

A Strategy to Provide RPC and Bootnode Services to the Kusama & System Chains

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1.0 Executive Summary

Access to reliable public RPC services provides a benefit to all users of the ecosystem, either as direct entry to the chain by end-users or by application developers allowing them to defray costs of their own.

Through Gov 1.0, each RPC candidate would be evaluated for funding with no limits to their number and with an overall budget. This approach transcended into OpenGov which received criticism from the community.

This procurement strategy suggests implementation of budgets and limits to providers in a manner to adequately satisfy the needs of the ecosystem. It further provides a suggestion for a tendering process which further adds value to the treasury.

2.0 Problem Definition

The provision of reliable and efficient public RPC service is important to the growth of the ecosystem. It provides an easy and risk free platform for developers to start building in Polkadot, and a foundation for application teams to build upon without the need to employ expensive resources of their own. Bootnodes are equally important as they are required by light-client and new nodes upon start-up to share root block and peer information.

The provision of said services needs to be balanced with sustainable spending of treasury funds. Treasury funding is trending downwards and spending on RPC provision is at present a variable cost with little oversight.

A strategy is required to determine and then deliver adequate levels of RPC & Bootnode service to Polkadot, Kusama, and their System Parachains. Expenditure on these services should be aligned to sustainable spending while maintaining sufficient service levels and decentralisation. Recipients of funding should be encouraged to provide high levels of value for the lowest cost.

2.0 Strategy

2.1 Summary

The proposed procurement strategy requires a collective of capable RPC providers to be established. It is proposed that this be achieved via a pre-qualification process in which each would-be RPC provider submits proof in support of their request to be added to the collective.

Members of the collective can submit Tenders for a finite number of RPC provision slots. Each of which has a fixed duration and a maximum payout. It is suggested that the length of this service period should be six (6) months.

Tenders are evaluated by independent Curators utilising a scoring system which measures metrics associated with Infrastructure, Cost, Geography and Community Contribution. RPC providers who have attained a slot would be periodically evaluated to ensure that their performance during the service period is in keeping with defined service standards. After evaluation, interim payments would be issued to RPC providers within the service period.

Before the end of the existing service period (n) another tender action is initiated for service provision for the next period (n+1). To afford mobilisation and continuity, it is suggested that tender action is undertaken within two (2) months of the start of the next service period.

It is also possible that we can unify payments for RPC service for both relay-chains under one bounty (on Polkadot) or share the total budget over two bounties (one on Polkadot and the other on Kusama). This may attract further discounted pricing due to economies of scale and afford reasonable budget allocations using a larger treasury fund.

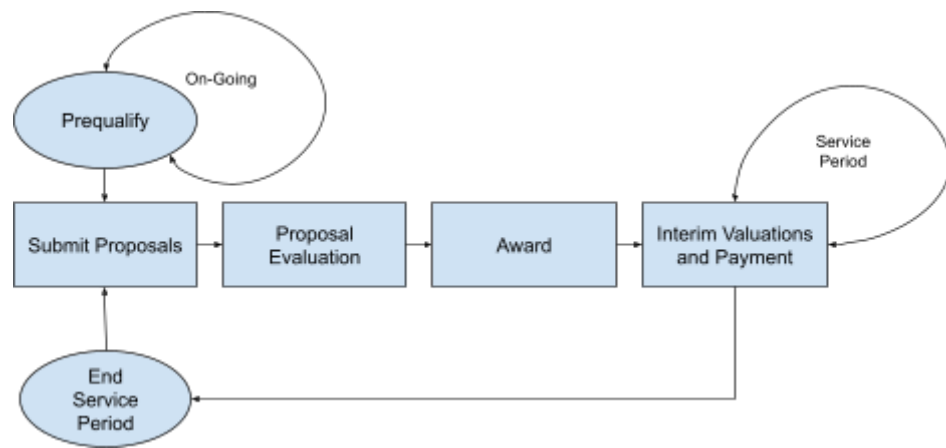


Image 1: Workflow

2.2 Pre Qualification

The Pre Qualification phase seeks to establish a collective of RPC providers who are capable of providing reliable RPC services to the ecosystem. Prospective providers shall provide an application demonstrating their company registration, staffing and a demonstration of their capabilities of RPC provision. Providers with no prior experience would be asked to host their service for one month under evaluation for the same performance requirements of RPC providers with active service agreements.

2.3 Standard of service

The Curators are responsible for determining the quality of service required by RPC providers. This may include requirements for block height, uptime, latency, query response times, node upgrade standards and the number of connections served for each chain.

Table x: Proposed Standards

Standard	Requirement
Block Height	All nodes must be archive nodes
Uptime	99.95% measured by an independent third party tool
Query Responses	Query time on the nominator map = X Query time of governance tracks = Y
Latency	< 200 ms [Region based]?
Upgrade standards	Upgrades should be implemented within 24hrs of release
Number of connections	1000 per relay-chain, 200 per system

	chain
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When an infraction occurs it would result in a five-percent (5%) deduction to each interim valuation. Should there be more than three (3) infractions with any service period the RPC provider would be exempt from evaluation for service in the subsequent service period.

2.4 Tender Submission & Evaluation

Each prequalified RPC provider has an opportunity to tender to provide service for each service period. To ensure sufficient time for tender evaluation and RPC provider mobilisation, it is recommended that the tender process begins two months prior to the end of any service period. It is expected that curators would make public all tenders received and final scores assigned.

