Polkashots maintenance Q3-Q4 2022

This treasury proposal is Between the Kusama Maintenance Council and MIDLDEV OÜ, a company registered in Estonia with registry number 14973249, commonly known as MIDL.dev.

Service description

- A functioning infrastructure to provide usable blockchain database snapshots for the Polkadot and Kusama networks, to the benefit of node operators and validators,
- New snapshots at least once per day. Snapshots are filesystem dumps of the Polkadot and Kusama node storage backend files, of variety RocksDb and ParityDb, of type pruned, with a depth of 1000 blocks, compressed in lz4 format, that can be used by validators to quickly spin up or restore their infrastructure,
- A website frontend at polkashots.io (http://polkashots.io) with relevant metadata and download links, including a permanent link that always redirects to the most recent snapshot,
- Best effort incident and problem management,
- Redundant implementation setup which allows for continuity, seamless upgrades and basic disaster recovery & contingency management.

Updates and commentary

See previous submissions for reference:

- proposal to the Kusama council for Q1/Q2 2021 (https://kusama.polkassembly.io/treasury/124)
- proposal to the Polkadot council for Q3/Q4 2021 (https://polkadot.polkassembly.io/treasury/80)
- proposal to the Kusama Council for Q1/Q2 2022 (https://hackmd.io/@nicolasochem/SkQv48pcc) - executed as child bounty (https://kusama.subscan.io/extrinsic/0x2953ce31d3423b8f6cf5aa3a6295d212e105767c86f0b23556d367a8f58ab0c0)

In the past, we have been submitting 6 months of expenses to either Polkadot or Kusama treasuries for the entire operational costs on both networks. However, the Kusama maintenance bounty process is best suited for funding infrastructure project such as ours. Therefore, we are again requesting funding on the Kusama network.

The snapshot size keeps inching upwards, as number of parachains are increasing:

	July 2022	**January 2023**
Kusama	122Gi	192Gi
Polkadot	77Gi	140Gi

As the parachain leases start getting renewed, we expect these numbers to stabilize.

In October, news came out that Hetzner was banning all Solana nodes (https://decrypt.co/113429/is-solana-decentralized-cloud-provider-hetzner-ban-raises-questions) and no longer tolerating blockchain validation on their platform. The Thousand Validator program subsequently banned validators on Hetzner IP address ranges. This caused an exodus of DotSama validators from Hetzner, and subsequently a spike of usage on Polkashots, as operators were restoring their nodes elsewhere.

This caused a very high Nov 22 cloud bill. After consulting with Raul Romanutti, we took the step to partially migrate our infra away from Google Cloud.

Cloudflare R2 (https://www.cloudflare.com/products/r2/) recently came out of Beta. It is a S3-compatible service that -critically for us- charges no egress costs. This means that the cost is based on the size of the snapshots (the rate is US$0.015 per GB-month), but not on the number of downloads.

At the end November 2022, we started serving Polkashots artifacts from R2.

This came with a loss of performance and speed (unfortunately nothing beats Google network infrastructure). Additionally, we have observed on occasion that downloads are being interrupted after some time, before they are complete. We are in touch with Cloudflare engineers (https://community.cloudflare.com/t/cloudflare-r2-http-2-error/441326/3) about the issue and we will ensure there is a full resolution.

Cloudflare also told us they are planning to increase R2 performance gradually.

Competition & usage

Polkachu (https://polkachu.com/snapshots/kusama) and RadiumBlock (https://www.radiumblock.com/snapshots.html#) continue to provide snapshot services.

Warp Sync is now a viable option to quickly sync the chain.

In spite of that, the usage of the polkashots.io (http://polkashots.io) platform remains robust: in Q3-Q4 2022, until the R2 migration on Nov 26, users downloaded 275,108 Gibibytes of data. Assuming a 110Gi average artifact size over this period, this corresponds to 2501 downloads or **16 downloads per day**.

R2 does not provide egress data transfer analytics, so we are unable to measure usage in December 2022 and beyond.

