



Crystal User Guide

Application version: 3.1



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1 Introduction

This document provides a complete set of instructions for using the Crystal application. It lists the main functions of the product and explains how to use it most effectively to advance your investigation.



Dashboard

Explorer

Monitor

Cases

Tracking




Crystal application contains 5 main tools for your investigation, which may be accessed from any page of the platform. These tools are:

1. **Dashboard** – here you may see your notifications on case activity, pages which were added to the account labels, saved visualizations and tracking list.
2. **Explorer** – our blockchain explorer allows you to investigate the blockchain in a convenient way. It offers you a complete list of information regarding transactions, blocks and addresses, as well as information regarding recent activity, top miners and the bitcoin exchange rate.
3. **Monitor** – this tool allows you to check the Risk Score of the deposits to your service, identify a “risky” amount received and check the withdrawal address specified by the customer.
4. **Cases** – this tool is designed for case management. It contains a list of cases and allows you to store addresses, transactions, visualizations and trackings associated with one case in the same place for further research or investigation.
5. **Tracking** – this tool permits you to track cryptocurrency from a particular set of transactions. The cryptocurrency will be traced to the wallet address where they settled, or to a known entity where they were used. Because some tracking projects are complex, the tool performs automatically and notifies your email when complete – thus allowing you to work on other aspects of your investigation.

Other important tools are the “Visualization” and “Entities interaction” tools. Each of them has a dedicated section in this guide.



Currently Bitcoin, Bitcoin Cash, Litecoin, Ethereum and Ripple (with limited functionality) are supported. You may switch between these currencies by clicking on the button  on the top left-hand side and choosing a currency in the dropdown list. For Bitcoin Cash you may

choose whether to display the addresses in Cash or Legacy format



In this guide we will explain the functions for Bitcoin, but please note that all functions apply to Bitcoin Cash and Litecoin as well.

The guides for Ethereum and Ripple will be available when you switch to the corresponding currency.

All dates on the Crystal interface are displayed in Universal Time Coordinated (UTC).

Below you may find a detailed description of each tool, their purpose and functionality.



2 Dashboard

The dashboard contains your activity notifications for your cases and your labels. Here you may save most of the platform pages for further review. In addition, tracking results and visualizations are saved to the dashboard automatically. The page may be divided into 4 sections:

- Cases
- Visualizations
- Labels
- Tracking List

2.1 Cases


Cases (11 updated) +				
Case ↓	Last update ↓	Created by	Status ↓	
• Test	Feb 11, 2020 11:05:41 am	AF	In progress	
• 1Po1oWkD2Lmo...	Feb 11, 2020 11:05:41 am	AF	Open	
• KYC case	Feb 11, 2020 11:05:41 am	AF	In progress	
• Investigation 1	Feb 11, 2020 11:05:41 am	AF	Open	
• KYC case (1)	Feb 11, 2020 11:05:41 am	AU	Open	
< 1 of 6 >				

This section lists all cases of the account. The number in brackets represents the number of updated cases. There are 4 columns of identifying information:

1. **Name** – name of the activity case. Clicking on it redirects you to the activity case.
2. **Last update** – date of the last transaction, in which at least one of the addresses in the case has participated.








3. **Created by** – the creator of the case. You may see the full name if you hover the mouse over the icon. This field is available only for corporate accounts.
4. **Status** – the status of the case. It may be Open, In progress or Closed.

You may delete the case by clicking on the icon  in the right-hand column.

You may create a new case by clicking on the “+” icon in the upper right corner.

For more details, please see [Creating a case](#) paragraph.

2.2 Visualizations

Visualizations (82)						+	
Name ↓	Currency	Type ↓	Items ↓	Created date ↓	Created by		
Visualizati...	BTC	Entity	5	Dec 20, 2019 11:18:14 am	AF		
Chain from...	BTC	Address	56	Dec 04, 2019 05:32:05 pm	AF		
0 output	USDT	Entity	8	Nov 05, 2019 11:47:40 am	AF		
high viz	BTC	Address	105	Oct 10, 2019 02:51:36 pm	AF		
Investigati...	USDT	Address	2	Oct 10, 2019 02:48:51 pm	AF		
< 6 of 17 > <input type="text"/> Go							



This section lists account visualizations (the total number of visualizations is in brackets).

The columns are:

1. **Name** – the name entered when saving the visualization, or the label assigned automatically. Clicking on it redirects you to the visualization.
2. **Type** – the type of visualization. It may be “Entity” or “Address”.
3. **Currency** – the currency selected while building the visualization. It may be BTC of USDT for Bitcoin Blockchain.
4. **Items** – the number of items on the visualization (addresses, transactions and entities).
5. **Created date** – the date when visualization was created.








6. **Created by** – the creator of the visualization. You may see the full name if you hover the mouse over the icon. This field is available only for corporate accounts.

You can edit the label by clicking on the icon  which appears upon hover over the label or delete the visualization by clicking on the icon  in the right-hand column. You can create a new visualization by clicking on the “+” icon.


The table may be sorted by **Label**, **Type**, **Items** and **Created date** in ascending or descending order. By default, it is sorted by Created date in descending order.

For more details, please see [7. Visualization](#).

2.3 Labels

Labels (155)					
Link ↓	Label ↓	Type ↓	Saved date ↓	Created by	
/address/...	/address/bc1...	address	Dec 14, 2018 04:51:05 pm	AF	
/address/...	OP_Return	address	Oct 06, 2018 03:02:40 pm	AF	
/tx/1928...	Page 1	transaction	Sep 10, 2018 08:05:26 am	AF	
/address/...	script	address	Sep 06, 2018 10:59:26 am	AF	
/address/...	my address	address	Sep 05, 2018 12:27:36 pm	AF	



< 31 of 31 > Go

This section includes all the pages that were labeled. These can be addresses, blocks, transactions, entities or entity interactions. To label a page, you will need to press the Label icon  at the top of that page. If you enter a label for the address on your visualization, the address is also saved to the labels (the total number of labels is shown in brackets). The section with labels includes:

1. **Link** – the link to the labeled page.
2. **Label** – the label you entered when saving the page.
3. **Type** – the type of page (i.e., interaction, address, transaction, block or entity).
4. **Saved date** – the date when page was saved.













5. **Created by** – the creator of the label. You may see the full name if you hover the mouse over the icon. This field is available only for corporate accounts.

You can edit the label by clicking on the icon  or delete the page from your labels by clicking on the icon  in the right-hand column.

The table may be sorted by each column in ascending or descending order. By default, it is sorted by Saved date in descending order.



2.4 Tracking list

Tracking List (114) +					
Name ↓	Currency	Status	Last update ↓	Created by	
New Inv...	BTC	Ready to check	Nov 15, 2019 06:13:18 am		
mQfYcie...	BTC	Ready to check	Oct 16, 2019 12:18:57 pm		
5V6eTO...	BTC	Ready to check	Sep 20, 2019 11:38:16 am		
Tracking...	BTC	Ready to check	Sep 17, 2019 01:19:45 pm		
Research	BTC	Ready to check	Sep 06, 2019 10:40:27 am		
<div>< 1 of 23 > <input type="text"/> <input type="button" value="Go"/></div>					

This section lists all of your previous trackings, with 4 columns of identifying information:

1. **Label** – the tracking label. You may enter your own label while setting up tracking, otherwise it is assigned automatically. Clicking on it redirects you to tracking results.
2. **Currency** – the currency, which was tracked.
3. **Status** – the tracking status. It may be:
 - a. **Ready to check** – the tracking was calculated
 - b. **Pending** – the tracking is being calculated for the first time
 - c. **Updating** – the tracking is being updated
4. **Last update** – the date when tracking was last updated.
5. **Created by** – the creator of the tracking. You may see the full name if you hover the mouse over the icon. This field is available only for corporate accounts.



The total number of trackings is displayed in brackets. You can start a new tracking by clicking on the “+” icon in the top right-hand corner. You can edit the label by clicking on the  icon which appears upon hover over the label or delete the tracking by clicking on the  icon in the right-hand column.

The table may be sorted by columns **Label**, **Addresses** and **Last update** in ascending or descending order by clicking on the arrows to the right of the column name. By default, it is sorted by Last update in ascending order.

For more details please refer to [8.Tracking](#).



3 Explorer

The *Explorer* tool provides basic information about all aspects of the blockchain including addresses, transactions and blocks. In addition, it determines ownership for millions of bitcoin addresses and calculates the risk score for any address which appeared in the blockchain.

3.1 Explorer Dashboard

The Explorer dashboard provides a snapshot of the overall bitcoin blockchain in real time, with statistics on entities, up-to-the-minute statistics on recently mined blocks, statistics on the top miners, and bitcoin exchange rates over time. It has 7 sections:

1. Search box
2. Entities
3. Entity types
4. Last mined blocks
5. Top 5
6. Bitcoin price
7. Miners

3.1.1 Search box



The explorer search box works with a wide variety of inputted information. You may enter any of the following strings to the search box in order to receive results. The first four strings are looked up for the exact match. The address tag, page label and entity name are for a partial match.

- **block height**
- **block hash**
- **transaction hash**
- **address hash**



- **address tag**
- **page label** (including case names, visualizations and trackings)
- **entity name**

After you have entered the data string, there are several possibilities:

1. The search for the strings described above didn't return any results from the database for the selected currency. If you have entered an address from another currency, you will be able to select the correct currency and get redirected to the address page.

A search input field contains the hexadecimal string "0x3be3e7287da0e95b4643cf0f9f305fbac3753f3c". To the right of the input is a close button (X). Below the input field, a message states: "This is ETH address, you can switch the currency:". Below this message, the same hexadecimal string is displayed next to the label "ETH".

Otherwise, the result: "No matches were found for your query" appears.

2. Search returns exactly one result from the database for the corresponding currency. In this case, there are several possible flows:

- If you insert an address which has appeared in the blockchain, transaction or block hash, you will be redirected to the corresponding page immediately.
- If you enter an exact entity name, address tag, page label or block height, you will receive a drop-down menu from which you will need to click on an entity name or block height to go to the corresponding page.

A search input field contains the number "528355". To the right of the input is a search icon (magnifying glass). Below the input field, a dropdown menu is open, showing the result "Block #528355".

3. Searches using partial names of entities, page labels or address tags will yield multiple possibilities from the database. You will see an additional drop-down menu with possible spellings. First, the search is performed by entity names, then by page



labels and finally by address tags if previous searches had no results. Choosing one of them will direct you to the corresponding entity page.

bit	Q
Bittrex	1454321
Bitfinex	945832
Bitpay	778712
Bitstamp	516335
Bitcoin Fog	233930
Bitcoin-24	228944
BitReserve	180487
BitcoinDE	120961
BitZino	89475
BitBar Gain	64097

Clicking on the search box reveals the search history (previous 20 successful searches). You may see the search result along with the page type and the date of the search.

Insert Entity Name, Address, Transaction or Block Identifier			Q
Binance	Entity	Sep 01, 2020 12:42:37	X
18cBEMRxXHqzWWCxZntU91F5sbUNKhL5PX	Address	Aug 19, 2020 07:30:53	X
Huobi	Entity	Aug 19, 2020 07:34:59	X
ddc45334f20326ac73d1a8e74827c0516824c...	Tx	Aug 19, 2020 07:33:34	X
scam4 17k	Bookmark	Aug 19, 2020 08:08:56	X
97e10c09cc97e22cc2101f9f346b7d1c43e820...	Tx	Aug 19, 2020 08:00:10	X

You can delete the result by clicking on the button “X” to the right.



3.1.2 Bitcoin Entities

Bitcoin Entities (2572)

In the table below we show those entities that have known names.

Note that the data from columns: *inner* and *external* transactions are updated once per day.

Search by Entity Name or Type

Entity Name	Entity Type	Risk Score	Wallets	Balance, BTC	Inner Transactions	External Transactions
Coinbase	Exchange With High ML Risk	50	46,353,721	288,550.43091066	6,460,333	39,178,093
blockchain.info	Online Wallet	25	11,644,833	430,373.82178579	262,713	4,595,797
LocalBitcoins	Exchange With Moderate Risk	50	8,158,237	194.03402618	7,923	10,321,626
CoinPayments	Payment Processor	0	4,967,273	712.36679979	73,058	7,446,178
GoCoin	Payment Processor	0	4,857,420	0.06046443	928	3,180,983
Binance	Exchange With High ML Risk	50	4,279,112	305,259.30748054	647,326	17,463,102
Hydra Marketpla...	Darknet Marketplace	100	3,259,038	1,584.17629006	54,927	7,365,043

< 1 of 368 > Go

One of the most pressing problems in Bitcoin Blockchain analysis is determining ownership of addresses. Crystal collects and saves data on thousands of entities, such as exchanges and miners. Many of these entities own multiple addresses, sometimes thousands. Therefore, Crystal gives ownership attribution to tens of millions of bitcoin addresses.

In this block, we list all entities present in our database (the total number of entities is specified in brackets). Note that many of these entities, e.g. exchanges and payment processors, may have hundreds or thousands of addresses. We group the addresses into clusters with the help of our clustering algorithm, which uses two heuristics: “common spending” and “one-time change.” We determine cluster ownership with the help of data collected about single addresses from several websites and manual registration on websites.

- 1 It is possible to sort the table in ascending or descending order by each column. For instance, by clicking on “Wallets” once, the order is changed to begin with the lowest # of wallets and clicking on it again reverses the order, to begin with the most number of wallets. Generally, exchanges will have the most number of assigned addresses, often counted in the millions.



- 2 In the search box at the top of the table, you can type a string, and a substring search is performed for the entity name and the entity type matching the given string.
- 3 The data presented in the columns **Balance**, **Inner transactions** and **External transactions** is updated once per day. Please see 5. External transaction and 6. Inner transaction in [Glossary below](#) for the definitions.

The table has the following columns:

- 1 **Entity name** – the name of the entity in the table.
- 2 **Entity type** – one of 19 possible entity types.
- 3 **Risk Score** – entity's Risk Score. It may be configured for each entity type in Risk Score profile described [below](#).
- 4 **Wallets** – number of Bitcoin addresses belonging to the entity.
- 5 **Balance** – the total number of bitcoins in all addresses belonging to this entity.
- 6 **Inner Transactions** – the number of an entity's internal transactions (where the sending and receiving addresses in the transaction both belong to the entity).
- 7 **External Transactions** – the number of an entity's external transactions (where at least one of the sending or receiving addresses does not belong to the entity).

By default, the table is sorted by **External Transactions** in descending order.



3.1.3 Entity types

Entity types

ATM	18
Darknet Marketplace	305
Darknet Service	34
Exchange With High ML Risk	70
Exchange With Low ML Risk	136
Exchange With Moderate Risk	19
Exchange With Very High ML Risk	229
Fraudulent Exchange	5
Gambling	101
Illegal Service	43
Miner	103
Mixing Service	31
Online Marketplace	9
Online Wallet	47
Other	144
Payment Processor	28
Ransom	605
Scam	575
Stolen Coins	70

In this block we show a list of all entity types by their activity and the number of entities in each group. There are 19 entity types in our classification system:

1. ATM – cryptocurrency ATM operator.
2. Darknet Marketplace – an online marketplace which operates via darknets and is used for trading illegal products for cryptocurrency.
3. Darknet Service – an organization which operates via darknets and offers illegal services for cryptocurrency.
4. Exchange With Low ML Risk – exchanges that require KYC/AML identification for any de-posit or withdrawal.



5. Exchange With Moderate ML Risk – exchanges that allow the withdrawal of up to \$2000 in crypto daily without KYC/AML. (For fiat withdrawals, KYC/AML is still required.)
6. Exchange With High ML Risk – exchanges that allow the withdrawal of more than \$2000 in crypto daily without KYC/AML. (For fiat withdrawals, KYC/AML is still required.)
7. Exchange With Very High ML Risk – exchanges that don't use verification procedures, or have requirements for certain countries only.
8. Fraudulent Exchange – an exchange that was involved in illegal activity.
9. Gambling – an online resource offering gambling services using cryptocurrency.
10. Illegal Service – a resource offering illegal services or engaged in illegal activities.
11. Miner – an organization which utilizes its computing power for mining cryptocurrency blocks.
12. Mixing Service – a service for mixing funds from different sources to make tracing them back harder or almost impossible. It is mostly used for money laundering.
13. Online Marketplace – an entity offering legal services/trading goods for cryptocurrency.
14. Online Wallet – a service for storage and making payments with cryptocurrency.
15. Other – none of the specified types. It may include a subtype.
16. Payment Processor – a service which acts as an intermediary between customers and the company which provides services for making a payment.
17. Ransom extortioner – extortioners demanding payment in the form of cryptocurrency.
18. Scam – entities that have scammed their customers and taken possession of their cryptocurrency.
19. Stolen Coins – the entities which have taken possession of someone else's cryptocurrency by hacking.

Several entity types may have a subtype. Please find them below:

- **Darknet Service** – the subtypes are Child Abuse, Terrorist Financing, Drug Dealer.
- **Ransom** – the subtypes are Blackmail, Malware.



- **Other** – the subtypes are Faucet, Scam, ICO, etc.

3.1.4 Last Blocks Mined

Last Blocks Mined				
Height	Relayed By	Time	Transactions	Size
606603	Poolin	11:42:10 AM	3,217	1283.99 KB
606602	F2Pool	11:21:56 AM	1,450	918.86 KB
606601	Unknown	11:17:14 AM	76	21.04 KB
606600	Huobi	11:17:03 AM	2,866	1251.45 KB
606599	AntPool	11:12:57 AM	2,741	1331.08 KB

The Last Mined Blocks section provides real-time information about the last 5 blocks mined on the bitcoin blockchain, set forth in 5 columns:

1. **Height** – the number of preceding blocks.
2. **Relayed by** – here you may see the name of the miner. In most cases these names are known, and by clicking you may open the entity page.
3. **Time** – the time when the block was mined.
4. **Transactions** – number of transactions in the block.
5. **Size** – size of the block in kilobytes.

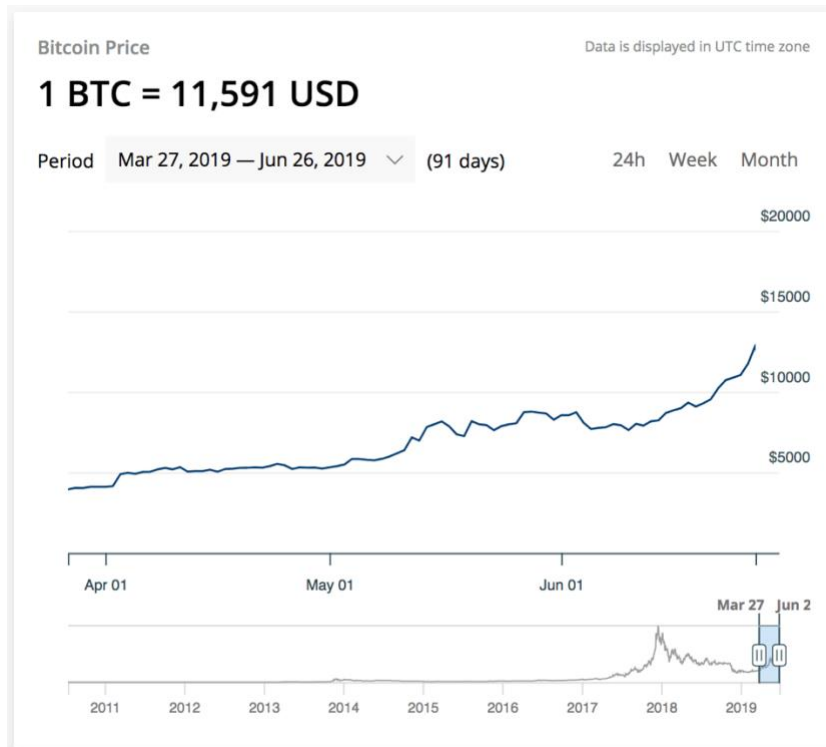
3.1.5 Top 5

Top 5				
In the block 587757				
Addresses	BTC	Entity	Transactions	BTC
1JtNkeBQ4fj...	945.62818921	Not defined	fb49a44a8...	945.62796521
18PT9jFVQ...	845.62796521	Not defined	8456c21b5f...	651.17625034
1Lmjfhrnjcq...	701.45498073	Bitbank.com	8bdcf254ab...	650.93653938
1NDyJtNTjm...	521.92675542	Binance	a8ca950cdb...	649.4987829
1NrERKT8iV...	384.00073073	Bitbank.com	af96ee9120...	646.87165732



This section may be divided into two subtables: Top 5 Addresses and Top 5 Transactions. The left-hand section provides the 5 addresses in the latest block with the largest amount of inputs and outputs with their owners. The right-hand section lets you see the top 5 transactions in the block, measured by the bitcoin amount. If you click on the transaction hash, you will be redirected to the transaction page.

3.1.6 Bitcoin Price



This section provides the daily bitcoin exchange rates from Jul 17, 2010, to the present day. At the top of the section is the current exchange rate, updated every hour. Currently we use 5 exchanges as source of data for the average rate: Bittrex, Coinbase, Liquid, OKEx, CEX.io. Data is accurate to the hour.

We use Coinmarketcap history only for transactions that were conducted earlier than January 2018, when Crystal was launched.

There are several ways to choose the time period for displaying the exchange rate graph:

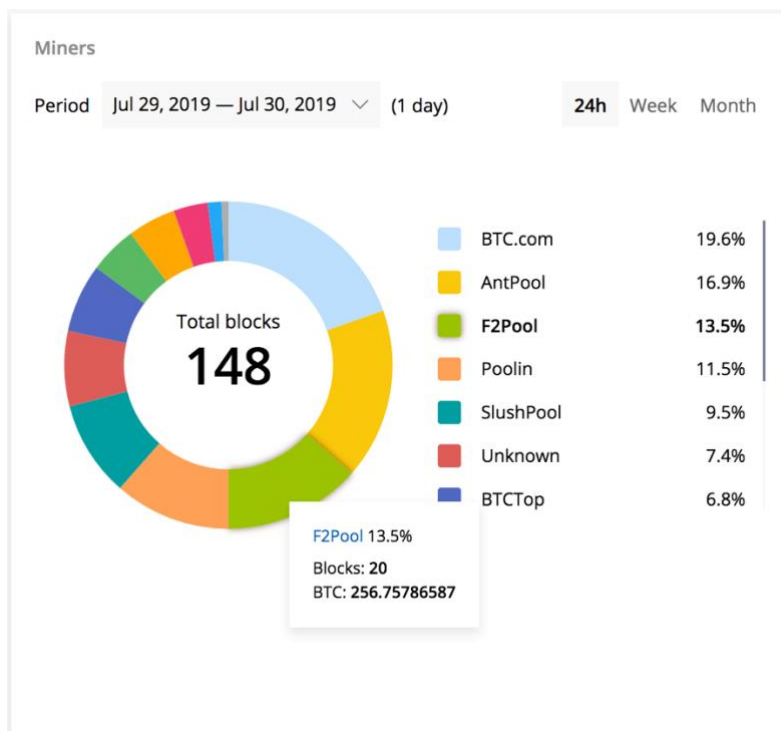
- The date picker above the graph area: here you enter the first and the last date of the time period required.



- The time navigation below the graph, where you may select the required period using two sliders.
- Shortcut buttons “24h”, “Week” and “Month.” For periods “24h” and “Week,” hourly exchange rates are provided.

When you hover the mouse cursor over the graph, a pop-up banner gives the date and exchange rate for that date.

3.1.7 Miners



In this block we display the list of miners and the share of the overall number of blocks mined by each miner in the past 24 hours. You can change the time period in two ways:

- Shortcut buttons “24h”, “Week”, “Month”, or
- Date picker above the graph where you can choose the start and end dates.

When you hover the mouse over a miner in the list or on the pie chart, a pop-up banner gives the miner’s total amount of mined blocks and total reward for the chosen period.

3.2 Address Page

The address page provides 4 sections of information pertaining to a bitcoin address:



1. Basic info
2. Connections
3. Transactions
4. Token Transfers (only if address has participated in USDT transfers)
5. Mentions

3.2.1 Basic Info


The screenshot displays the 'Basic Info' section for a Bitcoin address. It includes the following elements:

- Bitcoin Address:** 1Po1oWkD2LmodfkBYIAktwh76vkF... with a 'Label by user' button.
- Tags:** A 'Sample tag' button.
- Owner:** Poloniex.
- Total Balance in fiat:** 2,217,112.9 USD.
- Assets (2):** Bitcoin (BTC) with a dropdown menu. Balance: 7.51061198 BTC. Received amount: 439.04562904 BTC. Sent amount: 431.53501706 BTC. Number of Tx: 485,495.
- Risk Score:** 50% (Profile: Default). A note states: 'We regard Poloniex as an exchange'.
- Details:** Status: Active. First Activity: Jun 30, 2014 06:23 AM. Last Activity: May 04, 2020 06:04 PM. Mentions on the Web: 29.
- Buttons:** 'Visualization' and 'Add to case'.



Basic info may be divided into 4 subsections: Main Data, Owner, Assets, Risk Score and Details.

3.2.1.1 Main Data


In this section you may see the address hash, notes, labels and possible operations with the address.

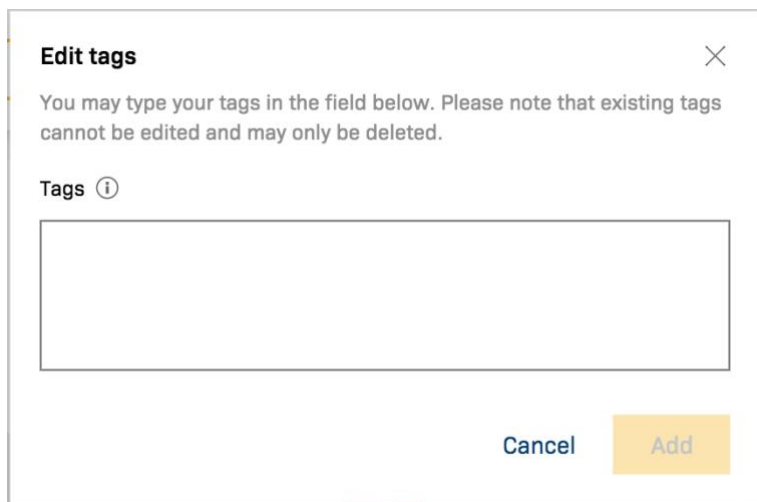
Bitcoin address – address hash, labels, tags and other possible actions. On the right-hand side you may see the button  for adding the label to the address. If the address has a label, the icon becomes filled with yellow color and you may see the label to the right. It may be edited by clicking on the label.

If other users have added their labels (available only for corporate accounts), you will see them to the right. You may see the creator of the label if hover you the mouse over it. You may click on the label to edit it (if permissions of your role allow it).

Near the hash, there is a “Copy” button . Clicking on it saves the address hash to the buffer. If the address is in one of the blocklists, you will see the icon  to the left of the hash. See section [Blocklists](#) for more details.




Below you may see the tags added to the address. Crystal tags are highlighted with red and your tags are blue. You can add new tags by clicking on the button . After that the field appears, where you can type new tags.




The dialog box titled "Edit tags" contains a close button (X) in the top right corner. Below the title, it says: "You may type your tags in the field below. Please note that existing tags cannot be edited and may only be deleted." Underneath this text is a label "Tags" followed by an information icon (i). Below the label is a large, empty rectangular text input field. At the bottom right of the dialog are two buttons: "Cancel" and "Add".

Each tag may be no longer than 30 symbols. Tags may be separated by double clicking the space or by clicking the Enter button.

Bitcoin Address 

script-01d6e23d 

Tags: 

Owner

Not defined

Script


asm | hex

Script – sometimes a transaction output may be a custom script. In such cases it is displayed as “script-01d6e23d” and may often be considered as an address. Basically, it is a set of rules which allow you to spend the corresponding output. You may view the script in hex and asm formats by clicking on the corresponding buttons. Hex format displays the script in the form of hexadecimal string, while asm format lets you see the known opcodes. You may search the scripts in Crystal by their internal name, asm and hex. It has to be noted that at



the moment most of the scripts are used to attach some data to the transaction, and such scripts may be identified by the OP_RETURN opcode in asm format.

3.2.1.2 Owner


Here we show the name of the entity to which the address belongs. If the entity owner is known it is an entity name and if the entity owner is unknown it is a number (internal identifier). You can add label to the address owner by clicking on the button . If an address does not belong to any of the entities, it will be marked as Not defined.

Below you may see 2 buttons:

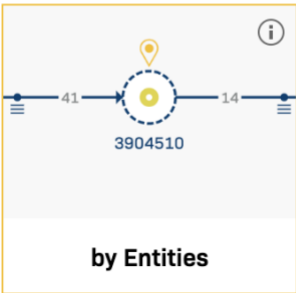
1. **Visualization** – a button for quick access to the visualization page. You may select whether to build the visualization by addresses or by entities in the subsequent menu:

Please select type and choose currency

Visualization type




by Addresses



by Entities

Currency

Bitcoin (BTC) 

Start

If USDT was transferred by the address, you will have to specify the currency for visualization in the drop-down menu.

Clicking on the Start button redirects to the visualization page. The entry point of the visualization graph is the address from the initial address page or the entity which



owns the address if you select the visualization by entities. By default, the graph shows the latest incoming transaction and the latest outgoing transaction for this address (including unconfirmed transactions) or entity (unconfirmed transactions are not counted).

2. **Add to case** – button for adding the address to a case. After clicking on it the pop-up appears.

Add the address to a new case ✕

Create a new case and configure your notification settings

Case Name

New Case

Notification settings ⓘ

☒ Minimum balance change ⓘ 0.10000000 BTC

☒ Minimum balance change ⓘ 1000 USDT

☒ Risk Score became ⓘ 70 %

☐ Receive email notifications to email@example.com

☐ Receive notifications in Slack ⚙️

Or add the address to an existing case

Select the case to add the address there

Case Name

Select case

Cancel Add

You can create a new case (1) or add address to an existing case from the drop-down list (2).

The detailed functionality of activity notifications is described in [Cases](#) section below.

3.2.1.3 Assets

Section contains information about address assets. This may be either BTC or USDT. If an address has participated in USDT transfers, you will be able to select the type of assets in the drop-down. The section contains:

1. **Balance** – current address balance.



2. **Received amount** – the total amount of funds received by this address over time.
3. **Sent amount** – The total number of funds sent from this address over time.
4. **Number of Tx** – the total number of transactions (incoming and outgoing) in which the specified address took part.

3.2.1.4 Risk Score

Risk Score

8% ⚙️ (Profile: Default)

Very strong connection with **exchanges with low ML risk**

Weak connection with **exchanges with high ML risk**

With the help of our clustering algorithm we grouped the addresses into clusters. We collected data from various resources on the Internet and connected part of the clusters to real-world entities. After that we manually assigned each of the known entities an expert estimate of the Risk Score value and Entity Type.

Then we calculated the degree of influence of each entity type for all addresses. For this we performed three repetitions of a label propagation algorithm to assign each address three sets of signals:

- Non-directional signals – they are calculated based on the weighted graph of transactions between clusters, where the weight of the edge is the amount sent and received between two clusters
- Sending signals – they are calculated based on the weighted directed graph of transactions between clusters, where the edges of the graph represent the direction of funds flow and the weight is the amount transferred. We only consider the sending direction for calculating the signals
- Receiving signals – the graph is the same as for sending signals, but only receiving signals are considered during Risk Score calculation.




After that each address is assigned a Risk Score value based on the [Risk Score profile](#) selected (it is specified next to the Risk Score value). For more details of the Risk Scoring model please contact our Support staff at support@crystalblockchain.com.

1. **Risk Score** is a metric that helps to estimate the chance that an address is related to illegal activity. The value can range from 0% to 100%, where 0% means that the address is safe, and 100% means that the address is involved in illegal activity. If the address belongs to an entity, its risk score is the same as the entity's risk score. The risk score value is displayed as a number with the following colors:

- a. Red – 75-100%
- b. Yellow – 25-74%
- c. Green – 0-24%
- d. Black – n/a

The Risk Score is not applicable in several cases:

- a. Risk Score has not been calculated yet. It happens in cases, when the address is new (it has transactions only in the mempool or in a recently mined block). In such cases Risk Score will be calculated soon.
- b. Address is too far from known entities. If the chain of transactions to any known entity is longer than 150, the entity will not influence the Risk Score. So if there are no known entities closer than 150 transactions away, the Risk Score will be n/a.
- c. Address does not transact with any addresses. It may happen for example if an unknown miner has mined some coins and hasn't sent them to anyone.

