Schwab Streamer API

The Streamer API enables clients to connect into different services to stream market data and account activity with JSON-formatting via WebSockets. Authentication and entitlements are provided via the Access token generated from the POST Token endpoint. Streamer information to establish the connection can be found on the GET User Preference endpoint. Client as referenced throughout this document is in reference to the application.

Contents

1. API Contract

1.1 Services available:

Service Name	***Description***	***Delivery Type***
LEVELONE_EQUITIES	Level 1 Equities	Change
LEVELONE_OPTIONS	Level 1 Options	Change
LEVELONE_FUTURES	Level 1 Futures	Change
LEVELONE_FUTURES_OPTIONS	Level 1 Futures Options	Change
LEVELONE_FOREX	Level 1 Forex	Change
NYSE_BOOK	Level Two book for Equities	Whole
NASDAQ_BOOK	Level Two book for Equities	Whole
OPTIONS_BOOK	Level Two book for Options	Whole
CHART_EQUITY	Chart candle for Equities	All Sequence
CHART_FUTURES	Chart candle for Futures	All Sequence
SCREENER_EQUITY	Advances and Decliners for Equities	Whole
SCREENER_OPTION	Advances and Decliners for Options	Whole
ACCT_ACTIVITY	Get account activity information such as order fills, etc	All Sequence

1.2 Request Format

A client request will consist of an array of one or more commands. Each command will include:

Request	***Name***	***Parameter***
service	Service Name (required)	ADMIN, LEVELONE_EQUITY etc. Please see Service Names table above.
command	Command (required)	LOGIN, SUBS, ADD, UNSUBS, VIEW, LOGOUT
requestid	Request ID (required)	Unique number that will identify this request.
SchwabClientCustomerId	Client's customer ID	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId	Client's session ID	`schwabClientCorrelId` as found in GET User Preference endpoint. Unique identifier value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	Any parameter (optional)	fields, version, credential, symbol, frequency, period, etc

Command	***Name***
LOGIN	Initial request when opening a new connection. This must be successful before sending other commands.
SUBS	Subscribes to a set of symbols or keys for a particular service. This overwrites all previously subscribed symbols for that service. This is a convenient way to wipe out old subscription list and start fresh, but it's not the most efficient. If you only want to add one symbol to 300 already subscribed, use an ADD instead. For example: 1. SUBS A,B,C (fresh sub for LEVELONE_EQUITIES) 2. SUBS A (fresh sub for LEVELONE_EQUITIES, previous SUBS of B,C are unsub'ed, only A is sub'ed)
ADD	Adds a new symbol for a particular service. This does NOT wipe out previous symbols that were already subscribed. It is OK to use ADD for first subscription command instead of SUBS.

	For example: 1. ADD A,B (fresh sub for LEVELONE_EQUITIES) 2. ADD C (additional symbol C added to A, B. All 3 symbols will stream)
UNSUBS	This unsubscribes a symbol to a list of subscribed symbol for a particular service.
VIEW	This changes the field subscription for a particular service. It will apply to all symbols for that particular service.
LOGOUT	Logs out of the streamer connection. Streamer will close the connection.

Example:

One Request

```
{
  "requestid": "0",
  "service": "LEVELONE_EQUITIES",
  "command": "SUBS",
  "SchwabClientCustomerId": "Someone",
  "SchwabClientCorrelId": "3be0b7e7-5b8b-4fd3-9bed-7f49106cfe1",
  "parameters": {
    "keys": "AAPL",
    "fields":
"0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27
,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,5
2,53,54"
  }
}
```

Multiple Requests

```
{
   "requests": [
      {
         "requestid": "1",
         "service": "ADMIN",
         "command": "LOGIN",
         "SchwabClientCustomerId": "Someone",
         "SchwabClientCorrelId": "2be0b7e7-5b8b-4fd3-9bed-7f49106cfe1",
         "parameters": {
            "Authorization": "PN",
            "SchwabClientChannel": "IO",
            "SchwabClientFunctionId": "Tradeticket"
         }
      },
      {
         "requestid":"3",
         "service":"LEVELONE_EQUITIES",
         "command":"SUBS",
         "SchwabClientCustomerId":"Someone",
```

```
        "SchwabClientCorrelId":"2be0b7e7-5b8b-4fd3-9bed-7f49106cfe1",
        "parameters":{
           "keys":"AAPL",
           "fields":"0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19"
        }
     }
  ]
}
```

1.3 Response Format

There are currently three types of responses:

- **Response** – Response to a request
- **Notify** – Notification of heartbeats
- **Data** – Streaming market data

A client response will consist of an array of one or more responses. Each response will include:

Response Type	***Request***	***Name***	***Parameter***
response notify data	service	Service Name	ADMIN, LEVELONE_EQUITY, etc. Please see Service Names table in section 5.
	requestid	Request ID	Unique number that will identify the original request
	command	Command from the request	LOGIN, SUBS, ADD, UNSUBS, VIEW, LOGOUT
	content	Data content	

Examples:

```
{"notify":[{"heartbeat":"1668715930582"}]}

{
  "response": [
    {
      "service": "LEVELONE_EQUITIES",
      "command": "SUBS",
      "requestid": "0",
      "SchwabClientCorrelId": "3be0b7e7-5b8b-4fd3-9bed-7f49106cfe1",
      "timestamp": 1668715930582,
      "content": {
        "code": 0,
        "msg": "SUBS command succeeded"
      }
    }
  ]
}
```

```
{
  "data": [
    {
      "service": "LEVELONE_EQUITIES",
      "timestamp": 1668715930585,
      "command": "SUBS",
      "content": [
        {
          "1": 149.81,
          "2": 149.82,
          "3": 149.811,
          "4": 4,
          "5": 2,
          "6": "Q",
          "7": "P",
          "8": 56049058,
          "9": 300,
          "10": 151.48,
          "11": 146.15,
          "12": " ",
          "13": 142.41,
          "14": "Q",
          "15": false,
          "16": "APPLE INC",
          "17": "D",
          "18": 146.43,
          "19": 7.401,
          "20": 182.94,
          "21": 129.04,
          "22": 0.04062,
          "23": 0,
          "24": 0,
          "25": 0,
          "26": "NASDAQ",
          "27": "",
          "28": true,
          "29": true,
          "30": 149.811,
          "31": 300,
          "32": 7.401,
          "33": "Normal",
          "34": 149.811,
          "35": 1668715930570,
          "36": 1668715930345,
          "37": 1668715930345,
          "38": 1668715930570,
          "39": 1668715930522,
          "40": "XNAS",
          "41": "ARCX",
          "42": "XADF",
          "43": 5.19696651,
          "44": 5.19696651,
          "45": 7.401,
          "46": 5.19696651,
          "key": "AAPL",
          "delayed": false
```

```
            }
          ]
        }
      ]
}
```

