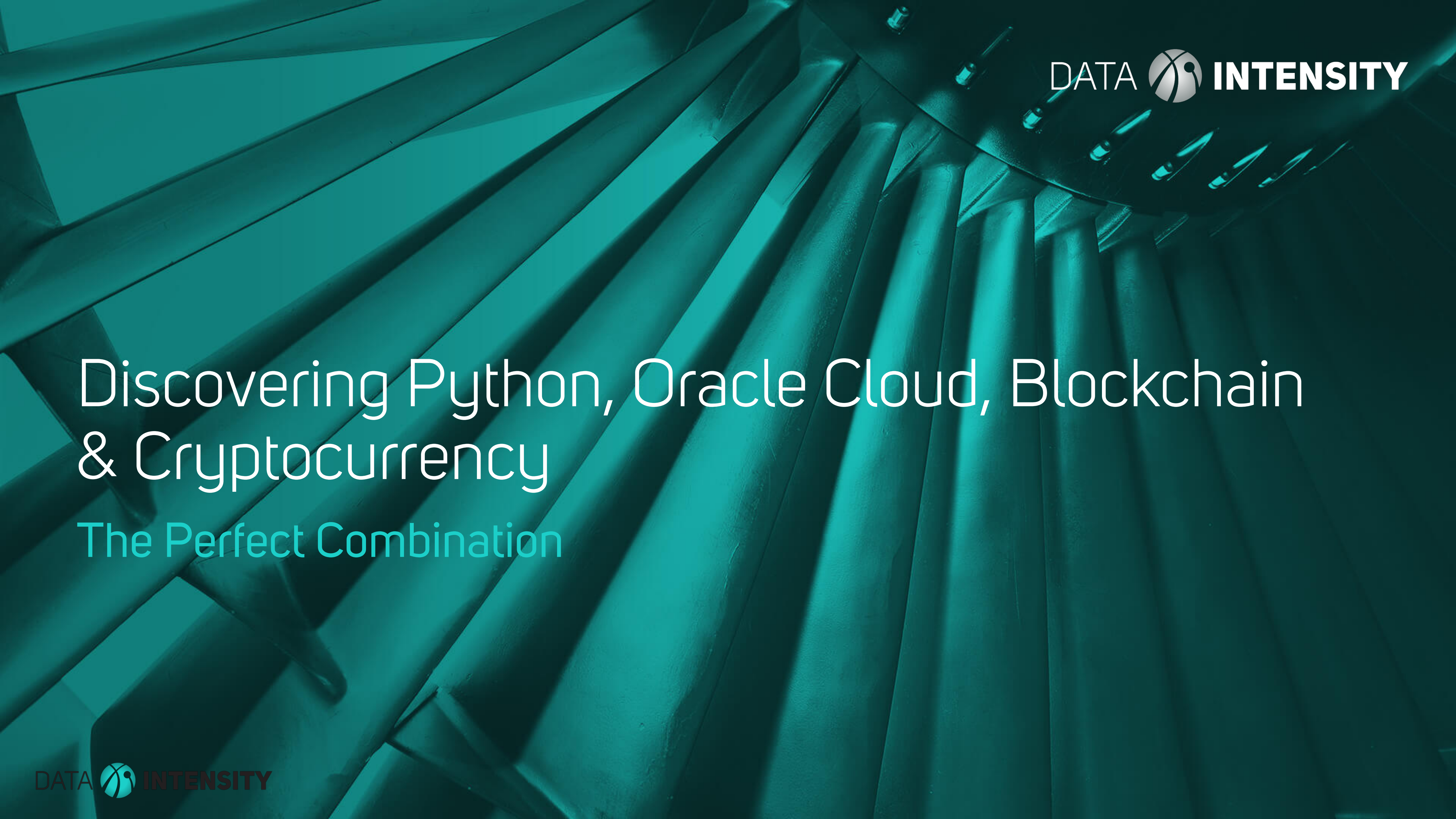
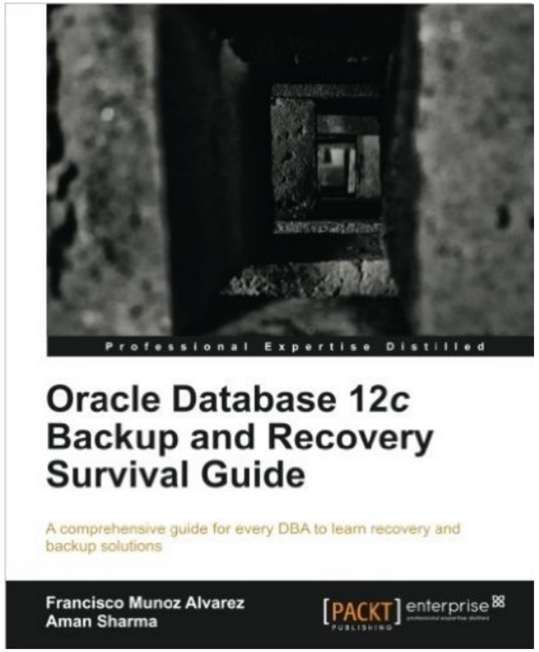


Discovering Python, Oracle Cloud, Blockchain & Cryptocurrency

The Perfect Combination

Francisco Munoz Alvarez

- **Oracle ACE Director**
- 8/9/10g/11g/12c OCP, RAC OCE, AS OCA, E-Business OCP,
- SQL/PLSQL OCA, Oracle 7 OCM
- Oracle 7, 11GR2, 12cR1, 12cR2, ADWCS and OVM 3.1 and 3.2 and 3.3 Beta Tester/Early Adopter
- IOUC LA and APAC Spokesperson, President of APACOUC,IAOUG, CLOUG and NZOUG – Founder of LAOUC and president from 2008 until 2016
- ITIL Certified
- 2008 Top OTN Forum Contributor (All year #1)
- 2008 Oracle ACE Award Winner
- 2010 Oracle Excellence Award Winner
- 2010 Oracle Magazine Editors Choice Award Winner
- 2012 LAOUC Architect of the year Winner
- 2017 APAC Webinar Tour Best Session Winner
- Presented over 420 sessions at 48 Countries around the world



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Oracle Database 12c Backup and Recovery Survival Guide

