *Generator*, If it is called asynchronously, it will return *AsyncGenerator*.

## StrictReceivePathsCallBuilder

```
class stellar_sdk.call_builder.StrictReceivePathsCallBuilder(horizon_url, client,
                                                            source, destination_asset, destination_amount)
```

Creates a new *StrictReceivePathsCallBuilder* pointed to server defined by *horizon\_url*. Do not create this object directly, use *stellar\_sdk.server.Server.strict\_receive\_paths()*.

The Stellar Network allows payments to be made across assets through path payments. A path payment specifies a series of assets to route a payment through, from source asset (the asset debited from the payer) to destination asset (the asset credited to the payee).

A path search is specified using:

- The source address or source assets.
- The asset and amount that the destination account should receive.

As part of the search, horizon will load a list of assets available to the source address and will find any payment paths from those source assets to the desired destination asset. The search's amount parameter will be used to determine if there a given path can satisfy a payment of the desired amount.

If a list of assets is passed as the source, horizon will find any payment paths from those source assets to the desired destination asset.

See [Find Payment Paths](#)

### Parameters

- **horizon\_url** (*str*) – Horizon server URL.
- **client** (*Union[BaseAsyncClient, BaseSyncClient]*) – The client instance used to send request.
- **source** (*Union[str, List[Asset]]*) – The sender's account ID or a list of Assets. Any returned path must use a source that the sender can hold.
- **destination\_asset** (*Asset*) – The destination asset.
- **destination\_amount** (*str*) – The amount, denominated in the destination asset, that any returned path should be able to satisfy.

**call()**

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if `status_code == 404`

*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`

*BadResponseError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor(cursor)**

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `cursor` (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**limit(limit)**

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns****order(desc=True)**

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream()**

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## StrictSendPathsCallBuilder

```
class stellar_sdk.call_builder.StrictSendPathsCallBuilder(horizon_url, client,
                                                         source_asset,
                                                         source_amount, destination)
```

Creates a new *StrictSendPathsCallBuilder* pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.strict_send_paths()`.

The Stellar Network allows payments to be made across assets through path payments. A strict send path payment specifies a series of assets to route a payment through, from source asset (the asset debited from the payer) to destination asset (the asset credited to the payee).

A strict send path search is specified using:

- The source asset
- The source amount
- The destination assets or destination account.

As part of the search, horizon will load a list of assets available to the source address and will find any payment paths from those source assets to the desired destination asset. The search's `source_amount` parameter will be used to determine if there a given path can satisfy a payment of the desired amount.

See [Find Payment Paths](#)

### Parameters

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.
- **source\_asset** (`Asset`) – The asset to be sent.
- **source\_amount** (`str`) – The amount, denominated in the source asset, that any returned path should be able to satisfy.
- **destination** (`Union[str, List[Asset]]`) – The destination account or the destination assets.

### call()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

### Raises

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if `status_code == 404`

*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`

*BadResponseError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

### cursor(cursor)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `cursor` (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

## TradeAggregationsCallBuilder

```
class stellar_sdk.call_builder.TradeAggregationsCallBuilder(horizon_url,
                                                            client,          base,
                                                            counter,    resolution,
                                                            start_time=None,
                                                            end_time=None,
                                                            offset=None)
```

Creates a new `TradeAggregationsCallBuilder` pointed to server defined by `horizon_url`. Do not create this object directly, use `stellar_sdk.server.Server.trade_aggregations()`.

Trade Aggregations facilitate efficient gathering of historical trade data.

See [Trade Aggregations](#)

**Parameters**

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

- **base** (*Asset*) – base asset
- **counter** (*Asset*) – counter asset
- **resolution** (*int*) – segment duration as millis since epoch. *Supported values are 1 minute (60000), 5 minutes (300000), 15 minutes (900000), 1 hour (3600000), 1 day (86400000) and 1 week (604800000).*
- **start\_time** (*Optional[int]*) – lower time boundary represented as millis since epoch
- **end\_time** (*Optional[int]*) – upper time boundary represented as millis since epoch
- **offset** (*Optional[int]*) – segments can be offset using this parameter. Expressed in milliseconds. *Can only be used if the resolution is greater than 1 hour. Value must be in whole hours, less than the provided resolution, and less than 24 hours.*

**call** ()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

**Raises**

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if `status_code == 404`

*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`

*BadResponseError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets `cursor` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (*Union*) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (*int*) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** **desc** (*bool*) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current CallBuilder instance

**stream()**

Creates an EventSource that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return Generator, If it is called asynchronously, it will return AsyncGenerator.

## TradesCallBuilder

**class** `stellar_sdk.call_builder.TradesCallBuilder(horizon_url, client)`

Creates a new *TradesCallBuilder* pointed to server defined by horizon\_url. Do not create this object directly, use `stellar_sdk.server.Server.trades()`.

See [Trades](#)

### Parameters

- **horizon\_url** (`str`) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call()**

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return Coroutine.

### Raises

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if status\_code == 404

*BadRequestError*: if 400 <= status\_code < 500 and status\_code != 404

*BadResponseError*: if 500 <= status\_code < 600

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (`cursor`)

Sets cursor parameter for the current call. Returns the CallBuilder object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current CallBuilder instance

**for\_account** (`account_id`)

Filter trades for a specific account

See [Trades for Account](#)

**Parameters** `account_id` (`str`) – account id

**Return type** `TradesCallBuilder`

**Returns** current `TradesCallBuilder` instance

**for\_asset\_pair** (`base`, `counter`)

Filter trades for a specific asset pair (orderbook)

**Parameters**

- **base** (`Asset`) – base asset
- **counter** (`Asset`) – counter asset

**Return type** `TradesCallBuilder`

**Returns** current `TradesCallBuilder` instance

**for\_offer** (`offer_id`)

Filter trades for a specific offer

See [Trades for Offer](#)

**Parameters** `offer_id` (`Union[int, str]`) – offer id

**Return type** `TradesCallBuilder`

**Returns** current `TradesCallBuilder` instance

**limit** (`limit`)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** `limit` (`int`) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (`desc=True`)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** `desc` (`bool`) – Sort direction, `True` to get desc sort direction, the default setting is `True`.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronous, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.



## TransactionsCallBuilder

**class** `stellar_sdk.call_builder.TransactionsCallBuilder` (*horizon\_url*, *client*)

Creates a new *TransactionsCallBuilder* pointed to server defined by *horizon\_url*. Do not create this object directly, use `stellar_sdk.server.Server.transactions()`.

See [All Transactions](#)

### Parameters

- **horizon\_url** (*str*) – Horizon server URL.
- **client** (`Union[BaseAsyncClient, BaseSyncClient]`) – The client instance used to send request.

**call** ()

Triggers a HTTP request using this builder's current configuration.

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** If it is called synchronous, the response will be returned. If it is called asynchronously, it will return `Coroutine`.

### Raises

*ConnectionError*: if you have not successfully connected to the server.

*NotFoundError*: if `status_code == 404`

*BadRequestError*: if `400 <= status_code < 500` and `status_code != 404`

*BadResponseError*: if `500 <= status_code < 600`

*UnknownRequestError*: if an unknown error occurs, please submit an issue

**cursor** (*cursor*)

Sets *cursor* parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **cursor** (`Union`) – A cursor is a value that points to a specific location in a collection of resources.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**for\_account** (*account\_id*)

This endpoint represents all transactions that affected a given account.

See [Transactions for Account](#)

**Parameters** **account\_id** (*str*) – account id

**Return type** `TransactionsCallBuilder`

**Returns** current `TransactionsCallBuilder` instance

**for\_ledger** (*sequence*)

This endpoint represents all transactions in a given ledger.

See [Transactions for Ledger](#)

**Parameters** **sequence** (`Union[str, int]`) – ledger sequence

**Return type** `TransactionsCallBuilder`

**Returns** current `TransactionsCallBuilder` instance

**include\_failed** (*include\_failed*)

Adds a parameter defining whether to include failed transactions. By default only transactions of successful transactions are returned.

**Parameters** **include\_failed** (*bool*) – Set to *True* to include failed transactions.

**Return type** `TransactionsCallBuilder`

**Returns** current `TransactionsCallBuilder` instance

**limit** (*limit*)

Sets `limit` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

See [Paging](#)

**Parameters** **limit** (*int*) – Number of records the server should return.

**Return type** `BaseCallBuilder`

**Returns**

**order** (*desc=True*)

Sets `order` parameter for the current call. Returns the `CallBuilder` object on which this method has been called.

**Parameters** **desc** (*bool*) – Sort direction, *True* to get desc sort direction, the default setting is *True*.

**Return type** `BaseCallBuilder`

**Returns** current `CallBuilder` instance

**stream** ()

Creates an `EventSource` that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Return type** `Union[AsyncGenerator[Dict[str, Any], None], Generator[Dict[str, Any], None, None]]`

**Returns** If it is called synchronously, it will return `Generator`, If it is called asynchronously, it will return `AsyncGenerator`.

**transaction** (*transaction\_hash*)

The transaction details endpoint provides information on a single transaction. The transaction hash provided in the hash argument specifies which transaction to load.

See [Transaction Details](#)

**Parameters** **transaction\_hash** (*str*) – transaction hash

**Return type** `TransactionsCallBuilder`

**Returns** current `TransactionsCallBuilder` instance

## 2.1.4 Client

## BaseAsyncClient

**class** stellar\_sdk.client.base\_async\_client.**BaseAsyncClient**

This is an abstract class, and if you want to implement your own asynchronous client, you **must** implement this class.

**get** (*url*, *params=None*)

Perform HTTP GET request.

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional[Dict[str, str]]*) – the request params

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**post** (*url*, *data*)

Perform HTTP POST request.

**Parameters**

- **url** (*str*) – the request url
- **data** (*Dict[str, str]*) – the data send to server

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**stream** (*url*, *params=None*)

Creates an EventSource that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional[Dict[str, str]]*) – the request params

**Return type** *AsyncGenerator[Dict[str, Any], None]*

**Returns** a dict AsyncGenerator for server response

**Raise** *ConnectionError*

## BaseSyncClient

**class** stellar\_sdk.client.base\_sync\_client.**BaseSyncClient**

This is an abstract class, and if you want to implement your own synchronous client, you **must** implement this class.

**get** (*url*, *params=None*)

Perform HTTP GET request.

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional[Dict[str, str]]*) – the request params

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**post** (*url, data*)

Perform HTTP POST request.

**Parameters**

- **url** (*str*) – the request url
- **data** (*Dict[str, str]*) – the data send to server

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**stream** (*url, params=None*)

Creates an EventSource that listens for incoming messages from the server.

See [Horizon Response Format](#)

See [MDN EventSource](#)

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional[Dict[str, str]]*) – the request params

**Return type** *Generator[Dict[str, Any], None, None]*

**Returns** a dict Generator for server response

**Raise** *ConnectionError*

## AiohttpClient

```
class stellar_sdk.client.aiohttp_client.AiohttpClient (pool_size=None, request_timeout=20, backoff_factor=0.5, user_agent=None, **kwargs)
```

The *AiohttpClient* object is a asynchronous http client, which represents the interface for making requests to a server instance.

**Parameters**

- **pool\_size** (*Optional[int]*) – persistent connection to Horizon and connection pool
- **request\_timeout** (*float*) – the timeout for all requests
- **backoff\_factor** (*Optional[float]*) – a backoff factor to apply between attempts after the second try
- **user\_agent** (*Optional[str]*) – the server can use it to identify you

**close()**

Close underlying connector.

Release all acquired resources.

**Return type** `None`

**get** (*url*, *params=None*)

Perform HTTP GET request.

**Parameters**

- **url** (`str`) – the request url
- **params** (`Optional[Dict[str, str]]`) – the requested params

**Return type** `Response`

**Returns** the response from server

**Raise** `ConnectionError`

**post** (*url*, *data=None*)

Perform HTTP POST request.

**Parameters**

- **url** (`str`) – the request url
- **data** (`Optional[Dict[str, str]]`) – the data send to server

**Return type** `Response`

**Returns** the response from server

**Raise** `ConnectionError`

**stream** (*url*, *params=None*)

Init the sse session

**Return type** `AsyncGenerator[Dict[str, Any], None]`

## RequestsClient

```
class stellar_sdk.client.requests_client.RequestsClient (pool_size=10,
                                                         num_retries=3,           re-
                                                         quest_timeout=20,
                                                         backoff_factor=0.5,
                                                         session=None,
                                                         stream_session=None)
```

The `RequestsClient` object is a synchronous http client, which represents the interface for making requests to a server instance.

**Parameters**

- **pool\_size** (`int`) – persistent connection to Horizon and connection pool
- **num\_retries** (`int`) – configurable request retry functionality
- **request\_timeout** (`int`) – the timeout for all requests
- **backoff\_factor** (`float`) – a backoff factor to apply between attempts after the second try
- **session** (`Optional[Session]`) – the request session

- **stream\_session** (*Optional*[*Session*]) – the stream request session

**close()**  
Close underlying connector.  
Release all acquired resources.

**Return type** *None*

**get** (*url*, *params=None*)  
Perform HTTP GET request.

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional*[*Dict*[*str*, *str*]]) – the request params

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**post** (*url*, *data=None*)  
Perform HTTP POST request.

**Parameters**

- **url** (*str*) – the request url
- **data** (*Optional*[*Dict*[*str*, *str*]]) – the data send to server

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**stream** (*url*, *params=None*)  
Creates an EventSource that listens for incoming messages from the server.  
See [Horizon Response Format](#)  
See [MDN EventSource](#)

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional*[*Dict*[*str*, *str*]]) – the request params

**Return type** *Generator*[*Dict*[*str*, *Any*], *None*, *None*]

**Returns** a Generator for server response

**Raise** *ConnectionError*

## SimpleRequestsClient

**class** stellar\_sdk.client.simple\_requests\_client.**SimpleRequestsClient**

The *SimpleRequestsClient* object is a synchronous http client, which represents the interface for making requests to a server instance.

This client is to guide you in writing a client that suits your needs. I don't recommend that you actually use it.

**get** (*url*, *params=None*)

Perform HTTP GET request.

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional[Dict[str, str]]*) – the request params

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**post** (*url*, *data*)

Perform HTTP POST request.

**Parameters**

- **url** (*str*) – the request url
- **data** (*Dict[str, str]*) – the data send to server

**Return type** *Response*

**Returns** the response from server

**Raise** *ConnectionError*

**stream** (*url*, *params=None*)

**Not Implemented**

**Parameters**

- **url** (*str*) – the request url
- **params** (*Optional[Dict[str, str]]*) – the request params

**Return type** *None*

**Returns** *None*

## Response

**class** `stellar_sdk.client.response.Response` (*status\_code*, *text*, *headers*, *url*)

The *Response* object, which contains a server's response to an HTTP request.

**Parameters**

- **status\_code** (*int*) – response status code
- **text** (*str*) – response content
- **headers** (*dict*) – response headers
- **url** (*str*) – request url

**json** ()

convert the content to dict

**Return type** *dict*

**Returns** the content from server

## 2.1.5 Exceptions

### SdkError

**class** stellar\_sdk.exceptions.**SdkError**  
Base exception for all stellar sdk related errors

### ValueError

**class** stellar\_sdk.exceptions.**ValueError**  
exception for all values related errors

### TypeError

**class** stellar\_sdk.exceptions.**TypeError**  
exception for all type related errors

### BadSignatureError

**class** stellar\_sdk.exceptions.**BadSignatureError**  
Raised when the signature was forged or otherwise corrupt.

### Ed25519PublicKeyInvalidError

**class** stellar\_sdk.exceptions.**Ed25519PublicKeyInvalidError**  
Ed25519 public key is incorrect.

### Ed25519SecretSeedInvalidError

**class** stellar\_sdk.exceptions.**Ed25519SecretSeedInvalidError**  
Ed25519 secret seed is incorrect.

### MissingEd25519SecretSeedError

**class** stellar\_sdk.exceptions.**MissingEd25519SecretSeedError**  
Missing Ed25519 secret seed in the keypair

### MemoInvalidException

**class** stellar\_sdk.exceptions.**MemoInvalidException**  
Memo is incorrect.

### AssetCodeInvalidError

**class** stellar\_sdk.exceptions.**AssetCodeInvalidError**  
Asset Code is incorrect.



### AssetIssuerInvalidError

```
class stellar_sdk.exceptions.AssetIssuerInvalidError
    Asset issuer is incorrect.
```

### NoApproximationError

```
class stellar_sdk.exceptions.NoApproximationError
    Approximation cannot be found
```

### SignatureExistError

```
class stellar_sdk.exceptions.SignatureExistError
    A keypair can only sign a transaction once.
```

### BaseRequestError

```
class stellar_sdk.exceptions.BaseRequestError
    Base class for requests errors.
```

### ConnectionError

```
class stellar_sdk.exceptions.ConnectionError
    Base class for client connection errors.
```

### BaseHorizonError

```
class stellar_sdk.exceptions.BaseHorizonError(response)
    Base class for horizon request errors.

    Parameters response (Response) – client response
```

### NotFoundError

```
class stellar_sdk.exceptions.NotFoundError(response)
    This exception is thrown when the requested resource does not exist. status_code == 400
```

### BadRequestError

```
class stellar_sdk.exceptions.BadRequestError(response)
    The request from the client has an error. 400 <= status_code < 500 and status_code != 404
```

### BadResponseError

```
class stellar_sdk.exceptions.BadResponseError(response)
    The response from the server has an error. 500 <= status_code < 600
```

## 2.1.6 Keypair

**class** stellar\_sdk.keypair.**Keypair**(*verify\_key, signing\_key=None*)

The *Keypair* object, which represents a signing and verifying key for use with the Stellar network.