You may change the Risk Score profile by clicking on the button "Change settings" in the pop-up, which appears when you hover the mouse over the  button. It will redirect you to the [Risk Score Profiles](#).



This value was calculated by algorithm according to the settings in the Risk Score profile.

Current profile: **Default**

[Change settings](#)

2. Under the Risk Score value, you can find explanations for the risk score value. They are constructed based on interactions between an address and known entities. We use 18 entity categories based on the risk score and entity type:

- ATM
- Darknet Marketplace
- Darknet Service
- Exchange With Low ML Risk
- Exchange With Moderate ML Risk
- Exchange With High ML Risk
- Exchange With Very High ML Risk
- Fraudulent Exchange
- Gambling
- Illegal Service
- Online Marketplace
- Miner
- Mixing Service
- Payment Processor
- Ransom Extortioner
- Scam
- Stolen coins
- Online Wallet



For each of these vector categories, we calculate its degree of influence on a particular address, from 0 to 100%. After that, each address is assigned a 16-element vector, where each of the components represents a possible entity type and its value represents the degree of influence. The components, when totaled, should equal 100%. They are divided into the following categories:

- a. Very Strong – 80-100%
- b. Strong – 50-79%
- c. Medium – 30-49%
- d. Weak – 10-29%
- e. Negligible – 0-9%

Only non-negligible degrees of influence are mentioned in this block.

If we know the owner of the address, it will be specified in the Risk Score section.

Risk Score

0%  (Profile: **Default**)

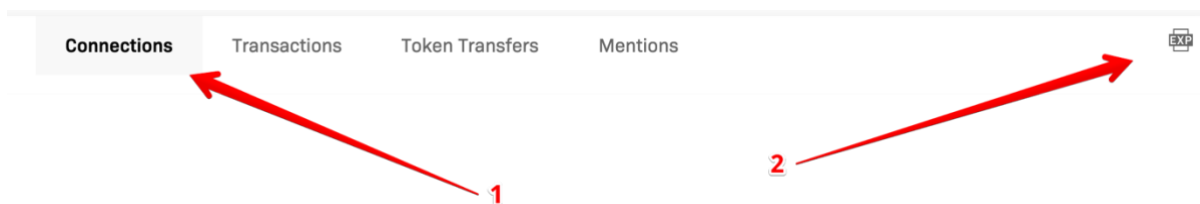
We regard Bitfury as a **miner**


3.2.1.5 Details

1. **Status** – the metric reflecting address activity shows 2 values: **Active** or **Inactive**. The address is **Inactive** if it has not taken part in any transaction for the last 90 days; otherwise it is **Active**.
2. **First Activity** – the date of the first transaction in which the address received bitcoin.
3. **Last Activity** – the date of the last transaction in which the specified address took part.
4. **Mentions on the Web** – here we show mentions on the web. The line is present only if there are any mentions. Clicking on it redirects you to the tab [Mentions](#) below.



Below the basic info, you may see Connections and may also switch between Connections, Transactions, Token Transfers and Mentions using the corresponding buttons (1) below:

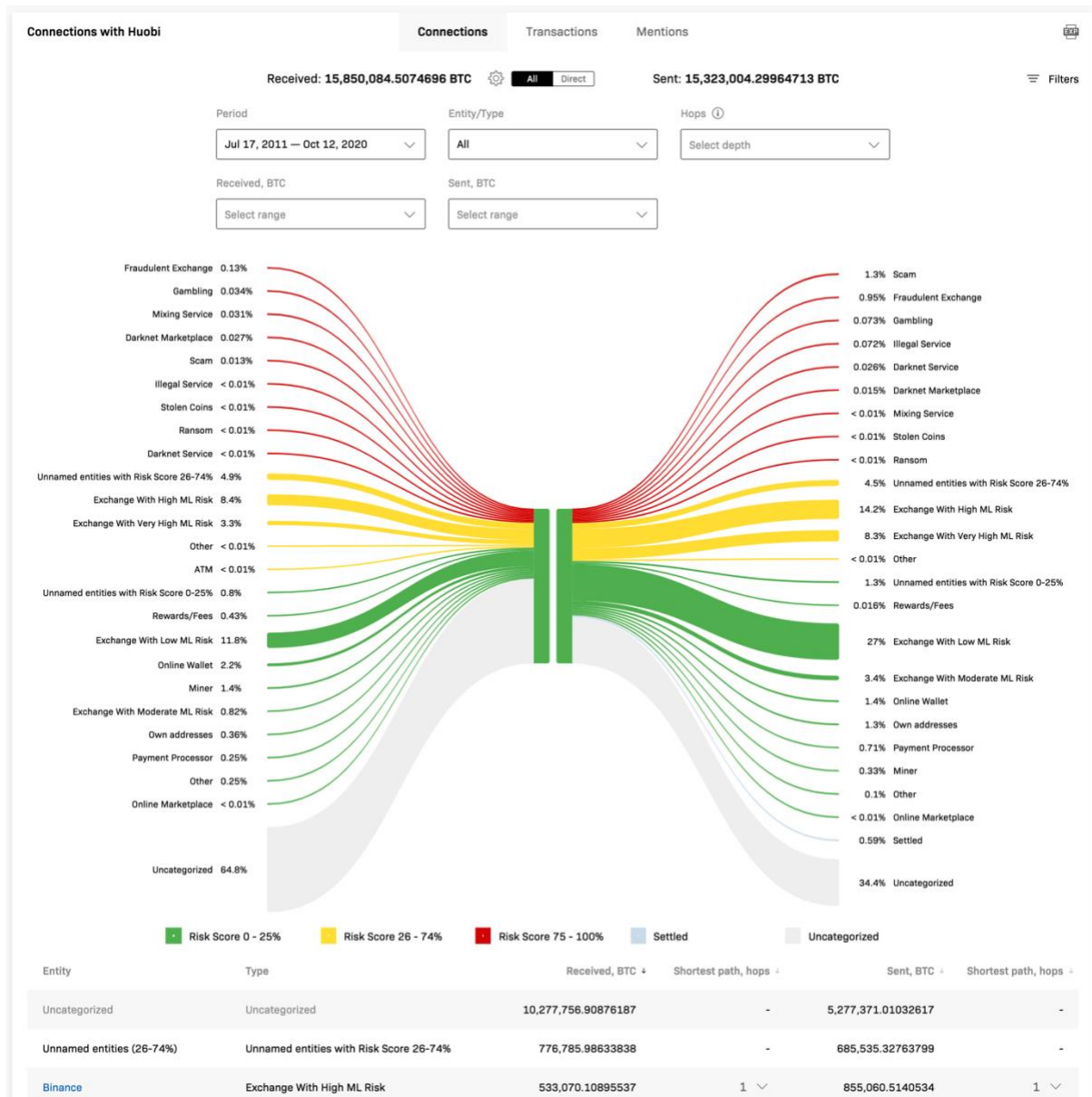


The button  (2) is available for the tabs “Connections”, “Transactions” and “Token Transfers”. Click on it to export the current page either in CSV or in PDF format. The exported PDF file will include the export date and the chosen currency in the header.


Below we will describe each section in detail.



3.2.2 Connections



This section provides information regarding the addresses or entities, from which the address has received bitcoin and to which it has sent bitcoin, both directly and via a chain of transactions. You may switch between **direct** connections and **all** connections. If an address has participated in USDT transfers, you will be able to select either BTC or USDT in the “Currency” drop-down.

You can configure the settings for indirect connections by clicking on the button  in the middle.



All connections settings ✕

You can specify the settings for all connections below. After you save the changes, they will be applied to all the connections throughout the service.

Stop when reached unnamed entity with activity ⓘ

100 200 500 1,000 10,000 ∞

965

Cancel Save

Here you can specify the number of transactions. When an unknown entity with more transaction is reached, further tracking stops and unknown entity is recorded to the results in the category corresponding to its Risk Score.

Direct connections represent the statistics of direct interactions with various entities within a transaction. All connections include direct connections, the tool also analyzes incoming and outgoing transactions that occur with unnamed entities and tracks them until the funds reach a known entity. So, if two entities interact via intermediate addresses with unknown owners, such an interaction will still be included in indirect connections. As a result, we provide a complete diagram of all address/entity interactions. Besides, the tool allows you to find the shortest path between two entities and build the visualization of the path.

It has to be noted, that at the moment, the algorithm has some limitations: the number of tracked transactions (maximum 20,000) and the length of the path to a known entity (maximum 100,000 hops, it may be configured in indirect filters) are limited. Users may switch between direct connections and all connections, which include both direct and indirect ones using the switcher over the diagram.

Rewards/Fees are the funds received in the coinbase transaction (newly generated coins) and the funds spent on fees. If an address belongs to a cluster or entity, connections for the whole cluster/entity are displayed.

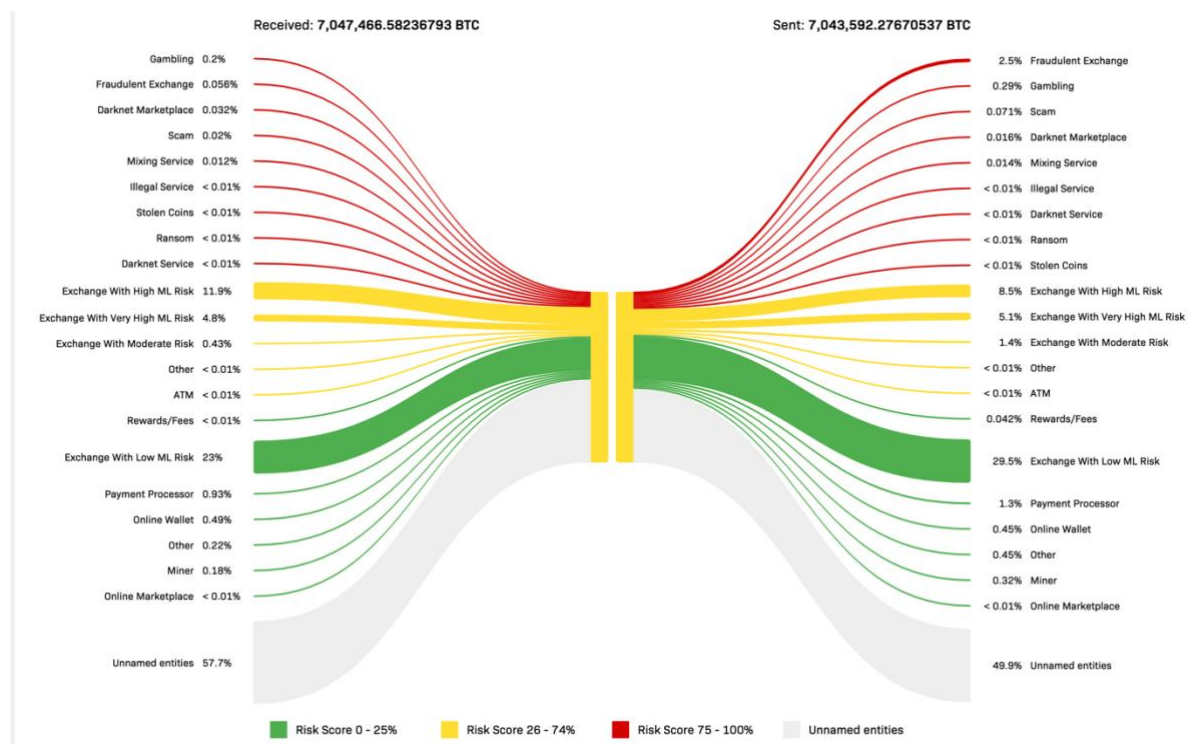
Section may be divided into two main parts: connection diagram and table of interactions.

If you export the address page with the connections in PDF, the exported file will include the main address info, a connection diagram, a list of filter parameters and the first page of the table of interactions.



If you export it in CSV format, the file will include the main address info, a chosen period for connections and the connections diagram in the form of a table which consists of known entities, their types and amounts sent/received. Unknown entities and addresses are combined and the total amount sent/received is shown.

3.2.2.1 Connection diagram



The Connection diagram is similar for direct and all connections. It provides a visual representation of connections between the address and all entity types. The left side of the diagram shows the entity types which have sent funds to the address or entity (for all connections it may be via a chain of transactions) and the share of the total amount that has been received. The right side of the diagram shows the entity types, which have received funds from the address or entity (for all connections it may be a chain of transactions) and the share of the total amount that has been sent. You may see the amount sent/received from the particular entity type by hovering the mouse over the corresponding line. You may see the total amount sent and received at the top the diagram. Lines represent amounts, the wider the line, the higher was the volume of interaction. The color of the line means the



risk score of the entity type. The most dangerous types are on top. There are 3 possible ranges:

- 0 - 25% Risk Score — Green
- 26 - 74% Risk Score — Yellow
- 75 - 100% Risk Score — Red

The columns in the are color corresponded to the Risk Score of the address.

If we do not know the entity type of the sender/receiver, they are combined in the grey line at the bottom of the diagram. This section is called “Unnamed Entities” for direct connections and “Uncategorized” for all connections. For indirect connections, 3 new categories are added:

1. Unnamed entities with Risk Score 0-25%
2. Unnamed entities with Risk Score 26-74%
3. Unnamed entities with Risk Score 75-100%

The diagram of all connections contains additional lines:

- **Settled** – the funds, that have reached unknown addresses and are still there.
- **Own Addresses** – the funds, that have returned to the entity itself via a chain of transactions



3.2.2.2 Table of Direct Interactions

Period

Jul 10, 2011 — Jul 29, 2020

Entity/Type

All

Received, BTC

Select range

Sent, BTC

Select range

Transactions

Select range

Entity	Type	Received, BTC +	Sent, BTC +	Transactions +	First interaction +	Last interaction +
CoinCheck	↔ Exchange With High ML Risk	380,852.22429749	167,252.69097245	67,796	Feb 28, 2015 05:46:45 am	Jul 29, 2020 08:34:28 am
Bittrex	↔ Exchange With Low ML Risk	370,395.42772772	389,003.82704371	350,901	Mar 03, 2014 07:54:20 pm	Jul 29, 2020 08:11:08 am
Bitfinex	↔ Exchange With Low ML Risk	322,545.31542094	519,502.4856304	103,053	Jan 25, 2014 03:11:04 am	Jul 29, 2020 07:06:37 am
70589801	↔ Unnamed entities	286,232.05512104	442,462.85152364	4,628	Apr 06, 2015 08:23:29 pm	Feb 23, 2018 08:19:51 am
Kraken	↔ Exchange With Low ML Risk	258,541.80692175	391,170.83062948	114,518	Jan 25, 2014 06:11:26 pm	Jul 29, 2020 09:24:52 am
Bitstamp	↔ Exchange With Low ML Risk	178,010.59028104	239,984.34166538	87,909	Sep 24, 2013 09:32:16 pm	Jun 07, 2020 03:09:58 pm
Coinbase	↔ Exchange With High ML Risk	176,449.45653828	182,568.28968485	335,024	Jan 26, 2014 07:45:50 pm	Jul 29, 2020 09:04:36 am
Coinone	↔ Exchange With Very High ML Risk	128,835.22949412	58,382.41216923	31,102	Dec 10, 2015 01:34:49 am	Jul 22, 2020 01:28:20 am
Huobi	↔ Exchange With Low ML Risk	109,787.71530018	70,382.81450772	39,765	Feb 04, 2014 08:45:47 am	Jul 29, 2020 10:31:53 am
Binance	↔ Exchange With High ML Risk	99,458.88353601	81,526.98540493	136,875	Oct 04, 2016 04:54:23 pm	Jul 29, 2020 11:49:19 am

< 1 of 370,901 >
Go

The table of direct interactions is available only for direct connections. It contains the following columns:

1. Entity – the name of the counterparty (this may be a cluster ID or address hash for addresses with an unknown owner), which is a link to the corresponding page.

Clicking on the button ↔ redirects you to the corresponding interaction (for more details see [Entities Interaction below](#)). The button is not available for the Rewards/Fees.

2. Type – type of the entity, if known. Otherwise “Unnamed Entity” is displayed.
3. Received – total amount received from the entity
4. Sent – total amount sent to the entity
5. Transaction – number of transactions between the two parties
6. First Interaction – date of the first transaction
7. Last Interaction – date of the last transaction



The table may be sorted by each column, except entity and type. By default, data is sorted by “Received” in descending order.

There are 5 filtering options:

1. Period – here you may choose the date range for the interaction
2. Entity/Type – you may choose particular entities you are interested in or entity types (types may also be picked by clicking on the corresponding line on the connections diagram)
3. Received – you may select the range of the amount received
4. Sent – you may select the range of the amount sent
5. Transactions – you may select the range of the transaction amounts

3.2.2.3 Table of All Interactions

Entity	Type	Received, BTC +	Shortest path, hops +	Sent, BTC +	Shortest path, hops +
Uncategorized	Uncategorized	3,931,998.60623534	-	3,310,397.18781903	-
CoinCheck	Exchange With High ML Risk	380,907.01075607	1 ▾	167,840.355222	1 ▾
Bittrex	Exchange With Low ML Risk	380,352.48514851	1 ▾	391,017.28537334	1 ▾
Bitfinex	Exchange With Low ML Risk	341,204.94218096	1 ▾	536,122.7402374	1 ▾
Kraken	Exchange With Low ML Risk	264,157.6718941	1 ▾	399,381.27861712	1 ▾
Bitstamp	Exchange With Low ML Risk	185,830.2950276	1 ▾	246,899.99017961	1 ▾
Coinbase	Exchange With High ML Risk	185,023.26649272	1 ▾	188,425.6605973	1 ▾
Coinone	Exchange With Very High ML Risk	128,854.95526129	1 ▾	58,392.44600962	1 ▾
Binance	Exchange With High ML Risk	123,021.96726401	1 ▾	81,526.98540493	1 ▾
Huobi	Exchange With Low ML Risk	113,770.98860821	1 ▾	71,774.80850363	1 ▾

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Table of all interactions has the following columns:

1. **Entity** – the name of the entity.
2. **Type** – one of the possible entity types. It may be “Rewards/Fees” for funds received in coinbase transactions and funds spent on fees, “Own Addresses” if the tracking of unknown transactions ends up back at the entity itself and “Settled” if the tracking ends up at unknown addresses, that haven’t sent the funds anywhere.



3. **Received** – the total amount received from the entity.
4. **Shortest path** – the shortest path detected between the entities. Clicking on the down arrow opens the shortest path, which is described [below](#).
5. **Sent** – the total amount sent to the entity

The table may be sorted by the columns Received and Sent. It is sorted by Received in descending order by default.

There are 5 possible filtering options:


1. Time period – you may pick the time period, for which connections will be counted. It is useful to choose the exact time you are interested in due to the slight limitations of the Indirect Connections algorithm.
2. Entity/Type – you may choose the particular entities you are interested in or entity types (types may be also picked by clicking on the corresponding line on the connections diagram)
3. Hops – the maximum number of hops (depths) to the known entity.
4. Received – you may enter the range of the amount received.
5. Sent – you may select the range of the amount sent.

3.2.2.3.1 Shortest path



Clicking on the down arrow opens the visualization of the shortest path between the entities. It may be either path for sending or receiving direction. On the visualization you may see the chain of transactions and intermediate addresses/unknown entities.



You may export the path by clicking on the button  in the upper right corner or open the path using the visualization tool by clicking on the button “Open Visualization” (please note that this option is available only for the paths no longer than 30 hops).

3.2.3 Transactions

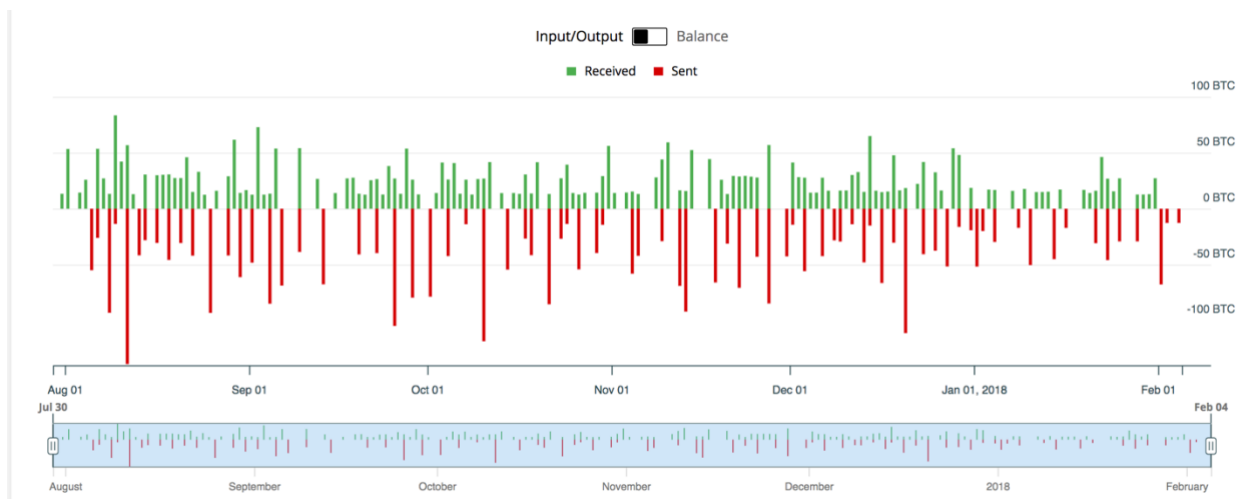
The tab “Transactions” may be divided into 2 parts: Balance History and Transaction List.

If you export the address page with the transactions, the exported file will include the main address info, the balance history graph in the chosen format (only in PDF), a list of filter parameters and the list of transactions (but please note that a maximum of 500 transactions only may be exported).

3.2.3.1 Balance History

There are 2 ways to view the address balance: **Input/Output** and **Balance**. You may switch between them by clicking on the corresponding button in the middle part of the section.

3.2.3.1.1 Input/Output



In this view incoming and outgoing transactions are grouped by date, so the green columns on the chart represent the total amount received on a particular date and the red columns represent the total amount sent on a particular date.

You may also see the amount sent and received on a particular date if you hover the mouse over the graph.



Oct 10, 2018 — Oct 13, 2018

Transactions: 4,097

Sent: 31,448.26219775 BTC

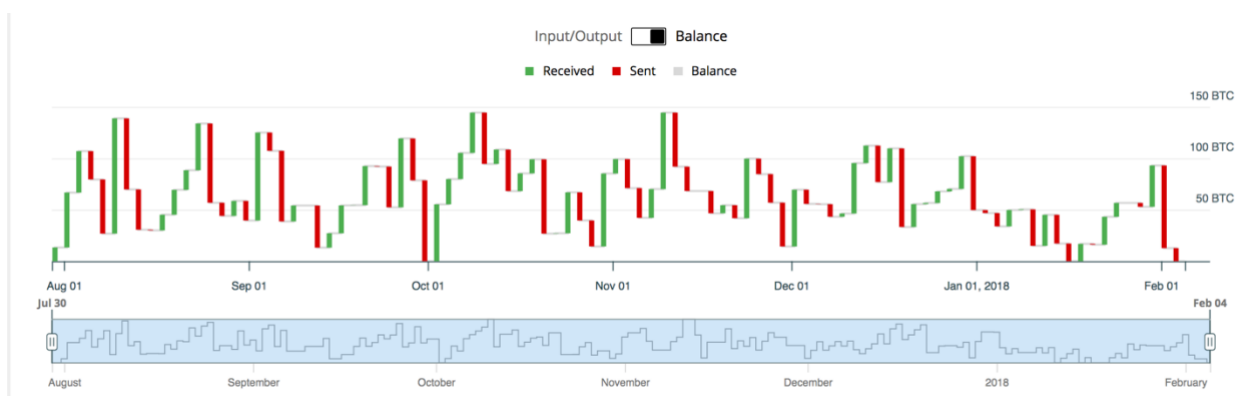
Received: 37,551.40440794 BTC

Final balance: 26,145.99804506 BTC

There are several ways to choose a custom time period to display the balance history chart.

1. The date picker in the filtering below the graph area. The first and the last dates should be included in the displayed time period.
2. Time navigation below the chart.

3.2.3.1.2 Balance



All address transactions are grouped by date, so a column on the chart represents the summary of an address's transactions on the corresponding date. The green columns on the chart represent positive changes of the balance on the corresponding date. The red columns on the graph represent negative changes of the balance. The gray lines are the balance graph.

You may see the amount sent and received on a particular date if you hover the mouse over the graph.



Oct 10, 2018 — Oct 13, 2018

Transactions: 4,097

Sent: 31,448.26219775 BTC

Received: 37,551.40440794 BTC

Final balance: 26,145.99804506 BTC

The balance chart is not displayed if there are no columns to show. This might happen if an address has a zero balance at the end of every transaction day.

3.2.3.2 Transaction list

Type

All

Date

Jun 30, 2014 — May 04, 2020

Total Outputs, BTC































Select range

Debit/Credit, BTC

Select range

Fee, BTC

Select range

Date ↓	Transaction	Total Outputs, BTC ↓	Debit/Credit, BTC ⓘ ↓	Fee, BTC ↓
May 04, 2020 06:04:19 pm	8b3f25d324b7f5a...   	0.0000273	0.00000546	0.001
May 04, 2020 06:04:19 pm	3b87c55e5bc761f...   	0.0010273	-0.0015273	0.0005
May 04, 2020 06:04:19 pm	35b8495aa0f4fb2...   	0.0000273	0.00000546	0.001
May 04, 2020 06:04:19 pm	197a0f94ef10206...   	0.0010273	-0.0015273	0.0005
May 04, 2020 05:58:25 pm	a863ff721aeb6bc...   	0.0000273	0.00000546	0.001
May 04, 2020 05:58:25 pm	41facfa438a8898f...   	0.0010273	-0.0015273	0.0005
May 04, 2020 04:48:44 pm	252d200ecff9d37...   	0.0000273	-0.0010054	0.001
May 04, 2020 04:34:52 pm	9b2da3bb1c13b6...   	0.0000273	0.00000546	0.001
May 04, 2020 04:34:52 pm	6be2e9f719b8c60...   	0.0010273	-0.0015273	0.0005
May 04, 2020 04:34:52 pm	8299196eee691...   	0.0000273	0.00000546	0.001

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Go

The transaction list contains all transactions involving the address, in reverse chronological order, as well as 5 columns of data pertaining to each.

1. **Date** – date and time when the transaction took place.
2. **Transaction** – the transaction hash. Clicking on it redirects to the transaction page. It is yellow in color if the transaction is unconfirmed. You may see three buttons to the right of the transaction hash:

- Use the “Copy” button  for saving transaction hash to the buffer



- Clicking on the “Details” button  clicking on which opens a pop-up with additional transaction details.
 - Clicking on the “Actions” button  yields a drop-down with 2 options:
 - Add to monitor – adding a transfer from this transaction to monitor.
The procedure is described [below](#)
 - Open visualization – start a visualization from the transaction
3. **Total outputs** – the sum of all outputs in this transaction.
 4. **Debit/Credit** – the balance change of the address in a transaction. It is calculated as the sum of all outputs minus sum of all inputs.
 5. **Fee** – the transaction fee.

The table may be sorted by all columns except “Transaction”.

Over the table you may see 5 filters for the address transactions:

1. Type – you may choose whether to display all transactions or only coinbase (newly generated coins)
2. Date – you may pick the date range
3. Total Outputs – you may pick the range of total output
4. Debit/Credit – the field for picking the range of debit/credit. You may choose to display only the transactions where the address balance increased, decreased, or you can choose all transactions.
5. Fee – field for picking the fee range.

3.2.4 Token Transfers

The tab is available for Bitcoin addresses which have participated in USDT transfers. It may be divided into 2 main parts: balance history (which is identical to the balance history for bitcoin described [above](#)) and list of token transfers.







3.2.4.1 List of Token Transfers

Date		Amount, USDT		
<div>Jun 30, 2014 — May 04, 2020</div>		<div>Select range</div>		
Date ↓	Transaction	From	To	Amount, USDT ↓
May 04, 2020 06:04:19 pm	8b3f25d324b7f5a... <div><div></div><div></div><div></div></div>	1C9irvcUBCd... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	7,707
May 04, 2020 06:04:19 pm	35b8495aa0f4fb20... <div><div></div><div></div><div></div></div>	1Ln8AMd1gr... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	5,000
May 04, 2020 05:58:25 pm	a863ff721aeb6bce... <div><div></div><div></div><div></div></div>	1FhU4gDj6gp... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	2,002.05
May 04, 2020 04:48:44 pm	252d200ecff9d375... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	3HJcDNAW3... <div><div></div><div></div><div></div></div> (641397133)	-400
May 04, 2020 04:34:52 pm	9b2da3bb1c13b63... <div><div></div><div></div><div></div></div>	1Ln8AMd1gr... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	10
May 04, 2020 04:34:52 pm	8299196eae6910... <div><div></div><div></div><div></div></div>	1Mcqc9pupF... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	85
May 04, 2020 03:04:54 pm	8ce26be93ab537d... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	17Vthrmkw... <div><div></div><div></div><div></div></div>	-850.65
May 04, 2020 02:31:34 pm	9ca557755e68145... <div><div></div><div></div><div></div></div>	1KWISR3STV... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	2,898
May 04, 2020 01:47:29 pm	1db6e42f44c93ee... <div><div></div><div></div><div></div></div>	1M1oJtpMV... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	70
May 04, 2020 01:06:18 pm	67b206d3046e795... <div><div></div><div></div><div></div></div>	1Po1oWkD2L... <div><div></div><div></div><div></div></div> (Poloniex)	1KZqJwCaeh... <div><div></div><div></div><div></div></div>	-17,410.27502373
<div>< 1 of 23,640 > <div></div> <div>Go</div></div>				

The list of token transfers contains all transactions involving the address, in reverse chronological order, as well as 5 columns of data pertaining to each.

1. **Date** – date and time when the transaction took place.
2. **Transaction** – the transaction hash. Clicking on it redirects to the transaction page.

You may see three buttons to the right of the transaction hash:

- Use the “Copy” button  for saving transaction hash to the buffer
 - Clicking on the “Details” button  clicking on which opens a pop-up with additional transaction details.
 - Clicking on the “Actions” button  yields a drop-down with 2 options:
 - Add to monitor – adding a transfer from this transaction to monitor.
The procedure is described [below](#)
 - Open visualization – start a visualization from the transaction
3. **From** – the sender of USDT. You may copy the address hash by clicking on the button  to the right. If you click on 3 dots, you can edit address tags or add the address to a case. If address owner is known, it is displayed to the right.



4. **To** – the receiver of the transfer. The functionality is the same as for the sender.
5. **Amount** – the USDT amount sent. It is green for incoming transactions and red for outgoing.

Table may be sorted by “Date” and “Amount”.

Over the table you may see 2 filters for the address transactions:

1. Date – you may pick the date range
2. Amount – field for picking the range of debit/credit. You may choose to display only the transactions where the address balance increased, decreased or all transactions.

3.2.5 Mentions

Connections Transactions Mentions			
Tag	Type	Link	Source
esotericizm	Post	bitcointalk.org	bitcointalk.org
NewFuturist	Post	reddit.com	reddit.com
Jachoshi	Post	reddit.com	reddit.com
cr1ys	Post	reddit.com	reddit.com
barrystyle	Post	reddit.com	reddit.com
allyougottado	Post	reddit.com	reddit.com

In this block, you may see all mentions of the address that were found on the internet. By a “mention” we mean that this address hash appeared on the web page specified in the column “Link”

1. **Tag** – the screen nickname or label associated with the profile that mentioned this address.
2. **Type** – type of post. There are 9 types of mentions:
 - Darkmarket Post – the address was found on darkmarket forums
 - Darkmarket Profile – the address was specified in darkmarket profile
 - Donation Address – the address for receiving donations
 - Malware – the address was used by malicious software to receive payments



- Payment Address – addresses which receive payments in bitcoins
 - Post – a post on any forum except darkmarket forums
 - User Profile – the address specified in a profile on a forum except darkmarket forums
 - Marketplace Profile – the address specified in a legal marketplace profile
 - Manual Tagging – addresses which were tagged manually. The data is retrieved from blockchain.com/btc/tags or tagged manually by our experts
3. **Link** – the link to the webpage where this mention has been found (if known).
 4. **Source** – the source where the mention was found.