1.4 Response Codes

Code	***Name***	***Description***	***Connection Severed***	***Error Notes***
0	SUCCESS	The request was successful	No	n/a - success
3	LOGIN_DENIED	The user login has been denied	Yes	Client should reconnect and re-login with new token. Client to determine if failed logins are expected.
9	UNKNOWN_FAILURE	Error of last-resort when no specific error was caught	TBD	Should be investigated by Trader API team. Please contact TraderAPI@Schwab.com if you see this with the \`schwabClientCorrelId\` of subscription.
11	SERVICE_NOT_AVAILABLE	The service is not available	No	Should be investigated by Trader API team. Please contact TraderAPI@Schwab.com if you see this with the \`schwabClientCorrelId\` of subscription. Either client is requesting an unsupported service or the service is not running from the source.
12	CLOSE_CONNECTION	You've reached the maximum number of connections allowed.	Yes	Client to determine if max connections are expected and proper response to customer. A limit of 1 Streamer connection at any given time from a given user is available.
19	REACHED_SYMBOL_LIMIT	Subscribe or Add command has reached a	No	Client to determine if symbol limit is expected and proper response to customer.

		total subscription symbol limit		
20	STREAM_CONN_NOT_FOUND	No connection found for user or new session but no login request	TBD	Server cannot find the connection based on the provided SchwabClientCustomerId & SchwabClientCorrelId in the request. Should be investigated by Trader API team. Please contact TraderAPI@Schwab.com if you see this with the `schwabClientCorrelId` of subscription. Common causes: • Client does not wait for a successful LOGIN response and issues a command immediately after the LOGIN command. There could be a race condition where the SUB is processed before the LOGIN. • Client modifies SchwabClientCustomerId or SchwabClientCorrelId after logging in. • Streamer has disconnected the client while processing the command.
21	BAD_COMMAND_FORMAT	Command fails to match specification	No	Client should investigate why a command is not formatted properly
22	FAILED_COMMAND_SUBS	Subscribe command could not be completed successfully	No	Should be investigated by Trader API team. Please contact TraderAPI@Schwab.com if you see this with the `schwabClientCorrelId` of subscription. Common causes:
23	FAILED_COMMAND_UNSUBS	Unsubscribe command		

		could not be completed successfully		• Two or more commands are processed in parallel causing one to fail.
24	FAILED_COMMAND_ADD	Add command could not be completed successfully		
25	FAILED_COMMAND_VIEW	View command could not be completed successfully		
26	SUCCEEDED_COMMAND_SUBS	Subscribe command completed successfully	No	n/a - success
27	SUCCEEDED_COMMAND_UNSUBS	Unsubscribe command completed successfully		
28	SUCCEEDED_COMMAND_ADD	Add command completed successfully		
29	SUCCEEDED_COMMAND_VIEW	View command completed successfully		
30	STOP_STREAMING	Signal that streaming has been terminated	Yes	See message provided for details. Common Causes:

		due to administrator action, inactivity, or slowness		• Typically due to no subscriptions.

1.5 Delivery Types

Delivery Types	***Description***
All Sequence	All data is streamed to the client and includes a sequence number. Data is not conflated by the streamer although the underlying source of the data may conflate.
Change	Only fields that clients are interested in, and have changed, are streamed to the client. Data is conflated by the streamer.
Whole	Data is streamed as a whole unit to the client, in throttled mode.
All Sequence	All data is streamed to the client and includes a sequence number. Data is not conflated by the streamer although the underlying source of the data may conflate.

2 Admin Services

2.1 Login Request

Delivery Types	***Description***	***Type***	***Length***	***Description***
service		String	Variable	ADMIN
command		String	Variable	LOGIN
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique identifier value that is attached to requests and messages that allow reference to a particular transaction or event chain.

parameters	Authorization	String	Variable	Access token as found from POST Token endpoint.
	SchwabClientChannel	String	2	Identifies the channel as found through the GET User Preferences endpoint.
	SchwabClientFunctionId	String	5	Identifies the page or source in the channel where quote is being called from (5 alphanumeric). Found through the GET User Preferences endpoint.

Streamer LOGIN Request Example:

```
{
   "requests": [
      {
         "requestid": "1",
         "service": "ADMIN",
         "command": "LOGIN",
         "SchwabClientCustomerId": "Someone",
         "SchwabClientCorrelId": "5be0b7e7-5b8b-4fd3-9bed-7f49106cfe96",
         "parameters": {
            "Authorization": "Access Token",
            "SchwabClientChannel": "N9",
            "SchwabClientFunctionId": "APIAPP"
         }
      }
   ]
}
```

2.2 Login Response

Type	***Request***	***Name***	***Type***	***Description***
response	service	ADMIN		
	requestid	Unique request ID number		
	command	LOGIN		
	SchwabClientCorrelId	Correlation ID string passed by client		
	timestamp	Milliseconds since epoch		
	content	**code**	Integer	0 = Success, 3 = Login denied
		msg	String	server=hostname-instance (for troubleshooting purposes)

				status=PN (Non-Paying Pro) NP (Non-Pro) PP (Paying-Pro) if no entitlements, client will get nfl/delayed quotes error message if there's a login issue

Streamer LOGIN Response Examples:

Login Successful

```
{
  "response": [
    {
      "service": "ADMIN",
      "command": "LOGIN",
      "requestid": "1",
      "SchwabClientCorrelId": "5be0b7e7-5b8b-4fd3-9bed-7f49106cfe96",
      "timestamp": 1669828276886,
      "content": {
        "code": 0,
        "msg": "server=s0166bdv-1;status=PN"
      }
    }
  ]
}
```

