



**Most Efficient Cryptocurrency
Mining Infrastructure in the GALAXY**

Rev. 3/19/18

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INTRO

In 1961, President John F. Kennedy announced before Congress that Americans would land on the moon before the end of the decade. Eight years later, in 1969, Neil Armstrong stepped off the Apollo 11 ship's ladder and onto the moon's surface. After Apollo 11's success, there were 6 more trips to the moon for various tests. Apollo18 is the next Moon mission and is preparing to depart.

***"That's one small step for man,
one giant leap for mankind."***

-Neil Armstrong

ABSTRACT

Proof of Work has been present in human civilization for over 50,000 years. Dating as far back as ancient African tribes, proof of work, and its value, can be seen throughout history through everything from jewelry to weaponry. This method of creating value has not changed. In January 2009, Satoshi Nakamoto released the Genesis Block of the Bitcoin network. The coins in this block were “mined” using a cryptographic hashing algorithm as a proof of work. Satoshi’s vision has been tweaked and modified over the years spawning thousands of variations of cryptocurrencies.

The Apollo18 Token (A18) seeks to continue the innovation of the cryptocurrency space, expand the infrastructure, and further secure the network. Apollo18’s scaling roadmap utilizes affordable real estate, cheap electricity, and system efficiency. Employing tested data center configurations, Apollo18’s silos will maximize efficiency while minimizing footprint.

The Launch Pad, Apollo18’s Research & Development arm, will focus on invention and innovation in the cryptocurrency space. Decentralization is the key to cryptocurrency. Apollo18’s goal is to lower the barrier of entry for miners by creating cases that are more of a “plug and play” experience, smart power supplies that provide output, and mining pools that benefit the community more than the server administrator. The Launch Pad’s roadmap is dynamic and will constantly be growing and changing. Ultimately, the goal is to forge a new, better path for cryptocurrency mining, fortify the community and, as a result, further secure the blockchain.

GOVERNANCE

The A18 Token

The Apollo18 Token (A18) is an ERC-20 based token built and issued on the Ethereum blockchain. The token represents a portion of the total hashing power of the mining farm. A18 tokens will be required to receive payouts from the Apollo18 Silos. Token holders will be able to easily store and manage tokens using existing infrastructure. Tokens will be created prior to the Partner Sale and Crowdsale. Due to SEC regulation, partner sale tokens will be locked via smart contract for six (6) months and will be time-released thereafter.¹ Pre-sale and Public sale tokens will be released immediately post-ICO. The total supply of A18 will be limited to the number of tokens created at this time. The total A18 supply will be capped at 24,000,000. Any tokens not sold during the ICO will be burned.

Initial Coin Offering

Partner Sale	March 16th, 2018
Pre-Sale	TBA, 2018
Public Sale	TBA 2018

A18 Token Allocation

Partner Sale	2,500,000 @ \$0.40
Pre-Sale	5,750,000 @ \$0.65
Public Sale	10,750,000 @ \$0.90
Founders	4,000,000 ²
Marketing/Growth	1,000,000

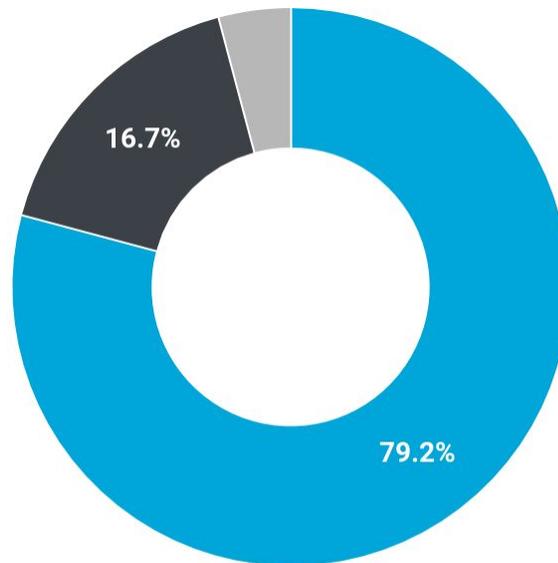
***Any A18 tokens not sold during each phase will be burned. Founders and Marketing/Growth token amounts will be adjusted to reflect the distribution of proceeds detailed below.**

During the first few months, the Apollo18 Silos will not be profitable enough to support operational expenses, therefore, we will reserve 10% of the capital raised during the three (3) ICO phases to cover operational expenses and to store as a general reserve.

