Aventus

Whitepaper

2021

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Overview

Founded in 2017 as a blockchain protocol designed to reduce fraud in the live ticketing industry, Aventus has now broadened its scope to become a layer-2 blockchain protocol that brings scalability, lower costs, and speed to Ethereum transactions.

The Aventus Network (AvN) went live in February 2021, making it accessible for business and decentralised platforms to build on Ethereum with fairer transactions for all. This is enabling Aventus to realise its mission to encourage the broadscale adoption of public decentralised blockchain through interoperability between different platforms.

As a result, the Aventus Network brings unprecedented transactional performance and scalability at a considerably lower cost than Ethereum with more than 18m historic transactions to date. The unique advantage of the Aventus Network is its ability to implement custom business logic on the Proof of Stake network, maintaining full interoperability with Ethereum and beyond.

Problem

Ethereum's scalability issues make it a victim of its own success.

As the blockchain network of choice for most businesses, its maximum transaction throughput is wildly insufficient in meeting demand. The economics of supply and demand have thus skyrocketed transaction fees (or gas fees) making them prohibitively expensive.

What's more, these rising gas fees have made running smaller transactions (or microtransactions) over Ethereum unviable. For example, if a company wanted to use Ethereum to process credit card rewards, where users are awarded between 5-10% cashback - usually of less than $10 - it's likely that the gas fees would cost more than that value of the transaction. At peak times, gas fees can reach as high as $20 or $30 per transaction.

Its scalability and price issues compound with the serious potential consequence of driving users and enterprises away from the Ethereum network.

Additionally, Ethereum, although the biggest, is not the only public blockchain being used. It is difficult to communicate across blockchains, throttling mainstream adoption, as is the case of the oracle in Ethereum.

Solution

Aventus brings the scale of private blockchains and the security and interoperability of public blockchains — without the shortcomings of either. What's more, it is possible to implement any custom business logic on the Aventus Network, making it extremely versatile to any business or decentralised application that wants to build on Ethereum without the typical limitations of speed, scale, and cost.

Price

The AvN average transaction cost will start at $0.01 (paid in AVT) and will decrease with future optimisations in the roadmap. This is 99% cheaper than the average Ethereum transaction over the last year, which can reach as high as $30 per transaction during peak hours.

Scale

The Aventus Network (AvN) can scale to 2,000 transactions per second — 133 times more than Ethereum. The AvN will also process transactions into blocks within 0.13 seconds — 100 faster than the Ethereum blockchain.

Enterprise Grade

The AvN is onboarding over 18 million transactions from clients that have been active on private test networks over the last year and all live transactions will flow through the main net from now on too. Aventus is fully transparent about its Network traffic and fees, which can be explored at https://explorer.aventus.io.

Green

The AvN is a Proof-of-Stake blockchain, meaning transaction processors are not selected to 'mine' or 'mint' a new block based on how much energy they burn compared to everyone else, as with Bitcoin or Ethereum today, but rather based on how much of the aventus token (AVT) they stake. The consensus of the AvN is 99% more environmentally friendly than Ethereum.

Traction

The Aventus Network is already working with a number of organisations globally to implement bespoke blockchain solutions, including Live Nation France, cashbackAPP, Fan Dragon Technologies, Vow Currency, Fruit Lab, EOS, and more.

Partnerships

Imperial College London

CATAPULT Digital

LONDON & PARTNERS

MAYOR'S INTERNATIONAL BUSINESS PROGRAMME

Tokenomics

The AVT utility token aligns the incentives of network participants to ensure a performant, fraud resistant network governed by token holders.

Token Details

Token symbol: AVT

Standard: ERC-20

Precision: 18

Supply: 10,000,000 (no further minting)

Etherscan: https://etherscan.io/token/0x0d88ed6e74bbfd96b831231638b66c05571e824f

Token Mechanics

The AVT token is the fuel of the proof of stake, layer-2, Aventus Network. There are two user personas:

1. Validators (transaction processors): Validators stake AVT when they join the AvN. This stake serves two purposes:

a. As a proof of stake network. An individual Validator's stake, as a proportion of all Validator stakes, represents their probability of selection to process a block and earn associated fees. E.g. if a Validator stakes 10 AVT out of a total of 100 AVT staked, they are likely to receive 10% of all network fees over time.

b. As a fraud deterrent. If the Validator seeks to damage the network by violating its rules, they are penalised directly. This aligns their incentives with those of the network.

