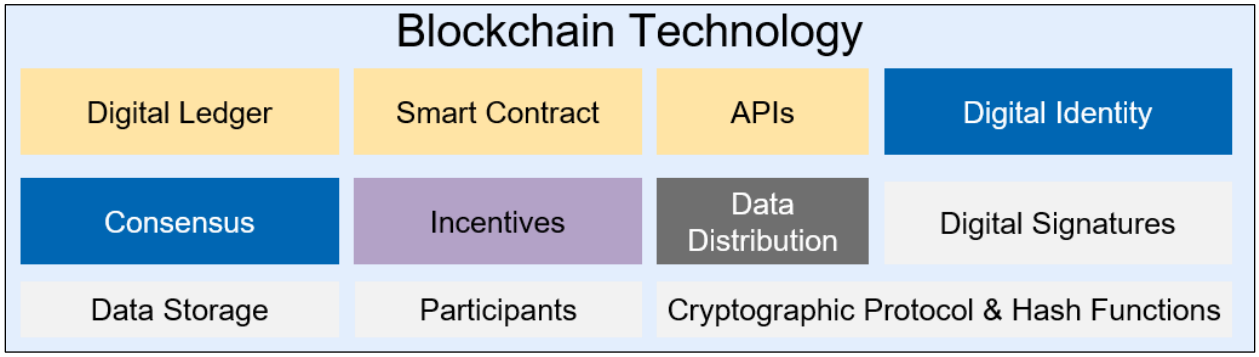
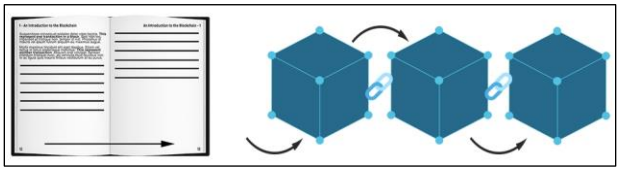
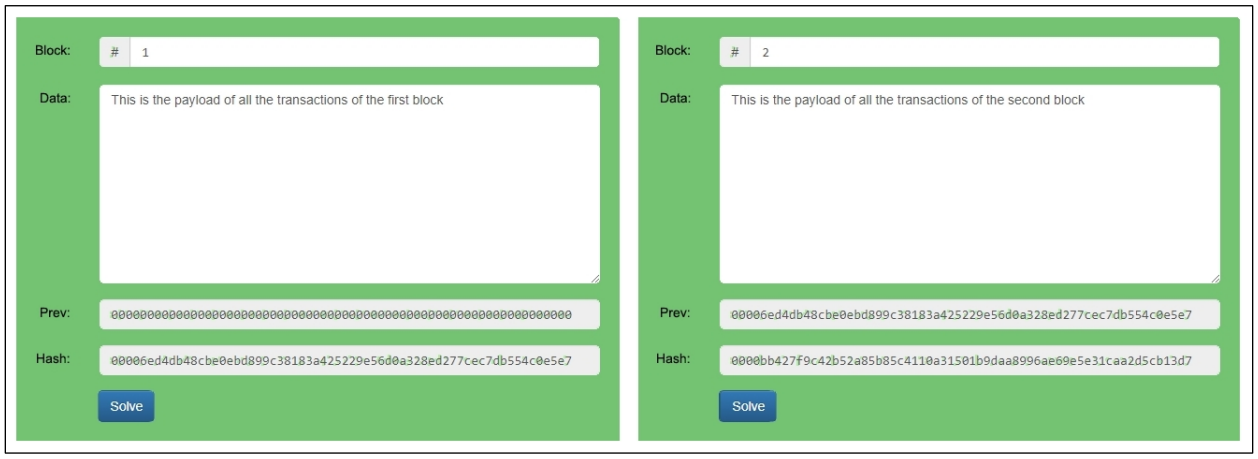
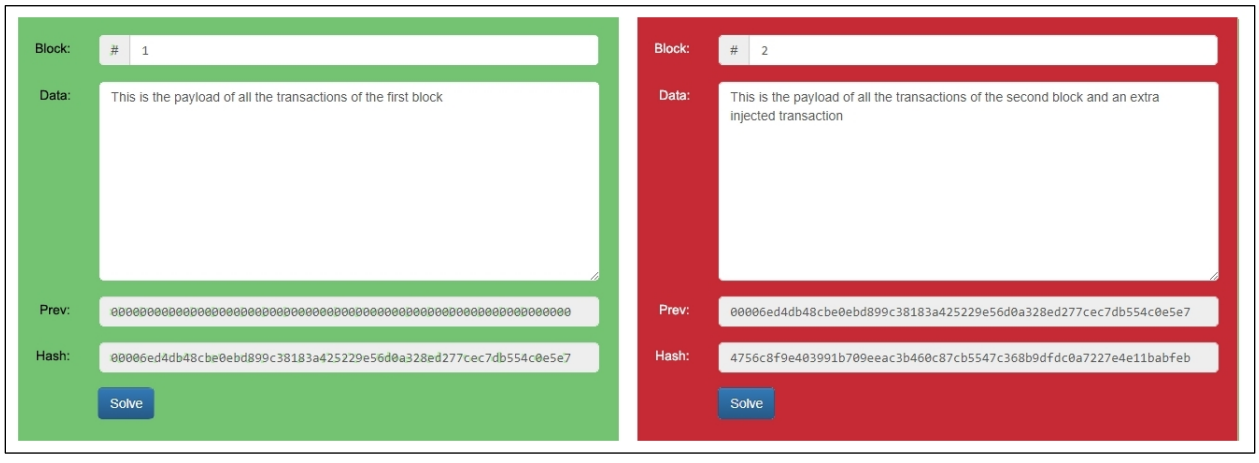
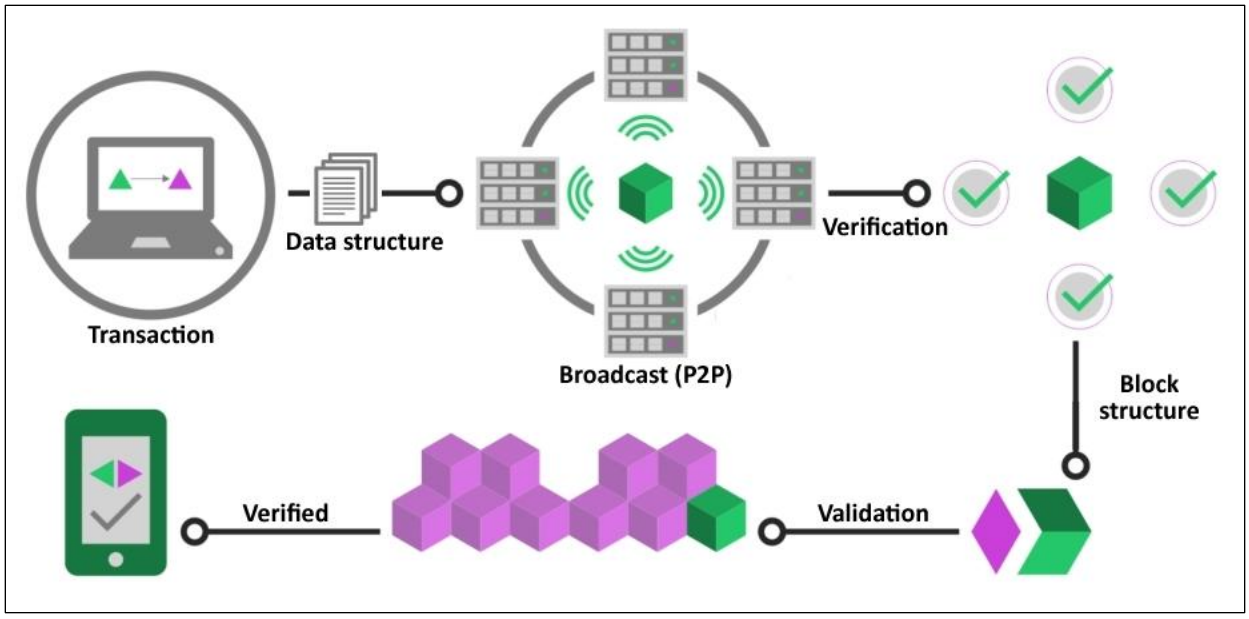
Chapter 1: An Introduction to the Blockchain

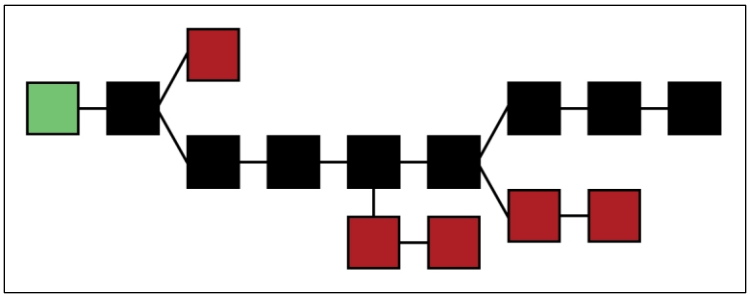












Data Layer

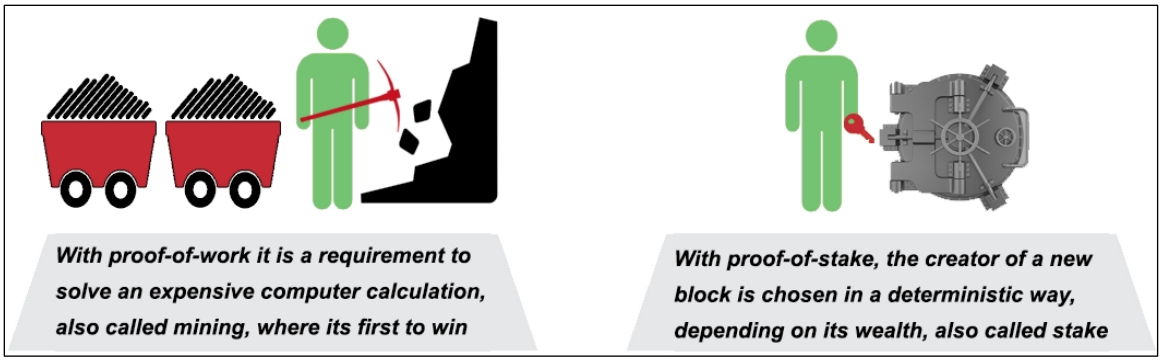
Transaction	Chain Structure	Digital Signature	Merkle Tree
Data Model	Participants	Cryptographic Protocol and Hash Functions	

Network Layer

Peer-2-Peer Broadcast	Local Validation	Relay Network

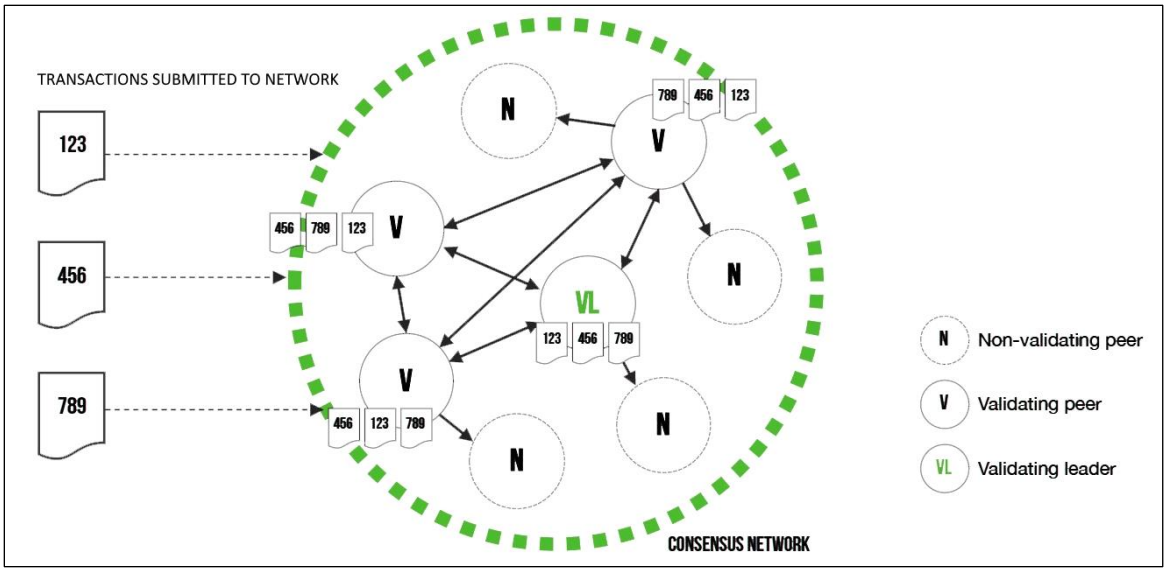
Consensus Layer

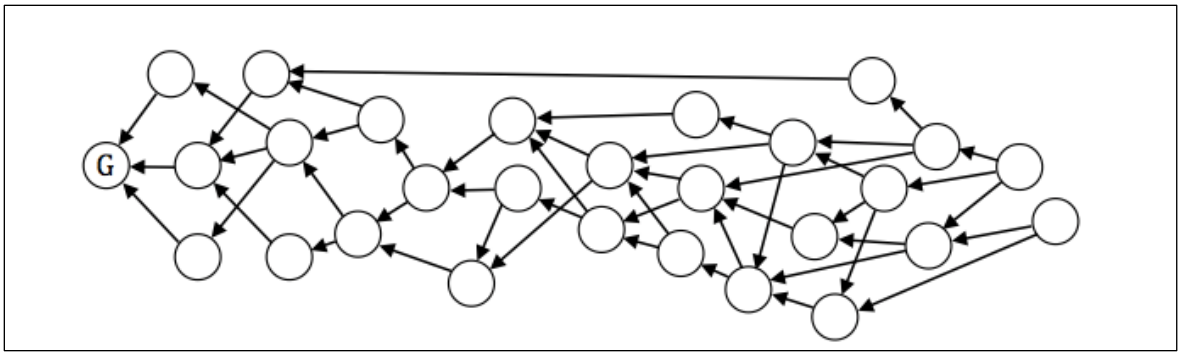
(Delegated) Proof of Work / Stake	Practical Byzantine Fault Tolerance	Permissioned Consensus	Sharding Consensus (Channels)



With proof-of-work it is a requirement to solve an expensive computer calculation, also called mining, where its first to win

With proof-of-stake, the creator of a new block is chosen in a deterministic way, depending on its wealth, also called stake





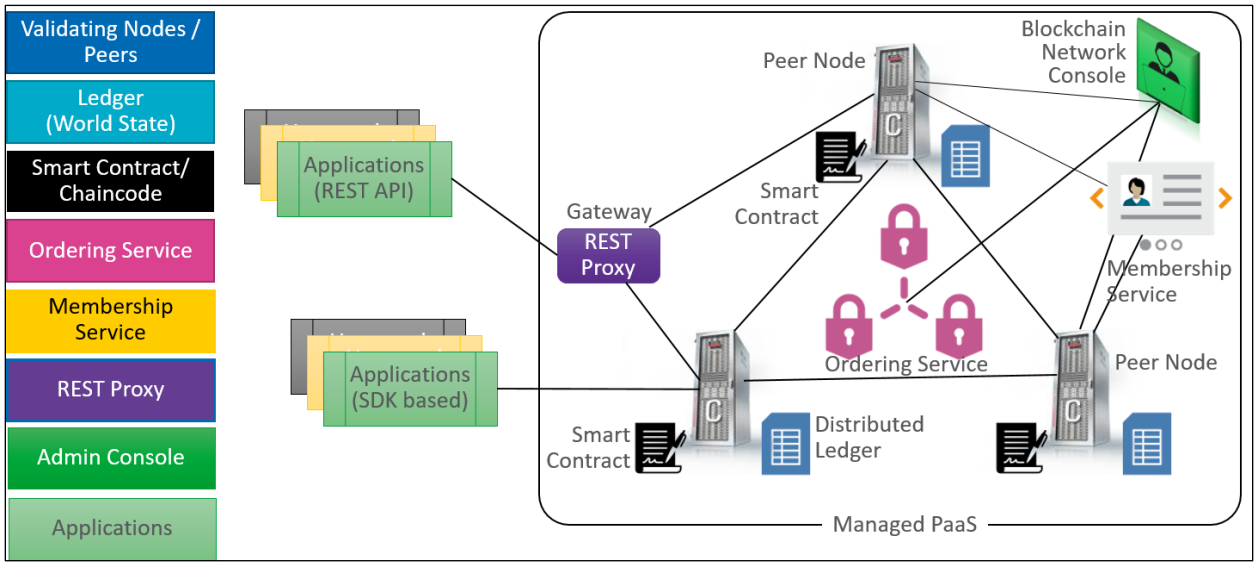
Incentive Layer

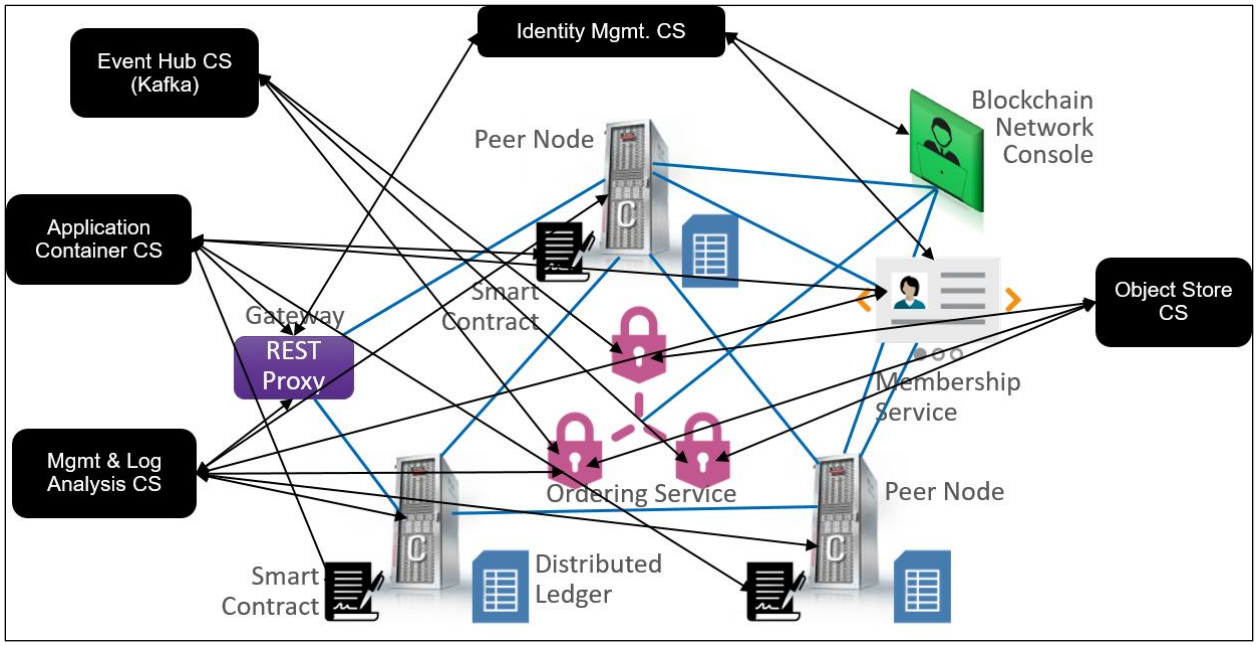
Rewards Distribution	Transaction Fees

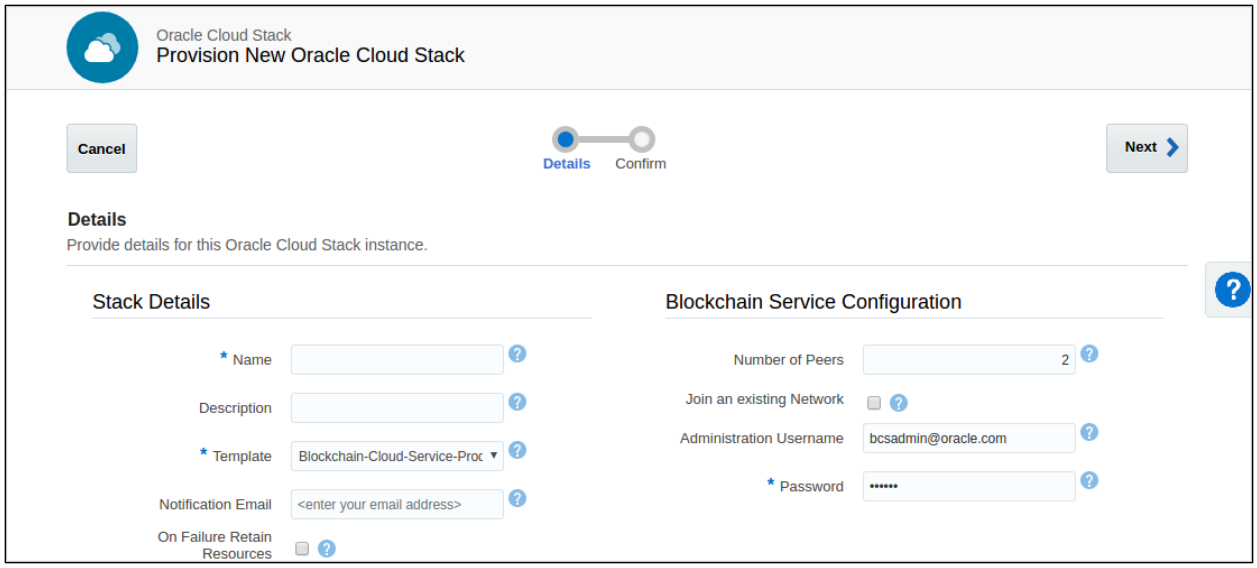
Application Layer

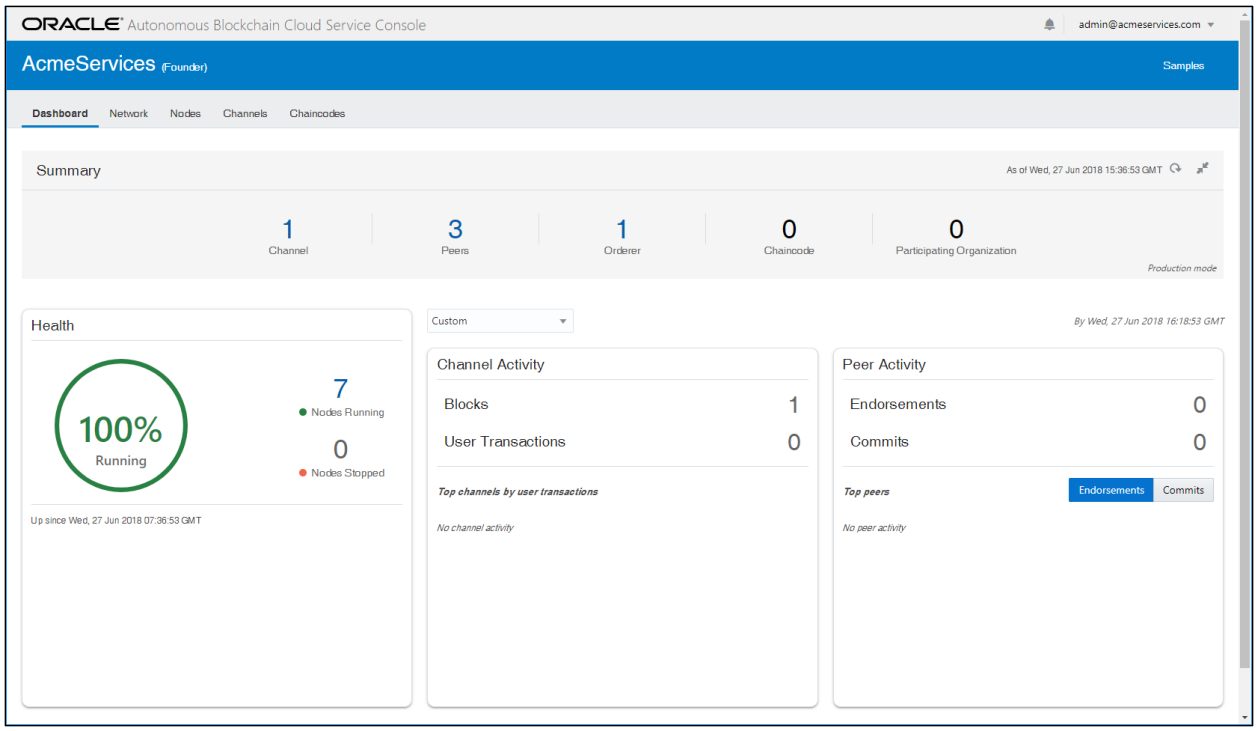
Digital Ledger	Smart Contract	APIs	Decentralized Applications