Instead of instantiating the class directly, we recommend using one of several class methods:

- *Keypair.random()*
- *Keypair.from\_secret()*
- *Keypair.from\_public\_key()*

### Parameters

- **verify\_key** (*VerifyKey*) – The verifying (public) Ed25519 key in the keypair.
- **signing\_key** (*Optional[SigningKey]*) – The signing (private) Ed25519 key in the keypair.

**can\_sign()**

Returns *True* if this *Keypair* object contains secret key and can sign.

**Return type** *bool*

**Returns** *True* if this *Keypair* object contains secret key and can sign

**classmethod** **from\_mnemonic\_phrase**(*mnemonic\_phrase, passphrase="", index=0*)

Generate a *Keypair* object via a mnemonic phrase.

### Parameters

- **mnemonic\_phrase** (*str*) – A unique string used to deterministically generate key-pairs.
- **passphrase** (*str*) – An optional passphrase used as part of the salt during PBKDF2 rounds when generating the seed from the mnemonic.
- **index** (*int*) – The index of the keypair generated by the mnemonic. This allows for multiple Keypairs to be derived from the same mnemonic, such as:

```
>>> from stellar_sdk.keypair import Keypair
>>> mnemonic = 'update hello cry airport drive chunk elite boat_
↳ shaft sea describe number' # Don't use this mnemonic in_
↳ practice.
>>> kp1 = Keypair.from_mnemonic_phrase(mnemonic, index=0)
>>> kp2 = Keypair.from_mnemonic_phrase(mnemonic, index=1)
>>> kp3 = Keypair.from_mnemonic_phrase(mnemonic, index=2)
```

**Returns** A new *Keypair* instance derived from the mnemonic.

**classmethod** **from\_public\_key**(*public\_key*)

Generate a *Keypair* object from a public key.

**Parameters** **public\_key** (*str*) – strkey ed25519 public key, for example: *GATPG-GOIE6VWADVVD3ER3IFO2IH6DTPA5G535ITB3TT66FZF5IZEAU2B*

**Return type** *Keypair*

**Returns** A new *Keypair* instance derived by the public key.

**Raise** *Ed25519PublicKeyInvalidError*: if *public\_key* is not a valid ed25519 public key.

**classmethod** `from_raw_ed25519_public_key(raw_public_key)`

Generate a `Keypair` object from ed25519 public key raw bytes.

**Parameters** `raw_public_key` (`bytes`) – ed25519 public key raw bytes

**Return type** `Keypair`

**Returns** A new `Keypair` instance derived by the ed25519 public key raw bytes

**classmethod** `from_raw_ed25519_seed(raw_seed)`

Generate a `Keypair` object from ed25519 secret key seed raw bytes.

**Parameters** `raw_seed` (`bytes`) – ed25519 secret key seed raw bytes

**Return type** `Keypair`

**Returns** A new `Keypair` instance derived by the ed25519 secret key seed raw bytes

**classmethod** `from_secret(secret)`

Generate a `Keypair` object from a secret seed.

**Parameters** `secret` (`str`) – strkey ed25519 seed, for example:  
`SB2LHKBL24ITV2Y346BU46XPEL45BDFAOOJLZ6SESCJZ6V5JMP7D6G5X`

**Return type** `Keypair`

**Returns** A new `Keypair` instance derived by the secret.

**Raise** `Ed25519SecretSeedInvalidError`: if `secret` is not a valid ed25519 secret seed.

**static** `generate_mnemonic_phrase(language=<Language.ENGLISH: 'english'>, strength=128)`

Generate a mnemonic phrase.

**Parameters**

- **language** (`Union[Language, str]`) – The language of the mnemonic phrase, defaults to english.
- **strength** (`int`) – The complexity of the mnemonic.

**Returns** A mnemonic phrase.

**public\_key**

Returns public key associated with this `Keypair` instance

**Return type** `str`

**Returns** public key

**classmethod** `random()`

Generate a `Keypair` object from a randomly generated seed.

**Return type** `Keypair`

**Returns** A new `Keypair` instance derived by the randomly seed.

**raw\_public\_key()**

Returns raw public key.

**Return type** `bytes`

**Returns** raw public key

**raw\_secret\_key()**

Returns raw secret key.

**Return type** `bytes`

**Returns** raw secret key

**secret**

Returns secret key associated with this *Keypair* instance

**Return type** `str`

**Returns** secret key

**Raise** *MissingEd25519SecretSeedError* The *Keypair* does not contain secret seed

**sign** (*data*)

Sign the provided data with the keypair's private key.

**Parameters** **data** (`bytes`) – The data to sign.

**Return type** `bytes`

**Returns** signed bytes

**Raise** *MissingEd25519SecretSeedError*: if *Keypair* does not contain secret seed.

**sign\_decorated** (*data*)

Sign the provided data with the keypair's private key and returns DecoratedSignature.

**Parameters** **data** – signed bytes

**Return type** `DecoratedSignature`

**Returns** sign decorated

**signature\_hint** ()

Returns signature hint associated with this *Keypair* instance

**Return type** `bytes`

**Returns** signature hint

**verify** (*data*, *signature*)

Verify the provided data and signature match this keypair's public key.

**Parameters**

- **data** (`bytes`) – The data that was signed.
- **signature** (`bytes`) – The signature.

**Raise** *BadSignatureError*: if the verification failed and the signature was incorrect.

**Return type** `None`

**xdr\_public\_key** ()

**Return type** `PublicKey`

**Returns** xdr public key

## 2.1.7 Memo

### Memo

**class** `stellar_sdk.memo.Memo`

The *Memo* object, which represents the base class for memos for use with Stellar transactions.

The memo for a transaction contains optional extra information about the transaction taking place. It is the responsibility of the client to interpret this value.

See the following implementations that serve a more practical use with the library:

- *NoneMemo* - No memo.
- *TextMemo* - A string encoded using either ASCII or UTF-8, up to 28-bytes long.
- *IdMemo* - A 64 bit unsigned integer.
- *HashMemo* - A 32 byte hash.
- *RetHashMemo* - A 32 byte hash intended to be interpreted as the hash of the transaction the sender is refunding.

See [Stellar's documentation on Transactions](#) for more information on how memos are used within transactions, as well as information on the available types of memos.

**static from\_xdr\_object** (*xdr\_obj*)

Returns an Memo object from XDR memo object.

**Return type** *Memo*

**to\_xdr\_object** ()

Creates an XDR Memo object that represents this *Memo*.

**Return type** *Memo*

## NoneMemo

**class** stellar\_sdk.memo.**NoneMemo**

The *NoneMemo*, which represents no memo for a transaction.

**classmethod from\_xdr\_object** (*xdr\_obj*)

Returns an *NoneMemo* object from XDR memo object.

**Return type** *NoneMemo*

**to\_xdr\_object** ()

Creates an XDR Memo object that represents this *NoneMemo*.

**Return type** *Memo*

## TextMemo

**class** stellar\_sdk.memo.**TextMemo** (*text*)

The *TextMemo*, which represents MEMO\_TEXT in a transaction.

**Parameters** *text* (*str*, *bytes*) – A string encoded using either ASCII or UTF-8, up to 28-bytes long.

**Raises** *MemoInvalidException*: if *text* is not a valid text memo.

**classmethod from\_xdr\_object** (*xdr\_obj*)

Returns an *TextMemo* object from XDR memo object.

**Return type** *TextMemo*

**to\_xdr\_object** ()

Creates an XDR Memo object that represents this *TextMemo*.

**Return type** *Memo*

## IdMemo

**class** stellar\_sdk.memo.IdMemo (memo\_id)  
The *IdMemo* which represents MEMO\_ID in a transaction.

**Parameters** memo\_id (*int*) – A 64 bit unsigned integer.

**Raises** *MemoInvalidException*: if id is not a valid id memo.

**classmethod** from\_xdr\_object (xdr\_obj)  
Returns an *IdMemo* object from XDR memo object.

**Return type** *IdMemo*

**to\_xdr\_object ()**  
Creates an XDR Memo object that represents this *IdMemo*.

**Return type** Memo

## HashMemo

**class** stellar\_sdk.memo.HashMemo (memo\_hash)  
The *HashMemo* which represents MEMO\_HASH in a transaction.

**Parameters** memo\_hash (*Union[bytes, str]*) – A 32 byte hash hex encoded string.

**Raises** *MemoInvalidException*: if memo\_hash is not a valid hash memo.

**classmethod** from\_xdr\_object (xdr\_obj)  
Returns an *HashMemo* object from XDR memo object.

**Return type** *HashMemo*

**to\_xdr\_object ()**  
Creates an XDR Memo object that represents this *HashMemo*.

**Return type** Memo

## ReturnHashMemo

**class** stellar\_sdk.memo.ReturnHashMemo (memo\_return)  
The *ReturnHashMemo* which represents MEMO\_RETURN in a transaction.

MEMO\_RETURN is typically used with refunds/returns over the network - it is a 32 byte hash intended to be interpreted as the hash of the transaction the sender is refunding.

**Parameters** memo\_return (*bytes*) – A 32 byte hash or hex encoded string intended to be interpreted as the hash of the transaction the sender is refunding.

**Raises** *MemoInvalidException*: if memo\_return is not a valid return hash memo.

**classmethod** from\_xdr\_object (xdr\_obj)  
Returns an *ReturnHashMemo* object from XDR memo object.

**Return type** *ReturnHashMemo*

**to\_xdr\_object ()**  
Creates an XDR Memo object that represents this *ReturnHashMemo*.

**Return type** Memo

## 2.1.8 MuxedAccount

**class** stellar\_sdk.muxed\_account.**MuxedAccount** (*account\_id*, *account\_id\_id=None*)

The *MuxedAccount* object, which represents a multiplexed account on Stellar's network.

See [SEP-0023](#) for more information.

### Parameters

- **account\_id** (*str*) – account id, for example: *GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD*
- **account\_id\_id** (*Optional[int]*) – account multiplexing id, for example: *1234*

### **account\_id\_muxed**

Get the multiplex address starting with *M*, return *None* if *account\_id\_id* is *None*

**Return type** *Optional[str]*

### **classmethod from\_account** (*account*)

Create a *MuxedAccount* from account id or muxed account id.

**Parameters** **account** (*str*) – account id or muxed account id, for example: *GDGQ-VOKHW4VEJRU2TETD6DBRKEO5ERCNF353LW5WBFW3JJWQ2BRQ6KDD* or *MAAAAAAAAAAJURAAB2X52XFQP6FBXLGT6LWOOWMEXWHEWBDVRZ7V5WH34Y22MPFBHUHY*

**Return type** *MuxedAccount*

### **classmethod from\_xdr\_object** (*muxed\_account\_xdr\_object*)

Create a *MuxedAccount* from an XDR Asset object.

**Parameters** **muxed\_account\_xdr\_object** (*MuxedAccount*) – The *MuxedAccount* Price object.

**Return type** *MuxedAccount*

**Returns** A new *MuxedAccount* object from the given XDR *MuxedAccount* object.

### **to\_xdr\_object** ()

Returns the xdr object for this *MuxedAccount* object.

**Return type** *MuxedAccount*

**Returns** XDR *MuxedAccount* object

## 2.1.9 Network

**class** stellar\_sdk.network.**Network** (*network\_passphrase*)

The *Network* object, which represents a Stellar network.

This class represents such a stellar network such as the Public network and the Test network.

**Parameters** **network\_passphrase** (*str*) – The passphrase for the network. (ex. 'Public Global Stellar Network ; September 2015')

**PUBLIC\_NETWORK\_PASSPHRASE** = 'Public Global Stellar Network ; September 2015'

Get the Public network passphrase.

**TESTNET\_NETWORK\_PASSPHRASE** = 'Test SDF Network ; September 2015'

Get the Test network passphrase.

### **network\_id** ()

Get the network ID of the network, which is an XDR hash of the passphrase.

**Return type** `bytes`

**Returns** The network ID of the network.

**classmethod** `public_network()`

Get the `Network` object representing the PUBLIC Network.

**Return type** `Network`

**Returns** PUBLIC Network

**classmethod** `testnet_network()`

Get the `Network` object representing the TESTNET Network.

**Return type** `Network`

**Returns** TESTNET Network

## 2.1.10 Operation

### Operation

**class** `stellar_sdk.operation.Operation` (*source=None*)

The `Operation` object, which represents an operation on Stellar's network.

An operation is an individual command that mutates Stellar's ledger. It is typically rolled up into a transaction (a transaction is a list of operations with additional metadata).

Operations are executed on behalf of the source account specified in the transaction, unless there is an override defined for the operation.

For more on operations, see [Stellar's documentation on operations](#) as well as [Stellar's List of Operations](#), which includes information such as the security necessary for a given operation, as well as information about when validity checks occur on the network.

The `Operation` class is typically not used, but rather one of its subclasses is typically included in transactions.

**Parameters** `source` (`Union[MixedAccount, str, None]`) – The source account for the payment. Defaults to the transaction's source account.

**static** `from_xdr_amount` (*value*)

Converts an str amount from an XDR amount object

**Parameters** `value` (`int`) – The amount to convert to a string from an XDR int64 amount.

**Return type** `str`

**classmethod** `from_xdr_object` (*operation\_xdr\_object*)

Create the appropriate `Operation` subclass from the XDR object.

**Parameters** `operation_xdr_object` (`Operation`) – The XDR object to create an `Operation` (or subclass) instance from.

**Return type** `Operation`

**static** `get_source_from_xdr_obj` (*xdr\_object*)

Get the source account from account the operation xdr object.

**Parameters** `xdr_object` (`Operation`) – the operation xdr object.

**Return type** `Optional[MixedAccount]`

**Returns** The source account from account the operation xdr object.



**static to\_xdr\_amount** (*value*)

Converts an amount to the appropriate value to send over the network as a part of an XDR object.

Each asset amount is encoded as a signed 64-bit integer in the XDR structures. An asset amount unit (that which is seen by end users) is scaled down by a factor of ten million (10,000,000) to arrive at the native 64-bit integer representation. For example, the integer amount value 25,123,456 equals 2.5123456 units of the asset. This scaling allows for seven decimal places of precision in human-friendly amount units.

This static method correctly multiplies the value by the scaling factor in order to come to the integer value used in XDR structures.

See [Stellar’s documentation on Asset Precision](#) for more information.

**Parameters** *value* (`Union[str, Decimal]`) – The amount to convert to an integer for XDR serialization.

**Return type** `int`

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** `Operation`

## AccountMerge

**class** `stellar_sdk.operation.AccountMerge` (*destination, source=None*)

The *AccountMerge* object, which represents a AccountMerge operation on Stellar’s network.

Transfers the native balance (the amount of XLM an account holds) to another account and removes the source account from the ledger.

Threshold: High

**Parameters**

- **destination** (`Union[MixedAccount, str]`) – Destination to merge the source account into.
- **source** (`Union[MixedAccount, str, None]`) – The source account (defaults to transaction source).

**classmethod from\_xdr\_object** (*operation\_xdr\_object*)

Creates a *AccountMerge* object from an XDR Operation object.

**Return type** `AccountMerge`

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** `Operation`

## AllowTrust

**class** `stellar_sdk.operation.AllowTrust` (*trustor, asset\_code, authorize, source=None*)

The *AllowTrust* object, which represents a AllowTrust operation on Stellar’s network.

Updates the authorized flag of an existing trustline. This can only be called by the issuer of a trustline’s *asset*.

The issuer can only clear the authorized flag if the issuer has the AUTH\_REVOCABLE\_FLAG set. Otherwise, the issuer can only set the authorized flag.

Threshold: Low

**Parameters**

- **trustor** (*str*) – The trusting account (the one being authorized).
- **asset\_code** (*str*) – The asset code being authorized.
- **authorize** (*Union[TrustLineEntryFlag, bool]*) – *True* to authorize the line, *False* to deauthorize. If you need further control, you can also use `stellar_sdk.operation.allow_trust.TrustLineEntryFlag`.
- **source** (*Union[MuxedAccount, str, None]*) – The source account (defaults to transaction source).

**classmethod from\_xdr\_object** (*operation\_xdr\_object*)

Creates a *AllowTrust* object from an XDR Operation object.

**Return type** *AllowTrust*

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** *Operation*

**class** `stellar_sdk.operation.allow_trust.TrustLineEntryFlag`

Indicates which flags to set. For details about the flags, please refer to the [CAP-0018](#).

- **UNAUTHORIZED\_FLAG**: The account can not hold a balance but cannot receive payments, send payments, maintain offers, or manage offers
- **AUTHORIZED\_FLAG**: The account can hold a balance but cannot receive payments, send payments, maintain offers, or manage offers
- **AUTHORIZED\_TO\_MAINTAIN\_LIABILITIES\_FLAG**: The account can hold a balance, receive payments, send payments, maintain offers, and manage offers

## BumpSequence

**class** `stellar_sdk.operation.BumpSequence` (*bump\_to, source=None*)

The *BumpSequence* object, which represents a BumpSequence operation on Stellar's network.

Bump sequence allows to bump forward the sequence number of the source account of the operation, allowing to invalidate any transactions with a smaller sequence number. If the specified bumpTo sequence number is greater than the source account's sequence number, the account's sequence number is updated with that value, otherwise it's not modified.

Threshold: Low

**Parameters**

- **bump\_to** (*int*) – Sequence number to bump to.
- **source** (*Union[MuxedAccount, str, None]*) – The optional source account.

