

Polkadot & Kusama Parachains Primer

September 2021

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1.

Introduction

The crypto industry has seen tremendous growth and continues to expand, but a point of friction that remains unresolved for some is scalability and interoperability. A bridge to this friction point is the Polkadot and Kusama projects, and their parachain auctions. Both projects were conceived in 2016 to serve as a decentralized blockchain that could connect other blockchains and enable permissionless communication. Though no small feat, accomplishing such would revolutionize the way blockchains operate with one another, allow for scalability alongside a growing user base, and supplant the need for a centralized network. Accordingly, one of the most anticipated events of this year is the launch of Kusama and Polkadot parachain auctions, which allows projects to bridge to one another through the use of parachains.

Parachains are individual blockchains dedicated to a specific application, and both Polkadot and Kusama networks support the use of parachains. Currently, individual blockchains (e.g. bitcoin and ethereum) cannot easily communicate with each other in a permissionless way, but the launch of parachains is the first big step for Kusama and Polkadot to enable seamless cross-chain communication. Since June 15, 2021, dozens of crypto projects have sought to crowdfund hundreds of millions of dollars via a “crowdloan” to get a shot at winning one of the parachain slots on the Kusama network. DeFi protocol Karura raised 501,137kSM through a crowdloan,¹ Moonriver network raised 205,935kSM, Shiden network raised 138,457kSM, Khala network raised 132,280kSM, and Bifrost raised 136,817kSM ahead of the parachain auctions.² A crowdloan campaign allows projects to commit KSM or DOT in order to participate in a parachain slot auction. Anyone can [participate in a crowdloan](#) and support projects by bonding their KSM or DOT to a particular campaign. If successful, the crowdfunded assets will be locked for the duration

of the parachain's active reservation of a parachain slot. Assets are returned to those who participated in a crowdloan once the parachain slot expires.³ In the event that an auction is unsuccessful, assets are returned to the participants of the campaign at the end of the crowdloan.

To better understand how this multi-chain technology works, its value proposition, and why global market participants have their eyes set on the Polkadot and Kusama ecosystem, we will deconstruct the Polkadot project, its canary network Kusama, and the purpose of parachain auctions and what it means for the broader cryptoasset ecosystem. By reading this report, you will understand the value of parachains, how and why they may change the future of the crypto industry, and why many believe both projects will serve as the “internet of blockchains.” Readers should feel equipped to confidently participate in parachain auctions and also realize the power and potential of parachains.

2.

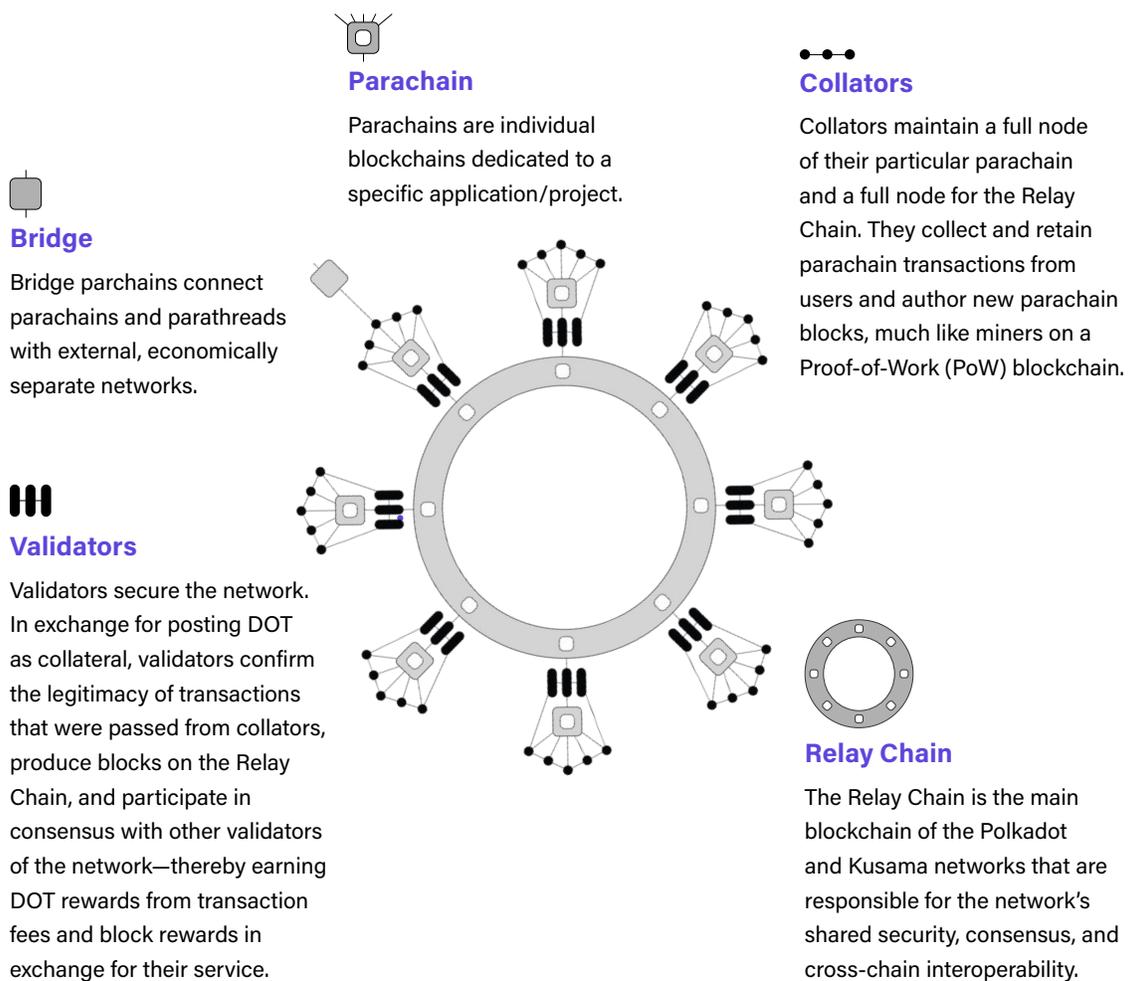
Polkadot & Kusama

What is Polkadot?

