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Executive Summary

Conduit was founded on the belief in a single philosophy:

> *"All of humankind has a role to play in solving the world's problems, and we must use our collective talents and skills to solve these problems together."*

Launching from the Massachusetts Institute of Technology (M.I.T.) and guided by this philosophy, we are building the world's first decentralized quantum cloud computing platform to meet the world's immediate need for efficient, scalable, and flexible computing capacity. To accomplish this bold goal, we will execute the phased development of two core services:

1. Fast, affordable cloud computing,
2. Quantum computing on the cloud.

Our Vision for Fast, Affordable Cloud Computing

Many cloud-computing customers are plagued by high service costs and a general lack of transparency around their usage and billing. In addition, leading cloud computing service providers are unable to provide the intended value to end users due to the limitations of their solution's aging architecture, lack of control, and inflexible design. On the Conduit platform, our users will have access to a fast, affordable and secure cloud computing pay-per-use service that will provide (1) more flexible, scalable computing services, (2) broader control of usage, and (3) better visibility around usage and performance.

Our Vision for Quantum Computing on the Cloud

Within the next few years and following the launch of our cloud computing service, we will launch a quantum computing service on the cloud and give third-party app developers the tools and platform they need to create quantum-powered applications. A quantum cloud computing service that is both affordable and user-friendly has revolutionary implications for all sectors -from Financial Services to Healthcare to Tech.

Our team is led by MIT's first quantum computer engineer, Ryan Robinson, and Selva Esra, an experienced developer that has led multiple technology projects for Morgan Stanley, Lehman Brothers, and the Royal Bank of Scotland. Additionally, our team includes Scott Heng, our Lead UI/UX engineer from MIT and Julia Han,a Wellesley graduate charged with leading our marketing efforts. Proudly, our board of advisors includes celebrated academics, such as Scott Aaronson, former Professor of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology (MIT) and current David J. Bruton Centennial Professor of Computer Science at the University of Texas at Austin, and experienced professionals that possess over 100 years of combined experience and have developed technologies for MIT Media Lab, IBM, CitiBank, Standard Chartered Bank, and JP Morgan Chase.

The Problems with Modern Computing and How We Got Here

Computers were created as tools for humankind. Starting in the Mainframe Era, computers were "a bicycle for the mind" - amplifying human productivity and imagination. With the advent of the Internet Age, we leveraged computers as a means of connecting to each other. To build and strengthen these digital connections, we created applications like email, blogging, and social media. But as our technology advanced, we were overwhelmed with data as it was generated by everything and permeated every aspect of our digital experience. After we recognized this problem, our question quickly became, "How do we make all of this data useful?" And technology leaders at the forefront of innovation quickly responded and gave us *cloud computing*. By leveraging the infrastructure of digital connections and better utilizing otherwise dormant resources, we could apply powerful solutions to "Big Data" problems. In the late 2000s, cloud computing followed the spirit of the previous decade's computers and became a crucial business tool. As proof of the lasting impact of cloud computing on commerce, 74% of Tech Chief Financial Officers believe that cloud computing has had a measurable impact on their business[1]. Due in part to those sentiments, the U.S. Cloud Computing industry is now worth over $67 Billion, and over $200 Billion worldwide.[2] With a growth rate of 19% a year, not only is cloud computing here to stay, but it's also rapidly growing.[3]

The Challenges and Limitations of Cloud Computing

While cloud computing in itself was a great solution, it brought great problems. According to RightScale's 2018 Annual Report on the Cloud, over 28% of cloud users struggle to understand how to use cloud in the first place[4]. Consequently, companies who look to the cloud to prevent headaches only get more problems as they become overwhelmed with the complicated nature of the technology and its pricing. In the hassle of moving over their infrastructure from private data centers to cloud infrastructure to save cost, companies waste time, money, and other precious resources in making sense of "how to cloud." In RightScale's 2018 Annual Report on the Cloud, executives estimate they overspend 35% of their budget on cloud services[5], and there exists other research that indicates they actually over-spend around 45% of budgets![6] Companies around the world are spending more than they can afford on cloud computing services - and this does not include additional money spent on setup, integration, ongoing maintenance, personnel, employee training, and other overhead expenses, like energy costs.

With specific regard to the energy challenges cloud computing creates, the global consultancy, McKinsey & Co., recently analyzed data center energy use and found that, on average, they were using only 6% to 12% of electricity powering servers to perform computations! The rest was used to keep servers idling and ready in case of an activity surge

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[1] Columbus, Lewis. *Roundup of Cloud Computing* .... Forbes. https://www.forbes.com/sites/louisco... Internet. April 2017.

[2] Columbus, Lewis. *Cloud Computing Market* .... Forbes. https://www.forbes.com/sites/louisco... Internet. October 2017.

[3] *Market growth forecast for public cloud services worldwide from 2011 to 2020.* Statista. https://www.statista.com... Internet. 2018.

[4] G. Cook. *Greenpeace's Investigation Of Amazon'...* Greenpeace.org. http://www.greenpeace.org/us... Internet. May 2015.

[5] *Rightscale 2018 State of the Cloud Report*. RightScale. https://assets.rightscale.com/uploads/p... Internet. 2018.

[6] Glanz, J. *Data Centers Waste Vast Amounts Of Energy.* The New York Times. http://www.nytimes.com/2012/09/23... Internet. September 2012.

that could slow or crash operations.[7] While this wasted energy contributes significantly to operational expenses, it also creates negative environmental impacts. To better raise awareness around these impacts, Greenpeace recently published a report on the environmental harm caused by Amazon EC2 data centers, demanding transparency on server usage and maintenance activities.[8]

In addition to the challenges of modern cloud computing, there also exist significant limitations. Just as the invention of the bicycle helped people to overcome certain problems prior to its introduction, its limitations were uncovered only after its introduction (e.g., inability to travel great distances, exposure to elements when riding, etc.). Similarly, the limitations of cloud computing - like weak computational power and slow processing speeds - have become more evident as more users have adopted and utilized the technology. And as the number of global internet users increases beyond 3.8 billion and the need for cloud services grows [9], these limitations will significantly strain weak and aging computing resources and harm global computing performance, and ultimately, technological advancements.

The World Needs Quantum Computing... and Big Tech is Failing to Deliver

Today's digital computers are weak and inefficient. While their design has helped humankind overcome many computing challenges, their expiring transistor-based design has significant limitations that have become more obvious with the introduction of the quantum computer. The information stored in digital computers, called bits, can only exist in two states (1 or 0); however the information in quantum computers can exist not only in these two states *and* any superposition of these two states. This unique characteristic of quantum computers translates into faster processing and lower energy use, and indicates that humankind has only scratched the surface of computing's potential. Industries - from pharmaceuticals to financial services - see the potential of quantum computing and have posited applications from simulating chemical reactions of novel molecules to dynamic portfolio optimization.[10] The possibilities are *truly* endless.

According to the 2013 McKinsey Global Institute (MGI) Report, quantum computing represents a "potentially transformative alternative to digital computers, but the breadth of its applicability and impact remain unclear and the time frame for commercialization is uncertain.[11] The quantum computing market landscape is even more confusing than the cloud landscape, as there are currently no established players. Despite the fact that experts are predicting the development of quantum computers will grow exponentially over the next five years, there exit significant barriers to market domination in quantum computing (e.g., technological challenges, general commercial applicability, etc.). Major Tech industry players such as IBM, Google, Amazon and D-Wave have experimented by incrementally increasing the number of Q-bits and power of current processors, but none of these efforts have

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[7] Manyika, J. et. al. *Disruptive technologies: Advances that will transform life, business, and the global economy*. McKinsey Global Institute. McKinsey & Co. https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital... Internet. May 2013.

[8] G. Cook. *Greenpeace's Investigation Of Amazon's Rapidly Growing Cloud*. Greenpeace.org. http://www.greenpeace.org/usa/greenpeace... Internet. May 2015.

[9] Global Internet Users. Internet Live Stats. http://www.internetlivestats.com/internet-users/. Internet. February 2018.

[10] Innovating with Quantum Computing. Accenture Labs. https://www.accenture.com/t00010101T0... Internet. 2017.