**classmethod from\_xdr\_object** (*operation\_xdr\_object*)

Creates a *BumpSequence* object from an XDR Operation object.

**Return type** *BumpSequence*

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** *Operation*

## ChangeTrust

**class** stellar\_sdk.operation.ChangeTrust (asset, limit=None, source=None)

The *ChangeTrust* object, which represents a ChangeTrust operation on Stellar’s network.

Creates, updates, or deletes a trustline. For more on trustlines, please refer to the *assets documentation* <<https://www.stellar.org/developers/guides/concepts/assets.html>>.

Threshold: Medium

### Parameters

- **asset** (*Asset*) – The asset for the trust line.
- **limit** (*Union[str, Decimal, None]*) – The limit for the asset, defaults to max int64(922337203685.4775807). If the limit is set to “0” it deletes the trustline.
- **source** (*Union[MuxedAccount, str, None]*) – The source account (defaults to transaction source).

**classmethod** from\_xdr\_object (operation\_xdr\_object)

Creates a *ChangeTrust* object from an XDR Operation object.

**Return type** ChangeTrust

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** Operation

## CreateAccount

**class** stellar\_sdk.operation.CreateAccount (destination, starting\_balance, source=None)

The *CreateAccount* object, which represents a Create Account operation on Stellar’s network.

This operation creates and funds a new account with the specified starting balance.

Threshold: Medium

### Parameters

- **destination** (*str*) – Destination account ID to create an account for.
- **starting\_balance** (*Union[str, Decimal]*) – Amount in XLM the account should be funded for. Must be greater than the *reserve balance* amount.
- **source** (*Union[MuxedAccount, str, None]*) – The source account for the payment. Defaults to the transaction’s source account.

**classmethod** from\_xdr\_object (operation\_xdr\_object)

Creates a *CreateAccount* object from an XDR Operation object.

**Return type** CreateAccount

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** Operation

## CreatePassiveSellOffer

**class** stellar\_sdk.operation.**CreatePassiveSellOffer** (*selling, buying, amount, price, source=None*)

The *CreatePassiveSellOffer* object, which represents a CreatePassiveSellOffer operation on Stellar's network.

A passive sell offer is an offer that does not act on and take a reverse offer of equal price. Instead, they only take offers of lesser price. For example, if an offer exists to buy 5 BTC for 30 XLM, and you make a passive sell offer to buy 30 XLM for 5 BTC, your passive sell offer does not take the first offer.

Note that regular offers made later than your passive sell offer can act on and take your passive sell offer, even if the regular offer is of the same price as your passive sell offer.

Passive sell offers allow market makers to have zero spread. If you want to trade EUR for USD at 1:1 price and USD for EUR also at 1:1, you can create two passive sell offers so the two offers don't immediately act on each other.

Once the passive sell offer is created, you can manage it like any other offer using the manage offer operation - see *ManageOffer* for more details.

### Parameters

- **selling** (*Asset*) – What you're selling.
- **buying** (*Asset*) – What you're buying.
- **amount** (*Union[str, Decimal]*) – The total amount you're selling. If 0, deletes the offer.
- **price** (*Union[Price, str, Decimal]*) – Price of 1 unit of *selling* in terms of *buying*.
- **source** (*Union[MuxedAccount, str, None]*) – The source account (defaults to transaction source).

**classmethod** **from\_xdr\_object** (*operation\_xdr\_object*)

Creates a *CreatePassiveSellOffer* object from an XDR Operation object.

**Return type** *CreatePassiveSellOffer*

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** *Operation*

## Inflation

**class** stellar\_sdk.operation.**Inflation** (*source=None*)

The *Inflation* object, which represents a Inflation operation on Stellar's network.

This operation runs inflation.

Threshold: Low

**Parameters** **source** (*str*) – The source account (defaults to transaction source).

**classmethod** **from\_xdr\_object** (*operation\_xdr\_object*)

Creates a *Inflation* object from an XDR Operation object.

**Return type** *Inflation*

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** Operation

## ManageBuyOffer

**class** stellar\_sdk.operation.**ManageBuyOffer** (*selling, buying, amount, price, offer\_id=0, source=None*)

The *ManageBuyOffer* object, which represents a ManageBuyOffer operation on Stellar's network.

Creates, updates, or deletes an buy offer.

If you want to create a new offer set Offer ID to 0.

If you want to update an existing offer set Offer ID to existing offer ID.

If you want to delete an existing offer set Offer ID to existing offer ID and set Amount to 0.

Threshold: Medium

### Parameters

- **selling** (*Asset*) – What you're selling.
- **buying** (*Asset*) – What you're buying.
- **amount** (*Union[str, Decimal]*) – Amount being bought. if set to 0, delete the offer.
- **price** (*Union[Price, str, Decimal]*) – Price of thing being bought in terms of what you are selling.
- **offer\_id** (*int*) – If 0, will create a new offer (default). Otherwise, edits an existing offer.
- **source** (*Union[MuxedAccount, str, None]*) – The source account (defaults to transaction source).

**classmethod** **from\_xdr\_object** (*operation\_xdr\_object*)

Creates a *ManageBuyOffer* object from an XDR Operation object.

**Return type** ManageBuyOffer

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this *Operation*.

**Return type** Operation

## ManageData

**class** stellar\_sdk.operation.**ManageData** (*data\_name, data\_value, source=None*)

The *ManageData* object, which represents a ManageData operation on Stellar's network.

Allows you to set, modify or delete a Data Entry (name/value pair) that is attached to a particular account. An account can have an arbitrary amount of DataEntries attached to it. Each DataEntry increases the minimum balance needed to be held by the account.

DataEntries can be used for application specific things. They are not used by the core Stellar protocol.

Threshold: Medium

### Parameters

- **data\_name** (*str*) – The name of the data entry.
- **data\_value** (*Union[str, bytes, None]*) – The value of the data entry.
- **source** (*Union[MuxedAccount, str, None]*) – The optional source account.

**classmethod** `from_xdr_object (operation_xdr_object)`  
Creates a *ManageData* object from an XDR Operation object.

**Return type** `ManageData`

**to\_xdr\_object ()**  
Creates an XDR Operation object that represents this *Operation*.

**Return type** `Operation`

## ManageSellOffer

**class** `stellar_sdk.operation.ManageSellOffer (selling, buying, amount, price, offer_id=0, source=None)`

The *ManageSellOffer* object, which represents a ManageSellOffer operation on Stellar's network.

Creates, updates, or deletes an sell offer.

If you want to create a new offer set Offer ID to 0.

If you want to update an existing offer set Offer ID to existing offer ID.

If you want to delete an existing offer set Offer ID to existing offer ID and set Amount to 0.

Threshold: Medium

### Parameters

- **selling** (*Asset*) – What you're selling.
- **buying** (*Asset*) – What you're buying.
- **amount** (`Union[str, Decimal]`) – The total amount you're selling. If 0, deletes the offer.
- **price** (`Union[Price, str, Decimal]`) – Price of 1 unit of *selling* in terms of *buying*.
- **offer\_id** (`int`) – If 0, will create a new offer (default). Otherwise, edits an existing offer.
- **source** (`Union[MuxedAccount, str, None]`) – The source account (defaults to transaction source).

**classmethod** `from_xdr_object (operation_xdr_object)`  
Creates a *ManageSellOffer* object from an XDR Operation object.

**Return type** `ManageSellOffer`

**to\_xdr\_object ()**  
Creates an XDR Operation object that represents this *Operation*.

**Return type** `Operation`

## PathPayment

**class** `stellar_sdk.operation.PathPayment (destination, send_asset, send_max, dest_asset, dest_amount, path, source=None)`

The *PathPayment* object, which represents a PathPayment operation on Stellar's network.

Sends an amount in a specific asset to a destination account through a path of offers. This allows the asset sent (e.g. 450 XLM) to be different from the asset received (e.g. 6 BTC).

Threshold: Medium

### Parameters

- **destination** (`Union[MixedAccount, str]`) – The destination account to send to.
- **send\_asset** (`Asset`) – The asset to pay with.
- **send\_max** (`Union[str, Decimal]`) – The maximum amount of send\_asset to send.
- **dest\_asset** (`Asset`) – The asset the destination will receive.
- **dest\_amount** (`Union[str, Decimal]`) – The amount the destination receives.
- **path** (`List[Asset]`) – A list of Asset objects to use as the path.
- **source** (`Union[MixedAccount, str, None]`) – The source account for the payment.  
Defaults to the transaction's source account.

**classmethod from\_xdr\_object** (`operation_xdr_object`)

Creates a `PathPaymentStrictReceive` object from an XDR Operation object.

**Return type** `PathPaymentStrictReceive`

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this `Operation`.

**Return type** `Operation`

## PathPaymentStrictReceive

```
class stellar_sdk.operation.PathPaymentStrictReceive (destination, send_asset,
                                                    send_max, dest_asset,
                                                    dest_amount, path,
                                                    source=None)
```

The `PathPaymentStrictReceive` object, which represents a `PathPaymentStrictReceive` operation on Stellar's network.

Sends an amount in a specific asset to a destination account through a path of offers. This allows the asset sent (e.g. 450 XLM) to be different from the asset received (e.g. 6 BTC).

Threshold: Medium

### Parameters

- **destination** (`Union[MixedAccount, str]`) – The destination account to send to.
- **send\_asset** (`Asset`) – The asset to pay with.
- **send\_max** (`Union[str, Decimal]`) – The maximum amount of send\_asset to send.
- **dest\_asset** (`Asset`) – The asset the destination will receive.
- **dest\_amount** (`Union[str, Decimal]`) – The amount the destination receives.
- **path** (`List[Asset]`) – A list of Asset objects to use as the path.
- **source** (`Union[MixedAccount, str, None]`) – The source account for the payment.  
Defaults to the transaction's source account.

**classmethod from\_xdr\_object** (`operation_xdr_object`)

Creates a `PathPaymentStrictReceive` object from an XDR Operation object.

**Return type** `PathPaymentStrictReceive`

**to\_xdr\_object** ()

Creates an XDR Operation object that represents this `Operation`.

**Return type** `Operation`

## PathPaymentStrictSend

```
class stellar_sdk.operation.PathPaymentStrictSend(destination, send_asset,  
                                                  send_amount, dest_asset, dest_min,  
                                                  path, source=None)
```

The *PathPaymentStrictSend* object, which represents a PathPaymentStrictSend operation on Stellar's network.

Sends an amount in a specific asset to a destination account through a path of offers. This allows the asset sent (e.g, 450 XLM) to be different from the asset received (e.g, 6 BTC).

Threshold: Medium

### Parameters

- **destination** (*Union[MixedAccount, str]*) – The destination account to send to.
- **send\_asset** (*Asset*) – The asset to pay with.
- **send\_amount** (*Union[str, Decimal]*) – Amount of send\_asset to send.
- **dest\_asset** (*Asset*) – The asset the destination will receive.
- **dest\_min** (*Union[str, Decimal]*) – The minimum amount of dest\_asset to be received.
- **path** (*List[Asset]*) – A list of Asset objects to use as the path.
- **source** (*Union[MixedAccount, str, None]*) – The source account for the payment. Defaults to the transaction's source account.

```
classmethod from_xdr_object(operation_xdr_object)
```

Creates a *PathPaymentStrictSend* object from an XDR Operation object.

**Return type** PathPaymentStrictSend

```
to_xdr_object()
```

Creates an XDR Operation object that represents this *Operation*.

**Return type** Operation

## Payment

```
class stellar_sdk.operation.Payment(destination, asset, amount, source=None)
```

The *Payment* object, which represents a Payment operation on Stellar's network.

Sends an amount in a specific asset to a destination account.

Threshold: Medium

### Parameters

- **destination** (*Union[MixedAccount, str]*) – The destination account ID.
- **asset** (*Asset*) – The asset to send.
- **amount** (*Union[str, Decimal]*) – The amount to send.
- **source** (*Union[MixedAccount, str, None]*) – The source account for the payment. Defaults to the transaction's source account.

```
classmethod from_xdr_object(operation_xdr_object)
```

Creates a *Payment* object from an XDR Operation object.

**Return type** Payment



`to_xdr_object()`

Creates an XDR Operation object that represents this *Operation*.

**Return type** *Operation*

## SetOptions

```
class stellar_sdk.operation.SetOptions (inflation_dest=None,          clear_flags=None,
                                         set_flags=None,             master_weight=None,
                                         low_threshold=None,         med_threshold=None,
                                         high_threshold=None,        signer=None,
                                         home_domain=None, source=None)
```

The *SetOptions* object, which represents a SetOptions operation on Stellar's network.

This operation sets the options for an account.

For more information on the signing options, please refer to the [multi-sig doc](#).

When updating signers or other thresholds, the threshold of this operation is high.

Threshold: Medium or High

### Parameters

- **inflation\_dest** (*Optional[str]*) – Account of the inflation destination.
- **clear\_flags** (*Union[int, Flag, None]*) – Indicates which flags to clear. For details about the flags, please refer to the [accounts doc](#). The *bit mask* integer subtracts from the existing flags of the account. This allows for setting specific bits without knowledge of existing flags, you can also use *stellar\_sdk.operation.set\_options.Flag* - AUTHORIZATION\_REQUIRED = 1 - AUTHORIZATION\_REVOCABLE = 2 - AUTHORIZATION\_IMMUTABLE = 4
- **set\_flags** (*Union[int, Flag, None]*) – Indicates which flags to set. For details about the flags, please refer to the [accounts doc](#). The *bit mask* integer adds onto the existing flags of the account. This allows for setting specific bits without knowledge of existing flags, you can also use *stellar\_sdk.operation.set\_options.Flag* - AUTHORIZATION\_REQUIRED = 1 - AUTHORIZATION\_REVOCABLE = 2 - AUTHORIZATION\_IMMUTABLE = 4
- **master\_weight** (*Optional[int]*) – A number from 0-255 (inclusive) representing the weight of the master key. If the weight of the master key is updated to 0, it is effectively disabled.
- **low\_threshold** (*Optional[int]*) – A number from 0-255 (inclusive) representing the threshold this account sets on all operations it performs that have a *low threshold*.
- **med\_threshold** (*Optional[int]*) – A number from 0-255 (inclusive) representing the threshold this account sets on all operations it performs that have a *medium threshold*.
- **high\_threshold** (*Optional[int]*) – A number from 0-255 (inclusive) representing the threshold this account sets on all operations it performs that have a *high threshold*.
- **home\_domain** (*Optional[str]*) – sets the home domain used for reverse *federation* lookup.
- **signer** (*Optional[Signer]*) – Add, update, or remove a signer from the account.
- **source** (*Union[MuxedAccount, str, None]*) – The source account (defaults to transaction source).

**classmethod** `from_xdr_object (operation_xdr_object)`  
Creates a *SetOptions* object from an XDR Operation object.

**Return type** *SetOptions*

**to\_xdr\_object ()**  
Creates an XDR Operation object that represents this *Operation*.

**Return type** *Operation*

**class** `stellar_sdk.operation.set_options.Flag`  
Indicates which flags to set. For details about the flags, please refer to the [accounts doc](#). The bit mask integer adds onto the existing flags of the account.

## 2.1.11 Price

**class** `stellar_sdk.price.Price (n, d)`  
Create a new price. Price in Stellar is represented as a fraction.

**Parameters**

- `n (int)` – numerator
- `d (int)` – denominator

**classmethod** `from_raw_price (price)`  
Create a *Price* from the given str price.

**Parameters** `price (str)` – the str price. (ex. `'0.125'`)

**Return type** *Price*

**Returns** A new *Price* object from the given str price.

**Raises** *NoApproximationError*: if the approximation could not not be found.

**classmethod** `from_xdr_object (price_xdr_object)`  
Create a *Price* from an XDR Asset object.

**Parameters** `price_xdr_object (Price)` – The XDR Price object.

**Return type** *Price*

**Returns** A new *Price* object from the given XDR Price object.

**to\_xdr\_object ()**  
Returns the xdr object for this price object.

**Return type** *Price*

**Returns** XDR Price object

## 2.1.12 Server

**class** `stellar_sdk.server.Server (horizon_url='https://horizon-testnet.stellar.org/',  
client=None)`  
Server handles the network connection to a [Horizon](#) instance and exposes an interface for requests to that instance.

Here we need to talk about the **client** parameter, if you do not specify the client, we will use the `stellar_sdk.client.requests_client.RequestsClient` instance by default, it is a synchronous HTTPClient, you can also specify an asynchronous HTTP Client, for example: `stellar_sdk.client.aihttp_client.AiohttpClient`. If you use a synchronous client, then all requests are synchronous. If you use an asynchronous client, then all requests are asynchronous. The choice is in your hands.

#### Parameters

- **horizon\_url** (`str`) – Horizon Server URL (ex. `https://horizon-testnet.stellar.org`)
- **client** (`Union[BaseAsyncClient, BaseSyncClient, None]`) – Http Client used to send the request

**Raises** `TypeError`: if the client does not meet the standard.

#### **accounts()**

**Return type** `AccountsCallBuilder`

**Returns** New `stellar_sdk.call_builder.AccountsCallBuilder` object configured by a current Horizon server configuration.

#### **assets()**

**Return type** `AssetsCallBuilder`

**Returns** New `stellar_sdk.call_builder.AssetsCallBuilder` object configured by a current Horizon server configuration.

#### **close()**

Close underlying connector.

Release all acquired resources.

**Return type** `Optional[Coroutine[Any, Any, None]]`

#### **data(account\_id, data\_name)**

**Returns** New `stellar_sdk.call_builder.DataCallBuilder` object configured by a current Horizon server configuration.

#### **effects()**

**Return type** `EffectsCallBuilder`

**Returns** New `stellar_sdk.call_builder.EffectsCallBuilder` object configured by a current Horizon server configuration.