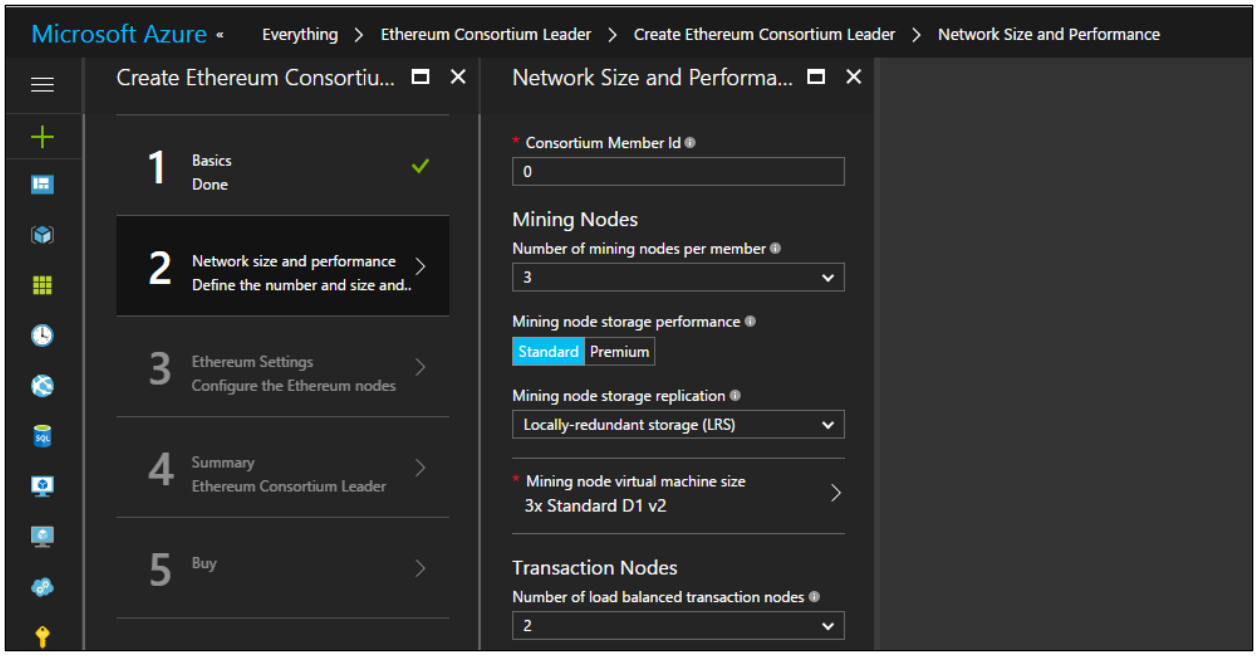
Chapter 2: How Blockchain Will Disrupt Your Organization

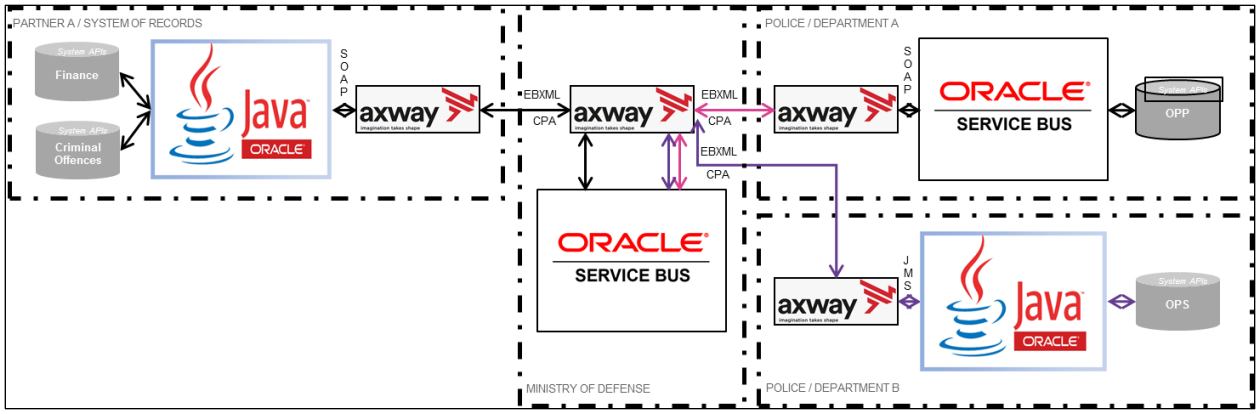




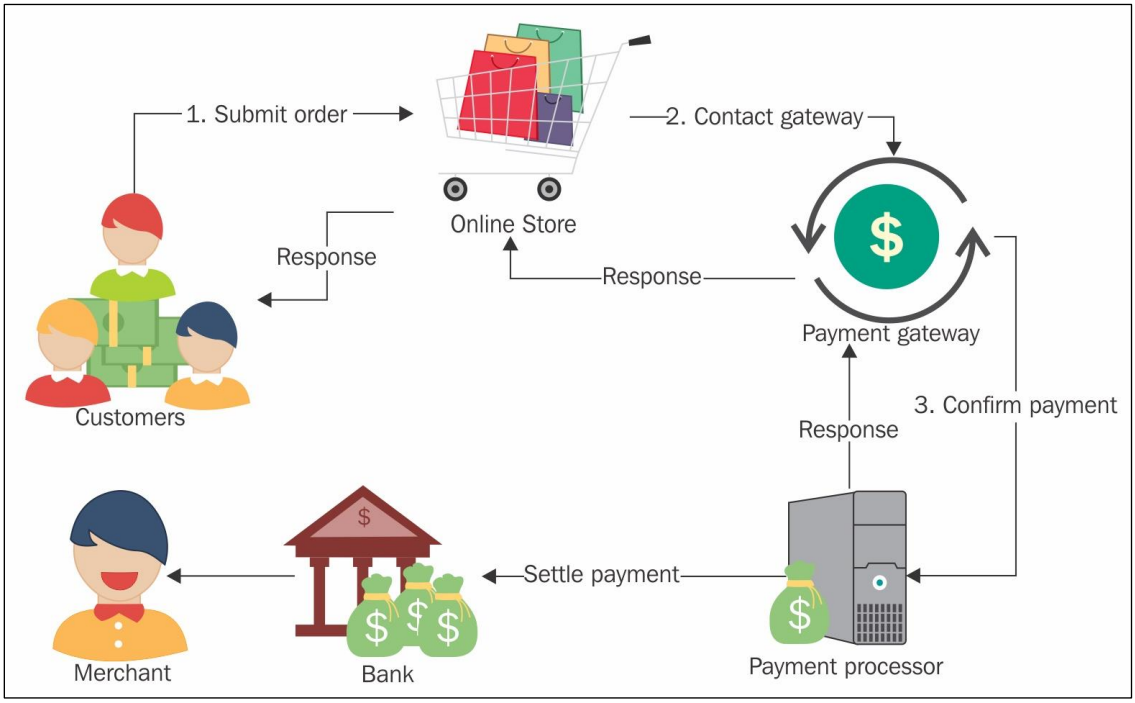

Oracle Cloud Stack
Provision New Oracle Cloud Stack
Cancel
Details
Confirm
Next
Details
Provide details for this Oracle Cloud Stack instance.
Stack Details
* Name
Description
* Template
Blockchain-Cloud-Service-Proc
Notification Email
<enter your email address>
On Failure Retain Resources
Blockchain Service Configuration
Number of Peers
2
Join an existing Network
Administration Username
bcsadmin@oracle.com
* Password

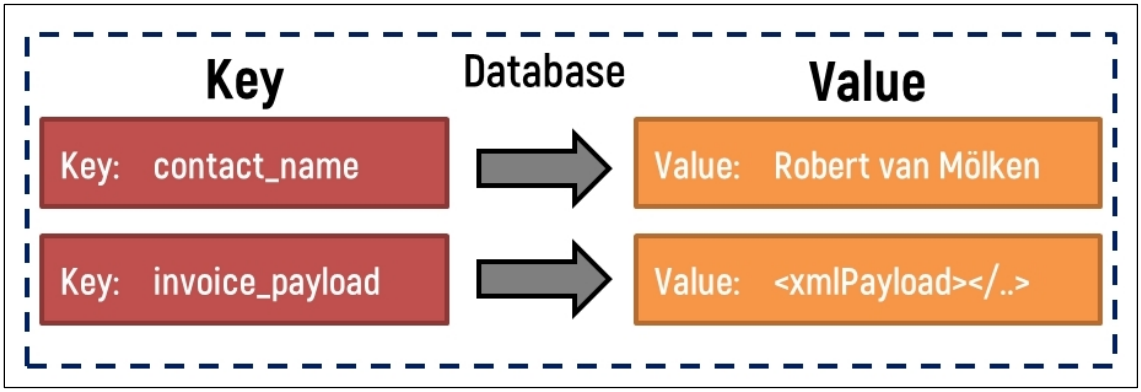

ORACLE Autonomous Blockchain Cloud Service Console
admin@acmeservices.com
AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Summary
As of Wed, 27 Jun 2018 15:36:53 GMT
1
Channel
3
Peers
1
Orderer
0
Chaincode
0
Participating Organization
Production mode
Health
100%
Running
7
Nodes Running
0
Nodes Stopped
Up since Wed, 27 Jun 2018 07:36:53 GMT
Custom
By Wed, 27 Jun 2018 16:18:53 GMT
Channel Activity
Blocks
1
User Transactions
0
Top channels by user transactions
No channel activity
Peer Activity
Endorsements
0
Commits
0
Top peers
Endorsements
Commits
No peer activity

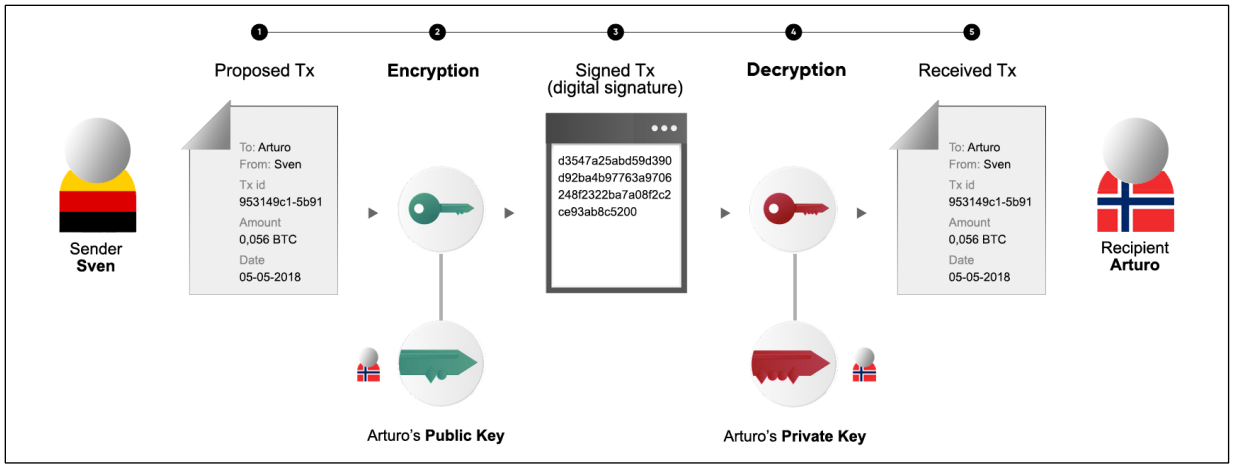

Microsoft Azure «
Everything > Ethereum Consortium Leader > Create Ethereum Consortium Leader > Network Size and Performance
Create Ethereum Consortiu...
1 Basics
Done
2 Network size and performance
Define the number and size and..
3 Ethereum Settings
Configure the Ethereum nodes
4 Summary
Ethereum Consortium Leader
5 Buy
Network Size and Performa...
* Consortium Member Id
0
Mining Nodes
Number of mining nodes per member
3
Mining node storage performance
Standard Premium
Mining node storage replication
Locally-redundant storage (LRS)
* Mining node virtual machine size
3x Standard D1 v2
Transaction Nodes
Number of load balanced transaction nodes
2

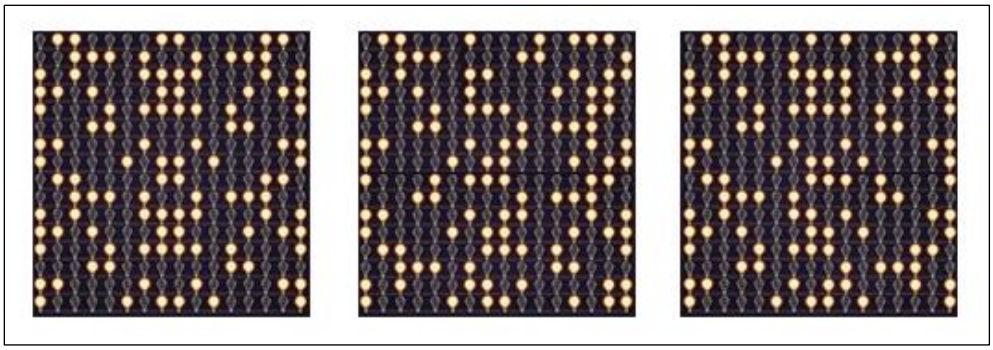

PARTNER A / SYSTEM OF RECORDS
Finance
Criminal Offences
Java
ORACLE
SOAP
axway
EBXML
CPA
MINISTRY OF DEFENSE
ORACLE
SERVICE BUS
POLICE / DEPARTMENT A
ORACLE
SERVICE BUS
OPP
POLICE / DEPARTMENT B
JMS
OPS

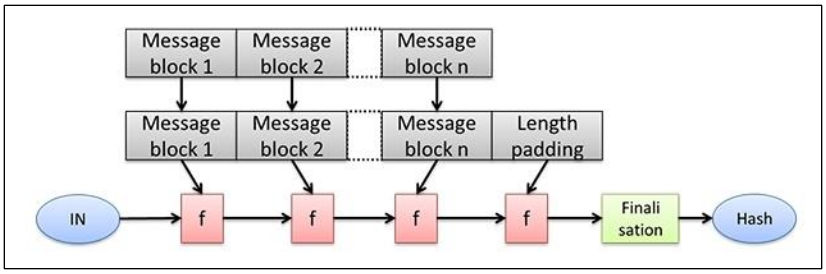
Chapter 3: Blockchain 101 - Assets, Transactions, and Hashes

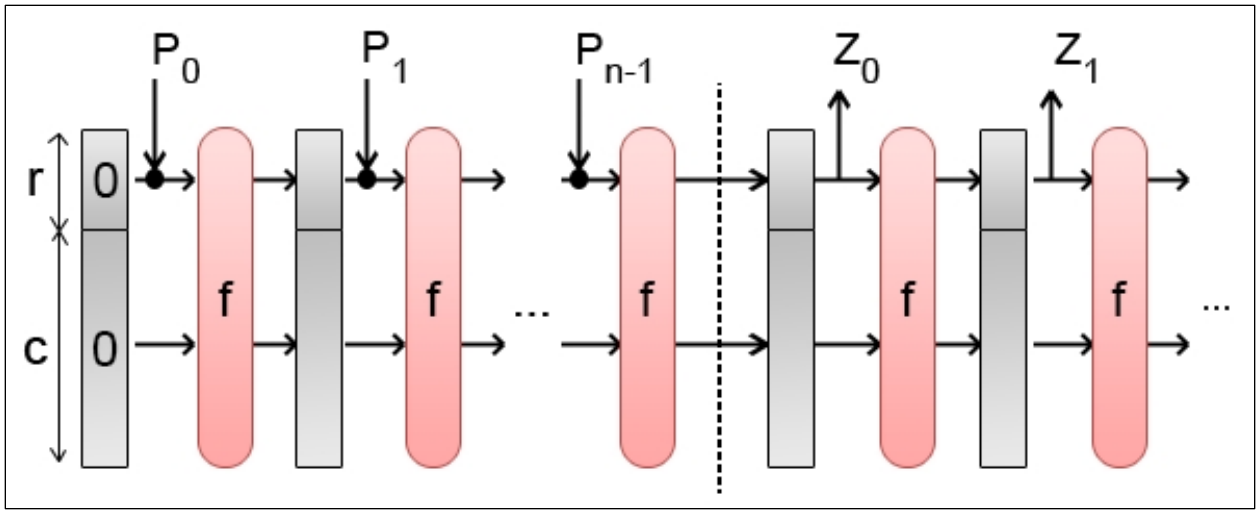




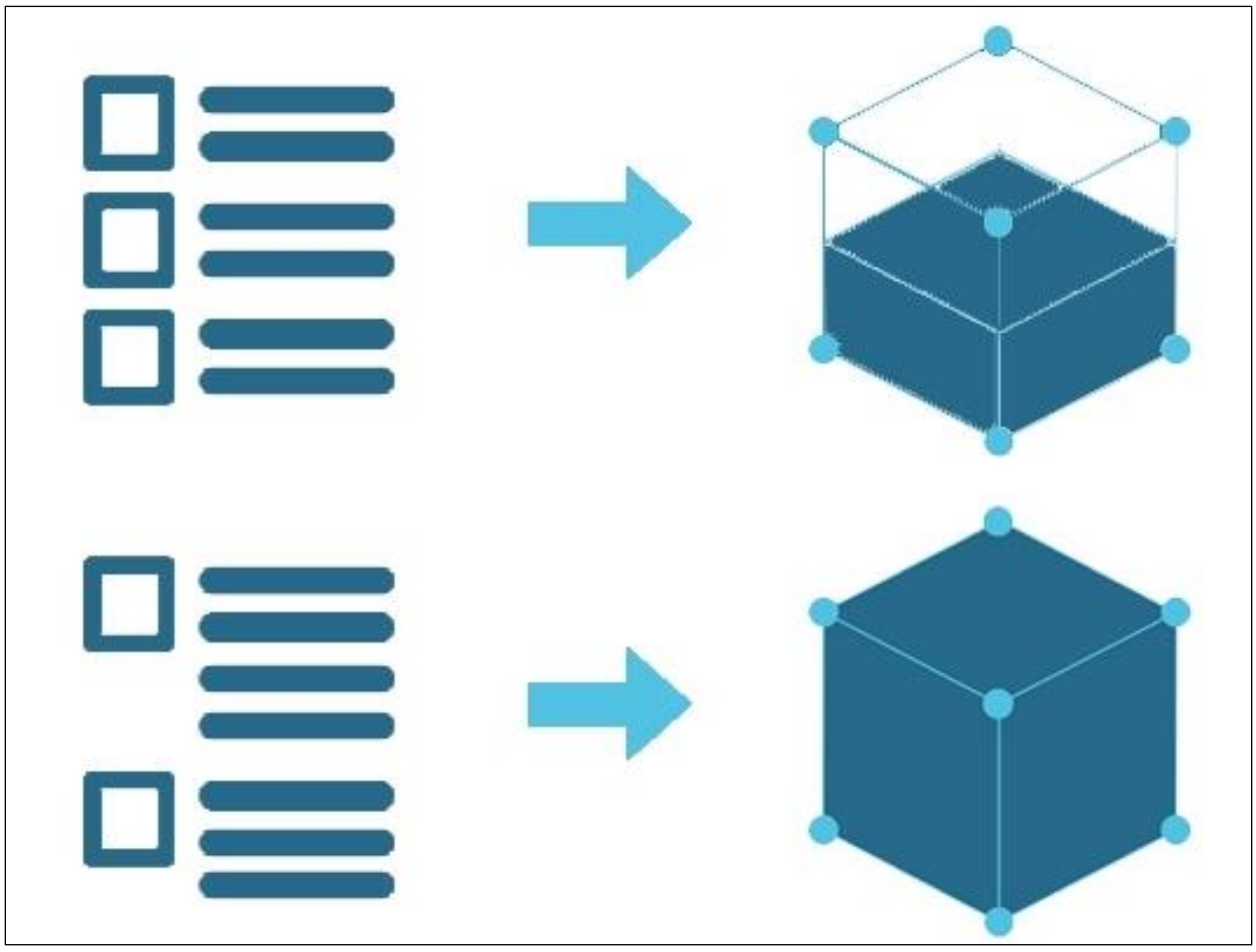

1
2
3
4
5
Proposed Tx
Encryption
Signed Tx
(digital signature)
Decryption
Received Tx
Sender
Sven
To: Arturo
From: Sven
Tx id
953149c1-5b91
Amount
0,056 BTC
Date
05-05-2018
d3547a25abd59d390
d92ba4b97763a9706
248f2322ba7a08f2c2
ce93ab8c5200
To: Arturo
From: Sven
Tx id
953149c1-5b91
Amount
0,056 BTC
Date
05-05-2018
Recipient
Arturo
Arturo's Public Key
Arturo's Private Key




Message block 1
Message block 2
Message block n
Message block 1
Message block 2
Message block n
Length padding
IN
f
f
f
f
Finali sation
Hash


P0
P1
Pn-1
Z0
Z1
r
c
0
0
f
f
f
f
f
...
...