A comprehensive guide for every DBA to learn recovery and backup solutions

Francisco Munoz Alvarez
Aman Sharma

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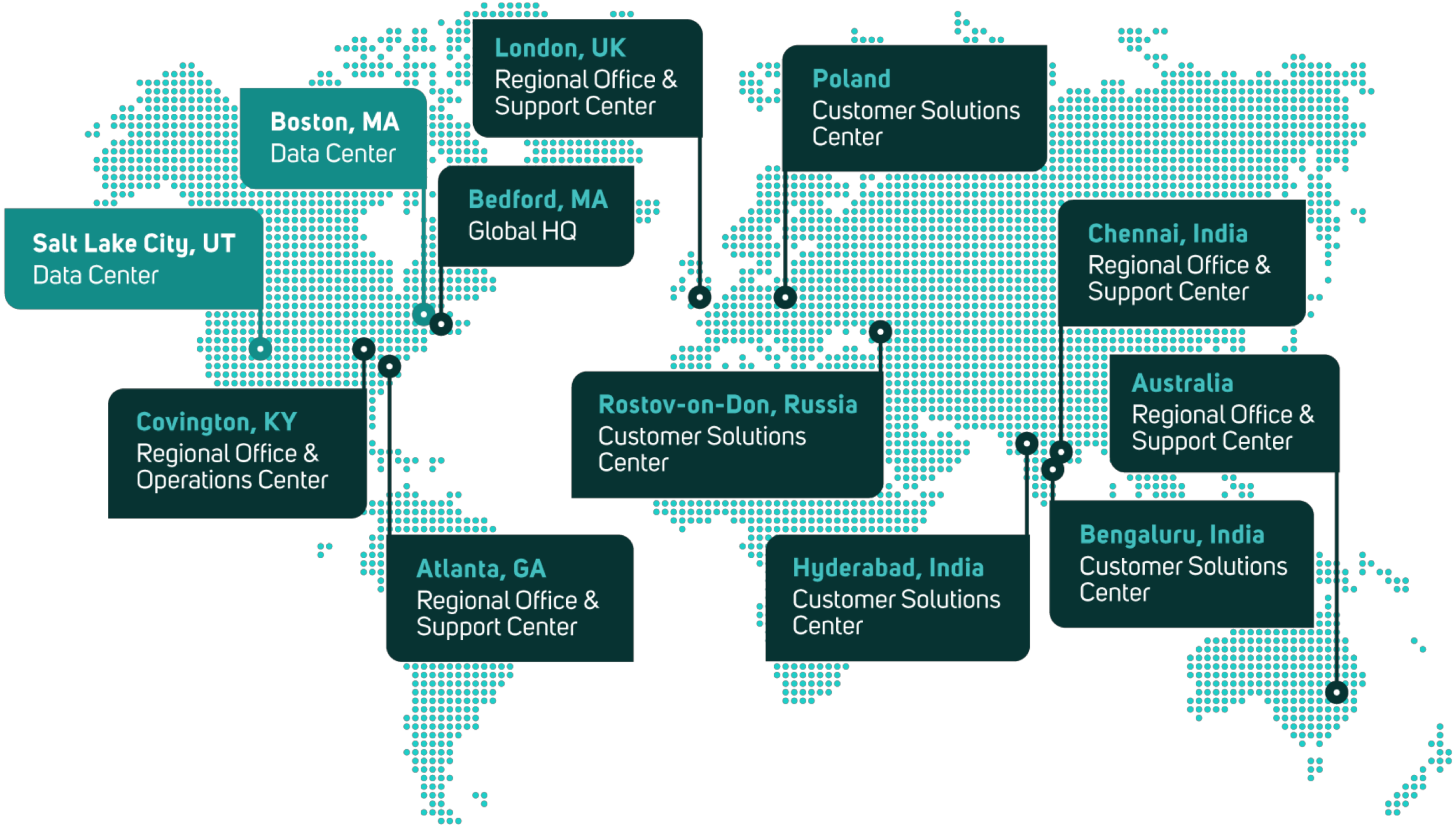

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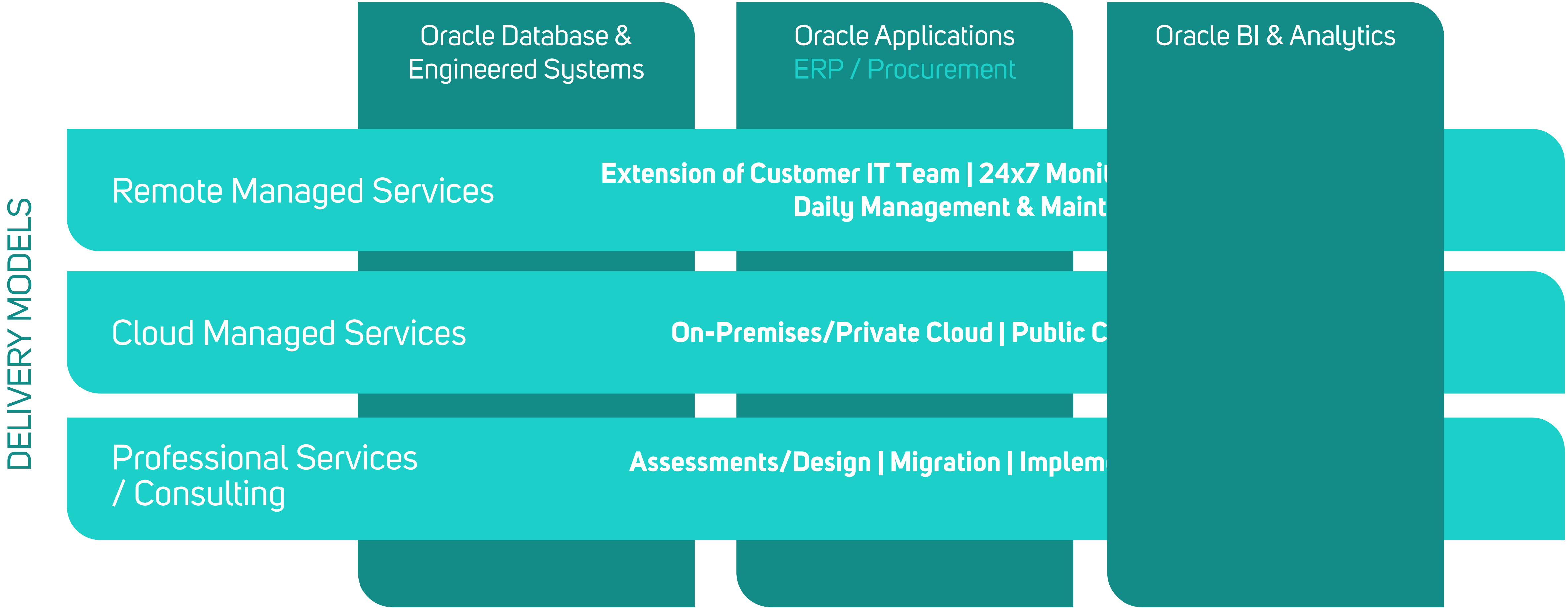

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Back to Basics

Learning the ABCs of the Future Part 1

- Discovering Blockchain
- Discovering Cryptocurrency
- What is and Why Python
- The Glue for Success – Oracle Cloud
- Conclusion

Blockchain

A real revolution

DATA INTENSITY

Blockchain

The blockchain era is here but most of the people hasn't a clue what to do with it

What is it?

Blockchain is a **decentralized distributed database** of immutable records, where transactions are protected by strong **cryptographic algorithms** and the network status is maintained by the **Consensus algorithm**.

In simple words, Blockchain is a chain of blocks that contain information.

The technology was originally described in 1991 and was intended to timestamp digital documents to avoid backdate or tempering of any records.

However great the technology was, its true potential was not realized until Satoshi Nakamoto (a mysterious person or group of people known as) used it to create a digital cryptocurrency **"the Bitcoins".**

Note: Bitcoin is a cryptocurrency and the blockchain is the technology that underpins it. A cryptocurrency refers to a digital coin that runs on a blockchain.

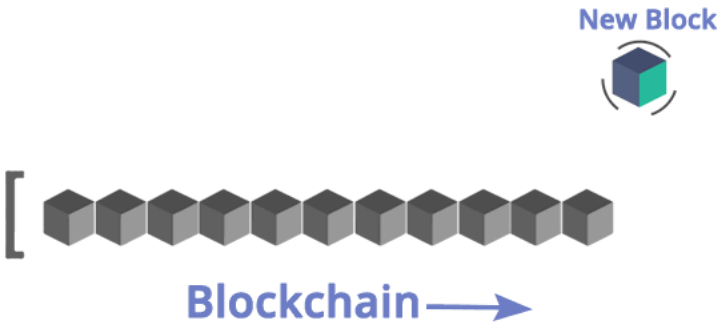
Blockchain

The blockchain era is here but most of the people hasn't a clue what to do with it

Let’s Make it easier to understand

Blockchain is a backlinked, decentralized and distributed-database of encrypted records.