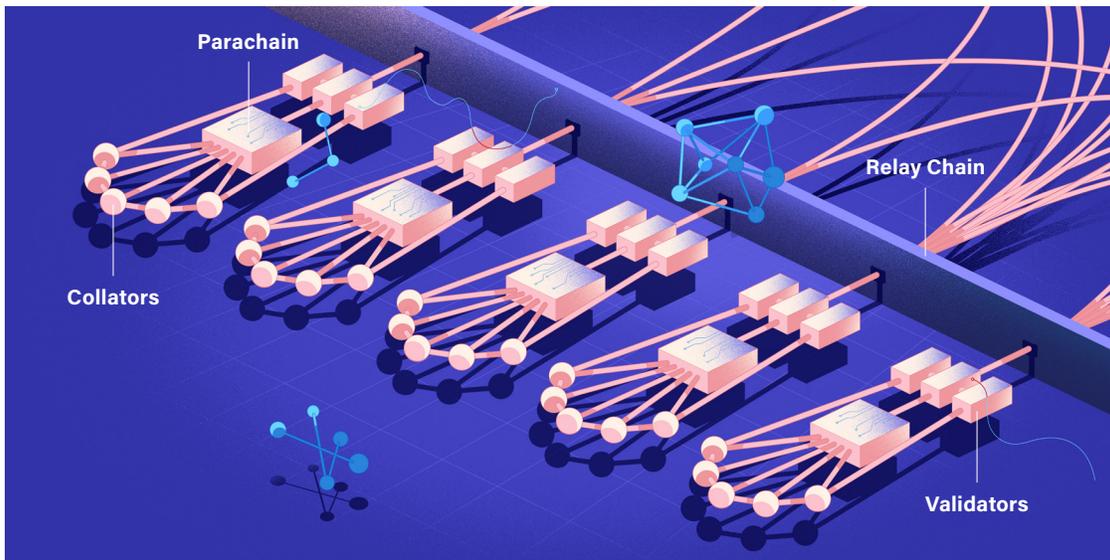
Polkadot is a blockchain network that aims to provide a trust-free environment where specialized blockchains can communicate with one another via the Polkadot **Relay Chain**, the main blockchain of the Polkadot system that is responsible for the network's shared security, consensus, and cross-chain interoperability.⁴ The Polkadot network scales by processing transactions across multiple parallel blockchain shards known as parachains, which is a stark contrast to networks that suffer from scalability issues due to a sequential processing of transactions. **Parachains** are sovereign blockchains that are optimized for a specific functionality or usage and can dictate their own governance structure. Interested blockchain projects can win a parachain slot by bonding DOT tokens, which can be sourced through a crowdloan should the project not have enough DOT of their own. Those who are not able to secure a parachain slot can also turn to **parathreads**, which allow blockchains that do not require continuous connectivity to the network to operate on a pay-as-you-go model (e.g. data oracles). Projects that use a parathread pay a fee in DOT for each block they produce. The primary difference between parathreads and other parachains is that parathreads are shared by multiple projects, which will take turns producing blocks as needed. Similar to the Bitcoin Lightning network that allows parallel processing,⁵ Polkadot achieves scalability by having transactions on each parachain processed in parallel as opposed to all in sequential order. Each of these parachains take the form of a blockchain and run in parallel to all other **shards**⁶ and the Relay Chain. Parachains and the Relay Chain trustlessly communicate with one another through a technology known as Cross-chain Message Passing (XCMP) protocol, which we delve into below.⁷

Although parachains can connect to the Polkadot Relay Chain through a parachain slot, there are only so many slots available. As the number of available slots opens up, a greater number of blockchains can be deployed on the Polkadot network to interact with other blockchains. However, it is worth noting that each auction does not necessitate a new project, and projects can re-apply for an auction once their slot lease⁸ is over. Parachains and parathreads also have the ability to connect with external, economically separate networks through **bridge parachains**.⁹ Blockchain bridges carry various designs, from centralized to more decentralized ecosystems.

Figure 1
Network Structure



Source: [Polkadot](https://polkadot.network/)



Those who manage and keep record of parachains and parathreads are known as collators. The role of a collator node is to maintain a full node of their particular parachain and a full node for the Relay Chain, as well as to collect and retain parachain transactions from users and author new parachain blocks, much like miners on a Proof-of-Work blockchain.¹⁰ Generally, they collate and execute transactions to produce new block candidates which are passed onto Relay Chain validators that are responsible for verifying and proposing a parachain block. Collators do not secure the network, as this is the role of a validator, and having too many collators could theoretically slow down the network.¹¹ Until a collator's proposed block candidates have been validated, collators are unable to build new blocks on a parachain. As full nodes of the Relay Chain, collators also play a pivotal role in **Cross-Chain Message Passing (XCMP)**. They are aware of other collators on different parachains and communicate with each other by sending messages from one parachain to another. However, with the XCMP still in development at the time of writing, the Polkadot testnet¹² has a temporary substitute known as **Horizontal Relay-routed Message Passing (HRMP)**. While the HRMP has the same interface and functionality as the XCMP, it is much more resource intensive because it stores all messages in the Relay Chain. In order to send transfers and messages between parachains and the Relay Chain,

every message is first sent to the Relay Chain, then from the Relay Chain to the desired parachain. However, once the xCMP has been implemented, HRMP will be phased out to achieve greater network efficiency.