Chapter 4: Blockchain 101 - Blocks, Chains, and Consensus



Block: # 1

Nonce: 0

Data:


```
{
   "transportOrder": {
      "shippingDate": "2017-7-31T18:00:34.011Z",
      "originWarehouse": 12,
      "destStore": 3,
      "products": [{
            "eanCode": "8806088280486",
            "productName": "Samsung UE40K5600",
            "productCode":  "UE40K5600AWXXN",
            "amount": 4
```


Hash: 2532cba2da4ea5aaddae75d31b418a42d32abe955b111b341bbdc82f164f1d1c

Solve

Block: # 1

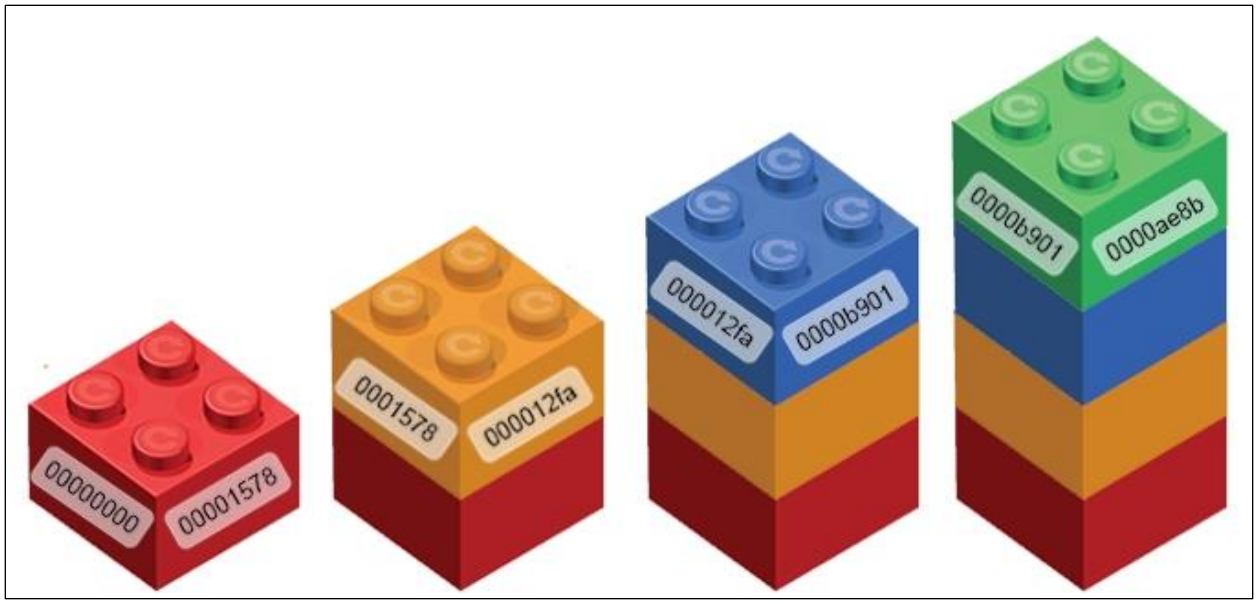
Nonce: 116399

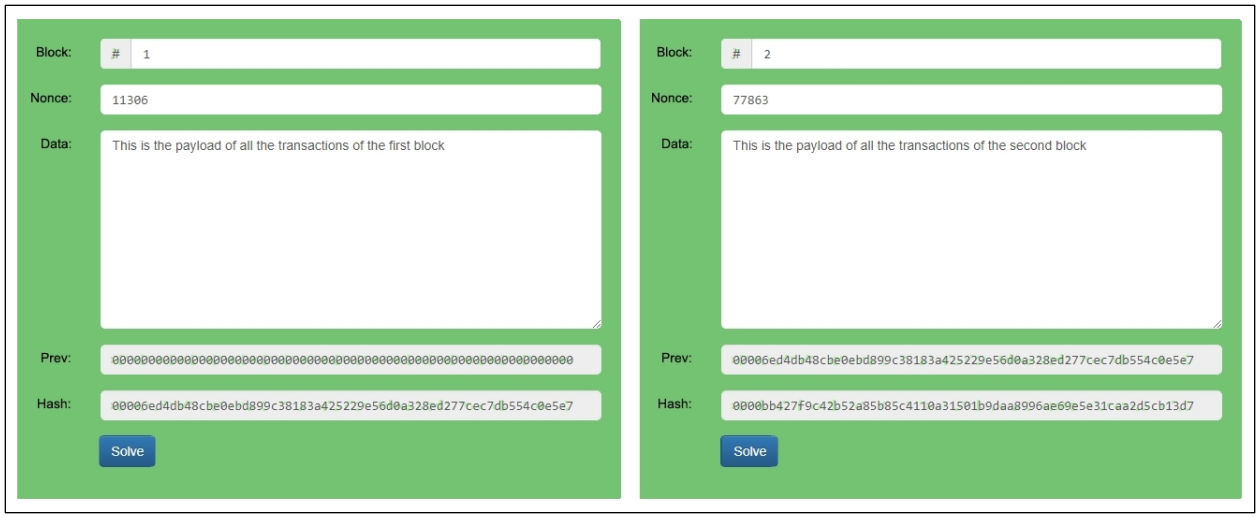
Data:

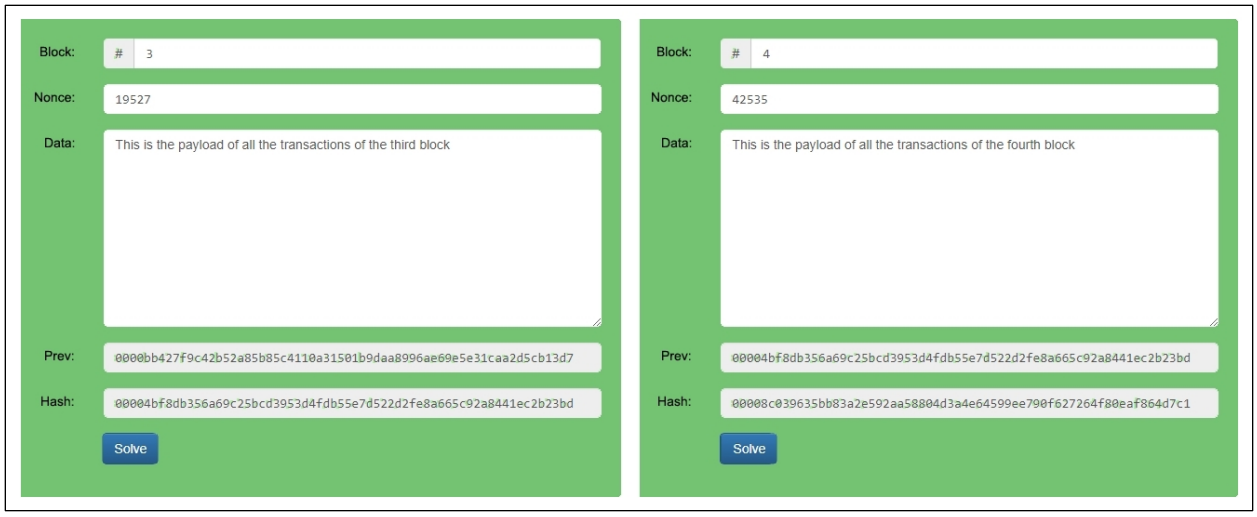
```
{
   "transportOrder": {
      "shippingDate": "2017-7-31T18:00:34.011Z",
      "originWarehouse": 12,
      "destStore": 3,
      "products": [{
            "eanCode": "8806088280486",
            "productName": "Samsung UE40K5600",
            "productCode":  "UE40K5600AWXXN",
            "amount": 4
```

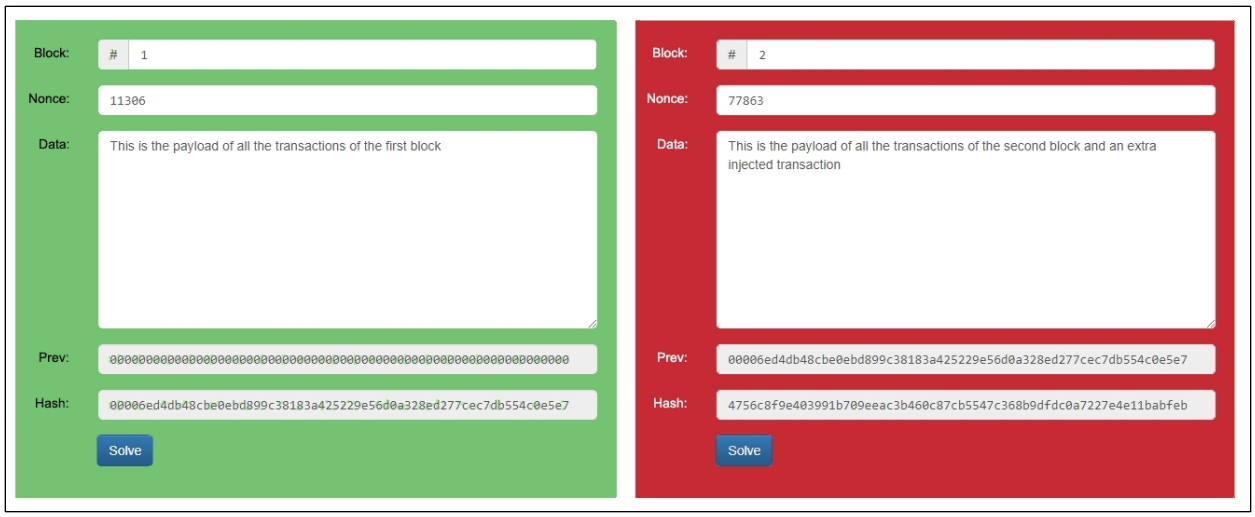
Hash: 000067766929fd122d6b6aa611304f6cc29f7ef65521ef76ba75977dea2eff66

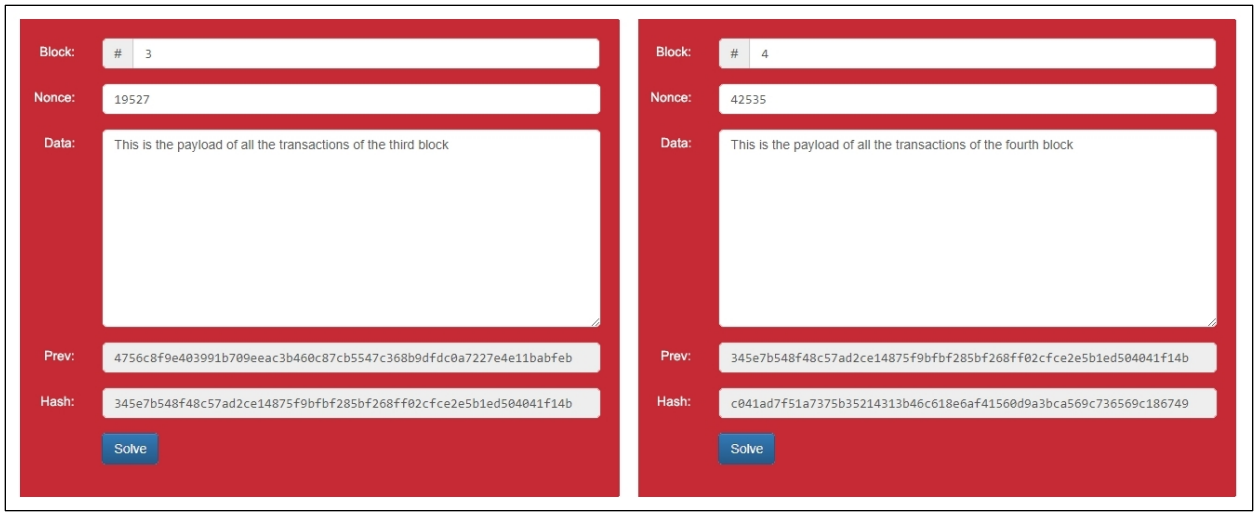
Solve

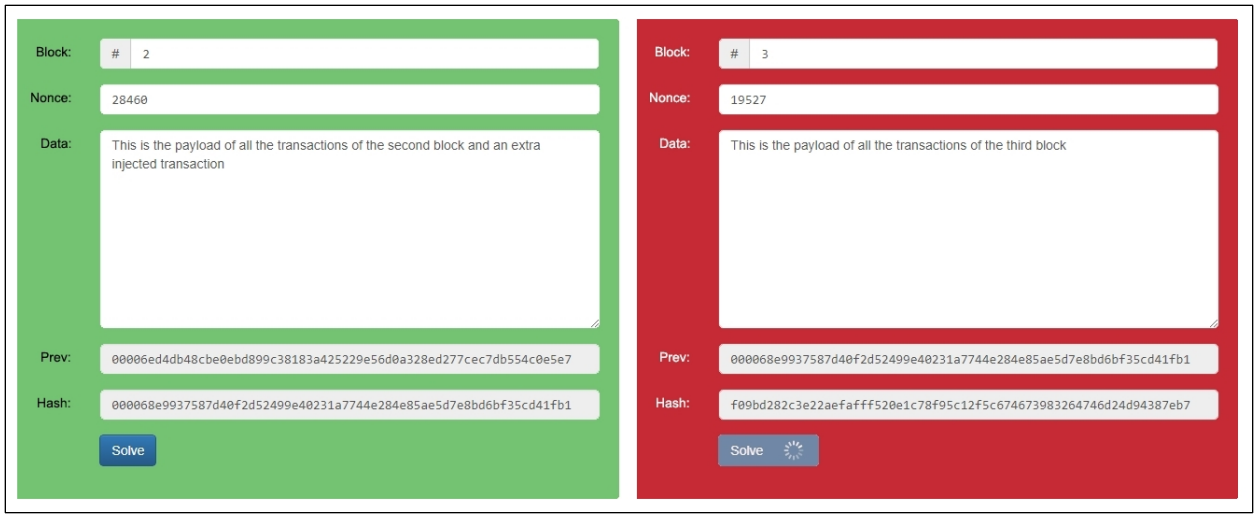



Block: # 1
Nonce: 11306
Data: This is the payload of all the transactions of the first block
Prev: 0000000000000000000000000000000000000000000000000000000000000000
Hash: 00006ed4db48cbe0ebd899c38183a425229e56d0a328ed277cec7db554c0e5e7
Solve
Block: # 2
Nonce: 77863
Data: This is the payload of all the transactions of the second block
Prev: 00006ed4db48cbe0ebd899c38183a425229e56d0a328ed277cec7db554c0e5e7
Hash: 0000bb427f9c42b52a85b85c4110a31501b9daa8996ae69e5e31caa2d5cb13d7
Solve

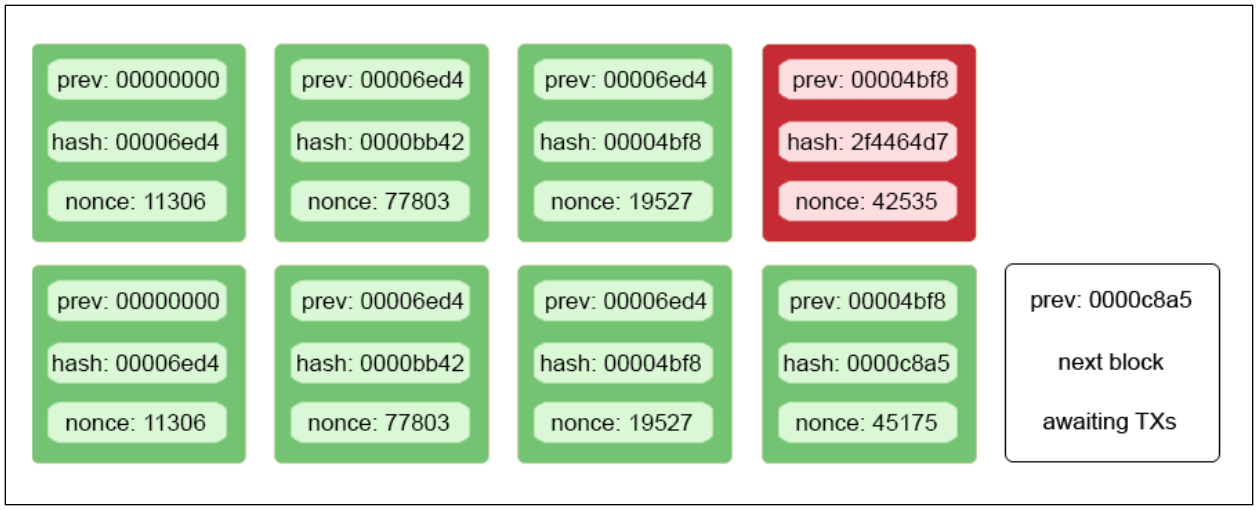

Block: # 3
Nonce: 19527
Data: This is the payload of all the transactions of the third block
Prev: 0000bb427f9c42b52a85b85c4110a31501b9daa8996ae69e5e31caa2d5cb13d7
Hash: 00004bf8db356a69c25bcd3953d4fdb55e7d522d2fe8a665c92a8441ec2b23bd
Solve
Block: # 4
Nonce: 42535
Data: This is the payload of all the transactions of the fourth block
Prev: 00004bf8db356a69c25bcd3953d4fdb55e7d522d2fe8a665c92a8441ec2b23bd
Hash: 00008c039635bb83a2e592aa58804d3a4e64599ee790f627264f80eaf864d7c1
Solve


Block: # 1
Nonce: 11306
Data: This is the payload of all the transactions of the first block
Prev: 0000000000000000000000000000000000000000000000000000000000000000
Hash: 00006ed4db48cbe0ebd899c38183a425229e56d0a328ed277cec7db554c0e5e7
Solve
Block: # 2
Nonce: 77863
Data: This is the payload of all the transactions of the second block and an extra injected transaction
Prev: 00006ed4db48cbe0ebd899c38183a425229e56d0a328ed277cec7db554c0e5e7
Hash: 4756c8f9e403991b709eeac3b460c87cb5547c368b9dfdc0a7227e4e11babfeb
Solve

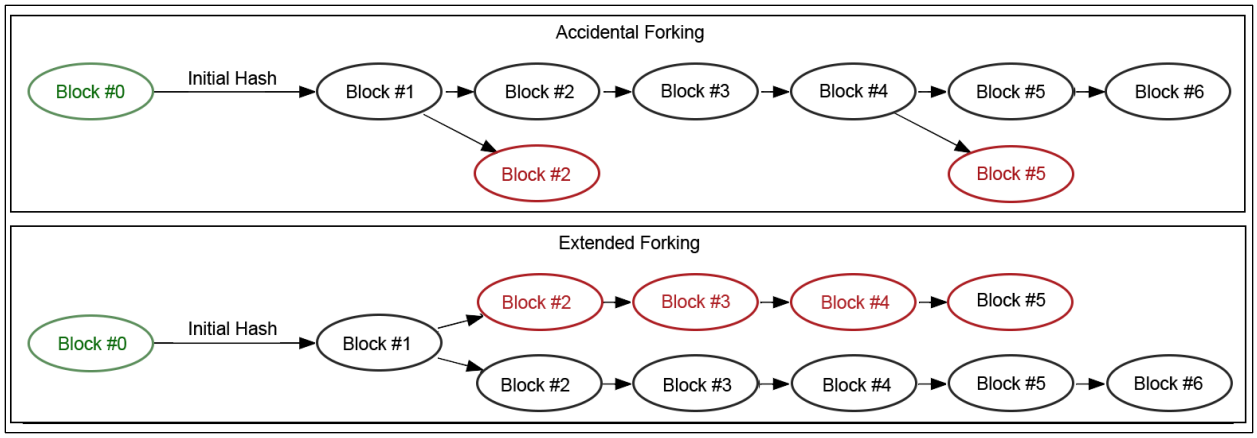

Block:
3
Nonce:
19527
Data:
This is the payload of all the transactions of the third block
Prev:
4756c8f9e403991b709eeac3b460c87cb5547c368b9dfdc0a7227e4e11babfeb
Hash:
345e7b548f48c57ad2ce14875f9bfbf285bf268ff02cfce2e5b1ed504041f14b
Solve
Block:
4
Nonce:
42535
Data:
This is the payload of all the transactions of the fourth block
Prev:
345e7b548f48c57ad2ce14875f9bfbf285bf268ff02cfce2e5b1ed504041f14b
Hash:
c041ad7f51a7375b35214313b46c618e6af41560d9a3bca569c736569c186749
Solve

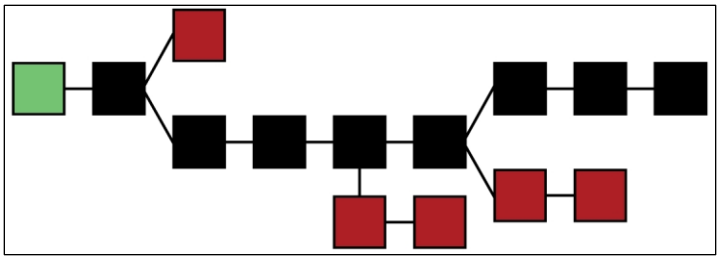

Block:
2
Nonce:
28460
Data:
This is the payload of all the transactions of the second block and an extra injected transaction
Prev:
00006ed4db48cbe0ebd899c38183a425229e56d0a328ed277cec7db554c0e5e7
Hash:
000068e9937587d40f2d52499e40231a7744e284e85ae5d7e8bd6bf35cd41fb1
Solve
Block:
3
Nonce:
19527
Data:
This is the payload of all the transactions of the third block
Prev:
000068e9937587d40f2d52499e40231a7744e284e85ae5d7e8bd6bf35cd41fb1
Hash:
f09bd282c3e22aefafff520e1c78f95c12f5c6746739832647 46d24d94387eb7
Solve

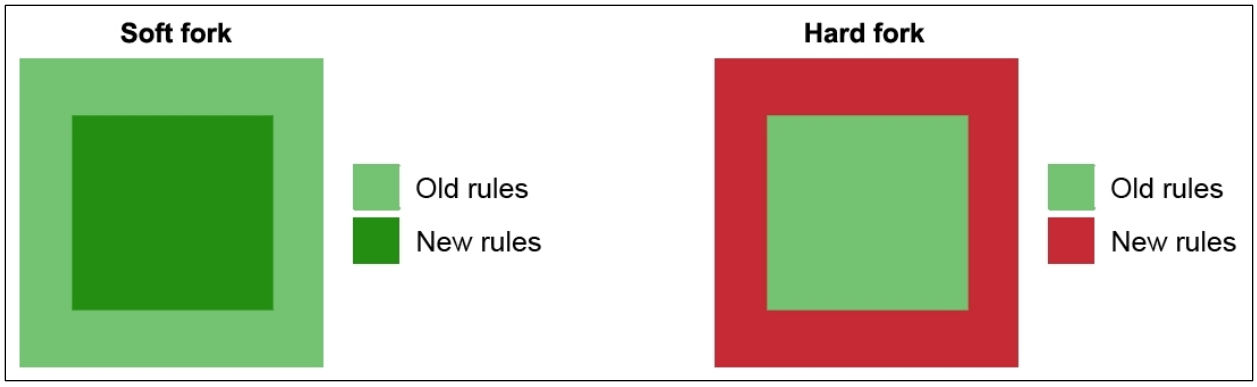
Peer A
prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 00008c03
nonce: 42535
prev: 00008c03
next block
awaiting TXs
Peer B
prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 00008c03
nonce: 42535
prev: 00008c03
next block
awaiting TXs
Peer C
prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 00008c03
nonce: 42535
prev: 00008c03
next block
awaiting TXs

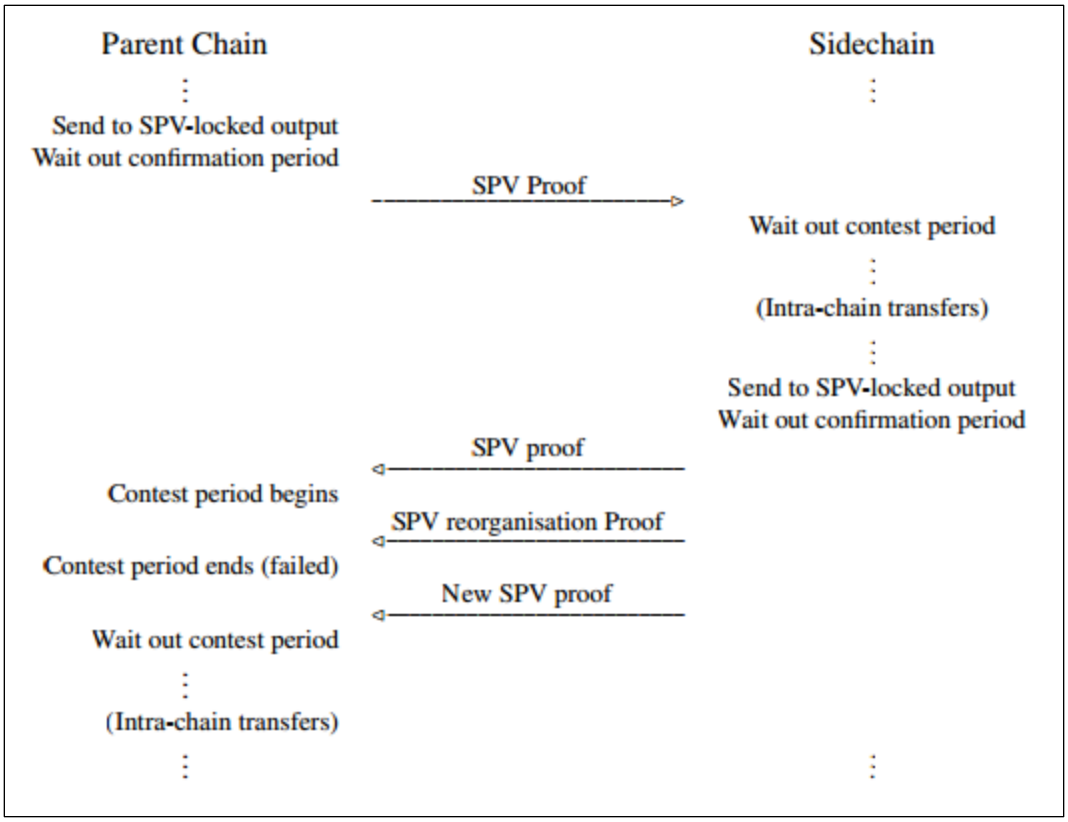

prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 2f4464d7
nonce: 42535
prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 0000c8a5
nonce: 45175
prev: 0000c8a5
next block
awaiting TXs