¹ <https://www.sec.gov/reportspubs/investor-publications/investorpubsrule144htm.html>

² Founders tokens are reserved for Apollo18 staff and are released yearly over a 4-year period.

Distribution of Proceeds



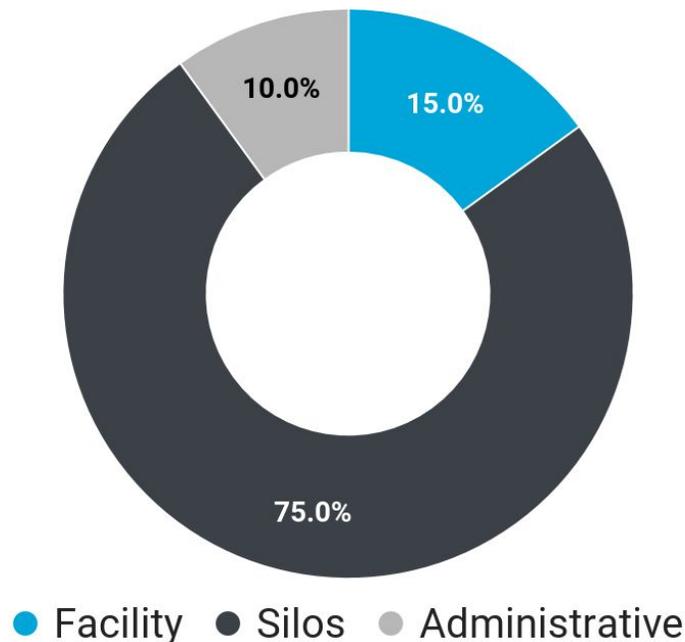
● Token Holders ● Founders ● Marketing/Growth

The Apollo18 ICO has set a cap on the total supply of A18 tokens at 24,000,000. 79.2% of these tokens will be available for distribution during the initial coin offering. Any tokens not sold during each respective ICO phase will be burned.

16.7% of tokens will be allocated for the Founders. These funds will be time locked and released yearly as an incentive towards the Founders, and the team, to continue the expansion and growth of the Apollo18 organization.

4.1% of tokens are going to be set aside and utilized for marketing efforts, expansion of the team, and a general reserve to be used as an incentive to improve the Apollo18 token and team.

Any tokens not sold during each phase of the ICO will be burned. Founders and Marketing tokens will be adjusted to reflect these token distribution values.



All post-ICO funds will be allocated towards the Apollo18 mission. 75% of funds will be geared towards the purchase, production, and implementation of Apollo18 Silos. 15% will be budgeted for Facility improvements to further increase efficiency and profitability. Finally, 10% will be set aside for administrative costs and recurring operational expenses such as utilities or legal retainer fees.

Dividends

Upon successful scaling and launch of the Apollo18 Silos, token holders will begin receiving monthly dividend payments in the form of Ethereum (ETH) tokens. Coins mined in the Apollo18 Silos will be converted to Ethereum (ETH) directly. If this is not possible, the mined coins will be converted to Bitcoin (BTC) and then converted to ETH. The resulting ETH will be the earnings distributed to token holders less operational costs. In addition, in order to stimulate growth, 10% of earnings will be reinvested back into the expansion of the Apollo18 Silos resulting in larger payouts and more growth. The remaining Ethereum tokens will be distributed to A18 token holders via the dividend-paying smart contract. The smart contract will distribute this ETH to token holders respective to the amount of Apollo18 tokens the investor is holding.

We have seen other companies in the past promise returns of 400% or more. This is wrong and misleading. As market volatility is high and mining difficulties are constantly fluctuating, Apollo18 is reluctant to promise any official ROI percentage. Apollo18 will provide all historical data throughout the lifetime of the project for current and prospective investors to review and evaluate their positions.

WHY APOLLO18?

Vision

We believe that infrastructure buildout is imperative in order for blockchain technologies and applications to continue as a viable option. We believe that additional research and development is needed in order to produce hardware that is efficiently scalable to keep up with the growth of blockchain technologies. The future of cryptocurrency mining needs to be distributed and geared towards the original visions of decentralization. Apollo18's goal is to return the power back to the people by lowering the barrier of entry, innovating more efficient mining methodologies, and ultimately, empowering the community.

Apollo Silos

The success of the Apollo18 mining platform is due in part to the uniquely configured mining system. As a token holder you will have access to dedicated mining hardware, similar to purchasing server space on any other platform such as Amazon's Web Services.

We refer to our mining rigs as "Silos" because of this model.

