VPN AND BLOCKCHAIN IN CRYPTOGRAPHY

What is a VPN/Virtual Private Network?

A VPN, or Virtual Private Network, allows you to create a secure connection to another network over the Internet.

VPNs can be used to access region-restricted websites, shield your browsing activity from prying eyes on public Wi-Fi, and more

How Does Cryptography affect VPN/How does a VPN work?

In a VPN, Cryptography has a big part to play since the Virtual Private Network takes a lot of encryption (the process used to convert information or data into code, mainly to stop unauthorised access). The encryption is necessary for the data protection of the network. Without this, the VPN wouldn’t have cryptography in it or even have a decent security system. The features that are important for a good VPN are:

1. Security
2. Reliability
3. Scalability
4. Network management
5. Policy management

VPN types

There are two main types of VPN:

* Remote access: Also referred to as a Virtual Private Dial-up Network (VPDN). These are a user-to-LAN connection, mainly used by companies who have a lot of staff working from remote areas that need to connect to the private network. When a company wants to set up large remote-access, VPN provides a form of internet dial-up account to their employees using an Internet Service Provider (ISP). The telecommuters can then dial a 1-800 number to reach the Internet and use their VPN client software to access the corporate network.
* Site-to-site: Some companies can connect multiple fixed sites over a public network such as the internet. To pull this off, the company needs advanced equipment and a lot of large-scale encryption. This is very beneficial since if it is used right, each site will only need a local connection to the same public network, thus saving money on long private lease lines.

What is a blockchain?

In the simplest terms, Blockchain can be described as a data structure that holds transactional records and while ensuring security, transparency, and decentralization.

You can also think of it as a chain or records stored in the forms of blocks which are controlled by no single authority.

How does cryptography effect blockchain?

In the blockchain, digital encryption technology has a core position. The security of user information and transaction data is a necessary condition for the promotion of blockchain. The development of cryptography technology promotes and restricts the further development of blockchain. The most successful blockchain that cryptography effected has to be Bitcoin, the online currency.

Blocks in a blockchain

“blocks” on the blockchain hold pieces of digital information, this is where most of the cryptography takes place, specifically they have three parts:

1. Blocks store information about transactions like the date time and euro amount of your most recent purchase from an online site of your choosing.
2. Blocks store information about who is included in the transactions. for example, if you bought a new laptop off of done deal, a block would record your name along with donedeal.ie . Instead of using your real name, the block records your purchase without any identifying information using a unique “digital signature” sort of username.
3. Blocks store information that distinguishes them from other blocks. Much like you and I have names to distinguish us from one another, each block stores a unique code called a “hash” that allows us to tell it apart from every other block. As we have discussed the uses of hash earlier.

BITCOIN

We cannot talk about the blockchain without coming to mention Bitcoin, Bitcoin uses a lot of cryptography and has even made its own currency worthful against other types of currencies such as euro’s, dollar’s and yin. When bitcoin was created, cryptography wasn’t commonly used and thus, its value was nil, but as time went on and cryptography began to grow in the world, the value of the currency began to rise, you used to be able to buy a lot of bitcoins for cents, now as of todays date, 11/05/2020, a singular bitcoin is worth about 8,725.47 dollars. This shows how much it has grown overtime and how it may continue to expand in the coming future.

Sites viewed and used:

<https://www.cisco.com/c/en/us/support/docs/security-vpn/ipsec-negotiation-ike-protocols/14106-how-vpn-works.html>

<https://www.investopedia.com/terms/b/blockchain.asp>

<https://computer.howstuffworks.com/vpn7.htm>