As collators maintain the Polkadot network, **validators** secure the network by securing the Relay Chain and staking DOT tokens. In exchange for posting DOT as collateral, validators can confirm the legitimacy of transactions that were passed from collators,¹³ produce blocks on the Relay Chain, and participate in consensus with other validators of the network. Validators thereby earn DOT rewards from transaction fees and block rewards in exchange for their service. Validators that do not comply with the consensus algorithm of the network will have their staked tokens slashed, which is the act of partially or fully removing their staked tokens. However, good performance results in validators receiving block rewards and transaction fees in the form of the network's native token.¹⁴ Validators are elected by **nominators**, who secure the Relay Chain by staking DOTs and select trustworthy validators to the active validator set by bonding their stake to particular validators. In return, the chosen validators generally give a portion of their staking rewards to the nominator. At time of writing, **Kraken users can earn up to 12%** on their KSM and DOT, with on-chain staking on Kraken.¹⁵ Any parachain full node or collator can also act as a **fisherman** of the network and report bad behavior to validators. Much like collators, fishermen keep full nodes of parachains. Acting as bounty hunters of the system, they are in charge of watching collators' processes and submitting invalidity reports if they find any misconduct. This ensures that there are no invalid state transitions included in parachain blocks, and fishermen are rewarded with a large payout if they are proven right of the reported misconduct, but will have their stake slashed if they are proven wrong.¹⁶

Kusama

Founded in 2019, Kusama is the “wild” cousin network of Polkadot with nearly the same codebase. Kusama was created to allow experimental development for those who want to utilize the Kusama network or prepare for future deployment on Polkadot. It

is also famously referred to as Polkadot’s “canary network,” the term originating from the practice of using canaries in coal mining to alert miners when toxic gases reached dangerous levels. Much like these canaries, Kusama was envisioned to be the network that warns project developers of issues that lie ahead when deployed in a real-world environment. Accordingly, various upgrades and features can be showcased and tried out on Kusama before it is implemented on Polkadot. The two networks are similar, yet independent from one another. However, both networks largely carry the same structure, and both Polkadot and Kusama will auction off parachain slots in order to select which parachains will be added to the core network.

Much like the Polkadot network, Kusama has Parachain Slot Auctions where parachains are added to the Kusama Relay Chain to become part of the Kusama network. Parachain auctions can involve crowdloans, where projects bond KSM to secure a parachain slot. The Kusama council and Kusama (KSM) stakeholders make the final decisions over what happens in the Kusama network, including the timing of the Parachain Slot Auctions. While the Kusama network is intended as a test network to Polkadot, it’s worth noting that it could become a home network for underfunded crypto projects that are unable to compete for a parachain slot in the Polkadot ecosystem.

Kusama vs. Polkadot

Kusama and Polkadot are nearly identical in their codebase, and while Kusama is best known as Polkadot’s test network, they remain independent and standalone networks. Kusama and Polkadot were created with different intentions; the former focuses on speed for bold experimentation and early-stage deployment, while the latter prioritizes reliability and predictability. To have a fuller understanding of the networks, we’ll first take a closer look at commonalities and differences between the two.

Figure 2

Kusama vs. Polkadot

Similarities	Differences
<ul style="list-style-type: none"> ▪ Decentralized and permissionless on-chain governance: anyone with the network's native token (ie. KSM, DOT) has a say in network developments. ▪ Architecture and network codebase: both networks are "a multichain, heterogeneously-sharded design based on Nominated Proof of Stake (NPoS),"¹⁷ ▪ Hot-swappable runtimes for forkless, on-chain upgrades. ▪ Interoperability: Cross-Chain Message Passing Protocol (XCMP). ▪ Same general architecture and roles: both have collators, validators, non-permissioned candle auctions, parachains, parathreads, bridges, fishermen, etc. 	<ul style="list-style-type: none"> ▪ Parachain slots and duration: Polkadot parachain slot durations are capped at 2 years and divided into 3 month periods, while Kusama parachain slot durations are capped at 1 year and divided into 6 week period ▪ Speed: Kusama was created with the intention of speedy and bold project deployments. Accordingly, the speed at which the Kusama network adapts to and evolves with change is roughly 4 times faster than Polkadot, with governance parameters that allow faster upgrades and shorter wait times between governance events. Block time and throughput are identical on both networks but on Kusama token holders have 7 days to vote on referendums, followed by an 8 day enactment period, after which the referendum is enacted on the chain. On the other hand, on Polkadot, token holders have 28 days to vote on referendums, followed by a 28 day enactment period. ▪ Bonding requirement: Acquiring a parachain requires teams to bond tokens, which is likely to be a lower hurdle on Kusama than on Polkadot.

As intended upon its inception, both networks serve a different purpose. Polkadot and Kusama may be better suited for different projects, as per figure 3.