2. Users (transaction originators): Users pay AVT as fees to the AvN for processing their transactions.

Governance

AVT token holders are able to participate in votes to determine the key parameters in the AvN. This is done through gov.aventus.io. 1 Aventus Token = 1 vote. Validators with staked tokens get 2 votes per staked AVT, proportionate to their greater vested interest in the AvN and intimate knowledge of its operations.

Technical Details

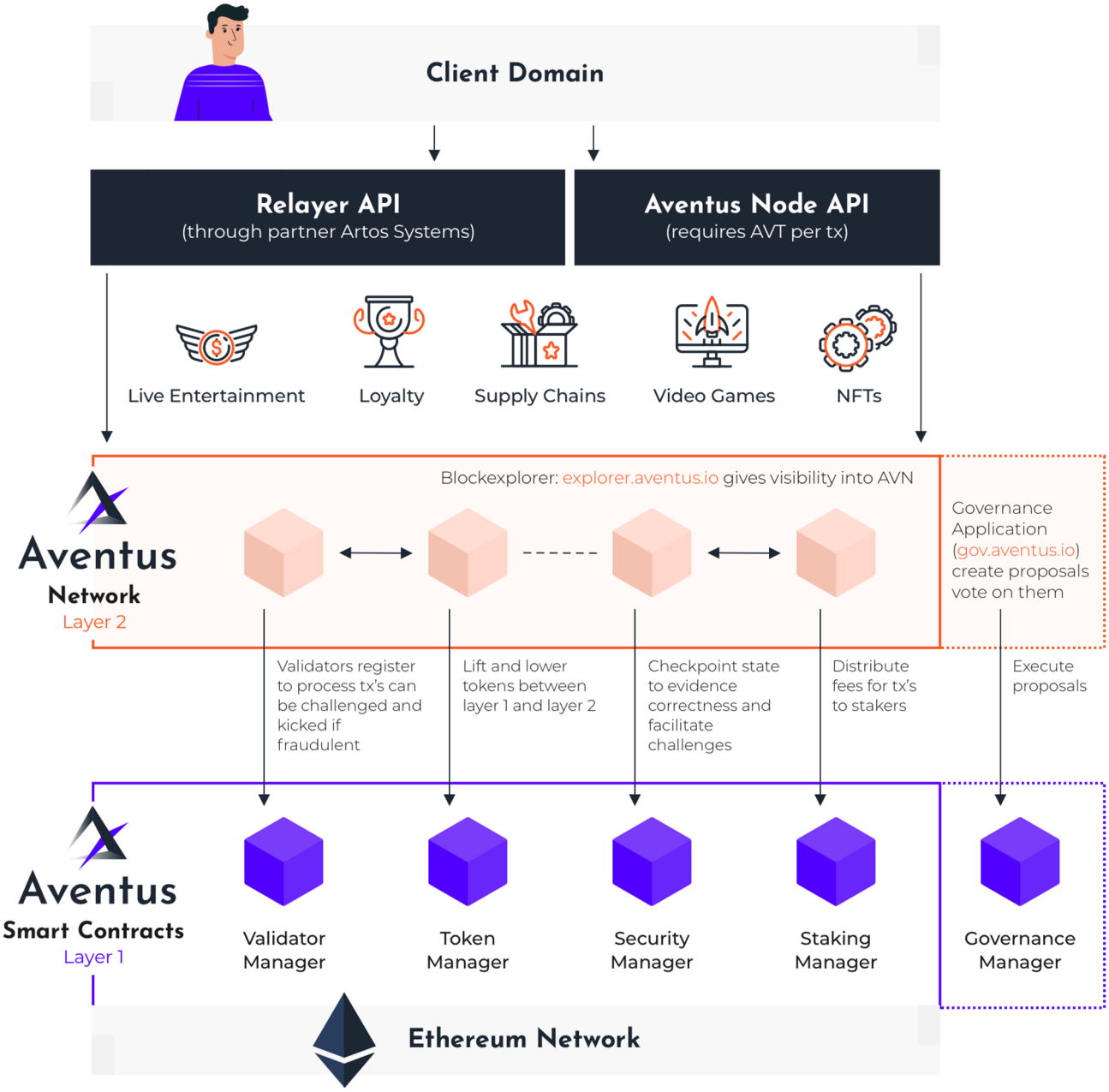
The Aventus Network (AvN) is a customisable layer-2 blockchain network that brings scalability, lower costs, and speed to Ethereum and beyond. It brings the scale and privacy of a permissioned blockchains with the security and interoperability of public blockchains — with none of the drawbacks of either.