3.3 Transaction

The screenshot displays the transaction details page. At the top, there's a header with 'Transaction' and 'Block' tabs. The 'Transaction' tab is active, showing the transaction ID '5cc9b2e963604631ee18ab9e6f6...'. Below this, it shows 'Token Transfers' as 3,481,777,070 USDT. The 'Total inputs' are 0.0010273 BTC, and 'Total outputs' are 0.0000273 BTC. The 'Fee' is 0.001 BTC (346.02 sat/byte). The 'Block' section shows the block number '617922' and a 'Maximum Risk Score among participants' of 50%. The 'Details' section shows the transaction size (289 B), VSize (289 B), pool date (Feb 18, 2020 10:45 AM), block date (Feb 18, 2020 10:45 AM), and confirmations (23,412). Below these are 'Visualization' and 'Add to' buttons. The main part of the page is a table of inputs and outputs, with columns for address, risk score, tags, BTC amount, and owner. Red arrows point to the 'BTC' and 'USD' currency switchers in the top right corner, labeled 1 and 2 respectively.

There are 2 main information sections on the transaction page:

- 1 Basic Info
- 2 Inputs/Outputs

You may choose whether to display amounts in BTC or USD using the switcher **BTC** **USD** in the upper right-hand corner. For calculations we use the exchange rate on the day when the transaction took place.

You may export the transaction page by clicking on the button  in the upper right-hand corner and choosing the format (CSV or PDF). The exported document will contain basic info and the list of inputs/outputs in the chosen format.





3.3.1 Basic Info

Transaction	Block	Details	
5cc9b2e963604631ee18ab9e6f6...	617922	Size	289 B
Token Transfers 3,481.777707 USDT	Maximum Risk Score among participants	VSize	289 B
Total inputs 0.0010273 BTC	50% (Profile: Default)	Pool date	Feb 18, 2020 10:45 AM
Total outputs 0.0000273 BTC	Very strong connection with exchanges with high ML risk	Block date	Feb 18, 2020 10:45 AM
Fee 0.001 BTC (346.02 sat/byte)		Confirmations	23,412

Basic info may be divided into 4 subsections: Main Data, Block Identifier, Risk Score and Details.

3.3.1.1 Main Data

1. **Transaction** – the hash of the bitcoin transaction. Near the hash, there is a “Copy” button  and “Label” button . Clicking on the “Copy” button saves the transaction hash to the buffer. Clicking on the "Label" button adds label to the transaction page.
If other users have added their labels (available only for corporate accounts), you will see them to the right. You may see the creator of the label if hover you the mouse over it. You may click on the label to edit it (if permissions of your role allow it).
2. **Token Transfers** – the amount of USDT transferred in the transaction. The field is available only for Bitcoin transactions where USDT was transferred.
3. **Total inputs** – the sum of all BTC/USD sent in this transaction depending on the selected currency.
4. **Total outputs** – the sum of all BTC/USD received in this transaction depending on the selected currency.



5. **Fee** – the transaction fee. This number is calculated as the difference between total inputs and total outputs. In brackets we display fee per byte.
6. **Visualization** button. You may select whether to build the visualization by addresses or by entities in the menu that appears:

Please select type and choose currency

Visualization type

by Addresses

by Entities

Currency

Bitcoin (BTC)

Start

If USDT was transferred in the transaction, you will have to specify the currency for visualization in the drop-down menu.

Clicking on the “Start” button redirects to the visualization page. Then transaction is the entry point of the visualization.

7. **Add to** – button for adding transaction to the case or to the monitor tool.
For adding transaction to the case you may either create a new case or add the transaction to the existing one from the list of cases.



Add the transaction to a new case

Create a new case and configure your notification settings

Case Name

Enter case name

Or add the transaction to an existing case

Select the case to add the transaction there

Case Name

Select case

CancelAdd

For adding transaction to monitor, select the type (deposit or withdrawal), select the destination address from the drop-down list, select the currency and enter the customer identifier. **N.B. Please avoid using any personal or sensitive data while entering the customer**

Add to Monitor

Add transfer with transaction hash "5cc9b2e963604631ee18ab9e6..."

Type ⓘ

Deposit

Destination Address ⓘ

Select address

Currency

Bitcoin (BTC)

Customer ⓘ

Enter customer identifier

CancelAdd



3.3.1.2 Block


Here we display the height of the block, in which the transaction was included. Clicking on it redirects you to the corresponding block page.

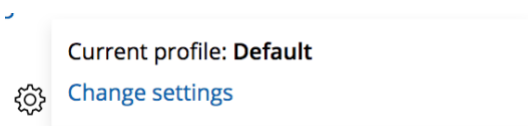
3.3.1.3 Risk Score

Maximum Risk Score among participants

50%  (Profile: Default)

Very strong connection with **exchanges with high ML risk**

1. **The Risk Score of a transaction** is the maximum risk score of the addresses, that participated in the transaction. It may be n/a if all addresses have n/a risk score. A detailed description of the address risk score may be found in the corresponding section [above](#). Next to the value you may see the name of the Risk Score profile according to which it was calculated. You may change the Risk Score profile by clicking on the button “Change Settings” in the pop-up, which appears when you hover the mouse over the  button. This will redirect you to the [Risk Score Profiles](#).



2. Under the risk score value, you can find explanations as to why the risk score was assigned. It is constructed based on the types of entities which took part in the transaction depending on the amount of bitcoins sent or received by each entity. The degree of influence looks the same as in the address Risk Score described [above](#).

3.3.1.4 Details

You may see transaction details in this section. They are described below.

1. **Size** – transaction size, in bytes.
2. **VSize** – virtual size of transaction. It is equal to the transaction weight divided by 4. Notice that for non-SegWit transactions VSize = Size.



VSize does not apply to BCH transactions, so this field will not be displayed.

3. **Pool date** indicates when the transaction was received by a node.
4. **Block date** indicates when the transaction was included on the blockchain.
5. **Confirmations** – the number of blocks included on the blockchain after the block in which the transaction happened was included.

3.3.2 Inputs/Outputs

Each transaction has a set of inputs and outputs. Please note that inputs do not necessarily belong to the same address. Transaction inputs are usually the outputs of previous transactions, and outputs dedicate all input values to new addresses.

USDT transfers are linked to regular bitcoin transactions. So if USDT was transferred in the transaction, additional tab USDT appears, where USDT transfer is displayed.

3.3.2.1 BTC transfers



Input					Output				
Address	Risk Score	Tags	BTC	Owner	Address	Risk Score	Tags	BTC	Owner
3N9Eh...	0%		0.5820596	Bitfinex	183Sa...	50%		0.2	Deribit
1NvsN...	0%		0.25660688	Bitfinex	3BIUN...	50%		0.0554002	LocalBitcoins
35B3K...	0%		0.24643	Bitfinex	3KjbF...	0%		0.04237799	Kraken
32Cqx...	0%		0.21617261	Bitfinex	1Kr6Q...	0%		2.03672672	Bitfinex
1DQP...	0%		0.18485607	Bitfinex					
13fMC...	0%		0.16921809	Bitfinex					
3FrFTz...	0%		0.1387492	Bitfinex					
16k2t...	0%		0.130606	Bitfinex					
3Erd7...	0%		0.11141468	Bitfinex					
1CXN3...	0%		0.1	Bitfinex					


1. **Quantity** – the total number of input addresses (green color) and output addresses (red color) involved in the transaction.
2. **Amount** – the sum of all inputs (BTC or USD sent depending on the selected currency) in the transaction appears in green; the sum of all outputs (BTC or USD received depending on the selected currency) in the transaction appears in red.



3. Buttons which control the view mode of the inputs/outputs addresses table:
 - a **Default.** In this mode, we show all transaction inputs and outputs. One address may be present in several inputs and/or outputs.
 - b **Group by address.** In this mode, we show receivers and senders grouped by address. Each address which was present in the inputs and outputs set must appear only once. The table structure remains the same.
 - c **Separate.** This button appears when it is possible to find unique correspondence between the subsets of senders and receivers of the transaction. In this mode, we show correspondence between subsets of senders and receivers of the transaction. This will be explained [below](#).

The Input/Output table consists of 2 similar sub-tables: one for input addresses and one for output addresses.


- 1 **Input address** – the address of the person or entity sending bitcoin in the transaction. You may copy the address hash by clicking on the button  to the right.
- 2 **Output address** – the address of the person or entity receiving bitcoin in the transaction. You may copy the address hash by clicking on the button  to the right. Note that transaction may have an unknown script as the output, in this case it will be displayed as “script-00952200” which is its internal name. You may open scripts just like any other address. Please find a more detailed explanation in the [Address Page](#).

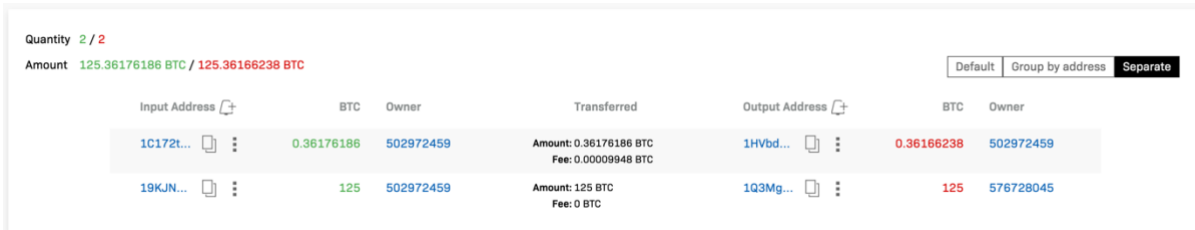
If any of the inputs or outputs is in the blocklist, you will see the icon  to the left. When you hover the mouse over the icon, you will see, in which Blocklist the address is included. For more details, please see [Blocklists](#).

Clicking on three dots to the right of the hash yields a drop-down with two options:

- Add to case – add address to the case. The instructions for adding address to the case are described [above](#)
 - Add & edit tags – add or edit the tags
- 3 **Risk Score** – the Risk Score of the address.







- 4 **Tag** – the icon  appears if an address has tags. You can view them upon hover over the icon.
- 5 **BTC/USD** – the quantity of BTC or USD (depending on the selected currency) sent from the address-sender (for input addresses) or the quantity of BTC or USD (depending on the selected currency) received by the address-receiver.
- 6 **Owner** – if known, the name of the entity to which the address belongs. There are several types of “owners” that could appear in this field:
 - The entity’s actual name, if we have this data in the database. For example, “SpectroCoin”.
 - A number, if the address belongs to a cluster that we have assigned to one entity but have been unable to explicitly name.
 - “Not defined”, if we do not know the Owner’s name and the address does not belong to any cluster.
- 7 To the left of each input address, there is an arrow. Clicking on this arrow redirects the user to another transaction page. This transaction is the one that has generated a UTXO which has been spent in the initial transaction.
- 8 To the right of each output address there may be another arrow. If the arrow appears in blue, it means that this output (bitcoins) has already been spent. Clicking on the arrow redirects to another transaction page – the transaction in which the bitcoin was later spent.
- 9 There are several switch buttons above the table: “Default”, “Group By Address” and “Separate” (if it is possible to separate the transaction). After clicking on the “Separate” button, you will be able to see the unique correspondence between subsets of senders and receivers, as seen in the picture below.



Quantity 2 / 2
Amount 125.36176186 BTC / 125.36166238 BTC

Default Group by address Separate






Input Address	BTC	Owner	Transferred	Output Address	BTC	Owner
1C172t... 	0.36176186	502972459	Amount: 0.36176186 BTC Fee: 0.00009948 BTC	1HVbd... 	0.36166238	502972459
19KJN... 	125	502972459	Amount: 125 BTC Fee: 0 BTC	1Q3Mg... 	125	576728045






The **Transferred** column appears, it contains the following information:

- **Amount** which was transacted from a sender subset to the corresponding receiver subset in BTC or USD depending on the selected currency.
- **Fee** that could have been paid to transact partial BTC amount from a sender subset to the corresponding receiver subset in BTC or USD depending on the selected currency.

3.3.2.2 USDT transfer

		BTC		USDT	
Date	Transaction	From	To		Amount, USDT
Feb 18, 2020 10:45:40 am	5cc9b2e963604631ee1...  	1Po1oWkD2L...  (Poloniex)	18eubb7yFH... 	(411247805)	3,481.777707
		sample tag 			

If USDT was transferred within the transaction, you may switch to USDT view. Then you will be able to see the transfer details. It has 5 columns:

1. **Date** – date and time when the transaction took place.
2. **Transaction** – the transaction hash. You may see two buttons to the right of the transaction hash:
 - Use the “Copy” button  for saving transaction hash to the buffer
 - Clicking on the “Actions” button  yields a drop-down with 2 options:
 - Add to monitor – adding a transfer from this transaction to monitor. The procedure is described [above](#)
 - Open visualization – start a visualization from the transaction
3. **From** – the sender of USDT. You may copy the address hash by clicking on the button  to the right. If you click on 3 dots, you can edit address tags or add the address to a case. Existing tags are displayed below the address hash. If address owner is known, it is displayed to the right.
4. **To** – the receiver of the transfer. The functionality is the same as for the sender.



5. **Amount** – the USDT amount sent. It is green for incoming transactions and red for outgoing.

3.4 Block Page

Block Label 164 **Hash** ...82e1c36a9e

Statistics

Transactions	1,809
Total Outputs	18,868.44519956 BTC
Total Fees	0.75736257 BTC
Block reward	12.5 BTC
Estimated amount transferred	14,367.31421558 BTC

Details

Size	1173.913 KB
VSize	998.272 KB
Difficulty	6653303141405
Version	0x20000000
Nonce	1532317464

Timestamp Nov 20, 2018 10:54 AM
Mined by Huobi
Confirmations 78,114

Transactions

Transaction	Addresses input Output	Total output, BTC	Fee, BTC	Fee per byte, Satoshi
ed5577e4c8fee58bd0b01e4c...	0 2	13.25736257	0	0
7acc2c5e00171ecd574e96a1...	1 1	13.0690204	0.01	5291.01
9c8d55f09e0d1bf5310556b3...	1 2	0.59457883	0.0027	1607.14
4d84205a18b7dd85a3f9d202...	1 2	0.19756387	0.00243613	1082.72
b49a5938d200e27ed025671...	6 1	12.00501386	0.01	1077.59
da273f12b05cfa9cb8490103...	1 2	0.06159616	0.00239388	1063.95
c69a9873679ddd1038af2cd1...	1 1	0.99713049	0.00137	1007.35
f481f0d8c9c4e23bb09d8784...	1 2	19.62887673	0.00189	843.75
0e42afbac451e178fd655b2...	1 61	5.382	0.018	834.49
804839846cde1dd18e6e93ee...	8 1	15.98	0.01	816.99

< 1 of 181 > Go

There are four main sections on the block page (see corresponding numbers on the picture):

1. Basic info
2. Transactions

3.4.1 Basic info

Block Label 164 **Hash** ...82e1c36a9e

Statistics

Transactions	1,809
Total Outputs	18,868.44519956 BTC
Total Fees	0.75736257 BTC
Block reward	12.5 BTC
Estimated amount transferred	14,367.31421558 BTC

Details

Size	1173.913 KB
VSize	998.272 KB
Difficulty	6653303141405
Version	0x20000000
Nonce	1532317464

Timestamp Nov 20, 2018 10:54 AM
Mined by Huobi
Confirmations 62,872


< Previous block Next block >

Basic block data may be divided into three parts: Main Data, Statistics and Details.



3.4.1.1 Main Data

Main data contains:

1. **Block** – a block height. Click on the “Label” button  to add label to the block page. If other users have added their labels (available only for corporate accounts), you will see them to the right. You may see the creator of the label if hover you the mouse over it. You may click on the label to edit it (if permissions of your role allow it).
2. **Hash** – a hash of the bitcoin block. Near the hash, there is a “Copy” button. Clicking on it saves the transaction hash to the buffer.
3. **TimeStamp** – the time when the current block was mined, in Universal Time Coordinated (UTC).
4. **Mined by** – the name of the entity or pool that mined the current block. Clicking on it redirects you to the corresponding entity page. If we do not know the miner’s name, “Unknown” will appear.
5. **Confirmations** – the number of blocks added to the blockchain after the current block.

3.4.1.2 Statistics

1. **Transactions** – the number of transactions that were included in the current block.
2. **Total outputs** – the sum of all outputs (bitcoins) of all transactions that were included in this block.
3. **Total Fees** – the sum of all transaction fees that were mined in this block. It is calculated as the difference between total inputs and total outputs.
4. **Block reward** – the number of new bitcoins the miner received for successfully mining the block.
5. **Estimated amount transferred** – the total sum of BTC transferred in all transactions in the block, taking into account the change amount. Our algorithm identifies the one-time change which lets us estimate the real amount of bitcoins transferred in the transaction.

































3.4.1.3 Details

1. **Size** – the size of the block.
2. **VSize** – the sum of the virtual sizes of block transactions.
VSize does not apply to BCH transactions, so this field will not be displayed.
3. **Difficulty** – a number which determines how difficult it will be to mine the next block of transactions. The higher the number, the harder it will be to mine the next block.
4. **Version** – the block version set by the miner.
5. **Nonce** – an arbitrary number that may only be used once. A nonce is used when trying to mine bitcoins and it plays a role in the hashing of a transaction.

At the bottom you may see the following buttons:

1. **Previous block** – clicking on this button opens the block page for the previous block in the Blockchain.
2. **Next block** – clicking on this button opens the block page for the next block in the Blockchain. If the current page shows the most recently mined block in the blockchain, the “Next block” button will be absent.




3.4.2 Transactions

Transactions					
Transaction ↓	Addresses Input Output	Total output, BTC ↓	Fee, BTC ↓	Fee per byte, Satoshi ↓	
ed5577e4c8fee58bd0b01e4c...   	0 2	13.25736257	0	0	
7acc2c5a00171ecd574e96a1...   	1 1	13.0690204	0.01	5291.01	
9c8d55f09e0d1bf5310556b3...   	1 2	0.59457883	0.0027	1607.14	
4d84205a18b7dd85a3f9d20...   	1 2	0.19756387	0.00243613	1082.72	
b49a5938d200e27ed025671...   	6 1	12.00501386	0.01	1077.59	
da273f12b05cfa9cb8490103...   	1 2	0.06159616	0.00239388	1063.95	
c69a9873679ddd1038af2cd1...   	1 1	0.99713049	0.00137	1007.35	
f481fd8c9c4e23bb09d8784...   	1 2	19.62887673	0.00189	843.75	
0e42afbfac451e178df655b2...   	1 61	5.382	0.018	834.49	
804839846cde1dd18e6e93e...   	8 1	15.98	0.01	816.99	

< 1 of 181 >



The list of all transactions included in the block appears in a transactions table. The total number of transactions is listed as “Quantity” at the top of the table, and the table consists of the following columns:

1. **Transaction** – transaction hash. You may see three buttons to the right of the transaction hash:
 - a. Use the “Copy” button  for saving transaction hash to the buffer
 - b. Clicking on the “Details” button  clicking on which opens a pop-up with additional transaction details.
 - c. Clicking on the “Actions” button  yields a drop-down with 2 options:
 - Add to monitor – adding a transfer from this transaction to monitor. The procedure is described [above](#)
 - Open visualization – start a visualization from the transaction
2. **Addresses Input | Output** – number of input and output addresses in the transaction.
3. **Total output** – sum of all bitcoins received in the transaction.
4. **Fee** – transaction fee, calculated as the difference between all transaction inputs and outputs.
5. **Fee per byte** – transaction fee per byte, in sat/B. It is calculated as the transaction fee, divided by transaction’s virtual size, multiplied by 100,000,000.

3.5 Entity Page

There are 6 information sections on the single Entity page:

- 1 Basic info
- 2 Connections
- 3 Addresses
- 4 Transactions



5 Token Transfers (only if entity addresses have participated in USDT transfers)

6 Mentions

3.5.1 Basic info

The screenshot displays the 'Basic info' section for an entity named 'Coinbase'. It is organized into three main columns: Entity, Assets, and Details.

- Entity:** Shows the entity name 'Coinbase' with a label 'Label 165' and a 'Type' of 'Exchange With High ML Risk'. It also lists 'Addresses' as 46,353,722 and 'Total Balance in fiat' as 3,209,713,559.21 USD. A 'Visualization' button is present at the bottom.
- Assets (2):** A dropdown menu is set to 'Bitcoin (BTC)'. It lists 'Balance' as 288,568.9281408 BTC, 'Received amount' as 13,057,984.54669529 BTC, 'Sent amount' as 12,769,415.61855449 BTC, 'Number of Tx's' as 45,635,990, 'Number of Inner Tx's' as 6,460,309, and 'Inner Tx's amount' as 34,328,734.21593969 BTC.
- Risk Score:** Displays a '50%' score with a gear icon for settings (Profile: Default) and a note: 'We regard Coinbase as an exchange with high ML risk'.
- Details:** Lists 'First Activity' as Jul 14, 2010 03:41 AM, 'Last Activity' as Jul 29, 2020 12:07 PM, 'Country' as the United States, 'Fiat support' as 'Yes', and 'Mentions on the Web' as 20,260.

Basic info may be divided into 3 parts: Main Data, Risk Score and Details.

3.5.1.1 Main data

In this section you may see the address hash, notes, labels and possible operations with the address.

Entity – the name of the current entity. There are two possible types of entity names in this field:

- literal, e.g. "Bitfury". This is shown for entities with a known owner.
- numerical, e.g. 312114771. This is an internal identifier for clusters where we don't know the owner.

Next to the entity there is a label button  for adding the label to the entity.

If other users have added their labels (available only for corporate accounts), you will see them to the right. You may see the creator of the label if hover you the mouse over it. You may click on the label to edit it (if permissions of your role allow it).

3.5.1.2 Type

In this field you may see the entity type (if known). Below you may see:

- 1 **Addresses** – the number of bitcoin addresses belonging to the entity.



- 2 **Total balance in fiat** – the entity's balance in selected fiat currency, i.e., the sum of all current fiat balances of all addresses belonging to this entity.

Below you may see the Visualization button. It is made for quick access to the visualization page. The current entity will be the entry point and the latest incoming and outgoing transactions will be shown on the visualization. You may select whether to build the visualization for BTC or USDT transactions:

Please select type and choose currency

Visualization type

by Addresses

by Entities

Currency

Bitcoin (BTC) ▾

Start

3.5.1.3 Assets

Section contains information about entity assets. This may be either BTC or USDT. If an address belonging to the entity has participated in USDT transfers, you will be able to select the type of assets in the drop-down. The section contains:

1. **Balance** – current balance of all addresses belonging to the entity.
2. **Received amount** – the total amount of funds received by entity addresses over time.
3. **Sent amount** – the total number of funds sent from entity addresses over time.




4. **Number of Tx** – the total number of transactions (incoming and outgoing) in which at least one of the entity addresses took part
5. **Number of Inner Tx** – the number of transactions, where all participants belong to the entity.
6. **Inner Tx amount** – sum of all outputs of all inner transactions. Please see [Glossary](#) for the definition

3.5.1.4 Risk score

The entity's risk score is presented in the same way as the address's risk score. Every address belonging to the Entity is assigned the same risk score as the Entity based on the parameters of the [Risk Score profile](#).

Above the risk score you may see the entity type (if known).

3.5.1.5 Details

- 1 **Country** – the country of registration of the entity. At the moment it is available only for exchanges, payment processors and online wallets. One entity may have several countries. If there are more than five countries, you will see the icon  with the number of countries to the right. The list of all countries appears upon hovering over the icon:

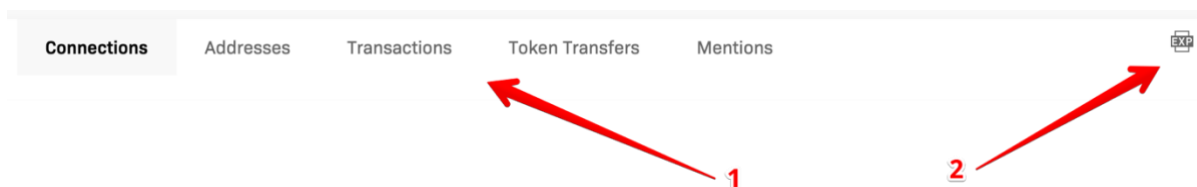
Details	
Country	 (9)
Seychelles, Singapore, United States, South Korea, United Kingdom, Australia, Canada, Brazil, Hong Kong	Yes
First Activity	11,560,520
Last Activity	43,533,388.84648487 BTC
Mentions on the Web	Sep 02, 2013 02:24 PM
	Sep 03, 2019 02:18 PM
	3,248


- 2 **Fiat support** – in this field we specify whether the entity accepts fiat money. It is available for exchanges, payment processors and online wallets.
- 3 **First activity** – the date of the first transaction, where one of addresses belonging to the entity took part.



- 4 **Last Activity** – the date of the last transaction in which at least one address belonging to the entity took part.
- 5 **Mentions on the Web** – the number of mentions of the entity’s addresses. Clicking on the field opens the “Mentions” section.
- 6 **Number of mined blocks** – the number of blocks mined by an entity. It is available only for miners.
- 7 **Total Reward** – the total reward received for the mined blocks. It is also available only for miners.

Below the basic info, you may see Connections and may also switch between Connections, Addresses, Transactions and Mentions using the corresponding buttons (1) below:



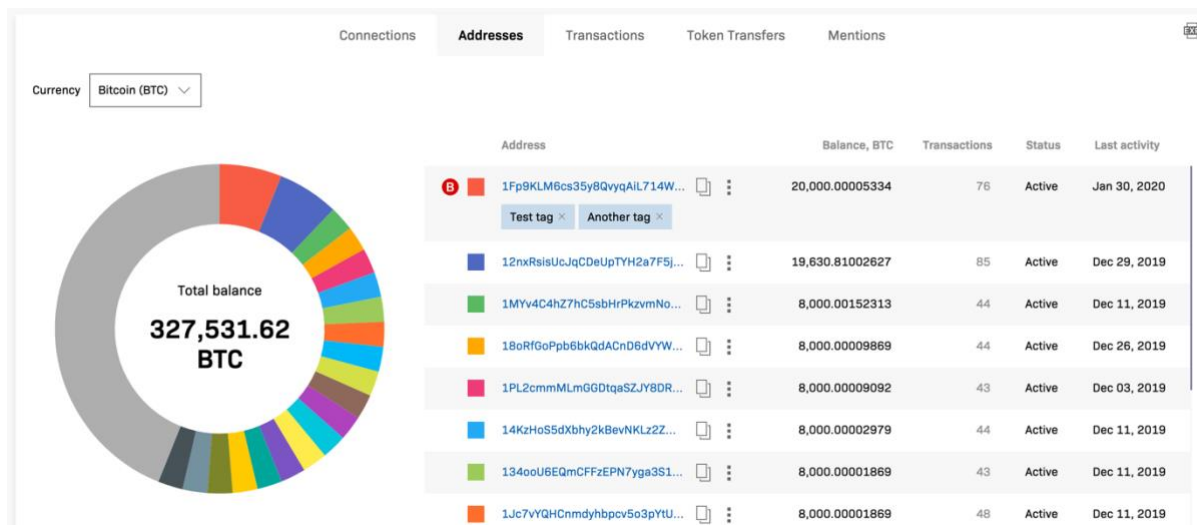
The export button  (2) is available for the tabs “Connections”, “Addresses”, “Transactions” and “Token transfers”. Click on it to export the current page either in CSV or in PDF format. The exported PDF file will include the export date and the chosen currency in the header.

3.5.2 Connections



Connections for the entity are basically the same as for the address, so please refer to [3.2.2 above](#).



3.5.3 Addresses



In this block, we show the list of all addresses belonging to this entity, with some additional info and a corresponding pie chart. If there are addresses, which took part in USDT transfers, you will be able to select the currency in the drop-down.

- Address** – hash of the address. Clicking on the button  copies the hash. If any of the addresses are in the blocklist, you will see the icon  to the left. When you hover the mouse over the icon you will see in which Blocklist the address is included. Below you may see the tags added to the address. Crystal tags are colored in red and your tags are in blue.
- Clicking on three dots to the right of the hash yields a drop-down with two options:
 - Add to case – add an address to the case
 - Add & edit tags – add or edit the tags
- Balance** – the current balance of the address.
- Transactions** – the number of transactions made by the address.
- Status** – an indicator of the address's activity. It can have 2 values: **Active** and **Inactive**. The address is **Inactive** if it has not taken part in any transaction for the last 90 days, and if it has then it is considered **Active**.
- Last Activity** – the date of the last transaction in which a listed address took part.



When you hover the cursor over an address line in the list, the corresponding sector of the pie chart is highlighted and a pop-up with additional information appears. And vice versa, when you hover the cursor over a sector of the pie chart – the corresponding address in the list is highlighted. For each of the first twenty addresses with the highest balances there is a corresponding sector on the pie chart. All other addresses are summarized by the grey piece of the pie chart.

On the pop-up you can see the following information:

- 1 **Address hash**, clicking on this redirects you to the address page
- 2 **Balance share** (5.8% on the picture) – a share of the address balance in the total balance of the entity. **Balance Share = Address Balance / Entity Balance**
- 3 **BTC/USDT** – the current address balance in bitcoins or USDT depending on the selected currency.

If you export the entity page with the addresses, the file will include the basic info and the top twenty addresses sorted by the balance.

3.5.4 Transactions



Type	Date	Total Outputs, BTC
All	Jul 14, 2010 — May 04, 2020	Select range
Debit/Credit, BTC	Fee, BTC	Counterparty
Select range	Select range	All

Date ↓	Transaction	Total Outputs, BTC ↓	Debit/Credit, BTC ⓘ ↓	Fee, BTC ↓	Counterparty
May 04, 2020 06:59:35 pm	f19a654ca4c47bccd2...	0.16697742	0.06144	0.00004746	Not defined
May 04, 2020 06:59:35 pm	bad7aa23eee03e6783...	7.45426265	0.01368601	0.00004004	Not defined
May 04, 2020 06:59:35 pm	4f7e54856b9869ae61...	0.09292286	0.08302761	0.00013687	Not defined
May 04, 2020 06:59:35 pm	a90f55c10b3b9a76a9...	0.00308587	0.00308587	0.0000745	Not defined
May 04, 2020 06:59:35 pm	73a7cd85d5c3b7498...	0.13265806	0.00625	0.00050112	Not defined

The table of transactions contains the following columns:

1. Date – the date and time when the transaction occurred
2. Transaction – the transaction hash, which is a link to the transaction page. You may see three buttons to the right of the transaction hash:
 - a. Use the “Copy” button for saving transaction hash to the buffer



- b. Clicking on the “Details” button  clicking on which opens a pop-up with additional transaction details.
- c. Clicking on the “Actions” button  yields a drop-down with 2 options:
 - i. Add to monitor – adding a transfer from this transaction to monitor.
The procedure is described [above](#)
 - ii. Open visualization – start a visualization from the transaction
- 3. Total Outputs – the sum of outputs of the transaction
- 4. Debit/Credit – the balance change of the entity in a transaction
- 5. Fee – the transaction fee
- 6. Counterparty – the entity with which the current entity interacted in this transaction, if known

There are 6 filters which may be applied to the table:

- 1. Type – you may choose whether to display all transactions, or just inner transactions, external transactions or coinbase transactions (ie. newly generated coins)
- 2. Date – you may pick the date range
- 3. Total Outputs – you may pick the range of total output
- 4. Debit/Credit – the field for picking the range of debit/credit. You may choose to display only the transactions where the address balance has increased, or decreased, or all transactions
- 5. Fee – the field for picking the fee range
- 6. Counterparty – you may choose from the drop-down list the entities (or entity types) with which the current entity has interacted

If you export the entity page with the transactions, file will include basic info, list of filtering parameters and the list of transactions (please note that maximum 500 transactions may be included).