[11] Manyika, J. et. al. *Disruptive technologies: Advances that will transform life, business, and the global economy*. McKinsey Global Institute. McKinsey & Co. https://www.mckinsey.com/~/media/McKinsey/Business%20Functi... Internet. May 2013.

developed a commercially viable quantum computing service. For example, D-wave's main product, the 2000Q, is a large machine used to perform specific calculations, but it has not proved to be more useful than modern PCs and sells for the high price of $15 Million per machine[12]. Despite the current and future global need for quantum computing, major players are struggling to bring a meaningful advance in quantum computing to an eagerly awaiting public.

[12] Ari Levy, *Quantum computing is finally here, and a Canadian company has a plan to bring it to the masses* https://www.cnbc.com/2018/02/23/d-wave-is-raising-money-to-bring-quantum-computing-to-public-cloud.html

The Conduit Solution

Conduit is the AirBnB of Cloud Computing. Our platform allows individuals or organizations to effortlessly rent out the unused computing power of their devices (e.g., mobile, PC, etc.) to other individuals or organizations through our simple, secure service. Conduit will collect, organize and assign network computing resources to provide cloud services to the masses while simultaneously building a quantum computing service on the cloud. Through Conduit, individuals and organizations around the world can lend their available computing resources, have the flexibility to use scalable resources on our decentralized network, and join millions of others around the world as we collaborate to build a global quantum computing platform.

Founded by the world's first MIT-trained quantum engineer and backed by the world-renowned, quantum computing pioneer Scott Aaronson, Conduit's mission is to bring a powerful, commercially-viable quantum computing service to the world. Users around the globe will access our quantum computer through a secure, decentralized network to better meet their various computing needs, while developers will be given the building blocks and tools to create third-party applications on our platform to better address ever-evolving customer needs. To accomplish this, our strategy is simple: 1) create a cloud computing economy on a decentralized network 2) deploy quantum services for users on the Conduit network.

For those who contribute their computer resources to our network, or "partners," Conduit runs as a background application on their device(s), never interfering with their experience. In fact, should a partner begin to use significantly more computational resources, we will notify them and recommend they reduce their allotted computing resources, thereby allowing us to always maximize our resource utilization while preventing negative partner experiences. Additionally, Conduit is easy to setup with pre-configured options for instances, and offers easy-to-use drag-and-drop tools to effortlessly select and allocate resources, helping our customers get back to more important work and avoid getting bogged down by lengthy, arduous system configurations.

Additionally, we do not force our partners or users into long-term contracts and we provide a simple pricing model based on a simple gigabyte (GB) per hour rate. For example, if you use 1GB for 100 hours or 100GBs for 1 hour, we will measure that as "100 GB HOURS." We will then charge a standard rate per GB HOUR, thereby makes pricing easy for users to understand, and in many cases, making our service far cheaper than other cloud services. Also, we provide a budgeted billing option, so should an organization want to cap their spend at $10,000/month, we can either (1) notify the users of high utilization prior to their budget being overran, or (2) slow or stop their service once their budgeted funds have been spent. However, we realize that it is often crucial that a user's instance(s) be continuously running, and in such cases, we can continue running the instance and simply notify them they have passed their monthly budget and collaborate with them to find other options to help them better control their spend. In summary, users can not only depend on Conduit to provide quality cloud and quantum cloud services - but also depend on us to provide greater transparency around their usage and charges.

Conduit's new computing paradigm gives rise to a wide range of security issues that traditional cloud service providers do not face. Firstly, the partner providing computing resources might be

untrustworthy. Even if the partner were trusted, other factors like multi-tenancy and complexity of software stacks would continue to enlarge the attack surface. Our first step toward addressing these securities concerns is to protect client's data at rest with semantically secure encryption. Following this step, we ensure computation integrity with hardware-root-of-trust, preventing all potential software-based attacks - *including operating system-level attacks* - that may compromise or tamper with a user's desired computation. Designed and built with rigid security in mind, we do not stop at the industry level measures, but take an extra step to ensure user data and computation privacy. Harnessing the state-of-the-art technique in privacy enhancing technologies, we incorporate a privacy-preserving framework that renders all computations data-oblivious, eliminating all side channel leakages. With this advance, Conduit is the first production-level design that will deliver providers and users this heightened level of security and privacy protection.

We also provide a host of security measures - such as limiting file types, restricting system access, or monitoring resources - to protect workers from malicious clients. More specifically, Conduit ensures benign inputs to the network screening and barring from submission common file types with malicious content. The registry of file types will be consistently updated and reviewed to ensure quality of job submission. Furthermore, Conduit software prevents the the worker submitted computation from unnecessary access to hardware and software and restricts system privileges to only what the Conduit miner allows. The Conduit partner will have the option to stop providing their spare capacity should they feel necessary as our software will monitor CPU usage and memory utilization of partners to ensure proper use of resources. Jobs that lead to over-utilization or request further access will be aborted or halted across the network. These measures ensure the miner's absolute control over their own hardware and experience.

Besides the above mentioned security-oriented preemptive expedients, Conduit's design also provide incentive-based mechanisms to guarantee high quality results. In particular, Conduit imposes a "time delaying" to miners with poor performance (i.e., incurring higher latency in completing the submitted task) and taxes "bad results". These incentive-based mechanisms provide a competitive economics to the Conduit ecosystem, so as to enable Conduit to not only operate efficiently but also provide unparalleled security at scale.

Additionally, we provide value to the users and partners beyond the service because we realize that expertise and technical resources are crucial to successful partnerships. Users need resources readily available and easily accessible, and partners need to better understand how to get the most out of their Conduit partnership. We provide easy-to-digest training videos, detailed and summarized documentation to soften the user learning curve, and world-class 24/7 technical support to help our users and partners with their biggest and smallest challenges. At Conduit, we recognize the success of our business not only rests on the quality of our service, but also on the quality of the experience before, during, and after partners and users utilize our service.

Our History

Conduit was launched from the Massachusetts Institute of Technology (MIT) and was a direct product of the MIT Bitcoin Project. In 2014, the MIT Bitcoin Project was created by Jeremy Rubin and Dan Elitzer and offered $100 in bitcoin to undergraduates to foster innovation among the world's brightest engineers and scientists. They understood that giving students access to cryptocurrencies was "analogous to providing them internet access at the dawn of the Internet Era." An undergraduate at the time, Ryan Robinson, Conduit CEO, quickly recognized the opportunity in the underlying blockchain technology to provide unlimited computing resources to companies and research institutions across the world. Robinson consulted with Harvard Professors, John Johnson and Pardis Sabeti, to learn more about creating and leading a diverse team towards this goal. As Robinson formed the idea of Conduit, he studied the mathematics of big data under the founder and Head of MIT's Lincoln Lab Supercomputing Center, Dr. Jeremy Kepner, while also working with MIT's Venture Mentoring Service.

Through these experiences and guidance from esteemed mentros, The Conduit economy gradually transformed from one where users would bid for computational time into a service-oriented company. Its new goal focused on leveraging the decentralized platform to provide seamless computing services; in both cloud computing and quantum computing.

Our CEO and Founder: Ryan Robinson

Growing up in Florida, Ryan Robinson's interests skewed heavily towards literature, poetry, and the beach. Yet in his early high school years, it was almost certain that he had an affinity for mathematics and difficult computations. Growing up during the "Internet Boom" and seeing first-hand the rise of tech giants, such as Apple, was inspiring and ultimately influenced his decision to apply his arithmetic abilities to pursue hard sciences and solve the world's most challenging technological problems like Apple's late CEO, Steve Jobs. It was with these thoughts in mind that he applied and was accepted to MIT.

After studying mechatronics and completing the curriculum content in an unprecedented two year period, he transitioned to studying information theory and quantum computing under Professor Seth Lloyd - who famously wrote the first paper on how to build a quantum computer. Under the guidance of Professor Lloyd, Ryan created his own major: "Quantum Engineering" - a unique cross-disciple combination of computer science, information theory, quantum computing, mechanical engineering, electrical engineering, materials, systems, and design. Upon completion of these studies, Ryan became the world's first MIT-trained "Quantum Engineer," and he continued to pursue graduate level computer science and Big Data coursework, while adding a degree in literature before finally graduating in 2017. In addition to these studies, Ryan possessed a keen interest in the business aspects of technology and was inspired to compete DECA's International Business Competition, where he placed in the top 99th percentile in Economics and the top 99th percentile in Marketing Management.

