Infrastructure Builders Program

Dear community,

With the on-chain approval of Bounty 19, successful assignment of 5 Administrative curators and approval of initial IBP members, the Infrastructure Builders Program has officially started. Last few weeks were extremely busy with a high level of activity, coordination and organization as multiple tasks are being executed simultaneously to ensure the successful launch of the project. With the program schedule on its way, it is time to report about all activities that made IBP possible, inform the community about our current activities and also what is coming in the near future.

1. Preparation - building Proof of Concept

The preparation work on IBP started in October 2022. and the first services were deployed in November. In this period 7 members declared the intention to participate and to help bootstrap the program. The initial 7 members of the program:

- Stake.plus - North America - US
- Amforc - Europe - Switzerland
- Helikon - Middle East - Turkey
- Crifferent.de - Europe - Czech Republic
- Gatotech - Central America - Costa Rica
- Metaspan - Europe - UK
- Turboflakes - Europe - Portugal

In order to show the idea was possible and to determine the necessary requirements for operating network services, members worked together to deploy GeoDNS and Anycast based RPC services as well as boot nodes. With already deployed collocations with needed capacity, 5 of the members were able to host the services where 2 members (Crifferent.de and Turboflakes) are in process of deploying the hardware.

In this period members launched the following services:

- Launch 3 Boot Nodes (1 each) for Westend, Kusama, Polkadot and have them included in the node source code. Following members launched the service:

  - Stake.plus
  - Helikon
  - Amforc
  - Metaspan
  - Gatotech
  - Turboflakes

- Operate 2x full archive RPC nodes for Polkadot, Kusama, and Westend. Following members launched the service:

    - Stake.Plus
    - Helikon
    - Amforc
    - Gatotech
    - Turboflakes

- Members are required to join at least 2x GeoDNS pools and 2x Anycast pools. Following members launched the service:

    - Stake.Plus - GeoDNS (dotters.network)
    - Gatotech - GeoDNS (ibp.network)
    - Helikon - AnyCast (Pending)
    - Amforc - AnyCast (Pending)

- The following RPC services are already operational and included into the polkadot.js:

    - Dotters.network - operational on Polkadot, Kusama and Westend
    - IBP.network - operational on Polkadot, Kusama and Westend and being tested for the inclusion in the Polkadot and Kusama

Beside these services, members are developing the tools, scripts and services necessary to efficiently deploy and monitor other members:

- IBP Website (Website - Source Code) - The main website, design, forms, and instructions
- IBP Monitor (Website - Source Code) - Decentralized health checker used to monitor and report on events that occur on the 1KV network.
- GeoDNS Manager (Source Code) - A tool written in golang designed to determine the nearest site for each country globally and automatically manage country -> member assignments. The tool also allows rapid response if a member goes offline to remove that member from service offering.
- Snapshot Manager - A tool written to manage creation and synchronization of blockchain snapshots using torrent P2P protocols.

2. Administration

In order to keep the IBP up to date, process documents, assist other members, and keep the program in-line with changing ecosystem goals two Janitorial advisors were selected:

- Tom | Stake Plus
- Derek | Metaspan

IBP should have no fewer than 2 Janitorial advisors with the option to further increase as the program grows. The role of these Advisors include:

- Craft / Update documentation necessary for the program
- Collecting / Collating documentation and information on the network and member status necessary for Administrative Curators
- Coordinate deployment of new members
- Track member Milestones / Accomplishments
- Recommend program changes to Administrative Curators.

With Referenda #73 following five Administrative curators were elected to take oversight on the IBP and are assigned to multisig account controlling the Bounty 19 funds:

- Cbbsb4t8Uq5KDaWeg12f2LMwTg6RGjei29bVo2ei4ZkFN1g **- Will**
- D8DtYYJUUBoACJwJrLNyn8aYArumdViVWAcZRUKcxnSoV9D **- Otar**
- G78epYd9YJUGnLDNzKPx9mrMTCUtRHgrDVzB7Ucu5UAJVbK **- Anaelle**
- EUbLd8Vc2PepZKz9onPDfRzzE2GqsUtLjUy8yDunZu7xndz **- bLd**
- GCMGu8sjEuEZuMZavo5PLvAhr8fJXAty76jDV1YPquG9erp **- CoinStudio**

After a few technical and operational meetings, Administrative curators focused their activities to complete the initial **Program Milestone 1 - PoC** and enter the next **Program Milestone 2 - Initial Funding** with a clean bill of health.