3.5.5 Token Transfers

Connections				Addresses				Transactions				Token Transfers				Mentions			
Date ↓	Transaction				From				To				Amount, USDT ↓						
May 03, 2020 10:59:39 pm	32f29742d5c085d...				115E3baxJZs...				3Jvj47mfc2C...				(Coinbase)				16.65		
May 02, 2020 03:39:49 pm	65792dfe77a6c8b...				3NrEXrB9qAx...				(Remitano)				3HeXYMi7pT...				2		
May 01, 2020 02:15:20 am	746a2a4b0332ea8...				1FoWyxwPXu...				(Binance)				37S6ReVeWU...				787.536369		
May 01, 2020 02:02:28 am	7852fb819f3b67e...				1FoWyxwPXu...				(Binance)				32DURtzjppa...				112.217356		
Apr 30, 2020 11:10:24 pm	beffa56503d0b3c9...				1JVF6Seefx4...				(Coinbase)				39GnUXu3GE...				939.672297		
Apr 30, 2020 11:10:24 pm	08b47b137a67cef...				1JVF6Seefx4...				(Coinbase)				12UT2HHLfyn...				8.754121		
Apr 30, 2020 05:07:42 am	005bda851f9d32fc...				1FoWyxwPXu...				(Binance)				1M4iDQw9GY...				89.771637		
Apr 29, 2020 08:24:03 pm	7a6a9e592e17a98...				1FoWyxwPXu...				(Binance)				3LovVGmTpy...				401.166		
Apr 28, 2020 07:23:18 am	5d672d6ce7bc75e...				1FoWyxwPXu...				(Binance)				12ZYsednLt3...				13.696864		
Apr 27, 2020 09:14:29 pm	5eb478f8cd3a12bf...				1FoWyxwPXu...				(Binance)				356Tr7eJokj...				3.88		
< 1 of 288 > <input type="text"/> <input type="button" value="Go"/>																			

The list of token transfers contains all transactions involving the entity, in reverse chronological order, as well as 5 columns of data pertaining to each.

1. **Date** – date and time when the transaction took place.
2. **Transaction** – the transaction hash. Clicking on it redirects to the transaction page. You may see three buttons to the right of the transaction hash:
 - Use the “Copy” button for saving transaction hash to the buffer
 - Clicking on the “Details” button clicking on which opens a pop-up with additional transaction details.
 - Clicking on the “Actions” button yields a drop-down with 2 options:
 - Add to monitor – adding a transfer from this transaction to monitor. The procedure is described [above](#)
 - Open visualization – start a visualization from the transaction
3. **From** – the sender of USDT. You may copy the address hash by clicking on the button to the right. If you click on 3 dots, you can edit address tags or add the address to a case. If address owner is known, it is displayed to the right.
4. **To** – the receiver of the transfer. The functionality is the same as for the sender.



5. **Amount** – the USDT amount sent. It is green for incoming transactions and red for outgoing.

Table may be sorted by “Date” and “Amount”.

Over the table you may see 3 filters for the address transactions:

1. Date – you may pick the date range
2. Amount – field for picking the range of debit/credit. You may choose to display only the transactions where the address balance increased, decreased or all transactions.
3. Counterparty – you may choose from the drop-down list the entities (or entity types) with which current entity has interacted.

3.5.6 Mentions on the web

Address	Tag	Type	Link	Source
15vjrLHKW6wjLTM...	free bitcoins faucet	Post	twitter.com	twitter.com
14yfxkcpHnju97pe...	[deleted]	Post	reddit.com	reddit.com
1AcAj9p6zjn4xLXd...	jaspita	Post	reddit.com	reddit.com
1FeDtFhARLxjKUP...	BitFury_Group	Post	reddit.com	reddit.com
1Nd99aNgYWpKkq...	organofcorti	Post	bitcointalk.org	bitcointalk.org
1DrK44np3gMKuv...	DavidWilliams_81	Post	reddit.com	reddit.com
1GESPUfh9an4AVF...	Bitfury	Manual tagging		blockchain.info
1DrK44np3gMKuv...	Bitfury	Manual tagging		blockchain.info
1A66YkobmtQvGb...	Bitfury	Manual tagging		blockchain.info
1FeDtFhARLxjKUP...	Bitfury	Manual tagging		blockchain.info

< 1 of 4 >

In this block, we show all mentions of an entity's addresses that were found on the internet. It is the same as in 3.2.4 Mentions [above](#) but here, mentions of all the entity addresses are collected.



4 Monitor

The Monitor tool allows you to check the Risk Score of the deposits to your service, identify “risky” amounts received, set up alerts and flagging options, and check the withdrawal address specified by the customer. The Monitor tool combines all the currencies available in Crystal, including ERC-20 tokens. It may be divided into three main parts:

- Transfers
- Customers
- Monitored addresses

Each of the parts will be described below in detail.

4.1 Transfers

Transfers

Customers

Monitored addresses

Alert settings

Selected 2 transfers














Update

Create case

Add to existing case

Export report

Archive

	ID	TYPE	RISKY AMOUNT, USD ↓	AMOUNT, USD ↓	AMOUNT	ASSET	CRS ⓘ ↓	CUSTOMER	LAST EVENT ⓘ ↓	STATE
<input checked="" type="checkbox"/>	 3ca9bb5	Deposit	\$0	\$364.31	0.992198	ETH	50%	ETH tokens	Nov 02, 2020 02:04:24 pm	 ⋮
<input checked="" type="checkbox"/>	3a93bcf	Deposit	\$4.55	\$383.5	1	ETH	30%	ETH tokens	Nov 02, 2020 02:04:24 pm	 ⋮
<input type="checkbox"/>	3c30919	Deposit	\$0	\$6.2	0.018242704	ETH	35%	ETH tokens	Nov 02, 2020 02:04:24 pm	 ⋮
<input type="checkbox"/>	39c63cc	Deposit	\$0	\$5,854.92	17.309709193	ETH	35%	ETH tokens	Nov 02, 2020 02:04:24 pm	 ⋮
<input type="checkbox"/>	 3e70a47	Deposit	\$0	\$1,262.65	1,262.645215	USDT	50%	Test customer	Nov 02, 2020 10:49:30 am	 ⋮
<input type="checkbox"/>	3e0082b	Deposit	\$0	\$16,419.96	1.2	WBTC (ERC-20 token)	34%	new test sw...	Nov 02, 2020 10:05:48 am	 ⋮
<input type="checkbox"/>	 3945039	Withdrawal	\$5,355.04	\$5,355.04	0.40301347	BTC	100%	connections	Oct 30, 2020 11:30:37 am	 ⋮
<input type="checkbox"/>	390be4c	Withdrawal	\$0	\$6,764.19	0.50906476	BTC	0%	connections	Oct 30, 2020 11:29:37 am	 ⋮
<input type="checkbox"/>	3a0313f	Withdrawal	\$0	\$5,638	0.42348415	BTC	46%	connections	Oct 30, 2020 11:27:58 am	 ⋮
<input type="checkbox"/>	38f8f81	Deposit	\$0	\$324,784.16	24.18069135	BTC	25%	connections	Oct 30, 2020 11:26:22 am	 ⋮

< 2 of 961 >

Go

The Transfers tab contains a list of all transfers. It has columns:

1. ID – the internal identifier of the transfer.
2. Type – the transfer type. It may be a deposit or withdrawal
3. Risky Amount, USD – the amount transferred between the addresses with a Risk Score greater than 74%, including indirect interactions. It is calculated using the exchange rate on the day the transaction has taken place.




4. Amount, USD – the amount in fiat received by the address calculated using the exchange rate on the date of the transaction
5. Amount – the amount in crypto received by address
6. Asset – the type of cryptoasset transferred
7. CRS (Counterparty Risk Score) – the Risk Score of the transfer. For deposit transfers, it is the average Risk Score of the transaction inputs. If it is a coinbase transaction, the Risk Score will be equal to 0 and source of funds will be “mined coins”. For withdrawal addresses it is the Risk Score of the specified address.
8. Customer – the customer identifier, which is the link to the dedicated customer page. **N.B. Please avoid using any personal or sensitive data while entering the customer**
9. Last event – the date of the last event. It may be the date when the transfer was added, the transfer was manually updated or the flag became more dangerous after the recheck.
10. State – the state of transfer calculation. There are 4 possible options:
 - a. Completed – all parameters were entered correctly and values were calculated
 - b. Pending – the Counterparty RS and Risky Amount are being calculated
 - c. Updating – the Counterparty RS and Risky Amount are being updated
 - d. Failed – the calculation failed. It may happen if one of the required fields was not specified, the transaction was dropped from the Mempool or the specified address is not in the transaction outputs
 - e. Missed – the transaction was not found in our databases

To the left of the table you should see the checkbox for selecting the transfer. You can select several transfers, after that the buttons with the following possible actions will appear:

1. Update – update selected transfers
2. Create case – create a new case with selected transfers. Please note that the button is available when transfers of the same asset are selected.
3. Add to existing case – add selected transfers to the existing case. Please note that the button is available when transfers of the same asset are selected.



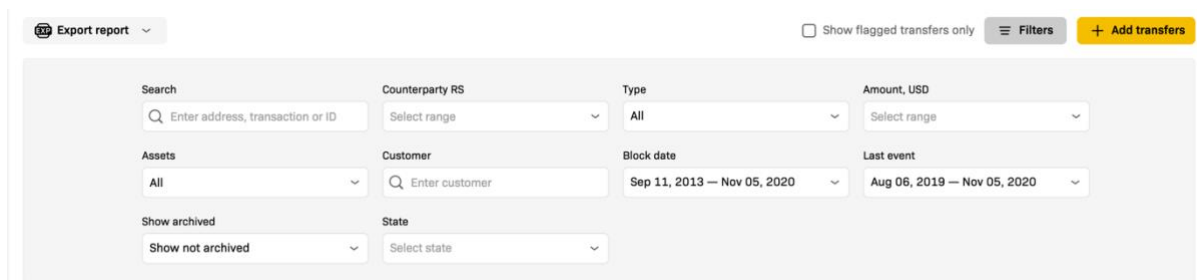
4. Export report – you can export the reports for selected transfers either in CSV or in PDF.
5. Archive – move selected transfers to the archive


The warning icon  appears when the transfer is flagged. You may unflag it by clicking on the icon (for unflagged transfers, rechecks will be disabled as well). Please see detailed description of flagging in the section [Transfer Flagging](#).

The list of transfers may be sorted by Counterparty RS, Risky Amount, Amount and Last Event. It is sorted by Last Update by default.

If you click on the 3 dots to the right of the transfer, you will see 6 options in the drop-down menu:

1. Create case – create a new case for the customer
2. Add to Existing Case – add transfer to the existing case
3. Archive – move transfer to the archive
4. Update – update transfer
5. Export as PDF – export the transfer report in PDF
6. Export as CSV – export the transfer report in CSV



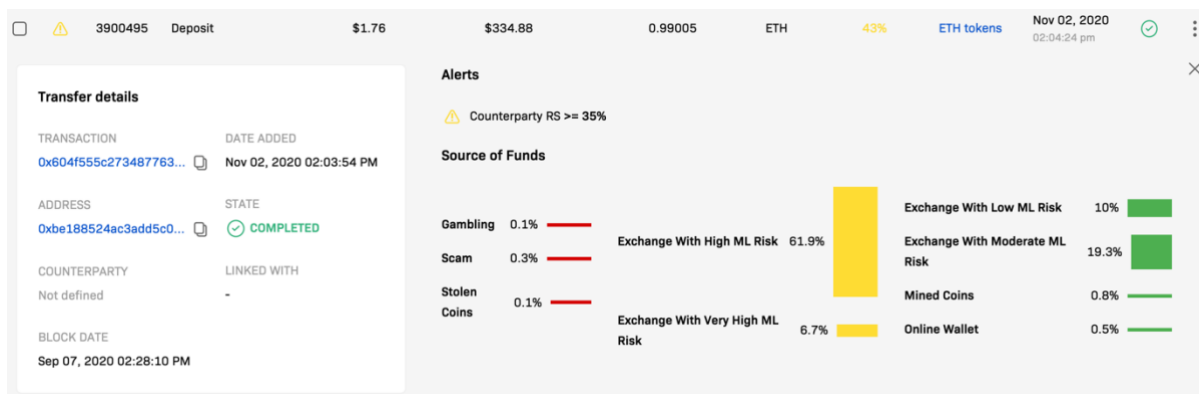
Clicking on the Filters button  yields a drop down with the filters. There are 10 possible filters:

1. Search – here you may the enter address, transaction or transfer ID
2. Counterparty RS – the field for picking the Risk Score range
3. Type – here you may select the transfer type. Possible options are All, None, Deposit, Withdrawal.
4. Amount, USD – here you may pick the range of the transfer amount in fiat
5. Assets – the cryptoasset transferred



6. Customer – you may search the table by Customer
7. Block date – you may select the time range when the transaction took place
8. Last event – the date of the last event
9. Show Archived – you may select whether to display Archived, Not Archived or All Transfers. By default, not archived transfers are displayed
10. State – the state of transfer. It may be Pending, Updating, Completed or Failed.

4.1.1 Transfer details



Clicking on the transfer in the list yields a pop-up with transfer details. Below you may see:

1. Transaction – the transaction hash corresponding to the transfer. If it is a withdrawal transfer where transaction was not specified, button “Add hash” appears. It yields a pop-up for entering the transaction hash:

Add transaction hash

After you add a transaction hash the transfer “200fec2” will be updated.

Transaction Hash ⓘ

Asset

Ethereum (ETH)

Cancel Add

The transfer will be updated after adding the hash

2. Address – the deposit or withdrawal address depending on the type
3. Counterparty – the sender of the transaction for deposit transfer or the receiver of the withdrawal transfer.



4. Block Date – the date when the transaction took place
5. Date added – the date when the transfer was added to the Monitor
6. State – the state of transfer calculation. Possible options are described [above](#). If the calculation failed, the exact reason will be specified.
7. Linked With – the list of cases the transfer is linked to (if there are any). Clicking on the case name redirects you to the case page.
8. Alerts – the section displays the alerts generated by the transfer (if there were any)
9. Source of Funds/Destination Address Sending Connections – the visual representation of the source of funds for deposits or the connections of the withdrawal address for withdrawals. For deposits it is the connections diagram of the transaction inputs. For withdrawals it will be the connections of the specified address.

4.1.2 Adding New Transfer

You may add a new transfer or a batch of transfers by clicking on the button “+ Add transfers” in the upper right corner. After that a pop-up appears.

For adding a single transfer you have to fill in the following fields:



1. Type – choose whether it is a deposit or withdrawal
2. Destination address – enter the deposit or withdrawal address. For Ethereum, it may also be the receiver of internal transaction or the receiver of token transfer.
3. Transaction hash – enter the transaction hash. The field is optional for withdrawal transfers
4. Asset – you can select the asset from the drop-down list. The list of assets is identified based on the address.
5. Customer – enter the customer identifier. **Please avoid using any personal or sensitive data**

Add new transfers [Close]

Add or upload new transfers

Single Upload CSV

You may paste the transfers into the field below. Each row of input data should match the following pattern: {Type}, {Address}, {TX hash}, {Asset}, {Customer} ?

1

or

2

Drag & Drop formatted .CSV file or browse your files

[Download CSV template](#)

Cancel Add

If you need to add a batch of transfers, click on the button Upload CSV. After that you have two options:



1. Paste the transfers into the field 1. Each row should match the format {Type}, {Address}, {TX hash}, {Asset},{Customer}. For withdrawal transfers the transaction hash is optional.
- For internal Ethereum transactions, all transfers involving the address will be summed up to calculate the total amount and risky amount.



You may drop the formatted file in the field 2 or browse your files. The .CSV file should be in the same format, as the data in the field (1).

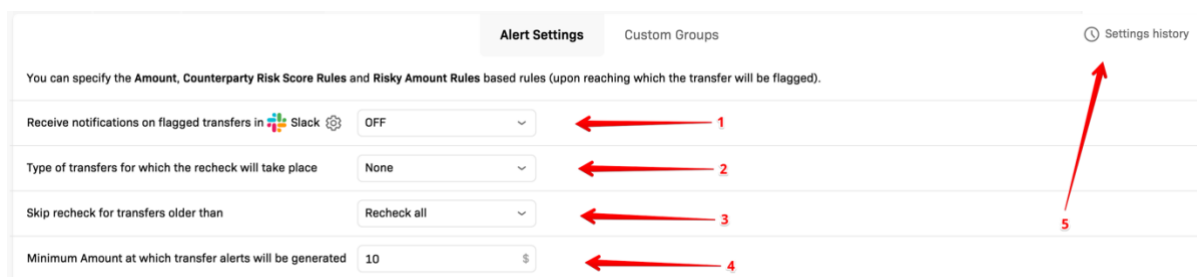
4.1.3 Transfer Flagging

Clicking on the button “Set Up Alerts” allows you to configure the conditions upon which the transfer will be flagged. Also you can create custom entity groups, upon interaction with which alerts will be generated.

Flagged transfers are highlighted in the table by the icon  or  depending on the alert level. Clicking on it unflags the transfer. It may be flagged by clicking on the icon once again. You may choose to display only flagged transfers by marking the checkbox “Show flagged transfers only”.

The alerts settings may be divided into basic settings, counterparty Risk Score rules and risky amount rules.

4.1.3.1 Alert Settings



In this section you can specify whether to receive notifications via Slack and the minimum amount in preferred fiat, at which alert will be generated.


If you have set up the Slack integration for Monitor, you can enable the notifications by selecting “All flagged transfers” in the drop-down list (1). Then you will receive notifications regarding flagged transfers along with the link to the transfer:



Crystal Notifier APP 9:25 PM

Deposit transfer [8aebbd](#) has been flagged.
Deposit transfer [a39bff](#) has been flagged.
Deposit transfer [be81f4](#) has been flagged.
Withdrawal transfer [83f8b3](#) has been flagged.
Withdrawal transfer [db1a76](#) has been flagged.



Otherwise, you can set up the integration by clicking on the button  which redirects you to the Profile page. You can find the detailed integration instructions [below](#).

You can specify the type of transfers, for which the recheck will take place in the field (2). It may be Deposit, Withdrawal or All.

The time period after which the transfer will not be rechecked, can be specified in the field (3). It may be 7 days, 30 days, 60 days, 90 days or 1 year.

The minimum transfer amount for generating alerts may be specified in the field (4).

You can view previous alert settings and restore them by clicking on the button “Settings history” (5) in the upper right-hand corner. The detailed functionality is described below.

4.1.3.2 Counterparty Risk Score Rules


Counterparty Risk Score Rules					
OFF / ON	CATEGORY	DIRECTION	MIN VALUE, %	MAX VALUE, %	ALERT GRADE
	Counterparty RS	Deposit	≥ 35%	-	Medium 
	Counterparty RS	Withdrawal	≥ 60%	-	Medium 
	Blocklist interaction	All	-	-	High 

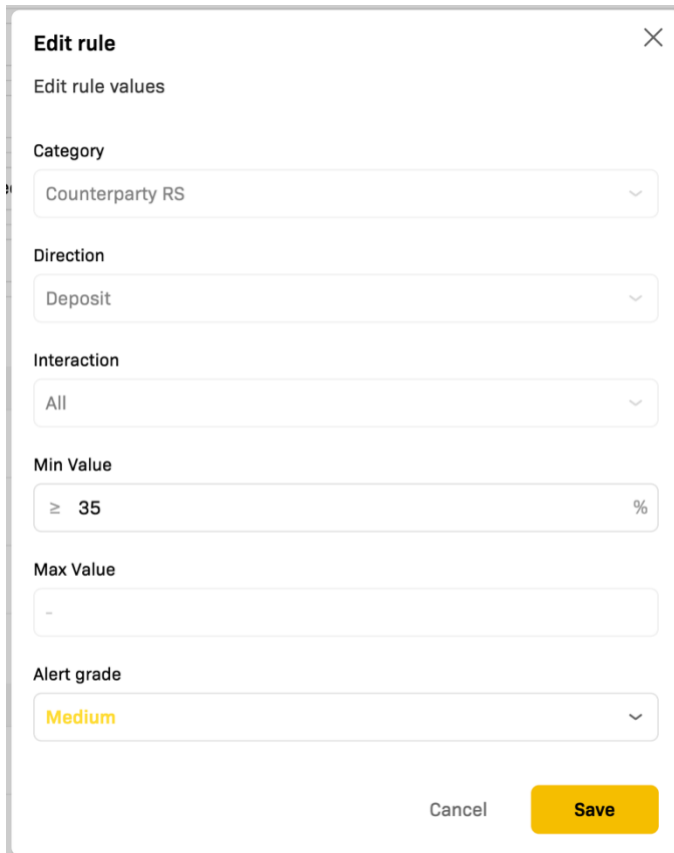
This section allows you to set up the counterparty Risk Score upon reaching which alert will be generated. Blocklist interaction alert will be generated with any counterparty Risk Score.

The settings are displayed in the form of a table with columns:

- 1 Off/On – switcher for disabling/enabling the particular flagging rule
- 2 Category – the rule category. It may be Counterparty Risk Score or Blocklist interaction
- 3 Direction – the transfer direction, which may be deposit, withdrawal or all
- 4 Min Value – the minimum Risk Score of the counterparty for generating the alert
- 5 Max Value – the maximum Risk Score of the counterparty for generating the alert
- 6 Alert Grade – the alerts may be divided into two grades by their threat level: Medium and High



- 7 Edit () button – the button for editing the particular rule. After clicking on it the pop-up for editing the rule appears:



The 'Edit rule' pop-up form contains the following fields:

- Category:** Counterparty RS
- Direction:** Deposit
- Interaction:** All
- Min Value:** ≥ 35 %
- Max Value:** -
- Alert grade:** Medium

Buttons: Cancel, Save

Here you can specify the minimum and maximum Risk Score value and the alert grade.


4.1.3.3 Risky Amount Rules

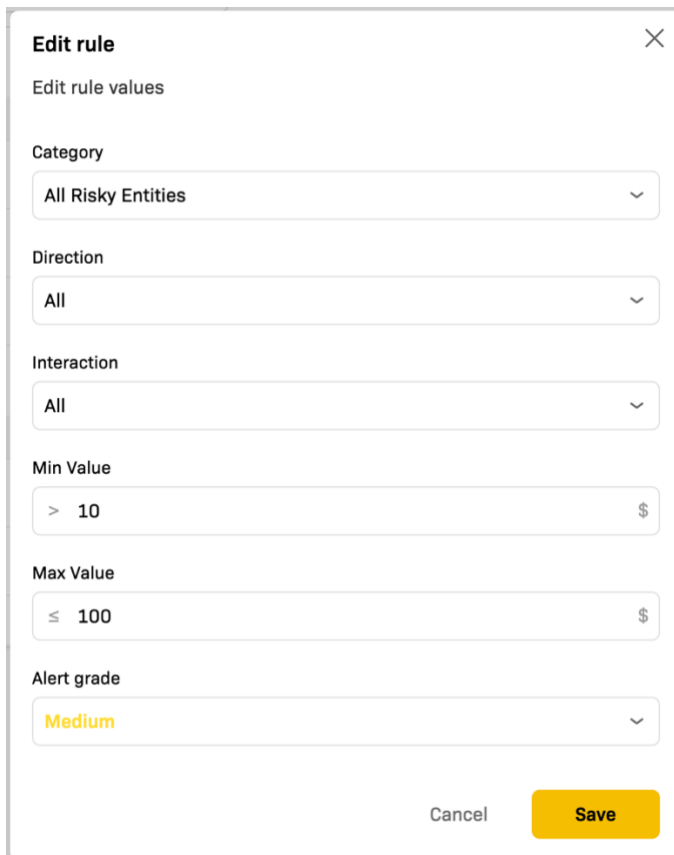
Risky Amount Rules							+ Add new rule
OFF / ON	CATEGORY	DIRECTION	INTERACTION	MIN AMOUNT, USD	MAX AMOUNT, USD	ALERT GRADE	
<input checked="" type="checkbox"/>	All Risky Entities	All	All	> \$100	-	High	⋮
<input checked="" type="checkbox"/>	All Risky Entities	All	All	> \$10	≤ \$100	Medium	⋮

This section allows you to set up the amount received from risky entities or from a particular entity type upon reaching which alert will be generated. The settings are displayed in the form of a table with columns:

- 1 Off/On – switcher for disabling/enabling the particular flagging rule



- 2 Category – the rule category. It may be All Risky Entities or a particular entity type
- 3 Direction – the transfer direction, which may be deposit, withdrawal or all
- 4 Interaction – the type of interaction. It may be direct interaction, indirect interaction or all
- 5 Min Amount – the minimum received, which generates the alert
- 6 Max Value – the maximum amount received, which generates the alert
- 7 Alert Grade – the alerts may be divided into two grades by their threat level: Medium and High
- 8 Actions () button – the button for editing or deleting the particular rule. After clicking on it the pop-up for selecting the action appears. If you select the “edit option” the pop-up appears:



Edit rule ×

Edit rule values

Category

All Risky Entities ▼

Direction

All ▼

Interaction

All ▼

Min Value

> 10 \$

Max Value

≤ 100 \$

Alert grade

Medium ▼

Cancel Save



Here you can select the category (this can be an entity type or one of your [Custom Groups](#)), direction, interaction, minimum and maximum value and the alert grade.

Clicking on the button “+ Add new rule” allows you to add a new rule to the list. The procedure is the same as for editing the existing rule.

4.1.3.4 Settings history

The screenshot shows the 'Alert Settings' tab in the Crystal Blockchain Platform. It includes a description: 'You can specify the Amount, Counterparty Risk Score Rules and Risky Amount Rules based rules (upon reaching which the transfer will be flagged)'. Below this are four settings: 'Receive notifications on flagged transfers in Slack' (OFF), 'Type of transfers for which the recheck will take place' (None), 'Skip recheck for transfers older than' (Recheck all), and 'Minimum Amount at which transfer alerts will be generated' (10 \$). A red arrow points to the 'Settings history' button in the top right corner.

Clicking on the button “Settings history” reveals the history of changes made to alert settings in the form of a table.

The screenshot shows the 'Alert Settings | History' table. It has two columns: 'CASE' and 'DATE'. The table lists four entries with their respective dates and times. Each entry has a 'view' link in the rightmost column.

CASE	DATE	
Current (v 13)	Nov 06, 2020 03:16:15 pm	
v 12	Oct 04, 2020 06:57:28 pm	view
v 11	Sep 15, 2020 12:13:25 pm	view
v 10	Sep 11, 2020 12:01:27 pm	view

It has columns:

1. Case – the version of the settings
2. Date – the date when the changes were saved

Clicking on the button “view” reveals the corresponding settings. You can restore them by clicking on the button “Restore Settings” in the upper right hand corner.

[Back to Settings History](#)

Restore Settings



4.1.3.5 Custom Groups

Alert Settings			Custom Groups
			+ Create new group
<input type="checkbox"/>	NAME	ENTITIES	NOTES
<input type="checkbox"/>	test group	Oxbitcoin token, OxBabylon	⋮
<input type="checkbox"/>	hacks	Linode Thief ..., Bitfloor Thief ..., cryptotabnac... and more 1	⋮
<input type="checkbox"/>	Exchanges	Binance US, Binance	⋮

In this section you can configure custom groups, create new groups or edit the existing ones. The list of custom groups is displayed as a table with columns:

1. Name – the group name
2. Entities – the list of entities added to the group
3. Notes – the notes left on the group

You can create a new group by clicking on the button + Create new group in the upper right corner.



Create a new group

×

Create a new group of entities

Name

Enter the Group name

Select Entities

Type

All

Search

Enter entity name

☐ Entities (13544)

Type

Risk score

☐ (HEDG)Other50%

☐ .CryptoOther25%

☐ OA2_nameOther50%

☐ OchainOther50%

☐ Oday.inDarknet Marketplace100%

Notes

Add notes (optional)

In the pop-up you specify:

1. The name of the group
2. The list of entities to add to the group. Please note that entities from all currencies are available in the list. You can select particular types in the section “Type” and search by entity name by typing it in the corresponding field. Please note, that the search is case sensitive.
3. Notes. This is the optional field, where you can enter your comment.

After that you can click on the button Add and new group will be created.

You can edit existing group or delete a group by clicking on 3 dots in the right column of the table. The procedure for editing the group is the same as for creating the group.




4.2 Customers

Selected 2 customers Archive

	CUSTOMER	TRANSFERS ↓	NOTES	LAST ADDED TRANSFER ↓	DEPOSIT AMOUNT ↓	RISKY AMOUNT ↓	WITHDRAWAL AMOUNT ↓	LINKED WITH	
<input type="checkbox"/>	token new test	11	-	Nov 06, 2020 09:53:44 am	\$40.13	\$0.07	\$0	-	⋮
<input checked="" type="checkbox"/>	ETH tokens	11	-	Nov 06, 2020 03:36:26 am	\$59,953.15	\$6.31	\$0	-	⋮
<input checked="" type="checkbox"/>	Test customer	4	-	Nov 02, 2020 10:48:30 am	\$104,848.78	\$0	\$0	-	⋮
<input type="checkbox"/>	new test swag...	1	-	Nov 02, 2020 10:05:48 am	\$16,419.96	\$0	\$0	-	⋮
<input type="checkbox"/>	connections	9	-	Oct 30, 2020 11:30:37 am	\$2,299,852.39	\$566,659.73	\$34,082.84	-	⋮
<input type="checkbox"/>	test. new	2	-	Oct 27, 2020 04:08:51 pm	\$15.79	\$0	\$444.07	-	⋮
<input type="checkbox"/>	new webinar	1	-	Oct 21, 2020 01:12:57 pm	\$7,943.16	\$0	\$0	-	⋮
<input type="checkbox"/>	ltc webinar	3	-	Oct 21, 2020 01:12:40 pm	\$8,243.37	\$2.49	\$0	-	⋮
<input type="checkbox"/>	mmmmmm	1	-	Oct 21, 2020 12:42:43 pm	\$0	\$244.98	\$469.59	-	⋮
<input type="checkbox"/>	new test.1	1	-	Oct 21, 2020 12:31:12 pm	\$469.59	\$51.12	\$0	-	⋮

< 1 of 742 > Go

The tab contains the list of all customers. It has further columns:

1. Customer – the customer identifier, specified while adding the transfer. It is a link to the customer page. When you hover the mouse over the customer the button  appears. Clicking on it allows you to edit the customer name
2. Created by – the creator of the tracking. You may see the full name if you hover the mouse over the icon. This field is available only for corporate accounts
3. Transfers – the number of transfers associated with the customer.
4. Notes – the notes added to the customer page
5. Last Added Transfer – the date when a transfer was last added to the customer page
6. Deposit Amount – the total amount deposited by the customer in fiat
7. Risky Amount – the risky amount transferred in USD, which is calculated as the amount transferred from/to addresses with a Risk Score greater than 74% (including indirect interactions) according to the exchange rate on the day of the transaction
8. Withdrawal Amount – the total amount withdrawn by the customer, in USD
9. Linked With – clicking on the arrow yields a pop-up with the list of cases linked with the customer. Clicking on the case name redirects you to the corresponding case page.



To the left of the table you may see the checkbox for selecting the customer. You may select several customers and archive/unarchive them by clicking on the button in the upper right corner. Please note: if you archive/unarchive the customer, all their transfers are archived/unarchived as well.

If you click on the 3 dots to the right of the customer, you will see 3 options in the drop-down menu:

- Create a New Case – button for creating a new case for the customer
- Add to Existing Case – link the customer to the existing case
- Archive – move customer along with all their transfers to the archive

Table may be sorted by Transfers, Last Added Transfer, Deposit Amount, Risky Amount and Withdrawal Amount. It is sorted by the Last added transfer by default.

The screenshot shows a filter panel with the following options:

- Search:** A text input field with a magnifying glass icon and placeholder text "Customer name or notes".
- Deposit Amount, USD:** A dropdown menu with "Select range" as the selected option.
- Risky Amount, USD:** A dropdown menu with "Select range" as the selected option.
- Withdrawal Amount, USD:** A dropdown menu with "Select range" as the selected option.
- Last added transfer:** A dropdown menu with "Jul 10, 2019 — Nov 06, 2020" as the selected option.
- Transfers:** A dropdown menu with "Select range" as the selected option.
- Show archived:** A dropdown menu with "Show not archived" as the selected option.

At the top right of the filter panel, there are two buttons: "Filters" (with a hamburger menu icon) and "Create customer" (with a plus icon).

Clicking on the button  yields a drop down with the following eight possible filters:

1. Search – here you may search by customer name and notes
2. Deposit Amount, USD – here you may pick the range of the amount deposited by the customer
3. Risky Amount, USD – here you may pick the range of Risky Amount
4. Withdrawal Amount, USD – here you may pick the range of the amount withdrawn by customer
5. Last Added Transfer – the date when transfer was last added to the customer page
6. Transfers – the field for picking the number of transfers
7. Linked with cases – here you may select whether to display customers linked with cases, not linked with cases or all.
8. Show Archived – you may select whether to display Archived, Not Archived or All Customers. By default, not archived customers are displayed



4.2.1 Creating new customer

Clicking on the button “+ Create Customer” yields a pop-up for creating a new customer.