- It’s a data structure where each block is linked to another block in a **time-stamped** chronological order
- It’s an **append-only transactional database**, not a replacement to the conventional databases
- Every node keeps a copy of all the transactions happened in the past which are **secured cryptographically**
- All information once stored on the ledger is verifiable and auditable but **not editable**
- Highly **fault tolerant** as there is **no Single-point-of-failure**



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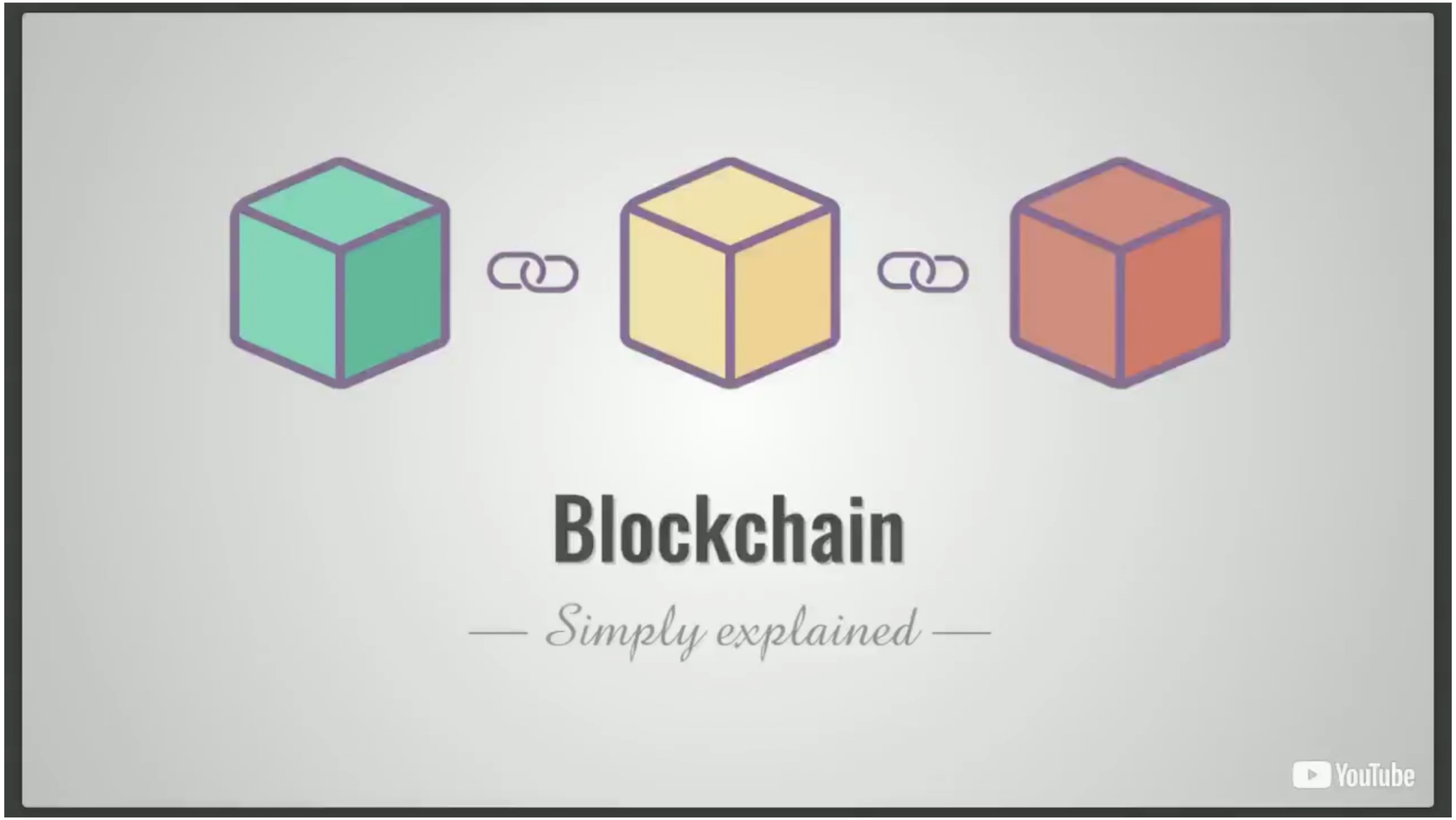
Blockchain

The blockchain era is here but most of the people hasn't a clue what to do with it



Blockchain

The blockchain era is here but most of the people hasn't a clue what to do with it

Some interesting facts about bitcoin

The blockchain behind bitcoin is a public ledger of every transaction that has taken place. It cannot be tampered with or changed retrospectively. Advocates of the technology say this makes bitcoin transactions secure and safer than current systems.

- It is not issued by a central authority (decentralised, not controlled by a central authority)
- The bitcoin blockchain is maintained by a network of people known as miners
- There is a limit of 21 million
- Currently just over 17 million are in circulation
- The first transaction is widely believed to be carried out by a programmer named Lazlo Henyecz, who spent 10,000 bitcoins on two Papa John’s pizzas in 2010.
- The identity of bitcoin creator Satoshi Nakamoto remains a mystery
- Bitcoin has often been used to buy illicit products such as drugs

Blockchain

The blockchain era is here but most of the people hasn't a clue what to do with it

Blockchain

The blockchain era is here but most of the people hasn't a clue what to do with it

Who is using it?

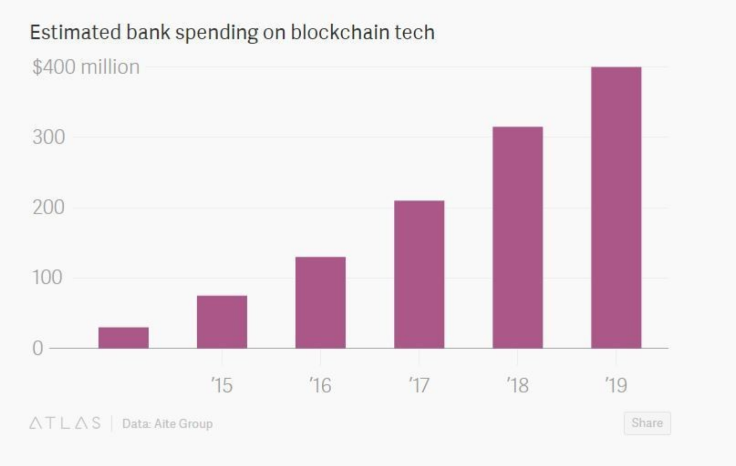
In theory, if blockchain goes mainstream, anyone with access to the internet would be able to use it to make transactions.

Currently only a very small proportion of global GDP (around 0.025%, or $20 billion) is held in the blockchain, according to a survey by the World Economic Forum's Global Agenda Council.

But the Forum's research suggests this will increase significantly in the next decade, as banks, insurers and tech firms see the technology as a way to speed up settlements and cut costs.

Companies racing to adapt blockchain include UBS, Microsoft, IBM and PwC. The Bank of Canada is also experimenting with the technology.

- A report from financial technology consultant Aite, estimated that banks spent $75 million last year on blockchain. And Silicon Valley venture capitalists are also queuing up to back it.



