Cloud Customer Architecture for Blockchain

http://www.cloud-council.org/deliverables/cloud-customer-architecture-for-blockchain.htm
The Cloud Standards Customer Council

THE Customer’s Voice for Cloud Standards!

- Provide customer-led guidance to multiple cloud standards-defining bodies
- Establishing criteria for open standards based cloud computing

2017 Projects
- Hybrid Integration Ref. Architecture
- API Management Ref. Architecture
- Security for Cloud Services Ref. Architecture
- Data Residency discussion paper
- Blockchain Ref. Architecture
- Practical Guide to Cloud Management Platforms
- Big Data and Analytics Ref. Architecture, v2
- And more!

2015 Deliverables
- Web App Hosting Ref. Architecture
- Mobile Ref. Architecture
- Big Data & Analytics Ref. Architecture
- Security for Cloud Computing, V2
- Practical Guide to Cloud SLAs, V2
- Practical Guide to PaaS

650+ Organizations participating

2013/2014 Deliverables
- Convergence of Social, Mobile, Cloud
- Analysis of Public Cloud SLAs
- Cloud Security Standards
- Migrating Apps to Public Cloud Services
- Social Business in the Cloud
- Deploying Big Data in the Cloud
- Practical Guide to Cloud Computing, V2
- Migrating Apps: Performance Rqmnnts
- Cloud Interoperability/Portability

2016 Deliverables
- Prac Guide to Hybrid Cloud Computing
- Public Cloud Service Agreements, V2
- Cloud Security Standards, V2
- IoT Ref. Architecture
- e-Commerce Ref. Architecture
- Impact of Cloud Computing on Healthcare, V2
- Enterprise Social Collaboration Ref. Architecture

2017 Projects
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http://cloud-council.org
This talk introduces the Cloud Customer Architecture for Blockchain

- What are Cloud Solution Architectures?
- Blockchain Cloud Architecture

CSCC’s Cloud Reference Architecture series is growing!


Presenting today!
Cloud Customer Reference Architectures

Cloud Customer Reference Architectures are...
- straightforward description of elements needed to implement particular application solutions using cloud infrastructure, cloud platforms, cloud software, and cloud services
- deployment neutral (public, private, hybrid) & implementable via IaaS, PaaS, SaaS
- general purpose reusable architectures as well as industry specific architectures
- vendor neutral & open

Important because they...
- enable cloud customers to understand unique features & advantages of using cloud computing
- bridge gap between understanding cloud customer needs and cloud provider offerings
- provide practical guidance on how common business applications can be realized from a cloud customer role perspective
- are stable anchors in a rapidly innovating cloud landscape
- save time, effort & money: be more productive

Useful when...
- those planning to build cloud based applications
- talking with cloud providers about their offerings
- understanding of the common elements and relationships in relevant solutions

Target audience
- those planning on building/purchasing cloud based applications
- developers, architects, managers

Consistent with ISO/IEC 17789 International Standard Cloud Computing Reference Architecture
Cloud Customer Reference Architecture for Blockchain

Executive Summary

- Today enterprises operate in a business network
- Frictions exist in business networks
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Executive Summary - Continued

**Blockchain has the potential to**

- Radically alter the way enterprises conduct business
- Reduce operational cost
- Reduce friction in business transactions
- Dramatically change workflow and business procedures
- Open up new opportunities for innovation and growth

Participants have multiple shared ledgers

NOTE: Participants same as before
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Blockchain Fundamentals

• Ledger is shared
• Ledger is distributed across the business network
• Only “Append” operation permitted on the ledger
• Transactions are permanently recorded
• Each Block linked to the previous using cryptographic hash – thereby a chain of blocks or *blockchain*
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High level view of a blockchain network

- Blockchain network consists of **Nodes**
- Nodes have a local copy of a **Ledger**
- **Transactions** are added to the ledger by gaining agreement between nodes
- Process of gaining agreement is called **Consensus**
- Authority to perform transaction can be **Permissioned** or **Permissionless**
- Business oriented blockchains include the ability to use **Smart Contract** aka **Chaincode**
- Some blockchains implement **Subchains** aka **Channels**
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Key Characteristics of a Blockchain Network