Login Denied

```
{
  "response": [
    {
      "service": "ADMIN",
      "command": "LOGIN",
      "requestid": "1",
      "SchwabClientCorrelId": "5be0b7e7-5b8b-4fd3-9bed-7f49106cfe96",
      "timestamp": 1669828982588,
      "content": {
        "code": 3,
        "msg": "Login Denied.: token is invalid or has expired."
      }
    }
  ]
}
```

2.3 Logout request

Streamer Contract name	*Type*	*Length*	*Description*
service	String	Variable	ADMIN
command	String	Variable	LOGOUT
requestid	Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId	String	Variable	Identifies the page or source in the channel where quote is being called from (5 alphanumeric). Found through the GET User Preferences endpoint.
SchwabClientCorrelId	String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	String	Variable	Can leave empty

2.4 Logout response

Type	*Request*	*Name*	*Type*	*Description*
response	service	ADMIN		
	requestid	Unique request ID number		
	command	LOGOUT		
	SchwabClientCorrelId	Correlation ID string passed by client		
	timestamp	Milliseconds since epoch		
	content	code	Integer	0 = Success, 3 = Login denied
		msg	String	SUCCESS, FAILURE

Streamer Logout Response Examples:


```
{
  "response": [
    {
      "service": "ADMIN",
      "command": "LOGOUT",
      "requestid": "0",
      "SchwabClientCorrelId": "5be0b7e7-5b8b-4fd3-9bed-7f49106cfe95",
      "timestamp": 1669830137089,
```

        "content": {
          "code": 0,
          "msg": "SUCCESS"
        }
      }
    ]
}

3 LEVELONE Services

3.1 LEVELONE_EQUITIES

Level One Equities Request				
Streamer Contract name		***Type***	***Length***	***Description***
service		String	Variable	LEVELONE_EQUITIES
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	Schwab-standard symbols in uppercase and separated by commas e.g. AAPL,TSLA,IBM
	fields	String	Variable	Please see the LEVELONE_EQUITIES Field Definition table below

LEVELONE_EQUITIES Request Example:

{
  "requests": [
    {
      "service": "LEVELONE_EQUITIES",
      "requestid": 1,
      "command": "SUBS",

```
      "SchwabClientCustomerId": "Someone",
      "SchwabClientCorrelId": "29bdf6d-b9d0-46dd-8786-424e1577bd",
      "parameters": {
        "keys": "SCHW,AAPL,SPY",
        "fields": "0,1,2,3,4,5,8,10 "
      }
    }
  ]
}
```


Response Field Definitions

Outside of fields that can be subscribed to, Streamer also returns initial data that indicates whether the data is real time or NFL (delayed).

Field Name	***Type***	***Field Description***	***Notes, Examples*** ***Source***
key	String	Usually this is the symbol	AAPL
delayed	boolean	Whether data is from the SIP or NFL	- false : data is from a SIP SIP stands for Securities Information Processor. Often considered the example for market data around the world, a SIP will collect trade and quote data from multiple exchanges and consolidate these sources into a single source of information. - true : data is from an NFL source NFL stands for Non-Fee Liable. This either means the result is returning delayed data (typically options, futures and futures options) or the result is returning real-time data from a subset of exchanges and therefore does not contain all markets in the National Plan (typically equity data). Delayed quotes do not represent the most recent last or bid/ask; real-time quotes from the subset of exchanges may not contain the most recent last or bid/ask. -

assetMainType	String	Asset Type	BOND, EQUITY, ETF, EXTENDED, FOREX, FUTURE, FUTURE_OPTION, FUNDAMENTAL, INDEX, INDICATOR, MUTUAL_FUND, OPTION, UNKNOWN
assetSubType	String	Asset sub type	ADR, CEF, COE, ETF, ETN, GDR, OEF, PRF, RGT, UIT, WAR
cusip	String	9 digits CUSIP	CUSIP number for the instrument, such as 594918104

LEVELONE_EQUITIES Response Example:


```
{
 "data": [
  {
   "service": "LEVELONE_EQUITIES",
   "timestamp": 1714949592301,
   "command": "SUBS",
   "content": [
    {
     "key": "SCHW",
     "delayed": false,
     "assetMainType": "EQUITY",
     "assetSubType": "COE",
     "cusip": "808513105",
     "1": 76.08,
     "2": 76.49,
     "3": 76.44,
     "4": 3,
     "5": 1,
     "8": 5414735,
     "10": 76.47
    },
    {
     "key": "AAPL",
     "delayed": false,
     "assetMainType": "EQUITY",
     "assetSubType": "COE",
     "cusip": "037833100",
     "1": 183.75,
     "2": 183.8,
     "3": 183.8,
     "4": 1,
     "5": 2,
     "8": 163224109,
     "10": 187
```

```
        },
        {
          "key": "SPY",
          "delayed": false,
          "assetMainType": "EQUITY",
          "assetSubType": "ETF",
          "cusip": "78462F103",
          "1": 512.3,
          "2": 512.32,
          "3": 511.29,
          "4": 8,
          "5": 1,
          "8": 72756709,
          "10": 512.55
        }
      ]
    }
  ]
}
```

Fields	***Field Name***	***Type***	***Field Description***	***Notes, Examples Source***
0	Symbol	String	Ticker symbol in upper case.	
1	Bid Price	double	Current Bid Price	
2	Ask Price	double	Current Ask Price	
3	Last Price	double	Price at which the last trade was matched	
4	Bid Size	int	Number of shares for bid	Units are "lots" (typically 100 shares per lot) Note for NFL data this field can be 0 with a non-zero bid price which representing a bid size of less than 100 shares.
5	Ask Size	int	Number of shares for ask	See bid size notes.
6	Ask ID	char	Exchange with the ask	
7	Bid ID	char	Exchange with the bid	
8	Total Volume	long	Aggregated shares traded throughout the day, including pre/post market hours.	Volume is set to zero at 7:28am ET.

<table>
<tr><td>9</td><td>Last Size</td><td>long</td><td>Number of shares traded with last trade</td><td>Units are shares</td></tr>
<tr><td>10</td><td>High Price</td><td>double</td><td>Day's high trade price</td><td>According to industry standard, only regular session trades set the High and Low.

If a stock does not trade in the regular session, high and low will be zero.