Competitive Landscape

	Sidechains	Sharding	Quorum	Cosmos	Polkadot	Polygon	
Ethereum compatibility	■	■	■	■		■	■
Scalability	■	■	■	■	■	■	■
Security		■			■	■	■
Sovereignty	■		■	■	■	■	■
Interoperability		■		■	■		■
User Experience	■		■	■	■	■	■
Developer Experience		■				■	■
Enterprise Experience			■		■		■

Architecture Overview

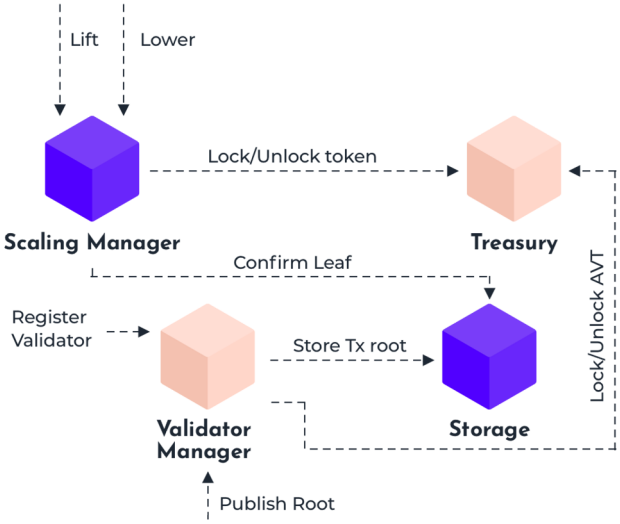
The diagram below depicts the various layers of the Aventus stack and how it operates with the other ecosystem applications:

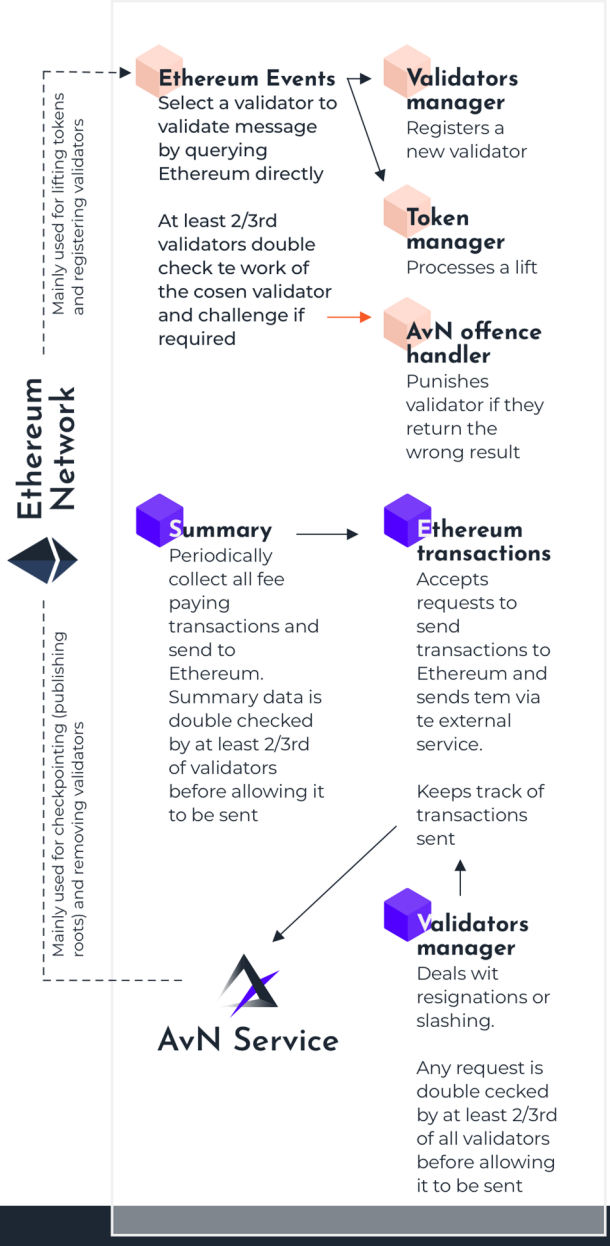


Architecture Layer-1

The AvN layer-1 architecture is comprised of a set of independently audited smart contracts for seamless coordination between the Ethereum network and the AvN:

- Staking contract for validator registration and management
- ERC20 and ERC777 transfer contract for lifting & lowering tokens
- Treasury — ledger contract for holding token balances
- Txs checkpoint - storage of AvN proofs





Architecture Layer-2

The AvN is built as a fork of Parity's substrate. It extends Substrate with pallets to introduce the following layer-2 functionality (further illustrated in the diagram below):

- Validator management
- Ethereum events handling
- Ethereum transaction handling
- Token management
- State summary checkpointing
- Finality tracker to avoid losing state information owing to block reorgs
- Offence handling for malicious Validators
- AvN infrastructure coordination

Major Milestones

The public launch of the Aventus Network takes over from the former release — the Aventus Protocol — and is the first step towards the full rollout of the AvN. The three-stage rollout is described in the terms and conditions of the Validator Registration Program. We are following the polkadot launch process given we build on Substrate: Polkadot's open source blockchain.

Phase 0 (2020):

Private R&D with a small group of initial clients across a few use cases proving the value of the network.

Phase 1 (Feb 2021):

Launch of the AvN in production with 10 nodes, all operated in the cloud by Aventus however the community provides the stake and earns the fees associated with them.

Phase 2 (mid to late 2021):

Move to nominated proof of stake protocol where third party users can run Aventus nodes while we maintain the ability for AVT holders to stake and earn fees for doing so.

Phase 3 (2022):

Anyone can join the Aventus Network as a Validator and start processing transactions and earning the fees by putting up their AVT stake.

Team

The core management team consists of Alan Vey as Chief Executive Officer, Anna Frankowska as Chief Commercial Officer, Andrey Brozhko as Chief Product and Technology Officer, and Andrew Shackleton as Chief Services Officer, with Daniel Masters of Coinshares and William Knottenbelt of Imperial College as board members and advisors.

Alan Vey
Chief Executive Officer

Alan is a Forbes 30 under 30 winner for his work as the co-founder & CEO of the Aventus Network. Before moving into Blockchain, Alan worked at Deloitte in the Entrepreneurial Business Department and macro hedge fund Brevan Howard. He completed a Master's Degree in Artificial Intelligence at Imperial College London. His masters thesis was on blockchain technology, during which he co-founded Aventus.

Anna Frankowska
Chief Commercial Officer

Anna is a Forbes 30 Under 30 Europe Technology award winning entrepreneur, Economist by education with a diploma from University College London, and Investment Banker (RBS) by training with CFA Level 1 and FCA & PRA certifications. Anna specialises in commercial strategy, partnerships and scaling products having successfully led companies in fintech, blockchain and entertainment industries. She is also a World Economic Forum Global Shaper and sits on the advisory Board of The Oxford Guild Society.

