

The logo consists of the words "CISO" and "MAG" stacked vertically in a bold, white, sans-serif font, enclosed within a white square border. The background of the entire cover is a collage of digital and financial imagery, including several golden Bitcoin coins, a blue-tinted circuit board, and a network of glowing blue lines connecting nodes.

**CISO  
MAG**

beyond cybersecurity

Volume 2 | Issue 10 | November 2018

# CRYPTOCURRENCY STOCKPILING NOT A SILVER BULLET

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EDITOR'S NOTE

Last year around this time, Bitcoin reached its all-time high at just shy of \$20,000 per coin. Ever since then, cryptocurrency has become mainstream with many competitors to the original making waves. This issue will delve

deeper into the world of cryptocurrencies and the pivotal role they've played in the information security space, for both good and ill. In our Buzz section, we look at the origin of cryptocurrencies, how Bitcoin came to be, its golden age, and where it could be headed.

Move to our Cover Story where we talk about how several cyber-attacks started a relatively new trend, where companies stockpile Bitcoins to pay ransom to retrieve their data. We discuss the drawbacks of such practices and how cryptocurrencies can be a tool for more than simply serving as ransom money.

Also in this issue, we interview Eng. Badar Ali Al Saleh, Director General Oman National CERT, where he talks about the establishment of OCERT, his journey so far, and the key milestones OCERT has achieved.

In the Insight section, we discuss having stronger security for your company which must begin by understanding the mind and the motives of the opponents, and how important it is to shift from a merely defensive security posture to one that anticipates how those bad actors gain access to the network.

Tell us what you think of this issue. If you have any suggestions, comments, or queries, please reach us at [editorial@cisomag.com](mailto:editorial@cisomag.com).

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## From the CISO Perspective to Cloud Security Assessments

Learn How to Make the Leap With Confidence

### **The secret is out:**

Enterprises large and small have moved to the cloud, and more are making the move daily. Whether you're an early adopter or you've been battling that persistent strain of nephophobia going around, it's important to thoroughly understand and evaluate potential cloud vendors, instilling confidence for your organization and your customers.

# Bitcoin: Part currency, Part revolution

Augustin Kurian



**W**hen the man known to the world as Satoshi Nakamoto not just unveiled a new currency but a new way to think about currency, our world was changed forever. What Bitcoin did to the world of cryptocurrency, or rather, to the world of economics is unparalleled. Bitcoin brought cryptocurrency limelight, and with it, a host of challenges. Bitcoin wasn't the first cryptocurrency. The history of cryptocurrency traces its roots back to the early eighties when cryptographer David Chaum had the idea of an anonymous cryptographic electronic money called ecash.

According to him, electronic payment systems have a substantial impact on personal privacy as well as the nature and extent of the criminal use of payments. "Ideally a new payments system should address both of these seemingly conflicting sets of concerns. On the one hand, knowledge by a third party of the payee, amount, and time of payment for every transaction made by an individual can reveal a great deal about the individual's whereabouts, associations and lifestyle," he wrote in his proposal for ecash. Ecash would have properties like "the inability of third parties to determine payee, time or amount of payments made by an individual; Ability of individuals to provide proof of payment, or to determine the identity of the payee under exceptional circumstances; and ability to stop use of payments media reported stolen."

By 1989, he started DigiCash Inc, with ecash as its trademark. Thus ecash became the first ever cryptographic electronic currency and it was as secure and private as cash in the physical world. In 1997, Nicholas Negroponte, celebrated guru and Greek American architect, signaled his support to the currency by backing the venture and becoming Chaum's first ever client. But DigiCash had a short lifespan and by 1999, Chaum sold his patents. "It was hard to get enough merchants to accept it so that you could get enough consumers to use it, or vice versa," he said in an early [interview](#) with *Forbes*.

But, the idea of cryptic money did not die with DigiCash. Several others joined the legion of crypto-anarchism which believed that encrypted exchanges ensured total anonymity, total freedom of speech, and total freedom to trade. Around 1998, Wei Dai, one of these crypto-anarchists, published a description of "b-money," a new kind of crypto money. Around the same time, purveyors of crypto anarchy like Nick Szabo went ahead and created Bit Gold that required users to complete proof-of-work, a piece of data which helped ease verification of the currency. The only problem was that Szabo's technology wasn't reusable and was very expensive to be made.