High/low reset to ZERO at 3:30am ET</td></tr>
<tr><td>11</td><td>Low Price</td><td>double</td><td>Day's low trade price</td><td>See High Price notes</td></tr>
<tr><td>12</td><td>Close Price</td><td>double</td><td>Previous day's closing price</td><td>Closing prices are updated from the DB at 3:30 AM ET.</td></tr>
<tr><td>13</td><td>Exchange ID</td><td>char</td><td>Primary "listing" Exchange</td><td>As long as the symbol is valid, this data is always present

This field is updated every time the closing prices are loaded from DB

<table>
<tr><th>Exchange</th><th>Code</th><th>Realtime/NFL</th></tr>
<tr><td>AMEX</td><td>A</td><td>Both</td></tr>
<tr><td>Indicator</td><td>:</td><td>Realtime Only</td></tr>
<tr><td>Indices</td><td>0</td><td>Realtime Only</td></tr>
<tr><td>Mutual Fund</td><td>3</td><td>Realtime Only</td></tr>
<tr><td>NASDAQ</td><td>Q</td><td>Both</td></tr>
<tr><td>NYSE</td><td>N</td><td>Both</td></tr>
<tr><td>Pacific</td><td>P</td><td>Both</td></tr>
<tr><td>Pinks</td><td>9</td><td>Realtime Only</td></tr>
<tr><td>OTCBB</td><td>U</td><td>Realtime Only</td></tr>
</table>
</td></tr>
<tr><td>14</td><td>Marginable</td><td>boolean</td><td>Stock approved by the Federal Reserve and an investor's broker as being eligible for</td><td></td></tr>
</table>

			providing collateral for margin debt.	
15	Description	String	A company, index or fund name	Once per day descriptions are loaded from the database at 7:29:50 AM ET.
16	Last ID	char	Exchange where last trade was executed	
17	Open Price	double	Day's Open Price	According to industry standard, only regular session trades set the open If a stock does not trade during the regular session, then the open price is 0. In the pre-market session, open is blank because pre-market session trades do not set the open. Open is set to ZERO at 3:30am ET.
18	Net Change	double		LastPrice - ClosePrice If close is zero, change will be zero
19	52 Week High	double	Higest price traded in the past 12 months, or 52 weeks	Calculated by merging intraday high (from fh) and 52-week high (from db)
20	52 Week Low	double	Lowest price traded in the past 12 months, or 52 weeks	Calculated by merging intraday low (from fh) and 52-week low (from db)
21	PE Ratio	double	Price-to-earnings ratio. The P/E equals the price of a share of stock, divided by the company's earnings-per-share.	Note that the "price of a share of stock" in the definition does update during the day so this field has the potential to stream. However, the current implementation uses the closing price and therefore does not stream throughout the day.
22	Annual Dividend Amount	double	Annual Dividend Amount	
23	Dividend Yield	double	Dividend Yield	

24	NAV	double	Mutual Fund Net Asset Value	Load various times after market close
25	Exchange Name	String	Display name of exchange	
26	Dividend Date	String		
27	Regular Market Quote	boolean		Is last quote a regular quote
28	Regular Market Trade	boolean		Is last trade a regular trade
29	Regular Market Last Price	double		Only records regular trade
30	Regular Market Last Size	integer		Currently realize/100, only records regular trade
31	Regular Market Net Change	double		RegularMarketLastPrice - ClosePrice
32	Security Status	String		Indicates a symbols current trading status, Normal, Halted, Closed
33	Mark Price	double	Mark Price	
34	Quote Time in Long	Long	Last time a bid or ask updated in milliseconds since Epoch	The difference, measured in milliseconds, between the time an event occurs and midnight, January 1, 1970 UTC.
35	Trade Time in Long	Long	Last trade time in milliseconds since Epoch	The difference, measured in milliseconds, between the time an event occurs and midnight, January 1, 1970 UTC.
36	Regular Market Trade Time in Long	Long	Regular market trade time in milliseconds since Epoch	The difference, measured in milliseconds, between the time an event occurs and midnight, January 1, 1970 UTC.
37	Bid Time	long	Last bid time in milliseconds since Epoch	The difference, measured in milliseconds, between the time an event occurs and midnight, January 1, 1970 UTC.

38	Ask Time	long	Last ask time in milliseconds since Epoch	The difference, measured in milliseconds, between the time an event occurs and midnight, January 1, 1970 UTC.
39	Ask MIC ID	String	4-chars Market Identifier Code	
40	Bid MIC ID	String	4-chars Market Identifier Code	
41	Last MIC ID	String	4-chars Market Identifier Code	
42	Net Percent Change	double	Net Percentage Change	NetChange / ClosePrice * 100
43	Regular Market Percent Change	double	Regular market hours percentage change	RegularMarketNetChange / ClosePrice * 100
44	Mark Price Net Change	double	Mark price net change	7.97
45	Mark Price Percent Change	double	Mark price percentage change	4.2358
46	Hard to Borrow Quantity	integer		-1 = NULL >= 0 is valid quantity
47	Hard To Borrow Rate	double		null = NULL valid range = -99,999.999 to +99,999.999
48	Hard to Borrow	integer		-1 = NULL 1 = true 0 = false
49	shortable	integer		-1 = NULL 1 = true 0 = false
50	Post-Market Net Change	double	Change in price since the end of the regular session (typically 4:00pm)	PostMarketLastPrice - RegularMarketLastPrice

51	Post-Market Percent Change	double	Percent Change in price since the end of the regular session (typically 4:00pm)	PostMarketNetChange / RegularMarketLastPrice * 100

3.2 LEVELONE_OPTIONS

Please refer to LEVELONE_EQUITIES for REQUESTS and RESPONSE examples. Replace LEVELONE_EQUITIES with LEVELONE_OPTIONS.