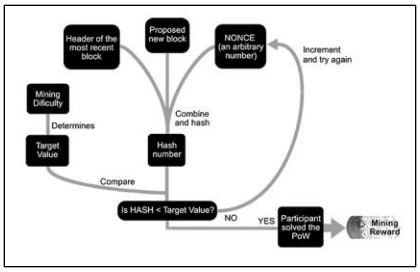
Peer A
prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 00008c03
nonce: 42535
prev: 0000ae8b
hash: 0000e4b9
nonce: 10588
Peer B
prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 0000c8a5
nonce: 45175
prev: 0000c8a5
hash: 0000bf03
nonce: 108557
Peer C
prev: 00000000
hash: 00006ed4
nonce: 11306
prev: 00006ed4
hash: 0000bb42
nonce: 77803
prev: 00006ed4
hash: 00004bf8
nonce: 19527
prev: 00004bf8
hash: 00008c03
nonce: 42535
prev: 0000ae8b
hash: 0000e4b9
nonce: 10588

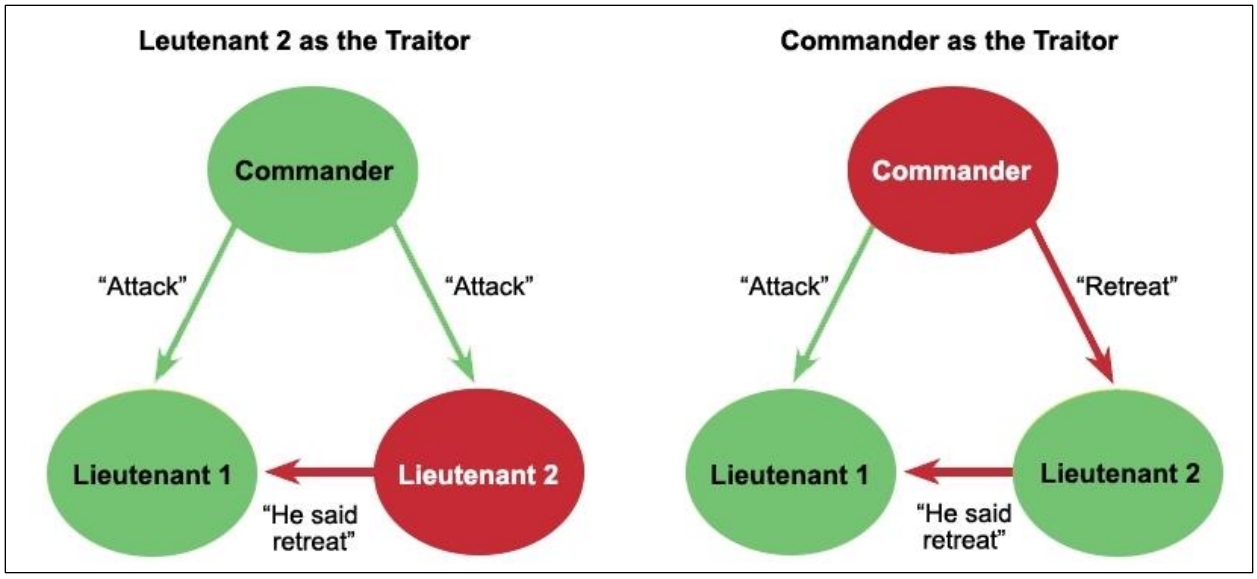

Accidental Forking
Block #0
Initial Hash
Block #1
Block #2
Block #3
Block #4
Block #5
Block #6
Block #2
Block #5
Extended Forking
Block #0
Initial Hash
Block #1
Block #2
Block #3
Block #4
Block #5
Block #2
Block #3
Block #4
Block #5
Block #6

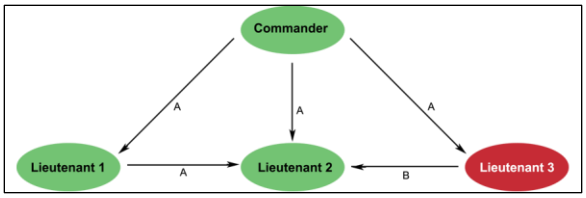



Soft fork
Old rules
New rules
Hard fork
Old rules
New rules

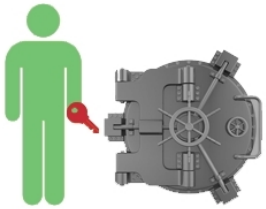

Parent Chain
Sidechain
Send to SPV-locked output
Wait out confirmation period
SPV Proof
Wait out contest period
(Intra-chain transfers)
Send to SPV-locked output
Wait out confirmation period
SPV proof
Contest period begins
SPV reorganisation Proof
Contest period ends (failed)
New SPV proof
Wait out contest period
(Intra-chain transfers)


Header of the most recent block
Proposed new block
NONCE (an arbitrary number)
Increment and try again
Mining Dificulty
Determines
Combine and hash
Target Value
Hash number
Compare
Is HASH < Target Value?
NO
YES
Participant solved the PoW
Mining Reward



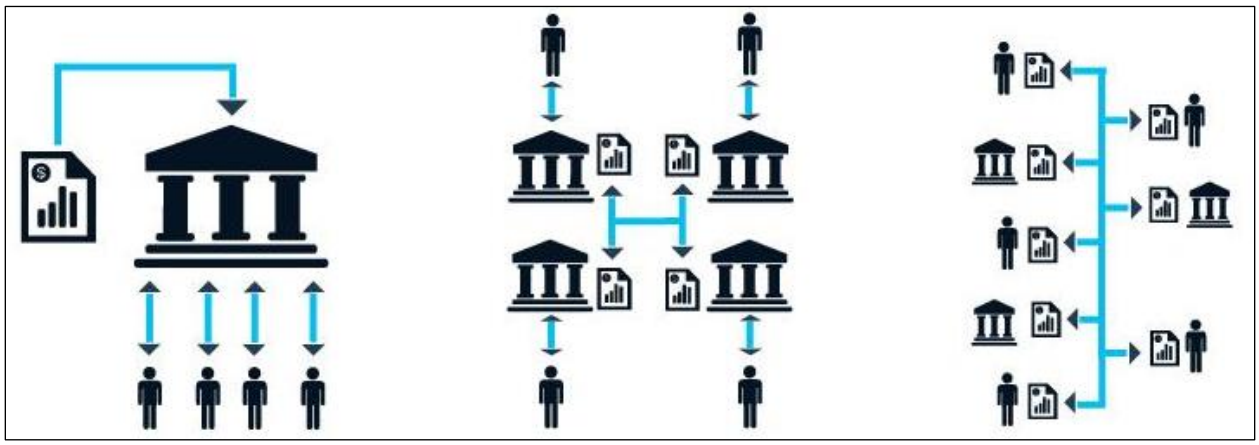


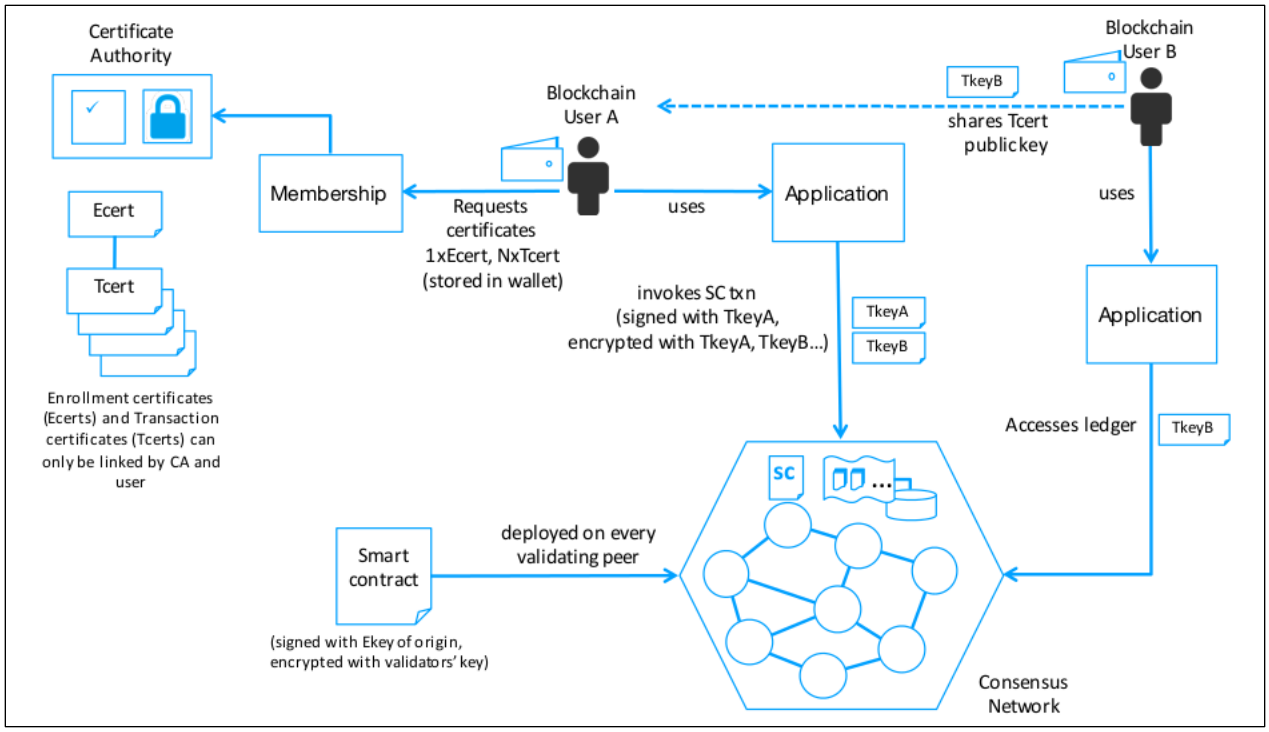
With proof of work it is a requirement to solve an expensive computer calculation, also called mining, where its first to win

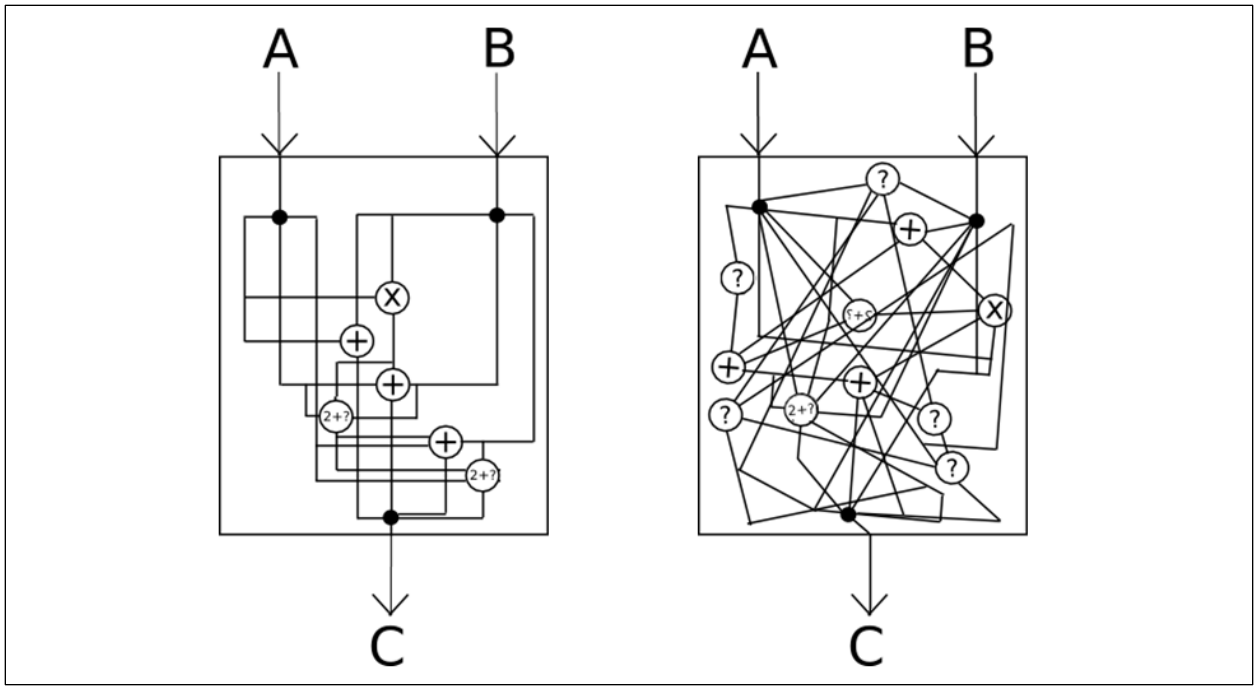


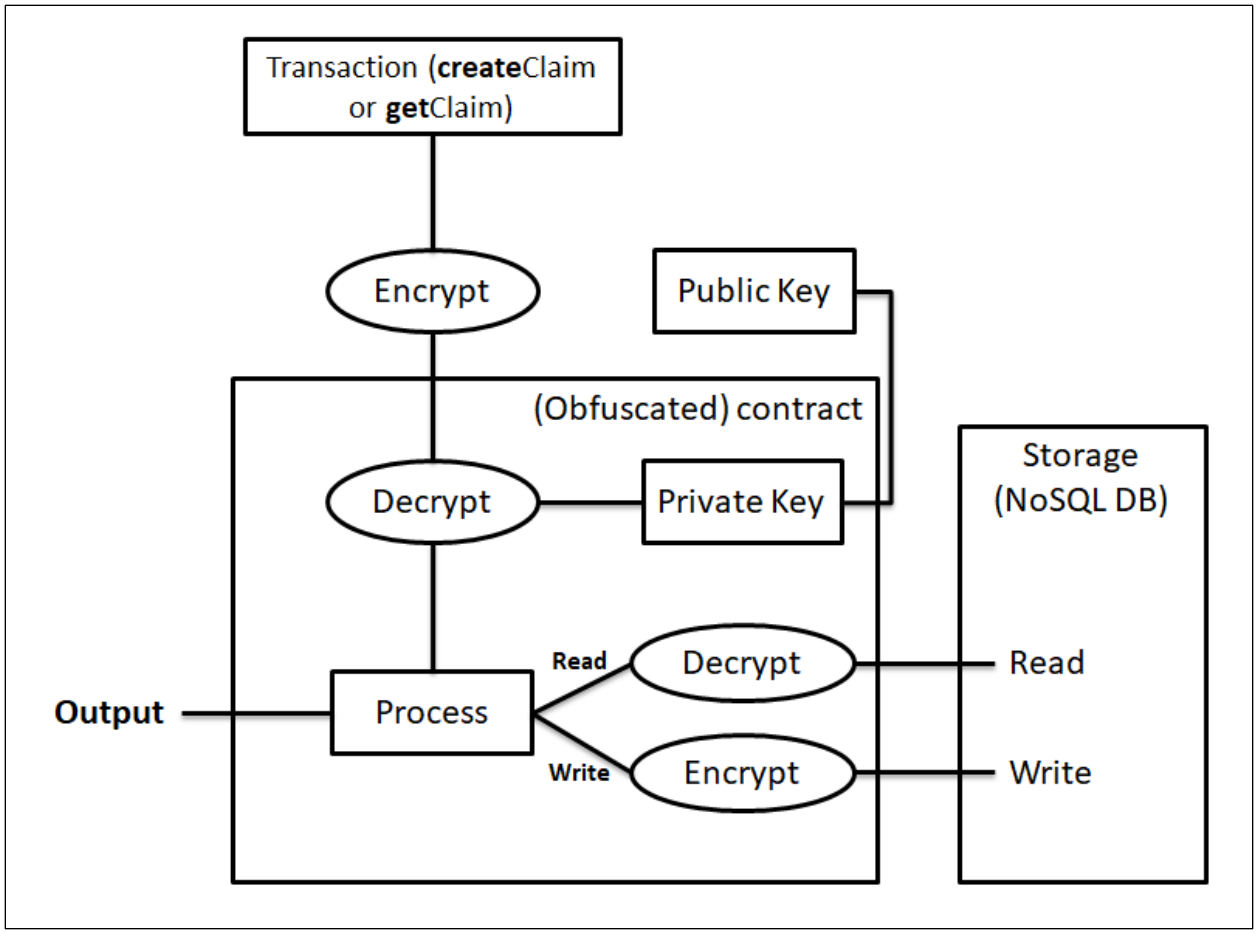
With proof-of-stake, the creator of a new block is chosen in a deterministic way, dependingh on its wealth, also called stake

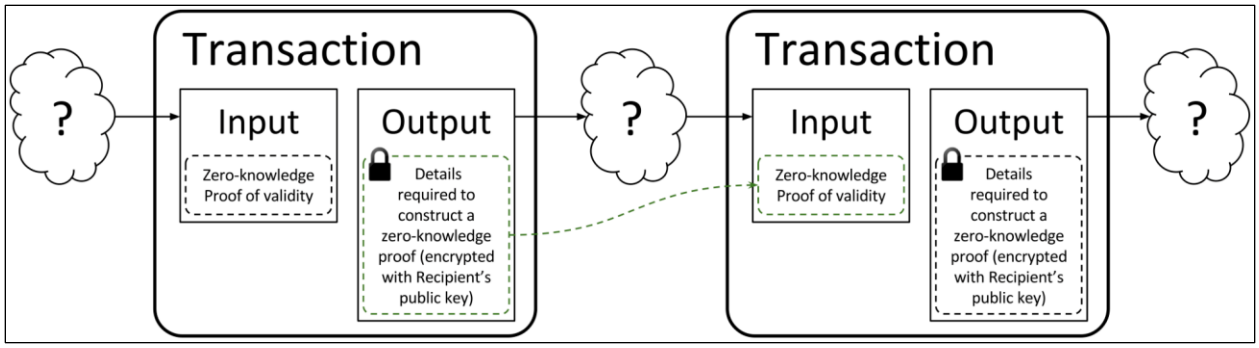
Chapter 5: Blockchain 101 - Security, Privacy, and Smart Contracts

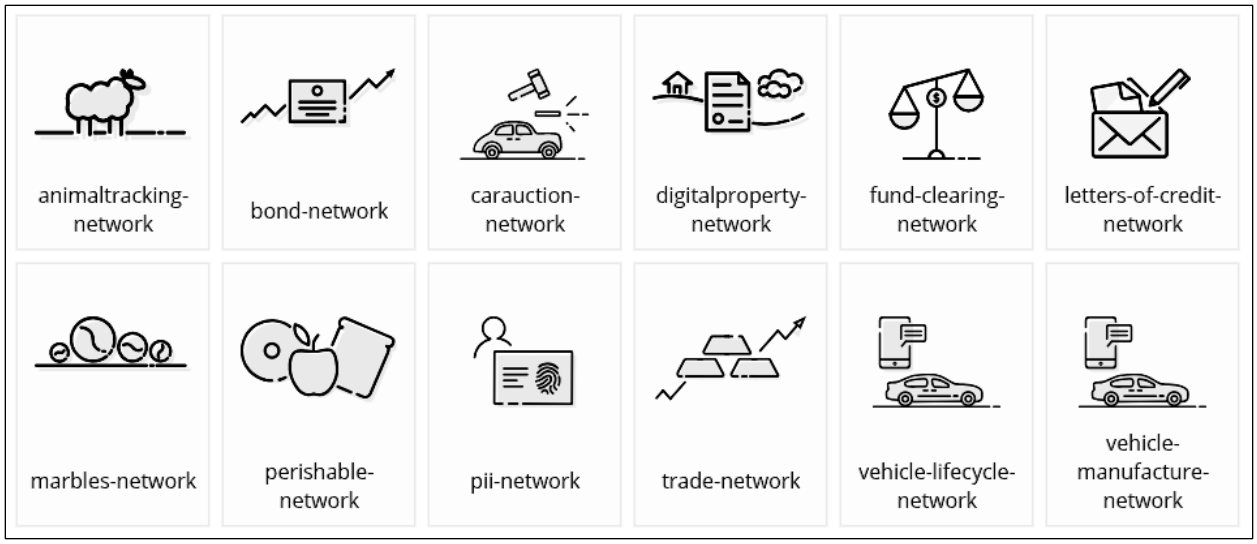


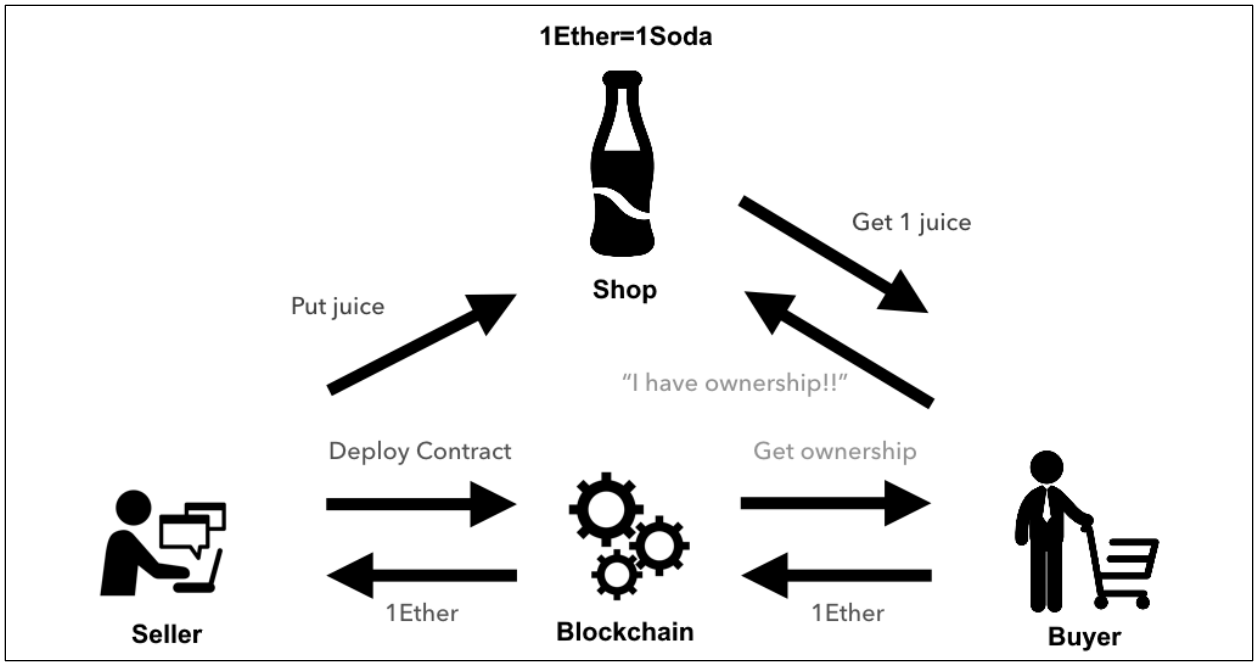

Certificate Authority
Blockchain User B
TkeyB
Blockchain User A
shares Tcert publickey
Membership
Requests certificates 1xEcert, NxTcert (stored in wallet)
uses
Application
uses
Ecert
Tcert
invokes SC txn (signed with TkeyA, encrypted with TkeyA, TkeyB...)
TkeyA
TkeyB
Application
Enrollment certificates (Ecerts) and Transaction certificates (Tcerts) can only be linked by CA and user
Accesses ledger
TkeyB
SC
Smart contract
deployed on every validating peer
(signed with Ekey of origin, encrypted with validators' key)
Consensus Network