Create a new customer [X]

Customer ?

Enter customer name

Notes ?

Add notes (optional)

Cancel Next

Here you can specify:

1. The customer name – **please avoid any personal and sensitive data. We recommend to use internal identifiers for each customer.**
2. The notes – you may leave notes for the customer. You should also avoid disclosing any personal or sensitive data here.

After that click on the “Next” button.




In the next window you will need to add transfers to the customer. The algorithm for adding transfers is the same as in [4.1.2 Adding New Transfer](#), but you do not have to specify the customer.

4.2.2 Customer Page

The Customer Page may be divided into two main parts: Customer Details and Transfer List. Each of the parts will be described below.

4.2.2.1 Customer details

The section contains:

1. Customer ID – the identifier for the customer specified during page creation. You can edit it by clicking on the button  to the left.



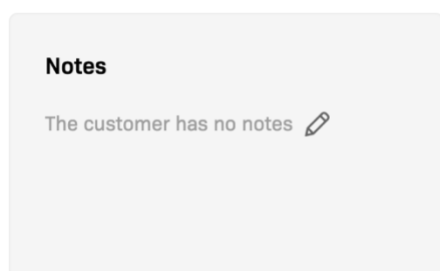
2. Linked Cases – you can see the list of linked cases by clicking on the arrow below the customer name.


The customer overview contains the fields:

1. Total transfers – the number of transfers associated with the customer (excluding the archived ones)
2. Flagged transfers – the number of flagged transfers
3. Archived Transfers – the number of archived transfers
4. Last Added Transfer – the date when the last transfer was added
5. Associated Addresses – the number of addresses associated with the customer
6. Risky Amount – the total Risky Amount of the customer's transfers in fiat

The total amount deposited and withdrawn by the customer is specified in the **assets**. You may select in the drop-down menu whether to display the data for any cryptoasset or for all currencies combined in preferred fiat currency.

1. Deposited amount – the total amount deposited by the customer
2. Withdrawn amount – the total amount withdrawn by the customer



The **Notes** section contains the notes added to the customer. You may leave the notes on the customer page by clicking on the button .



4.2.2.2 Actions

Possible actions with the case include Export report, Add to case, Start visualization and Archive/Unarchive.

You can export the customer report by clicking on the corresponding button



in the upper right corner.

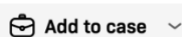
The dialog box titled "Export report parameters" contains the following elements:

- A close button (X) in the top right corner.
- Instructional text: "Please choose parameters you want to export in report."
- Three dropdown menus, each with a help icon (i):
 - "All Connections table" with the selected option "Do not display the table".
 - "Direct Connections table" with the selected option "Do not display the table".
 - "Transfers list" with the selected option "Include".
- Two buttons at the bottom: "Cancel" and "Export".

After that you specify the following parameters:

1. All connections table – you can export all entities, top 10 entities or do not export the table.
2. Direct connections table – you can export all entities, top 10 entities or do not export the table.
3. Transfer list – you can select whether to include the transfers list or not.


After that click on the button “Export” to generate the PDF file with the report.



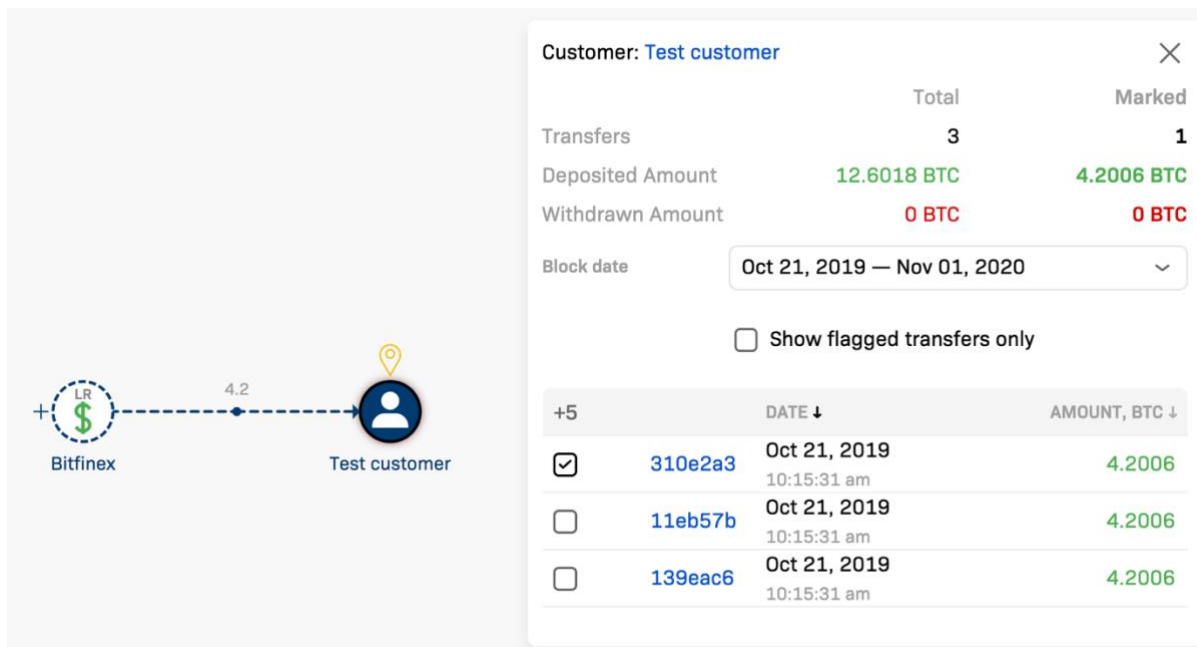
Clicking on the button allows to add the address to the case. You can select an existing case from the drop-down list or create a new case for the customer.



You can create the visualization based on the customer by clicking on the button

 **Start visualization**

. The visualization will be built by entities. Customer will be the entry point, and here you can add all their transfers to the visualization canvas.



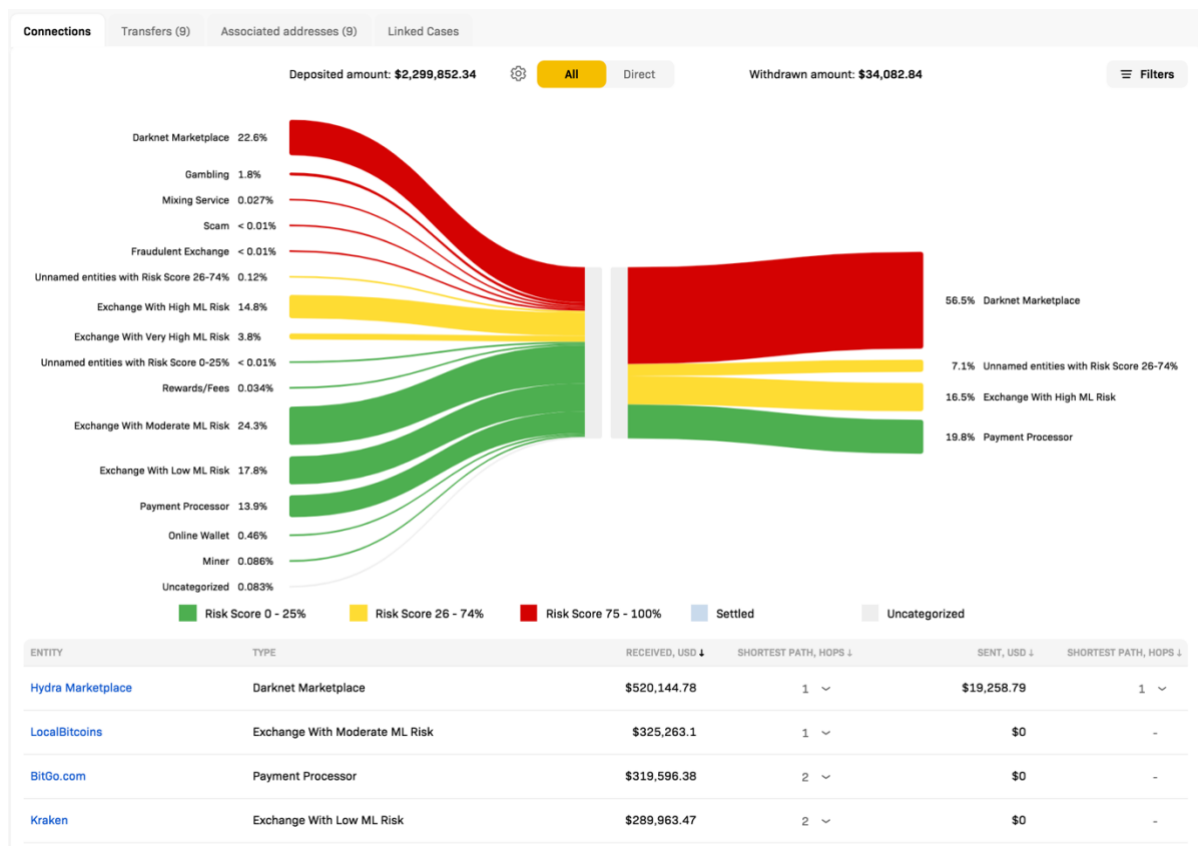
If you click on the customer, the menu with customer details will open. There you can see:

- Transfers – the number of transfers and transfers added to the visualization
- Deposited amount – the total amount deposited by customer and the amount deposited via the marked transfers
- Withdrawn amount – the total amount withdrawn by customer and the amount withdrawn via the marked transfers.
- If you mark the checkbox “Show flagged transfers only” the list will contain only flagged transfers.

The rest of the functionality is the same as for the visualization by entities. For more details, please see the [Visualization](#) section.



4.2.2.3 Connections



The Connections tool for customer allows you to get the connections diagram (either direct or all) for the deposited and withdrawn amount by a customer.

The diagram is the summary of customer's deposits and withdrawals. It allows you to estimate the source of the customer's deposits (the left part) and the destination of customer's withdrawals (the right part). Please note that the withdrawal transfers without the transaction hash are not considered in connections.

The diagram is identical to the Connection diagram for direct/all connections. The table is identical to the Table of Direct Interactions/Table of All Interactions for the address but it does not allow to build the visualization of the indirect path.



4.2.2.4 Transfers

Connections

Transfers (3)

Associated addresses (2)

Linked Cases (1)

Export report

Show flagged transfers only

Filters

Add transfers

	ID	TYPE	RISKY AMOUNT, USD ↓	AMOUNT, USD ↓	AMOUNT	ASSET	CRS ↑ ↓	LAST EVENT ↑ ↓	STATE
<div><div></div><div></div></div>	<div><div></div><div>3e70a47</div></div>	Deposit	\$0	\$1,262.65	1,262.645215	USDT	50%	Nov 02, 2020 10:49:30 am	<div><div></div><div></div></div>
<div><div></div><div></div></div>	<div><div></div><div>310e2a3</div></div>	Deposit	\$0	\$34,528.71	4.2006	BTC	0%	Sep 30, 2020 01:05:17 pm	<div><div></div><div></div></div>
<div><div></div><div></div></div>	<div><div></div><div>11eb57b</div></div>	Deposit	\$0	\$34,528.71	4.2006	BTC	0%	Apr 01, 2020 06:25:22 pm	<div><div></div><div></div></div>
<div><div></div><div></div></div>	<div><div></div><div>139eac6</div></div>	Deposit	\$0	\$34,528.71	4.2006	BTC	0%	Apr 01, 2020 06:25:22 pm	<div><div></div><div></div></div>

This section contains a list of transfers associated with a particular customer, including the archived ones. It is basically the same as the [Transfers](#) section, but does not have the column “Customer”.

Archived transfers are marked with the symbol to the left. A transfer may be restored from the archive by clicking on the tree dots to the right. If you update the archived transfer, it becomes unarchived. If you update or unarchive at least one of the transfers of an archived customer, the customer becomes unarchived.

4.2.2.5 Associated addresses

Connections

Transfers (3)

Associated addresses (2)

Linked Cases (1)

Filters

<input type="checkbox"/>	ADDRESS	CURRENCY	TRANSFERS ↓	TYPE	OWNER	LAST ADDED TRANSFER ↓
<input type="checkbox"/>	<div>3KgR9gZTa9cJnBoMbBJAXQ...</div> <div><div></div><div></div></div>	BTC	1	Deposit	571411039	Nov 02, 2020 10:49:30 am
<input type="checkbox"/>	<div>1AxCHIZA1mxNLg2o6KPRC...</div> <div><div></div><div></div></div>	BTC	3	Deposit	Binance	Sep 30, 2020 01:05:17 pm

The table of associated addresses contains the list of addresses, which were linked with the customer in their transfers. The table contains the following columns:

1. Address – the address hash, which is a link to the address page. Clicking on the button copies the address hash to the buffer. You may add address to the case or add/edit tags by clicking on three dots to the right. If an address is monitored, the icon appears to the left.
2. Currency – the cryptocurrency transferred
3. Transfers – the number of transfers, where the address was specified.



- If you click on the three dots in the right column, you can create a new case with address, add it to the existing case or add it to the monitored addresses.


4.2.2.6 Linked cases

This section contains the list of cases linked directly with the customer or with one of their transfers. The section contains the following columns:

-
- 89



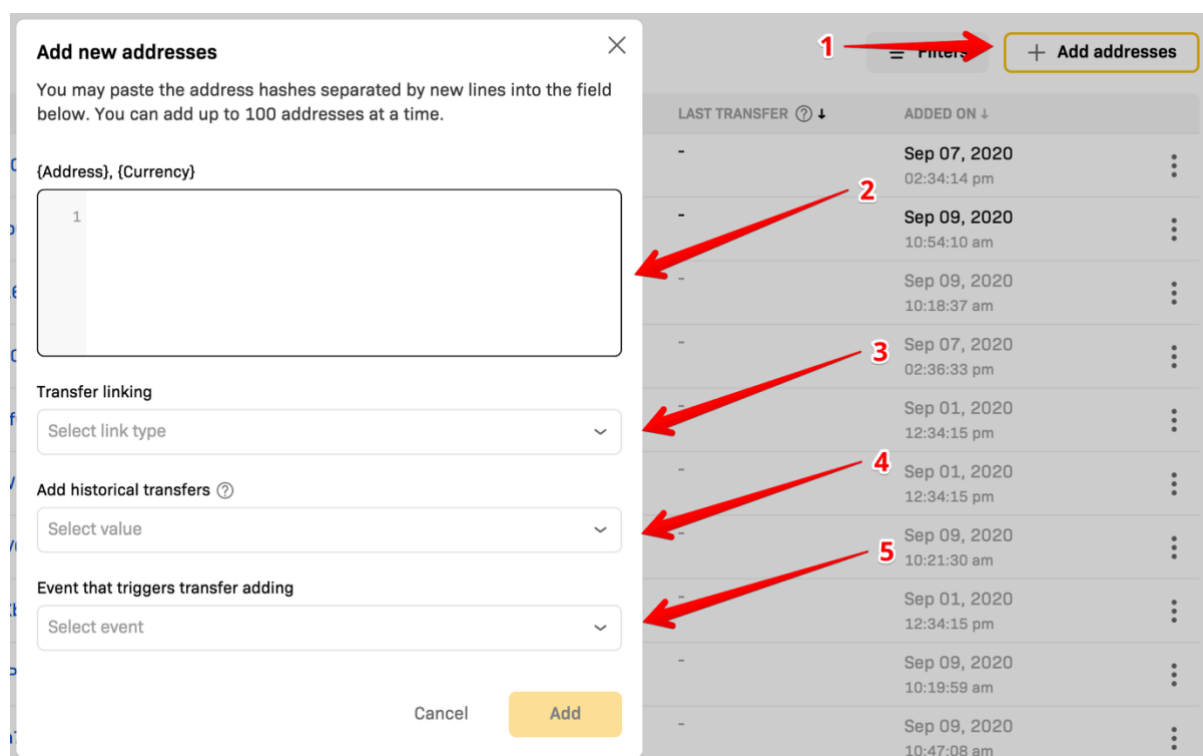
7. Status – the case status

Clicking on the button  unlinks the case. It is inactive for closed cases. The table may be filtered by currency (the filter is available only if there are cases in different currencies).

4.3 Monitored addresses

Crystal allows you to create a list of deposit addresses and automatically add transfers to the Monitor.

4.3.1 Add monitored addresses



Add new addresses

You may paste the address hashes separated by new lines into the field below. You can add up to 100 addresses at a time.

{Address}, {Currency}

1

Transfer linking

Select link type

Add historical transfers ?

Select value

Event that triggers transfer adding

Select event

Cancel Add

Monitored addresses table:

LAST TRANSFER ? ↓	ADDED ON ↓	
-	Sep 07, 2020 02:34:14 pm	⋮
-	Sep 09, 2020 10:54:10 am	⋮
-	Sep 09, 2020 10:18:37 am	⋮
-	Sep 07, 2020 02:36:33 pm	⋮
-	Sep 01, 2020 12:34:15 pm	⋮
-	Sep 01, 2020 12:34:15 pm	⋮
-	Sep 09, 2020 10:21:30 am	⋮
-	Sep 01, 2020 12:34:15 pm	⋮
-	Sep 09, 2020 10:19:59 am	⋮
-	Sep 09, 2020 10:47:08 am	⋮

To add monitored addresses, click on the button “+Add addresses” in the upper right-hand corner. After that a pop-up appears, where you specify the settings:

- Enter address and currency pairs, separated by new lines in the field (2)
- Select transfer linking option (3) from the drop-down. The possible options are:
 - Create new customer for every transfer
 - Create new customer and link all transfers with it
 - Link all transfers with existing customer (if you select this option, you will have to select an existing customer from the list)



- Add historical transfers (4) – here you can specify, whether you would like to add transfers based on the transaction history of the address.
- Event that triggers transfer adding – here you can specify whether to add transfers when transaction is added to the mempool or is confirmed.

4.3.2 The list of monitored addresses

Transfers	Customers	Monitored addresses	Selected 2 addresses Enable Disable Delete				Alert settings
	AUTO PARSING	ADDRESS	CURRENCY	CUSTOMER	TRANSFERS	LAST TRANSFER	ADDED ON
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0xfafcc6e2e1fa6420c9be091...	ETH	test monitored	0	-	Sep 07, 2020 02:34:14 pm
<input checked="" type="checkbox"/>	<input type="checkbox"/>	0x7ef35bb398e0416b81b019...	ETH	C#11224	0	-	Sep 09, 2020 10:54:10 am
<input type="checkbox"/>	<input type="checkbox"/>	0x72d27b314f27f0cd5016cc...	ETH	KYC Case	0	-	Sep 09, 2020 10:18:37 am
<input type="checkbox"/>	<input type="checkbox"/>	0x5c8c7ef16dac7596c280e7...	ETH	New customer for s...	0	-	Sep 07, 2020 02:36:33 pm

The list of monitored addresses is provided in the form of a table with the columns:

1. Auto parsing – the switcher allows you to disable/enable auto parsing of new transfers
2. Address – the monitored address hash which is a link to address page. You can click on the “copy” button . Clicking on 3 dots to the right allows you to add & edit address tags, or add address to a case.
3. Currency – the currency specified while adding the address.
4. Customer – the customer linked to the address. It is displayed in cases, when all transfers are linked to the same customer. If the customer is archived, the icon appears and auto parsing gets disabled. You will have to select a new customer or unarchive the current one and enable the parsing.
5. Transfers – the number of transfers generated from the address. The counter will be reset if you edit the monitored address settings.
6. Last transfer – the date when the transfer was last generated
7. Added on – the date when the address was added to the list.

Clicking on 3 dots to the right allows you to edit the monitored address or delete it from the list. The table may be sorted by columns Transfers, Last transfer and Added on.

Clicking on the “filters” button reveals the list of possible filters.



Transfers

Customers

Monitored addresses

[Alert settings](#)

Filters

+ Add addresses

Number of transfers

Select range

Currency

Select currency

Last transfer

Sep 03, 2020 — Nov 06, 2020

Added on

Aug 31, 2020 — Nov 02, 2020

The possible options are:

1. Number of transfers
2. Currency
3. Last transfer
4. Added on



5 Cases

The tab Cases is designed for case management. Here you can view the existing cases and create new cases. The case page contains the main details, addresses, visualizations and trackings added to the case.

5.1 Cases List

Cases List

Filters

Create case

<input type="checkbox"/>	Name ↓	Linked with ⓘ	Balance ⓘ	Change (24h) ⓘ	Avg Risk Score ⓘ ↓	Created by	Notifications	Last update ⓘ ↓	Status ↓	
<input type="checkbox"/>	Investigatio...		5,374.73465609 BTC 305.89893846 USDT	-638.50550513 BTC	35%	AF	RS, Balance	Feb 18, 2020 04:28:16 pm	Open	⋮
<input type="checkbox"/>	KYC case	3 Customers	5,361.45149069 BTC 305.89893846 USDT	-638.50550513 BTC	46%	AF	RS, Balance	Feb 18, 2020 04:28:16 pm	In progress	⋮
<input type="checkbox"/>	Test		5,382.08330582 BTC 305.89893846 USDT	-638.50550513 BTC	22%	AF	RS, Balance	Feb 18, 2020 04:28:16 pm	In progress	⋮
<input type="checkbox"/>	1FoSVYHpg...		0.37503902 BTC 616,470.92621345 USDT	-0.00720784 BTC -1,173,377.6735269 USDT	9%	AF	RS, Balance	Feb 18, 2020 04:28:16 pm	Open	⋮
<input type="checkbox"/>	KYC case (1)	2 Customers	5,361.45149609 BTC 305.89893846 USDT	-638.50550513 BTC	45%	AU	RS, Balance	Feb 18, 2020 04:28:16 pm	Open	⋮
<input type="checkbox"/>	test case		71.20059272 BTC	+67.31434478 BTC	37%	AF	Balance	Feb 18, 2020 04:20:10 pm	Open	⋮
<input type="checkbox"/>	3KF9nXow...		202.51458597 BTC 95 USDT	-38.16161808 BTC	0%	AF	Balance	Feb 18, 2020 04:20:10 pm	Open	⋮
<input type="checkbox"/>	1Po1oWkD...		7.5110341 BTC 6,489,703.44843121 USDT	-0.01614184 BTC -44,537.37684085 USDT	50%	AF	RS, Balance	Feb 18, 2020 03:53:46 pm	Open	⋮
<input type="checkbox"/>	Investigation		0 BTC		25%	AF	Balance	Feb 18, 2020 01:23:17 pm	Open	⋮
<input type="checkbox"/>	Case for Gu...	1 Customer	0 BTC		50%	AF	RS, Balance	Feb 18, 2020 08:55:52 am	Open	⋮

<


1 of 3

>



5. Avg Risk Score – the arithmetical average Risk Score of addresses included in the case
6. Created by – the creator of the case. You may see the full name if you hover the mouse over the icon. The field is available only for corporate accounts.
7. Notifications – the types of activity notifications enabled for the case. The possible notifications are RS (Risk Score) and Balance.
8. Last update – the date when the case was last updated. It may be an address balance change, address Risk Score change or adding the address.
9. Status – the case status. It may be Open, In Progress or Closed.

Clicking on three dots to the right of the case allows you to change its status, share with another Crystal user or delete the case. You may select multiple cases using the checkboxes to the left and apply the same action to a set of cases.

Clicking on the button  yields a drop-down menu with the filters. There are five possible filters:

1. Search – you may enter your search query. A substring search by the case name is performed
2. Balance – field for picking the Balance range for the case
3. Avg Risk Score – field for picking the average Risk Score range for the case
4. Last update – here you may pick the date range of the last update
5. Status – field for selecting the case status



5.2 Creating a case

Create a New Case ✕

Create a new case and configure your notification settings

Case Name

Enter case name

Notes ⓘ

Add notes (optional)

Notification settings ⓘ

☒ Minimum balance change ⓘ BTC

☐ Minimum balance change ⓘ USDT

☐ Risk Score became ⓘ %

☐ Receive email notifications to example@email.com


☐ Receive notifications in Slack ⚙️

Cancel Create

Clicking on the button “+ Create Case” yields a pop-up for creating the case. It may be divided in:

1. Case Name – the field for entering the name of the case. **Please avoid using personal or sensitive data**
2. Notes – here you may type any notes associated with the case. **Please avoid disclosing any sensitive data like real names, phone numbers, email addresses, etc**
3. Minimum Balance Change – the minimum balance change upon which you will be notified (you may specify the value for BTC and USDT transfers)
4. Risk Score became – you will be notified when the Risk Score of an address in the case reaches this value. You will also receive a notification when an address with a n/a Risk Score receives the first value and when you switch between [Risk Score Profiles](#)
5. Receive Email Notifications – mark the checkbox to receive email notifications regarding balance or Risk Score change



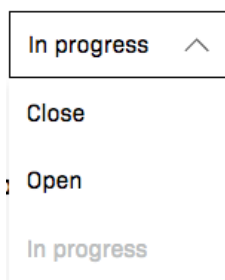
6. Receive notifications in Slack - If you have set up the Slack integration for Cases, you can enable the notifications by marking the corresponding checkbox. Otherwise, you can set up the integration by clicking on the button  which redirects you to the Profile page. You can find the detailed integration instructions [below](#)



Click on the button “Create” after you have filled in all the fields.

5.3 Case Page

The Case page may be divided into five parts: case details and notification settings, addresses, transactions, visualizations and trackings.


The status of the case is displayed in the upper right corner. You may change it by selecting the status from the drop-down menu:



Clicking on the share button  generates a link for sharing the case with another Crystal user. The user will be able to view the case only, linked objects will not be displayed. The user may save the case by clicking on the save button  and after that all actions will be available.


Visualizations and trackings from the case will be added to user’s dashboard.

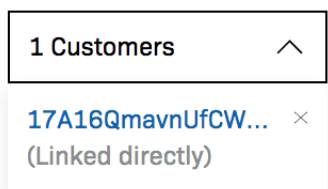
5.3.1 Case details

 Case for guide		Created on Feb 07, 2020	
Linked with ⓘ	0 customers ▾	Last update ⓘ	Feb 18, 2020 03:53 PM
Addresses	1	Created by	Admin for Guide
Transactions	0	Total balance, BTC ⓘ	7.5110341
Visualizations	1	Change (24h), BTC	-0.01614184
Trackings	0	Total balance, USDT ⓘ	6,489,703.44843121
Avg Risk Score ⓘ	50%	Change (24h), USDT	-44,537.37684085



Case details contain:

1. Case name – the case name, which may be edited by clicking on the edit button 
2. Linked with – the customers the case is linked with, either directly or via a transfer.
The list of customers is available in the drop-down. You may unlink the customer by clicking on the “x” button in the upper right corner.



3. Addresses – the number of addresses in the case
4. Transactions – the number of transactions in the case
5. Visualization – the number of visualizations in the case
6. Tracking – the number of trackings in the case
7. Avg Risk Score – the arithmetical average Risk Score of addresses in the case
8. Created on – the date when the case was created is displayed in the upper right-hand corner.
9. Created by – the creator of the case (available only for corporate accounts)
10. Last update – the date when the address in the case was last updated (address was added or deleted, address received a notification regarding balance or Risk Score change)
11. Total balance, BTC – the total balance of addresses in the case in Bitcoin
12. Change (24h), BTC – the balance change within the last 24 hours in Bitcoin.
13. Total balance, USDT – the total balance of addresses in the case in TetherUS
14. Change (24h), USDT – the balance change within the last 24 hours in TetherUS.

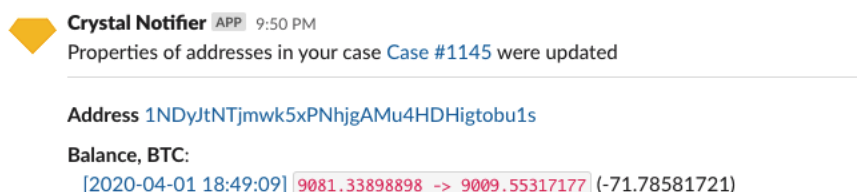


5.3.2 Notification settings

Notification settings
☒ Minimum balance change ⓘ BTC
☒ Minimum balance change ⓘ USDT
☒ Risk Score became ⓘ %
☐ Receive email notifications to
example@email.com
☒ Receive notifications in Slack

The section contains the conditions when you will be notified. Here you may select:

1. Minimum Balance Change – the minimum balance change of the address in the case, after which you will be notified for BTC and USDT
2. Risk Score Became – you will be notified when the Risk Score of an address in the case reaches the specified value. You will also receive notification when an address with n/a Risk Score receives the first value and when you switch between Risk Score profiles.
3. Receive email notifications – mark the checkbox to receive notifications via email.
4. Receive notifications in Slack – if you have set up the Slack integration for Cases, you can enable the notifications by marking the corresponding checkbox.

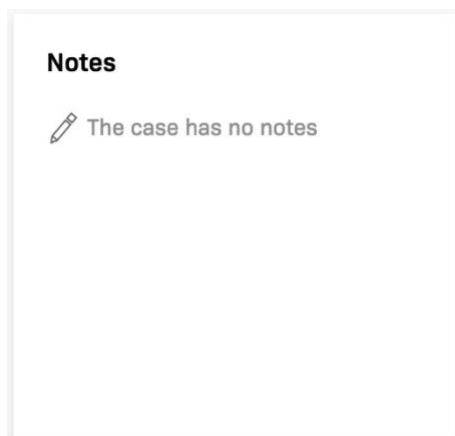



The notification will include the link to the case, the link to the transaction which triggered the notification and balance or Risk Score change.

Otherwise, you can set up the integration by clicking on the button which redirects you to the Profile page. You can find the detailed integration instructions [below](#)














5.3.3 Notes





The section contains notes added to the case. You may leave the notes on the case page by clicking on the edit button .

5.3.4 Addresses

Addresses (7)								 Add new address	
<input type="checkbox"/>	Address		Risk Score	Balance	Change (24h)	Owner	Date added ↓	Last update ↓	
<input type="checkbox"/>	• 1NDyJtNTjmwk5...	 	50%	12,436.7992478 BTC 305.89893846 USDT	+721.8379037 BTC	Binance	Aug 01, 2019 10:42:23 am	May 25, 2020 08:00:55 pm	⋮
<input type="checkbox"/>	3Dz3KPwixEWrc...	 	18%	0 BTC		336337136	Jan 31, 2019 03:45:35 pm	May 25, 2020 11:13:28 am	⋮
<input type="checkbox"/>	333SGlwVZ4Rgx...	 	12%	0 BTC		577837428	Jan 14, 2020 11:04:32 am	May 17, 2020 01:35:25 am	⋮
<input type="checkbox"/>	1LAZuQeh2yEWY...	 	50%	0 BTC		Binance	Oct 24, 2019 02:52:39 pm	Mar 13, 2020 04:10:50 pm	⋮
<input type="checkbox"/>	3EMEM3PZgKeZ...	 	0%	0 BTC		453077890	Jan 31, 2019 03:45:35 pm	Feb 22, 2020 12:44:48 pm	⋮


The section contains addresses added to the case:

1. Address – the address hash, clicking on which redirects you to the address page.
Clicking on the button  copies the address hash to the buffer. You may add or edit tags by clicking on the button . The blue dot to the left appears when there were notifications for the address.
2. Risk Score – the Risk Score of the address.
3. Balance – the address balance in BTC and USDT.
4. Change (24h) – the balance change within the last 24 hours in BTC and USDT.
5. Owner – the owner of the address, if known.
6. Date added – the date when address was added to the case.