Level One Options Request				
Streamer Contract name		**Type**	**Length**	**Description**
service		String	Variable	LEVELONE_OPTIONS
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	Options symbols in uppercase and separated by commas Schwab-standard option symbol format: RRRRRRYYMMDDsWWWWWddd Where: • R is the space-filled root • symbol YY is the expiration year • MM is the expiration month • DD is the expiration day • s is the side: C/P (call/put) • WWWWW is the whole portion of the strike price

				• nnn is the decimal portion of the strike price e.g.: AAPL 251219C00200000
	fields	String	Variable	Please see the LEVELONE_OPTIONS Field Definition table below

Response Field Definitions

Fields	*Field Name*	*Type*	*Field Description*	*Update Regular Hours*	*Update AM/PM Hours*	*Notes, Examples Source*
0	Symbol	String	Ticker symbol in upper case.	N/A	N/A	
1	Description	String	A company, index or fund name	Yes	Yes	Descriptions are loaded from the database daily at 3:30 am ET.
2	Bid Price	double	Current Bid Price	Yes	No	
3	Ask Price	double	Current Ask Price	Yes	No	
4	Last Price	double	Price at which the last trade was matched	Yes	No	
5	High Price	double	Day's high trade price	Yes	No	According to industry standard, only regular session trades set the High and Low. If a stock does not trade in the regular session, high and low will be zero.

						High/low reset to zero at 3:30am ET
6	Low Price	double	Day's low trade price	Yes	No	See High Price notes
7	Close Price	double	Previous day's closing price	No	No	Closing prices are updated from the DB at 7:29AM ET.
8	Total Volume	long	Aggregated contracts traded throughout the day, including pre/post market hours.	Yes	No	Volume is set to zero at 3:30am ET.
9	Open Interest	int		Yes	No	
10	Volatility	double	Option Risk/Volatility Measurement/Implied	Yes	No	Volatility is reset to 0 at 3:30am ET
11	Money Intrinsic Value	double	The value an option would have if it were exercised today. Basically, the intrinsic value is the amount by which the strike price of an option is profitable or in-the-money as compared to the underlying stock's price in the market.	Yes	No	In-the-money is positive, out-of-the money is negative.
12	Expiration Year	int				
13	Multiplier	double				
14	Digits	int	Number of decimal places			
15	Open Price	double	Day's Open Price	Yes	No	According to industry standard, only regular session trades set the open

						If a stock does not trade during the regular session, then the open price is 0. In the pre-market session, open is blank because pre-market session trades do not set the open. Open is set to ZERO at 7:28 ET.
16	Bid Size	int	Number of contracts for bid	Yes	No	From FH
17	Ask Size	int	Number of contracts for ask	Yes	No	From FH
18	Last Size	int	Number of contracts traded with last trade	Yes	No	Size in 100's
19	Net Change	double	Current Last-Prev Close	Yes	No	If(close>0) change = last – close Else change=0
20	Strike Price	double	Contract strike price	Yes	No	
21	Contract Type	char				
22	Underlying	String				
23	Expiration Month	int				
24	Deliverables	String				
25	Time Value	double				
26	Expiration Day	int				

27	Days to Expiration	int				
28	Delta	double				
29	Gamma	double				
30	Theta	double				
31	Vega	double				
32	Rho	double				
33	Security Status	String		Yes	Yes	Indicates a symbol's current trading status: Normal, Halted, Closed
34	Theoretical Option Value	double				
35	Underlying Price	double				
36	UV Expiration Type	char				
37	Mark Price	double	Mark Price	Yes	Yes	
38	Quote Time in Long	long	Last quote time in milliseconds since Epoch	Yes	Yes	The difference, measured in milliseconds, between the time an event occurs and midnight, January 1, 1970 UTC.
39	Trade Time in Long	long	Last trade time in milliseconds since Epoch	Yes	Yes	The difference, measured in milliseconds, between the time an event occurs and

						midnight, January 1, 1970 UTC.
40	Exchange	char	Exchange character	Yes	Yes	o
41	Exchange Name	String	Display name of exchange	Yes	Yes	
42	Last Trading Day	long	Last Trading Day	Yes	Yes	
43	Settlement Type	char	Settlement type character	Yes	Yes	
44	Net Percent Change	double	Net Percentage Change	Yes	Yes	4.2358
45	Mark Price Net Change	double	Mark price net change	Yes	Yes	7.97
46	Mark Price Percent Change	double	Mark price percentage change	Yes	Yes	4.2358
47	Implied Yield	double				
48	isPennyPilot	boolean				
49	Option Root	String				
50	52 Week High	double				
51	52 Week Low	double				
52	Indicative Ask Price	double				Only valid for index options (0 for all other options)
53	Indicative Bid Price	double				Only valid for index options (0 for all other options)
54	Indicative Quote Time	long	The latest time the indicative bid/ask prices updated in milliseconds since Epoch			Only valid for index options (0 for all other options)

						The difference, measured in milliseconds, between the time an event occurs and midnight, January 1, 1970 UTC.
55	Exercise Type	char				

3.3 LEVELONE_FUTURES

Please refer to LEVELONE_EQUITIES for REQUESTS and RESPONSE examples. Replace LEVELONE_EQUITIES with LEVELONE_FUTURES.

Level One Futures Fields for Streamer				
Streamer Contract name		***Type***	***Length***	***Description***
service		String	Variable	LEVELONE_FUTURES
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	\`schwabClientCustomerId\` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	Futures symbols in upper case and separated by commas. Schwab-standard format: '/' + 'root symbol' + 'month code' + 'year code' where month code is:

				• F: January • G: February • H: March • J: April • K: May • M: June • N: July • Q: August • U: September • V: October • X: November • Z: December and year code is the last two digits of the year Common roots: • ES: E-Mini S&P 500 • NQ: E-Mini Nasdaq 100 • CL: Light Sweet Crude Oil • GC: Gold • HO: Heating Oil • BZ: Brent Crude Oil • YM: Mini Dow Jones Industrial Average
	fields	String	Variable	Please see the LEVELONE_FUTURES Field Definition table below

Response Field Definitions

Fields	***Field Name***	***Type***	***Field Description***	***Update Regular Hours***	***Update AM/PM Hours***	***Notes, Examples Source***
0	Symbol	String	Ticker symbol in upper case.	N/A	N/A	
1	Bid Price	double	Current Best Bid Price	Yes	Yes	

2	Ask Price	double	Current Best Ask Price	Yes	Yes	
3	Last Price	double	Price at which the last trade was matched	Yes	Yes	
4	Bid Size	long	Number of contracts for bid	Yes	Yes	
5	Ask Size	long	Number of contracts for ask	Yes	Yes	
6	Bid ID	char	Exchange with the best bid	Yes	Yes	Currently "?" for unknown as all quotes are CME
7	Ask ID	char	Exchange with the best ask	Yes	Yes	Currently "?" for unknown as all quotes are CME
8	Total Volume	long	Aggregated contracts traded throughout the day, including pre/post market hours.	Yes	Yes	
9	Last Size	long	Number of contracts traded with last trade	Yes	Yes	
10	Quote Time	long	Time of the last quote in milliseconds since epoch	Yes	Yes	
11	Trade Time	long	Time of the last trade in milliseconds since epoch	Yes	Yes	
12	High Price	double	Day's high trade price	Yes	Yes	