#### **fee\_stats()**

**Return type** `FeeStatsCallBuilder`

**Returns** New `stellar_sdk.call_builder.FeeStatsCallBuilder` object configured by a current Horizon server configuration.

#### **fetch\_base\_fee()**

Fetch the base fee. Since this hits the server, if the server call fails, you might get an error. You should be prepared to use a default value if that happens.

**Return type** `Union[int, Coroutine[Any, Any, int]]`

**Returns** the base fee

**Raises** `ConnectionError` `NotFoundError` `BadRequestError`  
`BadResponseError` `UnknownRequestError`

#### **ledgers()**

**Return type** `LedgersCallBuilder`

**Returns** New `stellar_sdk.call_builder.LedgersCallBuilder` object configured by a current Horizon server configuration.

**load\_account** (*account\_id*)

Fetches an account's most current state in the ledger and then creates and returns an `stellar_sdk.account.Account` object.

**Parameters** **account\_id** (`Union[MixedAccount, Keypair, str]`) – The account to load.

**Return type** `Union[Account, Coroutine[Any, Any, Account]]`

**Returns** an `stellar_sdk.account.Account` object.

**Raises** `ConnectionError` `NotFoundError` `BadRequestError`  
`BadResponseError` `UnknownRequestError`

**offers** ()

**Return type** `OffersCallBuilder`

**Returns** New `stellar_sdk.call_builder.OffersCallBuilder` object configured by a current Horizon server configuration.

**operations** ()

**Return type** `OperationsCallBuilder`

**Returns** New `stellar_sdk.call_builder.OperationsCallBuilder` object configured by a current Horizon server configuration.

**orderbook** (*selling, buying*)

**Parameters**

- **selling** (*Asset*) – Asset being sold
- **buying** (*Asset*) – Asset being bought

**Return type** `OrderbookCallBuilder`

**Returns** New `stellar_sdk.call_builder.OrderbookCallBuilder` object configured by a current Horizon server configuration.

**paths** (*source\_account, destination\_account, destination\_asset, destination\_amount*)

**Parameters**

- **source\_account** (*str*) – The sender's account ID. Any returned path must use a source that the sender can hold.
- **destination\_account** (*str*) – The destination account ID that any returned path should use.
- **destination\_asset** (*Asset*) – The destination asset.
- **destination\_amount** (*str*) – The amount, denominated in the destination asset, that any returned path should be able to satisfy.

**Return type** `PathsCallBuilder`

**Returns** New `stellar_sdk.call_builder.PathsCallBuilder` object configured by a current Horizon server configuration.

**payments** ()

**Return type** `PaymentsCallBuilder`

**Returns** New `stellar_sdk.call_builder.PaymentsCallBuilder` object configured by a current Horizon server configuration.

**root()**

**Return type** `RootCallBuilder`

**Returns** New `stellar_sdk.call_builder.RootCallBuilder` object configured by a current Horizon server configuration.

**strict\_receive\_paths** (*source, destination\_asset, destination\_amount*)

**Parameters**

- **source** (`Union[str, List[Asset]]`) – The sender’s account ID or a list of Assets. Any returned path must use a source that the sender can hold.
- **destination\_asset** (`Asset`) – The destination asset.
- **destination\_amount** (`str`) – The amount, denominated in the destination asset, that any returned path should be able to satisfy.

**Returns** New `stellar_sdk.call_builder.StrictReceivePathsCallBuilder` object configured by a current Horizon server configuration.

**strict\_send\_paths** (*source\_asset, source\_amount, destination*)

**Parameters**

- **source\_asset** (`Asset`) – The asset to be sent.
- **source\_amount** (`str`) – The amount, denominated in the source asset, that any returned path should be able to satisfy.
- **destination** (`Union[str, List[Asset]]`) – The destination account or the destination assets.

**Returns** New `stellar_sdk.call_builder.StrictReceivePathsCallBuilder` object configured by a current Horizon server configuration.

**submit\_transaction** (*transaction\_envelope, skip\_memo\_required\_check=False*)

Submits a transaction to the network.

**Parameters** **transaction\_envelope** (`Union[TransactionEnvelope, FeeBumpTransactionEnvelope, str]`) – `stellar_sdk.transaction_envelope.TransactionEnvelope` object or base64 encoded xdr

**Return type** `Union[Dict[str, Any], Coroutine[Any, Any, Dict[str, Any]]]`

**Returns** the response from horizon

**Raises** `ConnectionError` `NotFoundError` `BadRequestError` `BadResponseError` `UnknownRequestError` `AccountRequiresMemoError`

**trade\_aggregations** (*base, counter, resolution, start\_time=None, end\_time=None, offset=None*)

**Parameters**

- **base** (`Asset`) – base asset
- **counter** (`Asset`) – counter asset

- **resolution** (`int`) – segment duration as millis since epoch. *Supported values are 1 minute (60000), 5 minutes (300000), 15 minutes (900000), 1 hour (3600000), 1 day (86400000) and 1 week (604800000).*
- **start\_time** (`Optional[int]`) – lower time boundary represented as millis since epoch
- **end\_time** (`Optional[int]`) – upper time boundary represented as millis since epoch
- **offset** (`Optional[int]`) – segments can be offset using this parameter. Expressed in milliseconds. *Can only be used if the resolution is greater than 1 hour. Value must be in whole hours, less than the provided resolution, and less than 24 hours.*

**Return type** `TradeAggregationsCallBuilder`

**Returns** New `stellar_sdk.call_builder.TradeAggregationsCallBuilder` object configured by a current Horizon server configuration.

**trades** ()

**Return type** `TradesCallBuilder`

**Returns** New `stellar_sdk.call_builder.TradesCallBuilder` object configured by a current Horizon server configuration.

**transactions** ()

**Return type** `TransactionsCallBuilder`

**Returns** New `stellar_sdk.call_builder.TransactionsCallBuilder` object configured by a current Horizon server configuration.

## 2.1.13 Signer

**class** `stellar_sdk.signer.Signer` (*signer\_key, weight*)

The *Signer* object, which represents an account signer on Stellar's network.

**Parameters**

- **signer\_key** (`SignerKey`) – The XDR signer object
- **weight** –

**classmethod** `ed25519_public_key` (*account\_id, weight*)

Create ED25519 PUBLIC KEY Signer from account id.

**Parameters**

- **account\_id** (`str`) – account id
- **weight** (`int`) – The weight of the signer (0 to delete or 1-255)

**Return type** *Signer*

**Returns** ED25519 PUBLIC KEY Signer

**Raises** `Ed25519PublicKeyInvalidError`: if `account_id` is not a valid ed25519 public key.

**classmethod** `from_xdr_object` (*signer\_xdr\_object*)

Create a *Signer* from an XDR TimeBounds object.

**Parameters** **signer\_xdr\_object** (`Signer`) – The XDR Signer object.

**Return type** *Signer*

**Returns** A new *Signer* object from the given XDR Signer object.

**classmethod** `pre_auth_tx` (*pre\_auth\_tx\_hash*, *weight*)

Create Pre AUTH TX Signer from the sha256 hash of a transaction, click [here](#) for more information.

**Parameters**

- **pre\_auth\_tx\_hash** (*bytes*) – The sha256 hash of a transaction.
- **weight** (*int*) – The weight of the signer (0 to delete or 1-255)

**Return type** *Signer*

**Returns** Pre AUTH TX Signer

**classmethod** `sha256_hash` (*sha256\_hash*, *weight*)

Create SHA256 HASH Signer from a sha256 hash of a preimage, click [here](#) for more information.

**Parameters**

- **sha256\_hash** (*bytes*) – a sha256 hash of a preimage
- **weight** (*int*) – The weight of the signer (0 to delete or 1-255)

**Return type** *Signer*

**Returns** SHA256 HASH Signer

**to\_xdr\_object** ()

Returns the xdr object for this Signer object.

**Return type** *Signer*

**Returns** XDR Signer object

## 2.1.14 TimeBounds

**class** `stellar_sdk.time_bounds.TimeBounds` (*min\_time*, *max\_time*)

TimeBounds represents the time interval that a transaction is valid.

The UNIX timestamp (in seconds), determined by ledger time, of a lower and upper bound of when this transaction will be valid. If a transaction is submitted too early or too late, it will fail to make it into the transaction set. **max\_time** equal 0 means that it's not set.

See [Stellar's documentation on Transactions](#) for more information on how TimeBounds are used within transactions.

**Parameters**

- **min\_time** (*int*) – the UNIX timestamp (in seconds)
- **max\_time** (*int*) – the UNIX timestamp (in seconds)

**Raises** *ValueError*: if *max\_time* less than *min\_time*.

**classmethod** `from_xdr_object` (*time\_bounds\_xdr\_object*)

Create a *TimeBounds* from an XDR TimeBounds object.

**Parameters** **time\_bounds\_xdr\_object** (*TimeBounds*) – The XDR TimeBounds object.

**Return type** *TimeBounds*

**Returns** A new *TimeBounds* object from the given XDR TimeBounds object.

**to\_xdr\_object** ()

Returns the xdr object for this TimeBounds object.

**Return type** `TimeBounds`

**Returns** XDR `TimeBounds` object

## 2.1.15 Transaction

**class** `stellar_sdk.transaction.Transaction` (*source, sequence, fee, operations, memo=None, time\_bounds=None, v1=False*)

The *Transaction* object, which represents a transaction (Transaction or TransactionV0) on Stellar's network.

A transaction contains a list of operations, which are all executed in order as one ACID transaction, along with an associated source account, fee, account sequence number, list of signatures, both an optional memo and an optional `TimeBounds`. Typically a *Transaction* is placed in a *TransactionEnvelope* which is then signed before being sent over the network.

For more information on Transactions in Stellar, see [Stellar's guide on transactions](#).

### Parameters

- **source** (`Union[Keypair, MuxedAccount, str]`) – the source account for the transaction.
- **sequence** (`int`) – The sequence number for the transaction.
- **fee** (`int`) – The fee amount for the transaction, which should equal FEE (currently 100 stroops) multiplied by the number of operations in the transaction. See [Stellar's latest documentation on fees](#) for more information.
- **operations** (`List[Operation]`) – A list of operations objects (typically its subclasses as defined in `stellar_sdk.operation.Operation`).
- **time\_bounds** (`Optional[TimeBounds]`) – The timebounds for the validity of this transaction.
- **memo** (`Optional[Memo]`) – The memo being sent with the transaction, being represented as one of the subclasses of the *Memo* object.
- **v1** (`bool`) – Temporary feature flag to allow alpha testing of Stellar Protocol 13 transactions. We will remove this once all transactions are supposed to be v1. See [CAP-0015](#) for more information.

**classmethod** `from_xdr` (*xdr, v1=False*)

Create a new *Transaction* from an XDR string.

### Parameters

- **xdr** (`str`) – The XDR string that represents a transaction.
- **v1** (`bool`) – Temporary feature flag to allow alpha testing of Stellar Protocol 13 transactions. We will remove this once all transactions are supposed to be v1. See [CAP-0015](#) for more information.

**Return type** *Transaction*

**Returns** A new *Transaction* object from the given XDR Transaction base64 string object.

**classmethod** `from_xdr_object` (*tx\_xdr\_object, v1=False*)

Create a new *Transaction* from an XDR object.

### Parameters

- **tx\_xdr\_object** (`Union[Transaction, TransactionV0]`) – The XDR object that represents a transaction.



- **v1** (*bool*) – Temporary feature flag to allow alpha testing of Stellar Protocol 13 transactions. We will remove this once all transactions are supposed to be v1. See [CAP-0015](#) for more information.

**Return type** *Transaction*

**Returns** A new *Transaction* object from the given XDR Transaction object.

**to\_xdr\_object** ()

Get an XDR object representation of this *Transaction*.

**Return type** *Union*[*Transaction*, *TransactionV0*]

**Returns** XDR Transaction object

## 2.1.16 TransactionEnvelope

```
class stellar_sdk.transaction_envelope.TransactionEnvelope (transaction, network_passphrase, signatures=None)
```

The *TransactionEnvelope* object, which represents a transaction envelope ready to sign and submit to send over the network.

When a transaction is ready to be prepared for sending over the network, it must be put into a *TransactionEnvelope*, which includes additional metadata such as the signers for a given transaction. Ultimately, this class handles signing and conversion to and from XDR for usage on Stellar’s network.

### Parameters

- **transaction** (*Transaction*) – The transaction that is encapsulated in this envelope.
- **signatures** (*list*) – which contains a list of signatures that have already been created.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

```
classmethod from_xdr (xdr, network_passphrase)
```

Create a new *BaseTransactionEnvelope* from an XDR string.

### Parameters

- **xdr** (*str*) – The XDR string that represents a transaction envelope.
- **network\_passphrase** (*str*) – which network this transaction envelope is associated with.

**Return type** ~T

**Returns** A new *BaseTransactionEnvelope* object from the given XDR *TransactionEnvelope* base64 string object.

```
classmethod from_xdr_object (te_xdr_object, network_passphrase)
```

Create a new *TransactionEnvelope* from an XDR object.

### Parameters

- **te\_xdr\_object** (*TransactionEnvelope*) – The XDR object that represents a transaction envelope.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

**Return type** *TransactionEnvelope*

**Returns** A new *TransactionEnvelope* object from the given XDR TransactionEnvelope object.

**hash()**

Get the XDR Hash of the signature base.

This hash is ultimately what is signed before transactions are sent over the network. See *signature\_base()* for more details about this process.

**Return type** *bytes*

**Returns** The XDR Hash of this transaction envelope's signature base.

**hash\_hex()**

Return a hex encoded hash for this transaction envelope.

**Return type** *str*

**Returns** A hex encoded hash for this transaction envelope.

**sign(*signer*)**

Sign this transaction envelope with a given keypair.

Note that the signature must not already be in this instance's list of signatures.

**Parameters** **signer** (*Union[Keypair, str]*) – The keypair or secret to use for signing this transaction envelope.

**Raise** *SignatureExistError*: if this signature already exists.

**Return type** *None*

**sign\_hashx(*preimage*)**

Sign this transaction envelope with a Hash(x) signature.

See Stellar's documentation on [Multi-Sig](#) for more details on Hash(x) signatures.

**Parameters** **preimage** (*bytes*) – 32 byte hash or hex encoded string, the "x" value to be hashed and used as a signature.

**Return type** *None*

**signature\_base()**

Get the signature base of this transaction envelope.

Return the "signature base" of this transaction, which is the value that, when hashed, should be signed to create a signature that validators on the Stellar Network will accept.

It is composed of a 4 prefix bytes followed by the xdr-encoded form of this transaction.

**Return type** *bytes*

**Returns** The signature base of this transaction envelope.

**to\_xdr()**

Get the base64 encoded XDR string representing this BaseTransactionEnvelope.

**Return type** *str*

**Returns** XDR TransactionEnvelope base64 string object

**to\_xdr\_object()**

Get an XDR object representation of this *TransactionEnvelope*.

**Return type** *TransactionEnvelope*

**Returns** XDR TransactionEnvelope object

### 2.1.17 FeeBumpTransaction

**class** stellar\_sdk.fee\_bump\_transaction.**FeeBumpTransaction** (*fee\_source*,  
*base\_fee*, *inner\_transaction\_envelope*)

The *FeeBumpTransaction* object, which represents a fee bump transaction on Stellar's network.

See [CAP-0015](#) for more information.

#### Parameters

- **fee\_source** (*Union[Keypair, MuxedAccount, str]*) – The account paying for the transaction.
- **base\_fee** (*int*) – The max fee willing to pay per operation in inner transaction (**in stroops**).
- **inner\_transaction\_envelope** (*TransactionEnvelope*) – The TransactionEnvelope to be bumped by the fee bump transaction.

**classmethod** **from\_xdr** (*xdr, network\_passphrase*)

Create a new *FeeBumpTransaction* from an XDR string.

#### Parameters

- **xdr** (*str*) – The XDR string that represents a transaction.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

**Return type** *FeeBumpTransaction*

**Returns** A new *FeeBumpTransaction* object from the given XDR FeeBumpTransaction base64 string object.

**classmethod** **from\_xdr\_object** (*tx\_xdr\_object, network\_passphrase*)

Create a new *FeeBumpTransaction* from an XDR object.

#### Parameters

- **tx\_xdr\_object** (*FeeBumpTransaction*) – The XDR object that represents a fee bump transaction.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

**Return type** *FeeBumpTransaction*

**Returns** A new *FeeBumpTransaction* object from the given XDR Transaction object.

**to\_xdr\_object** ()

Get an XDR object representation of this *FeeBumpTransaction*.

**Return type** *FeeBumpTransaction*

**Returns** XDR Transaction object

## 2.1.18 FeeBumpTransactionEnvelope

```
class stellar_sdk.fee_bump_transaction_envelope.FeeBumpTransactionEnvelope (transaction,
                                                                              net-
                                                                              work_passphrase,
                                                                              sig-
                                                                              na-
                                                                              tures=None)
```

The *FeeBumpTransactionEnvelope* object, which represents a transaction envelope ready to sign and submit to send over the network.

When a transaction is ready to be prepared for sending over the network, it must be put into a *FeeBumpTransactionEnvelope*, which includes additional metadata such as the signers for a given transaction. Ultimately, this class handles signing and conversion to and from XDR for usage on Stellar's network.

### Parameters

- **transaction** (*FeeBumpTransaction*) – The fee bump transaction that is encapsulated in this envelope.
- **signatures** (*list*) – which contains a list of signatures that have already been created.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

```
classmethod from_xdr (xdr, network_passphrase)
```

Create a new *BaseTransactionEnvelope* from an XDR string.