- Cryptography
- Immutability
- Provenance
- Decentralized computing infrastructure
- Decentralized transaction-processing platform
- Decentralized database
- Shared and distributed accounting ledger
- Software development platform
- Cloud computing
- Peer-to-peer network
- Wallet
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Architecture Overview
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Architecture Overview - Users
Edge Services include service capabilities needed to deliver function and content to the users via the internet.
Blockchain Applications

Applications take many form including web application, applications running on the end user device.
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Architecture Overview – API Management
Transformation and Connectivity component enables secure connections to the enterprise systems.
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Architecture Overview – Enterprise Network

Enterprise Application
Enterprise application could be legacy application the blockchain application interact with.

Enterprise Data
Include transactional, application or log data

Enterprise Directory
Directory to support secure access to the enterprise

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Architecture Overview – Foundational Services

Foundational Services
- **Governance** for procedures and policies
- **Security** includes all aspects of security
- **Monitoring and Intelligence** for system monitoring, log analytics for threat detection and avoidance

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Blockchain Options and Cloud Deployment Considerations

- Permission Options
  - Permissionless
  - Permissioned
- Storage Options
  - Ledger Storage
  - Data Storage
- Cloud Deployment Considerations
  - Scalability and Elasticity
  - Data Bandwidth
  - Data Sovereignty
  - Resilience
  - Security
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Sample Runtime Flow – Letter of Credit

PUBLIC NETWORK

EDGE SERVICES

CLOUD NETWORK

BLOCKCHAIN APPLICATIONS

APM

BLOCKCHAIN PLATFORM

CONSENSUS

MEMBERSHIP SERVICES

CRYPTOGRAPHIC SERVICES

GOVERNANCE

SECURITY

MONITORING & INTELLIGENCE

BLOCKCHAIN NETWORK MANAGEMENT

ENTERPRISE NETWORK

ENTERPRISE USER DIRECTORY

ENTERPRISE APPLICATIONS

ENTERPRISE DATA

TRANSFORMATION & CONNECTIVITY

SYSTEM INTEGRATION

COMMUNICATION PROTOCOL

EVENT DISTRIBUTION

SMART CONTRACT

SECURE RUNTIME ENVIRONMENT

LEDGER

TRANSACTION

COINBASE

ON BOARDING/OFF BOARDING

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Call to Action

▪ **Join the CSCC Now!**
  
  – To have an impact on customer use case based standards requirements
  – To learn about all Cloud Standards within one organization
  – To help define the CSCC’s future roadmap
  – Membership is free & easy: [http://www.cloud-council.org/become-a-member](http://www.cloud-council.org/become-a-member)

▪ **Get Involved!**
  
  – Join one or more of the CSCC Working Groups
    
    [http://www.cloud-council.org/workinggroups](http://www.cloud-council.org/workinggroups)

▪ **Leverage CSCC Collateral**
  
  – Visit [http://www.cloud-council.org/resource-hub](http://www.cloud-council.org/resource-hub)
Additional Resources from the CSCC

- Webinar: Introduction to Blockchain Technology and Hyperledger (May 2017)
  [Link](http://www.cloud-council.org/webinars/CSCC-Webinar-Hyperledger-Advancing-Blockchain-Technology-for-Business-5-17-17.pdf)

  [Link](http://www.cloud-council.org/deliverables/practical-guide-to-cloud-computing.htm)

- Whitepaper: Security for Cloud Computing: 10 Steps to Ensure Success
  [Link](http://www.cloud-council.org/deliverables/security-for-cloud-computing-10-steps-to-ensure-success.htm)

- Whitepaper: Practical Guide to Cloud Service Agreements
  [Link](http://www.cloud-council.org/deliverables/practical-guide-to-cloud-service-agreements.htm)

View all papers [www.cloud-council.org/resource-hub](http://www.cloud-council.org/resource-hub) and companion webinars [www.cloud-council.org/events](http://www.cloud-council.org/events)
Thank You!

Join the conversation

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