Figure 3

Benefits of each network

Kusama (KSM)	Polkadot (DOT)
<ul style="list-style-type: none"> ▪ Lower bonding requirement for validators and parachain auctions --> lower barrier to entry ▪ Low slashing penalties ▪ Faster upgrades on deployed projects --> best environment to test out new technology 	<ul style="list-style-type: none"> ▪ Higher network stability and security --> best environment as an upgrade path for existing or newer applications ▪ Higher validator rewards

Usage

Despite Kusama's association as a test network, it is likely to remain a highly sought after network onto which blockchain projects deploy. Initially, Kusama is a perfect pre-production environment where teams are able to test out projects under real-world conditions with lower stakes in case of bugs or issues that arise during their testing period. Polkadot is best suited for the deployment of applications that necessitate the greatest level of security and stability, ones that may involve higher-value transactions.

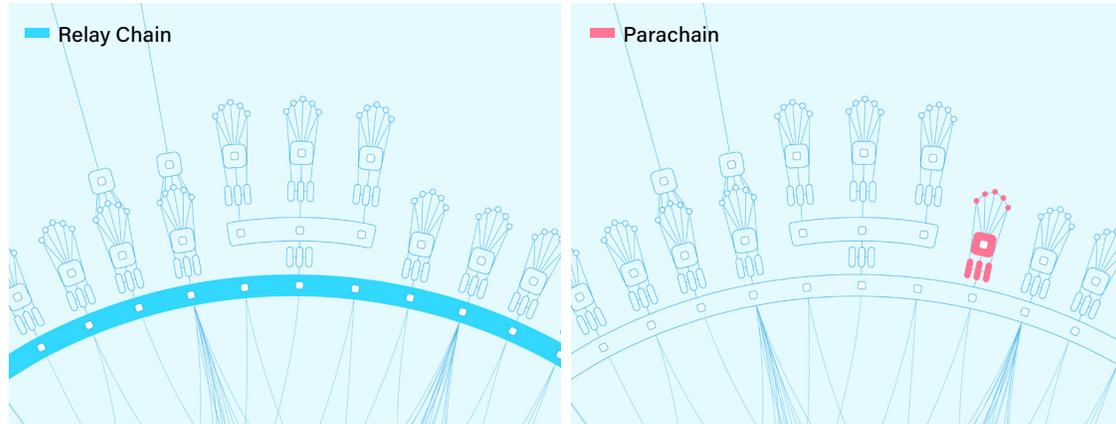
Once both networks are up and running, projects can choose to exist on both networks and likewise use Kusama as a testing environment. Some teams can choose to stay and exist only on Kusama, especially if they do not require the highest level of security or high throughput and want to take advantage of likely lower bonding requirements offered by the Kusama network.¹⁸ As most upgrades to Polkadot will first be tested on Kusama, it can present an opportunity for those utilizing the Kusama network to be the first to experience the latest changes in technology. Whichever ecosystem projects choose to use, both will continue to co-exist as close but separate communities with their own set of governance rules and use cases. In the future, it'll also be possible for Kusama to bridge into Polkadot for cross-network interoperability.

3.

Parachains

One of the value propositions of the Polkadot and Kusama networks is the concept of pooled, or shared, security. Blockchains can benefit from the shared security provided by validators of the Polkadot Relay Chain by leasing a parachain slot. Parachain slots are limited, and will be auctioned off individually so there's only a single parachain auction occurring at any given time. But before we delve into how parachain slots are acquired via parachain auctions, we will first look at how parachains function.

Figure 4
Parachains



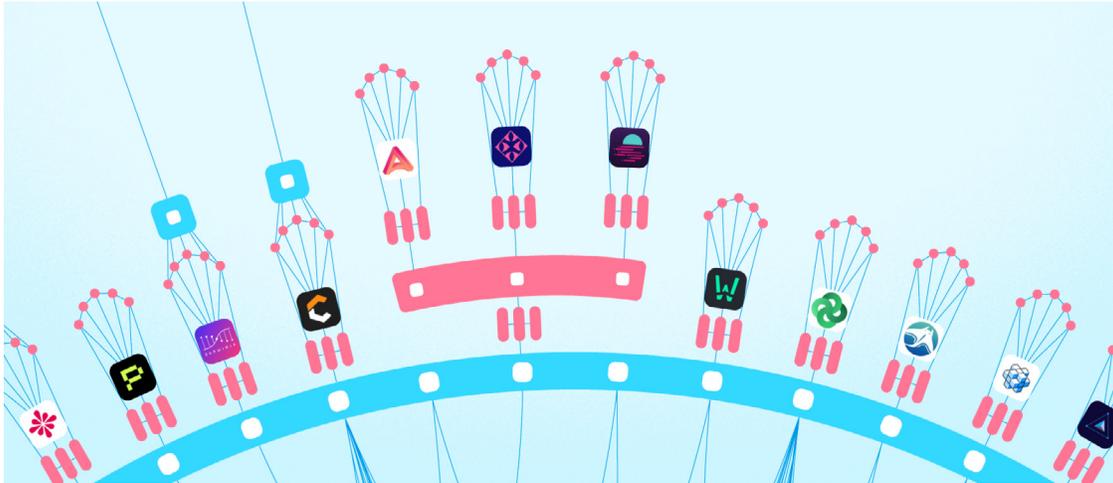
Source: [Kraken](#)

For both Kusama and Polkadot networks, parachains will most commonly be in the form of a blockchain, but do not need to be designed strictly in the form of a blockchain.¹⁹ Managers of parachains, known as collators, also do not need to be staked on the Relay Chain or own any DOT tokens unless the specific parachain which they maintain

stipulates such requirements. As the networks are liberal with how each parachain sets up rules for its respective network, parachains have the freedom to decide on their own economies and method of validating transactions (ie. through transaction fees). Whichever form and method is chosen, the validity of a transaction is still enforced on the Relay Chain level.