### Parameters

- **xdr** (*str*) – The XDR string that represents a transaction envelope.
- **network\_passphrase** (*str*) – which network this transaction envelope is associated with.

### Return type ~T

**Returns** A new *BaseTransactionEnvelope* object from the given XDR *TransactionEnvelope* base64 string object.

```
classmethod from_xdr_object (te_xdr_object, network_passphrase)
```

Create a new *FeeBumpTransactionEnvelope* from an XDR object.

### Parameters

- **te\_xdr\_object** (*TransactionEnvelope*) – The XDR object that represents a fee bump transaction envelope.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

### Return type *FeeBumpTransactionEnvelope*

**Returns** A new *FeeBumpTransactionEnvelope* object from the given XDR *TransactionEnvelope* object.

```
hash ()
```

Get the XDR Hash of the signature base.

This hash is ultimately what is signed before transactions are sent over the network. See *signature\_base()* for more details about this process.

### Return type *bytes*

**Returns** The XDR Hash of this transaction envelope's signature base.

**hash\_hex()**

Return a hex encoded hash for this transaction envelope.

**Return type** `str`

**Returns** A hex encoded hash for this transaction envelope.

**sign(signer)**

Sign this transaction envelope with a given keypair.

Note that the signature must not already be in this instance's list of signatures.

**Parameters** **signer** (`Union[Keypair, str]`) – The keypair or secret to use for signing this transaction envelope.

**Raise** `SignatureExistError`: if this signature already exists.

**Return type** `None`

**sign\_hashx(preimage)**

Sign this transaction envelope with a Hash(x) signature.

See Stellar's documentation on [Multi-Sig](#) for more details on Hash(x) signatures.

**Parameters** **preimage** (`bytes`) – 32 byte hash or hex encoded string, the "x" value to be hashed and used as a signature.

**Return type** `None`

**signature\_base()**

Get the signature base of this transaction envelope.

Return the "signature base" of this transaction, which is the value that, when hashed, should be signed to create a signature that validators on the Stellar Network will accept.

It is composed of a 4 prefix bytes followed by the xdr-encoded form of this transaction.

**Return type** `bytes`

**Returns** The signature base of this transaction envelope.

**to\_xdr()**

Get the base64 encoded XDR string representing this `BaseTransactionEnvelope`.

**Return type** `str`

**Returns** XDR TransactionEnvelope base64 string object

**to\_xdr\_object()**

Get an XDR object representation of this `TransactionEnvelope`.

**Return type** `TransactionEnvelope`

**Returns** XDR TransactionEnvelope object

## 2.1.19 TransactionBuilder

```
class stellar_sdk.transaction_builder.TransactionBuilder(source_account, network_passphrase='Test
SDF Network ; September
2015', base_fee=100, v1=False)
```

Transaction builder helps constructs a new `TransactionEnvelope` using the given `Account` as the transaction's "source account". The transaction will use the current sequence number of the given account as its

sequence number and increment the given account's sequence number by one. The given source account must include a private key for signing the transaction or an error will be thrown.

Be careful about **unsubmitted transactions**! When you build a transaction, stellar-sdk automatically increments the source account's sequence number. If you end up not submitting this transaction and submitting another one instead, it'll fail due to the sequence number being wrong. So if you decide not to use a built transaction, make sure to update the source account's sequence number with `stellar_sdk.Server.load_account()` before creating another transaction.

#### Parameters

- **source\_account** (*Account*) – The source account for this transaction.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from. Defaults to **Test SDF Network ; September 2015**.
- **base\_fee** (*int*) – Base fee in stroops. The network base fee is obtained by default from the latest ledger. Transaction fee is equal to base fee times number of operations in this transaction.
- **v1** (*bool*) – Temporary feature flag to allow alpha testing of Stellar Protocol 13 transactions. We will remove this once all transactions are supposed to be v1. See [CAP-0015](#) for more information.

#### `add_hash_memo (memo_hash)`

Set the memo for the transaction to a new *HashMemo*.

**Parameters** **memo\_hash** (*Union[bytes, str]*) – A 32 byte hash or hex encoded string to use as the memo.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**Raises** *MemoInvalidException*: if memo\_hash is not a valid hash memo.

#### `add_id_memo (memo_id)`

Set the memo for the transaction to a new *IdMemo*.

**Parameters** **memo\_id** (*int*) – A 64 bit unsigned integer to set as the memo.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**Raises** *MemoInvalidException*: if memo\_id is not a valid id memo.

#### `add_memo (memo)`

Set the memo for the transaction build by this Builder.

**Parameters** **memo** (*Memo*) – A memo to add to this transaction.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

#### `add_return_hash_memo (memo_return)`

Set the memo for the transaction to a new *RetHashMemo*.

**Parameters** **memo\_return** (*Union[bytes, str]*) – A 32 byte hash or hex encoded string intended to be interpreted as the hash of the transaction the sender is refunding.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**Raises** *MemoInvalidException*: if `memo_return` is not a valid return hash memo.

**add\_text\_memo** (*memo\_text*)

Set the memo for the transaction to a new *TextMemo*.

**Parameters** `memo_text` (*Union[str, bytes]*) – The text for the memo to add.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**Raises** *MemoInvalidException*: if `memo_text` is not a valid text memo.

**add\_time\_bounds** (*min\_time, max\_time*)

Add a time bound to this transaction.

Add a UNIX timestamp, determined by ledger time, of a lower and upper bound of when this transaction will be valid. If a transaction is submitted too early or too late, it will fail to make it into the transaction set. `maxTime` equal 0 means that it's not set.

**Parameters**

- **min\_time** (*int*) – the UNIX timestamp (in seconds)
- **max\_time** (*int*) – the UNIX timestamp (in seconds)

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_account\_merge\_op** (*destination, source=None*)

Append a *AccountMerge* operation to the list of operations.

**Parameters**

- **destination** (*Union[MuxedAccount, str]*) – The ID of the offer. 0 for new offer. Set to existing offer ID to update or delete.
- **source** (*Union[MuxedAccount, str, None]*) – The source address that is being merged into the destination account.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_allow\_trust\_op** (*trustor, asset\_code, authorize, source=None*)

Append an *AllowTrust* operation to the list of operations.

**Parameters**

- **trustor** (*str*) – The account of the recipient of the trustline.
- **asset\_code** (*str*) – The asset of the trustline the source account is authorizing. For example, if an anchor wants to allow another account to hold its USD credit, the type is `USD:anchor`.
- **authorize** (*Union[TrustLineEntryFlag, bool]*) – *True* to authorize the line, *False* to deauthorize if you need further control, you can also use `stellar_sdk.operation.allow_trust.TrustLineEntryFlag`.
- **source** (*Union[MuxedAccount, str, None]*) – The source address that is establishing the trust in the allow trust operation.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_bump\_sequence\_op** (*bump\_to*, *source=None*)

Append a *BumpSequence* operation to the list of operations.

**Parameters**

- **bump\_to** (*int*) – Sequence number to bump to.
- **source** (*Union[MuxedAccount, str, None]*) – The source address that is running the inflation operation.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_change\_trust\_op** (*asset\_code*, *asset\_issuer*, *limit=None*, *source=None*)

Append a *ChangeTrust* operation to the list of operations.

**Parameters**

- **asset\_issuer** (*str*) – The issuer address for the asset.
- **asset\_code** (*str*) – The asset code for the asset.
- **limit** (*Union[str, Decimal, None]*) – The limit of the new trustline.
- **source** (*Union[MuxedAccount, str, None]*) – The source address to add the trustline to.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_create\_account\_op** (*destination*, *starting\_balance*, *source=None*)

Append a *CreateAccount* operation to the list of operations.

**Parameters**

- **destination** (*str*) – Account address that is created and funded.
- **starting\_balance** (*Union[str, Decimal]*) – Amount of XLM to send to the newly created account. This XLM comes from the source account.
- **source** (*Union[MuxedAccount, str, None]*) – The source address to deduct funds from to fund the new account.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_create\_passive\_sell\_offer\_op** (*selling\_code*, *selling\_issuer*, *buying\_code*, *buying\_issuer*, *amount*, *price*, *source=None*)

Append a *CreatePassiveSellOffer* operation to the list of operations.

**Parameters**

- **selling\_code** (*str*) – The asset code for the asset the offer creator is selling.
- **selling\_issuer** (*Optional[str]*) – The issuing address for the asset the offer creator is selling.
- **buying\_code** (*str*) – The asset code for the asset the offer creator is buying.
- **buying\_issuer** (*Optional[str]*) – The issuing address for the asset the offer creator is buying.
- **amount** (*Union[str, Decimal]*) – Amount of the asset being sold. Set to 0 if you want to delete an existing offer.



- **price** (`Union[str, Price, Decimal]`) – Price of 1 unit of selling in terms of buying.
- **source** (`Union[MuxedAccount, str, None]`) – The source address that is creating a passive offer on Stellar’s distributed exchange.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_ed25519\_public\_key\_signer** (`account_id, weight, source=None`)

Add a ed25519 public key signer to an account.

Add a ed25519 public key signer to an account via a `SetOptions <stellar_sdk.operation.SetOptions` operation. This is a helper function for `append_set_options_op()`.

**Parameters**

- **account\_id** (`str`) – The account id of the new ed25519\_public\_key signer.
- **weight** (`int`) – The weight of the new signer.
- **source** (`Union[MuxedAccount, str, None]`) – The source account that is adding a signer to its list of signers.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_hashx\_signer** (`sha256_hash, weight, source=None`)

Add a sha256 hash(HashX) signer to an account.

Add a HashX signer to an account via a `SetOptions <stellar_sdk.operation.SetOptions` operation. This is a helper function for `append_set_options_op()`.

**Parameters**

- **sha256\_hash** (`[<class 'bytes'>, <class 'str'>]`) – The address of the new sha256 hash(hashX) signer, a 32 byte hash or hex encoded string.
- **weight** (`int`) – The weight of the new signer.
- **source** (`Union[MuxedAccount, str, None]`) – The source account that is adding a signer to its list of signers.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_inflation\_op** (`source=None`)

Append a `Inflation` operation to the list of operations.

**Parameters** **source** (`Union[MuxedAccount, str, None]`) – The source address that is running the inflation operation.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_manage\_buy\_offer\_op** (`selling_code, selling_issuer, buying_code, buying_issuer, amount, price, offer_id=0, source=None`)

Append a `ManageBuyOffer` operation to the list of operations.

**Parameters**

- **selling\_code** (`str`) – The asset code for the asset the offer creator is selling.
- **selling\_issuer** (`Optional[str]`) – The issuing address for the asset the offer creator is selling.

- **buying\_code** (`str`) – The asset code for the asset the offer creator is buying.
- **buying\_issuer** (`Optional[str]`) – The issuing address for the asset the offer creator is buying.
- **amount** (`Union[str, Decimal]`) – Amount being bought. if set to. Set to 0 if you want to delete an existing offer.
- **price** (`Union[str, Decimal, Price]`) – Price of thing being bought in terms of what you are selling.
- **offer\_id** (`int`) – The ID of the offer. 0 for new offer. Set to existing offer ID to update or delete.
- **source** (`Union[MuxedAccount, str, None]`) – The source address that is managing a buying offer on Stellar’s distributed exchange.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_manage\_data\_op** (`data_name, data_value, source=None`)

Append a `ManageData` operation to the list of operations.

**Parameters**

- **data\_name** (`str`) – String up to 64 bytes long. If this is a new Name it will add the given name/value pair to the account. If this Name is already present then the associated value will be modified.
- **data\_value** (`Union[str, bytes, None]`) – If not present then the existing Name will be deleted. If present then this value will be set in the DataEntry. Up to 64 bytes long.
- **source** (`Union[MuxedAccount, str, None]`) – The source account on which data is being managed. operation.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_manage\_sell\_offer\_op** (`selling_code, selling_issuer, buying_code, buying_issuer, amount, price, offer_id=0, source=None`)

Append a `ManageSellOffer` operation to the list of operations.

**Parameters**

- **selling\_code** (`str`) – The asset code for the asset the offer creator is selling.
- **selling\_issuer** (`Optional[str]`) – The issuing address for the asset the offer creator is selling.
- **buying\_code** (`str`) – The asset code for the asset the offer creator is buying.
- **buying\_issuer** (`Optional[str]`) – The issuing address for the asset the offer creator is buying.
- **amount** (`Union[str, Decimal]`) – Amount of the asset being sold. Set to 0 if you want to delete an existing offer.
- **price** (`Union[str, Price, Decimal]`) – Price of 1 unit of selling in terms of buying.
- **offer\_id** (`int`) – The ID of the offer. 0 for new offer. Set to existing offer ID to update or delete.
- **source** (`Union[MuxedAccount, str, None]`) – The source address that is managing an offer on Stellar’s distributed exchange.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_operation** (*operation*)

Add an operation to the builder instance

**Parameters** **operation** (*Operation*) – an operation

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_path\_payment\_op** (*destination, send\_code, send\_issuer, send\_max, dest\_code, dest\_issuer, dest\_amount, path, source=None*)

Append a *PathPayment* operation to the list of operations.

**Parameters**

- **destination** (*Union[MixedAccount, str]*) – The destination address (Account ID) for the payment.
- **send\_code** (*str*) – The asset code for the source asset deducted from the source account.
- **send\_issuer** (*Optional[str]*) – The address of the issuer of the source asset.
- **send\_max** (*Union[str, Decimal]*) – The maximum amount of send asset to deduct (excluding fees).
- **dest\_code** (*str*) – The asset code for the final destination asset sent to the recipient.
- **dest\_issuer** (*Optional[str]*) – Account address that receives the payment.
- **dest\_amount** (*Union[str, Decimal]*) – The amount of destination asset the destination account receives.
- **path** (*List[Asset]*) – A list of Asset objects to use as the path.
- **source** (*Union[MixedAccount, str, None]*) – The source address of the path payment.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**append\_path\_payment\_strict\_receive\_op** (*destination, send\_code, send\_issuer, send\_max, dest\_code, dest\_issuer, dest\_amount, path, source=None*)

Append a *PathPaymentStrictReceive* operation to the list of operations.

**Parameters**

- **destination** (*Union[MixedAccount, str]*) – The destination address (Account ID) for the payment.
- **send\_code** (*str*) – The asset code for the source asset deducted from the source account.
- **send\_issuer** (*Optional[str]*) – The address of the issuer of the source asset.
- **send\_max** (*Union[str, Decimal]*) – The maximum amount of send asset to deduct (excluding fees).
- **dest\_code** (*str*) – The asset code for the final destination asset sent to the recipient.
- **dest\_issuer** (*Optional[str]*) – Account address that receives the payment.

- **dest\_amount** (`Union[str, Decimal]`) – The amount of destination asset the destination account receives.
- **path** (`List[Asset]`) – A list of Asset objects to use as the path.
- **source** (`Union[MuxedAccount, str, None]`) – The source address of the path payment.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_path\_payment\_strict\_send\_op** (`destination, send_code, send_issuer, send_amount, dest_code, dest_issuer, dest_min, path, source=None`)

Append a `PathPaymentStrictSend` operation to the list of operations.

**Parameters**

- **destination** (`Union[MuxedAccount, str]`) – The destination address (Account ID) for the payment.
- **send\_code** (`str`) – The asset code for the source asset deducted from the source account.
- **send\_issuer** (`Optional[str]`) – The address of the issuer of the source asset.
- **send\_amount** (`Union[str, Decimal]`) – Amount of send\_asset to send.
- **dest\_code** (`str`) – The asset code for the final destination asset sent to the recipient.
- **dest\_issuer** (`Optional[str]`) – Account address that receives the payment.
- **dest\_min** (`Union[str, Decimal]`) – The minimum amount of dest\_asset to be received.
- **path** (`List[Asset]`) – A list of Asset objects to use as the path.
- **source** (`Union[MuxedAccount, str, None]`) – The source address of the path payment.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_payment\_op** (`destination, amount, asset_code='XLM', asset_issuer=None, source=None`)

Append a `Payment` operation to the list of operations.

**Parameters**

- **destination** (`Union[MuxedAccount, str]`) – Account address that receives the payment.
- **amount** (`Union[str, Decimal]`) – The amount of the currency to send in the payment.
- **asset\_code** (`str`) – The asset code for the asset to send.
- **asset\_issuer** (`Optional[str]`) – The address of the issuer of the asset.
- **source** (`Union[MuxedAccount, str, None]`) – The source address of the payment.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_pre\_auth\_tx\_signer** (`pre_auth_tx_hash, weight, source=None`)

Add a PreAuthTx signer to an account.

Add a PreAuthTx signer to an account via a `SetOptions` `<stellar_sdk.operation.SetOptions` operation. This is a helper function for `append_set_options_op()`.

#### Parameters

- **pre\_auth\_tx\_hash** (`bytes`) – The address of the new preAuthTx signer - obtained by calling `hash` on the `TransactionEnvelope`, a 32 byte hash or hex encoded string.
- **weight** (`int`) – The weight of the new signer.
- **source** (`Union[MuxedAccount, str, None]`) – The source account that is adding a signer to its list of signers.

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**append\_set\_options\_op** (`inflation_dest=None`, `clear_flags=None`, `set_flags=None`, `master_weight=None`, `low_threshold=None`, `med_threshold=None`, `high_threshold=None`, `home_domain=None`, `signer=None`, `source=None`)

Append a `SetOptions` operation to the list of operations.