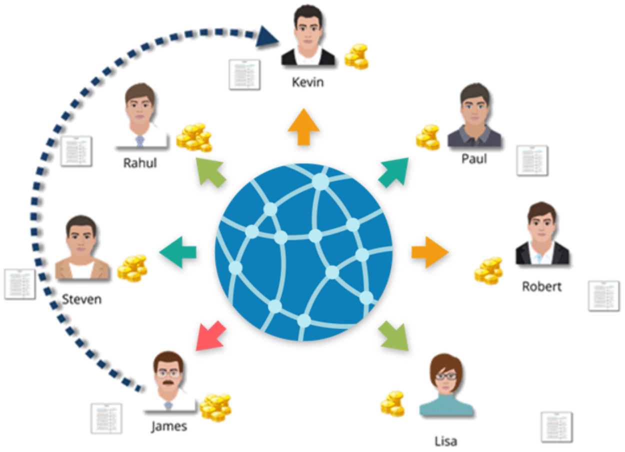
Blockchain

Discovering the ABCs – Bitcoin Example

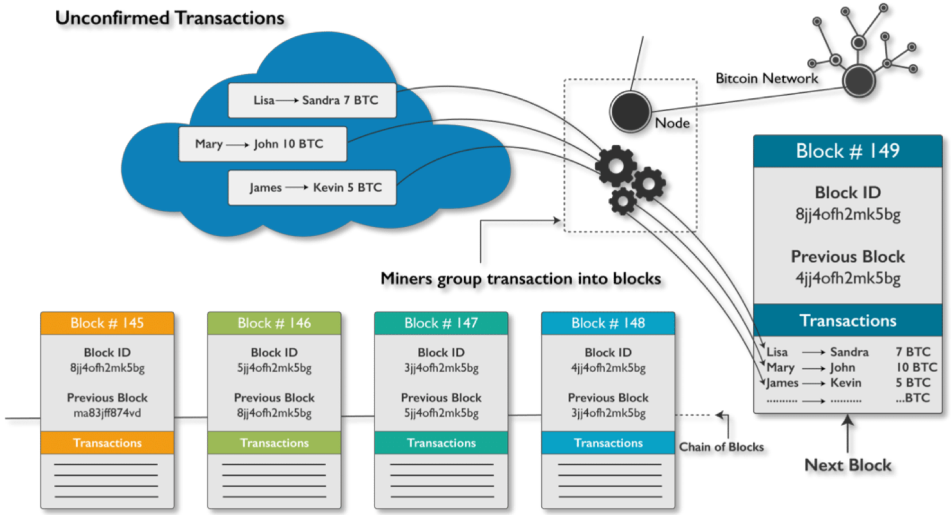
How it works?

Simple Bitcoin transaction

Consider a Bitcoin transaction where, James transfer **5 BTC to** his friend, Kevin in the network.



Now, this transaction is broadcast to the **Bitcoin Blockchain network**, and the special nodes called **Miners** who takes up this transaction from the pool of *unconfirmed transactions*, validate it and adds it to their block



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Blockchain

Discovering the ABCs – Bitcoin Example

Miners?

"Miners" some times called "nodes" on the network, are people running purpose-built computers that are actually competing to solve complex mathematical problems in order to make a transaction go through.

For example, say lot's of people are making bitcoin transactions. Each transaction originates from a wallet which has a private key. This is the digital signature and provides mathematical proof that the transaction has come from the owner of the wallet.

Now imagine lots of transactions are takin place across the globe. These individual transactions are grouped together into a block, organized by strict cryptographic rules. The block is sent out to the bitcoin network, witch are made up of people running high-powered computers. These computers compete to validate the transactions by trying to solve complex mathematical puzzles. The winner receives an award in bitcoins (actually around 12.5 newly created bitcoins).

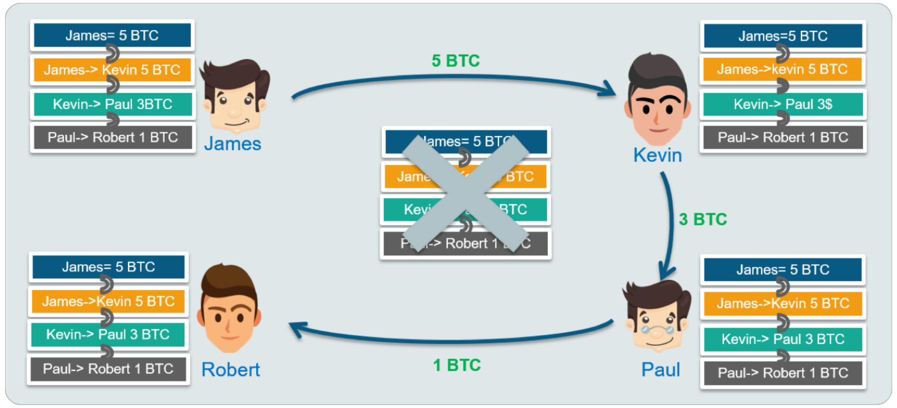
This validated block is then added onto previous blocks creating a chain of blocks called a blockchain.

Blockchain

Discovering the ABCs – Bitcoin Example

Here, suppose Lisa and Robert are miners, they verify the transactions in the network and groups the verified transaction in a block and start competing to solving a complex mathematical puzzle called Proof-of-work.

If Lisa here solves the puzzle first, she broadcast the block to the entire network. The other miners validate the block and every node unanimously agrees to the current state of the ledger, each updating the record independently. Thus James and Kevin get a verification message that the transaction is completed.

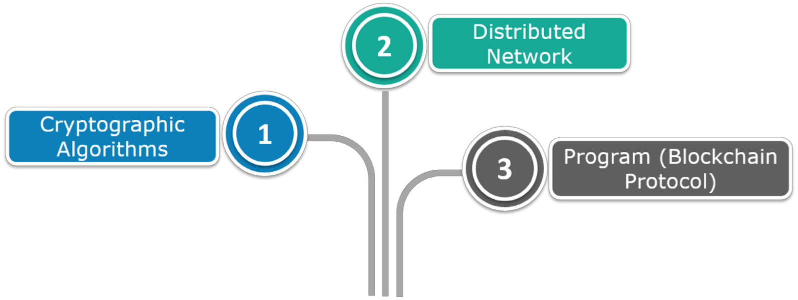


- The transaction thus becomes a part of the universal distributed ledger (or Blockchain). And, For her computational work, Lisa is rewarded with newly created Bitcoins (hence the term mining). The current reward for each block is 12.5 Bitcoins.
- “So the digital money is transferred from one person to another without the use of third parties we use in our conventional system. Isn’t that amazing?!”
- **Yet, Blockchain Technology, for all its virtue is not a new technology.**
- Passably, it is an amalgamation of potent technologies in a new way.

Courtesy of: edureka.co

Blockchain

Blockchain: A group of technologies

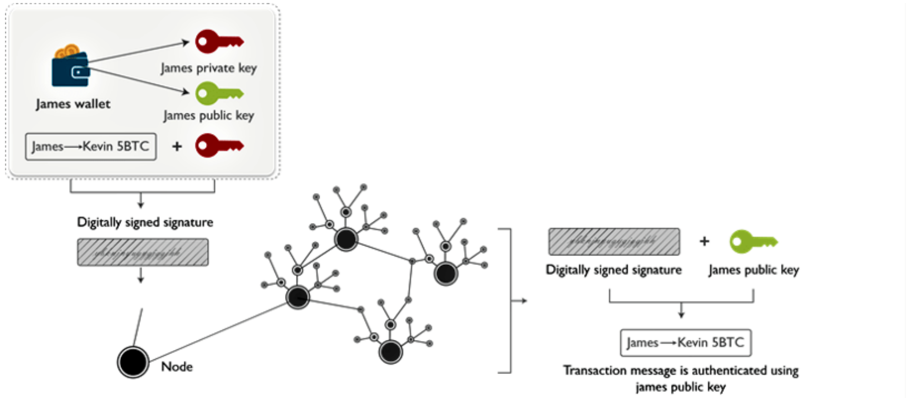


Cryptographic Algorithms:

Blockchains are secured with strong state-of-the-art cryptographic mechanisms. Everything stored on the Blockchain is encrypted.

To give you a better idea of how it is used in Blockchain, let's get back to our previously discussed example where Kevin transfers 5 BTC to James. This transaction goes into the network in the form of an encrypted message. This message is unique is for every transaction.