The Polkadot network necessitates cross-chain latency in the messaging of one parachain to another. Ideally, latency is around two blocks—one block validated for the message to be dispatched and one validated for the receiving chain to process and produce a block in response to the message. In application, there may be cases where latency is greater than two blocks if messages end up being queued for processing, or if there are no nodes that are running both parachain networks in order to gossip the message across. Due to this necessary latency in sending across messages between parachains, some parachains are being developed to become parachain hubs for entire sub-industries. For instance, the parachain project Acala aims to be a hub for DeFi applications. The applications of parachains are endless, and now that we have an understanding of how parachains work we will delve into how a chain can secure a parachain slot to be part of the Kusama or Polkadot network.

Parachain Auctions



Source: Kraken Learn Center

Parachain auctions were envisioned to be a tool of equitable distribution and provide competing teams a fair chance for a slot. On both Polkadot and Kusama, there is currently a limit of 100 parachain slots. For efficient allocation, parachains will be divided and allocated to three different parachain categories: governance granted parachains, auction granted parachains, and parathreads. The first category, **governance granted parachains**, are also known as “common good” parachains, allocated by Polkadot’s on-chain governance system. They are referred to as “common good” chains because they will be chains that benefit the entire network such as bridges that connect the Polkadot network to other networks or chains. These system-level chains or public utility chains do not generally have an economic model of their own and aid in the removal of transactions from the Relay Chain, enabling more efficient parachain processing. Another category is **auction granted parachains**, which are granted in a permissionless auction, meaning anyone can bid to participate in the ecosystem. Projects can bid with their own DOT or KSM tokens, or collect DOT or KSM from the community through a parachain crowdfund, or crowdloan campaign.²⁰ Lastly, there are **parathreads**, which are identical to parachains except that they are executed on a pay-as-you-go basis with an auction for each block.

Parathreads are more appropriate for projects that do not require continuous connectivity to the network.

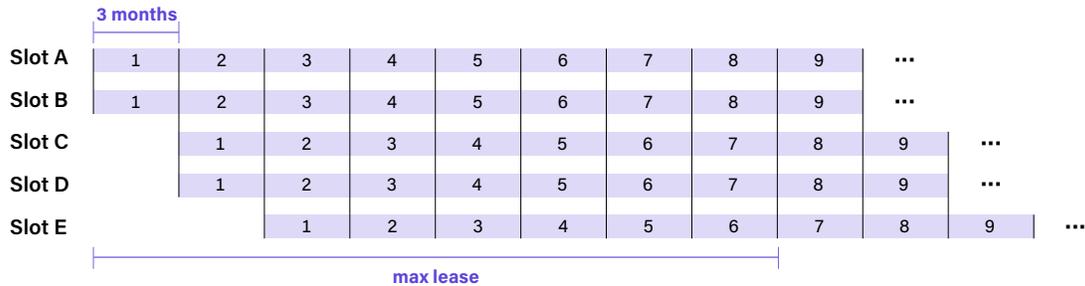
Though parachain auctions have yet to start on the Polkadot network, Kusama is now offering parachain auctions on the network through a modified candle auction format. Polkadot parachain auctions are set to go live in end-2021 and will take on the same format as Kusama, via modified candle auctions.²¹ **Candle auctions** are similar to open auctions, where bidders submit bids and the highest bidder at the closing of the auction wins. Parachain slot auctions are a modified form of this auction where the duration of the auction is retroactively decided, meaning going in, bidders do not have a clear idea of when the auction will end. This format was implemented to avoid **auction sniping**, which is when the end of an auction is known and bidders choose to initially place lower offers than what they think the item is truly worth, in the hopes of bidding up slowly and acquiring items at a lower price. This essentially makes winning a bid an exercise of timing and luck, rather than a proper allocation of value and ownership. With this modified candle auction format, the state of the bid is made visible yet the ending of the auction is kept hidden to ensure that participants make their true bids early on.

Polkadot parachain slot durations are capped at two years and divided into three month periods, while Kusama parachain slot durations are capped at one year and divided into six week periods. This means that parachain slots can be leased for any combination of periods of the slot duration. Parachains can lease more than one slot, which would allow their lease on Polkadot to pass the maximum two year period should they opt for the leasing of a contiguous slot. Individual parachain slots are fungible, which enables parachains to continue existing if they would like to.

Parachain Slot Bidding

Projects, or parachain teams, can bid in the auctions by specifying the time range of the slot that they wish to lease, which specific periods, and the number of tokens they are willing to bond. For example, in the case of Polkadot, the slot ranges may be any of the periods between 1–8 in figure 5, as each period within the range represents 3 months.

Figure 5
Polkadot parachain slots at genesis



Source: Polkadot Wiki

As previously discussed, parachains will host different decentralized applications that can simultaneously interact with one another through the Relay Chain. Furthermore, each network currently supports a maximum of 100 parachains, and auctions are used to determine the majority of the teams that will get to run their projects on a parachain.²²

The first live parachain went live on Kusama on May 17, 2021, under the name Shell.^{23,24} The parachain was designed to be a hollow vessel (hence the name “Shell”) that could be configured and upgraded into something functional. A week after its launch, the Shell parachain was upgraded to Statemine, which is Kusama’s equivalent of the Polkadot’s Statemint common-good parachain. As we covered above, common-good parachains are system-level or public utility chains. According to Gavin Wood, the founder of both Kusama and Polkadot networks, Statemine supports the following main functionalities:

- a low-cost place to hold and transfer ksm: the minimum balance and transaction fees are substantially lower than the relay-chain;
- the transferral of permissioned fungible assets: such as non-algorithmic stable coins; and
- the permissionless creation, issuance, and transferral of both fungible assets and non-fungible assets (NFTs).