#### Parameters

- **inflation\_dest** (`Optional[str]`) – Account of the inflation destination.
- **clear\_flags** (`Union[int, Flag, None]`) – Indicates which flags to clear. For details about the flags, please refer to the [accounts doc](#). The `bit mask` integer subtracts from the existing flags of the account. This allows for setting specific bits without knowledge of existing flags, you can also use `stellar_sdk.operation.set_options.Flag` - `AUTHORIZATION_REQUIRED = 1` - `AUTHORIZATION_REVOCABLE = 2` - `AUTHORIZATION_IMMUTABLE = 4`
- **set\_flags** (`Union[int, Flag, None]`) – Indicates which flags to set. For details about the flags, please refer to the [accounts doc](#). The `bit mask` integer adds onto the existing flags of the account. This allows for setting specific bits without knowledge of existing flags, you can also use `stellar_sdk.operation.set_options.Flag` - `AUTHORIZATION_REQUIRED = 1` - `AUTHORIZATION_REVOCABLE = 2` - `AUTHORIZATION_IMMUTABLE = 4`
- **master\_weight** (`Optional[int]`) – A number from 0-255 (inclusive) representing the weight of the master key. If the weight of the master key is updated to 0, it is effectively disabled.
- **low\_threshold** (`Optional[int]`) – A number from 0-255 (inclusive) representing the threshold this account sets on all operations it performs that have a [low threshold](#).
- **med\_threshold** (`Optional[int]`) – A number from 0-255 (inclusive) representing the threshold this account sets on all operations it performs that have a [medium threshold](#).
- **high\_threshold** (`Optional[int]`) – A number from 0-255 (inclusive) representing the threshold this account sets on all operations it performs that have a [high threshold](#).
- **home\_domain** (`Optional[str]`) – sets the home domain used for reverse [federation](#) lookup.
- **signer** (`Optional[Signer]`) – Add, update, or remove a signer from the account.
- **source** (`Union[MuxedAccount, str, None]`) – The source account (defaults to transaction source).

**Return type** `TransactionBuilder`

**Returns** This builder instance.

**build()**

This will build the transaction envelope. It will also increment the source account's sequence number by 1.

**Return type** *TransactionEnvelope*

**Returns** The transaction envelope.

**static build\_fee\_bump\_transaction** (*fee\_source*, *base\_fee*, *inner\_transaction\_envelope*, *network\_passphrase*='Test SDF Network ; September 2015')

Create a *FeeBumpTransactionEnvelope* object.

See [CAP-0015](#) for more information.

#### Parameters

- **fee\_source** (*Union*[*MuxedAccount*, *Keypair*, *str*]) – The account paying for the transaction.
- **base\_fee** (*int*) – The max fee willing to pay per operation in inner transaction (**in stroops**).
- **inner\_transaction\_envelope** (*TransactionEnvelope*) – The *TransactionEnvelope* to be bumped by the fee bump transaction.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

**Returns** a *TransactionBuilder* via the XDR object.

**static from\_xdr** (*xdr*, *network\_passphrase*)

Create a *TransactionBuilder* or *FeeBumpTransactionEnvelope* via an XDR object.

In addition, if *xdr* is not of *TransactionEnvelope*, it sets the fields of this builder (the transaction envelope, transaction, operations, source, etc.) to all of the fields in the provided XDR transaction envelope, but the signature will not be added to it.

#### Parameters

- **xdr** (*str*) – The XDR object representing the transaction envelope to which this builder is setting its state to.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from.

**Return type** *Union*[*TransactionBuilder*, *FeeBumpTransactionEnvelope*]

**Returns** a *TransactionBuilder* or *FeeBumpTransactionEnvelope* via the XDR object.

**set\_timeout** (*timeout*)

Set timeout for the transaction, actually set a *TimeBounds*.

**Parameters** **timeout** (*int*) – timeout in second.

**Return type** *TransactionBuilder*

**Returns** This builder instance.

**Raises** *ValueError*: if *time\_bound* is already set.

## 2.1.20 Helpers

`stellar_sdk.helpers.parse_transaction_envelope_from_xdr(xdr, network_passphrase)`

When you are not sure whether your XDR belongs to `TransactionEnvelope` or `FeeBumpTransactionEnvelope`, you can use this helper function.

### Parameters

- **xdr** (`str`) – Transaction envelope XDR
- **network\_passphrase** (`str`) – The network to connect to for verifying and retrieving additional attributes from. (ex. ‘Public Global Stellar Network ; September 2015’)

**Raises** `ValueError` - XDR is neither `TransactionEnvelope` nor `FeeBumpTransactionEnvelope`

**Return type** `Union[TransactionEnvelope, FeeBumpTransactionEnvelope]`

## 2.1.21 Stellar Ecosystem Proposals

### SEP 0001: stellar.toml

`stellar_sdk.sep.stellar_toml.fetch_stellar_toml(domain, client=None, use_http=False)`

Retrieve the stellar.toml file from a given domain.

Retrieve the stellar.toml file for information about interacting with Stellar’s federation protocol for a given Stellar Anchor (specified by a domain).

### Parameters

- **domain** (`str`) – The domain the .toml file is hosted at.
- **use\_http** (`bool`) – Specifies whether the request should go over plain HTTP vs HTTPS. Note it is recommend that you *always* use HTTPS.
- **client** (`Union[BaseAsyncClient, BaseSyncClient, None]`) – Http Client used to send the request.

**Return type** `Union[Coroutine[Any, Any, Dict[str, Any]], Dict[str, Any]]`

**Returns** The stellar.toml file as a an object via `toml.loads()`.

**Raises** `StellarTomlNotFoundError`: if the Stellar toml file could not not be found.

### SEP 0002: Federation protocol

`stellar_sdk.sep.federation.resolve_stellar_address(stellar_address, client=None, federation_url=None, use_http=False)`

Get the federation record if the user was found for a given Stellar address.

### Parameters

- **stellar\_address** (`str`) – address Stellar address (ex. bob\*stellar.org).
- **client** (`Union[BaseAsyncClient, BaseSyncClient, None]`) – Http Client used to send the request.

- **federation\_url** (`Optional[str]`) – The federation server URL (ex. <https://stellar.org/federation>), if you don't set this value, we will try to get it from `stellar_address`.
- **use\_http** (`bool`) – Specifies whether the request should go over plain HTTP vs HTTPS. Note it is recommend that you *always* use HTTPS.

**Return type** `Union[Coroutine[Any, Any, FederationRecord], FederationRecord]`

**Returns** Federation record.

```
stellar_sdk.sep.federation.resolve_account_id(account_id, domain=None, fed-
                                             eration_url=None, client=None,
                                             use_http=False)
```

Given an account ID, get their federation record if the user was found

**Parameters**

- **account\_id** (`str`) – Account ID (ex. `GBYNR2QJXLBCBTRN44MRORCMI4YO7FZPFBCNOKTOBCAAFC`)
- **domain** (`Optional[str]`) – Get `federation_url` from the domain, you don't need to set this value if `federation_url` is set.
- **federation\_url** (`Optional[str]`) – The federation server URL (ex. <https://stellar.org/federation>).
- **client** (`Union[BaseAsyncClient, BaseSyncClient, None]`) – Http Client used to send the request.
- **use\_http** (`bool`) – Specifies whether the request should go over plain HTTP vs HTTPS. Note it is recommend that you *always* use HTTPS.

**Return type** `Union[Coroutine[Any, Any, FederationRecord], FederationRecord]`

**Returns** Federation record.

```
class stellar_sdk.sep.federation.FederationRecord(account_id, stellar_address,
                                                  memo_type, memo)
```

## SEP 0005: Key Derivation Methods for Stellar Accounts

```
class stellar_sdk.sep.mnemonic.StellarMnemonic(language=<Language.ENGLISH:
                                                'english'>)
    Please use Keypair.generate_mnemonic_phrase() and Keypair.
    from_mnemonic_phrase()
```

```
class stellar_sdk.sep.mnemonic.Language
    The type of language supported by the mnemonic.

    CHINESE_SIMPLIFIED = 'chinese_simplified'
    CHINESE_TRADITIONAL = 'chinese_traditional'
    ENGLISH = 'english'
    FRENCH = 'french'
    ITALIAN = 'italian'
    JAPANESE = 'japanese'
    KOREAN = 'korean'
    SPANISH = 'spanish'
```



## SEP 0010: Stellar Web Authentication

```
stellar_sdk.sep.stellar_web_authentication.build_challenge_transaction(server_secret,
                                                                    client_account_id,
                                                                    anchor_name,
                                                                    network_passphrase,
                                                                    timeout=900)
```

Returns a valid [SEP0010](#) challenge transaction which you can use for Stellar Web Authentication.

### Parameters

- **server\_secret** (`str`) – secret key for server’s signing account.
- **client\_account\_id** (`str`) – The stellar account that the wallet wishes to authenticate with the server.
- **anchor\_name** (`str`) – Anchor’s name to be used in the manage\_data key.
- **network\_passphrase** (`str`) – The network to connect to for verifying and retrieving additional attributes from. (ex. ‘Public Global Stellar Network ; September 2015’)
- **timeout** (`int`) – Challenge duration in seconds (default to 15 minutes).

### Return type `str`

**Returns** A base64 encoded string of the raw TransactionEnvelope xdr struct for the transaction.

```
stellar_sdk.sep.stellar_web_authentication.read_challenge_transaction(challenge_transaction,
                                                                    server_account_id,
                                                                    network_passphrase)
```

Reads a SEP 10 challenge transaction and returns the decoded transaction envelope and client account ID contained within.

It also verifies that transaction is signed by the server.

It does not verify that the transaction has been signed by the client or that any signatures other than the servers on the transaction are valid. Use one of the following functions to completely verify the transaction:

- `stellar_sdk.sep.stellar_web_authentication.verify_challenge_transaction_threshold()`
- `stellar_sdk.sep.stellar_web_authentication.verify_challenge_transaction_signers()`

### Parameters

- **challenge\_transaction** (`str`) – SEP0010 transaction challenge transaction in base64.
- **server\_account\_id** (`str`) – public key for server’s account.
- **network\_passphrase** (`str`) – The network to connect to for verifying and retrieving additional attributes from. (ex. ‘Public Global Stellar Network ; September 2015’)

**Raises** `InvalidSep10ChallengeError` - if the validation fails, the exception will be thrown.

**Return type** `Tuple[TransactionEnvelope, str]`

`stellar_sdk.sep.stellar_web_authentication.verify_challenge_transaction_threshold` (*challenge\_transaction*, *server\_account\_id*, *network\_passphrase*, *threshold*, *signers*)

Verifies that for a SEP 10 challenge transaction all signatures on the transaction are accounted for and that the signatures meet a threshold on an account. A transaction is verified if it is signed by the server account, and all other signatures match a signer that has been provided as an argument, and those signatures meet a threshold on the account.

#### Parameters

- **challenge\_transaction** (*str*) – SEP0010 transaction challenge transaction in base64.
- **server\_account\_id** (*str*) – public key for server’s account.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from. (ex. ‘Public Global Stellar Network ; September 2015’)
- **threshold** (*int*) – The medThreshold on the client account.
- **signers** (*List*[*Ed25519PublicKeySigner*]) – The signers of client account.

**Raises** *InvalidSep10ChallengeError*: - The transaction is invalid according to `stellar_sdk.sep.stellar_web_authentication.read_challenge_transaction()`. - One or more signatures in the transaction are not identifiable as the server account or one of the signers provided in the arguments. - The signatures are all valid but do not meet the threshold.

**Return type** *List*[*Ed25519PublicKeySigner*]

`stellar_sdk.sep.stellar_web_authentication.verify_challenge_transaction_signed_by_client_ma`

An alias for `stellar_sdk.sep.stellar_web_authentication.verify_challenge_transaction()`.

#### Parameters

- **challenge\_transaction** (*str*) – SEP0010 transaction challenge transaction in base64.
- **server\_account\_id** (*str*) – public key for server’s account.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from. (ex. ‘Public Global Stellar Network ; September 2015’)

**Raises** *InvalidSep10ChallengeError* - if the validation fails, the exception will be thrown.

**Return type** *None*

`stellar_sdk.sep.stellar_web_authentication.verify_challenge_transaction_signers` (*challenge\_transaction*, *server\_account\_id*, *network\_passphrase*, *signers*)

Verifies that for a SEP 10 challenge transaction all signatures on the transaction are accounted for. A transaction

is verified if it is signed by the server account, and all other signatures match a signer that has been provided as an argument. Additional signers can be provided that do not have a signature, but all signatures must be matched to a signer for verification to succeed. If verification succeeds a list of signers that were found is returned, excluding the server account ID.

#### Parameters

- **challenge\_transaction** (*str*) – SEP0010 transaction challenge transaction in base64.
- **server\_account\_id** (*str*) – public key for server’s account.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from. (ex. ‘Public Global Stellar Network ; September 2015’)
- **signers** (*List*[*Ed25519PublicKeySigner*]) – The signers of client account.

**Raises** *InvalidSep10ChallengeError*: - The transaction is invalid according to `stellar_sdk.sep.stellar_web_authentication.read_challenge_transaction()`. - One or more signatures in the transaction are not identifiable as the server account or one of the signers provided in the arguments.

**Return type** *List*[*Ed25519PublicKeySigner*]

`stellar_sdk.sep.stellar_web_authentication.verify_challenge_transaction` (*challenge\_transaction*, *server\_account\_id*, *network\_passphrase*)

Verifies if a transaction is a valid [SEP0010 v1.2](#) challenge transaction, if the validation fails, an exception will be thrown.

This function performs the following checks:

1. verify that transaction `sequenceNumber` is equal to zero;
2. verify that transaction source account is equal to the server’s signing key;
3. verify that transaction has time bounds set, and that current time is between the minimum and maximum bounds;
4. verify that transaction contains a single Manage Data operation and it’s source account is not null;
5. verify that transaction envelope has a correct signature by server’s signing key;
6. verify that transaction envelope has a correct signature by the operation’s source account;

#### Parameters

- **challenge\_transaction** (*str*) – SEP0010 transaction challenge transaction in base64.
- **server\_account\_id** (*str*) – public key for server’s account.
- **network\_passphrase** (*str*) – The network to connect to for verifying and retrieving additional attributes from. (ex. ‘Public Global Stellar Network ; September 2015’)

**Raises** *InvalidSep10ChallengeError* - if the validation fails, the exception will be thrown.

**Return type** *None*

## Exceptions

**class** stellar\_sdk.sep.exceptions.**StellarTomlNotFoundError**

If the SEP 0010 toml file not found, the exception will be thrown.

**class** stellar\_sdk.sep.exceptions.**InvalidFederationAddress**

If the federation address is invalid, the exception will be thrown.

**class** stellar\_sdk.sep.exceptions.**FederationServerNotFoundError**

If the federation address is invalid, the exception will be thrown.

**class** stellar\_sdk.sep.exceptions.**BadFederationResponseError** (*response*)

If the federation address is invalid, the exception will be thrown.

**Parameters** *response* – client response

**class** stellar\_sdk.sep.exceptions.**InvalidSep10ChallengeError**

If the SEP 0010 validation fails, the exception will be thrown.

**class** stellar\_sdk.sep.exceptions.**AccountRequiresMemoError** (*message*, *account\_id*,  
*operation\_index*)

AccountRequiresMemoError is raised when a transaction is trying to submit an operation to an account which requires a memo.

This error contains two attributes to help you identify the account requiring the memo and the operation where the account is the destination.

See [SEP-0029](#) for more information.

## CHAPTER 3

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### Links

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- Document: <https://stellar-sdk.readthedocs.io>
- Code: <https://github.com/StellarCN/py-stellar-base/tree/v2>
- Docker: <https://hub.docker.com/r/overcat/py-stellar-base>
- Examples: <https://github.com/StellarCN/py-stellar-base/blob/v2/examples>
- Issue tracker: <https://github.com/StellarCN/py-stellar-base/issues>
- License: Apache License 2.0
- Releases: <https://pypi.org/project/stellar-sdk/>



## CHAPTER 4

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### Thanks

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This document is based on [Stellar JavaScript SDK](#) documentation. Thank you to all the people who have already contributed to Stellar ecosystem!





