Emergency Shutdown (ES) CLI

Level: Intermediate

Estimated-Time: 30 minutes

Description

Emergency Shutdown (ES) is the last resort to protect the Maker Protocol against a serious threat, such as but not limited to governance attacks, long-term market irrationality, hacks and security breaches. The Emergency Shutdown Module (ESM) is responsible for coordinating emergency shutdown, the process used to gracefully shutdown the Maker Protocol and properly allocate collateral to both Vault users and Dai holders. This guide outlines the steps and procedures necessary to check, interact with and trigger the ESM.

Learning Objectives: To be able to Check, Deposit and Trigger Emergency Shutdown.

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1. Installation

In order to interface with the Ethereum blockchain, the user needs to install seth, a command line tool as part of the app. Tools toolset. We also provide further installation information here. Once the user has installed and configured to use the main Ethereum network and the address which holds their MKR they can query contract balances, approvals and transfers.

1. Contract Address Setup

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Copy * The user will require the following contract addresses; MCD_END and MCD_ESM accessible at Changelog.makerdao.com as well as the Maker contract address, to be added in place of MKR_ADR below, which can be verified on Etherscan. * These should be setup in the following manner:

 $Copy\ export\ MCD_END=0xab14d3ce3f733cacb76ec2abe7d2fcb00c99f3d5\ export\ MCD_ESM=0x0581a0abe32aae9b5f0f68defab77c6759100085\ export\ MKR_ADR=export\ MY_ADR=$

example values for depositing into the ESM

 $export\ TRIAL_AMOUNT = (seth\ --to-uint 256\ (seth\ --to-wei\ 0.1\ eth))\ export\ REMAINING_AMOUNT = (seth\ --to-uint 256\ (seth\ --to-wei\ 50000\ eth))\ export\ REMAINING_AMOUNT = (seth\$

1. Commands and Explanations

Checking your MKR balance

Copy seth --from-wei (seth call MKR_ADR "balanceOf(address)" MY_ADR | seth --to-dec)

100000.00000000000000000

•••

Checking and setting your MKR approval

In order to execute the contract functions of the MKR token it is required that approvals be set on the token. The first step is to check if the ESM contract is allowed to withdraw from your address:

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If the ESM contract is not allowed to withdraw from your address, the following can be used to set the allowance on the MKR token. This will approve the ESM to withdraw from the user's wallet:

Copy seth send MKR_ADR "approve(address)" MCD_ESM

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Following which we again check to confirm that the ESM is allowed to withdraw from the user's account. This action will return uint256 to confirm the allowance to withdraw.

...

Copy seth call MKR_ADR "allowance(address,address)" MY_ADR MCD_ESM

...

Reference contract information

Checking the live flag

Live contracts havelive = 1, indicating that the system is running normally. Thus whencage() is invoked, it sets the flag to 0.

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Copy seth call MCD_END "live()" | seth --to-dec

1 -> system is running normally

...

Checking the ESM threshold

In order to check themin value, you can call:

...

Copy seth --from-wei (seth call MCD_ESM "min()" | seth --to-dec)

50000.00000000000000000

•••

Deposit a small amount (0.1 MKR) into the ESM

To deposit a small amount of MKR into the esm contract to test correct deposit function, we use the join function and specify a small amount.

...

Copy seth send MCD_ESM "join(uint256)" TRIAL_AMOUNT

•••

Checking how much MKR is in the ESM

To check for the total amount of MKR that has been added to the ESM we call the Sum() function

•••

Copy seth --from-wei (seth call MCD_ESM "Sum()" | seth --to-dec)

50050.000000000000000000

Checking how much MKR you have included in the ESM

To check how much MKR you have included in the ESM we can call lowercasesum() with the user address as an argument:

...

Copy seth --from-wei (seth call MCD_ESM "sum(address)" MY_ADR | seth --to-dec)

50.00000000000000000

...

Depositing e.g. 50,000 MKR into the ESM

To deposit MKR into the esm contract we use thejoin function and specify the amount.

...

Copy seth send MCD_ESM "join(uint256)" REMAINING_AMOUNT

...

Please specify the amount of MKR that you intend to deposit into the ESM.

Checking whether the ESM has been triggered

To validate that the Emergency Shutdown has been triggered, thefired() function can be called which will return a boolean.

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Copy seth call MCD_ESM "fired()" | seth --to-dec

0 -> ES has not been triggered

...

Triggering the ESM

In order for the emergency shutdown to trigger, it is required that the Sum() is greater than themin() . Only then can the fire() function be executed successfully.

..

Copy seth send MCD_ESM "fire()"

...

Note: If triggering the ESM is not successful, ensure gas is set at an appropriate level

Note: The triggering of the ESM isnot to be taken lightly; for a full explanation of the implications please review the below documentation.

Links

- ESM.sol
- Further Documentation
- End Documentation

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