Andrew Shackleton
Chief Services Officer

Andrew is a high-performance and innovative operational leader with over 15 years' achievement in delivering multi-million pound global digital programmes with a clear focus on increasing profitability, client satisfaction, ROI and revenue growth. He has delivered exceptional growth at start-ups, and spin-offs, and is a specialist in turning around areas of operational underperformance. He graduated with a MSc from the University of Cape Town.

Andrey Brozhko
Chief Product & Technology Officer

Andrey has over 20 years of experience leading product and software engineering efforts, primarily in distributed systems and security applications, spanning large multinational companies and startups in Fintech, Blockchain and Cloud industries. Ex-R3 and ex-Oracle, he is a graduate of Warwick University and holds an MBA and MSc software engineering degrees.

Alex Pinto
Cryptography SME

Alex combines a broad background in software engineering and academic experience, including a PhD in Cryptography and teaching undergraduate computer science courses. Before joining Aventus, he was a researcher at the Information Security Group at Royal Holloway University of London, and a software Engineer at Sophos and Fidessa, where he developed charting applications for Technical Analysis in Trading. A firm believer in the power of education, he maintains a blog promoting blockchains, cryptography and a scientific approach to software development.

Glyn Dimond
Ethereum SME

Glyn is a senior engineer at Aventus, who has followed blockchain's progress since the release of the Bitcoin whitepaper. After completing his MEng in AI & Cybernetics at the University of Reading, he worked across finance, security, and distributed systems, specialising in writing Solidity smart contracts from 2018 onwards, with a number of successful projects now live on Ethereum mainnet.

Nahu Seyoum
Substrate SME

Nahu is a software engineer with over 13 years experience developing enterprise grade software targeting desktop, web and blockchain applications in various industries. He has spent 10 years as a full stack developer and over 3 years working on blockchain. He has experience designing and writing smart contracts on Ethereum and more recently focusing on substrate and rust.

Danny Masters
Investor & Mentor

Danny is a Bitcoin Pioneer, Executive Chairman of CoinShares, a company that has accumulated over $3B in assets in XBT Provider listed products while having attracted over 40,000 clients. Entrepreneur, visionary founder and industry leader in the domain space's first two NASDAQ-listed bitcoin and ethereum tracking certificates. Director of the world's largest, first fully regulated Bitcoin Fund (which is now retired). Co-founded Global Advisors in 1999, after serving as Global Head of Energy and Trading Business at Morgan Guaranty Trust Company ("MGT") in New York (now JP Morgan Chase & Co.).

Prof. William Knottenbelt
Advisor & Mentor

Prof. William Knottenbelt is Professor of Applied Quantitative Analysis in the Department of Computing and Director of the Imperial College Centre for Cryptocurrency Research and Engineering (IC3RE). He is an expert of the World Economic Forum on blockchain and is technical advisor to a number of blockchain start-ups including Aventus, Gradbase and Alice.si.

Disclaimer

We reserve the right to change any technology mentioned in this white paper in favour of the overall goal of the project.

No Investment Advice

The information provided on this white paper does not constitute investment advice, financial advice, trading advice, or any other sort of advice, and you should not treat any of the website's content as such.

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We will strive to ensure accuracy of information in this white paper although we will not hold any responsibility for any missing or wrong information. You understand that you are using any and all information available here AT YOUR OWN RISK.

All Investments Involve Risk

The Aventus Token is not intended to be, nor should you consider it to be a security. Losses may exceed the principal invested, and the past performance of cryptocurrency, market, or financial product does not guarantee future results or returns. Gains with cryptocurrencies are typically subject to tax, depending on what country you reside.

We accept no liability for loss or damage suffered by you as a result of investing in, or staking with the Aventus Token.

Trading and investing bears risks, do so at your own risk, and we advise you to never use more money than you can afford to lose. The cryptocurrency market is a volatile and risky market. Cryptocurrency investing may not be suitable for all readers of this white paper. Anyone looking to invest in the Aventus Token should consult a fully qualified independent professional financial adviser.

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