Using the Cross-Chain Message Passing (XCMP) protocol, Kusama's native token KSM can freely move between Kusama and Statemine as well as other parachains with Statemine. Statemine thus acts as a reserve that trustlessly holds KSM and other assets in sovereign accounts.

Parachain auction winners

As of writing, with much anticipation of the crypto community, parachain auctions on Kusama went live and have been completed. The following teams have secured a spot on the Kusama network through parachain slot auctions.

Figure 6

Auction winners

Parachain auctions	Project	Total KSM raised	Contributions	Candle auction end
First auction	Karura	501,137 KSM	14,614	on block 12,096,001
Second auction	Moonriver	205,935 KSM	5,977	on block 8,051,569
Third auction	Shiden	138,457 KSM	4,611	on block 8,154,395
Fourth auction	Khala	132,280 KSM	2,759	on block 8,323,562
Fifth auction	Bifrost	142,431 KSM	938	on block 8,355,247

Source: [Kraken blog](#)

The five winning teams have each raised a significant amount of KSM prior to the auctions in order to secure a parachain. DeFi protocol Karura raised 501,137KSM (roughly \$91M equivalent) through a crowdloan, Moonriver network raised 205,935KSM (roughly \$37M equivalent), Shiden network raised 138,457KSM (roughly \$25M equivalent), Khala network raised 132,280KSM (roughly \$24M equivalent), and Bifrost raised 142,431KSM (roughly \$25M equivalent) ahead of the parachain auctions.^{25,26} As mentioned earlier, a crowdloan campaign allows projects to raise capital in order to participate in a parachain slot auction. Anyone can participate and support projects by investing their KSM or DOT and if a campaign is successful and the parachain is on-boarded, the raised tokens are locked into the parachain's account for the entire duration for which it is active. Once

the parachain lease is over, the tokens are returned to those who participated in the crowdloan.²⁷ In the case that a project is unsuccessful in winning an auction, assets are returned to the participants at the end of the crowdloan campaign.

Auction 1 winner: [Karura](#)



The first winner was [Acala's Karura network](#) (KAR), which secured the first ever parachain slot on Kusama. Karura was founded by the Acala Foundation to be a scalable network optimized for DeFi (Decentralized Finance). It aims to deliver several different DeFi functions on its platform, including a crypto-collateralized stablecoin, an automated market maker (AMM) decentralized exchange, access to liquid staking, and a blockchain compatible with Ethereum's code. It's an all-in-one DeFi platform that will allow you to swap, borrow, lend, earn, and more; transactions will be settled with micro gas fees that can be paid in virtually any token, the cost being a fraction of what is required on other networks. The project aims to deliver financial products and stablecoins to Kusama's entire ecosystem of networks.

Karura collected funds through a crowdloan, and in return for the support participants received Karura's native token KAR. For each 1KSM locked, participants were promised a minimum return of 12KAR, with the exact value dependent on total tokens collected and bonded. Currently, the estimated reward is 22KAR per 1KSM contributed, with 30% of rewards readily available to utilize within KAR's Decentralized Finance (DeFi) application. The remaining 70% will be vested and released gradually over the duration of the 48-week lease period. The parachain for KAR will be leased from June 22, 2021 to May 13, 2022.²⁸ Karura's native token KAR has a fixed supply of 100M KAR, with the entire supply minted

in the genesis block at launch. This results in 0% inflation, with a fixed and deflationary supply schedule.²⁹

Karura's launch phases and roadmap can be found [here](#). Additionally, KAR trading is now [available on Kraken](#).

Auction 2 winner: [Moonriver](#)



The second winner was Moonbeam's companion network [Moonriver](#) (MOVR). It's a smart contract platform that supports Ethereum decentralized applications, by providing a full EVM implementation, a Web3-compatible API and bridges that connect Moonriver to existing Ethereum networks. It's the canary network to its sister network Moonbeam, meaning all that is deployed on Moonriver will later be implemented on the Moonbeam network on Polkadot. Moonriver also plans to implement a built-in integration for all Kusama and ERC-20 tokens and bridges to other assets like bitcoin. Ultimately, Moonbeam will be a smart contract platform that allows developers to build applications that will be compatible with existing Ethereum developer toolchain and network.

As Moonriver also participated via a crowdloan, the network is distributing an estimated 14MOVR per 1KSM for participants that bonded their KSM in support of the project. 30% of the rewards are released immediately upon the launch of the parachain, while the remaining 70% is linearly vested over the span of 48 weeks, or the duration of the parachain lease. Moonriver's parachain lease period is from June 29, 2021 to May 13, 2022.³⁰

Moonriver's launch phases and roadmap can be found [here](#). Additionally, MOVR trading is now [available on Kraken](#).

Auction 3 winner: [Shiden](#)



The third winner was [Shiden](#) (SDN), a smart contract platform for decentralized applications on the Kusama network. Shiden is built to support “layer 2” solutions, which refers to secondary frameworks built on top of existing blockchains that improve upon a network’s scalability and transaction speeds. Shiden is also a canary network to the Plasm network (PLM), which will later be deployed on Polkadot. Shiden will act as the R&D chain of Plasm, and PLM token holders can claim 1SDN token for 1PLM token owned. Shiden has leased a parachain from July 6, 2021 to May 13, 2022, and rewards crowdloan participants with an estimated 20SDN per 1KSM bonded.³¹ Please note that the 20SDN denotes the raw crowdloan reward and is not inclusive of early-joiner rewards and promotional fees.