A
B
C
A
B
C

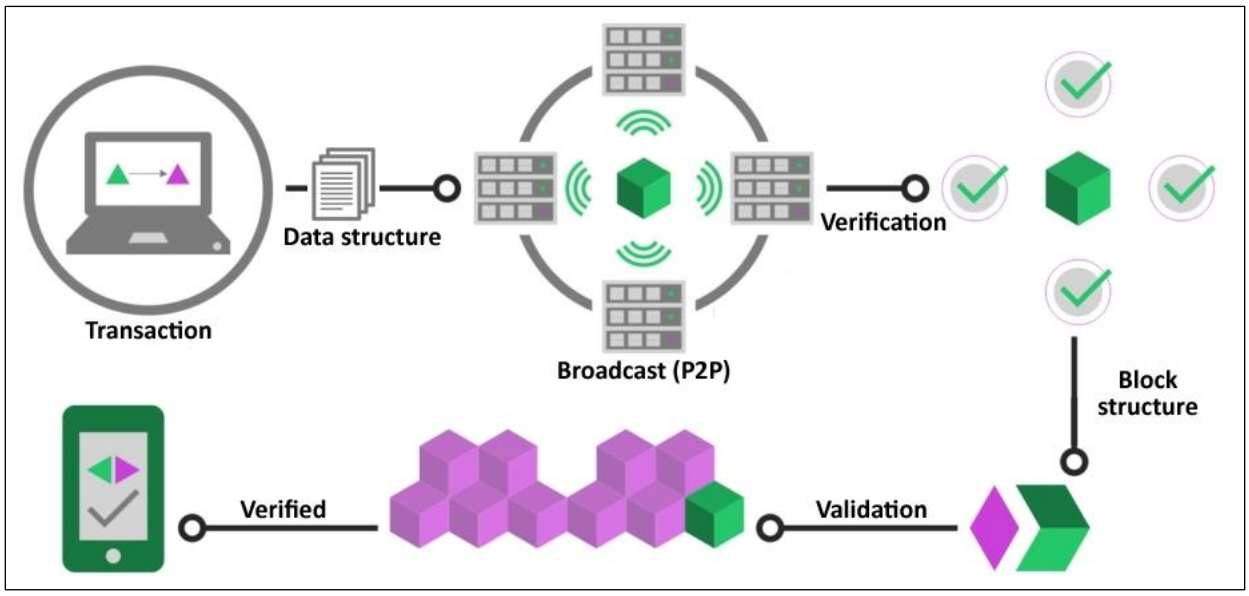

Transaction (**create**Claim or **get**Claim)
Encrypt
Public Key
(Obfuscated) contract
Storage (NoSQL DB)
Decrypt
Private Key
Read
Decrypt
Read
Output
Process
Write
Encrypt
Write

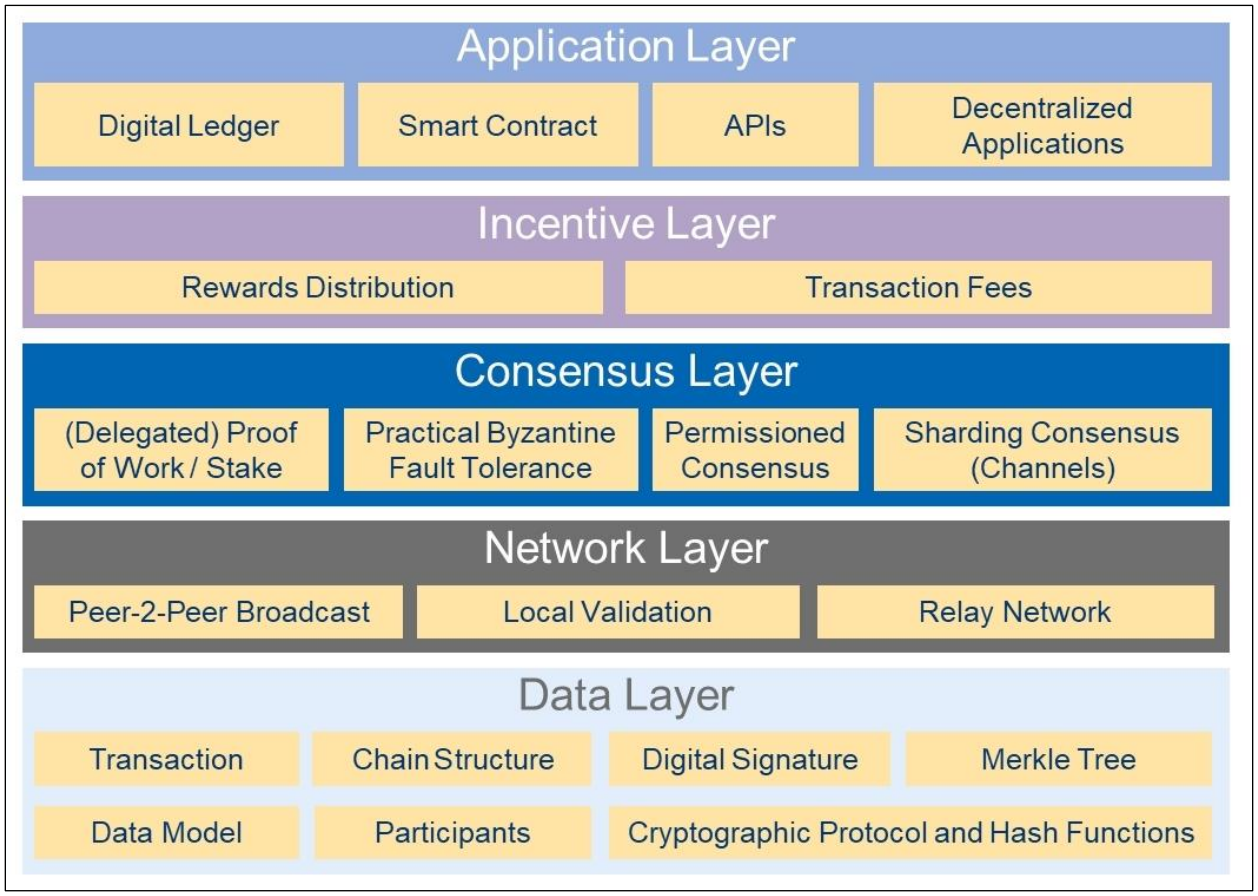

Transaction
Input
Output
Zero-knowledge Proof of validity
Details required to construct a zero-knowledge proof (encrypted with Recipient's public key)
Transaction
Input
Output
Zero-knowledge Proof of validity
Details required to construct a zero-knowledge proof (encrypted with Recipient's public key)
?
?
?

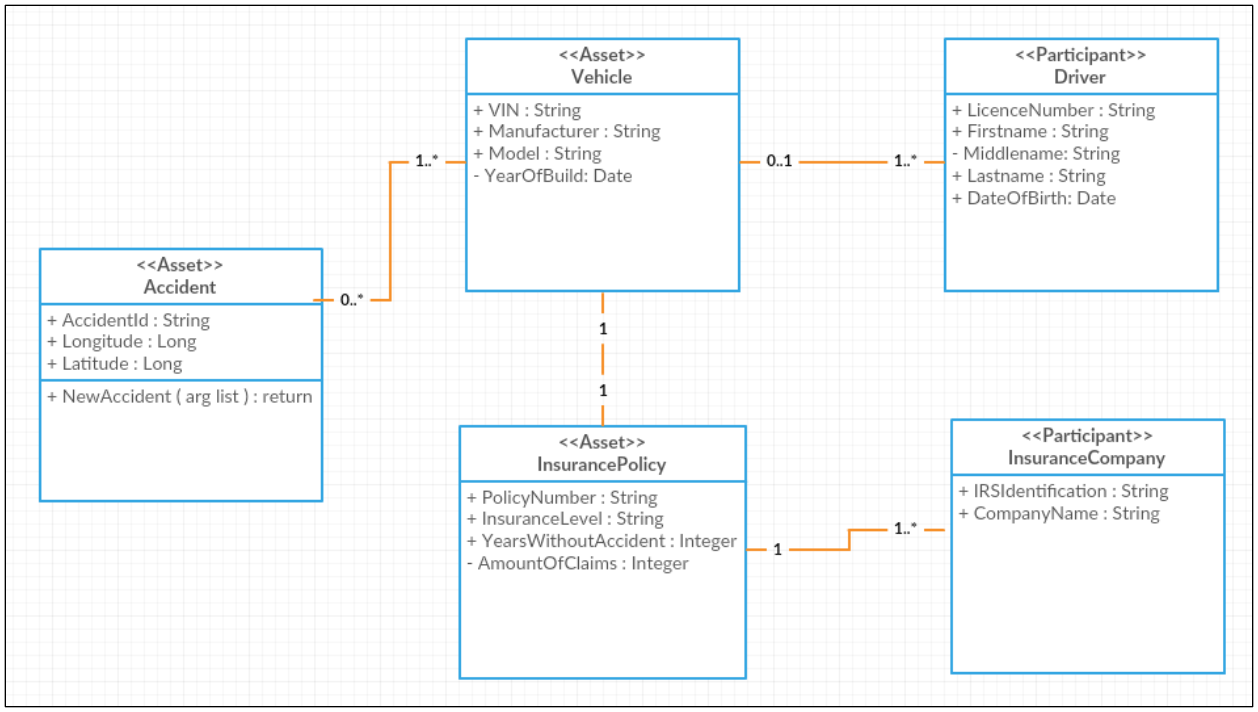

animaltracking-network
bond-network
carauction-network
digitalproperty-network
fund-clearing-network
letters-of-credit-network
marbles-network
perishable-network
pii-network
trade-network
vehicle-lifecycle-network
vehicle-manufacture-network

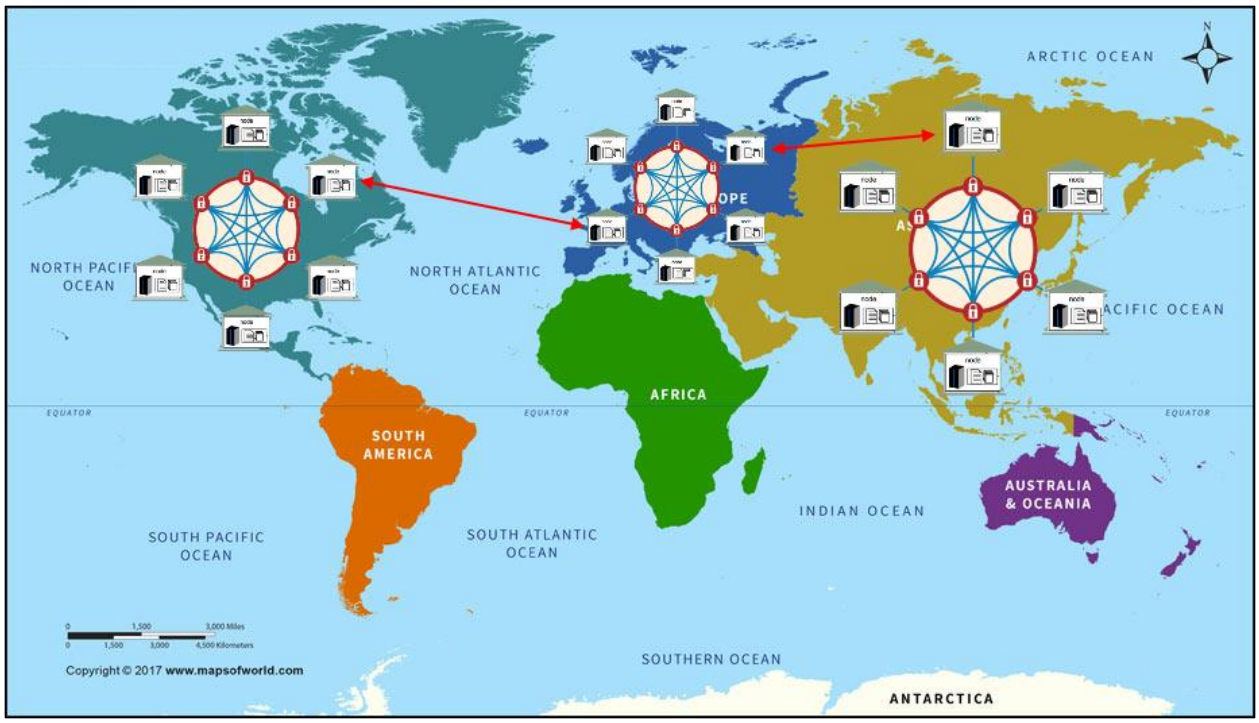

1Ether=1Soda
Shop
Get 1 juice
Put juice
"I have ownership!!"
Deploy Contract
Get ownership
1Ether
1Ether
Seller
Blockchain
Buyer

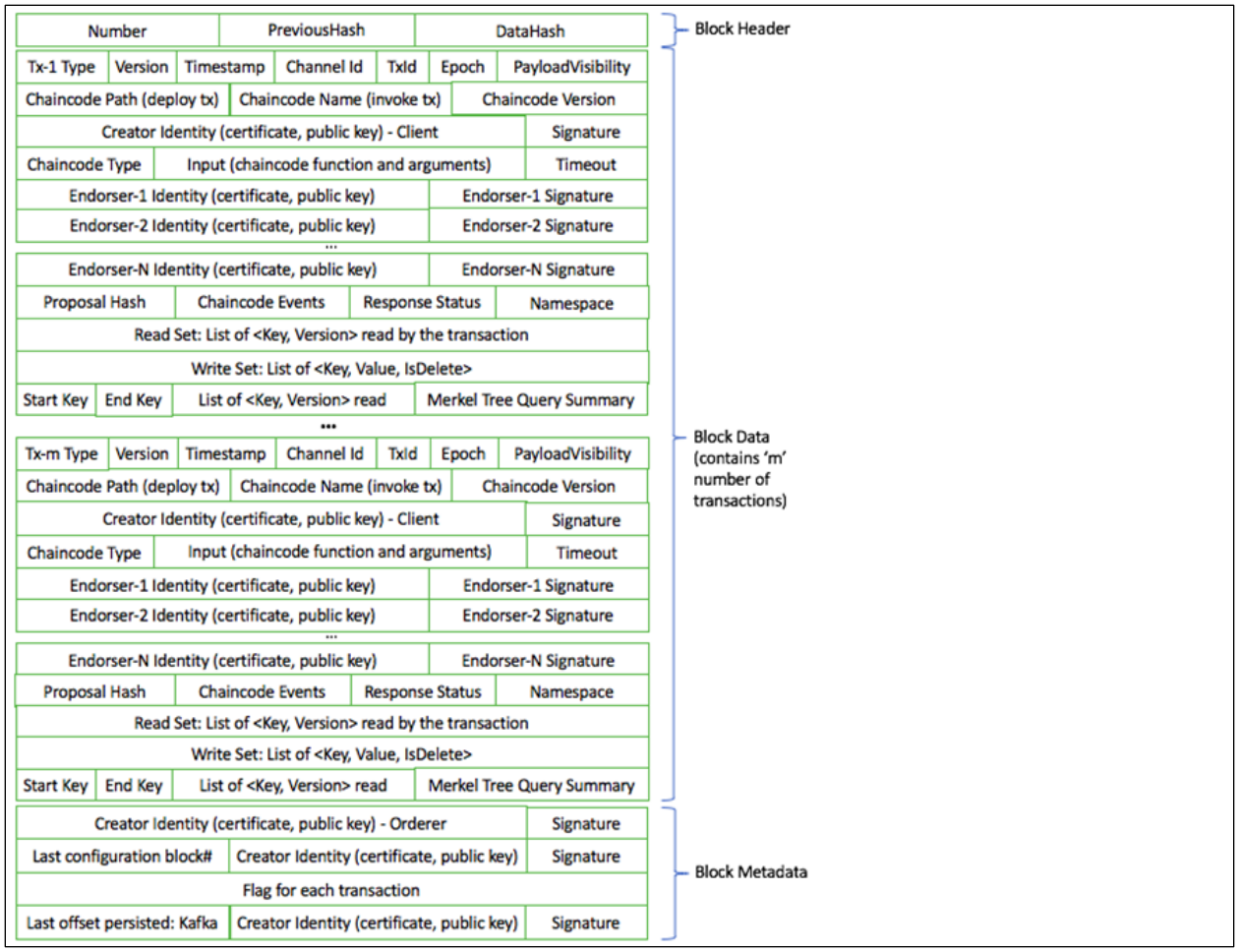
Chapter 6: Understanding the Blockchain Data Flow



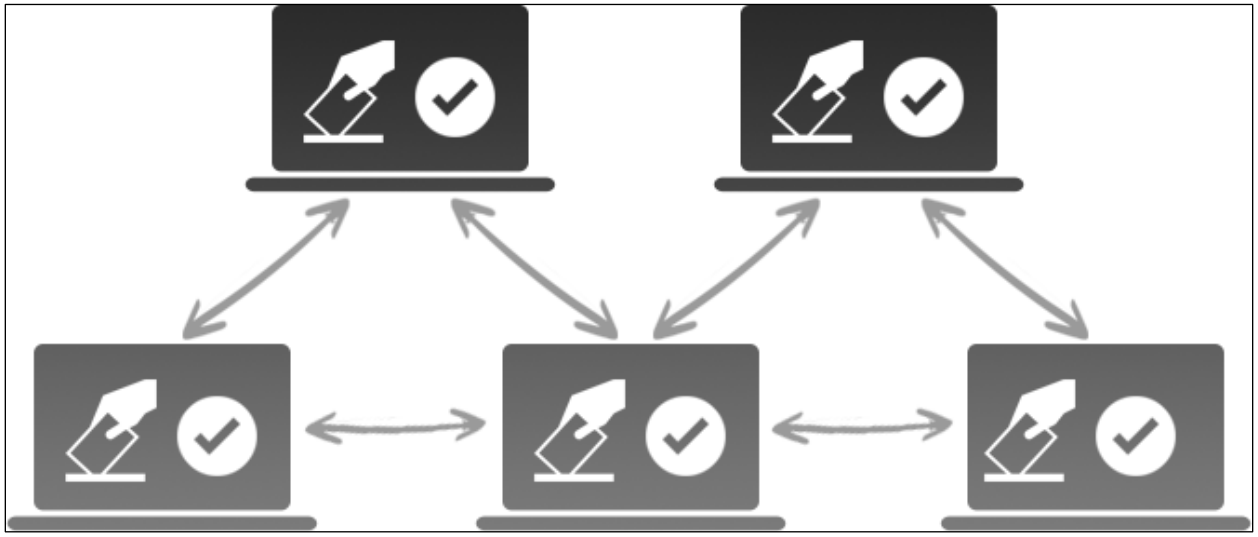


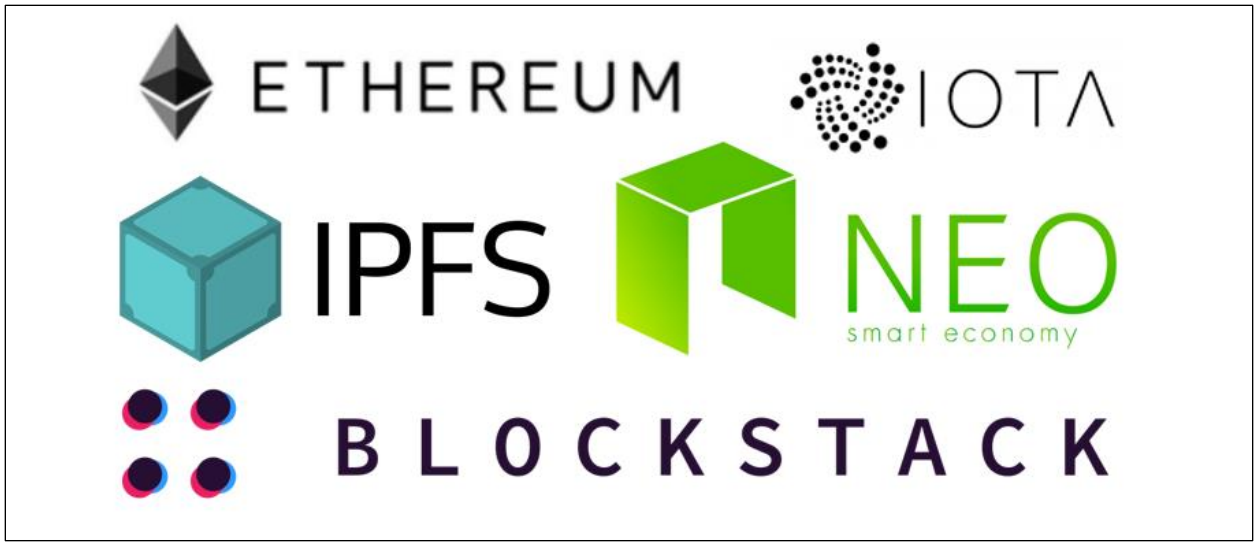

<<Asset>>
Vehicle
+ VIN : String
+ Manufacturer : String
+ Model : String
- YearOfBuild: Date
<<Participant>>
Driver
+ LicenceNumber : String
+ Firstname : String
- Middlename: String
+ Lastname : String
+ DateOfBirth: Date
<<Asset>>
Accident
+ AccidentId : String
+ Longitude : Long
+ Latitude : Long
+ NewAccident (arg list) : return
<<Asset>>
InsurancePolicy
+ PolicyNumber : String
+ InsuranceLevel : String
+ YearsWithoutAccident : Integer
- AmountOfClaims : Integer
<<Participant>>
InsuranceCompany
+ IRSIdentification : String
+ CompanyName : String
1..*
0..1
1..*
0..*
1
1
1
1..*

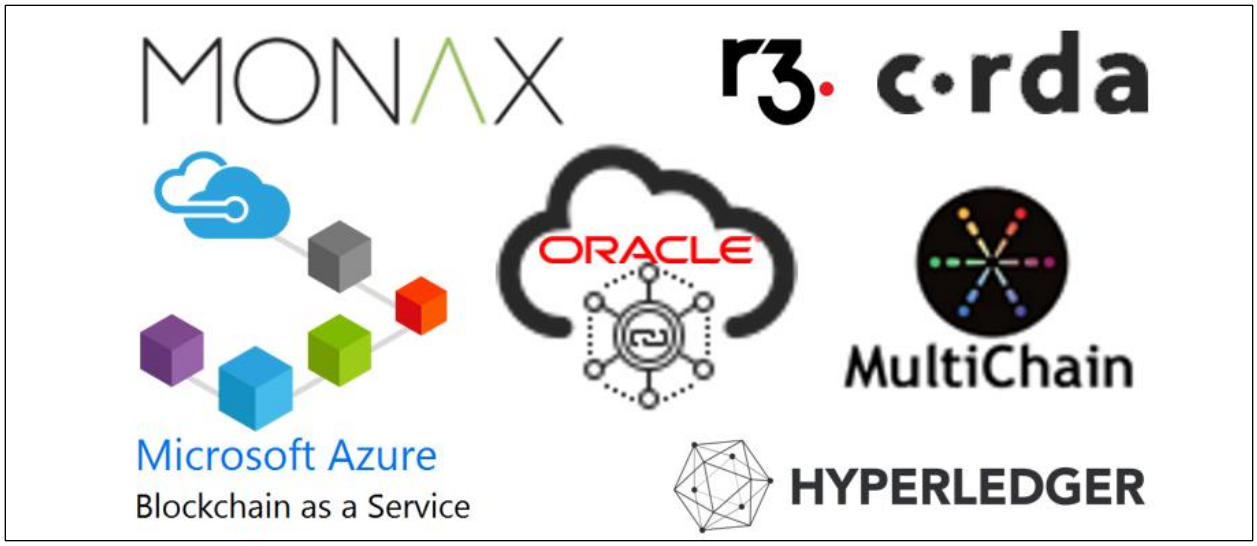

ARCTIC OCEAN
NORTH PACIFIC OCEAN
NORTH ATLANTIC OCEAN
AFRICA
SOUTH AMERICA
AUSTRALIA & OCEANIA
INDIAN OCEAN
SOUTH PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
SOUTHERN OCEAN
ANTARCTICA
EQUATOR
Copyright © 2017 www.mapsofworld.com