Now, you would ask what makes the message unique? It is because the transaction is signed by the senders unique key called a private key, hence the **digital signature**. The mechanism looks something like this:

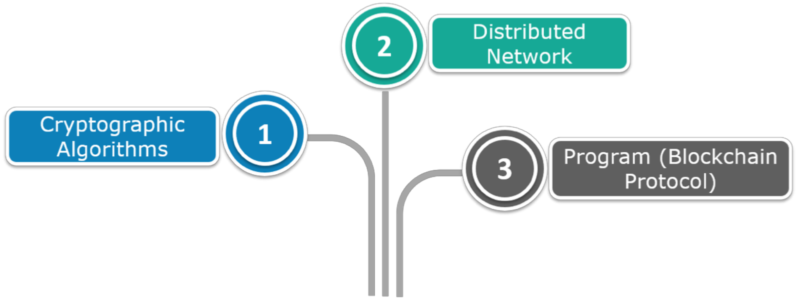


James wallet
James private key
James public key
James→Kevin 5BTC
+
Digitally signed signature
Node
Digitally signed signature
+
James public key
James→Kevin 5BTC
Transaction message is authenticated using james public key

Courtesy of: edureka.co

Blockchain

Blockchain: A group of technologies



1 Cryptographic Algorithms

2 Distributed Network

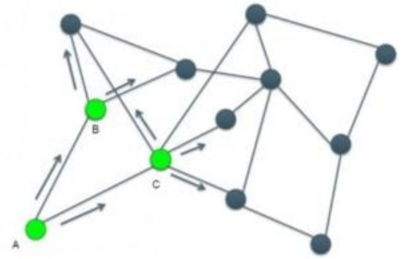
3 Program (Blockchain Protocol)

Distributed Network:

Blockchain uses distributed network where two or more nodes work with each other in a coordinated fashion in order to achieve a common outcome. All users on the Blockchain are nodes (or peers) who maintain their own ledger.

- In a distributed architecture, transaction is transmitted peer-to-peer
- Transmission of the transaction across the network takes around 1-2 seconds

Faster transaction process makes the validation process swift for the peers. This ultimately results in the faster transfer of digital assets



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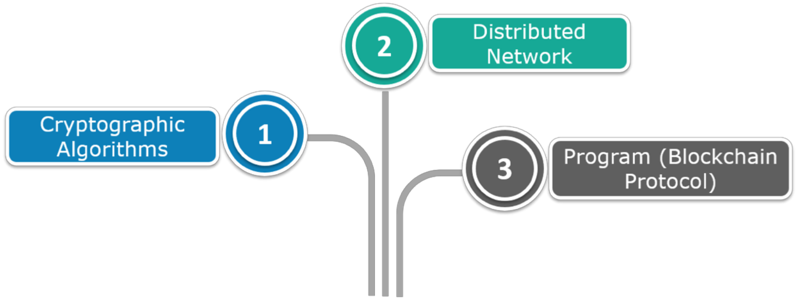
Blockchain

Blockchain: A group of technologies



Program(Blockchain Protocol):

Blockchain uses network servicing protocol for smooth and secure running of the system. The nodes serve the network by maintaining a record of transactions. The verification process can be customized for each blockchain. Basically, it is the consensus mechanism that governs the network of Blockchain. Example Proof-of-work in Bitcoin Blockchain.

Consensus does two things:

- It ensures that the next block in a blockchain is the one and only version of the truth
- It keeps powerful adversaries from derailing the system

Faster transaction process makes the validation process swift for the peers. This ultimately results in the faster transfer of digital assets.

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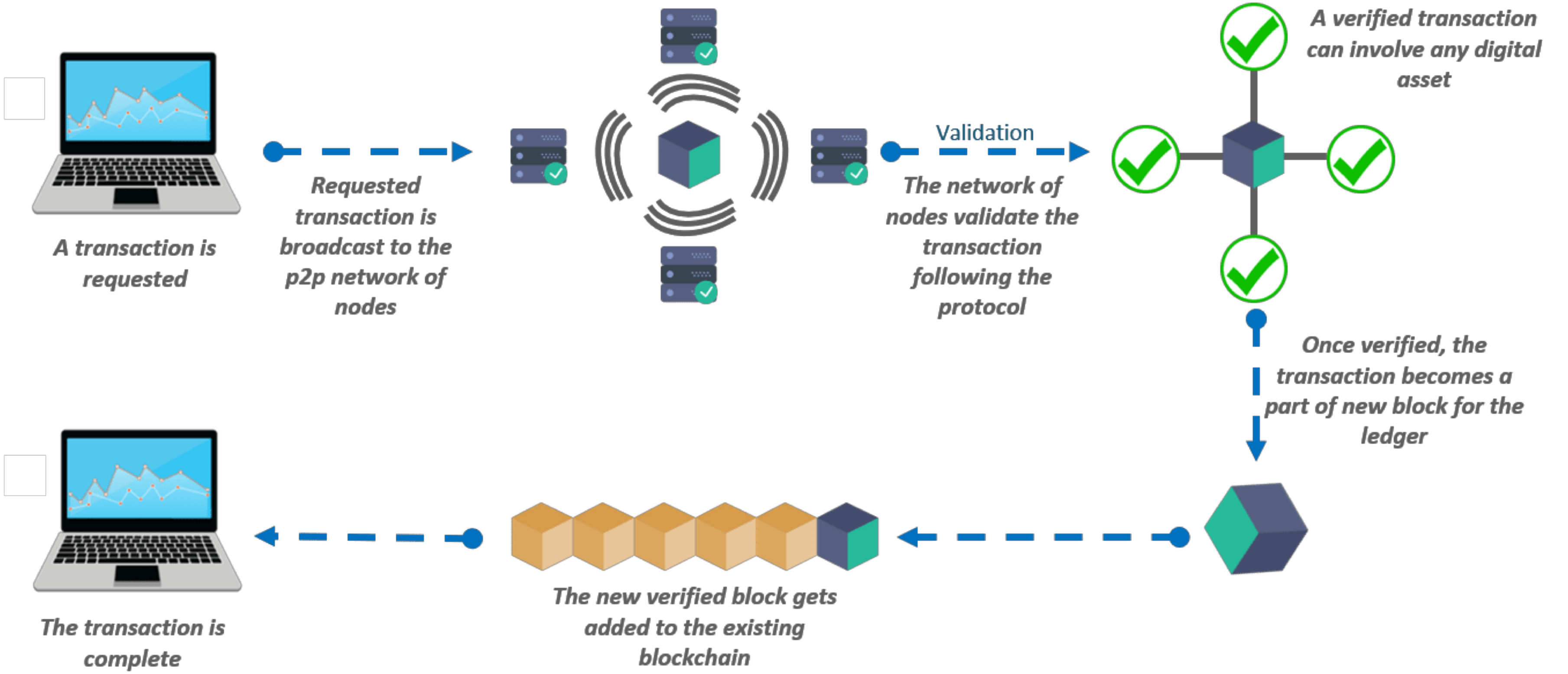
Blockchain

Putting all together



A transcription is requested

Requested transcation is broadcast to the p2p network of nodes

The network of nodes validate the transaction following the protocol

A verified transaction can involve any digital asset

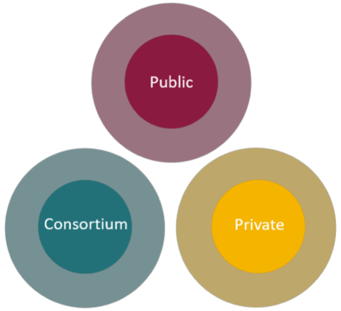
Once verified, the transaction becomes a part of new block for the ledger

The new verified block gets added to the existing blockchain

The transaction is complete

Blockchain

Blockchain: Types



Public: Public blockchains have ledgers visible to everyone on the internet and anyone can verify and add a block of transactions to the blockchain.

- ○ **Examples –** Bitcoin, Ethereum, Dash, Factom

Private: all permissions are kept centralized to an organization. Private blockchains allow only specific people in the organization to verify and add transaction blocks but everyone on the internet is generally allowed to view.

- ○ **Examples-** Multichain, Blockstack

Consortium: controlled by a consortium of members. Only predefined set of nodes have access to write the data or block.

- ○ **Examples-** Ripple ,R3 & Hyperledger1.0

Courtesy of: edureka.co

Back to Basics

Learning the ABCs of the Future Part 1

- Discovering Blockchain
- Discovering Cryptocurrency
- What is and Why Python
- The Glue for Success – Oracle Cloud
- Conclusion

Cryptocurrency

What it is?

A cryptocurrency is a digital or virtual currency designed to work as a medium of exchange. It uses cryptography to secure and verify transactions as well as to control the creation of new units of a particular cryptocurrency. Essentially, cryptocurrencies are limited entries in a database that no one can change unless specific conditions are fulfilled.