Shiden’s launch phases and roadmap can be found [here](#). Additionally, SDN trading is now [available on Kraken](#).

Auction 4 winner: [Khala](#)



The fourth winner was [Khala](#) (K-PHA), a canary network for the Phala (PHA) network which will follow on Polkadot. The network is a trustless computation platform built to

enable cloud processing without sacrificing data confidentiality, and ensures scalable processing power by separating the consensus mechanism from computation. As a member parachain ecosystem, Khala (and later Phala) will provide computing power to other blockchain applications while protecting the data layer. This opens up the possibility of privacy-protected DeFi trading positions and transaction history, co-computing DID confidential data, developing light-node cross-chain bridges, and more. Currently, Khala network is developing on-chain services such as mass data analytics, which could become a viable alternative to services like Google Analytics, without the compromise of personal privacy.

Similar to the prior winners, Khala network participated in the auctions through a crowdloan and secured a parachain for the duration of 48 weeks, from July 13, 2021 to May 13, 2022. For participants of the crowdloan, Khala is rewarding an estimated 150PHA per 1KSM bonded. While 34% of the rewards are released immediately, the remaining 66% will be released linearly over the entire duration of the parachain lease.³²

Khala's launch phases and roadmap can be found [here](#).

Auction 5 winner: Bifrost



The fifth winner was **Bifrost Finance** (BNC), a network that provides users access to DeFi applications while allowing token holders to stake any cryptocurrency on the Bifrost platform. In return for staking, users will receive a vToken of equal value—e.g., 1ETH for 1vETH. This token will allow access to decentralized apps while providing staking rewards. Ultimately, when launched on Polkadot, Bifrost users will be able to trade assets through bridge parachains, convert their tokens into vTokens, and receive rewards

for providing liquidity on Proof-of-Stake (PoS) systems. The benefits of vTokens is the ability for users to avoid the risk of locking in their assets while receiving a double reward when staking the asset. For instance, if a user connects their existing tokens supported by Bifrost, say 10TRON, they will receive 10vTRON in return. This vTRON can be traded through bridge parachains and users will also be rewarded for connecting their 10TRON.

For the participants of the Bifrost crowdloan, Bifrost is rewarding an estimated 22BNC per 1KSM bonded. While 50% of the rewards are released immediately, the remaining 50% will be released linearly within the entire duration of the parachain lease. Bifrost is leasing a parachain from July 20, 2021 to May 13, 2022.³³

Bifrost Finance's launch phases and roadmap can be found [here](#).

Supply implications

One potential implication of parachain auctions is on the supply of the native token (ie. DOT, KSM). For a team to secure a parachain slot on either the Kusama or Polkadot network, they must bond the native token KSM or DOT token as part of the parachain slot auction. Once a slot is won, these tokens are locked into the smart contract that connects the project's parachain to the Relay Chain. So long as parachain slots are operating, there will be a significant amount of KSM or DOT committed and locked up. Currently, the total amount of KSM raised for the first five projects that won a parachain represent approximately 12% of KSM's circulating supply.³⁴ Once the lease is over, the tokens are returned to the project team and/or those who helped fund the project through a crowdloan. Such a commitment of tokens into a project or network impacts the availability of tokens in the market for alternative use, as there will be lessening supply with steady or increasing demand. This is essentially an opportunity cost that could affect the value of the tokens if more tokens are locked up and there is a perceived decrease in the number of tokens in circulation.

Similarly, a burst in demand for parachain slots could result in a positive feedback loop. For instance, greater demand for parachain slots will result in greater demand for KSM

or DOT tokens, which could send spot prices higher. As the tokens appreciate, market participants may be compelled to buy more of the tokens, which heightens teams' concerns of affording a parachain slot. This could in turn bring about even greater demand for KSM or DOT, thereby sending token prices even higher. While a hypothetical scenario, once both networks go live and demand increases, we could see a potentially meaningful supply side shock.

Alternatively, there are potential opportunity costs tied to staking or bonding in parachain auctions. Those who participate in parachain auctions by bonding their tokens to a specific project forgo the rewards of staking, if they had chosen to stake their tokens instead. Funds are also locked in, meaning users cannot access their bonded KSM or DOT until the project's lease period has lapsed. While those who bond their tokens to project auctions do generally receive an incentive in the form of the project's native token, owning the native tokens would mean that the lender assumes the systematic risks associated with KSM and DOT networks as well as an additional risk tied to the project itself. It's worth noting that lending or bonding in parachain auctions carry both risks and benefits that should be carefully weighed.

4.

Conclusion

Both Kusama and Polkadot are early in their journeys of becoming ecosystems that support a variety of interconnected sub-sectors and projects. As a canary network, Kusama is paving the way for the most competitive projects in the crypto industry to not only evolve and refine but also learn to interact with other projects in the ecosystem. With the nature of the parachain auctions allowing community support and token-backing to be part of the auction winning process, we believe projects will have an opportunity to evolve with its community through trial-and-error as sectors within the crypto industry become increasingly interoperable.

Kusama has opened up an ecosystem where interoperability is accompanied by greater scalability. Parachains will continue to be leased through an equitable auction method, where competing teams have a fair chance at securing a slot. Much like the ethos of crypto, we hope Kusama and Polkadot parachains will create a more inclusive industry that slowly expands and replaces existing inefficient and centralized systems in the world today. While we are yet unsure if the two networks will become independently thriving ecosystems that serve the needs of different projects, or whether one will remain the “wild” or rougher starting point for the other, we believe they will both bring about tremendous growth in the industry.