Number
PreviousHash
DataHash
Block Header
Tx-1 Type
Version
Timestamp
Channel Id
TxId
Epoch
PayloadVisibility
Chaincode Path (deploy tx)
Chaincode Name (invoke tx)
Chaincode Version
Creator Identity (certificate, public key) - Client
Signature
Chaincode Type
Input (chaincode function and arguments)
Timeout
Endorser-1 Identity (certificate, public key)
Endorser-1 Signature
Endorser-2 Identity (certificate, public key)
Endorser-2 Signature
...
Endorser-N Identity (certificate, public key)
Endorser-N Signature
Proposal Hash
Chaincode Events
Response Status
Namespace
Read Set: List of <Key, Version> read by the transaction
Write Set: List of <Key, Value, IsDelete>
Start Key
End Key
List of <Key, Version> read
Merkel Tree Query Summary
...
Tx-m Type
Version
Timestamp
Channel Id
TxId
Epoch
PayloadVisibility
Chaincode Path (deploy tx)
Chaincode Name (invoke tx)
Chaincode Version
Creator Identity (certificate, public key) - Client
Signature
Chaincode Type
Input (chaincode function and arguments)
Timeout
Endorser-1 Identity (certificate, public key)
Endorser-1 Signature
Endorser-2 Identity (certificate, public key)
Endorser-2 Signature
...
Endorser-N Identity (certificate, public key)
Endorser-N Signature
Proposal Hash
Chaincode Events
Response Status
Namespace
Read Set: List of <Key, Version> read by the transaction
Write Set: List of <Key, Value, IsDelete>
Start Key
End Key
List of <Key, Version> read
Merkel Tree Query Summary
Block Data
(contains 'm'
number of
transactions)
Creator Identity (certificate, public key) - Orderer
Signature
Last configuration block#
Creator Identity (certificate, public key)
Signature
Flag for each transaction
Last offset persisted: Kafka
Creator Identity (certificate, public key)
Signature
Block Metadata

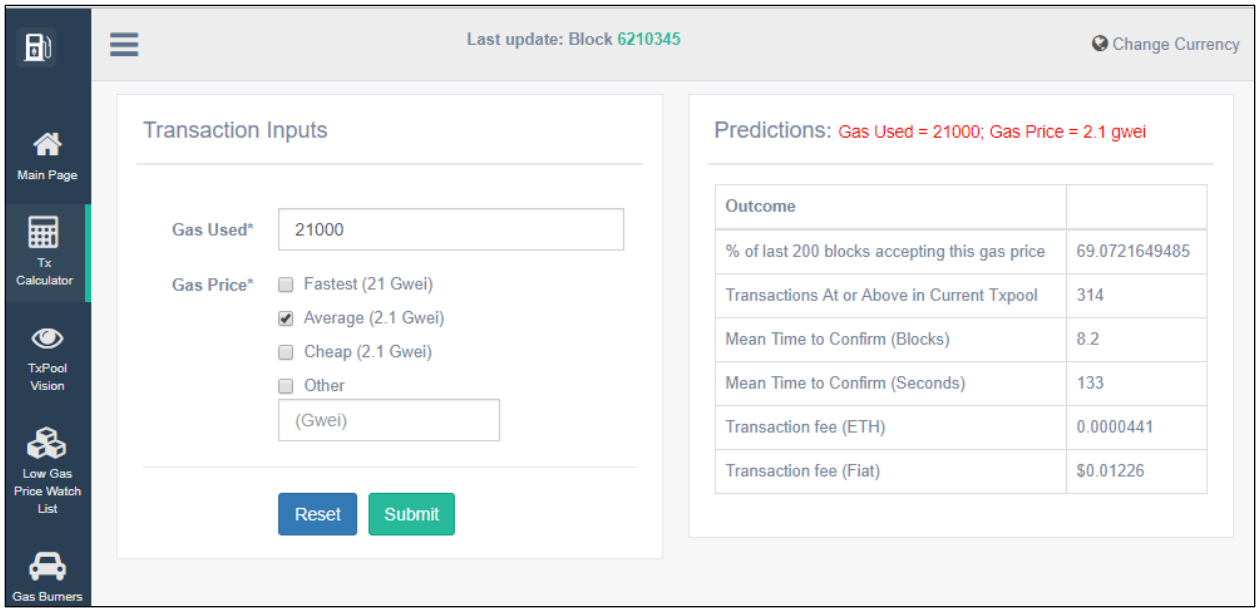
Chapter 7: Public Versus Permissioned Blockchains and their Providers

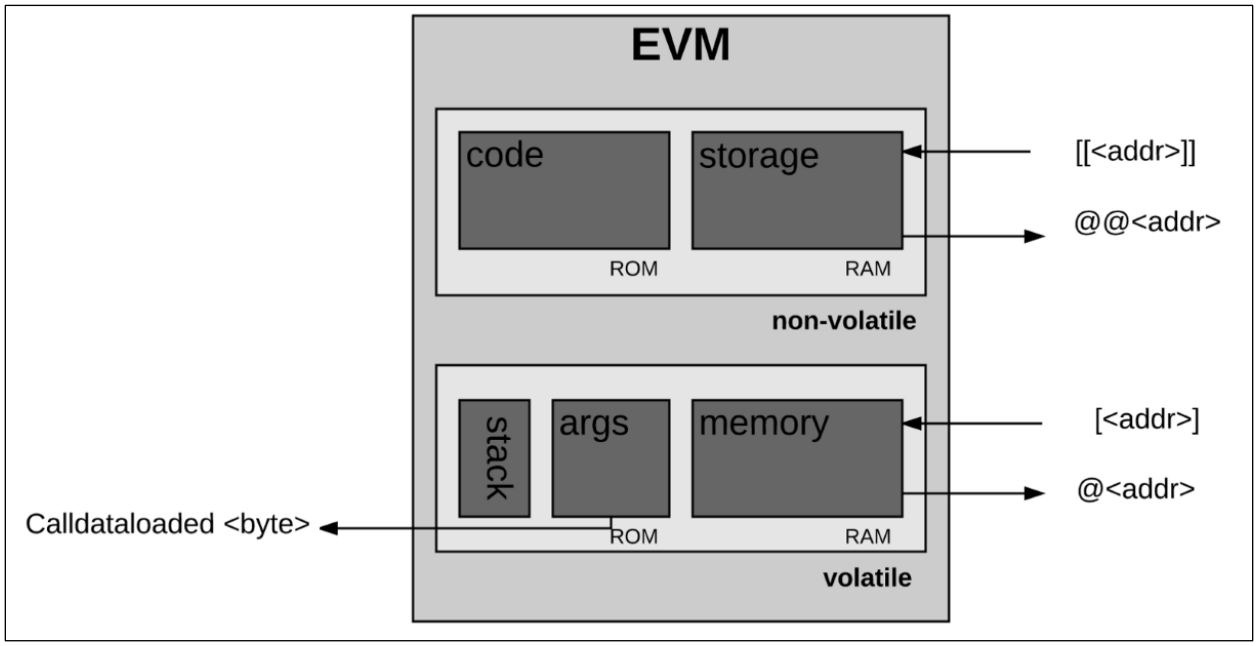



ETHEREUM
IOTA
IPFS
NEO
smart economy
BLOCKSTACK

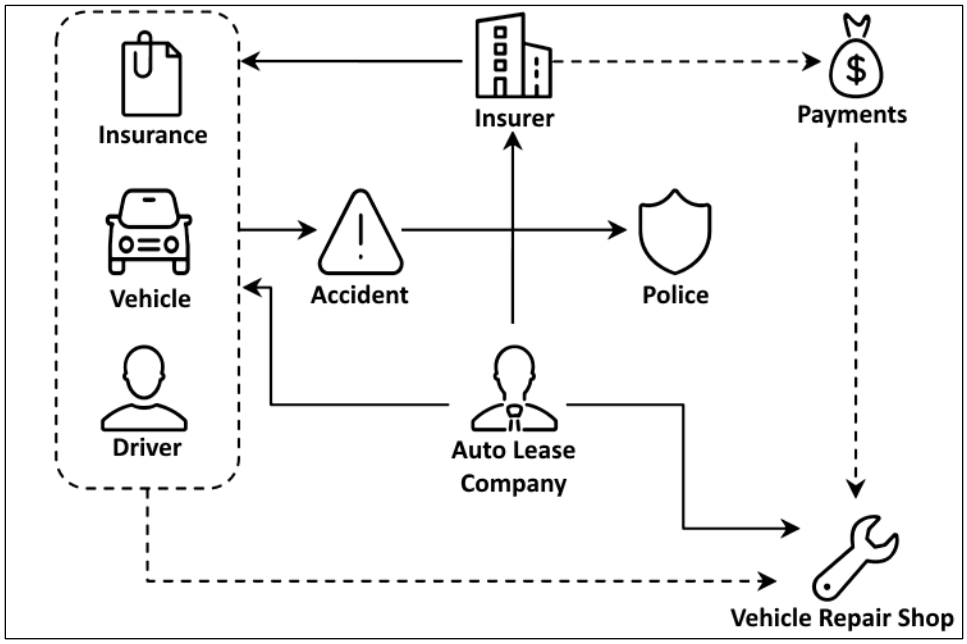

MONAX
r3
corda
ORACLE
MultiChain
Microsoft Azure
Blockchain as a Service
HYPERLEDGER

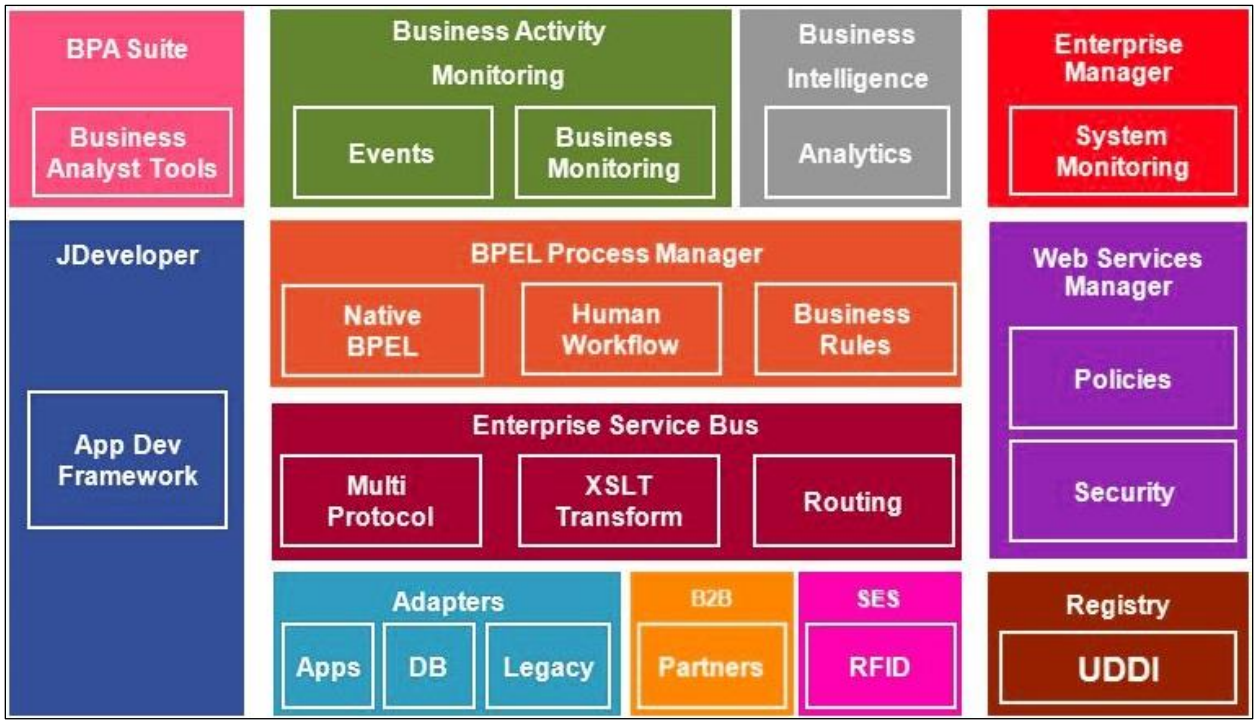
Chapter 8: Ethereum Versus Hyperledger

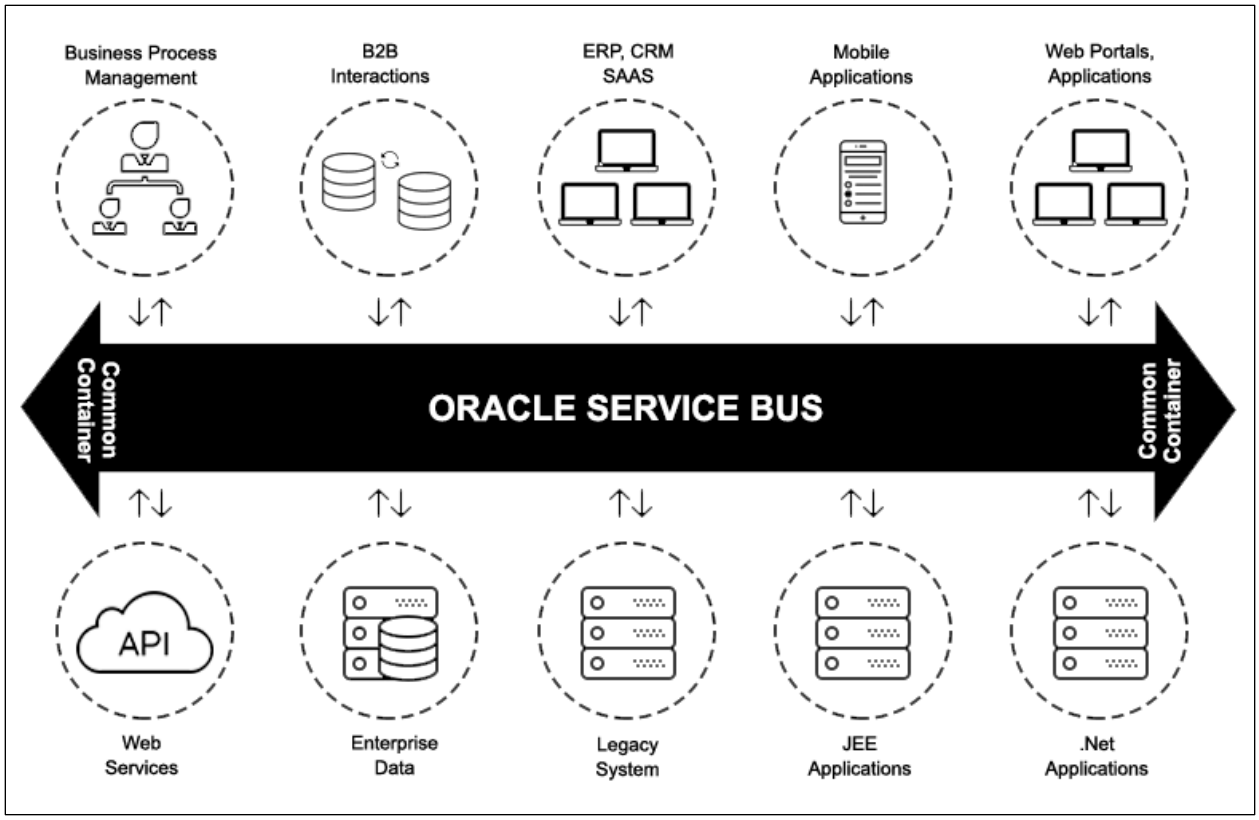


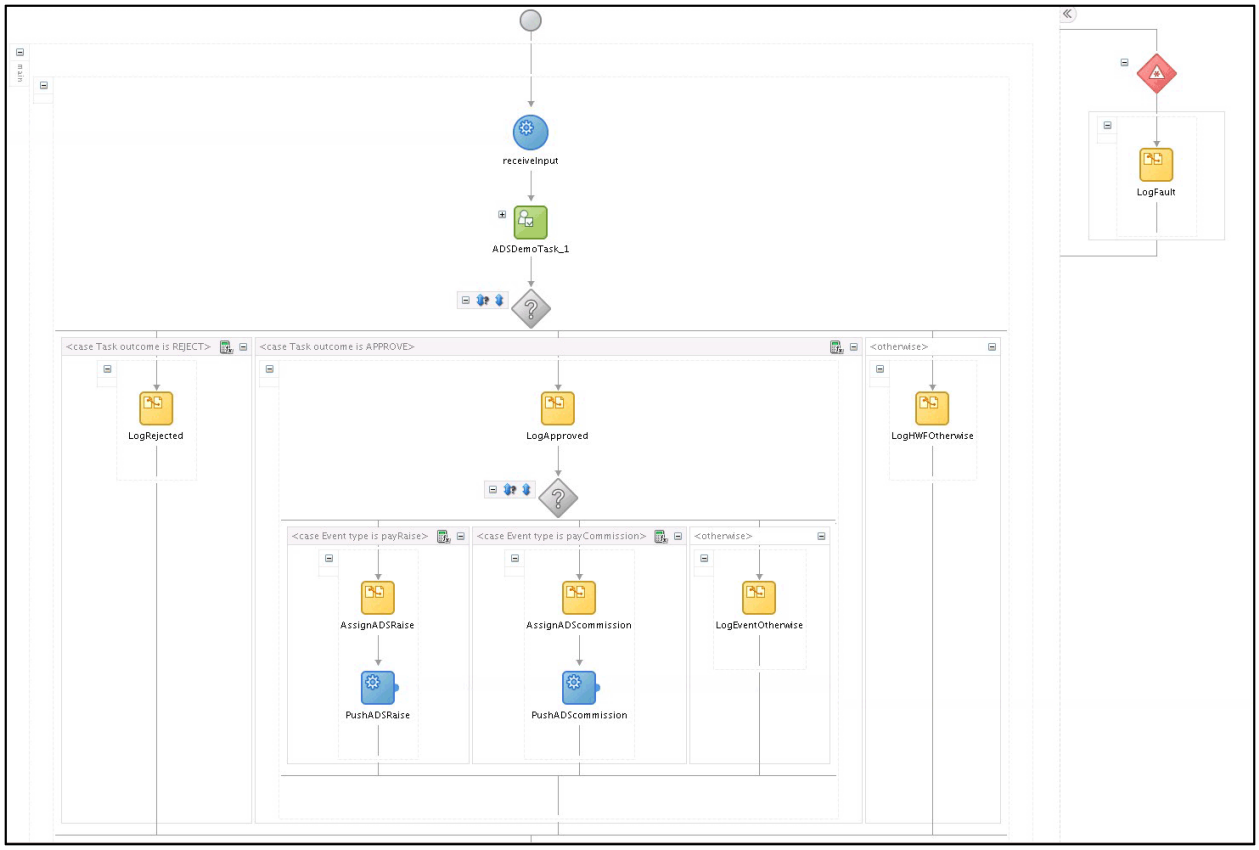


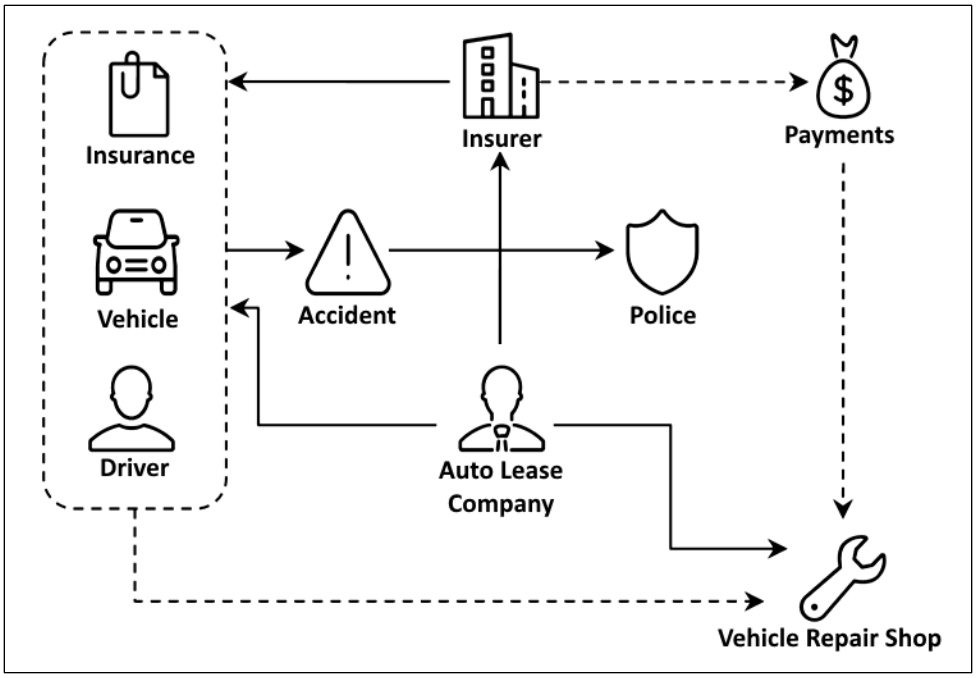
Chapter 9: Building a Next-Generation Oracle B2B Platform