2.1. Onboarding initial members

Members are required to go through an assessment process and to submit supporting documents to Administrative Curators for a review. The following documentation was submitted and reviewed:

- Incorporation - Members must submit incorporation documents showing beneficial ownership and formation date.
- Website
- Resume - The majority owner of the company and at least one partner, equity holder or employee must submit their updated resume.

- - ○ 6+ Years of aggregate systems administration experience
    - ○ 6+ Years of aggregate networking administration experience
    - ○ 6+ Years of aggregate devops experience
    - ○ Include github profile urls
    - ○ Include linkedin profile urls
  - Location - Members must submit their colocation facility location and submit lease contract or invoice to the corporation listed above.
  - Renewable Targets - Members must show that the datacenter selected is 100% renewable powered or submit a plan for how they intend to offset their carbon footprint.
  - Sign & Verify - Members must sign and verify from their Kusama and Polkadot address from the existing 1000 Validators Program.

During the review process, some members did not strictly comply with the above requirements. Incomplete documentation was mostly related to the Datacenter renewable certificates, where members were not able to provide official documents on the short notice. Members asked for additional time to either provide receipt of carbon offset credit purchase or receive the document from the datacenter operator. Few members asked for additional time to hire/find a 2nd partner.

Due to the nature of the findings, administrative curators decided to accept requests and give members a grace period of 1 month to resolve the incomplete documentation where the request will be reassessed on a month to month basis. Member acceptance to the programme is only conditional until all documents are provided.

The information regarding the member status, milestone accomplishments and service provided was tracked by the janitorial advisors and later reviewed by the administrative curators.

After taking all the relevant information into the account, administrative curators accepted all 7 initial members into the IBP and confirmed their Member level in IBP.

seq	ID	email	matrix	Region	Member Level
1	stake.plus	tom@stake.plus	@stakeplus:matrix.org	North America	P3
2	amforc	tugi	@tugytur:matrix.org	Europe	P3
3	helikon	kukabi	@helikon:matrix.org	Middle East	P3
4	crifferent.de	dev0_sik	@dev0_sik:matrix.org	Europe	P0
5	gatotech	miloš	@gatotech:matrix.org	Central America	P3
6	metaspan	derek@metaspan.com	@metaspan:matrix.org	Europe	P2
7	turboflakes	paulo@turboflakes.io	@turboflakes:matrix.org	Europe	P0

2.2.   Budget

With the Bounty 19 activation, it was decided to close all of the activities and reimburse all the work/tasks until 01/02/2023. This would officially end IBP Milestone 1 and signal the start of the IBP Milestone 2.

From the table above, it is visible that 7 initial members were accepted to the program where 2 members are still at Member level P0. This means 2 members are still in process of deploying hardware and not eligible for the payments as they did not meet the criteria in this period.

The first Bounty 19 payments were issued to the 5 members as child bounties. The KSM/USD EMA7 reference price was taken from Subscan:

2023-02-01
- Daily Price   35.529
- EMA7   35.435
- EMA30   32.338

Stake Plus / CL		HERTWZK4ZpmuXsEgW3UfL5x27XCdT5fE9x4QRbyNWifafdU							
Period Start	Period End	member_id	service_id	qty	reward USD	calc USD	total USD	Info	Total Payment USD
01/10/2022	31/10/2022	stake.plus	dev_pm_time	80	50	4,000.00	4,000.00	(Building the program in October)	
								Total 10/2022:	4,000.00
01/11/2022		stake.plus	P2-Bounty	1	15,000.00	15,000.00	15,000.00		
01/11/2022		stake.plus	P3-NorthAmerica	1	2,356.80	2,356.80	2,356.80		
01/11/2022		stake.plus	GeoDNS	1	600	600	600		
01/11/2022		stake.plus	dev_pm_time	80	50	4,000.00	4,000.00	(Building the program November)	
								Total 11/2022:	21,956.80
01/12/2022		stake.plus	P3-NorthAmerica	1	2,356.80	2,356.80	2,356.80		
01/12/2022		stake.plus	GeoDNS	1	600	600	600		
01/12/2022		stake.plus	dev_pm_time	80	50	4,000.00	4,000.00	(Building the program December)	
								Total 12/2022:	6,956.80
01/01/2023		stake.plus	P3-NorthAmerica	1	2,356.80	2,356.80	2,356.80		
01/01/2023		stake.plus	GeoDNS	1	600	600	600		
01/01/2023		stake.plus	dev_pm_time	80	50	4,000.00	4,000.00	(Building the program Jan)	
								Total 01/20223	6,956.80
								Total:	39870
								KSM rate KSM/USD	35.435
								Total KSM:	1125.17
								Slippage/Conversion 3%	33.76
								Final amount KSM:	1158.93

Metaspan — HyLisujX7Cr6D7xzb6qadFdedLt8hmArB6ZVGJ6xsCUHqmx

Period Start	Period End	member_id	service_id	qty	reward USD	calc USD	total USD	Info	Total Payment USD
01/12/2023	31/12/2023	metaspan	dev_pm_time	160	50	8,000.00	8,000.00	Initial dev't of IBP monitor (Nov/Dec 2022)	
								Total 12/2022:	**8,000.00**
01/01/2023		metaspan	P2-Bounty	1	15,000.00	15,000.00	15,000.00		
01/01/2023	31/01/2023	metaspan	dev_pm_time	80	50.00	4,000.00	4,000.00	Continued dev't of IBP monitor (Jan 23)	
								Total 01/20223	**19,000.00**
								Total:	**27000**
								KSM rate KSM/USD	**35.435**
								Total KSM:	**761.96**
								Slippage/Conversion 3%	**22.86**
								Final amount KSM:	**784.82**

Helikon/Istanbul — GC8fuEZG4E5epGf5KGXtcDfvrc6HXE7GJ5YnbiqSpqdQYLg

Period Start	Period End	member_id	service_id	qty	reward USD	calc USD	total USD	Info	Total Payment USD
01/11/2022		helikon	P2-Bounty	1	15,000.00	15,000.00	15,000.00		
01/11/2022	30/11/2022	helikon	P3-MiddleEast	1	2,716.80	2,716.80	2,716.80		
								Total 11/2022:	**17,716.80**
01/12/2022		helikon	P3-MiddleEast	1	2,716.80	2,716.80	2,716.80		
								Total 12/2022:	**2,716.80**
01/01/2023		helikon	P3-MiddleEast	1	2,716.80	2,716.80	2,716.80		
								Total 01/20223	**2,716.80**
								Total:	**23150**
								KSM rate KSM/USD	**35.435**
								Total KSM:	**653.32**
								Slippage/Conversion 3%	**19.60**
								Final amount KSM:	**672.92**

Gatotech / UK1 — DrRBkx2Qx4sXRGZDXz6d44QCXqV2eJhn8Rq79V88FpSqAr8

Period Start	Period End	member_id	service_id	qty	reward USD	calc USD	total USD	Info	Total Payment USD
01/01/2023		gatotech	P2-Bounty	1	15,000.00	15,000.00	15,000.00		
01/01/2023		gatotech	GeoDNS	1	600	600	600		
01/01/2023		gatotech	P3-CentralAmerica	1	3,436.80	3,436.80	3,436.80		
								Total 01/20223	**19,036.80**
								Total:	**19037**
								KSM rate KSM/USD	**35.435**
								Total KSM:	**537.23**
								Slippage/Conversion 3%	**16.12**
								Final amount KSM:	**553.35**

Amforc / 4		Ff3xdNrXA47svhiTJHj9uNhxLo29PYjYcJ9cUseAd9FK6iQ							
Period Start	Period End	member_id	service_id	qty	reward USD	calc USD	total USD	Info	Total Payment USD
01/12/2022		amforc	P2-Bounty	1	15,000.00	15,000.00	15,000.00		
01/12/2022		amforc	P3-Europe	1	2,356.80	2,356.80	2,356.80		
								Total 12/2022:	17,356.80
01/01/2023		amforc	P3-Europe	1	2,356.80	2,356.80	2,356.80		
								Total 01/20223	2,356.80
								Total:	19714
								KSM rate KSM/USD	35.435
								Total KSM:	556.33
								Slippage/Conversion 3%	16.69
								Final amount KSM:	573.02

