



ORBS

Orbs Operation Fees

Orbs is architected to ensure predictable operation fees, by designing the system to use the automatic-scaling methods of public cloud services, and to incentivize the development of an ecosystem of service providers competing to contribute resources to the Orbs network, which itself is in competition with the broader market of transaction and storage computing resource providers. As was stated in the Orbs Position Paper, users of the Orbs network should expect the cost of using its decentralized compute and storage services to be closely correlated with the costs of similar compute and storage services on public cloud platforms, when taking into account a fixed factor of data replication.

This list of operation fees provides the specifics of how this overall vision of stable and predictable operation fees will be implemented in the Orbs network. The goal of predictability is accomplished because the purchasing power of ORBS tokens is fixed as equal to a defined amount of computing power, as further described below. The value of computing power in general is determined by the global market for computing power, which is a highly competitive market that includes many sophisticated providers of computing power, such as AWS and Google Cloud. Based on the maturity and stability of this global market, it is anticipated that the value of ORBS tokens should be relatively stable--increasing or decreasing as the cost of computing power in the global market changes. If and when it becomes possible to purchase ORBS tokens on an exchange (in exchange for Bitcoin, Ether or another cryptocurrency or fiat currency), we will not adjust the purchasing power of ORBS tokens on the Orbs network in response to changes in the price paid for ORBS tokens on such exchanges. This model was designed to discourage speculation in ORBS tokens, which, if it occurs, could have a detrimental effect on the stability and predictability of the Orbs network for its users. Such model predicts that in the event that the price of ORBS tokens on exchanges changes at a rate unconnected to the global market for computing power, the market should correct for this and the prices paid for ORBS tokens on exchanges should revert toward the market value of the computing power that can be purchased with ORBS tokens.

Of course, the fees for compute and storage services on the Orbs blockchain take into account the need for redundancy in a decentralized ledger and therefore are not identical to the fees charged for compute and storage services provided by other market participants.



However, the fees set forth below are based on an analysis of the fees that would be payable to run virtual chains on major third-party public cloud providers such as AWS and Google Cloud. Accordingly, ORBS tokens are designed to have a stable value so that participants in the Orbs ecosystem can rely on the ORBS tokens as a reference for setting security deposits for smart contracts and arrangements between participants in the Orbs Universe, incentives for services on the network and planning for future use and development on the Orbs network. Validators and other service providers will have a stable reference for understanding the amount of ORBS tokens they will receive for providing services on the Orbs networks. Concurrently, Developers and other ORBS token holders can use this price list as reference to understand the services that they can expect to receive in exchange for any specific amount of ORBS tokens.

This document relates to the transaction fees for running decentralized applications on the Orbs network. Rewards for participation in the proof-of-stake ecosystem and governance of the Orbs blockchain are subject to the guidelines of the Orbs Universe, which are published separately. For more information on Orbs platform please refer to the [Orbs website](#).

Consensus Processing

Instance types differ on two dimensions: the amount of CPU allotted to the virtual chain on each of the consensus nodes, and the amount of verifiers contributing. In all instance types, network traffic is allotted in direct proportion to CPU power.

The basic instance type is called B5 and is the highest performing virtual chain that can run when all nodes execute (as required) on a current generation purpose cloud instances¹. According to our measurements, in V1.0 it is capable of processing, on average, around 1000 tps of simple account-based value transfer.

The purchasing power of ORBS tokens is defined using the basic instance type B5. As reflected in the chart below, the base purchasing power of an ORBS token is set at 1/40,000 of the cost of B5 service for one month.

¹ Equivalents on mainstream cloud providers: a single vCPU of an “m5” instance type on Amazon Web Services; “Fs” instance type on Microsoft Azure; or “n1” instance type on Google Cloud Services.



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Smaller instances are determined as halves of the subsequent instance types: B4 is half of a B5 instance, capable of processing around 500 tps, B3 is half of a B4, etc.

B0 (~20 tps)	1600 ORBS/Month
B1 (~55 tps)	2,900 ORBS/Month
B2 (~120 tps)	5,500 ORBS/Month
B3 (~250 tps)	10,600 ORBS/Month
B4 (~500 tps)	20,500 ORBS/Month
B5 (~1,000 tps)	40,000 ORBS/Month

We recommend, and will set the default setup parameters to reflect, a prepayment of 12 months subscription fee, plus 48 months of B0 instance fees (76,800 ORBS) when setting up a virtual chain for an app in production. This ensures a minimum of 1-year retention of the virtual chain in its defined capacity, and 5-years overall retention of the chain (to prevent data loss). No prepayment is required for virtual chains that are not defined as production, and it is up to the app administrators to determine the policy that suits them.

Storage

State data accessible by smart contracts in a virtual chain, as well as block retention, is paid for by measuring data volumes per unit of time. Note that cryptographic overheads, as well as indices, increase the amount of bytes required to store any piece of data.

State Storage	Block Storage
100 ORBS per GB/Month	5 ORBS per GB/Month

Orbs recommends that production data storage be prepaid for 60 months to ensure 5-year retention.



Legal Disclaimer

This document is subject to, and is qualified in its entirety by reference to, the Orbs Network Terms of Use, as may be in effect from time to time.

This document is for informational purposes only and may be subject to change. The prices listed herein reflect the approach of the Orbs network to provide service cost stability to users by pegging the purchasing power of a single ORBS token to a specific amount of computing power, and then setting the transaction fees for each type of service available on the Orbs network to a fee set forth as an amount of ORBS tokens. The specific fees listed herein are presented in good faith and believed to be correct at the time of publication, however the model presented herein is still being finalized and the specific fees may be changed from time to time during the launch period, including as the result of ongoing testing of the model and actual results before and during the launch period, in accordance with the generally applicable governance procedures of the Orbs Network. However, the fees will not be changed in response to fluctuations in the price paid for ORBS tokens on exchanges, should ORBS tokens be made available on such exchanges. Rather, changes in fees will consist only of fine tuning of the fee structure, and we will not change any fee by more than 5% within 180 days after the launch.

The Orbs network is a peer-to-peer platform with a decentralized, blockchain-based architecture designed to provide blockchain infrastructure-as-a-service. As a decentralized platform, the actual existence and performance of the Orbs network is dependent on the collective actions of various participants in the network, including Validators, Guardians and Token Holders (as defined in the Terms of Use). No party can exert full control over the operation of the Orbs network or the actual results obtained from its use. The control of the Orbs network is distributed and accordingly no particular party, including Orbs Ltd., is able to provide warranties or guarantees regarding the future operations or actual results of any activity on the Orbs network, including as described in this document.

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