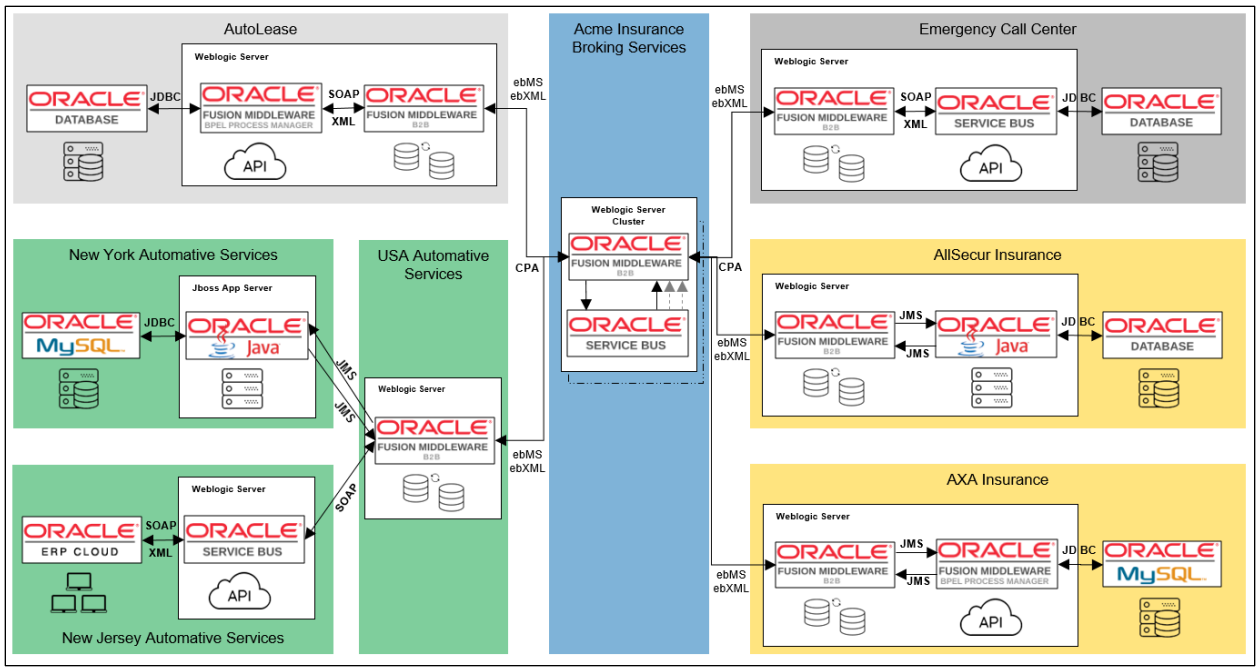


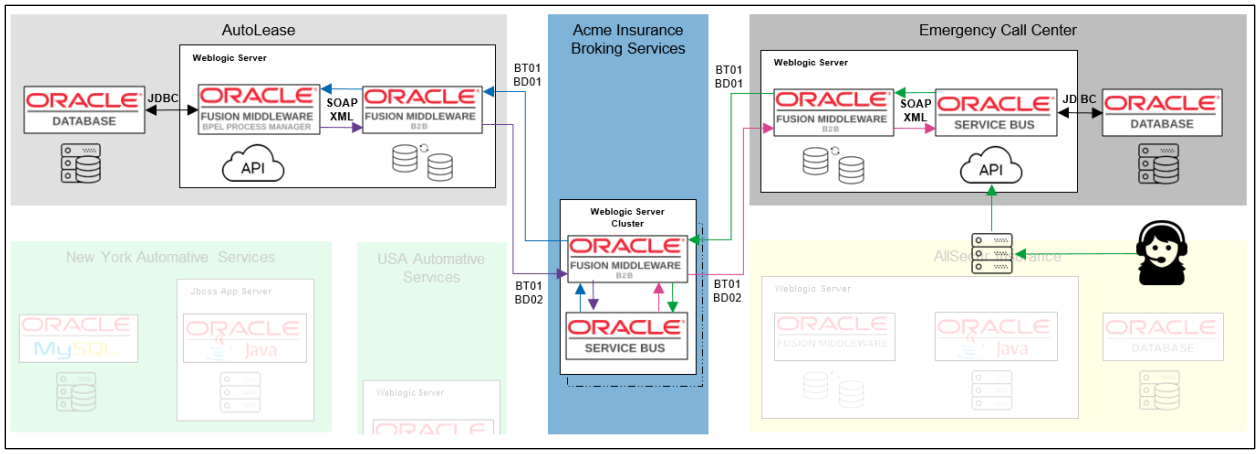


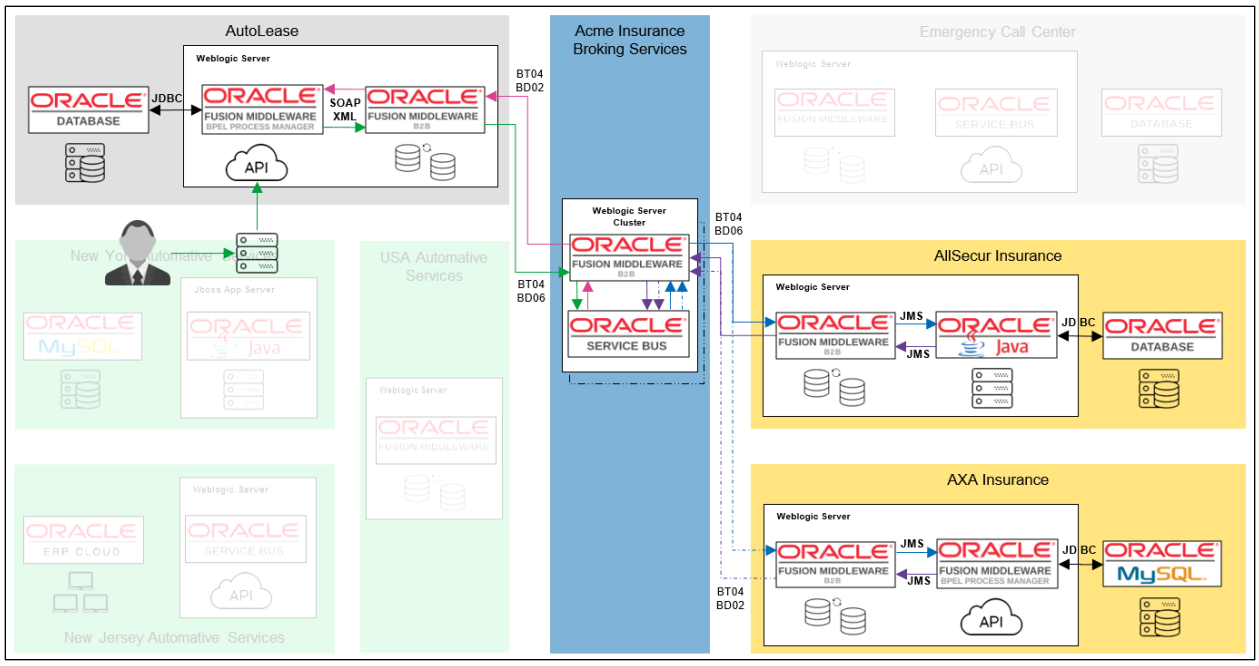

Business Process Management
B2B Interactions
ERP, CRM SAAS
Mobile Applications
Web Portals, Applications
Common Container
ORACLE SERVICE BUS
Common Container
API
Web Services
Enterprise Data
Legacy System
JEE Applications
.Net Applications

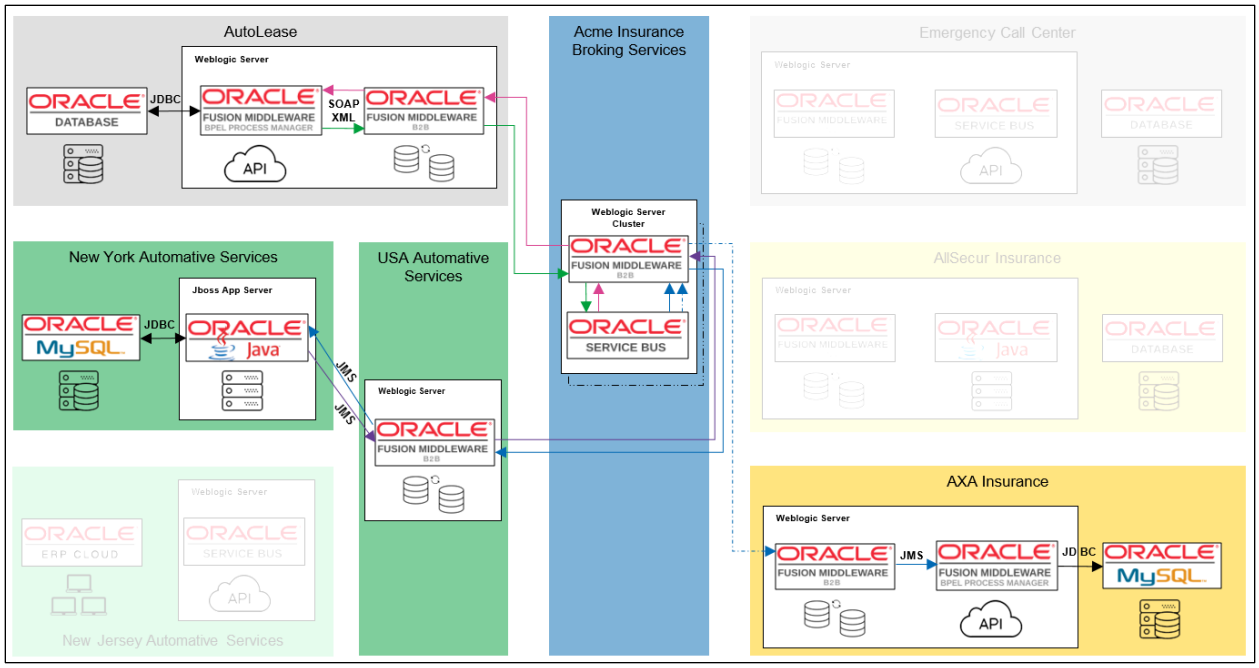

receiveInput
ADSDemoTask_1
<case Task outcome is REJECT>
<case Task outcome is APPROVE>
<otherwise>
LogRejected
LogApproved
LogHWFOtherwise
<case Event type is payRaise>
<case Event type is payCommission>
<otherwise>
AssignADSRaise
AssignADSCommission
LogEventOtherwise
PushADSRaise
PushADSCommission
LogFault

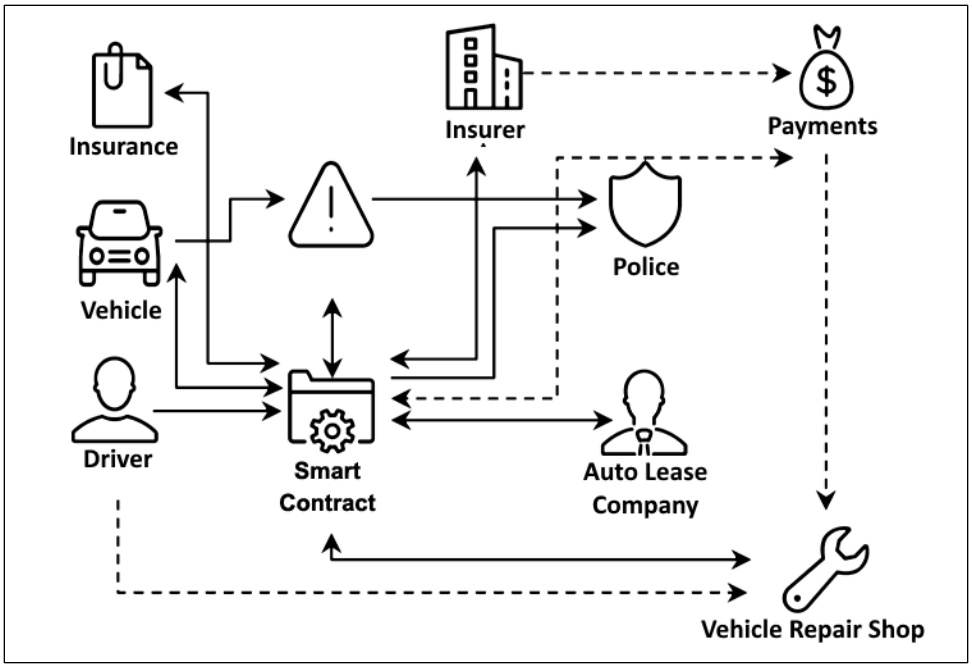

Insurance
Insurer
Payments
Vehicle
Accident
Police
Driver
Auto Lease
Company
Vehicle Repair Shop

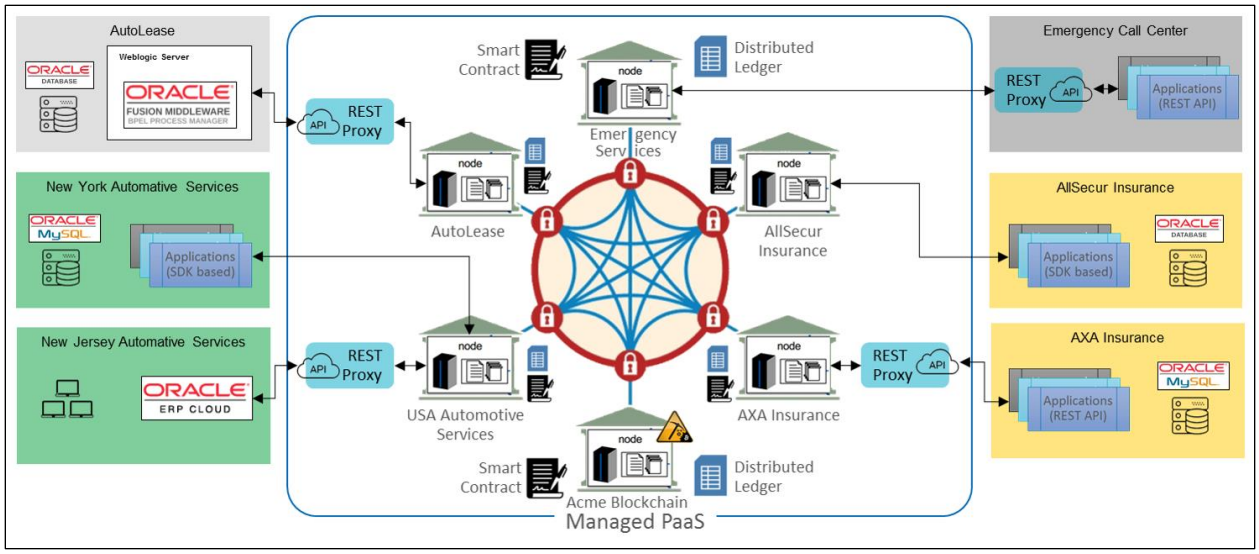

AutoLease
Weblogic Server
ORACLE DATABASE
JDBC
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
SOAP
XML
ORACLE FUSION MIDDLEWARE B2B
API
ebMS
ebXML
Acme Insurance
Broking Services
Weblogic Server
Cluster
ORACLE FUSION MIDDLEWARE B2B
ORACLE SERVICE BUS
CPA
Emergency Call Center
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
SOAP
XML
ORACLE SERVICE BUS
API
JDBC
ORACLE DATABASE
New York Automative Services
Jboss App Server
ORACLE MySQL
JDBC
ORACLE Java
JMS
USA Automative Services
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
AllSecur Insurance
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
JMS
ORACLE Java
JDBC
ORACLE DATABASE
New Jersey Automative Services
Weblogic Server
ORACLE ERP CLOUD
SOAP
XML
ORACLE SERVICE BUS
API
AXA Insurance
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
JMS
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
JDBC
ORACLE MySQL
API

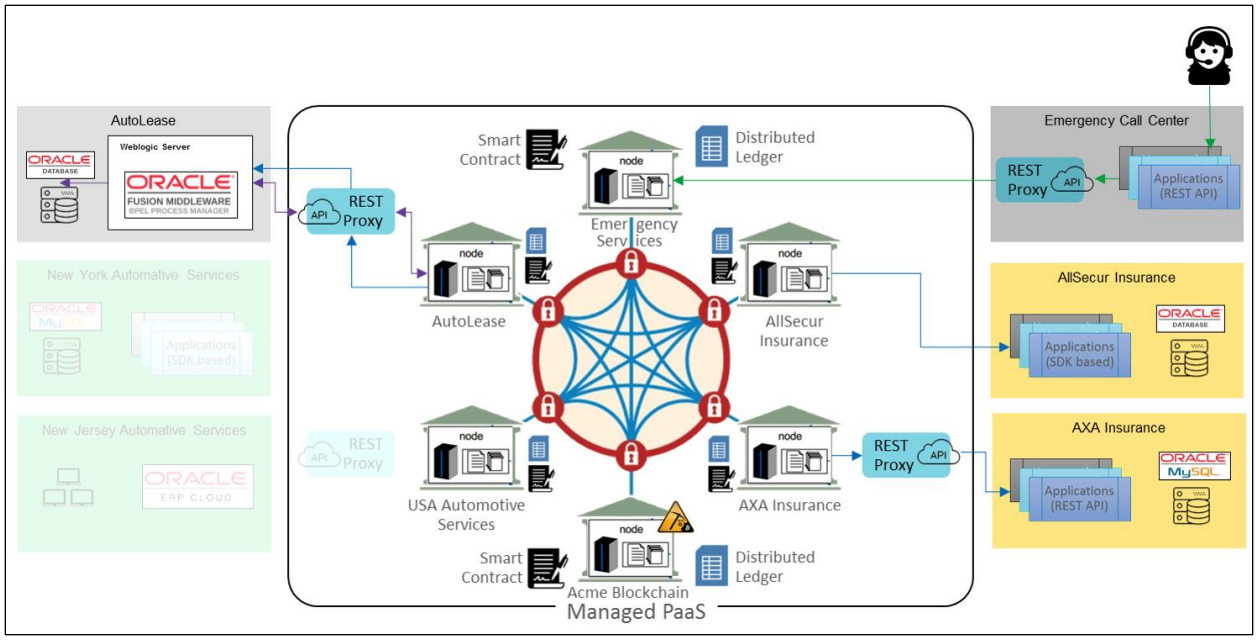

AutoLease
Weblogic Server
ORACLE DATABASE
JDBC
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
SOAP XML
ORACLE FUSION MIDDLEWARE B2B
API
Acme Insurance Broking Services
BT01 BD01
BT01 BD02
Weblogic Server Cluster
ORACLE FUSION MIDDLEWARE B2B
ORACLE SERVICE BUS
Emergency Call Center
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
SOAP XML
ORACLE SERVICE BUS
JDBC
ORACLE DATABASE
API
New York Automative Services
Jboss App Server
ORACLE MySQL
ORACLE Java
USA Automative Services
Weblogic Server
ORACLE FUSION MIDDLEWARE
AllSecur Insurance
Weblogic Server
ORACLE FUSION MIDDLEWARE
ORACLE Java
ORACLE DATABASE

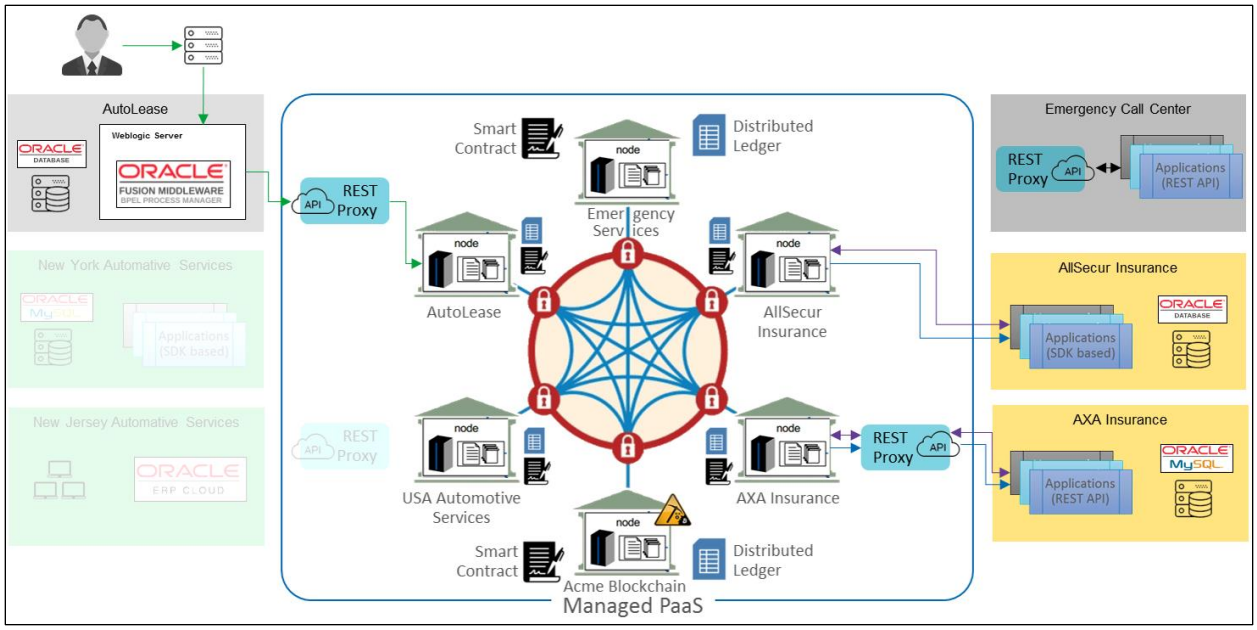

AutoLease
Weblogic Server
ORACLE DATABASE
JDBC
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
SOAP XML
ORACLE FUSION MIDDLEWARE B2B
API
Acme Insurance Broking Services
BT04 BD02
BT04 BD06
Weblogic Server Cluster
ORACLE FUSION MIDDLEWARE B2B
ORACLE SERVICE BUS
Emergency Call Center
Weblogic Server
ORACLE FUSION MIDDLEWARE
ORACLE SERVICE BUS
ORACLE DATABASE
API
New York Automative
Jboss App Server
ORACLE MySQL
ORACLE Java
USA Automative Services
Weblogic Server
ORACLE FUSION MIDDLEWARE
AllSecur Insurance
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
JMS
ORACLE Java
JDBC
ORACLE DATABASE
AXA Insurance
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
JMS
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
JDBC
ORACLE MySQL
API
New Jersey Automative Services
Weblogic Server
ORACLE ERP CLOUD
ORACLE SERVICE BUS
API

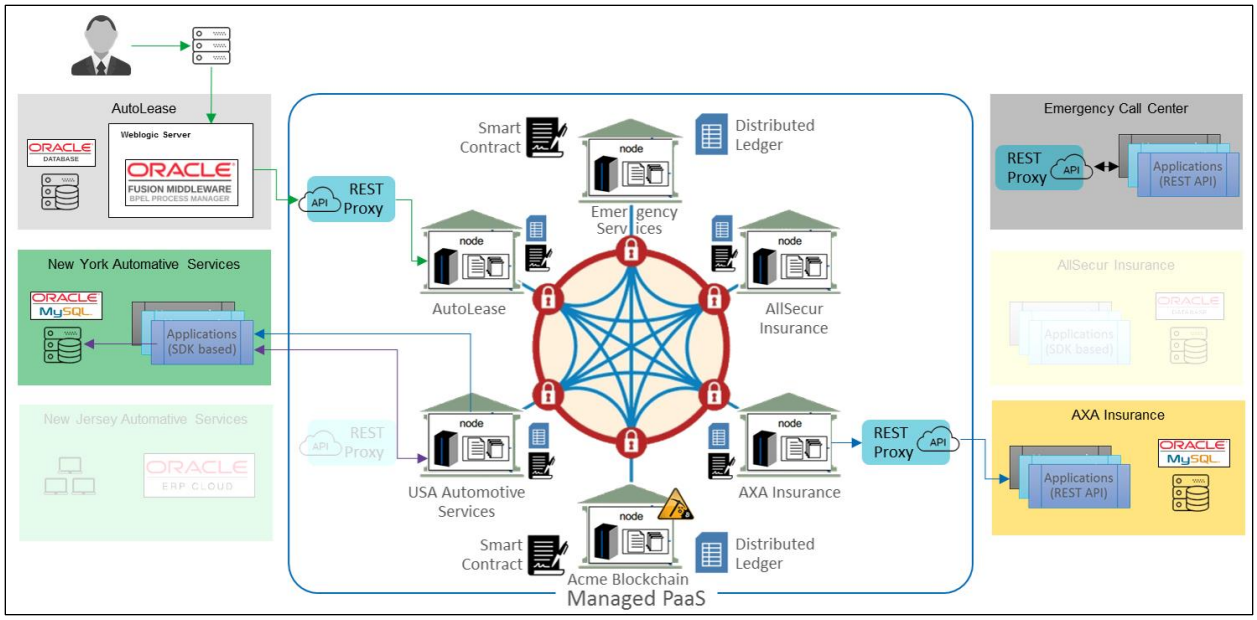

AutoLease
Weblogic Server
ORACLE DATABASE
JDBC
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
SOAP XML
ORACLE FUSION MIDDLEWARE B2B
API
Acme Insurance Broking Services
Weblogic Server Cluster
ORACLE FUSION MIDDLEWARE B2B
ORACLE SERVICE BUS
Emergency Call Center
Weblogic Server
ORACLE FUSION MIDDLEWARE
ORACLE SERVICE BUS
ORACLE DATABASE
API
New York Automative Services
Jboss App Server
ORACLE MySQL
JDBC
ORACLE Java
JMS
JMS
USA Automative Services
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
AllSecur Insurance
Weblogic Server
ORACLE FUSION MIDDLEWARE
ORACLE Java
ORACLE DATABASE
Weblogic Server
ORACLE ERP CLOUD
ORACLE SERVICE BUS
API
New Jersey Automative Services
AXA Insurance
Weblogic Server
ORACLE FUSION MIDDLEWARE B2B
JMS
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
JDBC
ORACLE MySQL
API


Insurance
Insurer
Payments
Police
Vehicle
Driver
Smart Contract
Auto Lease Company
Vehicle Repair Shop