In a decentralized network like Bitcoin, every single participant needs to do this job. This is done via the Blockchain - a public ledger of all transaction that ever happened within the network, available to everyone. Therefore, everyone in the network can see every account's balance.

Every transaction is a file that consists of the sender's and recipient's public keys (wallet addresses) and the amount of coins transferred. The transaction also needs to be signed off by the sender with their private key. All of this is just basic cryptography. Eventually, the transaction is broadcasted in the network, but it needs to be confirmed first.

Within a cryptocurrency network, only miners can confirm transactions by solving a cryptographic puzzle. They take transactions, mark them as legitimate and spread them across the network. Afterwards, every node of the network adds it to its database. Once the transaction is confirmed it becomes unforgeable and irreversible and a miner receives a reward, plus the transaction fees.

Essentially, any cryptocurrency network is based on the absolute consensus of all the participants regarding the legitimacy of balances and transactions. If nodes of the network disagree on a single balance, the system would basically break. However, there are a lot of rules pre-built and programmed into the network that prevents this from happening.

Cryptocurrencies are so called because the consensus-keeping process is ensured with strong cryptography. This, along with aforementioned factors, makes third parties and blind trust as a concept completely redundant.

Cryptocurrency

The History

There have been many attempts at creating a digital currency during the 90s tech boom, with systems like Flooz, Beenz and DigiCash emerging on the market but inevitably failing. There were many different reasons for their failures, such as fraud, financial problems and even frictions between companies' employees and their bosses.

Notably, all of those systems utilized a Trusted Third Party approach, meaning that the companies behind them verified and facilitated the transactions. Due to the failures of these companies, the creation of a digital cash system was seen as a lost cause for a long while.

At early 2009, an anonymous programmer or a group of programmers under an alias Satoshi Nakamoto introduced Bitcoin. Satoshi described it as a 'peer-to-peer electronic cash system.' It is completely decentralized, meaning there are no servers involved and no central controlling authority. The concept closely resembles peer-to-peer networks for file sharing.

Cryptocurrency

What can you do with cryptocurrency

Buy goods

In the past, trying to find a merchant that accepts cryptocurrency was extremely difficult, if not impossible. These days, however, the situation is completely different.

There are a lot of merchants - both online and offline - that accept Bitcoin as the form of payment. They range from massive online retailers like Overstock and Newegg to small local shops, bars and restaurants. Bitcoins can be used to pay for hotels, flights, jewelery, apps, computer parts and even a college degree.

Other digital currencies like Litecoin, Ripple, Ethereum and so on aren't accepted as widely just yet. Things are changing for the better though, with Apple having authorized at least 10 different cryptocurrencies as a viable form of payment on App Store.

Invest

Many people believe that cryptocurrencies are the hottest investment opportunity currently available. Indeed, there are many stories of people becoming millionaires through their Bitcoin investments. Bitcoin is the most recognizable digital currency to date, and just in 2016 one BTC was valued at $800. In November 2017, the price of one Bitcoin exceeded $7,000.

Mine

Miners are the single most important part of any cryptocurrency network, and much like trading, mining is an investment. Essentially, miners are providing a bookkeeping service for their respective communities. They contribute their computing power to solving complicated cryptographic puzzles, which is necessary to confirm a transaction and record it in a distributed public ledger called the Blockchain.

Cryptocurrency

Legality of cryptocurrencies

As cryptocurrencies are becoming more and more mainstream, law enforcement agencies, tax authorities and legal regulators worldwide are trying to understand the very concept of crypto coins and where exactly do they fit in existing regulations and legal frameworks.

With the introduction of Bitcoin, the first ever cryptocurrency, a completely new paradigm was created. Decentralized, self-sustained digital currencies that don’t exist in any physical shape or form and are not controlled by any singular entity were always set to cause an uproar among the regulators.

A lot of concerns have been raised regarding cryptocurrencies’ decentralized nature and their ability to be used almost completely anonymously. The authorities all over the world are worried about the cryptocurrencies’ appeal to the traders of illegal goods and services. Moreover, they are worried about their use in money laundering and tax evasion schemes.

As of November 2017, Bitcoin and other digital currencies are outlawed only in Bangladesh, Bolivia, Ecuador, Kyrgyzstan and Vietnam, with China and Russia being on the verge of banning them as well. Other jurisdictions, however, do not make the usage of cryptocurrencies illegal as of yet, but the laws and regulations can vary drastically depending on the country.

Cryptocurrency

2018 TOP 10 cryptocurrencies (*) – Values as per 15/09/2018

- Bitcoin — The original and most widely used. There are currently more than 16.8 million bitcoin tokens in circulation, against a present capped limit of 21 million. $6,522.82
- Bitcoin Cash — This offshoot of the original Bitcoin, which launched in the summer of 2017, has already soared to become one of the most traded cryptocurrencies. $449.80
- Litecoin — Known as "bitcoin's little brother", litecoin resembles its older sibling in that it is a peer-to-peer cryptocurrency, but has faster transaction speeds as well as a substantially higher token limit of 84 million. However, its mining process is more memory-intensive and its market cap is around 1/20th of the size of bitcoin $57.84
- Dogecoin— This is a cryptocurrency largely recognisable for its image of a Shiba Inu dog derived from the "Doge" internet meme. Initially introduced as a parody currency, it now has its own online community. At the start of 2018, Dogecoin saw its market capitalisation reach $2bn. $0.006213
- Ethereum — A Turing-complete programmable currency that lets developers build different distributed apps and technologies that wouldn't work with Bitcoin. $215.72
- BAT — This works on a similar principle to Ethereum but applies it to digital advertising. BATs (Basic Attention Tokens) allow advertisers to disintermediate publishers – or, in other words, cut out the middlemen – by paying internet users directly for their "eyeballs". Painful though this sounds, it simply means users get paid in BATs for browsing on the web. $0.1585
- NEO — The first open-source public blockchain in China, NEO was initially launched in 2014 as Antshares and enables the development of smart contracts and assets on its platform. The group is in the Ethereum model but aims to be the platform of choice for the new smart economy. $18.29
- Ripple XRP— Ripple has been designed as a centralised transaction network to be used by banks for money transfers in much the same way as, say, SWIFT. It uses the XRP currency – money is converted to the XRP token to be sent via the Ripple network and then converted back to money when it is withdrawn. It is designed to be faster, more reliable and less volatile than other cryptocurrencies. $0.279612
- Stellar (XLM)— This Stellar network has lived up to its name, with the share price of its cryptocurrency token XLM growing by a stratospheric 30,000pc in 2017. It was launched by Ripple co-founder Jed McCaleb in 2014 and, like Ripple, it is a transaction network for fast and efficient cross-border money transfers. $0.204510
- Cardano (ADA) — Cardano is another platform used to send and receive digital currencies, including its own cryptocurrency, ADA. Created by Ethereum co-founder Charles Hopkinson in 2015, it is the first peer-blockchain powered by scientists and academics. The Cardano network also aims to run decentralised apps on the blockchain. It currently has a market capitalisation of around $16bn. $0.069073

(*) By The Telegraph UK

Back to Basics

Learning the ABCs of the Future Part 1

- Discovering Blockchain
- Discovering Cryptocurrency
- What is and Why Python
- The Glue for Success – Oracle Cloud
- Conclusion

Python

What it is and where can I use it?

Python is probably the most trending programming language you can learn these days!

It's very popular because it's easy to learn and use, runs on all operating systems and allows you to build a broad variety of programs: Be that web applications, desktop applications, utility scripts or using it for data science and machine learning.

Python

What it is and where can I use it?

There are 3 main popular applications for Python:

- Web Development
- Data Science — including machine learning, data analysis, and data visualization
- Scripting

Python

Web Development

Web frameworks that are based on Python like **Django** and **Flask** have recently become very popular for web development.