13	Low Price	double	Day's low trade price	Yes	Yes	
14	Close Price	double	Previous day's closing price	N/A	N/A	
15	Exchange ID	char	Primary "listing" Exchange	N/A	N/A	Currently "?" for unknown as all quotes are CME
16	Description	String	Description of the product	N/A	N/A	
17	Last ID	char	Exchange where last trade was executed	Yes	Yes	
18	Open Price	double	Day's Open Price	Yes	Yes	
19	Net Change	double	Current Last-Prev Close	Yes	Yes	If(close>0) change = last – close else change=0
20	Future Percent Change	double	Current percent change	Yes	Yes	If(close>0) pctChange = (last – close)/close else pctChange=0
21	Exchange Name	String	Name of exchange			
22	Security Status	String	Trading status of the symbol	Yes	Yes	Indicates a symbols current trading status, Normal, Halted, Closed
23	Open Interest	int	The total number of futures contracts that are not closed or delivered on a particular day	Yes	Yes	
24	Mark	double	Mark-to-Market value	Yes	Yes	If lastprice is within spread, value = lastprice

			is calculated daily using current prices to determine profit/loss			else value=(bid+ask)/2
25	Tick	double	Minimum price movement	N/A	N/A	Minimum price increment of contract
26	Tick Amount	double	Minimum amount that the price of the market can change	N/A	N/A	Tick * multiplier field
27	Product	String	Futures product	N/A	N/A	From Database
28	Future Price Format	String	Display in fraction or decimal format.	N/A	N/A	Set from FSP Config format is <numerator decimals to display>,<implied denominator> where D=decimal format, no fractional display Equity futures will be "D,D" to indicate pure decimal. Fixed income futures are fractional, typically "3,32". Below is an example for "3,32": price=101.8203125 =101 + 0.8203125 (split into whole and fractional) =101 + 26.25/32 (Multiply fractional by implied denomiator) =101 + 26.2/32 (round to numerator decimals to display)

						=101'262 (display in fractional format)
29	Future Trading Hours	String	Trading hours	N/A	N/A	days: 0 = monday-friday, 1 = sunday, 7 = Saturday 0 = [-2000,1700] ==> open, close 1= [-1530,-1630,-1700,1515] ==> open, close, open, close 0 = [-1800,1700,d,-1700,1900] ==> open, close, DST-flag, open, close
30	Future Is Tradable	boolean	Flag to indicate if this future contract is tradable	N/A	N/A	
31	Future Multiplier	double	Point value	N/A	N/A	
32	Future Is Active	boolean	Indicates if this contract is active	Yes	Yes	
33	Future Settlement Price	double	Closing price	Yes	Yes	
34	Future Active Symbol	String	Symbol of the active contract	N/A	N/A	
35	Future Expiration Date	long	Expiration date of this contract	N/A	N/A	Milliseconds since epoch
36	Expiration Style	String				
37	Ask Time	long	Time of the last ask-side quote in milliseconds since epoch	Yes	Yes	

38	Bid Time	long	Time of the last bid-side quote in milliseconds since epoch	Yes	Yes	
39	Quoted In Session	boolean	Indicates if this contract has quoted during the active session			
40	Settlement Date	long	Expiration date of this contract	N/A	N/A	Milliseconds since epoch

For more examples on Futures Price format, see:
https://www.cmegroup.com/confluence/display/EPICSANDBOX/Fractional+Pricing+-+Display+Examples

If the DST-flag is present for Futures Trading Hours (field 29), please see the following hours for DST days:
https://www.cmegroup.com/confluence/display/EPICSANDBOX/Fractional+Pricing+-+Display+Examples

3.4 LEVELONE_FUTURES_OPTIONS

Please refer to LEVELONE_EQUITIES for REQUESTS and RESPONSE examples. Replace LEVELONE_EQUITIES with LEVELONE_FUTURES_OPTIONS.

Level One Futures Options Fields for Streamer				
Streamer Contract name		**Type**	**Length**	**Description**
service		String	Variable	LEVELONE_FUTURES_OPTIONS
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint

SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	Symbols in upper case and separated by commas. Schwab-standard format: '.' + '/' + 'root symbol' + 'month code' + 'year code' + 'Call/Put code' + 'Strike Price' where month code is: • F: January • G: February • H: March • J: April • K: May • M: June • N: July • Q: August • U: September • V: October • X: November • Z: December and year code is the last two digits of the year e.g.: ./OZCZ23C565
	fields	String	Variable	Please see the LEVELONE_FUTURES_OPTIONS Field Definition table below

Response Field Definitions

Fields	***Field Name***	***Type***	***Field Description***	***Update Regular Hours***	***Update AM/PM Hours***	***Notes, Examples Source***
0	Symbol	String	Ticker symbol in upper case.	N/A	N/A	

1	Bid Price	double	Current Bid Price	Yes	Yes	
2	Ask Price	double	Current Ask Price	Yes	Yes	
3	Last Price	double	Price at which the last trade was matched	Yes	Yes	
4	Bid Size	long	Number of contracts for bid	Yes	Yes	
5	Ask Size	long	Number of contracts for ask	Yes	Yes	
6	Bid ID	char	Exchange with the bid	Yes	Yes	Currently "?" for unknown as all quotes are CME
7	Ask ID	char	Exchange with the ask	Yes	Yes	Currently "?" for unknown as all quotes are CME
8	Total Volume	long	Aggregated contracts traded throughout the day, including pre/post market hours.	Yes	Yes	
9	Last Size	long	Number of contracts traded with last trade	Yes	Yes	
10	Quote Time	long	Trade time of the last quote in milliseconds since epoch	Yes	Yes	
11	Trade Time	long	Trade time of the last trade in milliseconds since epoch	Yes	Yes	
12	High Price	double	Day's high trade price	Yes	Yes	
13	Low Price	double	Day's low trade price	Yes	Yes	
14	Close Price	double	Previous day's closing price	N/A	N/A	