## CHAPTER 5

---

genindex

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### S

`stellar_sdk`, [15](#)



## A

- Account (class in stellar\_sdk.account), 15
- account() (stellar\_sdk.call\_builder.OffersCallBuilder method), 28
- account\_id() (stellar\_sdk.call\_builder.AccountsCallBuilder method), 18
- account\_id\_muxed (stellar\_sdk.muxed\_account.MuxedAccount attribute), 59
- AccountMerge (class in stellar\_sdk.operation), 61
- AccountRequiresMemoError (class in stellar\_sdk.sep.exceptions), 96
- accounts() (stellar\_sdk.server.Server method), 71
- AccountsCallBuilder (class in stellar\_sdk.call\_builder), 18
- add\_hash\_memo() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 82
- add\_id\_memo() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 82
- add\_memo() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 82
- add\_return\_hash\_memo() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 82
- add\_text\_memo() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 83
- add\_time\_bounds() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 83
- AiohttpClient (class in stellar\_sdk.client.aiohttp\_client), 48
- AllowTrust (class in stellar\_sdk.operation), 61
- append\_account\_merge\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 83
- append\_allow\_trust\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 83
- append\_bump\_sequence\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 83
- append\_change\_trust\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 84
- append\_create\_account\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 84
- append\_create\_passive\_sell\_offer\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 84
- append\_ed25519\_public\_key\_signer() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 85
- append\_hashx\_signer() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 85
- append\_inflation\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 85
- append\_manage\_buy\_offer\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 85
- append\_manage\_data\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 86
- append\_manage\_sell\_offer\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 86
- append\_operation() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 87
- append\_path\_payment\_op() (stellar\_sdk.transaction\_builder.TransactionBuilder method), 87
- append\_path\_payment\_strict\_receive\_op()

(*stellar\_sdk.transaction\_builder.TransactionBuilder* method), 87

`append_path_payment_strict_send_op()` (*stellar\_sdk.transaction\_builder.TransactionBuilder* method), 88

`append_payment_op()` (*stellar\_sdk.transaction\_builder.TransactionBuilder* method), 88

`append_pre_auth_tx_signer()` (*stellar\_sdk.transaction\_builder.TransactionBuilder* method), 88

`append_set_options_op()` (*stellar\_sdk.transaction\_builder.TransactionBuilder* method), 89

`Asset` (class in *stellar\_sdk.asset*), 16

`asset()` (*stellar\_sdk.call\_builder.AccountsCallBuilder* method), 18

`AssetCodeInvalidError` (class in *stellar\_sdk.exceptions*), 52

`AssetIssuerInvalidError` (class in *stellar\_sdk.exceptions*), 53

`assets()` (*stellar\_sdk.server.Server* method), 71

`AssetsCallBuilder` (class in *stellar\_sdk.call\_builder*), 20

## B

`BadFederationResponseError` (class in *stellar\_sdk.sep.exceptions*), 96

`BadRequestError` (class in *stellar\_sdk.exceptions*), 53

`BadResponseError` (class in *stellar\_sdk.exceptions*), 53

`BadSignatureError` (class in *stellar\_sdk.exceptions*), 52

`BaseAsyncClient` (class in *stellar\_sdk.client.base\_async\_client*), 47

`BaseCallBuilder` (class in *stellar\_sdk.call\_builder*), 17

`BaseHorizonError` (class in *stellar\_sdk.exceptions*), 53

`BaseRequestError` (class in *stellar\_sdk.exceptions*), 53

`BaseSyncClient` (class in *stellar\_sdk.client.base\_sync\_client*), 47

`build()` (*stellar\_sdk.transaction\_builder.TransactionBuilder* method), 90

`build_challenge_transaction()` (in module *stellar\_sdk.sep.stellar\_web\_authentication*), 93

`build_fee_bump_transaction()` (*stellar\_sdk.transaction\_builder.TransactionBuilder* static method), 90

`BumpSequence` (class in *stellar\_sdk.operation*), 62

`call()` (*stellar\_sdk.call\_builder.AccountsCallBuilder* method), 18

`call()` (*stellar\_sdk.call\_builder.AssetsCallBuilder* method), 20

`call()` (*stellar\_sdk.call\_builder.BaseCallBuilder* method), 17

`call()` (*stellar\_sdk.call\_builder.DataCallBuilder* method), 22

`call()` (*stellar\_sdk.call\_builder.EffectsCallBuilder* method), 23

`call()` (*stellar\_sdk.call\_builder.FeeStatsCallBuilder* method), 25

`call()` (*stellar\_sdk.call\_builder.LedgersCallBuilder* method), 26

`call()` (*stellar\_sdk.call\_builder.OffersCallBuilder* method), 28

`call()` (*stellar\_sdk.call\_builder.OperationsCallBuilder* method), 30

`call()` (*stellar\_sdk.call\_builder.OrderbookCallBuilder* method), 32

`call()` (*stellar\_sdk.call\_builder.PathsCallBuilder* method), 34

`call()` (*stellar\_sdk.call\_builder.PaymentsCallBuilder* method), 35

`call()` (*stellar\_sdk.call\_builder.RootCallBuilder* method), 37

`call()` (*stellar\_sdk.call\_builder.StrictReceivePathsCallBuilder* method), 38

`call()` (*stellar\_sdk.call\_builder.StrictSendPathsCallBuilder* method), 40

`call()` (*stellar\_sdk.call\_builder.TradeAggregationsCallBuilder* method), 42

`call()` (*stellar\_sdk.call\_builder.TradesCallBuilder* method), 43

`call()` (*stellar\_sdk.call\_builder.TransactionsCallBuilder* method), 45

`can_sign()` (*stellar\_sdk.keypair.Keypair* method), 54

`ChangeTrust` (class in *stellar\_sdk.operation*), 63

`CHINESE_SIMPLIFIED` (*stellar\_sdk.sep.mnemonic.Language* attribute), 92

`CHINESE_TRADITIONAL` (*stellar\_sdk.sep.mnemonic.Language* attribute), 92

`close()` (*stellar\_sdk.client.aihttp\_client.AiohttpClient* method), 48

`close()` (*stellar\_sdk.client.requests\_client.RequestsClient* method), 50

`close()` (*stellar\_sdk.server.Server* method), 71

`ConnectionError` (class in *stellar\_sdk.exceptions*), 53

`CreateAccount` (class in *stellar\_sdk.operation*), 63

`CreatePassiveSellOffer` (class in *stel-*

- `lar_sdk.operation`), 64
- `cursor()` (`stellar_sdk.call_builder.AccountsCallBuilder` method), 19
- `cursor()` (`stellar_sdk.call_builder.AssetsCallBuilder` method), 20
- `cursor()` (`stellar_sdk.call_builder.BaseCallBuilder` method), 17
- `cursor()` (`stellar_sdk.call_builder.DataCallBuilder` method), 22
- `cursor()` (`stellar_sdk.call_builder.EffectsCallBuilder` method), 23
- `cursor()` (`stellar_sdk.call_builder.FeeStatsCallBuilder` method), 25
- `cursor()` (`stellar_sdk.call_builder.LedgersCallBuilder` method), 27
- `cursor()` (`stellar_sdk.call_builder.OffersCallBuilder` method), 28
- `cursor()` (`stellar_sdk.call_builder.OperationsCallBuilder` method), 30
- `cursor()` (`stellar_sdk.call_builder.OrderbookCallBuilder` method), 32
- `cursor()` (`stellar_sdk.call_builder.PathsCallBuilder` method), 34
- `cursor()` (`stellar_sdk.call_builder.PaymentsCallBuilder` method), 35
- `cursor()` (`stellar_sdk.call_builder.RootCallBuilder` method), 37
- `cursor()` (`stellar_sdk.call_builder.StrictReceivePathsCallBuilder` method), 39
- `cursor()` (`stellar_sdk.call_builder.StrictSendPathsCallBuilder` method), 40
- `cursor()` (`stellar_sdk.call_builder.TradeAggregationsCallBuilder` method), 42
- `cursor()` (`stellar_sdk.call_builder.TradesCallBuilder` method), 43
- `cursor()` (`stellar_sdk.call_builder.TransactionsCallBuilder` method), 45
- D**
- `data()` (`stellar_sdk.server.Server` method), 71
- `DataCallBuilder` (class in `stellar_sdk.call_builder`), 22
- E**
- `ed25519_public_key()` (`stellar_sdk.signer.Signer` class method), 74
- `Ed25519PublicKeyInvalidError` (class in `stellar_sdk.exceptions`), 52
- `Ed25519SecretSeedInvalidError` (class in `stellar_sdk.exceptions`), 52
- `effects()` (`stellar_sdk.server.Server` method), 71
- `EffectsCallBuilder` (class in `stellar_sdk.call_builder`), 23
- ENGLISH (`stellar_sdk.sep.mnemonic.Language` attribute), 92
- F**
- `FederationRecord` (class in `stellar_sdk.sep.federation`), 92
- `FederationServerNotFoundError` (class in `stellar_sdk.sep.exceptions`), 96
- `fee_stats()` (`stellar_sdk.server.Server` method), 71
- `FeeBumpTransaction` (class in `stellar_sdk.fee_bump_transaction`), 79
- `FeeBumpTransactionEnvelope` (class in `stellar_sdk.fee_bump_transaction_envelope`), 80
- `FeeStatsCallBuilder` (class in `stellar_sdk.call_builder`), 25
- `fetch_base_fee()` (`stellar_sdk.server.Server` method), 71
- `fetch_stellar_toml()` (in module `stellar_sdk.sep.stellar_toml`), 91
- `Flag` (class in `stellar_sdk.operation.set_options`), 70
- `for_account()` (`stellar_sdk.call_builder.EffectsCallBuilder` method), 24
- `for_account()` (`stellar_sdk.call_builder.OperationsCallBuilder` method), 30
- `for_account()` (`stellar_sdk.call_builder.PaymentsCallBuilder` method), 35
- `for_account()` (`stellar_sdk.call_builder.TradesCallBuilder` method), 43
- `for_account()` (`stellar_sdk.call_builder.TransactionsCallBuilder` method), 45
- `for_asset()` (`stellar_sdk.call_builder.AccountsCallBuilder` method), 19
- `for_asset_pair()` (`stellar_sdk.call_builder.TradesCallBuilder` method), 44
- `for_buying()` (`stellar_sdk.call_builder.OffersCallBuilder` method), 28
- `for_code()` (`stellar_sdk.call_builder.AssetsCallBuilder` method), 21
- `for_issuer()` (`stellar_sdk.call_builder.AssetsCallBuilder` method), 21
- `for_ledger()` (`stellar_sdk.call_builder.EffectsCallBuilder` method), 24
- `for_ledger()` (`stellar_sdk.call_builder.OperationsCallBuilder` method), 30

<code>for_ledger()</code>	(stellar_sdk.call_builder.PaymentsCallBuilder method), 36	<code>from_xdr()</code> (stellar_sdk.transaction_envelope.TransactionEnvelope class method), 77
<code>for_ledger()</code>	(stellar_sdk.call_builder.TransactionsCallBuilder method), 45	<code>from_xdr_amount()</code> (stellar_sdk.operation.Operation static method), 60
<code>for_offer()</code> (stellar_sdk.call_builder.TradesCallBuilder method), 44		<code>from_xdr_object()</code> (stellar_sdk.asset.Asset class method), 16
<code>for_operation()</code>	(stellar_sdk.call_builder.EffectsCallBuilder method), 24	<code>from_xdr_object()</code> (stellar_sdk.fee_bump_transaction.FeeBumpTransaction class method), 79
<code>for_seller()</code>	(stellar_sdk.call_builder.OffersCallBuilder method), 28	<code>from_xdr_object()</code> (stellar_sdk.fee_bump_transaction_envelope.FeeBumpTransactionEnvelope class method), 80
<code>for_selling()</code>	(stellar_sdk.call_builder.OffersCallBuilder method), 29	<code>from_xdr_object()</code> (stellar_sdk.memo.HashMemo class method), 58
<code>for_signer()</code>	(stellar_sdk.call_builder.AccountsCallBuilder method), 19	<code>from_xdr_object()</code> (stellar_sdk.memo.IdMemo class method), 58
<code>for_transaction()</code>	(stellar_sdk.call_builder.EffectsCallBuilder method), 24	<code>from_xdr_object()</code> (stellar_sdk.memo.Memo static method), 57
<code>for_transaction()</code>	(stellar_sdk.call_builder.OperationsCallBuilder method), 31	<code>from_xdr_object()</code> (stellar_sdk.memo.NoneMemo class method), 57
<code>for_transaction()</code>	(stellar_sdk.call_builder.PaymentsCallBuilder method), 36	<code>from_xdr_object()</code> (stellar_sdk.memo.ReturnHashMemo class method), 58
<code>FRENCH</code> (stellar_sdk.sep.mnemonic.Language attribute), 92		<code>from_xdr_object()</code> (stellar_sdk.memo.TextMemo class method), 57
<code>from_account()</code>	(stellar_sdk.muxed_account.MuxedAccount class method), 59	<code>from_xdr_object()</code> (stellar_sdk.muxed_account.MuxedAccount class method), 59
<code>from_mnemonic_phrase()</code>	(stellar_sdk.keypair.Keypair class method), 54	<code>from_xdr_object()</code> (stellar_sdk.operation.AccountMerge class method), 61
<code>from_public_key()</code> (stellar_sdk.keypair.Keypair class method), 54		<code>from_xdr_object()</code> (stellar_sdk.operation.AllowTrust class method), 62
<code>from_raw_ed25519_public_key()</code> (stellar_sdk.keypair.Keypair class method), 54		<code>from_xdr_object()</code> (stellar_sdk.operation.BumpSequence class method), 62
<code>from_raw_ed25519_seed()</code> (stellar_sdk.keypair.Keypair class method), 55		<code>from_xdr_object()</code> (stellar_sdk.operation.ChangeTrust class method), 63
<code>from_raw_price()</code> (stellar_sdk.price.Price class method), 70		<code>from_xdr_object()</code> (stellar_sdk.operation.CreateAccount class method), 63
<code>from_secret()</code> (stellar_sdk.keypair.Keypair class method), 55		<code>from_xdr_object()</code> (stellar_sdk.operation.CreatePassiveSellOffer class method), 64
<code>from_xdr()</code> (stellar_sdk.fee_bump_transaction.FeeBumpTransaction class method), 79		<code>from_xdr_object()</code> (stellar_sdk.operation.Inflation class method), 64
<code>from_xdr()</code> (stellar_sdk.fee_bump_transaction_envelope.FeeBumpTransactionEnvelope class method), 80		<code>from_xdr_object()</code> (stellar_sdk.operation.ManageBuyOffer class method), 65
<code>from_xdr()</code> (stellar_sdk.transaction.Transaction class method), 76		<code>from_xdr_object()</code> (stellar_sdk.operation.ManageData class method), 65
<code>from_xdr()</code> (stellar_sdk.transaction_builder.TransactionBuilder static method), 90		



65

`from_xdr_object()` (*stellar\_sdk.operation.ManageSellOffer* class method), 66

`from_xdr_object()` (*stellar\_sdk.operation.Operation* class method), 60

`from_xdr_object()` (*stellar\_sdk.operation.PathPayment* class method), 67

`from_xdr_object()` (*stellar\_sdk.operation.PathPaymentStrictReceive* class method), 67

`from_xdr_object()` (*stellar\_sdk.operation.PathPaymentStrictSend* class method), 68

`from_xdr_object()` (*stellar\_sdk.operation.Payment* class method), 68

`from_xdr_object()` (*stellar\_sdk.operation.SetOptions* class method), 69

`from_xdr_object()` (*stellar\_sdk.price.Price* class method), 70

`from_xdr_object()` (*stellar\_sdk.signer.Signer* class method), 74

`from_xdr_object()` (*stellar\_sdk.time\_bounds.TimeBounds* class method), 75

`from_xdr_object()` (*stellar\_sdk.transaction.Transaction* class method), 76

`from_xdr_object()` (*stellar\_sdk.transaction\_envelope.TransactionEnvelope* class method), 77

## G

`generate_mnemonic_phrase()` (*stellar\_sdk.keypair.Keypair* static method), 55

`get()` (*stellar\_sdk.client.aiohttp\_client.AiohttpClient* method), 49

`get()` (*stellar\_sdk.client.base\_async\_client.BaseAsyncClient* method), 47

`get()` (*stellar\_sdk.client.base\_sync\_client.BaseSyncClient* method), 47

`get()` (*stellar\_sdk.client.requests\_client.RequestsClient* method), 50

`get()` (*stellar\_sdk.client.simple\_requests\_client.SimpleRequestsClient* method), 50

`get_source_from_xdr_obj()` (*stellar\_sdk.operation.Operation* static method), 60

`guess_asset_type()` (*stellar\_sdk.asset.Asset* method), 16

## H

`hash()` (*stellar\_sdk.fee\_bump\_transaction\_envelope.FeeBumpTransactionEnvelope* method), 80

`hash()` (*stellar\_sdk.transaction\_envelope.TransactionEnvelope* method), 78

`hash_hex()` (*stellar\_sdk.fee\_bump\_transaction\_envelope.FeeBumpTransactionEnvelope* method), 81

`hash_hex()` (*stellar\_sdk.transaction\_envelope.TransactionEnvelope* method), 78

`HashMemo` (class in *stellar\_sdk.memo*), 58

## I

`IdMemo` (class in *stellar\_sdk.memo*), 58

`include_failed()` (*stellar\_sdk.call\_builder.OperationsCallBuilder* method), 31

`include_failed()` (*stellar\_sdk.call\_builder.PaymentsCallBuilder* method), 36

`include_failed()` (*stellar\_sdk.call\_builder.TransactionsCallBuilder* method), 45

`increment_sequence_number()` (*stellar\_sdk.account.Account* method), 15

`Inflation` (class in *stellar\_sdk.operation*), 64

`InvalidFederationAddress` (class in *stellar\_sdk.sep.exceptions*), 96

`InvalidSep10ChallengeError` (class in *stellar\_sdk.sep.exceptions*), 96

`is_native()` (*stellar\_sdk.asset.Asset* method), 16

`ITALIAN` (*stellar\_sdk.sep.mnemonic.Language* attribute), 92

## J

`JAPANESE` (*stellar\_sdk.sep.mnemonic.Language* attribute), 92

`join()` (*stellar\_sdk.call\_builder.OperationsCallBuilder* method), 31

`json()` (*stellar\_sdk.client.response.Response* method), 51

`Keypair` (class in *stellar\_sdk.keypair*), 54

`KOREAN` (*stellar\_sdk.sep.mnemonic.Language* attribute), 92

## L

`Language` (class in *stellar\_sdk.sep.mnemonic*), 92

`ledger()` (*stellar\_sdk.call\_builder.LedgersCallBuilder* method), 27

`ledgers()` (*stellar\_sdk.server.Server* method), 71

`LedgersCallBuilder` (class in *stellar\_sdk.call\_builder*), 26

`limit()` (*stellar\_sdk.call\_builder.AccountsCallBuilder method*), 19

`limit()` (*stellar\_sdk.call\_builder.AssetsCallBuilder method*), 21

`limit()` (*stellar\_sdk.call\_builder.BaseCallBuilder method*), 17

`limit()` (*stellar\_sdk.call\_builder.DataCallBuilder method*), 22

`limit()` (*stellar\_sdk.call\_builder.EffectsCallBuilder method*), 24

`limit()` (*stellar\_sdk.call\_builder.FeeStatsCallBuilder method*), 25

`limit()` (*stellar\_sdk.call\_builder.LedgersCallBuilder method*), 27

`limit()` (*stellar\_sdk.call\_builder.OffersCallBuilder method*), 29

`limit()` (*stellar\_sdk.call\_builder.OperationsCallBuilder method*), 31

`limit()` (*stellar\_sdk.call\_builder.OrderbookCallBuilder method*), 33

`limit()` (*stellar\_sdk.call\_builder.PathsCallBuilder method*), 34

`limit()` (*stellar\_sdk.call\_builder.PaymentsCallBuilder method*), 36

`limit()` (*stellar\_sdk.call\_builder.RootCallBuilder method*), 37

`limit()` (*stellar\_sdk.call\_builder.StrictReceivePathsCallBuilder method*), 39