Later, Hal Finney created a currency system that deployed Reusable Proof-of-Work (RPOW). Although it was never intended to be more than a prototype, it did solve some of the problems of its predecessors. "An RPOW client creates an RPOW token by

providing a proof-of-work string of a given difficulty, signed by his private key. The server then registers that token as belonging to the signing key. The client can then give the token to another key by signing a transfer order to a public key. The server then duly registers the token as belonging to the corresponding private key," [points](#) out [nakamotoinstitute.org](#) in one of their posts. This was one of the first times the concept of cryptocurrency was becoming a reality. But challenges remained and the biggest one was tracking the currency to prevent double spending.

Double spending simply means the same digital currency being spent more than once as the token file could be easily copied, duplicated, and even falsified. It wasn't until someone proposed a new cryptocurrency in 2009 that this issue was solved. That someone here is still unknown and is still referred to by his pseudonym, Satoshi Nakamoto, and the currency is Bitcoin.

Bitcoin was the solution to the problem of double spending. Nakamoto's invention limited mining of the currency through a peer-to-peer network where no bank, government, or any other central authority had control. The users of the new currency could protect themselves from double spending by waiting for confirmations when receiving payments on the blockchain. Once the confirmation is sent, the transactions became irreversible. This was the biggest win for the crypto-anarchists, who were skeptical of the banking sector. "The root problem with



conventional currency is all the trust that's required to make it work. The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust. Banks must be trusted to hold our money and transfer it electronically, but they lend it out in waves of credit bubbles with barely a fraction in reserve. We have to trust them with our privacy, trust them not to let identity thieves drain our accounts," Satoshi Nakamoto [wrote](#) on his paper in 2009.

#### The Genesis

Of course, Bitcoin was not an overnight sensation. In early January 2009, Nakamoto mined the first ever batch of Bitcoins, which later came to be known as the Genesis Block. Hal Finney was among the few early cryptographers who received the first block of Bitcoin. In the early years, Nakamoto's brainchild remained an obscure and confusing phenomenon for the rest world outside of a few early adopters. But Bitcoin gradually started gaining accolades from the stakeholders of digital currency. Even Finney was of the opinion that Bitcoin was a world-changing invention. During the early years, the Electronic Frontier Foundation, an advocate for digital privacy, accepted donations in the new currency.

During this time, the price hovered around \$50 for 10,000 Bitcoins. On May 22, 2010, Laszlo Hanyecz, a programmer based out of Florida, made the first real world Bitcoin transaction, where he paid 10,000 Bitcoins for two pizzas from Papa John's. In reality though, Papa John's didn't actually accept Bitcoins and

“  
**The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust. Banks must be trusted to hold our money and transfer it electronically**  
 ”

Laszlo had to send the Bitcoins to a volunteer in England, who then ordered the pizza using his credit card. Also around this same time, David Forster, a farmer based out of Massachusetts, began [accepting](#) Bitcoins for his alpaca socks.

It is estimated that Nakamoto mined nearly one million Bitcoins before disappearing into the abyss of the internet. Many faithful are still pondering the true identity of



Nakamoto but haven't had any luck in unmasking him (at least as of the time of publication of this article).

#### The Golden Age Begins

By early 2011, there was a massive spike in the popularity of the currency. The major downside was that Bitcoin became the choice of currency for the black market, most prominently the Silk Road. As Bitcoin became the exclusive currency of cybercrime, the price escalated from \$0.30 per Bitcoin to \$31.50 between January and June 2011. With the dubious distinction attached to Bitcoins, the price fell month after month, reaching \$4.77. The price fluctuated again during 2012, when it reached \$13.30 and slumped back to \$7.10. During this time, an agency called Bitcoin Foundation was founded to promote its development.