Ryan's professional experience includes working with startup businesses and commercial banking. He was a business analyst with Innovators 4 Purpose, a non-profit educational startup that teaches children in lower-income neighborhoods STEM skills. He also worked with the Presencing Institute and New Resource Bank as a data analyst. He is on the advisory board for the Strategic Analytics Summit and a mentor at Bootup.

Our Team

Selva Esra is Chief Technology Officer at Conduit. He is a blockchain expert, a passionate champion for Agile development and implementation of DevOps. Prior to Conduit, he served as Head of technology for Standard Chartered Bank, assistant VP of Citibank in Singapore and developed technologies for JP Morgan, Lehman Brothers, and Royal Bank of Scotland.

Julia Han is our Chief Marketing Officer. Prior to startup life, she worked in marketing at The Boston Consulting Group (BCG). Julia specializes in business strategy, organic growth, investments and marketing. She graduated from Wellesley College in Political Science & Government and has studied at MIT Sloan and The Institute of Political Science (Sciences Po) in France.

Scott Heng is our Lead UI/UX Engineer. Graduating from MIT, Scott has worked as a UI engineer at Sentient Technologies and was a data science intern at Takeda Pharmaceuticals. He has also done research in MIT's Chung Lab and Myerson Research Group. Scott Heng specializes in UI/UX design and frontend implementation.

Hung Dang is Conduit's Technical Security Lead. As a current PhD candidate at the National University of Singapore, his present research projects are focused on privacy enhancing technologies, scalable distributed consensus protocols, and adversarial machine learning. His works have been published at various prestigious security conferences (ACM CCS, PETS, FSE).

Ebonique Stepney is a Marketing / Community Lead for Conduit. She has a strong passion for various growth and retention marketing strategies and specializes in community building, community management, and social media. She is also a proud mother!

David Andrade is an Executive Associate for Conduit. Prior to Conduit, David was a manager and supervisor with AlliedBarton Security Services and MIT Security Services.

Erik Martin is the Community Advisor to Conduit and was the general manager for Reddit. Erik is the founder of Earthlings, VP of marketing at Airtime, and previously the VP of Member Partnerships at WeWork. He's been named one of the world's 100 most influential people by Time Magazine, and a top 50 innovator by Adweek. He specializes in community management, social media growth strategy, and developing strategic partnerships.

Our Advisors

Scott Aaronson is our Lead Quantum Computing Advisor and a world-renowned quantum computing expert and former professor at the Massachusetts Institute of Technology (MIT). Please see his in-depth bio for additional information.

Cristina Dolan is an Advisor and MIT Media Lab Alum and Entrepreneur. She was also a Co-Founder of OneMain (Acquired by ELNK after IPO), Division President and Chief Strategic Alliances Officer at Geographic Community Portals. She has had multiple roles across Product Management, Software Development, Product Marketing and Enterprise Sales and has taken products to market for large companies (Oracle & IBM) and young start-ups. She has also held lead technical roles at Hearst New Media and ABC/Disney.

Daniel Santos, an advisor to Conduit, is a Henley Business school graduate with over a decade of investment banking experience gained at Morgan Stanley, DB and Citi in London and Renaissance Capital in Moscow. He is the Founder of Token Advisors and a World Economic Forum Summer Davos participant. With a specialty in token economics, international business development, and token game theory he was an early investor in IOTA and advisor to TRON's ICO.

Ashish Gaurav with an MBA from FMS Delhi, has seven years of experience across investment banking, financial market sales, strategy and change management. He currently leads Strategy & Change Management for the digital portfolio of Standard Chartered Bank with investments over $150M in projects and strategic initiatives worldwide.

Chuan Jin (CJ) Fong, a double degree holder from Singapore Management University with ten years experience in investment banking from Morgan Stanley and Nomura. He is the Asia CEO and Co-Founder at Token Advisors.

Yin Nawaday is a Conduit advisor and Harvard graduate with seven years experience in global strategy at CNN and Hearst Corporation. As the founder of Icebox Consulting Group and the Strategic Analytics Summit (SAS), her specialty is in global strategy, analytics, Big Data and Business Transformation.

Carsten Stocker is also a Conduit Advisor, founder of Spherity GmbH, a decentralized platform. Stocker has a Ph.D from the University of Aachen, is a Council Member of Global Future Network and the World Economic Forum, and has worked with the Machine Economy Innovation Programme. Conduit also receives legal counseling from WilmerHale, an international legal firm with offices in the United States, Europe, and Asia.

Stuart Prior is an Advisor to Conduit and has held various executive positions at global financial institutions, including CIO of Global Rates at Deutsche Bank, Director of IT at Credit Suisse, and head of Equity Technology and Renaissance Capital. Based in Switzerland, Stuart is an expert in cryptocurrency and emerging blockchain companies from Europe.

Corttrell Kinney is Conduit's U.S. Investor Strategist and leads investor relations. He has served as CEO of Hyland William, a board member of Sunflower Solutions, a fellow of the Give1Project Global Leadership Program and a graduate of Morehouse College.

Kanon Armstrong is Conduit's Marketing Advisor and is a Director of Product Marketing at Boston-based startup, Happie. A graduate of Cornell University, he has consulted and worked with companies of all sizes, from Fortune 100 companies to startups, across the Healthcare and Tech industries to launch new products and grow market share for mature products. He specializes in product positioning, value messaging, go-to-market planning, and marketing program execution.

Scott Aaronson, PhD

Lead Advisor on Quantum Computing

Scott Aaronson is a former Professor of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology (MIT) and the current David J. Bruton Centennial Professor of Computer Science at the University of Texas at Austin. Considered one of the top quantum complexity theorists in the world, he is widely known for his research in quantum computing and computational complexity theory. His research and popular writing have earned him numerous awards, including the United States Presidential Early Career Award for Scientists and Engineers, the National Science Foundation's Alan T. Waterman Award, the Vannevar Bush Fellowship, and MIT's Junior Bose Award for Excellence in Teaching.[13]

While at MIT, Scott taught a popular graduate-level survey course, *Quantum Computing since Democritus*, for which a book of the same name was published by Cambridge University Press. This work uniquely weaves together seemingly disparate topics into a cohesive whole by exploring engaging topics such as quantum mechanics, complexity, free will, time travel, the anthropic principle among many others. Many of these interdisciplinary applications of computational complexity were later fleshed out in his article, *Why Philosophers Should Care About Computational Complexity*.[14]

He is a founder of *The Complexity Zoo*, an online encyclopedia of computational complexity theory and catalog of all computational complexity classes. He also authors the popular blog, *Shtetl-Optimized*. His essay, *Who Can Name The Bigger Number?*, is widely distributed in academic computer science, and uses the concept of Busy Beaver Numbers as described by Tibor Radó to illustrate the limits of computability in a pedagogic environment. Professor Aaronson has also written popular articles for Scientific American (*The Limits of Quantum Computers*) and is frequently cited in non-academic press, such as The New York Times, Forbes, Science News, The Age, ZDNet, Slashdot, and New Scientist.

Professor Aaronson has been invited to various Tedx Talks as his discourse is been widely revered and appreciated. At TedxDresden, Scott covered the topic "What Quantum Computing Isn't", where elucidated the potential and limits of quantum computing. In a sober fashion, he gives an insightful overview of the state of research and outlines future expectations of quantum computers.

Scott obtained his BSc in Computer Science from Cornell University, pursued his PhD at the University of California, Berkeley, and completed postdoctoral fellowships at the Institute for Advanced Study and University of Waterloo.

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[13] Scott Aaronson profile. Simons Institute for the Theory of Computing. https://simons.berkeley.edu/people/scott-aaronson. Internet. 2018

[14] Personal Website. https://www.scottaaronson.com/. Internet. 2018

What is Quantum Computing and Why is it Important?