Unique Selling Proposition

Apollo18 is contributing to the blockchain infrastructure by implementing scalable mining units built on the industry tested data server models. We continue to enhance the server mining hardware through the research and development of dedicated hardware.

Lowest price for energy in the United States. Apollo18 is located in a region of the United States with base residential electric rates between 5-6 cents/KWh.³ This rate is nearly half the rate of the lowest state rate average. Upon scaling, Apollo18 may be eligible for local industrial rates of 1.7 cents/KWh.⁴

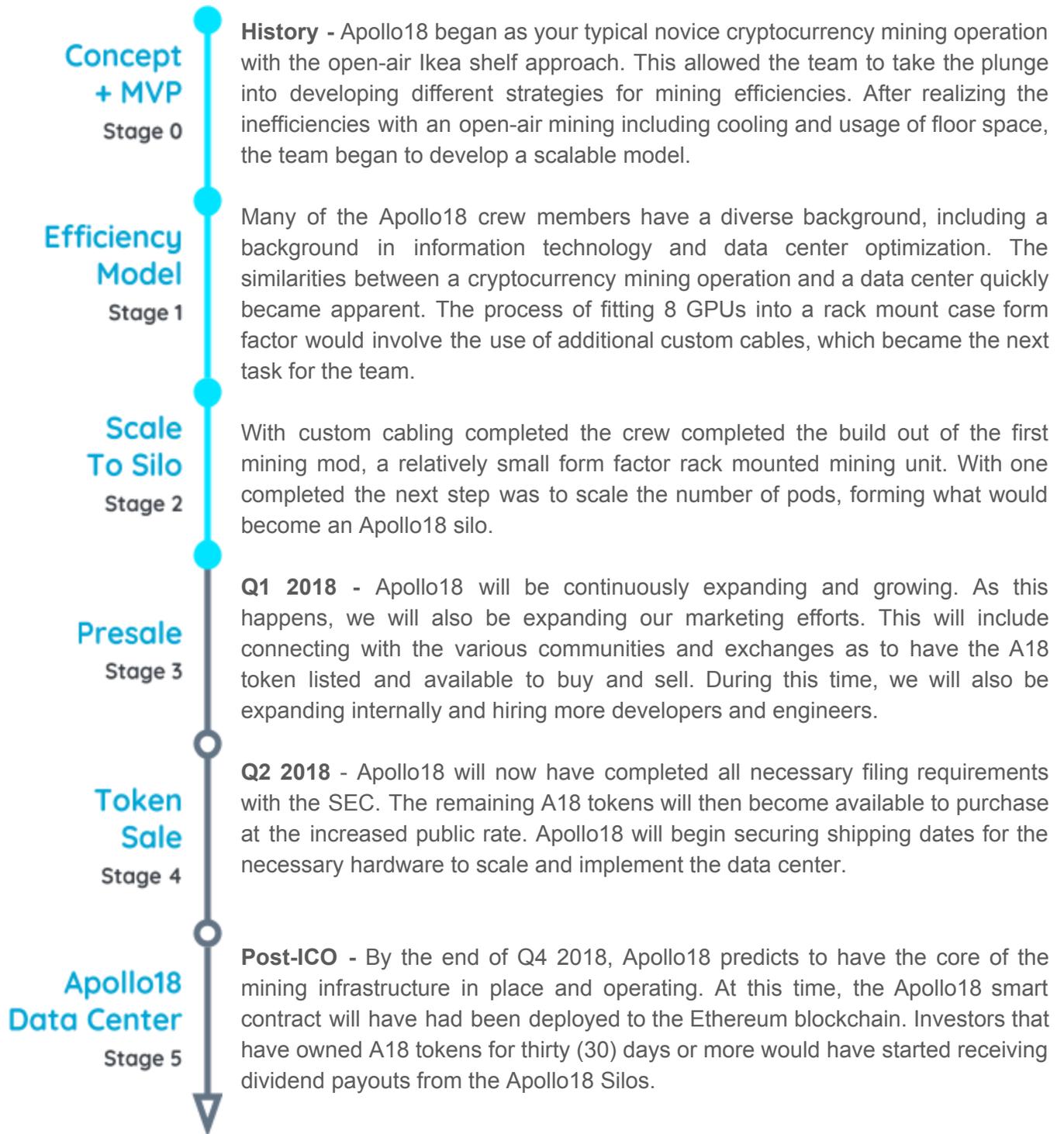
Industry tested infrastructure. The Apollo18 Silos are configured to reflect, and improve upon, the setups utilized by giants in the tech industry today. These tested configurations provide highly effective models for cooling systems.

