Quickstart: Swapping USDC Across Blockchains

Use Circle APIs to swap USDC seamlessly from one supported chain to another.Suggest Edits

Circle APIs enable you to easily transfer USDC funds from one blockchain to another. Circle uses a "private bridge" approach to act as a counter-party to the swap operation. This means that funds being swapped are temporarily kept in Circle's custody. This process is fully automated and involves no human intervention, so you don't need to manually interact with both blockchains as usual.

In this example, we'll transfer USDC funds from theEthereum blockchain to theAlgorand blockchain. However, it makes no difference whichsupported chains you decide to use or in which order.

- Do NOT send real / live USDC to addresses generated in the sandbox environment, as your funds might be permanently lost.

1. Get a sandbox API key

If you don't yet have an API key in the sandbox environment, take a few moments tocreate a sandbox account . (Learn more about Circle's sandbox and APIshere .

Get an API key

.sandbox-button { width: 250px; margin: auto; }

2. Receive USDC from the Ethereum blockchain

- You can transfer USDC from an external wallet on any of thesupported chains
- into a Circle wallet you control.

Start by transferring USDC from an externalEthereum wallet.

Create a Wallet

First, use the command below to create a new wallet to receive the external funds via thecreate wallet endpoint . Be sure to create your ownidempotency key .

Terminal

Replace {YOUR_API_KEY} with your API key

curl -H 'Content-type: application/json' \ -H "Authorization: Bearer {YOUR_API_KEY}" \ -X POST https://api-sandbox.circle.com/v1/wallets \ --data '{"idempotencyKey": "4ddef365-f2fc-4a56-95f5-a214c84ba8f4"}' The response should look like this:

Create wallet response { "data":{ "walletId":"1000005062", "entityId":"7cbdedb1-d526-46b4-af12-4162a002eb9c", "type":"end_user_wallet", "balances":[] } }

Create a Deposit Address

- Because wallets are not tied to specific blockchains, you can generate deposit addresses for wallets, allowing you to receive transfers from different chains.

To create a newEthereum deposit address, use thegenerate new address endpoint . To ensure the API generates a USDC deposit address for the Ethereum blockchain, specify the origin currency (USD) and chain (ETH) attributes. Change the chain attribute to create deposit addresses on othersupported chains .

Create a deposit address for your wallet using the command below.

Terminal

Replace {YOUR_API_KEY} with your API key

Replace {WALLET_ID} with the wallet id from the previous step

curl -H 'Accept: application/json' \ -H 'content-type: application/json' \ -H "Authorization: Bearer {YOUR_API_KEY}" \ -X POST --url https://api-sandbox.circle.com/v1/wallets{WALLET_ID}/addresses \ --data '{"idempotencyKey": "ed9a7b3b-b45f-4262-a8aa-8dfee5a4f31b", "currency": "USD", "chain": "ETH"}' The response should look like this:

Create address response { "data":{ "address":"0x618b24211048c6ec8b29e8129c2bbc5cf80c9f0b", "currency":"USD", "chain":"ETH" } }

addressTag for Stellar

For blockchains that support destination tags or memos, you'll see an additional addressTag attribute returned with the deposit address. When present, this value is required when depositing USDC.

Transfer USDC

Circle's sandbox environment is connected to the Ethereum Sepolia testing network, so you can send USDC from a Sepolia wallet into your Circle hosted wallet.

Use supported chains and currencies only

Transferring unsupported currencies using the Accounts API may result in a permanent loss of funds. You can verify the token contract details for supported currencieshere . Now transfer the funds from the Ethereum blockchain. Circle'ssandbox environment is connected to theEthereum Sepolia testing network , so you can send USDC from a Sepolia wallet into your Circle hosted wallet.

- VisitUSDC on Testing Networks
- to learn more about support on other blockchains.

If you need USDC to send, you can obtain some USDC on the Sepolia network for testing by using aUSDC faucet . Go tofaucet.circle.com and make sure you choose theSepolia button. Paste the deposit (wallet) address you created above and hit Submit.

- Be very careful not to miss any characters in the deposit address.

Monitor the transfer on the blockchain by using the Sepolia Etherscan link provided by the faucet.

Alternately, you can obtain USDC byfunding a test wallet with a paymentand then transferring USDC out of that wallet.

3. Check the Status of the Transfer

Use theretrieve transfers endpoint (as in the command below) to find transfers that are routed to to the wallet you created earlier.

Terminal

Replace {YOUR_API_KEY} with your API key

Replace {WALLET_ID} with the wallet id from the previous step

curl -H "Authorization: Bearer {YOUR_API_KEY}" \ -X GET https://api-sandbox.circle.com/v1/transfers?destinationWalletId={WALLET_ID} The response should look like this:

Get wallet transfers response { "data":[{ "id":"9f6362f4-a3d2-396e-a1eb-b628ec3a29b2", "source":{ "type":"blockchain", "chain":"ETH" }, "destination":{ "type":"wallet", "id":"1000005062", "address":"0x618b24211048c6ec8b29e8129c2bbc5cf80c9f0b" }, "amount":{ "amount":"1.00", "currency":"USD" },

"transactionHash":"0xbd3085c3faed933f4093a7b93419ca934fa09d62fe62115d4b3f38a4a94e3a89", "status":"running", "createDate":"2020-09-21T18:50:06.202Z" }] } You can look up the transactionHash onEtherscan's tracker on Sepolia .