Definition of Quantum Computing

Often times, when people hear the word "Quantum Computing" they feel instantly confused and overwhelmed by what seems to be a hodgepodge of words that were both too complicated by in of themselves let alone together. The path to enlightenment starts by breaking down the words themselves. Quantum refers to Quantum Physics, a branch of physics that describes how the Universe works on a subatomic level. Now let's think about what computers do. Computer comes from the Latin word computare, meaning "to count or calculate." In other words, computers do math. Quantum computers just use quantum physics to do that. See, Quantum Computers rely on something called "quantum parallelism." Quantum Parallelism, in short, is the ability of quantum physics to do math calculations faster than normal (i.e. electric) computers. In computer science, a computer calculates using something called "bits." These bits store information. Colors. Height. Grades. Store Supplies. Everything. Computation, meaning math, is done using bits. To put it simply, the more bits you have the more powerful your computer. However, there is a whole different bit for quantum computers and quantum parallelism. It's called a "qubit." Each qubit can store twice as much information as one normal bit. Now we can start to see why Quantum Computers are more powerful than normal computers. Imagine, 1 bit verses 1 qubit. The qubit stores twice as much information as the normal bit. If you had three qubits then the qubits could store as much information as 8 normal bits and the difference only gets more noticeable with more qubits. In fact, with even just 10 qubits a quantum computer is as powerful as a 1024 bit normal computer.

Why Quantum Computing is Important

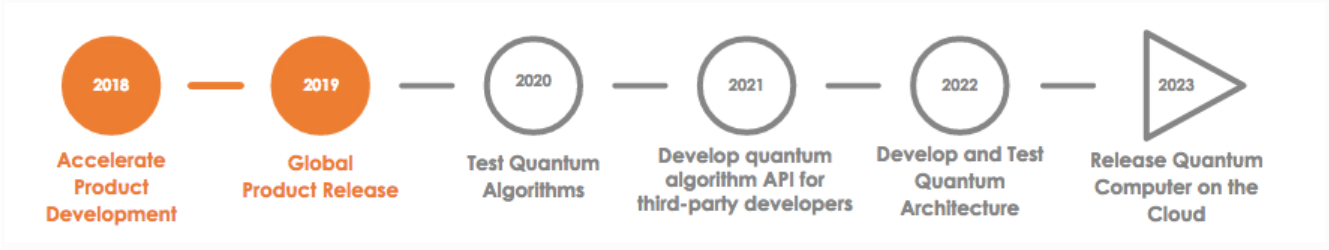
It starts with the fact that quantum computers are more powerful than normal computers. This means that we will (1) do things we can't do now or (2) do what we do today *at a lower cost and faster*. Quantum Computers can model nature and search vast amounts of data far better than classical computers. For instance, one paper titled, "Quantum Algorithm for Linear System of Equations" written by Avinatan Hassidim, Aram Harrow, and Seth Lloyd from MIT could solve "trillions of equations with trillions of variables." Not only would we be able to create virtual reality simulations bigger than anything created before it or predict economic downturns better than before than ever, but we would also be able to finally pick something to watch on Netflix! But one of the most *human* reasons Quantum Computing is so important is medication. New medications cost $2.9 Billion to develop on average.[15] Not only that, but the computer intensive R&D takes years of data crunching and analysis before even going through the process of government approval that can take years. Conduit's Quantum Computer will cut costs not by a factor of 2 or 10 by over a 1000x. Through quantum computing, Conduit will make medication more affordable for the entire world. Not only that, but by lowering the development costs more companies will create medications for diseases that were too expensive to treat before. Conduit will save thousands of lives and make healthcare more affordable for the entire world.

[15] R. Mullin. *Tufts Study Finds Big Rise In Cost Of Drug Development*. C&EN. https://cen.acs.org/articles/92/w... Internet. May 2015.

Our Path to a Quantum Future

Product Roadmap

In the current quantum computing landscape, there is neither large scale quantum computing nor fully fledged commercial applications. Conduit's ultimate goal is provide the first large scale quantum computing on the cloud that is not only affordable but commercially viable through our cloud services. In order to do so, we are not only focused on usability, but also affordability. Our initial steps into quantum computing will begin with our entry into the cloud computing market. Then by leveraging the computing capacity of our cloud network we will test quantum algorithms and then ultimately quantum computing through our network. Please see our path to a quantum future in the below image.



We will be the gateway to the Modern Quantum Revolution-leading development and accessibility of quantum computing. Our platform's quantum computing applications will come from providing the equivalent of a Quantum API where developers can create, publish, and sell novel quantum applications. Prior to this quantum app store, we will provide quantum algorithm testing for developers after we begin offering quantum algorithms as a service (QAaaS). This will give developers the resources to develop a whole new generation of algorithms that will evolve into applications and commercial use through the Quantum API.

We will create QAaaS as an extension of our initial cloud computing services. By scaling our compute capacity to overcome the exponential scaling factor of quantum algorithms Conduit will provide quantum algorithms critical to fields from finance to biology to physics research. Conduit will then extend this service to not just provide current quantum algorithms but also allow third party developers to customize their own algorithms.

Conduit will develop this compute capacity by first creating a cloud computing infrastructure-as-a-service (IaaS). AirBnB Meets Cloud Computing, Conduit offers cloud computing by paying miners to rent out the capacity of their computer. Not only can traditional miners equipped with GPUs mine Conduit Coins but also modern PC's. Modern PC's will be able to rent out the extra capacity of their computers to mine Conduit Coins while still using their computers.

After creating our cloud computing service and then extending it by providing quantum algorithms via simulation, Conduit will leverage its resources to create a quantum computer available through the cloud. Through Conduit's cloud resources, Conduit's compute capacity will exceed even the world's largest supercomputer. Conduit will be able to use finite element

analysis and matrix multiplication to optimize a solution for a quantum computing architecture that is affordable for the world.

Growing our Team

As Conduit transitions from cloud computing to quantum algorithms, Conduit will continue to expand its core team members specialized in quantum computing. This team will be composed of engineers and professors. Beginning with Scott Aaronson, Conduit will have three professors by 2020 working with the team. Conduit will expand its quantum team to 8 people by 2020 and 16 people by 2021. In addition to that, Conduit plans to partner with a quantum computing research group at MIT to help create its new architecture by 2020. Together, Conduit will have a powerful team of world class engineers.

Building our Global Network of Computing Resources

Beginning with the Conduit ICO, Conduit will reach the computers necessary to further our quantum initiative by a combination of advertising, network, and strategic partnerships. Conduit's initial community and partner market entry point is the cryptocurrency mining community. The cryptocurrency mining community is already familiar with the concepts of "mining" and digital currency. Conduit will first target this community first through its ICO in Q2 of 2018. Conduit's ICO will create a core community of miners and to not only provide funds necessary for accelerated product development but also the compute capacity necessary for Conduit's quantum initiative. With a target goal of 20,000 community members by the end of the ICO, Conduit's community will provide the capacity that will allow the product to be immediately usable upon global release in 2019. Conduit will reach this 20,000 member goal by using social media marketing to reach the cryptocurrency community through Facebook, Google, Twitter, and other relevant channels.

After the ICO, Conduit will use ICO funds to not only accelerate product development but also to forward our marketing efforts to bring more miners to the Conduit Network. Expanding out from the cryptocurrency mining community, Conduit will target specific industries such as telephone answering services. By the 2019 Global Release, Conduit will have at least 100,000 computers on its network-allowing customers to have a ready supply of computing resources for their cloud computing needs. Conduit's goal is to reach 500,000 computers by 2020. With enough computers, Conduit will be able to begin testing quantum algorithms on network while also providing cloud computing-ultimately leading to a 2021 release of Quantum Algorithms-as-a-Service.

After the 2021 release of Quantum Algorithms-as-a-Service, Conduit will expand those services to first offer quantum algorithm testing for third party developers and then begin developing our quantum computing architecture by 2022. Expanding on the existing architecture solutions such as quantum dots, Conduit will use its extensive compute capacity to use finite element analysis and matrix multiplication techniques to design and simulate quantum computers. Upon completing a design optimized for large scale quantum computing and cost, Conduit will then create this design to provide quantum computing on the cloud in 2023.

Simulating Quantum Algorithms

The common feature that both Quantum Computers and Classical Computers have in common is that they are both computers! And one of the things computers are great at doing is performing simulations. Thereby, while Quantum Computers have unique features that cannot be duplicated due to quantum parallelism a powerful enough computer would be able to simulate quantum algorithms and then even quantum computers themselves. While one modern personal computer provides only a fraction of the resources a supercomputer does, thousands and millions and computers would not only be more powerful than a supercomputer but more powerful than any computer that has ever existed. By using those resources, Conduit will first simulate *quantum algorithms* (algorithms uniquely made for quantum computers), and then create quantum computer designs. These quantum computers and algorithms can be simulated using Tooli and Hadamard quantum gates. Tooli gates are a classical gate, meaning they can be performed on a normal computer. The quantum Hadamard gate can be expressed as a Fourier Transform which can be calculated on a classical computer. Together, Conduit will be able to simulate a large range of quantum algorithms.