3.   IBP Milestone 2

With the approval of the program, the curators, and back issues dealt with we are ready to open the program for additional applicants. It was decided to further expand the program to the 12 locations instead of the 10 originally in the proposal. In the meantime we received and approved 1 new application:

- Dwellir - Africa location with Lagos, Nigeria datacenter

With all existing applicants accounted for, the proposed member geographical distribution for Milestone 2:

- **Europe: 4 - (4)** Amforc - Switzerland, Crifferent.de - Czech Republic, Metaspan - UK, Turboflakes - Portugal
- **North America: 2 - (1)** Stake.plus - US, Virginia
- **Central America: 1 - (1)** Gatotech - Costa Rica
- **South America: 1 - (0)**
- **Asia: 1 - (0)**
- **Middle East: 1 - (1)** Helikon - Turkey
- **Oceania: 1 - (0)**
- **Africa: 1 - (1)** Dwellir - Nigeria

With the 8 members onboard we have 4 locations available. If you wish to provide professional membership services in one of the following regions:

- North America - preferably Western US
- South America - preferably Argentina, Chile or Brazil
- Asia - preferably Southeast Asia
- Oceania - preferably South Australia or New Zealand.

Applications are open now and you can submit your application on the following form.
https://forms.gle/ShonANgdTt84i5os8

As the program grows into Program Milestone 3, we will seek additional funding allowing for additional slots per region. The current Program Milestone 2 is meant to both build out the infrastructure for the program itself as well as prove the idea is possible. As the underlying software is completed we will be able to expand the program by taking on Hobbyist Members as well as applying for additional funding to progress to Program Milestone 3. If your region is full, you can apply now and wait in queue for a slot to become available in your region. If you wish to become a Hobbyist Member, it will take us some time to prepare the network and for us to figure out exactly how we should handle on-boarding these members.

The initial members will continue to build the program, develop the tools, scripts and services necessary to efficiently deploy and monitor other members. We are hoping that these services will be convenient to present relevant data in the real time and replace the conventional reports like this one.

4. Geographical distribution of services

The program's objective is to provide the best quality of service irrespective of where in the world the users are located. Thus, the priorities are equally divided on geo-diversity of the program operators and the ability to self-repair the services in case of problems, also called resilience. In this chapter we will try to present the idea and reasoning why IBP has settled on 12 unique locations.