During the first two weeks RPC providers would prepare their submissions and when finished submit a hash of their proposal. After the first two weeks have passed no further submissions would be accepted for evaluation.

Curators would have a further two weeks of evaluation. At the onset of the evaluation phase the Curators would request the RPC providers to submit their proposal documents and verified against the hashes provided earlier. Invalid submissions would be rejected. Curators evaluate and score each proposal in keeping with a score sheet.

In the subsequent week the curators would present their scoring, original proposals and the RPC providers selected. The remaining period would then allow for the respective RPC providers to mobilise for service.

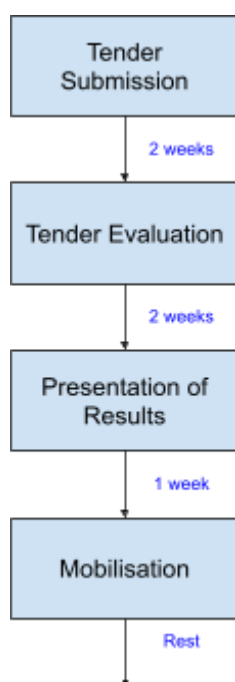


Image x: Tender Evaluation process

Table x: Proposed Scoring

Title	Total Score	Details
Infrastructure	20	+10 for service provision at colo facilities (not cloud). +10 for passing Polkadot benchmark * +5 for providing leases at multiple facilities +5 providing 10G b/w with own ASN *
Cost	30	A banded approach would be used to evaluate costs against the maximum allowance. An example of which is found in Appendix I
Geography	20	Full scores would be allotted to providers who fall within regional allocations. If there's excess then the scores would be shared evenly. See Appendix II
Community Support & Innovation	15	+10 Community initiatives, participation in

		<p>discussions, forum posts, technical support.</p> <p>+5 Maintenance of technical tooling or provision of pro bono service to parachains.</p> <p>All of the above should not be funded by existing grants or treasury spends.</p>
Provision in previous period	5	<p>If a RPC provider is not currently providing service, the provider would receive the full score, otherwise 0.</p> <p>This affords some opportunity to would-be candidates and possibly rotation of service.</p>

In the event that scores are tied, participants would be selected based on cost with no banding applied.

* A modified benchmark tool would be required to verify validity of those applicable.

2.5 Interim Valuations

To aid with cash flows, RPC providers would be provided with interim payments within the first week of each month. If there aren't any infractions the provider would receive a monthly proportion of their tendered price disbursed within the first week of the next month.

2.6 Curators

It is suggested that the role of the curator be fulfilled by a pure-proxy using a three (3) out of five (5) multi-signature account. Curators selection guidelines are as follows:

1. Curators should not be associated with any RPC provider vying for tender
2. As a collective, there should be at least one individual who is familiar with the etiquette associated with procurement
3. The curator team should compromise of at least two technically capable individuals

2.7 Independent Monitoring

In order to independently and impartially monitor the performance of RPC providers, specifically uptime, query responses, latency, and upgrade standards, it is proposed that an independent RPC monitoring service be commissioned specifically for this purpose.

This independent service would report metrics directly to the Curators, and also make these metrics public to the community, and these metrics would be used to assess the performance of RPC providers for subsequent periods.

3.0 Budget

To achieve reasonable availability of funds during the spend period, it is suggested that funding for the subject service be fulfilled via bounty. The Curators should be independent of any prequalified RPC providers and comprise of at least one technical party.

The Curators would be responsible for determining the number of providers that are required to service the needs of the respective networks and for establishing an overall budget. This may be achieved by reviewing overall requests served by existing providers and comparative pricing with published invoices/data.

As network demands change due to macro factors, the Curators can suggest increases or decreases to the number of providers and requests served as they evaluate funding for future spend periods.

The scoring metrics and standards as suggested in sections 2.3 and 2.4 of this document may also be augmented by the Curators at their discretion.

4.0 Appendices

Appendix I: Banded Tender Price Scoring

Costs would be evaluated by ten (10) even bands represented by the maximum payout for each provider. The provider in the lowest band would receive the highest score, other providers would receive a score deduction (max score/10) for each band away from the lowest.

To illustrate, providing that Curators have established a maximum allowance of \$100,000 for each candidate for the service period and bids were received as follows:

Provider	Bid
A	\$90,000
B	\$100,000
C	\$80,000
D	\$85,000
E	\$50,000

Banded scoring:

Bands	Provider	Score
0 - 10,000		
10,001 - 20,000		
20,001 - 30,000		
30,001 - 40,000		
40,001 - 50,000	E	30
50,001 - 60,000		
60,001 - 70,000		
70,001 - 80,000	C	$30 - (30/10 * 3) = 21$

80,001 - 90,000	A, D	$30 - (30/10 * 4) = 18$
90,001 - 100,000	B	$30 - (30/10 * 5) = 15$

Appendix II: Scoring by Geography

Targeted geographies:

Region	Number of Candidates
North America	2
South America	1
Europe	2
Africa	1
Asia	1

Providing that proposals are received within candidate allotment the full score for geography would be allocated to the candidate. If proposals are received such that candidates exceed allotments the total score would be divided amongst the candidates e.g if three candidates propose service for North America then each candidate would receive a score of $(20 * 2) / 3 = 13.33$.