Things gradually changed for Bitcoin in the ensuing years. Several spin-offs of Bitcoins emerged and cryptocurrency exchanges started to play a crucial role in the price of Bitcoin. By mid 2014, the US Financial Crimes Enforcement Network (FinCEN) enforced legal regulations for American Bitcoin miners. With regulators and government getting involved, things got serious. In 2013, the US Drug Enforcement Administration (DEA) listed 11.02 bitcoins as seized assets. This marked the first time a government body seized a cryptocurrency. By October of the same year, the FBI apprehended Ross William Ulbricht for his involvement in illegal trade on the Silk Road and seized 26,000 Bitcoins from him.

On 30 November 2013, the price reached its highest point ever at \$1,163, but that highpoint was short

lived. By February 2014, the price of Bitcoins fell by half following a hack at Mt. Gox exchange, one of the largest Bitcoin exchanges at the time. The exchange lost nearly \$500 million. Bitcoin gradually recovered its value over the next years.

#### The Boom

In January 2017, prices rose to \$998, signaling the currency's recovery. On December 17, 2017, Bitcoin's price reached an all-time high of \$19,666. What followed was a mad rush of buying and selling. "I don't know what's going to happen in the future. I'm really not a fortune teller or anything like that. I believe that more than fear of regulation that decline from the \$20,000 peak was more of just a normal retracement," Mati Greenspan, a senior analyst at eToro told Express. "Whenever the bitcoin price moves and jumps into a new order of magnitude, we need to see some sort of retracement on that. It's the same thing that when it jumped up from eight cents to \$3.50 then it had a retracement back to a dollar. That's a very normal thing after that kind of leap. So, if we look at it now I believe we are about five or six percent up over the price a year ago," he added.

And then it all changed. The price of Bitcoins has slumped since its highpoint on December 17, 2017, because of several breaches in exchanges and regulatory turmoil. On the day the article was written, Bitcoin's market capitalization fell below the \$100 billion mark on, with a per coin price standing at \$5,564.70. Of course, this price is still a huge leap from where it all began. [A](#)

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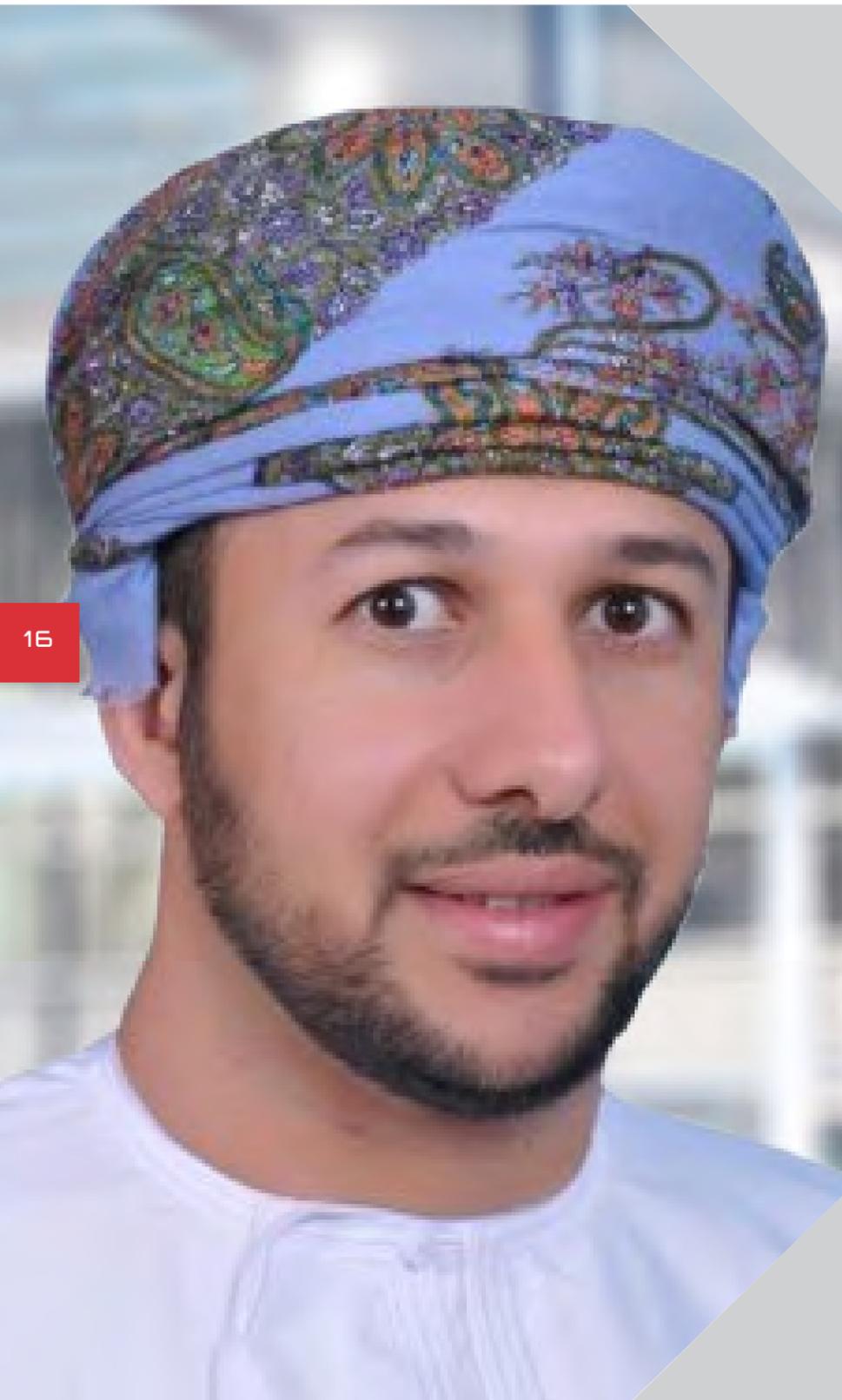
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## Interview of **ENG. BADAR ALI AL SALEH**