These simulation strategies share a common feature the identification of a suitable classical data structure to efficiently store the state or circuit, with efficient rules to update and evaluate it. In the state vector formalism, where states are represented as vectors of complex amplitudes and unitary operators as square matrices, families of circuits over increasing numbers of qubits cannot generally be eciently simulated, since the size of vectors and matrices increases exponentially. Nevertheless, Jozsa and Linden showed that certain classes of quantum circuit remain simulable in this framework, provided the entanglement in the states is restricted in a way that we shall describe below.[16]

Simulating the Quantum Fourier Transform A particular type of QFT relies on parallelization. Cleve and Watrous showed in 2000 that an aa QFT can be simulated using parallelizability. They showed e show that the QFT with respect to an arbitrary modulus m can be approximated with accuracy /spl epsiv/ with circuits of depth O (log log m)(log log 1 /spl epsiv/) and size polynomial in log m + log(1 /spl epsiv/).[17]

Product State Input Simulation

Since there are no entangling gates, the circuit can thus be simulated by following the evolution of individual qubits one by one. For each qubit this consists of a sequence of (adaptive) unitary gates followed by a measurement. Both the update of a single qubit state under the action of a single qubit gates and calculating the probabilities of the two measurement outcomes require a small (constant) number of classical calculation steps. By sampling from this probability distribution and using the generated classical bit as the control for the next rounds of single-qubit gates a simulation of the complete circuit is achieved.

[16] Comment: Despite the size of vectors and matrices growing exponentially because of the scale of Conduit's computing power, the Conduit will also be able to simulate these algorithms as well.

[17] Harry Buhrman, Richard Cleve, Monique Laurent, Noah Linden, Alexander Schrijver, Falk Unger, "New Limits on Fault-Tolerant Quantum Computation", Foundations of Computer Science 2006. FOCS '06. 47th Annual IEEE Symposium on, pp. 411-419, 2006, ISSN 0272-5428.

The full classical simulation consists of a linear number of simulated single-qubit measurements and a quadratic number of single-qubit gates and is thus efficient.[18,19] However, there is one caveat - not every quantum algorithm can outperform classical computers. The quantum Fourier transform (QFT) is sometimes said to be the source of various exponential quantum speed-ups. In this paper we introduce a class of quantum circuits which cannot outperform classical computers even though the QFT constitutes an essential component.

Quantum Algorithms as a Service (QA-a-a-S)

Conduit will be able to simulate quantum algorithms through it's expansive compute capacity. As mentioned before the quantum parallelism of quantum algorithms can be simulated through classical simulation. Quantum parallelism provides 2^n possible states, where n is the number of qubits. As the Conduit network expands, the ability to simulate quantum algorithm dramatically increases. Conduit will use it's matrix multiplication and finite element analysis.

Qubits	**Bits**	**# of 32 Bit Computers**
1	2	.0625
2	4	.125
4	16	.500
8	4096	128
20	1048576	32768
32	4294967296	134217728

Quantum Algorithms as a Service (QA-a-a-S): Select Use Cases

Virtual Reality and Netflix: In the paper, "Quantum Algorithm for Linear System of Equations" written by Avinatan Hassidim, Aram Harrow, and Seth Lloyd, the HHL algorithm we can solve "trillions of equations with trillions of variables." The HHL Algorithm operates on "sparse matrices," which are matrices with few entries to solve equations. The HHL algorithm has applications to virtual reality, gaming, physics simulations, and economic forecasts. While current classical algorithms make attempts at these problems, quantum algorithms solve these problems faster and easier. [20]

Banking and Finance - Buy the Best Stock in the World: Japanese financial holding company Nomura Securities has recently tested the applicability of quantum computing to stock

[18] Browne, Daniel E. "Efficient classical simulation of the quantum Fourier transform." New Journal of Physics, vol. 9, no. 146, 2007, doi:10.1088/1367-2630/9/5/146.

[19] Comment: In short, you follow each qubit one by one. Entangled Input Simulation Entangled states that are `p-blocked' or can be written as a product of entangled states across smaller sets that are no more than p bits can be simulated classically, and thereby can be simulated by the Conduit.

[20] Larry Hardesty, Linear Equations Go Quantum
https://www.technologyreview.com/s/416789/linear-equations-go-quantum/

market forecasting. Everyday, the financial industry is overwhelmed with data on capital markets and stock price fluctuations. In a statement, Nomura claims that its aim is to "test the extent to which the machine increases the efficiency and accuracy of calculations."[21] Quantum technology has strong potential to increase the everyday investor's portfolio and minimize risk.

In addition, the paper titled "Quantum Speed-Ups for Semidefinite Programming," outlines a quantum algorithm that utilizes quantum Gibbs sampling and the multiplicative weight method to solve linear programs faster than classical algorithms. Linear programs are used in the finance industry to make business decisions such as maintaining a portfolio or buying stock.

Improving Global Food Supplies and Industrial Materials: Quantum computing can perform finite element analysis better than classical computers. One paper titled, "Quantum Algorithms and the Finite Element Method" devise a quantum algorithm that uses quantum parallelism and the FEM technique used to calculate approximate solutions to the Boundary Value Problems that are at the heart of Finite Element Analysis. The Finite element analysis is used to everything from constructing skyscrapers to designing cars to limiting the amount of chemicals that enter your food through its packaging.[22]

[21] FinExtra, Nomura takes quantum step in stock-market forecasting
https://www.finextra.com/newsarticle/31750/nomura-takes-quantum-step-in-stock-market-forecasting
[22] Roduit B1, Borgeat CH, Cavin S, Fragnière C, Dudler V. Application of Finite Element Analysis (FEA) for the simulation of release of additives from multilayer polymeric packaging structures.
https://www.ncbi.nlm.nih.gov/pubmed/16227178

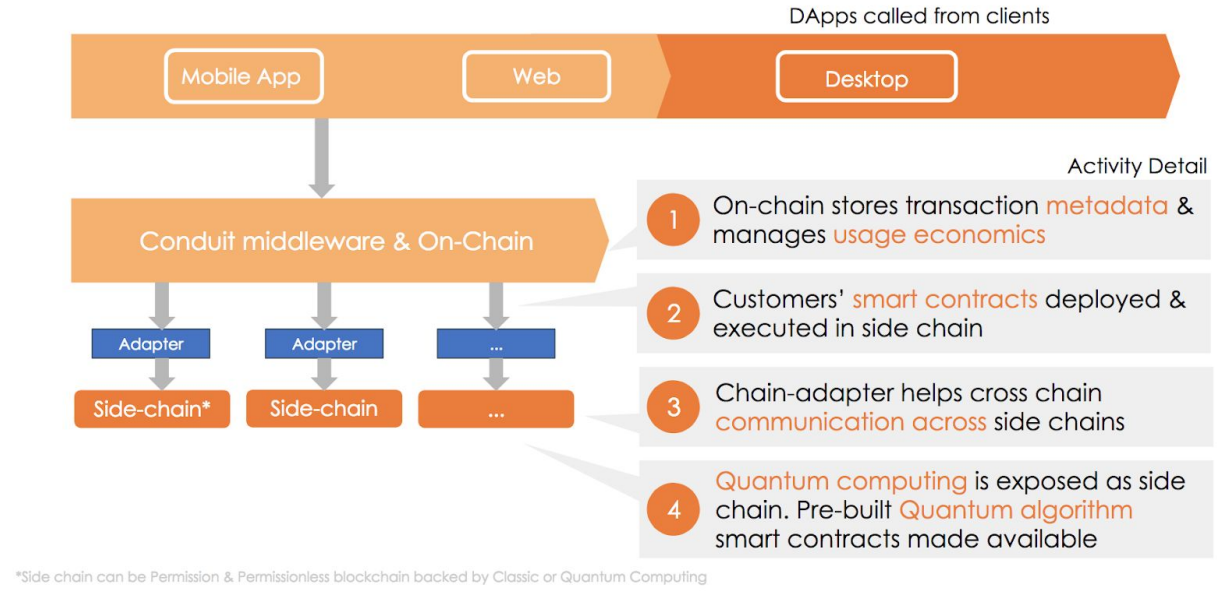
Technology and Architecture

1. Introduction

Our architectural approach is to utilize computing power using permissioned & permissionless blockchain. We achieve this through the use of a Conduit middleware, sideChains and APIs.