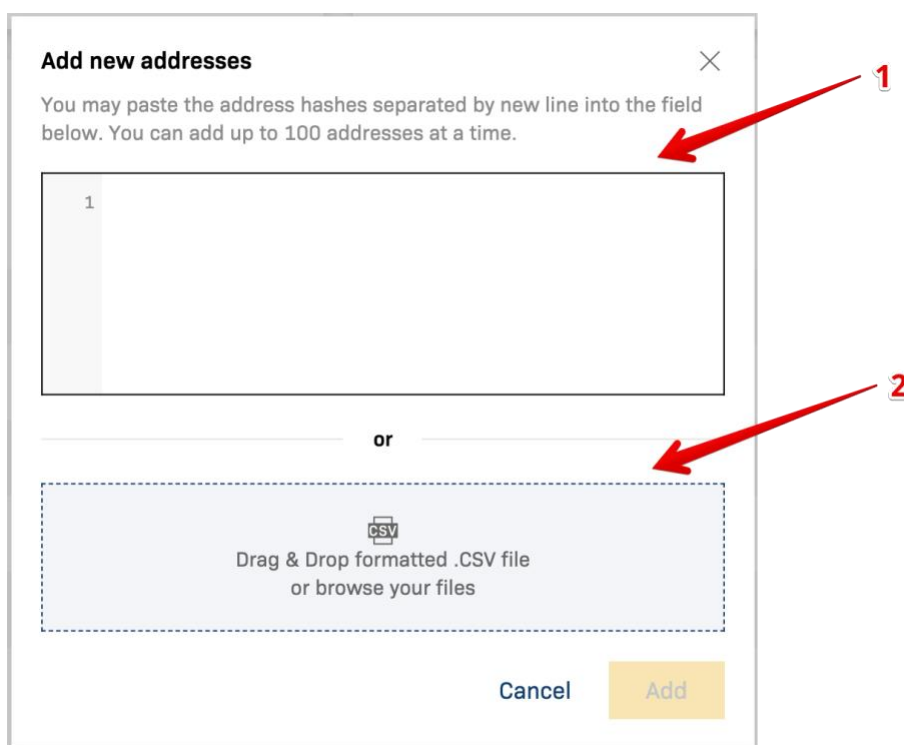


7. Last update – the date when the last notification has taken place.

You may select multiple addresses using the checkboxes in the left column and create a visualizations with all of them or delete them from the case using the buttons in the upper right corner. Clicking on three dots to the right of each address allows the same actions, but with a single address.

You can export the addresses in a CSV file by clicking on the export button  in the upper right corner.

You can add new addresses to the case by clicking on the button “+” in the upper right corner.



In the pop-up window you may enter the addresses (each address on the new line) in the field 1, or drop the .CSV file with the address hashes.



5.3.5 Transactions

Transactions (3)

BTC

USD

Selected 2 transactions



Start tracking

Start visualization


Delete

	Transaction	Risk Score	Amount ↓	Date added ↓	
<input checked="" type="checkbox"/>	c8053c44c587aaa4c79badcdaa299...	13%	422.90296328 BTC	Oct 10, 2019 10:42:44 am	⋮
<input checked="" type="checkbox"/>	359b3a12d8f355979befd88eefd40c...	100%	192.83725745 BTC	Oct 06, 2019 06:33:18 pm	⋮
<input type="checkbox"/>	5cc9b2e963604631ee18ab9e6f679...	80%	0.0000273 BTC 3,481.777707 USDT	Feb 18, 2020 10:45:40 am	⋮

This section contains transactions added to the case:

1. Transaction – the transaction hash, clicking on which redirects you to the transaction page. Clicking on the copy button  copies the address hash to the buffer. Clicking on the button  yields a pop-up with transaction details.
2. Risk Score – the Risk Score of the transaction.
3. Amount – the amount transferred in the transaction in BTC and USDT.
4. Date added – the date when the transaction was added to the case.

You may select multiple transactions using the checkboxes in the left column and create a visualization, start tracking with them or delete them from the case using the buttons in the upper right hand corner. Clicking on the three dots to the right of each transaction allows the same actions, but with a single transaction. Also it allows creating a transfer from the transaction.

You can export the transactions in a CSV file by clicking on the export button  in the upper right corner.

You can add new transactions to the case by clicking on the add button “+” in the upper right hand corner.



Add new transactions

You may paste the transaction hashes separated by new line into the field below. You can add up to 100 transactions at a time.

1 |

or

Drag & Drop formatted .CSV file
or browse your files

Cancel Add

In the pop-up window you may enter the transactions (each address on a new line) in Field 1, or drop the .CSV file with the address hashes. You may add up to 100 transactions at a time and up to 1000 transactions to the case in total.

5.3.6 Visualizations

Visualizations (2)

+ Add new visualization


<input type="checkbox"/>	Name ↓	Type ↓	Items ↓	Created date ↓	Created by
<input type="checkbox"/>	Investigation 1	Address	2	Oct 10, 2019 02:48:51 pm	AF
<input type="checkbox"/>	Investigation 2	Entity	2	Oct 10, 2019 02:48:36 pm	AF

This section lists your saved visualizations. The total number of visualizations is in brackets. The columns are:

1. **Label** – the label you entered when saving the visualization, or the label assigned automatically. Clicking on it redirects you to visualization



2. **Type** – the type of visualization. It may be Address or Entity
3. **Items** – the number of items on the visualization (addresses, transactions and entities)
4. **Created date** – the date when the visualization was created
5. **Created by** – the creator of the visualization. This field is available only for corporate accounts

You can edit the label by clicking on the edit icon  next to the visualization title or delete the visualization by clicking on the three dots in the right column and selecting the action.

The table may be sorted by **Label**, **Type**, **Items** and **Created date** in ascending and descending order. It is sorted by Created date in descending order by default.

You may select multiple visualizations using the checkboxes to the left to delete them in one action.

You may add a new visualization to the case by clicking on the add button “+”.

Add visualization

×

Add an existing visualization from your account or create a new one using a simple form

Add existing

Create new

Select visualization

<input type="checkbox"/>	Name ↓	Type ↓	Items ↓	Created date ↓	Created by
<input type="checkbox"/>	Test txs	Entity	2	Jan 13, 2020 04:33:38 pm	<div>AU</div>
<input type="checkbox"/>	self tx address (1)	Address	2	Jan 13, 2020 04:33:38 pm	<div>AU</div>
<input type="checkbox"/>	exchange txs	Address	160	Jan 08, 2020 05:08:06 pm	<div>AF</div>
<input type="checkbox"/>	Visualization 54	Entity	5	Dec 20, 2019 11:18:14 am	<div>AF</div>
<input type="checkbox"/>	Chain from entity	Address	56	Dec 04, 2019 05:32:05 pm	<div>AF</div>

< 1 of 11 >

Go

Cancel

Add

In the pop-up window you may select existing visualizations to add them to the case. You can create a new one with one of the addresses or entities of the case, depending on the selected type of the visualization.




5.3.7 Trackings

Trackings (3)					
<div>+ Add new tracking</div>					
<input type="checkbox"/>	Name ↓	Addresses ↓	Status	Last update ↓	Created by
<input type="checkbox"/>	Trackin...	70582	Ready to check	Sep 17, 2019 01:19:45 pm	AF
<input type="checkbox"/>	Research	44633	Ready to check	Sep 06, 2019 10:40:27 am	AF
<input type="checkbox"/>	Investig...	1434	Ready to check	Aug 30, 2019 10:30:36 am	AF

This section contains trackings that have been added to the case. It has columns:

1. Label – the tracking label
2. Addresses – the number of the addresses in the tracking
3. Last update – the date when the tracking was last updated
4. Status – the tracking status. It may be:
 - a. Pending – the new tracking is being calculated
 - b. Ready to check – the tracking was successfully calculated
 - c. Updating – the tracking is being updated
5. Created by – the creator of the tracking. This field is available only for corporate accounts.

You can edit the label by clicking on the edit icon  next to the tracking title. You may update or delete a single tracking by clicking on the three dots to the right and selecting the needed action or you may apply the action to multiple trackings using the checkboxes in the left column. The table may be sorted by columns Label, Addresses and Last Update.

You may add a tracking to the case by clicking on the add “+” button in the upper right hand corner.



Add tracking



Add an existing tracking from your account or create a new one using a simple form.

Add existing Create new

<input type="checkbox"/>	Name ↓	Addresses ↓	Status	Last update ↓	Created by
<input type="checkbox"/>	New Investigati...	8489	Ready to check	Nov 15, 2019 06:13:18 am	AF
<input type="checkbox"/>	mQfYcieS76gD...	0	Ready to check	Oct 16, 2019 12:18:57 pm	AF
<input type="checkbox"/>	5V6eTOovcn4b...	42699	Ready to check	Sep 20, 2019 11:38:16 am	AF
<input type="checkbox"/>	Stolen Funds	269	Ready to check	Aug 12, 2019 03:15:13 pm	AF
<input type="checkbox"/>	Z47TD7PDNDD...	5	Ready to check	May 28, 2019 02:01:16 pm	AF

< 1 of 22 > Go

Cancel

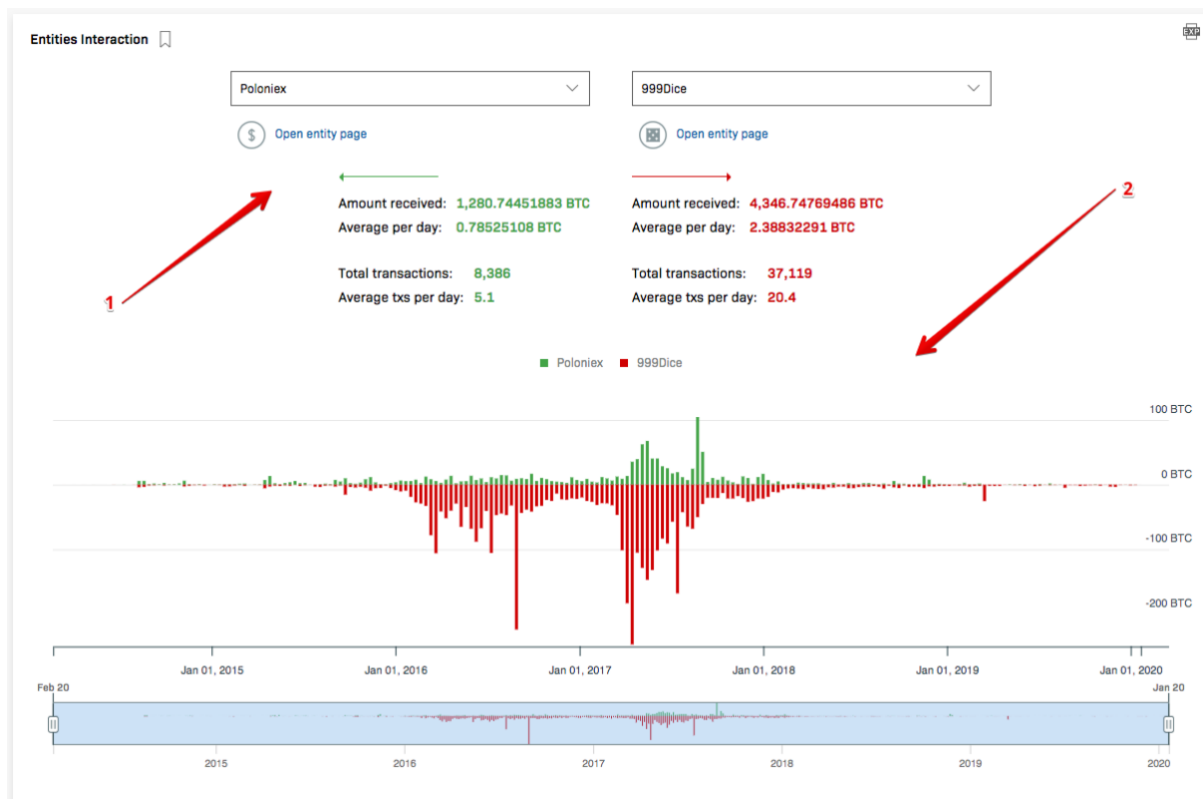
Add

You may select existing trackings from the list or create a new one. You can find the details of the tracking setup [below](#).



6 Entities Interaction

This tool helps you to understand how and when two selected blockchain entities or blockchain addresses have transacted with each other. For example, you can find out whether a wallet address of your choice is connected to a suspicious transaction or has engaged with a known illegal darkmarket site.





3































Date: Feb 20, 2014 — Mar 23, 2020

Amount, BTC: Select range

Receiver: All

Total Outputs, BTC: Select range


Fee, BTC: Select range

Date ↓	Transaction	Amount, BTC ① ↓	Receiver	Total Outputs, BTC ↓	Fee, BTC ↓
Sep 29, 2017 02:39:44 pm	78d9d8a4e1ec765854...   	0.0099	999Dice	73.33279737	0.00150766
Sep 29, 2017 01:31:13 pm	43e7dfef7988c77051...   	0.00027259	999Dice	294.49438196	0.0015077
Sep 29, 2017 01:23:31 pm	09507471b416d88d0...   	0.00289	999Dice	9.28893124	0.00150771
Sep 29, 2017 11:36:37 am	555b07d2b76652668...   	0.00276	999Dice	77.55806598	0.00301558
Sep 29, 2017 09:13:44 am	a82929f54267d0f6c8...   	0.00939564	Poloniex	0.01539564	0.00013256
Sep 29, 2017 08:44:44 am	644619fcca7e07d05...   	0.00889	999Dice	17.6356772	0.00150792
Sep 29, 2017 08:22:14 am	b8a33ad3d24fc0001f...   	0.00975	Poloniex	0.00975	0.00004
Sep 29, 2017 06:28:54 am	cef5ed0a8e592f146fd...   	0.00889578	999Dice	19.94319704	0.00150806
Sep 29, 2017 03:31:24 am	94bafb4a62d5178ca0...   	0.00786961	999Dice	1,342.2526774	0.003017
Sep 28, 2017 09:28:27 pm	0a0a01e6f97546fc22...   	0.00457513	Poloniex	0.00457513	0.00009236

< 100 of 822 > Go

There are three main sections of information on the Entities Interaction page (see the corresponding numbers on the picture):

- 1 Interaction setup
- 2 Statistics and interaction chart
- 3 Transactions

You may export the interaction page by clicking on the export button  in the upper right hand corner and choosing the format (CSV or PDF). The exported file will include statistics, filtering parameters, an interaction diagram (available only in PDF) and the list of transactions (please note that a maximum of 1000 transactions only may be exported).

6.1 Interaction setup


Select entity or input address

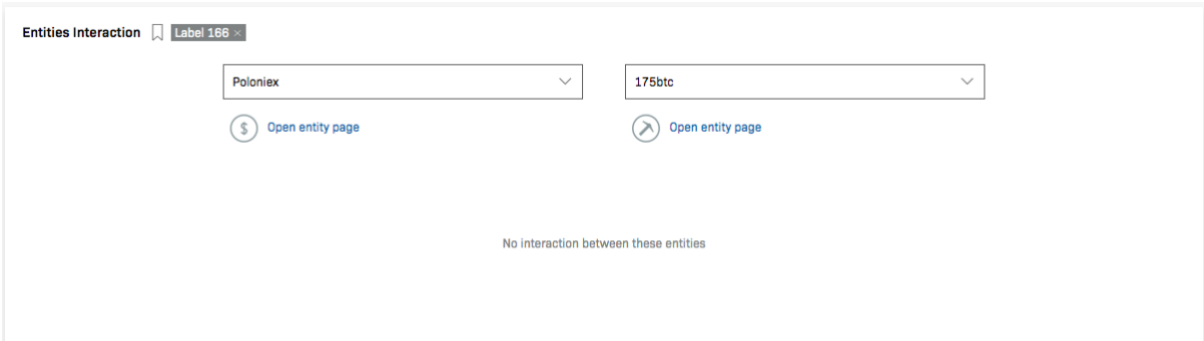
polo


Poloniex

Select entity or input address





- 1 There are two input fields in this block. Both fields expect an input string of either a literal entity name, a numerical entity name, or an address hash.
 - a. Literal entity name – a substring search is performed. The matching results are shown in the dropdown list.
 - b. Numerical entity name – the exact match with the numbered entity is looked up. If the result is found, it appears in a dropdown list.
 - c. Address hash – the exact match with a Bitcoin address is looked up. If an address is found, its owner (entity) is looked up in the database. If it is found, a dropdown menu appears with the entity name or number. Otherwise, the address itself appears in the dropdown list.
- 2 Clicking on the dropdown list item (or pressing the "Enter" button) fills the field with the selected data.
- 3 When the input field is filled, the entity icon and a link to the entity page (or address page in case of an address in the field) appears underneath.
- 4 When both fields are filled, press the “Calculate” button below. After that the request to compute interaction results is sent to the server. Meanwhile you may continue using the service, but you should not reload the interaction page while it is calculating.
- 5 If there are no transactions between the selected entities, the following message appears: “No interactions between these entities.” The icon  in the upper left hand corner allows you to add label to the interaction.



Entities Interaction  Label 166

Poloniex 175btc

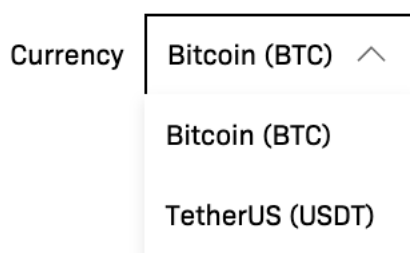
 Open entity page  Open entity page

No interaction between these entities



If other users have added their labels (available only for corporate accounts), you will see them to the right. You may see the creator of the label if hover you the mouse over it. You may click on the label to edit it (if permissions of your role allow it).

- 3 If there is at least one transaction between the chosen entities, the statistics described in the following section appear. You may switch between Bitcoin and TetherUS using the “Currency” drop-down which appears in cases when there were USDT transactions between entities.



6.2 Statistics and Interaction Chart



The horizontal axis represents the date, and the vertical axis represents the amount of bitcoins. The green lines are bitcoins received by the left entity (they are above 0) and the red lines are bitcoins received by the right entity (they are below 0).

There are two ways to choose a period over which interaction statistics are calculated and that interaction chart is displayed.



- 1 Filtering options below the chart. The first and the last dates should be included in the displayed period. The list of transactions is adjusted accordingly.
- 2 Time navigation below the graph.

The green and red colors indicate the direction of the bitcoin flow:

- 1 Green – from the right entity to the left entity, i.e. the left entity *receives* bitcoin
- 2 Red – from the left entity to the right entity, i.e. the left entity *sends* bitcoin

The following metrics are included in the statistics block:

- 1 **Amount received** – total amount of Bitcoin received by one entity from another
- 2 **Average per day** – this number indicates the average volume of interaction. It is calculated as total amount received by an entity and then divided by the number of days these entities interacted
- 3 **Total transactions** – the number of transactions in which one entity received bitcoin from another.
- 4 **Average txs (transactions) per day** – a metric that helps to assess the intensity of interaction. It is calculated as the number of transactions within a chosen period divided by the number of days over which these transactions happened.

When you hover the mouse cursor over the graph area, the following pop-up with additional information is shown. It shows an interaction summary for the selected date.



- 1 **Date** corresponding to the selected interval
- 2 **Entity name**
- 3 **Received** – the amount of received bitcoins during this interval
- 4 **Transactions** – the number of transactions received during this time period




6.3 Transactions

Date	Transaction	Amount, BTC	Receiver	Total Outputs, BTC	Fee, BTC
Sep 29, 2017 02:39:44 pm	78d9d8a4e1ec765854...	0.0099	999Dice	73.33279737	0.00150766
Sep 29, 2017 01:31:13 pm	43e7dfef7988c77051...	0.00027259	999Dice	294.49438196	0.0015077
Sep 29, 2017 01:23:31 pm	09507471b416d86d0...	0.00289	999Dice	9.28893124	0.00150771
Sep 29, 2017 11:36:37 am	555b07d2b76652668...	0.00276	999Dice	77.55806598	0.00301558
Sep 29, 2017 09:13:44 am	a82929f54287d0f6c8...	0.00939564	Poloniex	0.01539564	0.00013256
Sep 29, 2017 08:44:44 am	644619fcca7e07d05...	0.00889	999Dice	17.6356772	0.00150792
Sep 29, 2017 08:22:14 am	b8a33ad3d24fc0001f...	0.00975	Poloniex	0.00975	0.00004
Sep 29, 2017 06:28:54 am	cef5ed0a8e592f146fd...	0.00889578	999Dice	19.94319704	0.00150806
Sep 29, 2017 03:31:24 am	94bafb4a62d5178ca0...	0.00786961	999Dice	1,342.2526774	0.003017
Sep 28, 2017 09:28:27 pm	0a0a01e6f97546fc22...	0.00457513	Poloniex	0.00457513	0.00009236



This section may be divided into two parts: Transactions Table and Filtering Options.

The table contains the following columns:

- 1 **Date** – the date when the transaction was made
- 2 **Transaction** – the transaction hash, clicking on which redirects you to the transaction page. You will see three buttons to the right of the transaction hash:
 - Use the “Copy” button  for saving transaction hash to the buffer
 - Clicking on the “Details” button  clicking on which opens a pop-up with additional transaction details.
 - Clicking on the “Actions” button  yields a drop-down with 2 options:
 - Add to monitor – adding a transfer from this transaction to monitor.
The procedure is described [above](#)
 - Open visualization – start a visualization from the transaction
- 3 **Amount** – the amount of bitcoin sent from one entity to another
- 4 **Receiver** – the name of the receiving entity
- 5 **Total outputs** – the sum of all outputs
- 6 **Fee** – the transaction fee

You’ll find the following filtering options:

1. Date – here you may pick the date range for the transactions
2. Amount – in this field you may pick the balance change
3. Receiver – here you may choose the receiver (all transactions are displayed by default)
4. Total outputs – this is the field for picking the range of total outputs.
5. Fee – this is the field for picking the fee range.



7 Visualization

The Visualization tool helps you track bitcoin flows and explore the blockchain in a visual way. There are two possible types of visualization:

- By Addresses
- By Entities

Most of the functionality is common for these types, but the Visualization by Entities combines all the addresses of the entity into one item. In this section we will explain the functions of the Visualization by Addresses, but they are valid for Visualization by Entities as well.

7.1 Starting the Visualization

To start a visualization, you may open an address, transaction or entity page and press the button “Visualization” in the details at the top of the page. For the transaction and address options you will have to choose in the menu whether to start the visualization by addresses or entities. If the entry point has USDT transfers, you will have to select the currency in the drop-down (USDT or BTC). For entity, Visualization by Entities will start.



Please select type and choose currency

Visualization type

by Addresses

by Entities

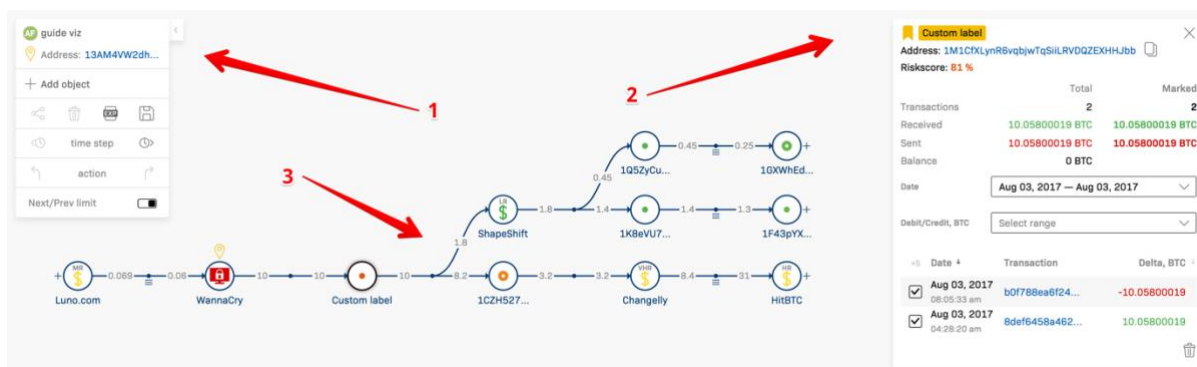
Currency

Bitcoin (BTC) ▾

Start

Alternatively, you may click on the “+” in the upper right corner of section Visualization in the Dashboard and enter the address/transaction/entity there. If you enter an address/transaction, you will have to choose the type of visualization. If you enter an entity name, visualization by entities will start.

7.2 Visualization Page



There are three main information blocks on the visualization page (see the corresponding numbers on the picture):





1. Main menu
2. Transaction/Address/Entity info



3. Visualization area

7.3 Visualization Area





Below you'll find the description of the visualization area procedures in this section.

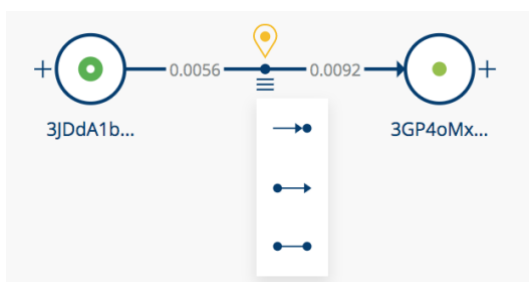
- Bitcoin addresses on the visualization are represented by full circles 
- Entities on the visualizations are represented by dotted circles . The visual is only available if you start the visualization by entities.
- Transactions are represented by lines that connect circles 
- Gray numbers represent input/output amounts
- The icon  marks the point from which you started the current visualization




- 1 **Left “+”** (located to the left of an address circle) – clicking on this symbol opens up the previous location of the bitcoins that were received by the current address or entity. If there are several counterparties that contributed to the current output, we show the counterparty that sent the highest amount.
- 2 **Right “+”** (located to the right of an address circle) – clicking on this symbol opens the next location of the bitcoins that were sent from this address. If there are several counterparties that have received bitcoins, we show the counterparties that have received the highest amount.



- 3 **Label under address circle** – there are several possible labels that may be observed under an address/entity circle:
 - a) If the address's owner is not known, we show the first seven digits of the address' hash under the circle
 - b) If the address/entity owner is known, we show the entity name under the circle
 - c) If the entity owner is not known, we show its internal identifier
 - d) If you have set up a custom address label, we show that label under the circle
- 4 **Add inputs/outputs** – underneath the black dot “.” in the transaction line, you will see a series of three short lines (). They are not available for USDT transactions, because they have only one sender and one receiver. Clicking on the black dot yields a pop-up window for the transaction. Clicking on the three lines yields three options. Clicking on the first () adds another input to the transaction; clicking on the second () adds another output; clicking on the third () yields both an additional input and output. Continuing to press on these icons will yield additional input or output address circles, until all input/outputs of the transaction have been exhausted.



- 5 **+/- (Zoom)** – click on plus/minus button to scale the visualization area. It is also possible to change the canvas size using a mouse scroll
- 6  (Hotkeys) – this is the button for viewing the hotkeys



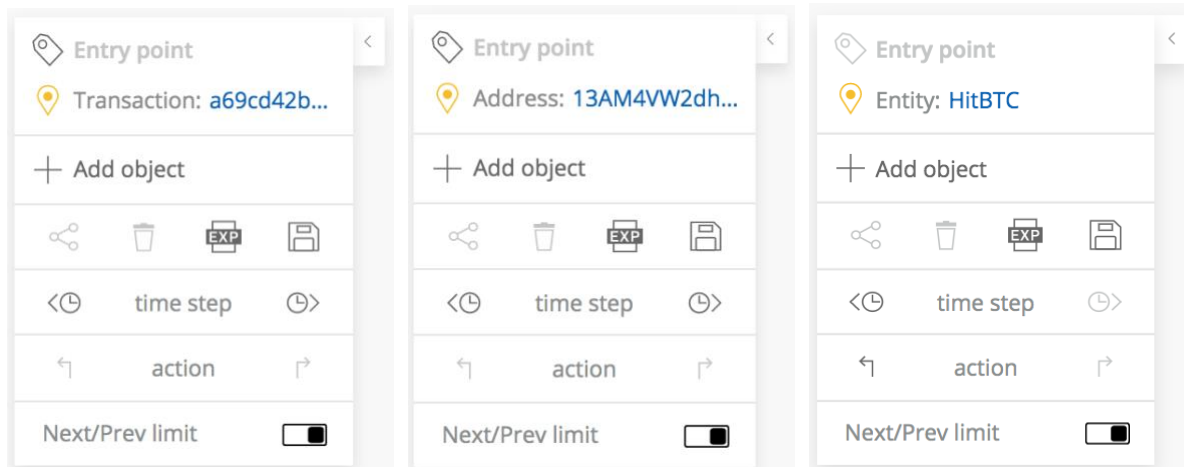
Hotkeys	
Undo	+
Redo	+ +
Zoom out	+
Zoom in	+
Save	+
Save As	+ +
Next	
Prev	


- 7 **“I” icon** – clicking on this icon will open a legend showing a list of 19 icons corresponding to various address/entity types:

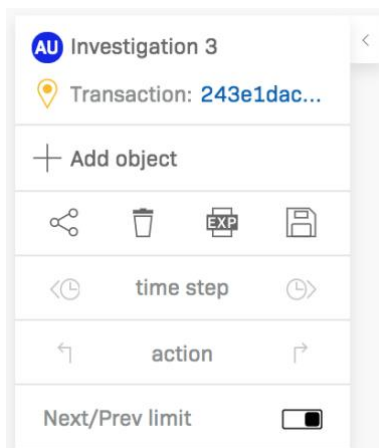
Icons		
	ATM	
	Fraudulent Exchange	
	Exchange With Moderate Risk	
	Exchange With High ML Risk	
	Gambling	
	Illegal Service	
	Mixing Service	
	Ransom	
	Stolen Coins	
	Address	
	Other Entity	
	Mined Coins	



7.4 Main Menu







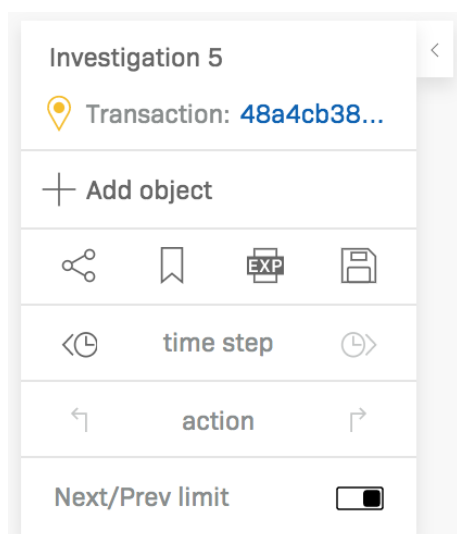
1. **Entry point** – the small orange icon  marks the address, transaction or entity from which the visualization has been started. When a visualization is saved, its label receives a name, which is then displayed instead of "Entry point". If you open an existing visualization, you will be able to see its creator near the entry point. This is available only for corporate accounts.



2. **Address/Transaction/Entity** – the address or transaction hash or entity name corresponding to the entry point.
3. **Add object** – button for adding an address or transaction or entity (only for visualization by entity) to the visualization. A detailed explanation will be provided below
4. **Share/Delete/Export/Save visualization** – buttons for working with the visualization








- 4.1. After clicking on the Share button , you will receive a link that can be shared with other Crystal Express users
- 4.2. After clicking on the Delete button , a pop-up will appear to confirm or cancel the deletion
- 4.3. The Export button  allows you to export a visualization to your own files. There are several options:
 - 4.3.1. Export all Addresses to CSV – the button for exporting the addresses available on the visualization. The file will contain address hash, owner, entity type (if known) and Risk Score
 - 4.3.2. Export all TX hashes to CSV – the button for exporting the transactions available on the visualization. The file will contain transaction hash and the block date (it will be “unconfirmed” if transaction is in the mempool)
 - 4.3.3. Export as PNG – export the visualization as PNG
 - 4.3.4. Export as SVG – export the visualization as SVG
- 4.4. There are two options for saving the visualization. If it is a newly created, unedited visualization, you may click the Save button  and enter your label in the pop-up. If you have edited an existing visualization, you may update the current visualization or save it as a new one by pressing the option “Save as...” in the pop-up.



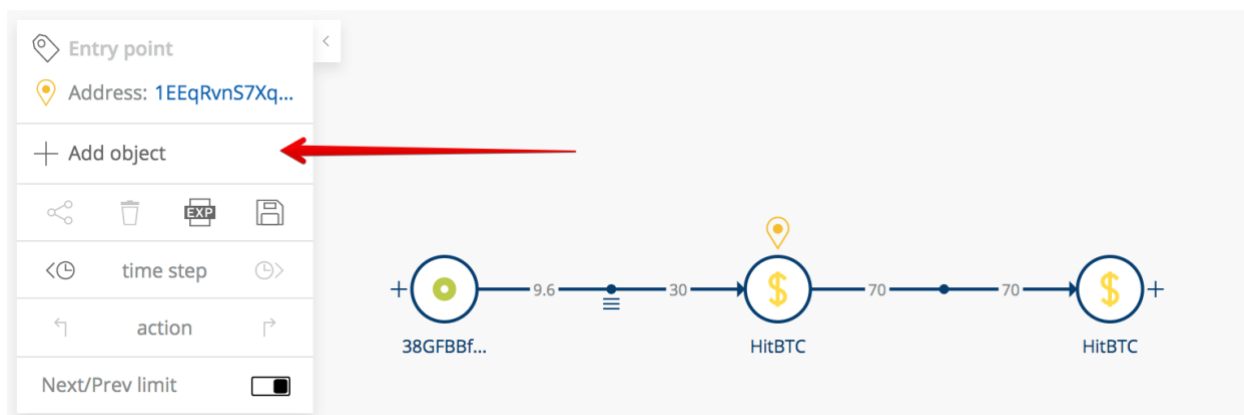
5.