Operational expenses

Our labor costs are identical to the previous submission:

- a labor cost of 1,860 EUR/month including 2 engineers in 2 geographical locations (Western US and Western Europe),
- a fixed markup of 3,050.55 EUR

Cost item	cost
Cloud costs, GCP "midlps" project	35,132.96 EUR
Cloud costs, Cloudflare R2	18.42 EUR (19.79 USD)
Labor, monthly	1,860 EUR /mo
Labor, total for period	11,160 EUR
Markup (fixed amount based on past proposals)	3,050.55 EUR
Total for period	**49,361.93 EUR**
Exchange rate KSM/EUR (subscan EMA30 01/11)	TBD EUR (TBD USD)
Total base price in KSM	TBD KSM
Slippage + conversion fee 5%	TBD KSM
Proposal (KSM)	**TBD KSM**

Google Cloud has the concept of "Projects" which allow for precise separation of infrastructure costs. All polkashots supporting infrastructure (Kubernetes cluster, virtual machines, block storage backend) reside on one single Google Cloud project for which we are attaching a screenshot:

Saved views ▼

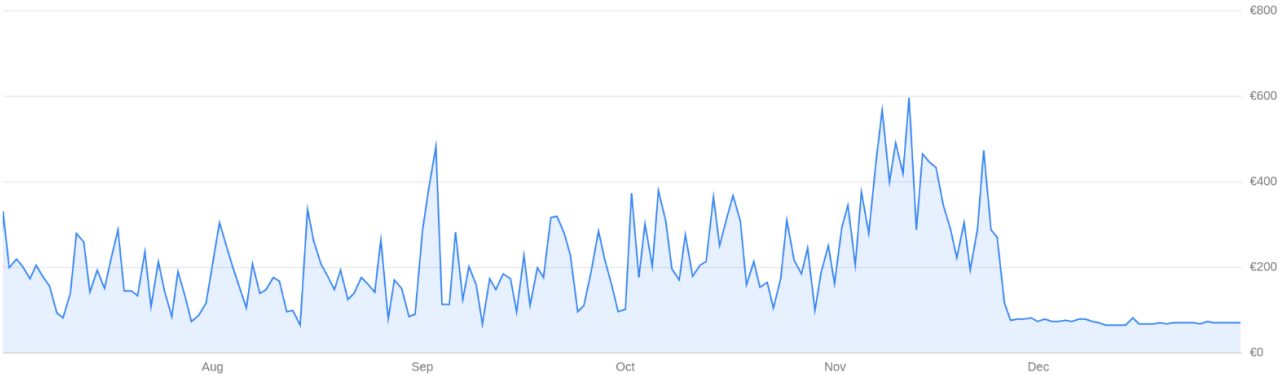**July 1 – December 31, 2022 (total cost)** ❓

€35,132.96   ↑ 32.06%

includes -€3.60 in credits , €0.00 tax   €8,529.48 over January 1 – June 30, 2022

Daily ▼

Project	Project ID	Project number	Cost	Discounts	Promotions and others	↓ Subtotal
● midlps0ee14fe661cba36d	midlps0ee14fe661cba36d	626825809863	€35,136.57	-€3.60	€0.00	€35,132.96
					Subtotal	€35,132.96
					Filtered total ❓	€35,132.96

Cloudflare commingles all expenses, but the relevant R2 costs are shown in the December 22 invoice below:

INVOICE# CFUSA5860233

Invoice Date: 12/14/2022

CLOUDFLARE

Invoice From
Cloudflare, Inc.
101 Townsend St.
San Francisco, CA 94107 USA

Invoice To

Nicolas Ochem
MIDLDEV OU

VAT/GST: EE102369869

Summary of Current Charges

Account Subscriptions

Basic Load Balancing

Description	Billing Period	Quantity	Tax (USD)	Subtotal (USD)
Basic Load Balancing				
DNS Queries to Load Balanced Hostnames (First 500K are included)	11/14/2022 - 12/13/2022	151,221,030	$0.00	$151.00
Basic Load Balancing	12/14/2022 - 01/13/2023	1	$0.00	$5.00

R2 Storage

Description	Billing Period	Quantity	Tax (USD)	Subtotal (USD)
R2 Storage				
R2 Data Storage (First 10GB-Month included)	11/14/2022 - 12/13/2022	1,328.30726	$0.00	$19.79

Total Charges (USD)	$175.79
Subtotal (USD)	**$175.79**
Sales Tax	$0.00
Total	**$175.79**
Available Balance as of 12/14/2022	$0.00

*Your payment for Amount due will be reflected on the activity statement of your next invoice.