For our customers, we have created an efficient way to join the computing network to both buy and supply computing power & storage. We are using our COND coin as the integral mechanism to build trust and to pay for services, and our upcoming token sale will allow us to bootstrap the community, create our token economy, and raise necessary funds to complete development of the full-production Conduit ecosystem.

This section outlines the architecture and technology stack that supports the Conduit ecosystem.



Middleware & On-chain is built around the DPOS Blockchain allowing business users/DApp developers to interface with respective side chains. This allows us to create a direct, tamper-proof and immutable record of computing resources used by the business users. Metadata of each transactions of respective sidechain will be stored in the On-chain.

Conduit Sidechain Adapter interfaces between On-chain and sidechain. This means Conduit is agnostic to the underlying Sidechain blockchain technology, make it more flexible and future-proof. It also simplifies development on our platform, as developers are able to call specific Sidechain blockchain technology without worrying about the hassle of onchain's overhead. Sidechain adapter also helps communicate with other sidechain.

Off-chain Storage Systems - in addition to the benefits of blockchain we are also aware of its architectural limitations. So we are only using the blockchain to store transactional data. All other data is stored in off-chain storage systems allowing us to leverage the benefits of traditional

database architecture such as transaction speed and privacy.

Privacy-preserve compute protocol - Conduit's step toward addressing untrusted nodes is to protect client's data at rest with semantically secure encryption. Conduit leverages hardware-root-of-trust to ensure computation integrity, thwarting all potential software-based attacks (even from the OS level) that compromise or tamper with the client's desired computation.

Our development team has significant experience in delivering large scale global technological platforms, and has a proven track record managing some of the world's largest applications for financial services.

Component Overview

1. **Public Application Services**
    a. Fully featured Buyer interface
    b. Fully featured Seller interface

2. **Conduit middleware and On-Chain**
    a. Smart contract to process submitted request
    b. Smart contract to route the request to appropriate side chain
    c. Smart Contract to update state DB asynchronously

3. **Side Chains**
    a. Side chains execute the task submitted by client.
    b. Separate Side chains for traditional and quantum computing.
    c. A side chain was dedicated for Storage.

4. **Privacy-preserve Computing**

5. **Storage Systems**

6. **Dashboard**

2.1 Public Application Services

To interact with our system, our front-end provides interfaces for suppliers contributing computing resources to our network and buyers purchasing these resources. To facilitate these two experiences, we have two web applications that include:

1. **Supplier Dashboard** - The fully featured, responsive web app allows suppliers to manage the computing capacity usage, user preferences to run specific sidechain technology, user onboard to network, track supplier financials, etc.
2. **Buyer Dashboard** - Responsive web app for deploying and executing the Smart contract,chain code, etc. Buyer dashboard also possesses additional functionality, such as account settings management, usage monitoring, payment services, etc.
3. **Command line (Conduit CLI)** - Command line interface for Supplier and Buyer of Conduit computing. Buyer CLI will help deploy Smart contract, Chaincode, etc. To help interact

with the on-chain, Supplier CLI will help to start and join the sidechain network.

2.1.1 Supplier Dashboard

The web app is implemented as a responsive Single Page Application (SPA) with ReactJs. ReactJs is component based Javascript library that can go with any backend, also leverages the use of virtual DOM.Virtual DOM enable partial dynamic loading of components instead of full page getting loaded for particular field updates. Being a superset of JavaScript, it is easy to learn, but the tooling and resources provided by the community ensures a much better experience than working with plain JavaScript.

2.1.2 Buyer Dashboard

Same as the Supplier Dashboard, instead it shows the information related to Buyers, enabling them to deploy and execute the Smart contract and Side chains from UI . Buyer dashboarding enables easy on boarding with simple easy to use UI.

2.1.3 Command Line Interface

Buyers and Suppliers have their own respective command line interface. Buyers CLI enables deployment of Smart Contract and Chain codes into network. Supplier CLI helps users to choose the Side chain they want to join, also it helps to join network.

2.2 Conduit Middleware and On-Chain

Conduit Middleware and On-chain component is the interface that connects directly from the Public service component. Once Buyers initiate the request our component will create the required metadata and update the details to On-Chain and make an entry in data store.This component will also act as Router to send the transaction to the respective Side chains.

DPOS

Delegated Proof of Stake (DPOS) is the fastest, most efficient, most decentralized, and most flexible consensus model available. Nodes of a DPoS crypto vote for delegates/witnesses to serve on a panel of witnesses. Most of the behaviour of the network is controlled by this witness panel. The witness panel also selects witnesses to "witness" . Clearly, the network and users place a lot of trust in these elected witnesses to give them such powers, yet if they misbehave, they can easily be voted out of the "witness panel," so there is really no incentive for them to misbehave or upset their voters.To add in the "proof of stake" part of DPoS, stakeholders have influence proportional to their stake in the system

2.2.1 Metadata

Following Metadata information will be extracted from each transaction request. To list few,

- **Timestamp**

- **Sender address**
- **Side chain Id**
- **Transaction Id**
- **Network Id**
- **Smart contract address**
- **Algorithm Id**

These details will be used for deploying and executing Smart Contract/Quantum algorithm in specific side chains.

2.3 Side chain

Side chain is implementation of one of the blockchain algorithms. Side chain could be private permissioned or public permissionless blockchain. Based on buyers preference specific class of chains can be chosen for implementing business use cases. Each supplier will be onboarded into a supplier group that may mine a specific blockchain.Side chain is so flexible that network of quantum computers can be setup as a separate cluster. Each Side chain will have a network id, chainid for the buyers to choose when they deploy / execute smart contracts. Sidechain with the help of adapters can execute smart contracts in another sidechain. For Example, a smart contract from DPOS sidechain can invoke a chain code running on sidechain that hosts hyperledger.

2.4 Conduit Sidechain Adapter

Sidechain adaptors enables On-chain to communicate with Sidechain. It also allows deployment of respective Smart contract or Chain code into respective Sidechain. Sidechain Adapters also enables communication between Sidechain.It allows Conduit to be agnostic to underlying Sidechain blockchain technology, more flexible and future-proof.

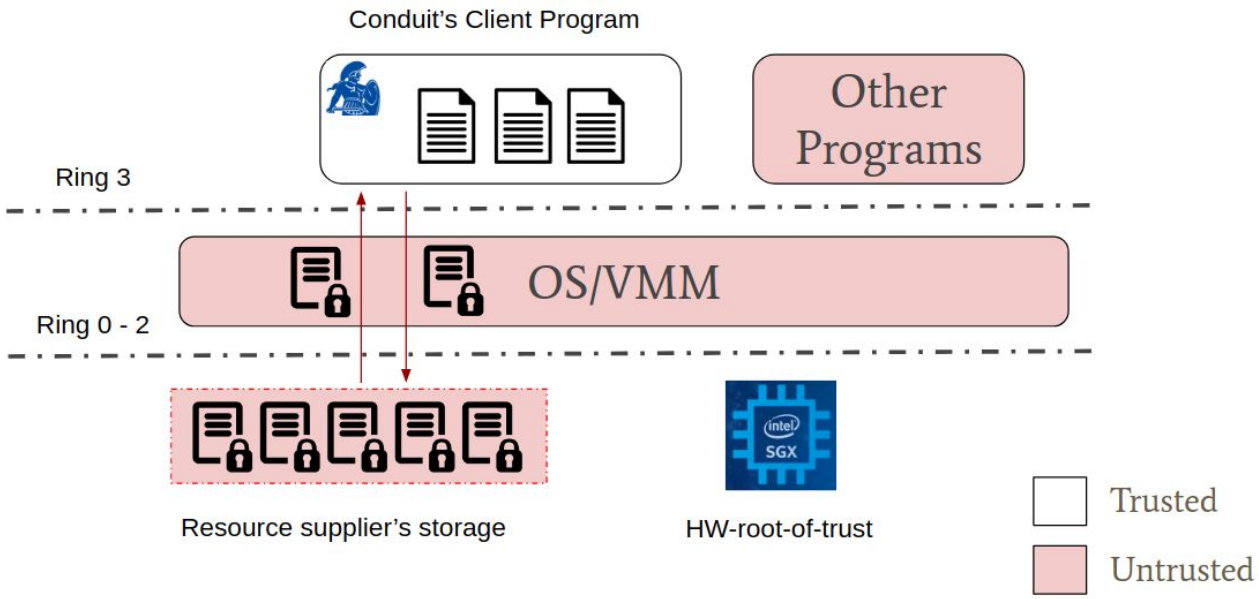
2.5 Privacy-preserve compute protocol

With conventional cloud computing paradigm, client's computations are executed on the cloud provider's infrastructures, which might be distributed but remains centralized (i.e., controlled and managed by a single party). Conduit, on the other hand, embraces the idea of decentralization, and delegating the computations to various independent resource supplier machines. The client who requests computational resource and the resource supplier who matches such request might be mutually distrustful. Conduit reconciles this concern of trustworthiness by providing multiple security mechanism to protect both client's computation and resource supplier's infrastructure.