Resources

If you are interested in keeping up with the developments of the network, be sure to check out the resources below:

- Kraken's Parachain Auctions podcast:
<https://www.youtube.com/watch?v=ldBEqRIPRXk&t>
<https://open.spotify.com/show/0LcLxV4tYLPLNN5ZEmyyWd>
- Kraken's video guide on Polkadot Parachains:
<https://www.youtube.com/watch?v=YAo2o01GBfA>
- Polkadot official roadmap:
<https://polkadot.network/launch-roadmap/>
- Polkadot updates:
<https://wiki.polkadot.network/en/>
- Kusama updates:
<https://guide.kusama.network/>
- How to buy kusama (KSM) on Kraken:
<https://www.kraken.com/en-gb/learn/buy-kusama-ksm/>
- How to buy polkadot (DOT) on Kraken:
<https://www.kraken.com/en-gb/learn/buy-polkadot-dot/>

Footnotes

- ¹ <https://twitter.com/KaruraNetwork/status/140281168591421447>
- ² <https://polkadot.js.org/apps/?rpc=wss%3A%2F%2Fkusama-rpc.polkadot.io#/parachains/crowdloan>
- ³ <https://wiki.polkadot.network/docs/learn-crowdloans>
- ⁴ <https://polkadot.network/technology/>
- ⁵ Parallel processing refers to the process in which transactions are processed off-chain (off the main blockchain) instead of all on-chain (on the main blockchain), which allows a greater volume of transactions to be processed in parallel and achieves scalability on a system.
- ⁶ Parachains are shards, or horizontal partitions in a database that function to spread the load of data. ([https://en.wikipedia.org/wiki/Shard_\(database_architecture\)](https://en.wikipedia.org/wiki/Shard_(database_architecture)))
- ⁷ "Cross-chain transactions are resolved using a simple queuing mechanism based around a Merkle tree to ensure fidelity. It is the task of the Relay Chain validators to move transactions on the output queue of one parachain into the input queue of the destination parachain. However, only the associated metadata is stored as a hash in the Relay Chain storage." (<https://wiki.polkadot.network/docs/en/learn-crosschain>)
- ⁸ Projects can lease a parachain slot for up to two years. (<https://wiki.polkadot.network/docs/learn-auction>)
- ⁹ <https://wiki.polkadot.network/docs/en/learn-bridges>
- ¹⁰ Proof-of-work crypto protocols like bitcoin require expended computational effort in order for the network to recognize a block as valid. Participating miners simultaneously compete against each other to provide a valid PoW, or a block hash that meets the difficulty requirement, in order to earn the block reward and related transaction fees. The first step in PoW mining is for a miner to collect transaction data from a pool of unconfirmed transactions, known as the mempool. "Cryptocurrency Mining: A Primer" Kraken Intelligence (<https://kraken.docsend.com/view/7qqtW5i8q7z3mev>)
- ¹¹ Both Kusama and Polkadot networks hope to scale to 1,000 validator nodes. (<https://polkadot.network/join-kusamas-thousand-validators-programme/>)
- ¹² The Polkadot testnet is named Rococo. (<https://polkadot.network/introducing-rococo-polkadots-parachain-testnet/>)
- ¹³ Verification of bundled proof of state transition is known as a Proof-of-Verification block, which is what collators submit to validators. (<https://wiki.polkadot.network/docs/en/learn-parachains>)
- ¹⁴ <https://wiki.polkadot.network/docs/learn-validator>
- ¹⁵ <https://support.kraken.com/hc/en-us/articles/360037682011-Overview-of-On-chain-staking-on-Kraken>
- ¹⁶ <https://wiki.polkadot.network/docs/learn-availability>
- ¹⁷ <https://wiki.polkadot.network/docs/en/learn-kusama-vs-polkadot>
- ¹⁸ <https://wiki.polkadot.network/docs/learn-kusama-vs-polkadot/#:~:text=Teams%20wishing%20to%20run%20a,be%20lower%20than%20on%20Polkadot.>
- ¹⁹ <https://wiki.polkadot.network/docs/learn-parachains#:~:text=Most%20commonly%20a%20parachain%20will,paralle%20to%20the%20Relay%20Chain.>
- ²⁰ <https://wiki.polkadot.network/docs/en/learn-crowdloans>
- ²¹ <https://www.cryptoglobe.com/latest/2021/06/ethereum-and-polkadot-co-founder-gavin-wood-on-the-kusama-ksm-parachain-auctions/>
- ²² Maximum number of parachains are subject to change by governance vote. (<https://www.kraken.com/en-gb/learn/parachain-auctions>).
- ²³ <https://polkadot.network/kusama-parachain-auctions/>
- ²⁴ <https://twitter.com/gavofyork/status/1394352534375092224?s=20>
- ²⁵ <https://polkadot.js.org/apps/?rpc=wss%3A%2F%2Fkusama-rpc.polkadot.io#/parachains/crowdloan>
- ²⁶ <https://parachains.info/auctions#crowdloans>
- ²⁷ <https://wiki.polkadot.network/docs/learn-crowdloans>
- ²⁸ <https://parachains.info/auctions#crowdloans>
- ²⁹ <https://acala.network/karura/token>
- ³⁰ <https://parachains.info/auctions#crowdloans>
- ³¹ <https://parachains.info/auctions#crowdloans>
- ³² <https://parachains.info/auctions#crowdloans>
- ³³ <https://parachains.info/auctions#crowdloans>
- ³⁴ <https://parachains.info/#!>

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