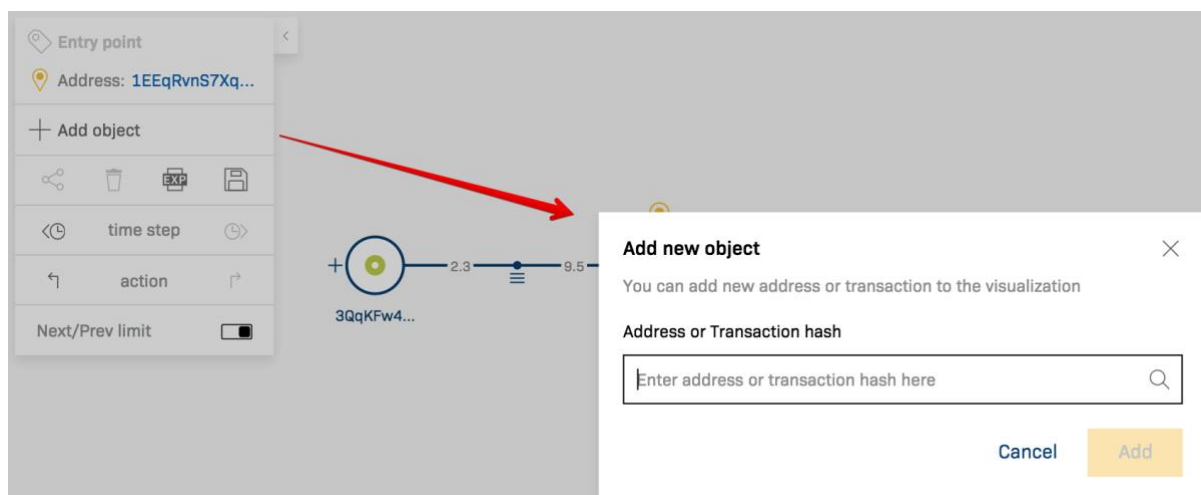
You may add a visualization shared by another Crystal user to the bookmarks by clicking on the button 

6. **Time step** – clicking on the buttons  and  will extend the visualization to the left/right, adding the previous/next location of the Bitcoins that came to/from the current addresses. It is the equivalent to clicking on the plus (+) icon to the left/right of all the addresses (circles). If a transaction has several inputs/outputs we will show only the largest
7. **Action** – you may undo the last step by clicking on the undo button  and redo the last step undone by clicking on the redo button 
8. **Next/Prev limit** – if a known entity is reached on a visualization and the limit is switched on, clicking on the buttons next/prev will not add the transactions coming out/received by the entity. It is the equivalent to ignoring the (+) icon to the left/right of all the addresses (circles) belonging to a known entity

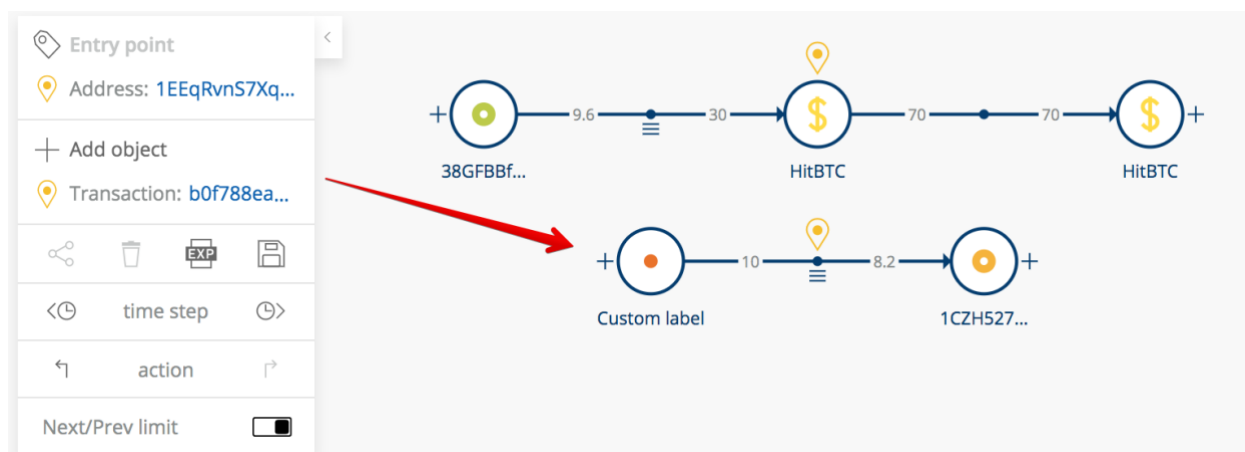
7.5 Adding Objects to Visualization



You may add any address, transaction or entity (if you build a visualization by entities) to the visualization. Clicking on the button “+ Add object” yields a pop-up window for entering an address or transaction or entity.

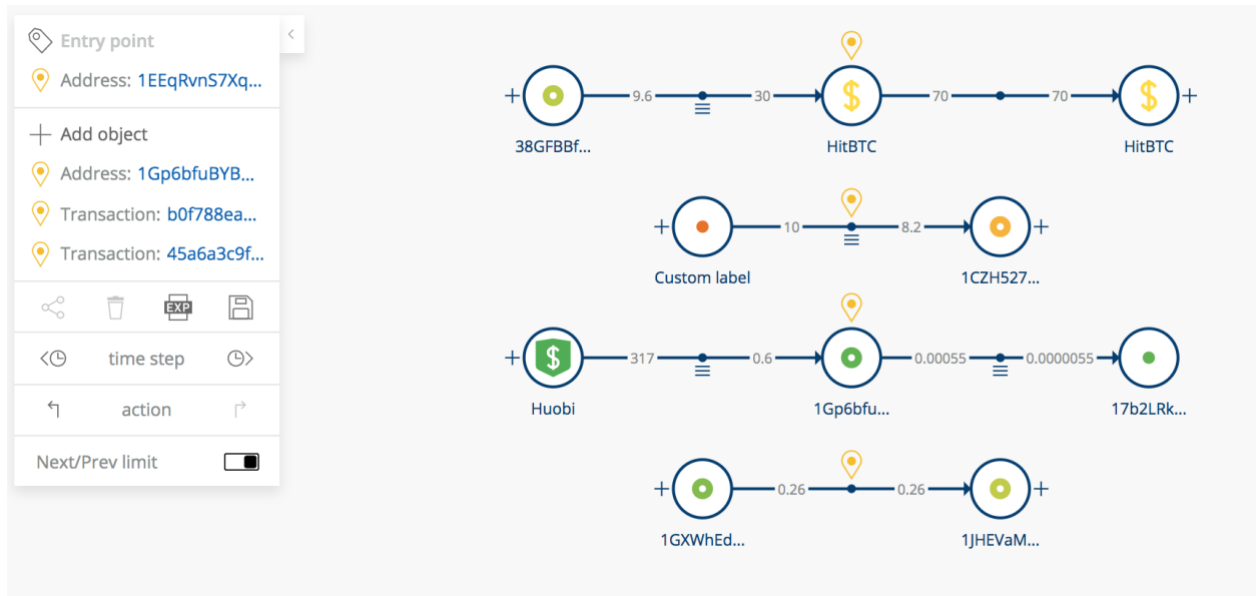


After you enter an address or a transaction hash, clicking on the button “Add” will add it as an extra entry point below the current visualization.

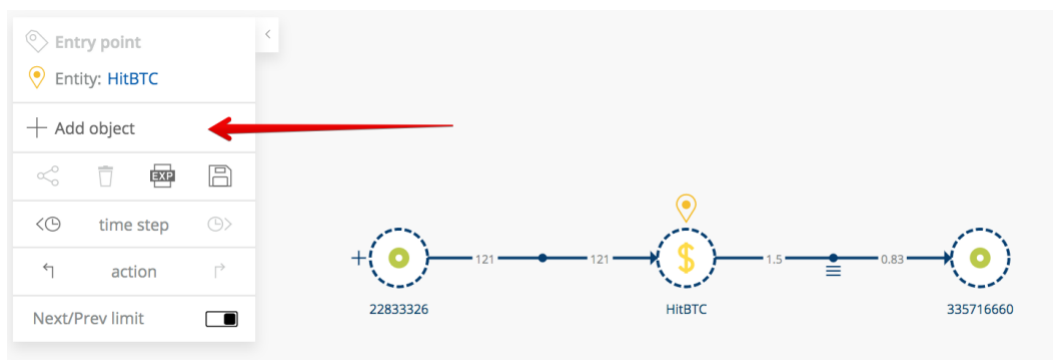




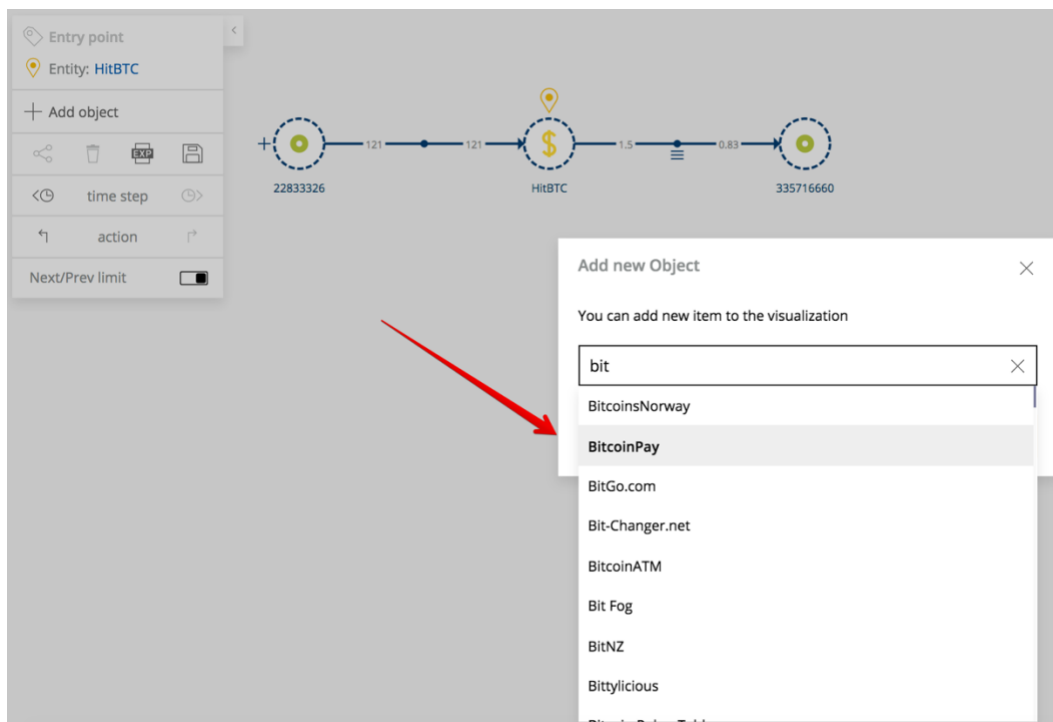
Any number of objects may be added to the visualization.



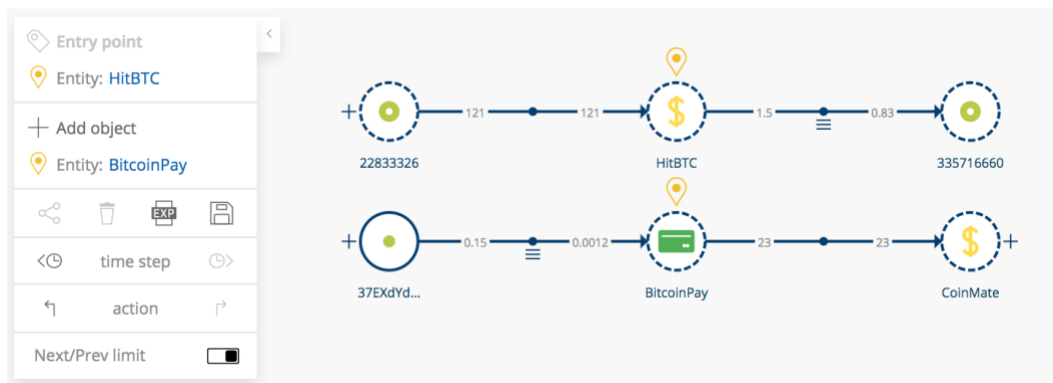
To add a new entity to the visualization by entities click on the button “+ Add object”:



Then type the entity name and choose the required entity from the drop-down list:



As a result of this action, an extra entry point will appear on the visualization:



If you enter an address belonging to the entity, the entity will appear on the visualization.



7.6 Transaction/Address/Entity Info

Clicking on the address/entity circle (or hovering a mouse over the address/entity circle) or the transaction line will open an information pop-up window. These windows are described below.

7.6.1 Address info

Address: [13AM4VW2dhxYgXeQepoH...](#)

Owner: [WannaCry](#) (3)

Marked

Transactions	139	2
Received, BTC	20.04165158	0.06
Sent, BTC	19.74510304	10.06868926
Balance, BTC	0.29654854	
Risk Score	100 %	

Date: May 12, 2017 — Apr 22, 2019

Debit/Credit, BTC: Select range

+5	Date ↓	Transaction	BTC ↓
<input type="checkbox"/>	Apr 22, 2019 07:10:42 am	df240708...	0.0584
<input checked="" type="checkbox"/>	Feb 14, 2018 01:51:53 pm	506ef51d...	0.06
<input type="checkbox"/>	Jan 07, 2018 05:24:32 am	3ef45d1e...	0.00012
<input type="checkbox"/>	Jan 03, 2018 10:32:29 pm	f02992bd...	0.0001
<input type="checkbox"/>	Jan 03, 2018 03:31:09 am	103ec673...	0.0001

< 1 of 28 >


Clicking on any of the address circles on the visualization will produce a pop-up window containing the detailed information about that particular address.

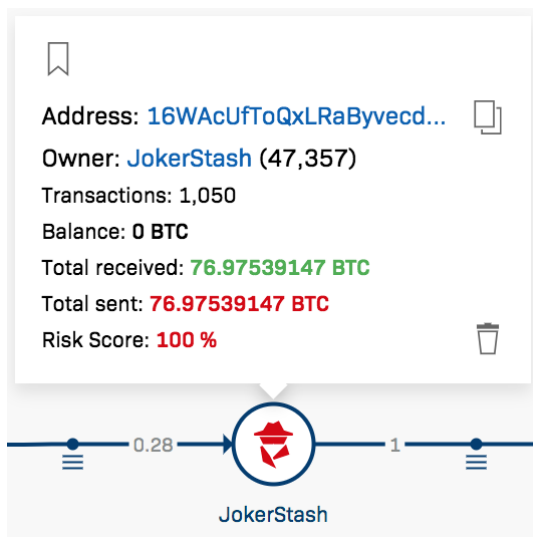
- 1 **Add label** – by clicking on the label icon, you may add a custom label to the address. After entering, the label will be displayed in the label field and under the address in the visualization area. The address along with the label will be saved to the bookmarks.





- 2 **Address** – the address hash. Near the hash, there is a “Copy” button. Clicking on it will save the address hash to the buffer. To enter the copied address into another tool search bar (e.g., Tracking, Interaction), simply click the cursor in the desired address/transaction search bar and paste the hash using the mouse or shortcut buttons
- 3 **Owner** – the owner of the address, represented as a literal or numerical entity name. We display the number of addresses with the same owner to the right of the name. If the address owner is not known, this line will be empty
- 4 **Transactions** – the total number of the address's transactions over time/ the number of transactions shown on the visualization
- 5 **Received, BTC** – the total amount of bitcoins received by the address/ the total amount received in transactions shown on the visualization
- 6 **Sent, BTC** – the total amount of bitcoins sent by the address/ the total amount sent in transactions shown on the visualization
- 7 **Balance, BTC** – current address balance
- 8 **Risk Score** – the risk score calculated for this address
- 9 **Date** – the filter for selecting the date range of the transactions
- 10 **Debit/Credit** – filter for selecting the balance change rate. You may specify whether it is debit or credit
- 11 **Show** – this checkbox is used to add or delete transactions in the visualization graph. Those transactions which are marked with a check mark ☒ in the box next to their hash string, are shown on the visualization graph. By checking additional boxes, those transactions will be added to the visualization. Clicking on the button “+5” at the top of the column adds unchecked transactions to the visualization (up to 5 transactions per click).
- 12 **Date** – the transaction date.
- 13 **Transaction** – the transaction hash.



- 14 **BTC** – the total amount of bitcoin sent (in red) or received (in green) by the current address as a result of the transaction listed in this row.
- 15 **Delete button** – the delete icon  is located in the lower right hand corner. It deletes the address from the visualization. The entry point of the visualization cannot be deleted.



Hovering a mouse over the address circle yields a pop-up with information for that address. In the pop-up you will see:

- 1 **Address label** – if an address has a label, it is displayed next to the icon  icon
- 2 **Address** – the address hash, which is a link to address page. Clicking on the copy button  copies address hash to the buffer
- 3 **Owner** – the owner of the address. You may see the total number of the addresses with the same owner to the right of the owner's name or ID
- 4 **Transactions** – the number of address transactions
- 5 **Balance** – the current address balance
- 6 **Total received** – the total amount of Bitcoins received by the address
- 7 **Total sent** – the total amount of Bitcoins sent by the address
- 8 **Risk score** – the address Risk Score



7.6.2 Entity info

Entity: [HitBTC](#)

Type: Exchange With High ML Risk

Riskscore: 50 %

	Total	Marked
Transactions	1,533,055	2
Addresses	564706	
Received	910,566.299 BTC	0.03038281 BTC
Sent	910,325.3976 BTC	1.76821651 BTC
Balance	240.9014708 BTC	

Date

Apr 05, 2011 — Jul 29, 2020

Debit/Credit, BTC

Select range


+5	Date ↓	Transaction	Delta, BTC ↓
<input checked="" type="checkbox"/>	Jul 29, 2020 12:31:51 pm	19605b0dc9fd...	0.03038281
<input type="checkbox"/>	Jul 29, 2020 12:31:51 pm	eeec1c0fac6e...	0.01261238
<input type="checkbox"/>	Jul 29, 2020 12:31:51 pm	f0102cbf2e16...	0.01070664
<input type="checkbox"/>	Jul 29, 2020 12:31:51 pm	0e66709fbba6...	1.06
<input checked="" type="checkbox"/>	Jul 29, 2020 12:31:51 pm	27e7eccf07bb...	-1.76821651

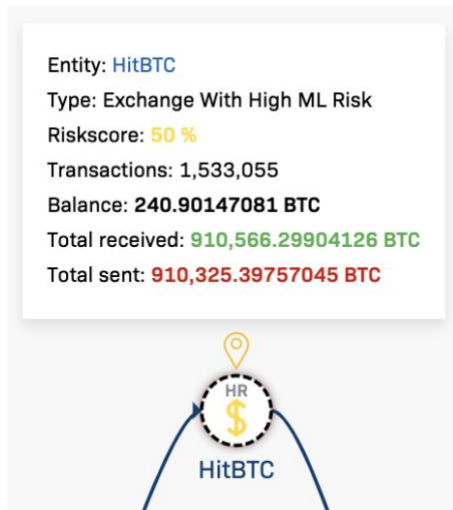
< 1 of 306,611 > Go

Clicking on any of the entity circles on the visualization will produce a pop-up window containing detailed information about the entity.

- 1 **Entity** – the entity name, which is the link to the entity page
- 2 **Addresses** – the number of addresses belonging to the entity
- 3 **Type** – the type of entity. If there is a subtype, it will be specified to the right
- 4 **Transactions** – the total number of entity's transactions over time/ the number of transactions shown on the visualization
- 5 **Received, BTC** – the total amount of bitcoins received by the entity/ the total amount received in transactions shown on the visualization



- 6 **Sent, BTC** – the total amount of bitcoins sent by the entity/ the total amount sent in transactions shown on the visualization
- 7 **Balance, BTC** – the total balance of all addresses belonging to the entity
- 8 **Risk Score** – the Risk Score of the entity
- 9 **Date** – the filter for selecting the date range of the transactions
- 10 **Debit/Credit** – the filter for selecting the balance change range. You may specify whether it is debit or credit
- 11 **Show** – this checkbox is used to add or delete transactions in the visualization graph. Those transactions which are marked with a check ☒ in the box next to their hash string are shown on the visualization graph. By checking additional boxes, those transactions will be added to the visualization. Clicking on the button “+5” at the top of the column adds unchecked transactions to the visualization (up to 5 transactions per click)
- 12 **Date** – the transaction date
- 13 **Transaction** – the transaction hash
- 14 **BTC** – the total amount of bitcoin sent (in red) or received (in green) by the current entity as a result of the transaction listed in this row
- 15 **Delete button** – the delete icon  is located in the lower right corner. It deletes the entity from the visualization. The entry point of the visualization cannot be deleted



Hovering a mouse over entity circle yields a pop-up with entity information. There you will see:

- 1 **Entity** – the entity name, which is the link to the entity page
- 2 **Addresses** – the number of addresses belonging to the entity
- 3 **Type** – the type of entity
- 4 **Transactions** – the total number of entity's transactions over time/ the number of transactions shown on visualization
- 5 **Balance** – the total balance of all addresses belonging to the entity
- 6 **Total received** – the total amount of bitcoins received by the entity
- 7 **Total sent** – the total amount of bitcoins sent by the entity
- 8 **Risk Score** – the Risk Score of the entity



7.6.3 Transaction info

Transaction: 59c811fa0b8... BTC USD

Input/Output 4/2

Amount, BTC 0.03104456 / 0.03016656

Fee 0.000878 BTC

Size / VSize 763 B / 439 B

Block Date Sep 05, 2019 05:29 PM

<+5 **Input Address** BTC

<input checked="" type="checkbox"/>	3ESpjwb...	0.017061
<input type="checkbox"/>	3AS6Wakk...	0.00764324
<input type="checkbox"/>	3QvAeSA4...	0.00544032
<input type="checkbox"/>	38F9z4b1...	0.0009

5+> **Output Address** BTC


<input checked="" type="checkbox"/>	3EzV1ThW...	0.02
<input type="checkbox"/>	3AS5YbZW...	0.01016656

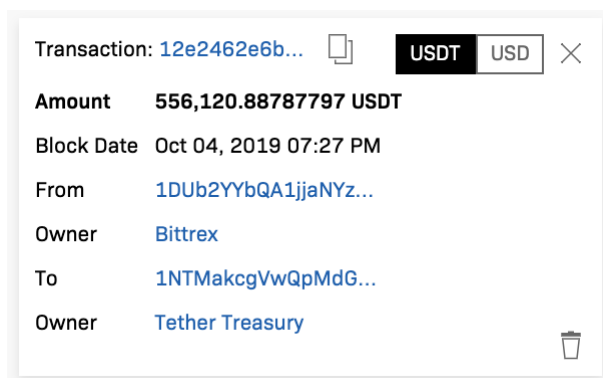
Clicking on the transaction line will produce a pop-up window containing detailed information about the transaction. You may switch between BTC and USD (or other preferred fiat currency) view using the button in the upper right hand corner.

- 1 **Transaction** – the transaction hash. Near the hash, there is a “Copy” button. Clicking on it saves the transaction hash to the buffer.
- 2 **Input/Output** – the number of addresses sending bitcoins in the transaction (green), and the number of addresses receiving bitcoins in the transaction (red).
- 3 **Amount, BTC/USD** – the total amount of BTC/USD (or other preferred fiat currency) sent (green) and received (red) in the transaction.
- 4 **Fee** – the transaction fee in BTC/USD (or other preferred currency).
- 5 **Size/VSize** – the transaction size, in bytes/ the virtual size of the transaction.
- 6 **Block Date** – the date when the transaction was included on the blockchain.



- 7 **Show** – this checkbox is used to add or delete input or output addresses to the current visualization graph. The button “+5” at the top of the column adds unchecked inputs or outputs (up to 5 addresses per click).
- 8 **Input Address / Output Address** – hashes of addresses sending (input) or receiving (output) Bitcoins in the transaction. If you build the visualization by entities, you will see entities in bold instead of addresses.
- 9 **BTC/USD** – this column shows the net amount of BTC/USD (or other preferred fiat currency) sent and received in the current transaction. Green numbers represent a positive balance, and red a negative balance.

The **Delete** button  in the lower right hand corner deletes the transaction from the visualization.



For USDT transfers we show only:

1. Amount – the amount of USDT transferred
2. **Block Date** – date when the transaction was included on the blockchain.
3. **From** – the sender of the transaction
4. **Owner** – the owner of the address
5. **To** – the receiver of the transaction



8 Tracking

The Tracking tool enables you to determine the present location of bitcoins from a selected transaction or set of transactions. For example, tracking can reveal whether the bitcoins from the original transaction have reached a known entity, such as an Exchange or a Payment Processor, which in turn could permit identification of a bitcoin owner (usually with additional legal process). In any case, the results of the analysis are easily exported and presented in a convenient and auditable form.

There are four main parts of tracking:

- 1 Tracking setup
- 2 Table of tracking results
- 3 Tracking paths
- 4 Tracking list



8.1 Tracking Setup

Create new tracking

This tool allows you to discover where outputs from particular transactions are located. You can trace a route from the initial transaction to certain addresses. These addresses are either addresses with defined owner (Exchanges, Wallets, etc.) or addresses at which the funds have settled. In addition, you can view a graph of the funds flow.

You can add up to 10 transactions here.

Label

Currency

Bitcoin (BTC) ▾

Starting point

Minimum relative increase of address's balance ⓘ

3 %

Minimum sum received by an address ⓘ

0,1 BTC

Email

[Cancel](#) [Create](#)

To start the tracking, open the Tracking tab in the toolbar at the top of the page. Then complete the following steps:

- 1 **Enter label** – in this field you need to enter a custom name for reference. It is “Tracking ##” by default.
- 2 **Currency** – here you can select the currency you would like to track. For Bitcoin Blockchain there are 2 options: BTC and USDT.
- 3 **Starting point** – in this field you need to enter either a **transaction hash** or an **address hash**. Both of these two options result in the following:



- a) The **transaction hash** will automatically be added to the tracking list.
- b) If you insert a valid **address hash** into the field, the list of transactions for that address will be shown. You will need to mark the transaction or transactions that you want to add to the tracking list. Here you can select up to 10 transactions.

Starting point

bc1qgnerwnztlz7ne4seq0rdencmavl8xnm9ruuacf

Select transactions to tracking list

	Address	amount change	Date	Transaction	BTC
<input type="checkbox"/>	-363.53166641		Feb 21, 2020, 09:14 AM	7421f2...	363.53160677
<input type="checkbox"/>	363.53166641		Feb 21, 2020, 09:14 AM	200fd3...	365.25590092
<input checked="" type="checkbox"/>	-420.83726138		Feb 20, 2020, 09:34 PM	87883a...	420.8371989
<input checked="" type="checkbox"/>	420.83726138		Feb 20, 2020, 09:22 PM	6298bd...	421.03726138
<input checked="" type="checkbox"/>	-426.59453082		Feb 20, 2020, 04:25 PM	e296c3...	426.59446746
<input checked="" type="checkbox"/>	426.59453082		Feb 20, 2020, 04:13 PM	397bd4...	426.65403082
<input type="checkbox"/>	-426.65605015		Feb 20, 2020, 03:48 PM	654b6a...	426.65599335

< 1 of 49 >

Go

- 4 **Minimum relative increase of address's balance** – tracking will include only the addresses that receive more than the indicated share of their balance from the tracked transactions. It is 3% by default and may take any value between 0.1% and 20%. This function permits you to include only the addresses that have received a significant part of their balance from tracked funds.
- 5 **Minimum sum received by an address** – tracking will include only the addresses receiving a bitcoin amount higher than the indicated amount. It is 0.1 BTC by default and may take any value greater than 0.00000001 BTC
- 6 **Email** – optional field. If you enter an email address, you will receive an email notifying you when the tracking results are ready. The field is filled with your login email by default. That email will provide a link to the page with tracking results. If you do not supply an email address, the tracking results will be available in the



Tracking List. Tracking can be as short as a matter of seconds, and as long as a few hours for the most complex investigations.

- 7 **Create** button – when the complete list of transactions is formed, and the desired boxes checked, click on the “Create” bar to begin. You will be notified once tracking has been successfully set up.

8.2 Table of Tracking Results

You may get tracking results by using the link, provided while tracking setup or received by email, or open the tracking tab at the top of the page. Your previous tracking is saved there.

Tracking #jMnZyKmSBNSGQpe2

In the table below, we show only addresses that satisfy one of the following conditions:

1. Address received at least 3% of its balance from the tracked funds
2. Address received at least 0.1 BTC from the tracked funds

If the address belongs to an Exchange, Gambling or Mixing Service, we halt tracking its outgoing transactions.

Group by owner **All addresses**

Transactions list: efeabe2006...

Search by address, owner or service type

☐ Remove transitional addresses

May 27, 2019 02:29 PM UTC

Path	Length ↓	Address ↓	Settled, BTC ↓	In, BTC ↓	Balance, BTC ↓	Owner ↓	Service Type ↓	Risk score, % ↓	Mentions ↓
📍	21	36pCsTRRrQF7y...	21.08167446 BTC	21.08167446 BTC	342.00000546 BTC	Not defined	Not defined	17	no
📍	30+	1QHVSz4ALAF8...	17.03085068 BTC	17.03085068 BTC	8,149.99976776 BTC	Not defined	Not defined	18	no
📍	6	1i1cyFGyARm93...	5.79847852 BTC	5.79847852 BTC	8.19198745 BTC	Not defined	Not defined	30	no
📍	7	18BXeBcTpNrf2l...	5.79847016 BTC	5.79847016 BTC	27.79577252 BTC	Not defined	Not defined	26	no
📍	8	1MSsAtmzURBG...	3.99900289 BTC	3.99900289 BTC	35.55727434 BTC	Not defined	Not defined	34	no
📍	30+	346KeWZbf7EC3...	3.87044536 BTC	3.87044536 BTC	4 BTC	Not defined	Not defined	6	no

In the results table, we show the addresses that received some or all of the bitcoins involved in the tracked transaction. Only addresses that satisfy at least one of the conditions you have specified while tracking setup are shown. You may see these conditions at the top of the page.

If the address belongs to a known entity, we halt tracking there – no subsequent transactions are traced.

The data displayed on the page of tracking results is the following:

- 1 **Tracking label** – name of the tracking. It is the label you have entered while tracking setup, or the one assigned automatically.