`limit()` (*stellar\_sdk.call\_builder.StrictSendPathsCallBuilder method*), 41

`limit()` (*stellar\_sdk.call\_builder.TradeAggregationsCallBuilder method*), 42

`limit()` (*stellar\_sdk.call\_builder.TradesCallBuilder method*), 44

`limit()` (*stellar\_sdk.call\_builder.TransactionsCallBuilder method*), 46

`load_account()` (*stellar\_sdk.server.Server method*), 72

`load_ed25519_public_key_signers()` (*stellar\_sdk.account.Account method*), 15

## M

`ManageBuyOffer` (*class in stellar\_sdk.operation*), 65

`ManageData` (*class in stellar\_sdk.operation*), 65

`ManageSellOffer` (*class in stellar\_sdk.operation*), 66

`Memo` (*class in stellar\_sdk.memo*), 56

`MemoInvalidException` (*class in stellar\_sdk.exceptions*), 52

`MissingEd25519SecretSeedError` (*class in stellar\_sdk.exceptions*), 52

`MuxedAccount` (*class in stellar\_sdk.muxed\_account*), 59

## N

`native()` (*stellar\_sdk.asset.Asset static method*), 16

`Network` (*class in stellar\_sdk.network*), 59

`network_id()` (*stellar\_sdk.network.Network method*), 59

`NoApproximationError` (*class in stellar\_sdk.exceptions*), 53

`NoneMemo` (*class in stellar\_sdk.memo*), 57

`NotFoundError` (*class in stellar\_sdk.exceptions*), 53

## O

`offer()` (*stellar\_sdk.call\_builder.OffersCallBuilder method*), 29

`offers()` (*stellar\_sdk.server.Server method*), 72

`OffersCallBuilder` (*class in stellar\_sdk.call\_builder*), 28

`Operation` (*class in stellar\_sdk.operation*), 60

`operation()` (*stellar\_sdk.call\_builder.OperationsCallBuilder method*), 31

`operations()` (*stellar\_sdk.server.Server method*), 72

`OperationsCallBuilder` (*class in stellar\_sdk.call\_builder*), 30

`order()` (*stellar\_sdk.call\_builder.AccountsCallBuilder method*), 19

`order()` (*stellar\_sdk.call\_builder.AssetsCallBuilder method*), 21

`order()` (*stellar\_sdk.call\_builder.BaseCallBuilder method*), 18

`order()` (*stellar\_sdk.call\_builder.DataCallBuilder method*), 22

`order()` (*stellar\_sdk.call\_builder.EffectsCallBuilder method*), 24

`order()` (*stellar\_sdk.call\_builder.FeeStatsCallBuilder method*), 26

`order()` (*stellar\_sdk.call\_builder.LedgersCallBuilder method*), 27

`order()` (*stellar\_sdk.call\_builder.OffersCallBuilder method*), 29

`order()` (*stellar\_sdk.call\_builder.OperationsCallBuilder method*), 31

`order()` (*stellar\_sdk.call\_builder.OrderbookCallBuilder method*), 33

`order()` (*stellar\_sdk.call\_builder.PathsCallBuilder method*), 34

`order()` (*stellar\_sdk.call\_builder.PaymentsCallBuilder method*), 36

`order()` (*stellar\_sdk.call\_builder.RootCallBuilder method*), 37

`order()` (*stellar\_sdk.call\_builder.StrictReceivePathsCallBuilder method*), 39

`order()` (*stellar\_sdk.call\_builder.StrictSendPathsCallBuilder method*), 41

`order()` (*stellar\_sdk.call\_builder.TradeAggregationsCallBuilder method*), 42

`order()` (*stellar\_sdk.call\_builder.TradesCallBuilder method*), 44  
`order()` (*stellar\_sdk.call\_builder.TransactionsCallBuilder method*), 46  
`orderbook()` (*stellar\_sdk.server.Server method*), 72  
`OrderbookCallBuilder` (class in *stellar\_sdk.call\_builder*), 32

## P

`parse_transaction_envelope_from_xdr()` (in module *stellar\_sdk.helpers*), 91  
`PathPayment` (class in *stellar\_sdk.operation*), 66  
`PathPaymentStrictReceive` (class in *stellar\_sdk.operation*), 67  
`PathPaymentStrictSend` (class in *stellar\_sdk.operation*), 68  
`paths()` (*stellar\_sdk.server.Server method*), 72  
`PathsCallBuilder` (class in *stellar\_sdk.call\_builder*), 33  
`Payment` (class in *stellar\_sdk.operation*), 68  
`payments()` (*stellar\_sdk.server.Server method*), 72  
`PaymentsCallBuilder` (class in *stellar\_sdk.call\_builder*), 35  
`post()` (*stellar\_sdk.client.aiohttp\_client.AiohttpClient method*), 49  
`post()` (*stellar\_sdk.client.base\_async\_client.BaseAsyncClient method*), 47  
`post()` (*stellar\_sdk.client.base\_sync\_client.BaseSyncClient method*), 48  
`post()` (*stellar\_sdk.client.requests\_client.RequestsClient method*), 50  
`post()` (*stellar\_sdk.client.simple\_requests\_client.SimpleRequestsClient method*), 51  
`pre_auth_tx()` (*stellar\_sdk.signer.Signer class method*), 75  
`Price` (class in *stellar\_sdk.price*), 70  
`public_key` (*stellar\_sdk.keypair.Keypair attribute*), 55  
`public_network()` (*stellar\_sdk.network.Network class method*), 60  
`PUBLIC_NETWORK_PASSPHRASE` (*stellar\_sdk.network.Network attribute*), 59

## R

`random()` (*stellar\_sdk.keypair.Keypair class method*), 55  
`raw_public_key()` (*stellar\_sdk.keypair.Keypair method*), 55  
`raw_secret_key()` (*stellar\_sdk.keypair.Keypair method*), 55  
`read_challenge_transaction()` (in module *stellar\_sdk.sep.stellar\_web\_authentication*), 93  
`RequestsClient` (class in *stellar\_sdk.client.requests\_client*), 49

`resolve_account_id()` (in module *stellar\_sdk.sep.federation*), 92  
`resolve_stellar_address()` (in module *stellar\_sdk.sep.federation*), 91  
`Response` (class in *stellar\_sdk.client.response*), 51  
`ReturnHashMemo` (class in *stellar\_sdk.memo*), 58  
`root()` (*stellar\_sdk.server.Server method*), 73  
`RootCallBuilder` (class in *stellar\_sdk.call\_builder*), 37

## S

`SdkError` (class in *stellar\_sdk.exceptions*), 52  
`secret` (*stellar\_sdk.keypair.Keypair attribute*), 56  
`Server` (class in *stellar\_sdk.server*), 70  
`set_timeout()` (*stellar\_sdk.transaction\_builder.TransactionBuilder method*), 90  
`SetOptions` (class in *stellar\_sdk.operation*), 69  
`sha256_hash()` (*stellar\_sdk.signer.Signer class method*), 75  
`sign()` (*stellar\_sdk.fee\_bump\_transaction\_envelope.FeeBumpTransactionEnvelope method*), 81  
`sign()` (*stellar\_sdk.keypair.Keypair method*), 56  
`sign()` (*stellar\_sdk.transaction\_envelope.TransactionEnvelope method*), 78  
`sign_decorated()` (*stellar\_sdk.keypair.Keypair method*), 56  
`sign_hashx()` (*stellar\_sdk.fee\_bump\_transaction\_envelope.FeeBumpTransactionEnvelope method*), 81  
`sign_hashx()` (*stellar\_sdk.transaction\_envelope.TransactionEnvelope method*), 78  
`signature_base()` (*stellar\_sdk.fee\_bump\_transaction\_envelope.FeeBumpTransactionEnvelope method*), 81  
`signature_base()` (*stellar\_sdk.transaction\_envelope.TransactionEnvelope method*), 78  
`signature_hint()` (*stellar\_sdk.keypair.Keypair method*), 56  
`SignatureExistError` (class in *stellar\_sdk.exceptions*), 53  
`Signer` (class in *stellar\_sdk.signer*), 74  
`signer()` (*stellar\_sdk.call\_builder.AccountsCallBuilder method*), 20  
`SimpleRequestsClient` (class in *stellar\_sdk.client.simple\_requests\_client*), 50  
`SPANISH` (*stellar\_sdk.sep.mnemonic.Language attribute*), 92  
`stellar_sdk` (module), 15  
`StellarMnemonic` (class in *stellar\_sdk.sep.mnemonic*), 92

`StellarTomlNotFoundError` (class in `stellar_sdk.sep.exceptions`), 96

`stream()` (`stellar_sdk.call_builder.AccountsCallBuilder` method), 20

`stream()` (`stellar_sdk.call_builder.AssetsCallBuilder` method), 21

`stream()` (`stellar_sdk.call_builder.BaseCallBuilder` method), 18

`stream()` (`stellar_sdk.call_builder.DataCallBuilder` method), 23

`stream()` (`stellar_sdk.call_builder.EffectsCallBuilder` method), 25

`stream()` (`stellar_sdk.call_builder.FeeStatsCallBuilder` method), 26

`stream()` (`stellar_sdk.call_builder.LedgersCallBuilder` method), 27

`stream()` (`stellar_sdk.call_builder.OffersCallBuilder` method), 29

`stream()` (`stellar_sdk.call_builder.OperationsCallBuilder` method), 32

`stream()` (`stellar_sdk.call_builder.OrderbookCallBuilder` method), 33

`stream()` (`stellar_sdk.call_builder.PathsCallBuilder` method), 34

`stream()` (`stellar_sdk.call_builder.PaymentsCallBuilder` method), 36

`stream()` (`stellar_sdk.call_builder.RootCallBuilder` method), 38

`stream()` (`stellar_sdk.call_builder.StrictReceivePathsCallBuilder` method), 39

`stream()` (`stellar_sdk.call_builder.StrictSendPathsCallBuilder` method), 41

`stream()` (`stellar_sdk.call_builder.TradeAggregationsCallBuilder` method), 43

`stream()` (`stellar_sdk.call_builder.TradesCallBuilder` method), 44

`stream()` (`stellar_sdk.call_builder.TransactionsCallBuilder` method), 46

`stream()` (`stellar_sdk.client.aiohttp_client.AiohttpClient` method), 49

`stream()` (`stellar_sdk.client.base_async_client.BaseAsyncClient` method), 47

`stream()` (`stellar_sdk.client.base_sync_client.BaseSyncClient` method), 48

`stream()` (`stellar_sdk.client.requests_client.RequestsClient` method), 50

`stream()` (`stellar_sdk.client.simple_requests_client.SimpleRequestsClient` method), 51

`strict_receive_paths()` (`stellar_sdk.server.Server` method), 73

`strict_send_paths()` (`stellar_sdk.server.Server` method), 73

`StrictReceivePathsCallBuilder` (class in `stellar_sdk.call_builder`), 38

`StrictSendPathsCallBuilder` (class in `stellar_sdk.call_builder`), 40

`submit_transaction()` (`stellar_sdk.server.Server` method), 73

## T

`testnet_network()` (`stellar_sdk.network.Network` class method), 60

`TESTNET_NETWORK_PASSPHRASE` (`stellar_sdk.network.Network` attribute), 59

`TextMemo` (class in `stellar_sdk.memo`), 57

`TimeBounds` (class in `stellar_sdk.time_bounds`), 75

`to_dict()` (`stellar_sdk.asset.Asset` method), 16

`to_xdr()` (`stellar_sdk.fee_bump_transaction_envelope.FeeBumpTransactionEnvelope` method), 81

`to_xdr()` (`stellar_sdk.transaction_envelope.TransactionEnvelope` method), 78

`to_xdr_amount()` (`stellar_sdk.operation.Operation` static method), 60

`to_xdr_object()` (`stellar_sdk.asset.Asset` method), 16

`to_xdr_object()` (`stellar_sdk.fee_bump_transaction.FeeBumpTransaction` method), 79

`to_xdr_object()` (`stellar_sdk.fee_bump_transaction_envelope.FeeBumpTransactionEnvelope` method), 81

`to_xdr_object()` (`stellar_sdk.memo.HashMemo` method), 58

`to_xdr_object()` (`stellar_sdk.memo.IdMemo` method), 58

`to_xdr_object()` (`stellar_sdk.memo.Memo` method), 57

`to_xdr_object()` (`stellar_sdk.memo.NoneMemo` method), 57

`to_xdr_object()` (`stellar_sdk.memo.ReturnHashMemo` method), 58

`to_xdr_object()` (`stellar_sdk.memo.TextMemo` method), 57

`to_xdr_object()` (`stellar_sdk.muxed_account.MuxedAccount` method), 59

`to_xdr_object()` (`stellar_sdk.operation.AccountMerge` method), 61

`to_xdr_object()` (`stellar_sdk.operation.AllowTrust` method), 62

`to_xdr_object()` (`stellar_sdk.operation.BumpSequence` method), 62

`to_xdr_object()` (`stellar_sdk.operation.ChangeTrust` method), 63

`to_xdr_object()` (*stellar\_sdk.operation.CreateAccount method*), 63  
`to_xdr_object()` (*stellar\_sdk.operation.CreatePassiveSellOffer method*), 64  
`to_xdr_object()` (*stellar\_sdk.operation.Inflation method*), 64  
`to_xdr_object()` (*stellar\_sdk.operation.ManageBuyOffer method*), 65  
`to_xdr_object()` (*stellar\_sdk.operation.ManageData method*), 66  
`to_xdr_object()` (*stellar\_sdk.operation.ManageSellOffer method*), 66  
`to_xdr_object()` (*stellar\_sdk.operation.Operation method*), 61  
`to_xdr_object()` (*stellar\_sdk.operation.PathPayment method*), 67  
`to_xdr_object()` (*stellar\_sdk.operation.PathPaymentStrictReceive method*), 67  
`to_xdr_object()` (*stellar\_sdk.operation.PathPaymentStrictSend method*), 68  
`to_xdr_object()` (*stellar\_sdk.operation.Payment method*), 68  
`to_xdr_object()` (*stellar\_sdk.operation.SetOptions method*), 70  
`to_xdr_object()` (*stellar\_sdk.price.Price method*), 70  
`to_xdr_object()` (*stellar\_sdk.signer.Signer method*), 75  
`to_xdr_object()` (*stellar\_sdk.time\_bounds.TimeBounds method*), 75  
`to_xdr_object()` (*stellar\_sdk.transaction.Transaction method*), 77  
`to_xdr_object()` (*stellar\_sdk.transaction\_envelope.TransactionEnvelope method*), 78  
`trade_aggregations()` (*stellar\_sdk.server.Server method*), 73  
`TradeAggregationsCallBuilder` (class in *stellar\_sdk.call\_builder*), 41  
`trades()` (*stellar\_sdk.server.Server method*), 74  
`TradesCallBuilder` (class in *stellar\_sdk.call\_builder*), 43  
`Transaction` (class in *stellar\_sdk.transaction*), 76  
`transaction()` (*stellar\_sdk.call\_builder.TransactionsCallBuilder method*), 46  
`TransactionBuilder` (class in *stellar\_sdk.transaction\_builder*), 81  
`TransactionEnvelope` (class in *stellar\_sdk.transaction\_envelope*), 77  
`transactions()` (*stellar\_sdk.server.Server method*), 74  
`TransactionsCallBuilder` (class in *stellar\_sdk.call\_builder*), 45  
`TrustLineEntryFlag` (class in *stellar\_sdk.operation.allow\_trust*), 62  
`type` (*stellar\_sdk.asset.Asset attribute*), 16  
`TypeError` (class in *stellar\_sdk.exceptions*), 52

## V

`ValueError` (class in *stellar\_sdk.exceptions*), 52  
`verify()` (*stellar\_sdk.keypair.Keypair method*), 56  
`verify_challenge_transaction()` (in module *stellar\_sdk.sep.stellar\_web\_authentication*), 95  
`verify_challenge_transaction_signed_by_client_mast` (in module *stellar\_sdk.sep.stellar\_web\_authentication*), 94  
`verify_challenge_transaction_signers()` (in module *stellar\_sdk.sep.stellar\_web\_authentication*), 94  
`verify_challenge_transaction_threshold()` (in module *stellar\_sdk.sep.stellar\_web\_authentication*), 93

## X

`xdr_public_key()` (*stellar\_sdk.keypair.Keypair method*), 56