These web frameworks help you create server-side code (backend code) in Python. That's the code that runs on your server, as opposed to on users' devices and browsers (front-end code). If you're not familiar with the difference between backend code and front-end code, please see my footnote below.

Python

Data Science

First of all, let's review what machine learning is.

The best way to explain what machine learning is would be to give you a simple example.

Let's say you want to develop a program that automatically detects what's in a picture, and we show a picture of a dog.

However, this kind of approach gets tricky pretty quickly. What if there's a white dog in the picture with no brown hair? What if the picture shows only the round parts of the table?

This is where machine learning comes in.

Machine learning typically implements an algorithm that automatically detects a pattern in the given input.

You can give, say, 1,000 pictures of a dog and 1,000 pictures of a table to a machine learning algorithm. Then, it will learn the difference between a dog and a table. When you give it a new picture of either a dog or a table, it will be able to recognize which one it is.

Python

Data Science

Machine learning algorithms work much the same way.

You can apply the same idea to:

- recommendation systems (think YouTube, Amazon, and Netflix)
- face recognition
- voice recognition
- among other applications.

Popular machine learning algorithms you might have heard about include:

- Neural networks
- Deep learning
- Support vector machines
- Random forest

You can use any of the above algorithms to solve the picture-labeling problem I explained earlier

Python

Python for machine learning

There are popular machine learning libraries and frameworks for Python.

Two of the most popular ones are **scikit-learn** and **TensorFlow**.

- scikit-learn comes with some of the more popular machine learning algorithms built-in. I mentioned some of them above.
- TensorFlow is more of a low-level library that allows you to build custom machine learning algorithms.

If you're just getting started with a machine learning project, I would recommend that you first start with scikit-learn. If you start running into efficiency issues, then I would start looking into TensorFlow.

Python

Data analysis / visualization with Python

One of the most popular libraries for data visualization is Matplotlib.

It’s a good library to get started with because:

- It’s easy to get started with
- Some other libraries such as seaborn is based on it. So, learning Matplotlib will help you learn these other libraries later on.

After learning the fundamentals of data analysis and visualization, learning fundamentals of statistics from websites like Coursera and Khan Academy will be helpful, as well.

Python

Scripting

Scripting usually refers to writing small programs that are designed to automate simple tasks, can be easily used for:

- Embedded applications (Including Rasberry Pi as per example)
- Gaming
- Desktop applications
- Your imagination is the limit

Back-end code vs front-end code

- The front-end is the code that is executed on the client side. This code (typically HTML, CSS, and JavaScript) runs in the user's browser and creates the user interface.
- The back-end is the code that runs on the server, that receives requests from the clients, and contains the logic to send the appropriate data back to the client. The back-end also includes the database, which will persistently store all of the data for the application.

Back to Basics

Learning the ABCs of the Future Part 1

- Discovering Blockchain
- Discovering Cryptocurrency
- What is and Why Python
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Oracle Autonomous Blockchain Cloud Service

Transforming the Enterprise

Oracle offers an easier way to adopt blockchain and transform your enterprise with the industry's most comprehensive, autonomous, and enterprise-grade blockchain cloud service. Oracle Autonomous Blockchain Cloud Service securely extends your business processes and applications while enabling you to process business transactions much faster.

Key Features

- **Preassembled**
- Open
- Plug-and-Play Integrations
- Enterprise-Grade
- Autonomous
- Expertise and Experience

Oracle Autonomous Blockchain Cloud Service

Oracle Blockchain Cloud Service's goals

- **Deliver business results** with the ability to rapidly onboard and easily scale the network participants globally, while ensuring that operations run continually with resilience, high availability, and autonomous recoverability.
- **Accelerate innovation with Oracle Cloud Applications** by extending enterprise boundaries to reduce friction in existing business processes and enable new business models and opportunity to access untapped revenue streams. The Applications Integration toolkit provides integrated applications, sample code, templates and design patterns to accelerate the integration of Blockchain applications to Oracle SaaS and on premises applications suites.
- **Speed up business processes** through trusted real-time information sharing across existing Oracle ERP Cloud, Oracle SCM Cloud, Netsuite SuiteCloud Platform or custom blockchain application integrations.
- **Reduce risk, complexity, and increase efficiency** by securely automating cross-organization transactions, and providing reliable sharing of information both inside and outside the enterprise boundary. Combined, these can help reduce transaction costs, mitigate security and privacy risks for enterprises, and simplify compliance and audits. With a pre-assembled, managed cloud platform, customers can also simplify operational complexity, dynamically change network configurations and rapidly identify and resolve issues with real-time monitoring dashboards. Furthermore, as blockchain technology rapidly evolves, Oracle plans to stay on top of the latest capabilities and helps ensure customers are not exposed to undue risk of technological churn.
- **Accelerate time to market** with REST API-driven platform and rich integration options in Oracle Cloud Platform. Start developing blockchain applications within minutes without complex setup and provisioning, and leverage API-driven development for cloud or on-premises applications using REST API and API management service to easily invoke blockchain services directly or with pre-built integrations from Oracle Cloud.

Oracle Autonomous Blockchain Cloud Service

Key Features

Preassembled

Preassembled Managed Service

- A Fully managed cloud service for rapid provisioning and simplified administration of blockchain networks
- Includes all components: infrastructure dependencies, Hyperledger Fabric components, REST proxy, and operations console
- Easy partner onboarding with preintegrated , buit-in verification

Open

- Built on open source Hyperledger Fabric software
- Interoperable with non-Oracle Hyperledger Fabric Instances deployed in your data center or third-party clouds
- Accessible from on-premises using REST API and Fabrik SDK

Oracle Autonomous Blockchain Cloud Service

Key Features

Plug-and-Play Integrations

- Rapidly integrate Oracle SaaS, op-premises applications, and third-party applications using Oracle Integration Cloud
- Includes out of the box API integration for Oracle FLEXCUBE Core Banking, NetSuite ERP, and Oracle Banking API platform
- Easily integrate applications via REST APIs with tooling for API lifecycle management

Enterprise-Grade

- The industry most comprehensive blockchain cloud service, managed by Oracle
- Built-in, high-availability, and continuous backup and archiving for multi data center disaster and recovery
- Enhanced security with data-at-rest encryption, certificate revocation management, and role-based identity management
- Achieve a higher throughput with parallel execution in the world #1 database, using record level locking