4.1. Stage 0: Baseline with 1 service location

The following map shows the expected level of service of a lone operator providing user experiences from a single location in the globe, and for this example, we placed them in the United States, you can see that users in the US would expect an overall good response time from this operator, and their user experience has the best chance to be quick, responsive and enjoyable.
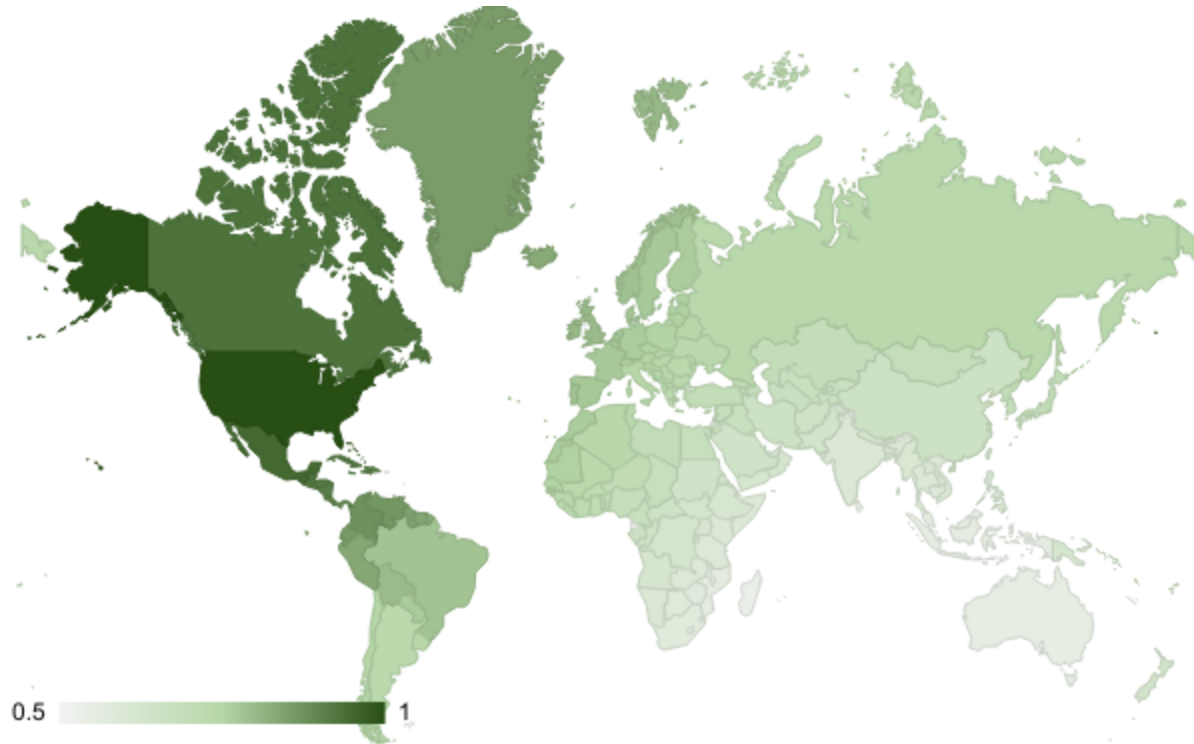
However, note how far away would the users be accessing from, let's say: New Zealand. They would experience lags and delays when requesting services from the lone operator in the US. These delayed responses would heavily detriment the responsiveness of the Dotsama ecosystem apps for the users on the other side of the globe, that is why the Infrastructure Builders Program is deploying the following solution.

4.2.   Stage 1: Initial deployment with 7 locations

As a first step toward that goal, the Infrastructure Builders Program has deployed the following seven (7x) nodes:

- 1x North America:
    - US: United States.
- 1x Central America:
    - CR: Costa Rica
- 4x Europe:
    - CH: Switzerland
    - UK: United Kingdom
    - PT: Portugal
    - CZ: Czech Republic
- 1x Middle East:
    - TR: Turkey.

The service coverage now looks better for the densely populated areas of the developed world, thus satisfying the most demanding requirements of the program, however huge improvement opportunities are obvious for the service provided in more remote locations of the globe.

4.3.   Stage 2: Final Rollout with 12 locations

New operators are expected to join from very specific and curated locations. With them, The service from the Infrastructure Builders Program will be regionally available from a total of 12 points around the world:

- 2x North America:
    - US West: Western United States
    - US East: Eastern United States (*)
- 1x Central America:
    - CR: Costa Rica
- 1x South America:
    - UY: Uruguay (*)
- 4x Europe:
    - CH: Switzerland
    - GB: Great Britain
    - PT: Portugal

- ○ CZ: Czech Republic
- 1x Middle East:
  - ○ TR: Turkey
- 1x Asia:
  - ○ KR: South Korea (*)
- 1x Africa:
  - ○ NG: Nigeria (*)
- 1x Oceania:
  - ○ AU: Australia (*)

0.838   1

(*) *These locations are approximate, and will be confirmed upon successful applications.*

At this stage, the average distance of any user to the closer service point will be only 2200 km, which in turn is expected to provide a much better responsiveness and overall experience than the almost 17000 km of the extreme case presented in Stage 0.

5. Communication

I believe the IBP program presents a major effort to further decentralize the core infrastructure and I am happy to see the community eyes are closely watching the program. For this reason I welcome everyone to come forward and share any concerns or give us feedback on the program. The best place to reach the program is on Element - IBP Public chat room or reply to the polkassembly post.

We would definitely like to hear from the existing providers who may consider switching from existing grants to the IBP. IBP Applications are open and you can apply with the following form.