2.6.1 Protecting resource supplier infrastructure

Conduit protects resource supplier infrastructure from malicious clients by limiting file types, restricting system access, and monitoring resources that the computations could involve and/or invoke. More specifically, Conduit ensures benign inputs to the network, screening and barring from submission common file types with malicious content. The registry of file types will be consistently updated and reviewed to ensure quality of computation requests. Furthermore, Conduit software prevents the client submitted computation from unnecessary access to hardware and software and restricts system privileges to only what the resource supplier allows. The resource suppliers will have the

option to stop providing their spare capacity should they feel necessary. Conduit software proceeds to monitor CPU usage and memory utilization of miners to ensure proper use of resources. Computations that lead to over-utilization or request further access will be aborted or halted across the network. These measures ensure the resource supplier's absolute control over their own hardware and experience.



2.6.2 Protecting client's computation

While it is arguably easy to protect the supplier infrastructure against a malicious client, it is much more involved to protect the client computation against a malicious resource supplier. This is due to the fact that Conduit software stack is necessarily running at ring 3, while the resource supplier would likely have control over the OS/VMM, running at ring 0. In another words, without built-in security mechanism, the resource supplier can deviate arbitrarily from the computation, such as tampering with client's computation, leaking private data or returning invalid results. Conduit mitigates these issues by relying on state of the art semantically secure encryption and hardware-root-of-trust.

Protecting data at rest. The first step toward combating against malicious resource suppliers is to encrypt the client's data with semantically secure encryption. A properly designed key management ensures that no untrustworthy party (e.g., resource supplier's OS/VMM or other programs running on the same physical systems with Conduit's program) can breach data confidentiality. While semantically secure encryption schemes ensure high level of security, they can only protect data at rest; i.e., they do not inherently support computations on encrypted data. Fully homomorphic encryption schemes allow for computations over encrypted data, but suffer from prohibitive overheads. Partially homomorphic encryption schemes are more practical, but limited in the range of supported operations. Conduit sidestep this limitation by leveraging hardware-root-of-trust to enable private computations and at the same time protect the computation integrity.

Ensuring computation integrity and confidentiality. The hardware-root-of-trust is responsible

to provision a confidentiality and integrity protected execution environment. This environment is protected in a sense that no untrustworthy party can tamper with or observe its state, appearing as a black-box to the adversary. The client's requested computation is loaded and initiated inside the protected execution environment, and the data is only decrypted and processed therein. In another word, the malicious resource provider can only see encrypted data, but cannot alter the computation logic, or get access to the decrypted data.

Preserving computation privacy. Nevertheless, the trusted environment has a limit on the amount of data it can process at any time. This means a communication channel between the trusted and the untrusted environments is necessary to complete the computation. Unfortunately, such a channel could leak information about the data. For instance, by observing I/O access patterns during merge sort, an attacker can infer the order of the input records, i.e., their ranks in the output. To our knowledge, none of the existing cloud computing services offered inherent protection against this subtle leakage.

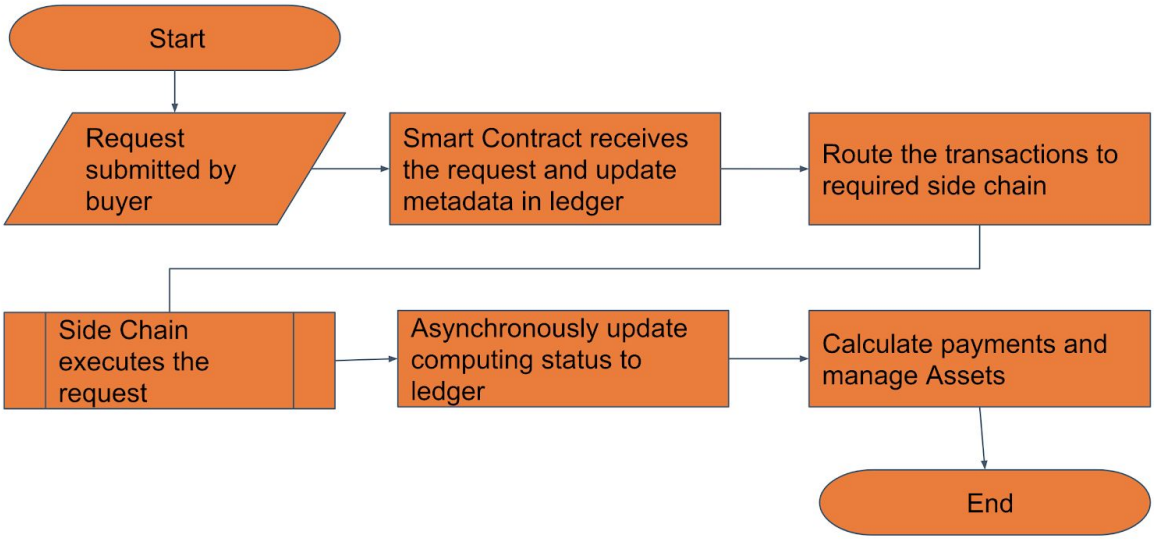
Conduit builds upon the state-of-the-art research in privacy enhancing technology, incorporating a privacy-preserving framework to its workflow so as to provide computation privacy. This framework, namely Scramble-then-Compute (STC), is simple, thus keeping the trusted code base lean and the performance overhead small, yet expressively supports all classes of computations. The key idea underlying STC is based on the observation that randomly permuting the input before feeding it to the original (non-privacy-preserving) algorithms is sufficient to prevent leakage from access patterns. Conduit's harnesses the provenly-secure privacy-preserving guarantee of STC to protect client's computation, attaining an unparalleled security that none of the existing cloud service providers offer.

3. The Token Environment

3.1 The COND Token

Buying coins on Conduit ecosystem is undertaken using cryptocurrencies, or fiat. *(Note: for the ICO and Pre-ICO period Conduit coins are securities subject to securities law and regulation)* Conduit uses the COND utility token to build trust in sharing computation, as well as to pay for the fees of the ecosystem. COND tokens can be acquired directly using conduit client apps, through a secondary exchange or during our token sale. The COND tokens are created through an ERC20 smart contract on Ethereum.

Conduit Flow chart



1. Buyer submit the request from web browser by providing data and algorithm.
2. Through API, request was sent to blockchain
3. Smart Contract receives the request and register the transaction by updating metadata in ledger
4. Smart Contract route the transaction to pre-defined sidechain
5. Side Chain executes the transaction and updates computing status to ledger asynchronously.
6. Smart Contract calculates the payments and manage assets.

3.2.3 Our Technology Stack

We carefully select technologies that best meet our requirements, in particular scalability and regulatory compliance. As we are technology agnostic, we will always choose the best product for the job.