- 2 **Transactions list** – the list of transactions to track you have entered during the tracking setup
- 3 **Search box** – you may enter any string in this box. After that the search is performed over values in the columns *address*, *owner* and *service type*. Only the rows which have at least one matching value (it may be a partial match) in the corresponding columns are displayed in the table.
- 4 **Group by owner/All addresses** – buttons for switching view options. Group by address is chosen by default.
- 5 **Remove transitional addresses** – if the checkbox is marked, only addresses with a settled amount are shown. Otherwise all addresses are displayed in the table.
- 6 **Date of last tracking** – the date of the last tracking update
- 7 **Update tracking** – click on this button requests an update of tracking results. This means that new transactions (written on the Blockchain after the tracking setup) are analyzed
- 8 **Export to CSV** – button for exporting tracking results in a .csv file. Clicking on it yields a drop-down with 2 options:
 - a Export results to CSV – the button for exporting the table with tracking results
 - b Export all paths to CSV – the button for exporting the tracking paths to all addresses available in tracking results. Each line contains the sequence of transaction and sent amount pairs

This table consists of 10 columns:

- 1 **Path** – Clicking on this icon results in scrolling the page to the section where the chain of transactions from one of the supplied transactions to the corresponding address is shown. Please see section [8.3](#) for a detailed explanation
- 2 **Length** – the number of transactions in the path



- 3 **Address** – the Bitcoin address that received money involved in the tracked transactions, it may be within a chain of transactions. You may copy the address hash by clicking on the copy button  to the right.
- 4 **Settled** – the number of tracked bitcoins that have settled in the given address
- 5 **In** – the total number of tracked bitcoins that the given address received
- 6 **Balance** – current address balance (at the moment of last tracking update)
- 7 **Owner** – the organization or person who is the owner of the address according to our database. There are two possibilities for this value:
 - a Not defined
 - b Actual name (or number). In this case, clicking on the name redirects to the corresponding Entity page.
- 8 **Service Type** – The type of the owner. There are 18 possible types described [above](#)
- 9 **Risk score** – The value of the risk score metric. See explanation of address Risk Score [above](#) for details.
- 10 **Mentions** – Links to the mentions of the given address on the web. There are two possibilities for value in this column:
 - a no
 - b Show(n), where n is the number of mentions of the current address



Group by ownerAll addresses

Transactions list: [effac6b9a9...](#) [17d2e22ca6...](#) [d801f6e481...](#) [b37e0c2537...](#)

☐ Remove transitional addresses Nov 15, 2019 06:13 AM UTC

Path	Length	Address	Settled, BTC	In, BTC	Owner	Service Type	Risk score, %	Mentions
	7	84 Addresses	102.45253343	102.92659887	Binance	Exchange With High ML Risk	50	Show (90)
	5	50 Addresses	91.36066018	92.21544627	Huobi	Exchange With Low ML Risk	0	Show (1)
	27	16 Addresses	42.55359988	42.55359988	548759889	Not defined	43	no
	9	1JcGYUnF6WLh...	34.15157978	34.15157978	Not defined	Not defined	78	no
	13	2 Addresses	33.15467744	68.29071829	556389495	Not defined	70	no
	9	1AnWBD9x6oJXK...	26.72989481	42.4596124	Not defined	Not defined	75	no
	25	137TXvqm9w...	24.41323029	24.41323029	Not defined	Not defined	56	no
	9	1G8bgUTShVu5Y...	21.83452198	21.83452198	Not defined	Not defined	76	no
	9	6 Addresses	19.30056153	59.92579084	543765321	Not defined	58	Show (1)
	13	3KhHG9QrwxY...	18.05937919	18.05937919	Not defined	Not defined	84	no

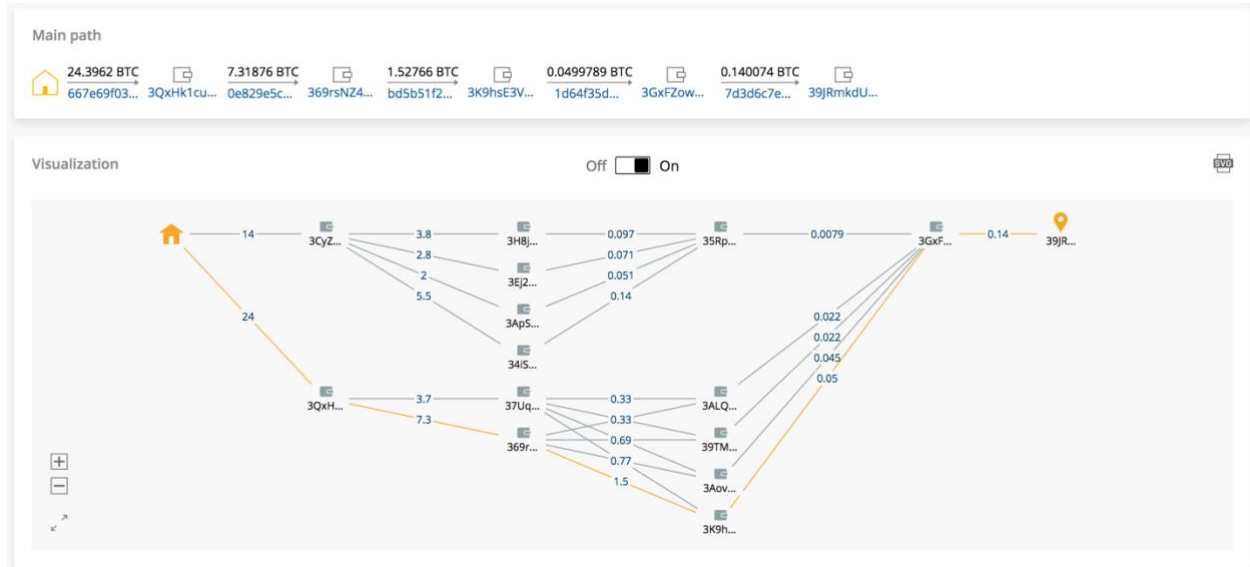
< 1 of 600 > Go


You may switch to the **Group by owner** view, and the addresses owned by the same owner will be combined in one row.

1. The length in this case is the minimum length of the path to any of the addresses owned by entity.
2. The number of addresses is displayed in the **Address** column. Clicking on it opens the pop-up with a list of addresses.
3. The amount settled is the total amount settled in entity addresses.
4. The incoming amount is the total amount of tracked funds received by entity addresses.



8.3 Tracking Paths



- 1 **Main path** – this sequential string of wallet addresses shows the bitcoin flow from one of the supplied transactions to the receiving address with the largest bitcoin amount. Clicking on the transaction hash under the arrow or the address hash under the wallet icon will redirect you to the corresponding transaction or address page.
- 2 **Visualization Off/On switch** – clicking on this will open or hide the visualization area. On the visualization, you can see all bitcoin flow paths from the supplied transactions to the receiving address. The numbers on the edges represent the transaction amounts. Clicking on the address hash under the wallet icon, or the number on the edge line redirects to the corresponding transaction or address page.
- 3 **Zoom visualization:**
 - click on “+/-” buttons to enlarge or reduce the visualization area
 - click on the button below (the white circle in the square) to fit the graph to the entire visualization area (width and height)
- 4 **Save as .SVG** button () – save and export the visualization graph as an .svg file.



8.4 Tracking List

Tracking List (114)							+ Add new tracking
Name	Currency	Addresses	Status	Last update	Created date	Created by	
New Investigation	BTC	8489	Ready to check	Nov 15, 2019 06:13:18 am	Jul 08, 2019 03:18:21 pm	AF	
mQFYcieS76gDQGLK	BTC	0	Ready to check	Oct 16, 2019 12:18:57 pm	Oct 16, 2019 12:18:49 pm	AF	
5V6eTOovcn4bHAZc	BTC	42699	Ready to check	Sep 20, 2019 11:38:16 am	Sep 20, 2019 11:35:39 am	AF	
Tracking money	BTC	70582	Ready to check	Sep 17, 2019 01:19:45 pm	Sep 17, 2019 01:15:39 pm	AF	
Research	BTC	44633	Ready to check	Sep 06, 2019 10:40:27 am	Aug 29, 2019 09:13:44 am	AF	

< 1 of 23 > Go


When you open the “Tracking” tab you can see the list of your previous trackings in the form of a table with next columns:

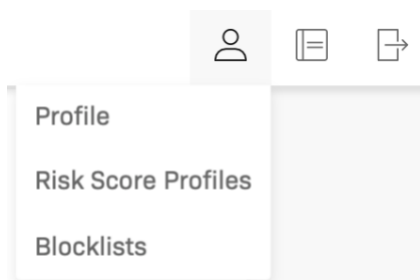
1. **Name** – the tracking name specified while tracking setup
2. **Currency** – the currency which was tracked. It can be BTC or USDT for Bitcoin Blockchain.
3. **Addresses** – the number of addresses that received some or all bitcoins involved in the tracked transaction.
4. **Status** – the tracking status. It may be:
 - a. **Ready to check** – the tracking was calculated
 - b. **Pending** – the tracking is being calculated for the first time
 - c. **Updating** – the tracking is being updated
5. **Last update** – the date when tracking was last updated
6. **Created date** – the date when the tracking was created
7. **Created by** – the creator of the tracking (available only for corporate accounts)

The total number of trackings is displayed in brackets. You can start a new tracking by clicking on the “+” icon in the top right-hand corner. You can edit the label by clicking on the icon which appears upon hover over the label or delete the tracking by clicking on the icon in the right-hand column.





9 User Area

The User Area tab  at the top of the page contains links to your Profile, Risk Score Profiles and Blocklists.



9.1 Profile

In your profile you'll find info about your UI license and API license if you have one. To open your profile page, press the Profile icon  in the upper right hand corner, and in the pop-up menu choose the Profile tab.

Profile Details Name Test User Email example@email.com Change password Theme <div>Light</div>	UI License Details License Name Trial License ID ZqxxxxxxxxRBR Expiration Date February 03, 2021	API Package Package name 22,000 calls License ID 0bxxxxxxxxSoU Expiration Date February 02, 2021 Total requests 22000 Remaining requests 21866 Packages history <input type="checkbox"/> Enable extra requests ⓘ	API key <div>FLm6eTOxhVXOWmnyeBrOnpJSPVavnzj</div> <div>Regenerate API key</div>
Currency Select the fiat currency for all fiat/crypto switchers throughout the product. Fiat currency <div>USD</div>	Slack settings  Select Slack channels to get notifications from Cases and Transfers. Notifications from Cases #slack_integration ⚙️ 🔗 Notifications from Monitor #slack_integration ⚙️ 🔗		

The page is divided into several blocks:

1. Profile details
2. UI license details
3. API details (field appears only if you have an API license)
4. Currency
5. Slack settings



9.1.1 Profile Details

Profile Details

Name Test User

Email example@email.com

[Change password](#)

Theme Light

The Profile details provide the following information:

1. Name – the name you entered while creating the account. Double-clicking on the name or clicking on the edit icon allows you to edit it.
2. Email – the email used for registration
3. Change password button – clicking on this button takes you to the page for changing the password:

Change Password Cancel

Old password

New password

Confirm password

Here you have to enter your current password, new password and then confirm it.

The password must be longer than 6 symbols and not longer than 256 symbols. It is stored using the SHA256 hash with salt.

After the new password is submitted, you will be able to press the button **Submit** to save the changes. After the password is changed you will receive an email notification.

If you do not want to change the password, press the **Cancel** button in the upper right hand corner and you will return to the profile page.

4. Theme – here you can select the theme, which will apply to the interface. You may select light, dark or system theme (it will adjust to system preferences automatically).



9.1.2 UI License Details

UI License Details
License Name Crystal Expert
License ID L24EsErP7KtxF5
Expiration Date July 31, 2021

In this block you may see your UI license details:

1. License name
2. License ID – unique identifier of your UI license
3. Expiration date. If it has passed, you will see the line **“Your license has expired”** below.

9.1.3 API License Details

API Package	Future API Package	API key
Package name API Package License ID 01k8kX4e3ebrgrnf Expiration Date December 24, 2019 Total requests 7 Remaining requests 7 Packages history <input type="checkbox"/> Enable extra requests ⓘ	Package name Api Package 2 Total requests 20	<div>B45f744hZWRBH9KxwCngiHoVjXvXvwf</div> <div>Regenerate API key</div>

The block API license details appears only if you have an API license. Here you may see details of your API packages and your API key.

9.1.3.1 Current API package

This column provides details of your active API package. Here you may see the following lines:

1. Package name – the name of your active package
2. License ID – the unique license identifier
3. Expiration date – the date when the current package expires. After this date you will not be able to use remaining requests or any extra requests
4. Total requests – the number of requests in the package



5. Remaining requests – the number of requests left
6. Packages history button – clicking on this button yields a pop-up, where you may see your previous, current and future packages

API packages history



License Name	Total requests	Used requests	Start date	Exp. date	Status
Lite	100	4	Aug 09, 2018	Aug 09, 2018	Expired
Api 1	10	2	Aug 10, 2018	Aug 20, 2018	Expired
Test Package	1,000	7	Aug 21, 2018	Nov 29, 2018	Active
Lite	100				not activated
Pack it	15				not activated

It has next columns:

- License name – the name of the package
 - Total requests – the number of requests in the package
 - Used requests – the number of requests used, this includes extra requests as well.
 - Start date – the date when the package was activated
 - Exp. date – expiry date
 - Status – this field indicates whether this is your previous, current or future package. Active package is highlighted in bold.
7. Enable extra requests checkbox. When extra requests are activated, you may continue using Crystal API even if you have no requests left. Extra requests may be used until your API package expires.

When you run out of requests, you will receive a pop-up regarding extra requests, and they may be activated by marking the checkbox and clicking on the button “Apply”



Extra API requests

×

You have run out of API requests, but you may enable extra requests by marking the checkbox below. They may be used until your API package expires. The price for each extra request is specified in your contract.

☐ Enable extra requests

Cancel

Apply

The number of extra requests used will be displayed below.

Remaining requests: 0
You have no API requests left. Please [contact us](#).
☒ Enable extra requests ⓘ
Extra requests: 1

9.1.3.2 Future API package

Future API Package

Package name **Api Package 2**

Total requests 20

Column appears if you have a future package, which hasn't been activated. Here you may see its name and number of requests.

9.1.3.3 API key

API key

B45f744hZWRBH9KxwCngiHoVjXvXvwf


Regenerate API key

In this column you may see your API key (key will be copied into buffer upon clicking on it) and a button "Regenerate API key" for generating a new API key.




9.1.4 Currency

Currency
Select the fiat currency for all fiat/crypto switchers throughout the product.
Fiat currency

USD 

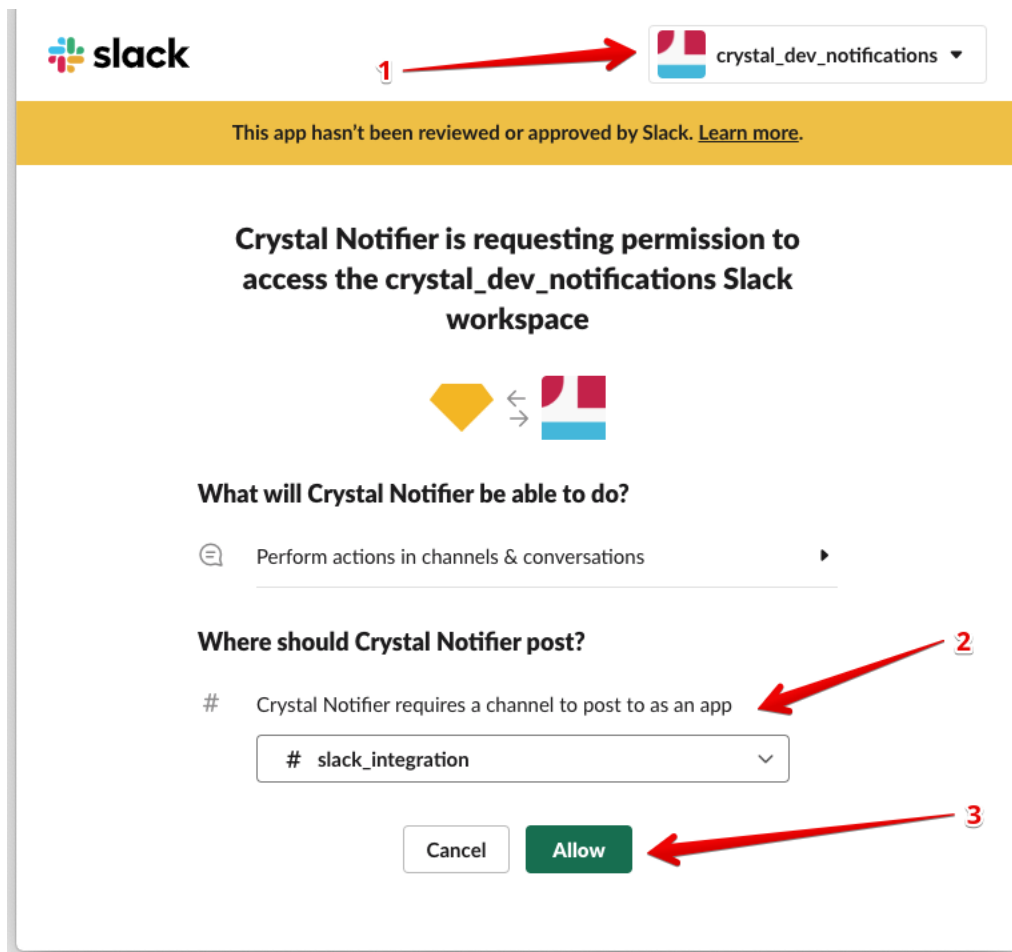
In this field you may select the preferred fiat currency (USD and EUR are currently available). The fiat amounts throughout the service will be displayed in this currency. For selecting the currency click on the corresponding field.

9.1.5 Slack Settings

Slack settings 
Select Slack channels to get notifications from Cases and Transfers.
Notifications from Cases
[Choose channel](#)
Notifications from Monitor
[Choose channel](#)

In this section you can set up the Slack integration. It will later allow you to receive activity notifications from the Cases and transfer alerts from the Monitor in a dedicated Slack channel.

You can set up integration by clicking on the button “Choose channel”. After that you are redirected to the Slack pop-up.



8. Select the workspace where you would like to receive the notifications
9. Select the channel where you would like to receive notifications
10. Click on the button “Allow” to add the integration

After that the integration with Crystal Notifier will be added to the channel. Go to [Transfer Flagging](#) section to enable Slack notifications in Monitor and to the [Notification settings](#) to enable the notifications for cases.

9.2 Risk Score Profiles

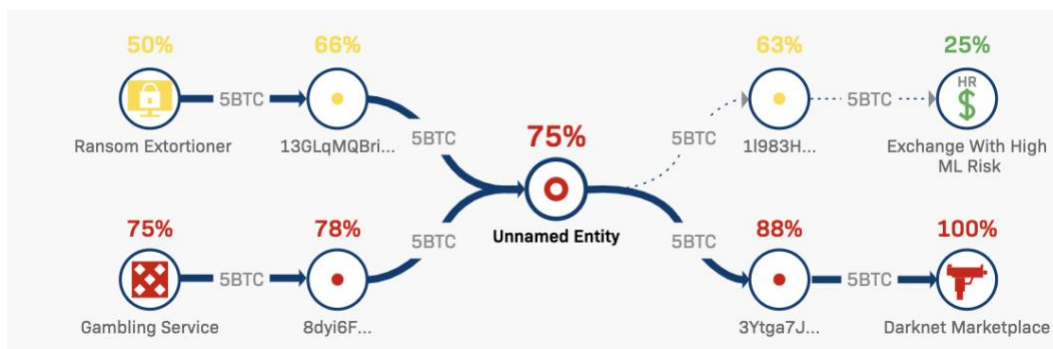
You may configure the way the Risk Score is propagated to all addresses in our service. Each address has three sets of signals (degree of influence of all entity types on the address):

- Non-directional signals – they are calculated based on the weighted graph of transactions between clusters, where the weight of the edge is the amount sent and received between two clusters



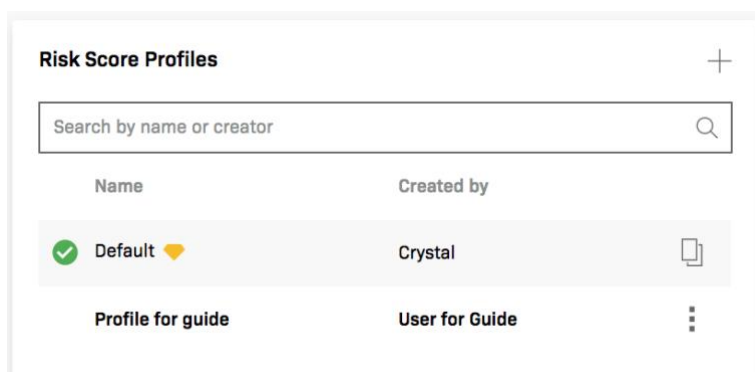
- Sending signals – they are calculated based on the weighted directed graph of transactions between clusters, where the edges of the graph represent the direction of funds flow and the weight is the amount transferred. We consider only sending direction for calculating the signals
- Receiving signals – the graph is the same as for sending signals, but only receiving signals are considered during Risk Score calculation.

With help of Risk Score parameters in your profile you may assign the Risk Score to each entity type based on your requirements and regulations of your organization. You may also specify, which signals should have higher influence on the Risk Score and which should have lower one.



With help of Risk Score guide you may test how different settings influence the Risk Score of unknown entity. The guide can be accessed by clicking on the button “Risk Score Guide” in the upper right corner.

9.2.1 The list of profiles



The list of existing profiles is available in the left section of the page. Each profile contains:

- Name – the name of the profile



- Created by – the name of the creator of the profile
- Copy (📄) – button for copying the profile, available for default profile

Clicking on three dots to the right yields a pop up with possible actions (copy or delete profile).

Default profile was created by Crystal team. You may always switch to default profile, so it cannot be deleted and edited. If you need to edit the profile, you have to copy it first, and then edit the copy.

You may create new profile by clicking on the button “+” in the upper right corner of the section.

Create a new profile ×

Create a new Risk Score profile with your own settings

Profile name

Enter profile name

Description

Enter profile description

Cancel Create

After that enter the profile name and description (optional) in corresponding fields and click on the “Create” button in the lower right corner. When new profile is created, it will have the same parameters as default profile, so after that you can edit the parameters to fit your requirements.



9.2.2 Risk Score profile

Profile for guide

Profile created for guide

Profile history





Apply Profile

Entity type	Risk Score	Receiving direct...	Sending direction	Reset all
ATM	50%	High	High	
Darknet Marketplace	10%	Medium	Medium	
Darknet Service	100%	Medium	Medium	
Exchange With High ML Risk	50%	High	High	
Exchange With Low ML Risk	0%	High	High	
Exchange With Moderate Risk	50%	High	High	
Exchange With Very High M...	50%	High	High	
Fraudulent Exchange	75%	High	High	
Gambling	75%	High	High	
Illegal Service	98%	High	High	
Miner	27%	High	High	
Mixing Service	100%	Low	Medium	
Online Marketplace	15%	High	High	
Online Wallet	25%	High	High	
Payment Processor	1%	Low	High	
Ransom	100%	High	High	
Scam	100%	High	High	
Stolen Coins	100%	High	High	



The Risk Score profile is in the right section of the page. You may see the details of each profile by clicking on its name in the list of profiles. This section may be divided into several parts:

1. Profile name – the name of the case (Sample Profile on the image above). It may be edited by clicking on the “edit” (✎) button.
2. Profile description – the description of the profile. It may be edited by clicking on the “edit” (✎) button. Below you may see the profile creator.
3. Profile settings – list of entity types, their Risk Score and influence on the counterparties.
4. Profile history – the button, clicking on which reveals the history of profile edits:

Profile for guide History			Back to Profile
Case	Saved by	Date	
Current (v 4)	 Admin for Guide	Jun 30, 2020 01:09:31 pm	
v 3	 Admin for Guide	Jun 30, 2020 01:09:22 pm	view
v 2	 Admin for Guide	Jun 30, 2020 01:07:47 pm	view
v 1	 Admin for Guide	Jan 30, 2020 03:03:58 pm	view

The table contains 3 columns:

- Case – the version of profile history
- Saved by – the user who has saved the changes
- Date – the date of the change


Clicking on the button “view” reveals the corresponding version of the Risk Score profile.

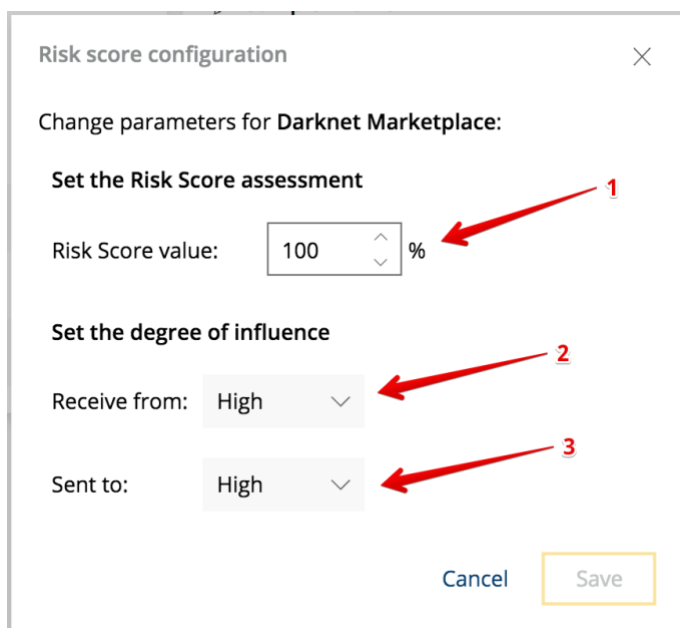
Profile Settings are provided in the form of a table, which contains columns:

1. Entity type – the list of entity types
2. Risk Score – the Risk Score assigned to the type



3. Receiving direction – the strength of influence of this type on receivers. There are 4 options:
 - a. None
 - b. Low
 - c. Medium
 - d. High
4. Sending direction – the strength of influence of this entity type on senders. There are 4 options:
 - a. None
 - b. Low
 - c. Medium
 - d. High
5. Edit – button for editing the parameters of the entity type

Clicking on the edit () button yields a pop-up:



The image shows a 'Risk score configuration' pop-up window. It has a title bar with a close button (X). The main content area is titled 'Change parameters for Darknet Marketplace:'. Below this, there are three sections. The first section is 'Set the Risk Score assessment', which contains a 'Risk Score value:' label followed by a text input field containing '100' and a percentage sign '%'. A red arrow labeled '1' points to the input field. The second section is 'Set the degree of influence', which contains two dropdown menus. The first dropdown is labeled 'Receive from:' and has 'High' selected. A red arrow labeled '2' points to this dropdown. The second dropdown is labeled 'Sent to:' and also has 'High' selected. A red arrow labeled '3' points to this dropdown. At the bottom right of the window, there are two buttons: 'Cancel' and 'Save'.

Here you may select:

1. The Risk Score of entity type
2. Strength of influence on receivers
3. Strength of influence on senders



You may apply the profile by clicking on the button “Apply Profile” in the upper right corner of the section and it will be used for calculating the Risk Score everywhere throughout the service. You may reset the profile settings to custom parameters created by Crystal team by clicking on the “Reset all” button.

Risk Score Guide is available by clicking on the blue button in the lower right corner.

9.3 Blocklists

The tab contains lists of addresses of all available currencies, that are considered to be risky to interact with. There are two lists:


- Custom blocklist – the list created by user.
- Crystal blocklist – the list created by Crystal team. It cannot be edited.

Blocklisted addresses will be highlighted on the address, transaction and entity page. Also, you may set up alerts for interaction with blocklisted addresses.

9.3.1 Custom blocklist



Custom blocklist							Crystal blocklist
Search by address, tag or owner							+ Add address
<input type="checkbox"/>	Address	Active on	Owner	Mentions	Description	Date added +	
<input type="checkbox"/>	1GxcnXdsgEjVnSzBmapuSQ38RB8... hacker	BCH, BTC	muskbtc.us	1	hacker	Jul 16, 2020	
<input type="checkbox"/>	16acVRG2RdMDSmdVuve1N1bYBF...	BCH, BTC	Not defined	1	Ransom extortioner	Dec 05, 2019	
<input type="checkbox"/>	19ji666fbDxjZee2VzJcANtsKf22nT2... bch entity	BCH	308524135	0	BCH entity	Dec 05, 2019	
<input type="checkbox"/>	1FhCPHniJTt9AJLmj93MvHoDoMQ...	BCH	302125155	0	-	Dec 05, 2019	
<input type="checkbox"/>	1PQtflDbCzBLDP9R9CCAWkHjBZybn...	BCH	301663416	0	-	Dec 05, 2019	

The page contains the list of addresses, which you have added to the blocklist. It has columns:


1. Address – the address hash. If the address is valid for several blockchains and you click on address hash, you will have to select the currency in the drop-down to open the address page. Below you may see the tags added to the address. Crystal tags are highlighted with red and your tags are blue. You can add new tags by clicking on the button . After that the field appears, where you can type new tags or delete the existing ones.



Each tag may be no longer than 30 symbols. Tags may be separated by double clicking the space or by clicking the Enter button.

2. Active on – here we specify the blockchain, where the address was active.
3. Owner – the address owner.
4. Mentions – the number of mentions on the web. Clicking on the icon  yields a drop-down with the links to the mentions.
5. Description – the address description entered while adding the address. You may edit or add description by clicking on the button , that appears upon hover over the description field.
6. Date added – the date when the address was added.

Clicking on the button  in the right column deletes the address from blocklist.

Alternatively, you may select the addresses that you want to delete by marking the checkboxes in the left column. After that you may delete the selected addresses by clicking on the  button.

You may search by owner, address hash or tag using the search bar above. The substring search is performed.

Crystal tags may be deleted by clicking on the “x” button in the upper right corner of the tag.



You can add new addresses to the blocklist using the button “+ Add address” in the upper right corner.

You have to specify in the pop-up:

1. Address – address hash
2. Description – address description; please avoid disclosing any sensitive data like real names, phone numbers, email addresses, etc.
3. Tags – address tags. Each tag may be no longer than 30 symbols. Tags may be separated by double space or by clicking “Enter” button.

Alternatively you may upload a CSV file, where you specify address and its comma-separated tags in each line.



9.3.2 Crystal blocklist

Custom blocklist					
Crystal blocklist					
Crystal blocklist contains the addresses that we consider risky to transact with. Currently there are 6 possible tags:					
Abuse report – the addresses that have abuse reports on the web					
Ransom extortioner – the addresses used by blackmailers to demand payment					
OFAC sanctions – the addresses sanctioned by the Office of Foreign Asset Control (OFAC)					
DOJ sanctions – the addresses sanctioned by the United States Department of Justice (DOJ)					
Scam , Gainbitcoin scam – the addresses that have been reported as a scam					
Search by address, tag or owner					
Address	Active on	Owner	Mentions	Description	Date added
1P1Y5SRRLCL3rnGw46XZF8geYCV... Abuse report	-	Not defined	1	-	Oct 09, 2020
13Lf7NhmTnuXJv7yCH7a6UUPz4k... Abuse report	-	Not defined	1	-	Oct 09, 2020
19biByNmCFHbwFAWC3TAQbCvGL... Abuse report	-	Not defined	1	-	Oct 09, 2020

Crystal blocklist contains the list of addresses, that we consider dangerous to interact with.

Currently there are three possible tags:

- Abuse report – the addresses that have at least 20 abuse reports on the web
- Ransom extortioner – the addresses used by blackmailers to demand payment
- OFAC sanctions – the addresses sanctioned by the Office of Foreign Asset Control (OFAC)
- DOJ sanctions – the addresses sanctioned by the United States Department of Justice (DOJ)
- Scam, Gainbitcoin scam – the address has been reported as a scam

If an address has your tags as well, they will be also displayed in the list.

The table is the same as in [Custom blocklist](#), but you cannot edit it, add or delete the addresses.



10 Error Messages and Problem Resolution

If you see “404 Page not found” on your screen, please check that you entered the correct URL.

If the URL is correct, please contact Crystal administrator / support service.



11 Glossary

In alphabetical order:

1. **Average per day** is the average amount of funds transferred between two entities. It is calculated as the sum of all transactions divided by the number of days on which transactions between the two entities took place.
2. **Average txs per day** (between two entities) is a metric that indicates the total number of transactions between two entities, divided by the number of days on which transactions took place.
3. **Bitcoin address**, or simply **address**, is an identifier that represents a possible destination for a bitcoin payment. It may be:
 - A 26-35 alphanumeric characters string, beginning with the number **1** or **3**.
 - A 42 or 62 alphanumeric characters string, beginning with **bc1**Addresses can be generated at no cost to any user of bitcoin. It is also possible to get a bitcoin address using an account at an exchange or online wallet service.
4. **Debit/Credit** of address is the balance change of the address in a transaction. It is calculated as the sum of all output values (bitcoins received) minus sum of all input values (bitcoins sent) that belong to the current address.
5. **External transaction** of an entity is a transaction where at least one of the inputs or outputs belongs to another entity.
6. **Inner transaction** of an entity is a transaction where all inputs and outputs pertain to addresses owned by this entity.
7. **Risk Score (of address or entity)** is a metric that helps to estimate the chance that an address (or entity or transaction) is related to illegal activity. In addition, we provide reasons for assigning the higher or lower risk scores. The values can vary from 0% to 100%, where 0% means that this address (or entity or transaction) is safe, and 100% means that this address is involved in illegal activity. If an address is just created, it has neutral risk score that is equal to 50%. If an address belongs to an entity, its risk score is equal to the entity's risk score.



8. **Risk Score (of transaction)** is the highest risk score of the addresses, which participated in the transaction.
9. **Transaction** is a transfer of bitcoin value that is broadcast to the network and grouped into blocks. A transaction typically references previous transaction outputs as new transaction inputs and dedicates all input bitcoin values to new outputs.
10. **UTXO**, or unspent transaction output – a transaction output which has not been spent yet. They play important role in transactions verification. A transaction is considered to be valid only if all its inputs belong to the UTXO set.