15	Last ID	char	Exchange where last trade was executed	Yes	Yes	Currently "?" for unknown as all quotes are CME
16	Description	String	Description of the product	N/A	N/A	
17	Open Price	double	Day's Open Price	Yes	Yes	
18	Open Interest	double				
19	Mark	double	Mark-to-Market value is calculated daily using current prices to determine profit/loss	Yes	Yes	If lastprice is within spread, value = lastprice else value=(bid+ask)/2
20	Tick	double	Minimum price movement	N/A	N/A	Minimum price increment of contract
21	Tick Amount	double	Minimum amount that the price of the market can change	N/A	N/A	Tick * multiplier field
22	Future Multiplier	double	Point value	N/A	N/A	
23	Future Settlement Price	double	Closing price	Yes	Yes	
24	Underlying Symbol	String	Underlying symbol	N/A	N/A	
25	Strike Price	double	Strike Price			
26	Future Expiration Date	long	Expiration date of this contract	N/A	N/A	Milliseconds since epoch
27	Expiration Style	String				
28	Contract Type	Char				

29	Security Status	String		Yes	Yes	Indicates a symbol's current trading status: Normal, Halted, Closed
30	Exchange	char	Exchange character	Yes	Yes	
31	Exchange Name	String	Display name of exchange	Yes	Yes	

3.5 LEVELONE_FOREX

Please refer to LEVELONE_EQUITIES for REQUESTS and RESPONSE examples. Replace LEVELONE_EQUITIES with LEVELONE_FOREX.

Level One Forex Request for Streamer				
Streamer Contract name		***Type***	***Length***	***Description***
service		String	Variable	LEVELONE_FOREX
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	Symbols in upper case and separated by commas. e.g.: EUR/USD,USD/JPY,AUD/CAD
	fields	String	Variable	Please see the LEVELONE_FOREX Field Definition table below

Response Field Definitions

Fields	***Field Name***	***Type***	***Field Description***	***Update Regular Hours***	***Update AdoubleM/PM Hours***	***Notes, Examples Source***
0	Symbol	String	Ticker symbol in upper case.	N/A	N/A	
1	Bid Price	double	Current Bid Price	Yes	Yes	
2	Ask Price	double	Current Ask Price	Yes	Yes	
3	Last Price	double	Price at which the last trade was matched	Yes	Yes	
4	Bid Size	long	Number of currency pairs for bid	Yes	Yes	
5	Ask Size	long	Number of currency pairs for ask	Yes	Yes	
6	Total Volume	long	Aggregated currency pairs traded throughout the day, including pre/post market hours.	Yes	Yes	
7	Last Size	long	Number of currency pairs traded with last trade	Yes	Yes	
8	Quote Time	long	Trade time of the last quote in milliseconds since epoch	Yes	Yes	
9	Trade Time	long	Trade time of the last trade in milliseconds since epoch	Yes	Yes	

10	High Price	double	Day's high trade price	Yes	Yes	
11	Low Price	double	Day's low trade price	Yes	Yes	
12	Close Price	double	Previous day's closing price	N/A	N/A	
13	Exchange	char				
14	Description	String	Description of the product	N/A	N/A	
15	Open Price	double	Day's Open Price	Yes	Yes	
16	Net Change	double	Current Last-Prev Close	Yes	Yes	If(close>0) change = last – close else change=0
17	Percent Change	double	Current percent change	Yes	Yes	If(close>0) pctChange = (last – close)/close else pctChange=0
18	Exchange Name	String	Name of exchange	N/A	N/A	
19	Digits	Int	Valid decimal points	N/A	N/A	
20	Security Status	String	Trading status of the symbol	Yes	Yes	Indicates a symbols current trading status, Normal, Halted, Closed
21	Tick	double	Minimum price movement	N/A	N/A	Minimum price increment for pair
22	Tick Amount	double	Minimum amount that the price of the market can change	N/A	N/A	Tick * multiplier field from database
23	Product	String	Product name	N/A	N/A	
24	Trading Hours	String	Trading hours	N/A	N/A	

25	Is Tradable	boolean	Flag to indicate if this forex is tradable	N/A	N/A	
26	Market Maker	String				
27	52 Week High	double	Higest price traded in the past 12 months, or 52 weeks	Yes	Yes	
28	52 Week Low	double	Lowest price traded in the past 12 months, or 52 weeks	Yes	Yes	
29	Mark	double	Mark-to-Market value is calculated daily using current prices to determine profit/loss	Yes	Yes	

4 BOOK Services

4.1 Book Common

Book Request for Streamer				
Streamer Contract name		**Type**	**Length**	**Description**
service		String	Variable	NYSE_BOOK, NASDAQ_BOOK, OPTIONS_BOOK
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint

SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	Symbols in upper case and separated by commas. e.g.: AAPL,TSLA,IBM
	fields	String	Variable	Please see the BOOK Field Definition table below

Response field definitions

Book Fields for Streamer				
Fields	***Field Name***	***Value***	***Type***	***Description***
0	Symbol	Ticker symbol in upper case.	String	
1	Market Snapshot Time	Milliseconds since Epoch	long	Timestamp for the data
2	Bid Side Levels	Price Levels	Array	Bid side price levels
3	Ask Side Levels	Price Levels	Array	Ask side price levels

Book Price Levels Sub-Field for Streamer			
Price Levels **Field #**	***Field Name***	***Type***	***Description***
0	Price	double	Price for this level
1	Aggregate Size	int	Aggregate size for this price level
2	Market Maker Count	int	Number of Market Makers in this price level
3	Array of Market Makers	Array	Array of market maker sizes for this price level

Book Market Makers Sub-Field for Streamer			
Market Makers **Field #**	***Field Name***	***Type***	***Description***
0	Market Maker ID	String	Market Maker ID
1	Size	long	Size of the Market Maker for this price level
2	Quote Time	long	Quote time in milliseconds for this Market Maker's quote

5 CHART Services

5.1 CHART_EQUITY

Chart Equity Request for Streamer				
Streamer Contract name		**Type**	**Length**	**Description**
service		String	Variable	CHART_EQUITY
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	Equities symbols in upper case and separated by commas. e.g.: AAPL,TSLA,IBM
	fields	String	Variable	Please see the CHART_EQUITY Field Definition table below