The Conduit ICO: The Quantum Public Sale

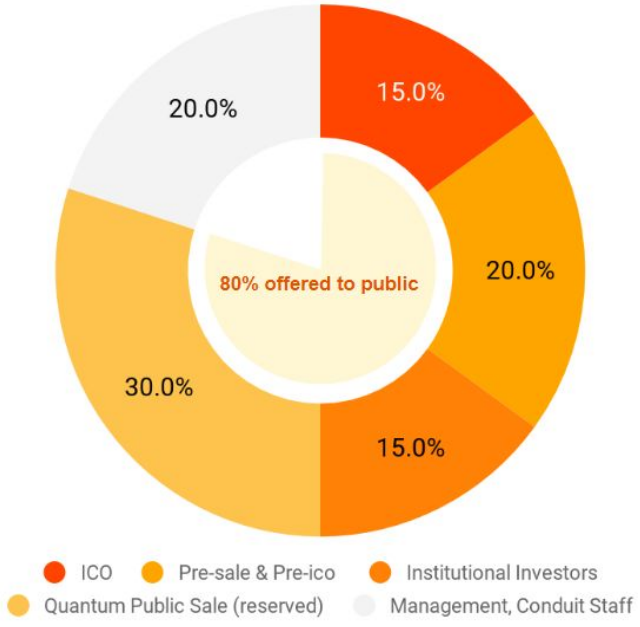
Overview

Conduit is a powerful tool for both cloud computing and the cryptocurrency mining communities. In our roadmap we create a network of tech supports and high quality computers to service two multi-billion dollar industries. Not only that but to succeed Conduit needs an engaged community to help us provide computing power to the world. Consequently, Conduit's ICO is an opportunity for the organization to not only fund raise but also "crowd raise," and create a fostering community.

ICO Details

Token Classification	**Utility**
Indicative Ticker	*COND*
Expected ICO Date	*May 16th-May 23rd, 2018 EST*
Pre – ICO & Bonus	*April 10th-May 2nd, 2018 EST (30% bonus)*
Type of Token	*ERC-20*
Hardcap ICO	*300 Million COND*
Softcap ICO	*75 Million COND*
Minimum Purchase	*1000 COND*
Expected ICO Price	*2,200 COND = 1 ETH*

The "Quantum Public Sale" refers to a public issuance of Conduit coins, or *COND*, in the future to raise funds for Quantum Computing architecture to ensure Conduit transitions from classical decentralized cloud computing to Quantum Computing. Please see the assignment of our coins in image(*right*). These funds will be used for Quantum infrastructure and/or increasing Conduit's existent computing capability.



The Post-Raise Budget Allocation

The following detail outlines how raised funds will be allocated across ongoing and future operations:

Product Awareness - 15% of the Total Budget: Technology that fails at advertising and exposure, generally fails as technology. No matter how great a technology is, it requires considerable amount of advertising to ensure it reaches the hands of consumers. Because Conduit must reach the cloud computing audience, the cryptocurrency/ blockchain community, and the general public around the world, a considerable amount of budget will be used on building global awareness of Conduit as a service and cryptocurrency. Channeling every media outlet across every country from traditional media to social media, Conduit intends on becoming (1) a household name in cloud computing conversations, and a (2) verb that describes the use of decentralized quantum cloud computing services.

Product Development & Testing - 45% of the Total Budget: Unlike most technology companies, Conduit's software must be tested across tens of thousands of algorithms and even more general use cases. Not only that, but Conduit technology must be able to scale to billions of computers across the world that both enter or leave our network at any time. A notable amount of budget will be not just be applied to extensive product development, but also to testing and quality assurance at increasingly higher orders of magnitude.

Network Infrastructure - 30% of the Total Budget: Upon product release, it is crucial that Conduit is able to ensure a quality customer experience globally. Since we utilize computing power around the world, urban centers will have an initial advantage over rural regions for computation availability. To fill the rural user experience gap, we will install computers distributed throughout the world in order to ensure that the we provide a reliable, high-quality experience to all users everywhere.

Budget Allocation Tech Support - 10% of the Total Budget: One of the major needs throughout the current experience of technology users everywhere is tech support. As technology gets more complex, users have less resources available to troubleshoot their issues. With customers across the world having different uses and different issues, it is crucial that customers get the technical support they need, in any country and at any hour.

Referrals - To Be Determined percentage of the Total Budget: Conduit's ICO will provide two distinct opportunities for referral bonuses. The first referral bonus will equate to 7% of the tokens bought by the referred.

Conclusion

With great problems come great solutions. In the 21st century, we face the problem of dealing with overwhelming amounts of data and our growing technological needs. Yet fundamentally, the 21st century struggle is the same as all prior centuries, In fact, it is a problem that humanity has faced from our prehistoric beginnings: how do we get the resources we need to solve the problems we have? From abacus to printing press to the Internet, each technology brought an answer to the same fundamental question. Now, in the 21st century our answer is not just innovation, but efficiency. More than just a cryptocurrency, Conduit answers an age old question by harnessing the excess computing power of the world by channeling our common inefficiencies into a universal solution. Conduit is not just a technology but a global community that congregates what the world has to provide the world with what we need. On April 10th, 2018, Conduit's Pre-ICO does not spark the creation of a new technology but also a new future where the world is better because we work together.

Welcome to a future where humankind uses our collective talents and skills to solve our biggest problems together. **Welcome to Conduit.**

Appendix

FAQ

TOKEN AND DISTRIBUTION

What is the total supply of Conduit Tokens?
The total supply of Conduit Tokens is 3 Billion.

How do we get on the whitelist for the token launch?
Visit our homepage at www.conduitcomputing.com to get on our whitelist.

What will the token launch proceeds be used for?
Token proceeds will be used to accelerate product development, including providing 24/7 tech support service, completing software performance analysis, and growing a quantum community. It will also be used to test full functionality and bring in resources to simulate quantum algorithms.

What will happen if the hard cap is not reached?
If the hard cap is not reached, the remaining portion of the Conduit Tokens will be saved and re-allocated for future ICOs, depending on product development.

What contribution methods are accepted?
We only accept Ethereum (ETH).

When will I receive my refund?
Any refund will be made within 45 days of the end of the Pre-ICO.

How will you ensure fiat-crypto conversion?
We only accept payment in Ethereum and do not provide fiat-crypto conversion.

Can I use more than one Ethereum address?
No, you can only use the Ethereum address you provide us during registration.

When can I start using Conduit Tokens?
Conduit tokens can be used when the network is launched.

Will there be a lockup or vesting period for Conduit Tokens acquired during the Pre-Launch?
Conduit tokens obtained during the Pre-ICO will be subject to a linear vesting period of six months starting from when the network is launched.

When will the token issuance start?
Token issuance will begin when the Conduit network is launched.

What is the Ethereum and Conduit token exchange rate?
The exchange rate is 1 ETH = 2,200 COND.

APPLICATION PROCESS AND DOCUMENTATION

Do I have to go through a Know Your Customer (KYC) or Anti-Money Laundering (AML) process?
Yes, we will collect all the required documentation to satisfy KYC and AML requirements.

Are there any countries banned from the Conduit Token distribution?
Residents of the People's Republic of China and North Korea are not allowed to participate.

I live in the USA/Canada and I am not an Accredited Investor. Can I still participate in the Pre-Launch of Conduit Token distribution?
No, you may not participate in the Token distribution.

Do I need to show all my assets to prove that I am an accredited investor?
We do not need to see all of your assets, only enough to prove that your net worth exceeds the minimum threshold or that your income meets the requirements.

We've moved house and changed addresses. How does this affect the KYC process?
You just need to provide a valid proof of address for your new address.

Is there an encrypted way to send my SSN, for security reasons?
No, we need to verify your SSN with physical proof (copy of Social Security card, letter from Social Security Administration, copy of W2).

Is the front and back required for both passport & ID card?
Yes, we need to verify the front and back of both the passport identification page and ID card.

Do you accept document proofs in a language other than English?
All languages are accepted for document proofs.

Who is an Accredited Investor?
In the United States, an accredited investor is an individual with a net worth of at least $1,000,000, excluding the value of one's primary residence. Or, the individual's income must be at least $200,000 each year for the last two years and expects to make the same amount in the future.

I have dual Citizenship and have houses and property in both countries. Which documents should I provide as address proof.?
You should provide proof of address for the residence in the country where you pay your taxes or are required to pay taxes in.

I am based in the USA, and while I have my Social Security Number (SSN) available, I do not have a physical copy of the Social Security Card (SSC) available. Do you need a photocopy of this card?
If you do not have a physical copy of your Social Security card, you may provide a letter from the Social Security Administration or a copy of a W2.

Can I submit a mobile phone bill as a Proof of Residence?
No, you can only provide a landline telephone bill.

Why do you want all of this sensitive information from me?
All of this information is required for full compliance with KYC, AML, and SEC laws.

Legal

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