Efficient. Apollo18 has implemented the most efficient GPU mining infrastructure per square foot. Mining farms we have visited in the past average approximately 8 GPUs per 3 sq. ft. Apollo18's configuration compares at approximately 8 GPUs per 1 sq. ft. Upon scaling, GPU density increases compared to traditional mining farms.

³ <http://www.altoonamirror.com/news/local-news/2018/03/penelec-decreases-rates/>

⁴ <https://www.electricitylocal.com/states/pennsylvania/altoona/>

Roadmap



Notice: Apollo18 makes no guarantees of specific timeframes, and certain roadmap items may take out-of-order precedence over others, we make a good faith assurance that we will work to push out the most critical elements of the Apollo18 project during 2018 and beyond. We will keep the community informed via apollo18.co.in as well as through our social media channels and email newsletters.

Shoulders of Giants

We looked at several mining hardware configurations with the goal of maximizing miner density and ensuring heat management efficiency. Many of the massive mining operations are configured using the Ikea shelf method.

The inspiration for our configuration came from the massive data centers used in industry. These data centers maximize hardware density per square foot with a highly effective air management system.

INFRASTRUCTURE

Scaling

Apollo18 team is led by individuals with a diverse background in business and personnel management, this is coupled with a world renowned advisory board that will effectively guide the team to scale. In the preparation of growth, we have already identified and briefed both accounting and legal counsel to ensure we will remain compliant and prevent any roadblocks from issues with compliance.

We are prepared to bring in the necessary workforce needed to implement the silos as well as to maintain them after. The majority of staffing needs will be to maintain data center equipment and harden the network for security and optimization.

Sourcing

As we begin to scale up the silos it is critical to have a supply source that is able to provide the high volume of hardware at a competitive price to market. Whenever possible we will be working as close as possible with the supply chain of the manufacturers, if not directly with the manufacturer.

The critical hardware in our operation will be the graphics cards, we have identified that one of Nvidia's main distributors is located within our operating territory of Pennsylvania.⁵ D&H Distributing Company is located in Harrisburg PA, as a distributor of Nvidia graphics products they will be able to fulfill a large order of graphics cards at a bulk rate.

Physical Security

Apollo believes that physical security is a non-negotiable when operating data centers. It is of utmost importance to protect and insure your investment and minimize any downtime due to a breach in physical security. The Apollo18 facility will have a dedicated closed off data center room where the silos will be located, the access to the data center will be strictly controlled. We will implement security control measurements and procedures that exceed the highest level of control as defined by the National Institute of Standards and technology (NIST).⁶

⁵ https://www.nvidia.com/object/IO_29380.html

⁶ <https://nvd.nist.gov/800-53/Rev4/control/PE-3>

Network Security

Apollo18 Silos, while a valuable target, have a relatively low digital attack surface. Silos will not run any services and will only be permitted to make outbound connections relevant to their mining operations. To ensure these rules are respected, Apollo18 will integrate systems to actively monitor network traffic for anomalies and indicators of compromise.

To ensure Apollo18 is achieving the highest levels of network security we will be implementing industry standard best practices as defined by NIST.⁷

Maintenance

We created the Apollo18 silos to mimic the efficiencies of servers found in data centers. In the event that equipment needs maintenance we are able to quickly remove the individual mining pods from a rack and take them over to a fully equipped workbench to service them. We will have replacement of all pod components on hand to perform quick part replacements.

Like traditional data centers, we will soon be able to ensure 99.99% uptime. This can only be achieved by implementing proven infrastructure configurations. In addition to having quick response to maintain faulty equipment we will minimize technical debt to implement multiple levels of preventative maintenance. Preventative maintenance will include the clean out of all filters and checking to see that all connections have been properly made.

OUTLOOK

One of the most common questions that we have been asked has been “what about proof of stake?” The answer is we don’t know. What we do know is this: Proof of Stake is essentially “the rich get richer.”

Overall, Proof of Stake is less secure than Proof of Work coins. Proof of Stake coins require a large amount of money to disrupt a network. Proof of Work requires the same along with large amounts of resources, hardware, and electricity. For example, to rollback the transaction of the “10,000 BTC Pizza,” an attacker would need to control 100% of BTC miners for 200 days.⁸

Another argument with Proof of Stake is that, should an attacker alter the blockchain, they would also need to convince the community that their chain is legitimate. History has proven time and time again that humans are not always the best at consensus (Salem Witch Trials) and if they do agree that something is bad, they cannot agree how to deal with it (BTC/BCH).