Response field definitions

Fields	*Field Name*	*Type*	*Field Description*	*Update Regular Hours*	*Update AM/PM Hours*	*Notes, Examples Source*
0	key	String	Ticker symbol in upper case.	N/A	N/A	
1	Open Price	double	Opening price for the minute	Yes	Yes	
2	High Price	double	Highest price for the minute	Yes	Yes	
3	Low Price	double	Chart's lowest price for the minute	Yes	Yes	
4	Close Price	double	Closing price for the minute	Yes	Yes	
5	Volume	double	Total volume for the minute	Yes	Yes	
6	Sequence	long	Identifies the candle minute	Yes	Yes	
7	Chart Time	long	Milliseconds since Epoch	Yes	Yes	
8	Chart Day	int				

5.2 CHART_FUTURES

Chart Futures Request for Streamer				
Streamer Contract name		**Type**	**Length**	**Description**
service		String	Variable	CHART_FUTURES
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint

SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	**keys**	String	Variable	Futures symbols in upper case and separated by commas. Schwab-standard format: '/' + 'root symbol' + 'month code' + 'year code' where month code is: • F: January • G: February • H: March • J: April • K: May • M: June • N: July • Q: August • U: September • V: October • X: November • Z: December and year code is the last two digits of the year Common roots: • ES: E-Mini S&P 500 • NQ: E-Mini Nasdaq 100 • CL: Light Sweet Crude Oil • GC: Gold • HO: Heating Oil • BZ: Brent Crude Oil • YM: Mini Dow Jones Industrial Average
	fields	String	Variable	Please see the CHART_FUTURES Field Definition table below

Field response definitions

Fields	*Field Name*	*Type*	*Field Description*	*Update Regular Hours*	*Update AM/PM Hours*	*Notes, Examples Source*
0	key	String	Ticker symbol in upper case.	N/A	N/A	
1	Chart Time	long	Milliseconds since Epoch	Yes	Yes	
2	Open Price	double	Opening price for the minute	Yes	Yes	
3	High Price	double	Highest price for the minute	Yes	Yes	
4	Low Price	double	Chart's lowest price for the minute	Yes	Yes	
5	Close Price	double	Closing price for the minute	Yes	Yes	
6	Volume	double	Total volume for the minute	Yes	Yes	

6 SCREENER services

6.1 Screener Common

Screener Request for Streamer				
Streamer Contract name		**Type**	**Length**	**Description**
service		String	Variable	SCREENER_EQUITY, SCREENER_OPTION
command		String	Variable	SUBS, UNSUBS, ADD, VIEW
requestid		Integer	Variable	Unique number that will identify this request.
SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow

				reference to a particular transaction or event chain.
parameters	keys	String	Variable	Symbols in upper case and separated by commas. (PREFIX)_(SORTFIELD)_(FREQUENCY) where PREFIX is: • Indices: $COMPX $DJI, $SPX.X, INDEX_ALL • Exchanges: NYSE, NASDAQ, OTCBB, EQUITY_ALL • Option: OPTION_PUT, OPTION_CALL, OPTION_ALL and sortField is: • VOLUME, TRADES, PERCENT_CHANGE_UP, PERCENT_CHANGE_DOWN, AVERAGE_PERCENT_VOLUME and frequency is: • 0, 1, 5, 10, 30 60 minutes (0 is for all day)
	fields	String	Variable	Please see the SCREENER Field Definition table below

Response field definitions

Index	*Field*	*Type*	*Description*	*Values*
0	symbol	String	The symbol used to look up either actives, gainers or losers	Subscribed or requested symbol
1	timestamp	long	Market snapshot timestamp in milliseconds since Epoch	12345613123

2	sortField	String	Field to sort on	VOLUME, TRADES, PERCENT_CHANGE_UP, PERCENT_CHANGE_DOWN, AVERAGE_PERCENT_VOLUME
3	frequency	Integer	Frequency of data to sort	0, 1, 5, 10, 30 60 minutes (0 is for all day)
4	Items	Array		Refer to the field table below

Field	***Type***	***Description***
description	String	Description of instrument
lastPrice	double	Last trade price (up to 2 decimal places)
marketShare	double	Market share percentage of instrument (up to 2 decimal places)
netChange	double	Net change value (up to 2 decimal places)
netPercentChange	double	Net percent change value (up to 4 decimal places)
symbol	String	Stock or Option symbol
totalVolume	long	Total volume for the day
trades	long	Number of trades for the frequency requested
volume	long	Volume for the frequency requested

7 ACCOUNT services

7.1 ACCT_ACTIVITY

Account Activity Request for Streamer				
Streamer Contract name		***Type***	***Length***	***Description***
service		String	Variable	ACCOUNT_ACTIVITY
command		String	Variable	SUBS, UNSUBS
requestid		Integer	Variable	Unique number that will identify this request.

SchwabClientCustomerId		String	Variable	`schwabClientCustomerId` as found in GET User Preference endpoint
SchwabClientCorrelId		String	Variable	Unique **identifier** value that is attached to requests and messages that allow reference to a particular transaction or event chain.
parameters	keys	String	Variable	A client-provided string that streamer will populate updates with. Only first key is used if multiple are provided.
	fields	String	Variable	"0" expected

Example:

```
{
    "requests": [
        {
            "service": "ACCT_ACTIVITY",
            "requestid": "2",
            "command": "SUBS",
            "SchwabClientCustomerId": "Someone",
            "SchwabClientCorrelId": "f308b89-19a7-2d18-4a0a-1c5e7120336",
            "parameters": {
                "keys": "Account Activity",
                "fields": "0,1,2,3"
            }
        }
    ]
}
```

Response:

Fields	**Field Name**	**Type**	**Value**
"seq"	Sequence	Integer	This field identifies the message number. If client reconnects and receives the same seq number again, it can choose to ignore the duplicate.
"key"	Key	String	Passed back to the client from the request to identify a subscription this response belongs to.
1	Account	String	Account Number that the activity occurred on.

2	Message Type	String	Message Type that dictates the format of the Message Data field.
3	Message Data	String	The core data for the message. Either JSON-formatted data describing the update, NULL in some cases, or plain text in case of ERROR.