At first, the status is shown as running because the transaction has been recently initiated. In a few minutes, once the required 30 block confirmations have been completed, the status changes to complete. At that point Circle credits the receiving wallet with the value of the transfer.

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- Refer to ourconfirmations guide
- to learn about block confirmation requirements for different chains.

You have successfully received USDC from the Ethereum blockchain using the Circle Wallets API.

4. Send USDC to the Algorand blockchain

After the receiving portion of the swap settles, you can initiate the second portion: sending USDC funds to an address on a different blockchain using theCreate a transfer endpoint.

- Make sure you have an Algorand blockchain address to send to as the
- destination
- .
- Circle'ssandbox environment
- is connected to theAlgorand TestNet
- , so the destination blockchain address has to be a valid Algorand TestNet address.

Algorand Wallet TestNet Account

Download theAlgorand Wallet . Under Settings > Node Settings, select TestNet. From the main wallet screen, note your account address. Your Algorand TestNet wallet address should look like this: BL27TI3CYMFX5URLYNBJJZGV4ABRYJJHBMLRR5OYSVPUVDIUAF66IR4COA .

Opt-in to Accept the USDC Asset

Due toAlgorand Standard Assets spam protection, you must opt in to accept new assets such as USDC. To do so, select Add New Asset, then search for "USDC" (the USDC asset ID on Algorand TestNet is10458941 `).

ALGO Dispenser (Faucet)

To complete the opt-in, you must pay for a transaction. Obtain TestNet ALGO tokens on from theTestNet ALGO Dispenser (Faucet) . To send funds to the external Algorand wallet, use thecreate wallet transfer endpoint . Specify the currency and chain attributes that match the destination blockchain. Create a USDC transfer to an Algorand blockchain address by using the command below.

Terminal

Replace {YOUR_API_KEY} with your API key

Replace {YOUR_WALLET_ID} with your master wallet id

curl -H 'Accept: application/json' \ -H 'Content-type: application/json' \ -H "Authorization: Bearer {YOUR_API_KEY}" \ -X POST https://api-sandbox.circle.com/v1/transfers \ --data '{"idempotencyKey": "fbba9d81-72f1-4bf8-97c8-99f1f28995e2", "source": {"type": "wallet", "id": "{YOUR_WALLET_ID}"}, "destination": {"type": "blockchain", "address": "BL27TI3CYMFX5URLYNBJJZGV4ABRYJJHBMLRR5OYSVPUVDIUAF66IR4COA", "chain": "ALGO"}, "amount": {"amount": "1.00", "currency": "USD"}}'

addressTag for Stellar

When you create a transfer on chains like Stellar that support destination tags or memos, you can use the optional addressTag parameter to make sure your send is received correctly.

Flow Vaults

Prior to sending USDC to a wallet on the Flow network, make sure the wallet address is set up to receive a USDC transfer. In most cases, this involves selecting an option in the wallet's UI to "add USDC." SeeFlow documentation for details. The response should look like this:

Create wallet transfer response { "data":{ "id":"9dd86dfe-72e8-4182-9573-04196cc7d6cb", "source":{ "type":"wallet", "id":"1000005062" }, "destination":{ "type":"blockchain", "address":"BL27TI3CYMFX5URLYNBJJZGV4ABRYJJHBMLRR5OYSVPUVDIUAF66IR4COA", "chain":"ALGO" }, "amount": { "amount":"1.00", "currency":"USD" }, "status":"pending", "createDate":"2020-09-21T20:31:39.507Z" } }

5. Check the Status of the Transfer

Use theget transfer endpoint to retrieve details about the status of the transaction. You can use it as shown in the command below.

Terminal

Replace {YOUR_API_KEY} with your API key

Replace {TRANSFER_ID} with the id of the transfer you created earlier

curl -H "Authorization: Bearer {YOUR_API_KEY}" \ -X GET https://api-sandbox.circle.com/v1/transfers{TRANSFER_ID} The response should look like this:

Get wallet transfer response { "data":{ "id":"9dd86dfe-72e8-4182-9573-04196cc7d6cb", "source":{ "type":"wallet", "id":"1000005062" }, "destination":{ "type":"blockchain", "address":"BL27TI3CYMFX5URLYNBJJZGV4ABRYJJHBMLRR5OYSVPUVDIUAF66IR4COA", "chain":"ALGO" }, "amount": { "amount":"1.00", "currency":"USD" }, "transactionHash":"PS74XNN7GHNQTVEV52ZMYHR3CWTKLJUFZ5U3DD43P5WO6GO5VDLQ", "status":"complete", "createDate":"2020-09-23T21:35:03.563Z" } } Algorand transactions confirm in under 5 seconds, so your transfer status should quickly change to complete . SeeBlockchain Confirmations to find transaction times for all chains.

6. Ready for the next step?

After experimenting with our APIs, you'll want to start building test integrations in sandbox prior to moving into production. Start by applying for aapplying for a Circle Mint account . We'll be happy to walk you through the next steps. Updatedabout 2 months ago * Table of Contents * * 1. Get a sandbox API key * * 2. Receive USDC from the Ethereum blockchain* * * Create a Wallet * * * Create a Deposit Address * * * Transfer USDC * * 3. Check the Status of the Transfer* * 4. Send USDC to the Algorand blockchain * * 5. Check the Status of the Transfer* * 6. Ready for the next step?