Oracle Autonomous Blockchain Cloud Service

Key Features

Autonomous

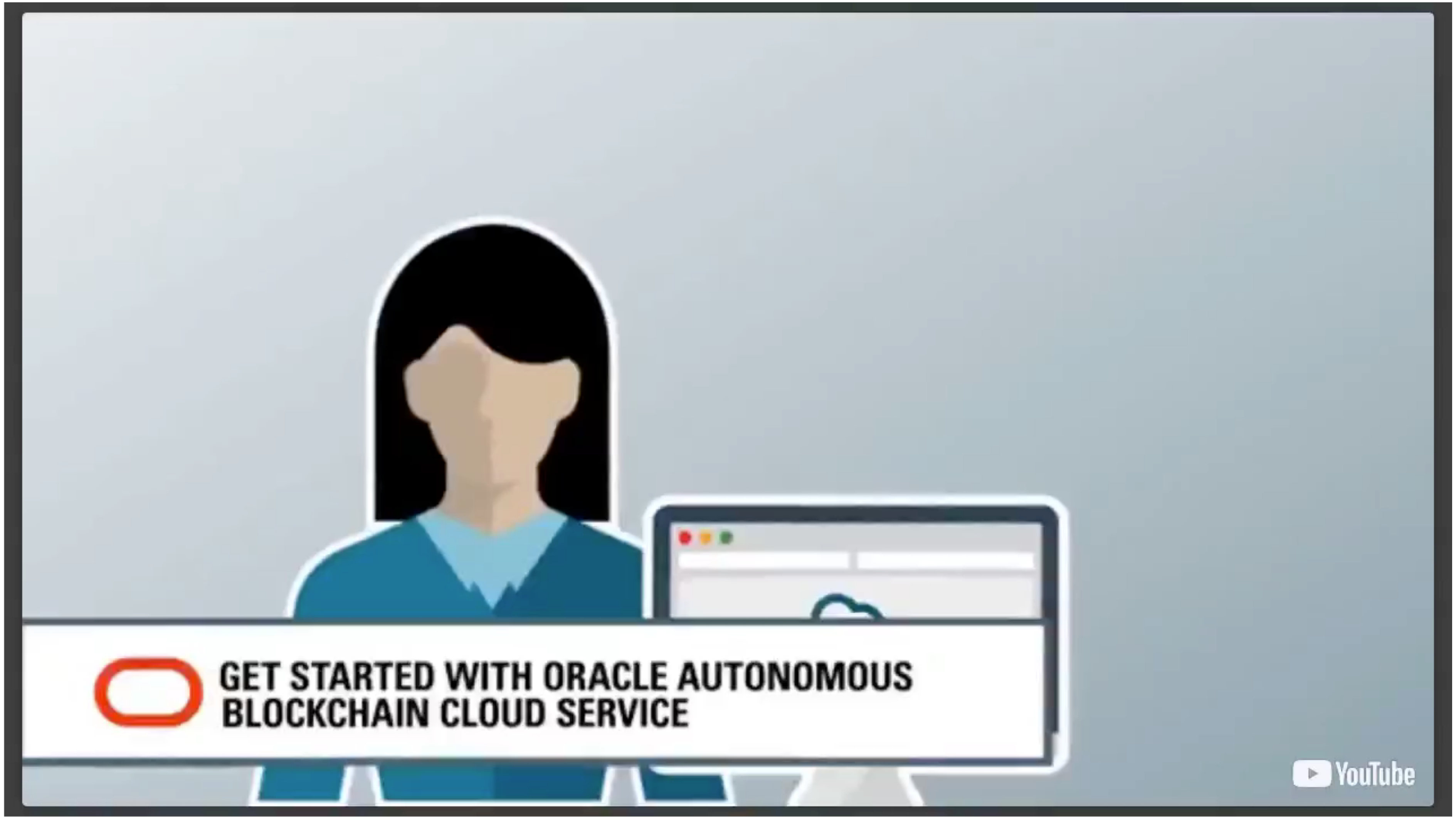
- Self-Driving: Auto-provisioning of infrastructure dependencies, embedded backup, recovery and monitoring
- Self-Securing: Adaptive intelligence-enabled threat detection and remediation and automated security patching
- Self-Repairing: Automated, high availability configuration and rest with zero-downtime patching, delivering 99.95% availability

Expertise and Experience

- Oracle offers deep-domain industry experience to help you implement new blockchain solutions or integrate existing applications
- Support from Oracle Blockchain Cloud Services experts to help prototype and bootstrap customer projects
- Design and Implementation expertise available through Oracle Consulting and partners trained on Oracle Blockchain Cloud Service

Oracle Autonomous Blockchain Cloud Service

DEMO



Oracle Autonomous Blockchain Cloud Service

Resources

- Blockchain for Developers: https://developer.oracle.com/blockchain
- Try for Free: https://cloud.oracle.com/blockchain
- OABCS Faq: https://cloud.oracle.com/blockchain/faq
- Training Demos and Videos: https://cloud.oracle.com/en_US/blockchain/videos

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Oracle Cloud Infrastructure

Python SDK

This is the public Python SDK for Oracle Cloud Infrastructure. Python 2.7+ and 3.5+ are supported.

```
>>> import oci
>>> config = oci.config.from_file(
... "~/.oci/config",
... "integ-beta-profile")
>>> identity = oci.identity.IdentityClient(config)
>>> user = identity.get_user(config["user"]).data
>>> print(user)
{
"compartment_id": "ocid1.tenancy.oc1...",
"description": "Integration testing user [BETA]",
"id": "ocid1.user.oc1...",
"inactive_status": null,
"lifecycle_state": "ACTIVE",
"name": "testing+integ-beta@corp.com",
"time_created": "2016-08-30T23:46:44.680000+00:00" }
```

Oracle Cloud Infrastructure

Python SDK Installation

The Python SDK supports operations for the following services:

- Audit Service
- Core Services (Networking Service, Compute Service, and Block Volume Service)
- Database Service
- DNS Service
- Email Service
- File Storage Service
- Identity and Access Management Service
- Load Balancing Service
- Object Storage Service

Oracle Cloud Infrastructure Python SDK

Prerequisites

Note: The Python SDK uses the cryptography.io library, which has its own additional build requirements. Ensure that you satisfy those requirements prior to installing the Python SDK.

- An Oracle Cloud Infrastructure account
- A user created in that account, in a group with a policy that grants the desired permissions. This can be a user for yourself, or another person/system that needs to call the API. For an example of how to set up a new user, group, compartment, and policy, see Adding Users in the Getting Started Guide. For a list of other typical Oracle Cloud Infrastructure policies, see Common Policies in the User Guide.
- Python version 2.7.5 or 3.5 or later, running on Mac, Windows, or Linux.
- A keypair used for signing API requests, with the public key uploaded to Oracle. Only the user calling the API should be in possession of the private key. (For more information, see Configuring the SDK.)

Oracle Cloud Infrastructure Python SDK

Downloading and Installing the SDK

You can install the Python SDK through the Python Package Index (PyPI), or alternatively through GitHub.

Set up a virtual environment

Oracle recommends that you run the SDK in a virtual environment with virtualenv. This allows you to isolate the dependencies for the SDK and avoids any potential conflicts with other Python packages which may already be installed (e.g. in your system-wide Python).

With Linux, virtualenv is usually in a separate package from the main Python package. If you need to install virtualenv, use pip install virtualenv. To create and activate a virtual environment:

```
virtualenv <environment name>
```

```
source <environment name>/bin/activate
```

For example:

```
virtualenv oci_sdk_env
```

```
source oci_sdk_env/bin/activate
```

Oracle Cloud Infrastructure Python SDK

Downloading and Installing the SDK

PyPI

To install from PyPI use the following command:

```
pip install oci
```

GitHub

To install from GitHub:

1. Download the SDK from GitHub. The download is a zip containing a whl file and documentation.
2. Extract the files from the zip.
3. Use the following command to install the SDK:

```
pip install oci-*-py2.py3-none-any.whl
```

Note: If you're unable to install the whl file, make sure pip is up to date. Use pip install -U pip and then try to install the whl file again.

Oracle Cloud Infrastructure Python SDK

Configuring the SDK

Before using the SDK, you must set up your config file with the required credentials. For instructions, see SDK and Tool Configuration in the User Guide.

Verify OpenSSL Version

The supported version of OpenSSL for the Python SDK is version 1.0.1 or newer. Run the following command to find out the version of OpenSSL that you have:

```
python -c "import ssl; print(ssl.OPENSSL_VERSION)"
```

If the version is lower than 1.0.1, run the following command to bypass the version issue:

```
pip install requests[security]==2.18.4
```

This command instructs the requests library used by the Python SDK to use the version of OpenSSL that is bundled with the cryptography library used by the SDK.

Note: If you don't want to use requests[security] you can update OpenSSL as you normally would. For example, on OS X, use Homebrew to update OpenSSL using the following commands:

```
brew update
brew install openssl
brew install python
```

Oracle Cloud Infrastructure Python SDK

Resources

- Tutorial to Connect to DB: http://www.oracle.com/webfolder/technetwork/tutorials/obe/cloud/apaas/python/python-oracle-accs/python-oracle-accs.html
- Tutorial Connect to DB 11G: http://www.oracle.com/technetwork/articles/dsl/python-091105.html
- OCI Python SDK: https://oracle-cloud-infrastructure-python-sdk.readthedocs.io/en/latest/
- Installation SDK: https://oracle-cloud-infrastructure-python-sdk.readthedocs.io/en/latest/installation.html

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Any Questions?

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