As stated in the Abstract, Proof of Work has been around since ancient civilizations used handcrafted jewelry and weaponry as forms of payment. As we progress further into the future, decentralized blockchain technology will become more of a backbone in the world’s

⁷ <https://www.nist.gov/itl/cyber-and-network-security>

⁸

<https://medium.com/@tuurdeemeester/critique-of-buterins-a-proof-of-stake-design-philosophy-49fc9eb36c6>

technological infrastructure. We wholeheartedly believe that mining will continue to be the leading settlement layer for cryptocurrency transactions.

LONG TERM VISION

A core distinguisher of the Apollo18 token is the drive to innovate and develop new technologies and methods that can help reinforce the cryptocurrency infrastructure.

Cryptocurrency is bleeding edge, fast paced, uncharted territory. Apollo18 feels that it is imperative to stay ahead of any expected or unforeseen challenges that may arise. Therefore, Apollo18 will also have a research & development division focusing on conquering issues before they exist.

Mining Enclosures

When the Apollo Project launched its first mining Silo, all of the components were off of the shelf, general use PC components. While the computing hardware is essential in the mining operation, the enclosure and rig cases were not ideal for mining operations involving graphics cards.

When looking at data servers and the specialized enclosures that make up a server, we quickly discovered some of the features that made these enclosures ideal for servers. The features we identified included:

- Modular design
- Hot swappable components
- Component trays and bays
- Efficient airflow
- Visual status indicators
- Physical security

Through the Apollo Launch Pad, our R&D division, we intend to design the first custom built GPU server case made for crypto mining. These cases will have a formfactor that allows them to be loaded into server racks while also integrating some of the key features listed above.

Our initial focus will be on the development of a plug and play GPU tray that will eliminate many of the hassles and issues associated with cable management.

Power Management

It is not a secret that mining operations use a large amount of power. The power is regulated locally through the use of a power supply. Through our experiences developing mining systems, finding a PSU that is both capable of producing the necessary wattage and modular enough for effective cable management is a daunting task. The Apollo Launch Pad intends to design a “Smart PSU” for the mining community with features including, but not limited to, direct BUS communication.

Mining Pools

The mining pool market has become very diluted as new pools come and go. Most of these pools have high fees, hidden fees, and poor uptime. Apollo18 believes in contributing back to its roots: the community. One of Apollo's goals is to launch a no-fee mining pool. Miners will be able to mine at the pool and not be taxed or punished due to greedy or incompetent administrators.

THE CREW

[Kirk Durbin](#) is the founder of The Apollo Project, an initiative geared towards education surrounding security, cryptocurrency, and blockchain technology. Kirk has performed security audits, incident response projects, and consulted numerous companies in a variety of business sectors as well as spoke in various educational settings in the Central Pennsylvania region including public seminars and entrepreneurial groups. Kirk's combination of information security knowledge, experience in the cryptocurrency space, and his drive to innovate and build is unmatched.

[Justin Merrell](#) is a serial entrepreneur and maker. By the age of 22, he had already founded both for-profit and non-profit corporations while raising a combined total of nearly half a million dollars. He also holds a patent for a device that plays a critical role in the management of many makerspaces. With a background in both business and engineering, Justin specializes in creating systems and processes that are efficiently scalable through the use of technology.

[Pamela Paige](#) is a real estate developer in New York City who specializes in connecting high-level commercial developers internationally. She also spent a decade in charge of staffing, marketing, and development for Team Enterprises and US Concepts. Currently, Pamela is one of the key players in the Phore Blockchain acting as Head of Partnerships and Business Development.

[Chelsea Turner](#) is Apollo18's graphic designer and branding expert. As a graduate from Penn State University, Chelsea's freelance experience in web design and brand development combined with her knowledge of advertising, marketing, and human psychology is paramount to Apollo18's mission.

Advisors

[Chris Mair](#) is a strategist and an early blockchain enthusiast, having first invested in Bitcoin in 2011. He is a founder of DADI and is the key architect behind the decentralized business strategy. Prior to DADI he was a partner at London based technology company Airlock, where he headed the strategy division. Before joining

Airlock, Chris was the Global Head of Digital Technology for fashion brand Diesel where he was responsible for the development and implementation of the brand's digital strategy across 33 markets worldwide.

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Telegram: <https://t.me/apollo18crypto>

Reddit: <https://reddit.com/r/apollo18>

BitcoinTalk: <https://bitcointalk.org/index.php?topic=3019146>