Director General  
Oman National CERT

Rahul Arora

**Eng. Badar Ali Al-Salehi** is the Director of Oman National CERT, an e-Oman national initiative aiming at addressing cybersecurity risks, building local cybersecurity capabilities, and promoting cybersecurity awareness among public and private sector organizations in Oman. A veteran in this arena, Al-Salehi is a member of several regional and international forums and committees.

In an exclusive interview with CISO MAG, Al-Salehi discusses regulations and laws for cybersecurity, state of ethical hacking in Oman, and requisites for keeping critical infrastructures safe from cyber-attacks.

**OCERT was established in 2010 to ensure the cyber safety and security of the country. How has the journey been in the last eight years and what are the key milestones OCERT has been able to achieve?**

OCERT was established with a clear vision and objectives. The initiative has been able to accomplish the following:

- Built highly skilled and expert professional team in cybersecurity and cyber incident management
- Obtained regional and international membership and recognitions including GCC-CERT, OIC-CERT, FRIST, Malware alliance, APWG, and Honey Net Project.
- Elected as the chair of OIC-CERT
- Elected as the chair of ITU Arab Study groups 17
- Hosted the ITU Arab regional cyber security center
- Obtained the World Summit in Information Society (WSIS) award in the category of building confidence and security in the use of ICT

**What are the key components of a**

“

**OCERT resources are a part of the Information Technology Authority in Oman, and we have clear and extensive capacity building programs. Human resources development has been addressed very seriously in ITA.**

”

**What framework that would facilitate the government to offer secure e-government services?**

The framework as an enabling or trust as a global cyber security needs the address... with... support... framework... support... framework... support...

**Many countries have recently introduced regulations or laws related to data protection and privacy. Do you think OTCs should have a regulation similar to that as well?**

There are already several... framework... support... framework... support...

**Do you think blockchain technology is an answer to data privacy and data security concerns?**

There... framework... support... framework... support...

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**FOR COMPLETE ISSUE**

**How does OCERT allocate resources to attract and build strong cybersecurity teams?**

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**How does your team work with your organizations, academia, and the private sector to minimize cyber risk?**

OCERT... framework... support... framework... support...

**What role does cybersecurity education and training**