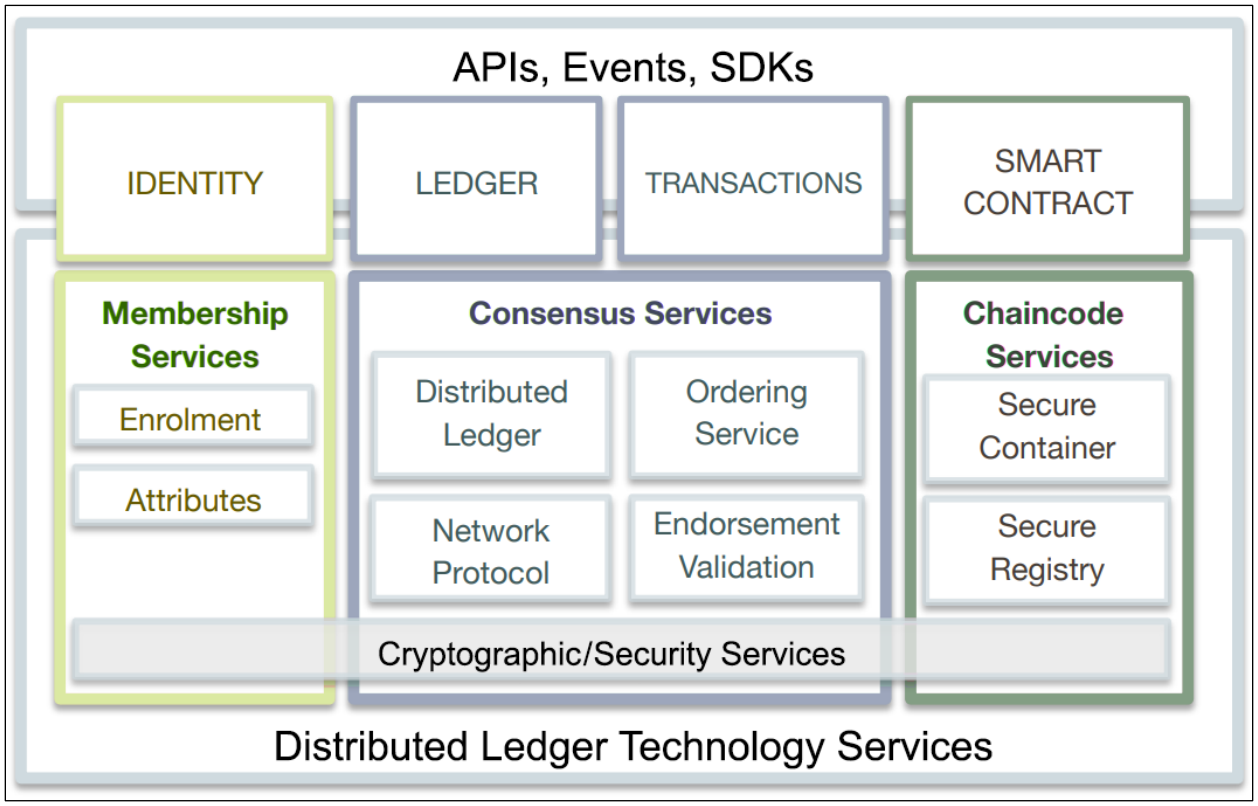

AutoLease
Weblogic Server
ORACLE DATABASE
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
New York Automative Services
MySQL
Applications (SDK based)
New Jersey Automative Services
ORACLE ERP CLOUD
REST Proxy
API
Smart Contract
Distributed Ledger
node
Emergency Services
AutoLease
AllSecur Insurance
USA Automotive Services
AXA Insurance
Acme Blockchain
Managed PaaS
Emergency Call Center
Applications (REST API)
AllSecur Insurance
Applications (SDK based)
AXA Insurance
Applications (REST API)

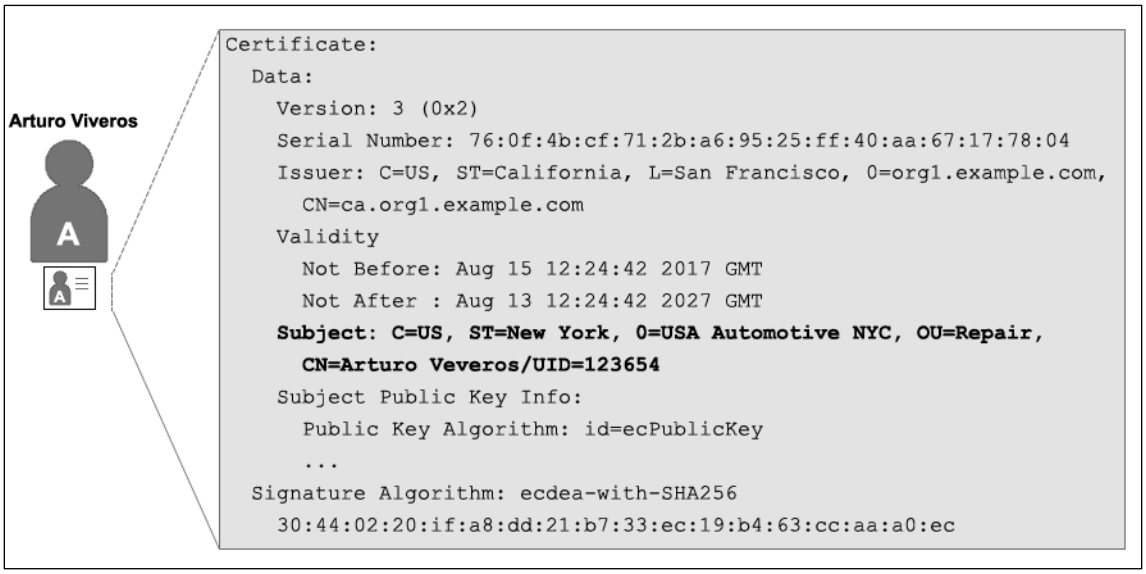

AutoLease
Weblogic Server
ORACLE DATABASE
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
New York Automative Services
Applications (SDK based)
New Jersey Automative Services
ORACLE ERP CLOUD
REST Proxy
API
Smart Contract
Distributed Ledger
node
Emergency Services
AutoLease
AllSecur Insurance
USA Automotive Services
AXA Insurance
Acme Blockchain
Managed PaaS
Emergency Call Center
Applications (REST API)
AllSecur Insurance
Applications (SDK based)
AXA Insurance
Applications (REST API)

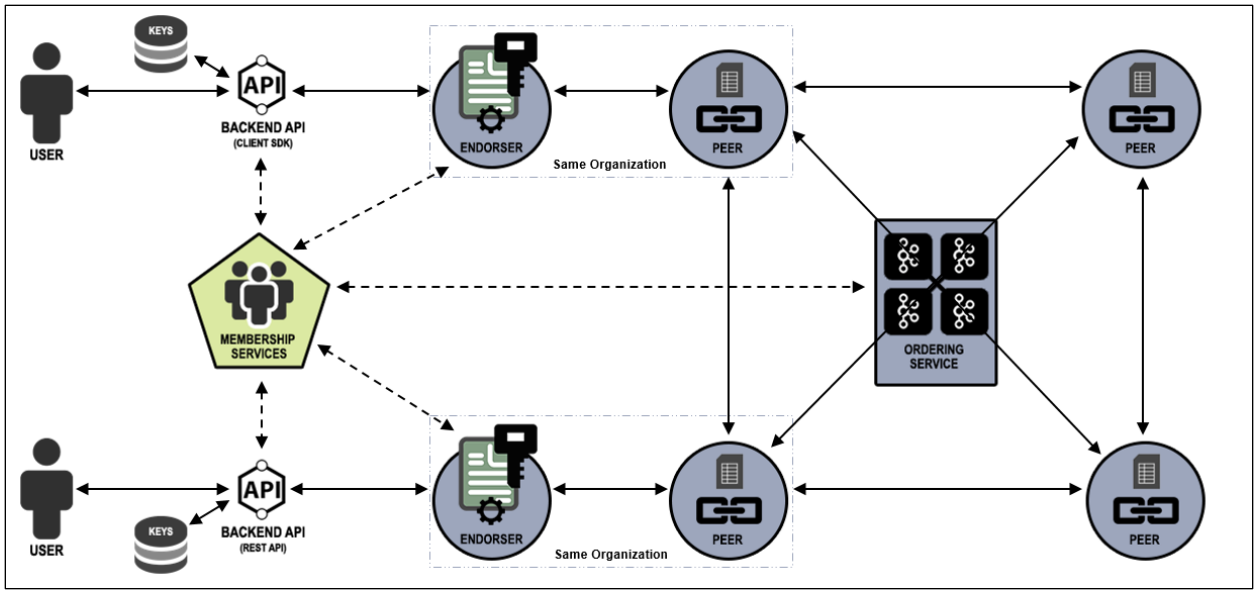

AutoLease
Weblogic Server
ORACLE DATABASE
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
New York Automative Services
Applications (SDK based)
New Jersey Automative Services
ORACLE ERP CLOUD
Smart Contract
node
Distributed Ledger
Emergency Services
REST Proxy
API
AutoLease
AllSecur Insurance
USA Automotive Services
AXA Insurance
Acme Blockchain
Managed PaaS
Emergency Call Center
Applications (REST API)
AllSecur Insurance
Applications (SDK based)
AXA Insurance
ORACLE MySQL
Applications (REST API)

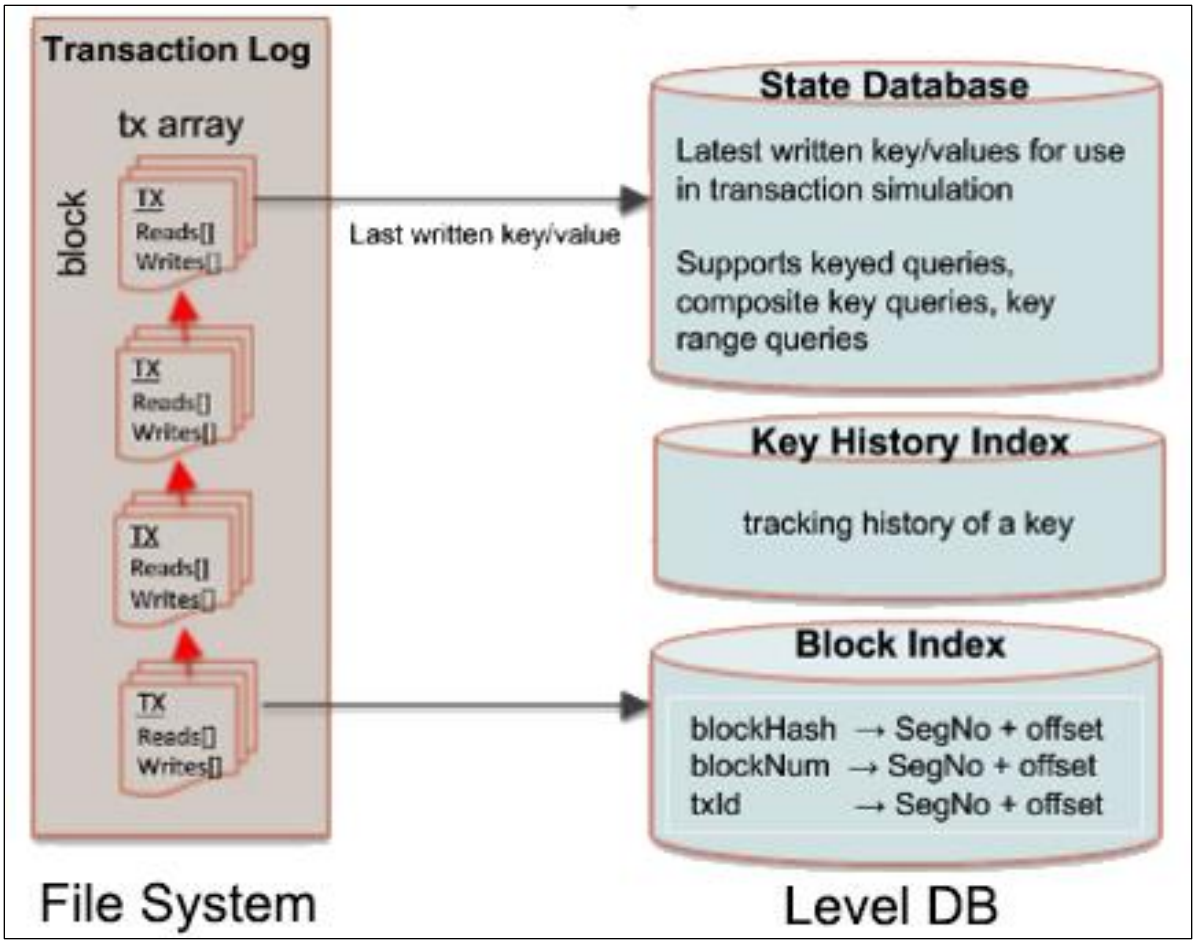

AutoLease
Weblogic Server
ORACLE DATABASE
ORACLE FUSION MIDDLEWARE BPEL PROCESS MANAGER
New York Automative Services
ORACLE MySQL
Applications (SDK based)
New Jersey Automative Services
ORACLE ERP CLOUD
Smart Contract
node
Distributed Ledger
Emergency Services
REST Proxy
API
AutoLease
AllSecur Insurance
USA Automotive Services
AXA Insurance
Acme Blockchain
Managed PaaS
Emergency Call Center
Applications (REST API)
AllSecur Insurance
Applications (SDK based)
AXA Insurance
ORACLE MySQL
Applications (REST API)

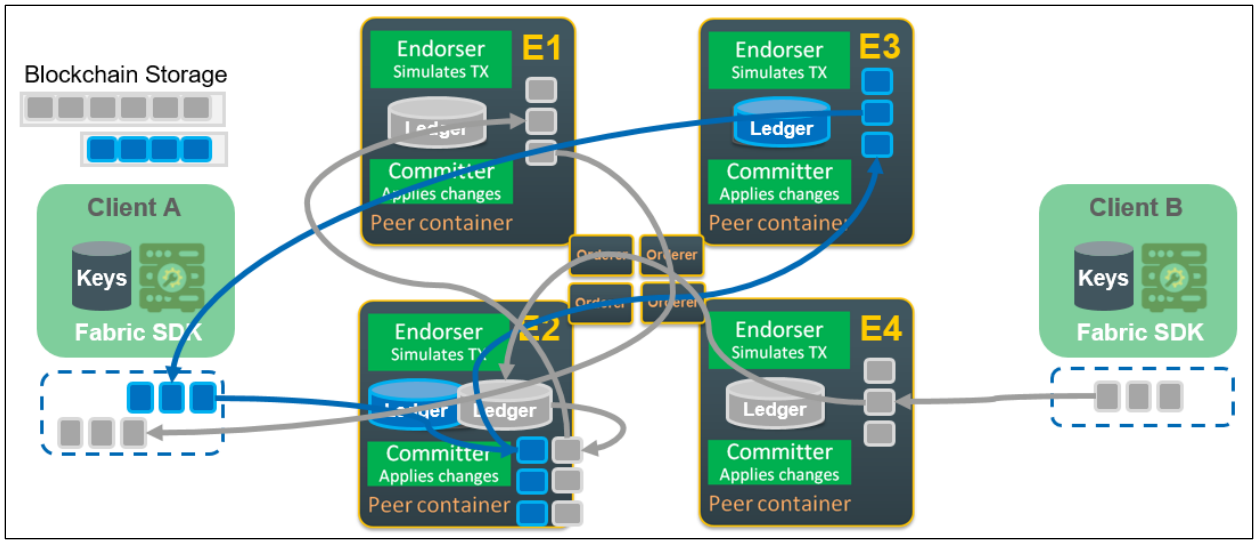
Chapter 10: Introducing the Oracle Blockchain Cloud Service

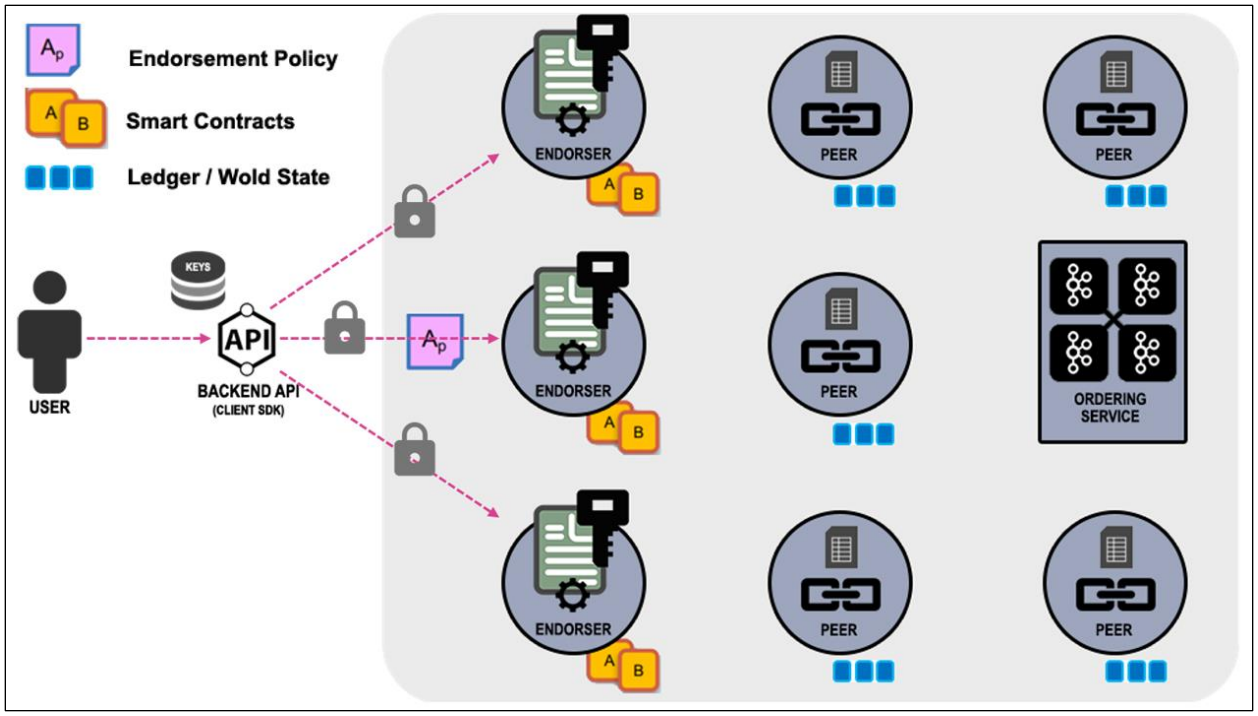


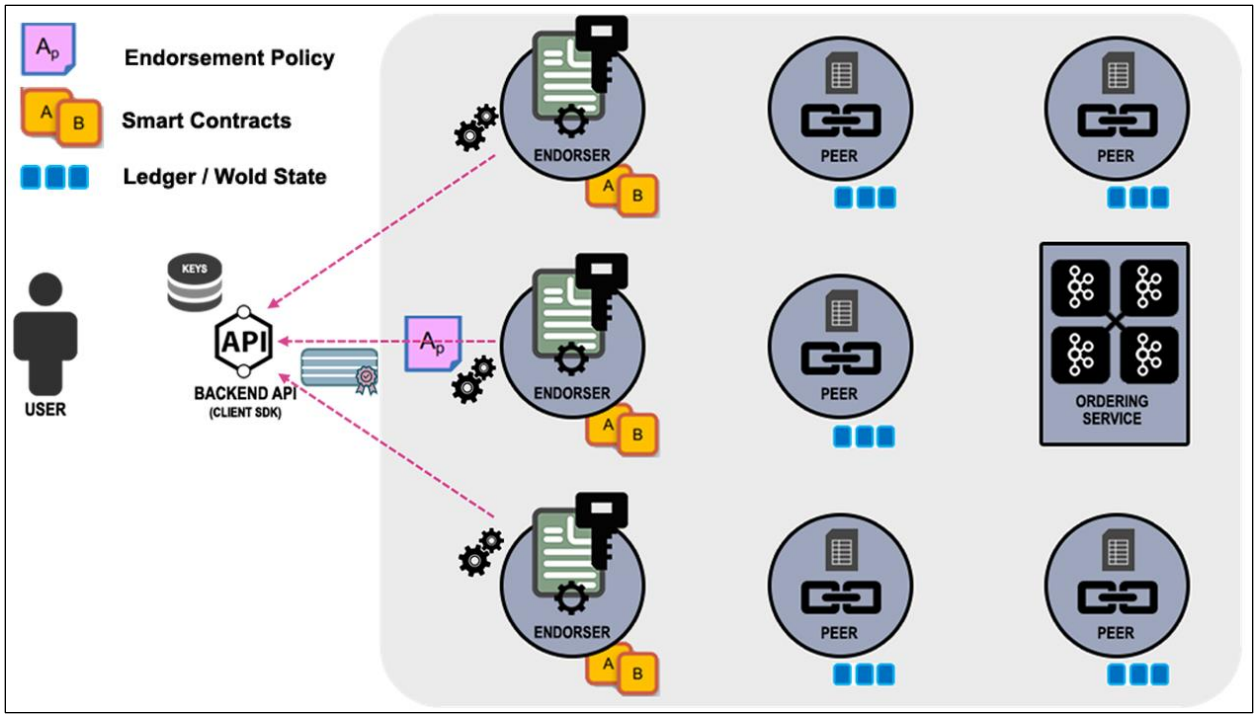


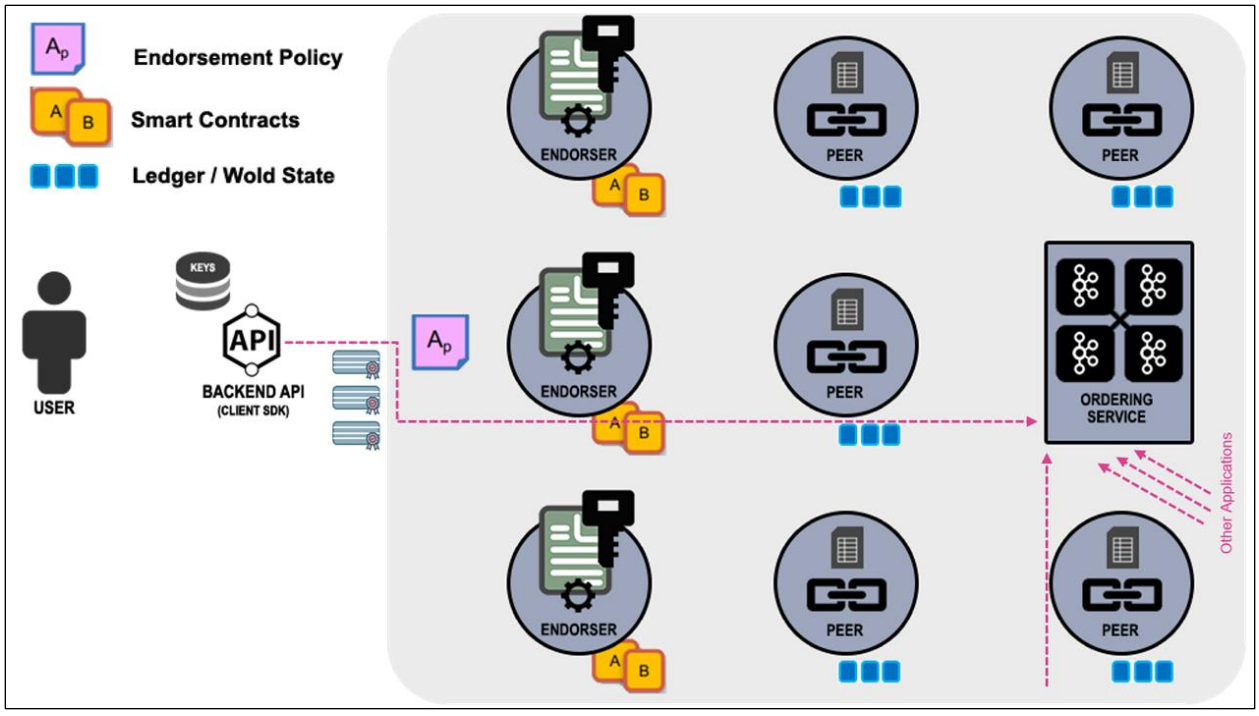

KEYS
API
BACKEND API
(CLIENT SDK)
USER
ENDORSER
Same Organization
PEER
PEER
MEMBERSHIP
SERVICES
ORDERING
SERVICE
USER
API
BACKEND API
(REST API)
KEYS
ENDORSER
Same Organization
PEER
PEER

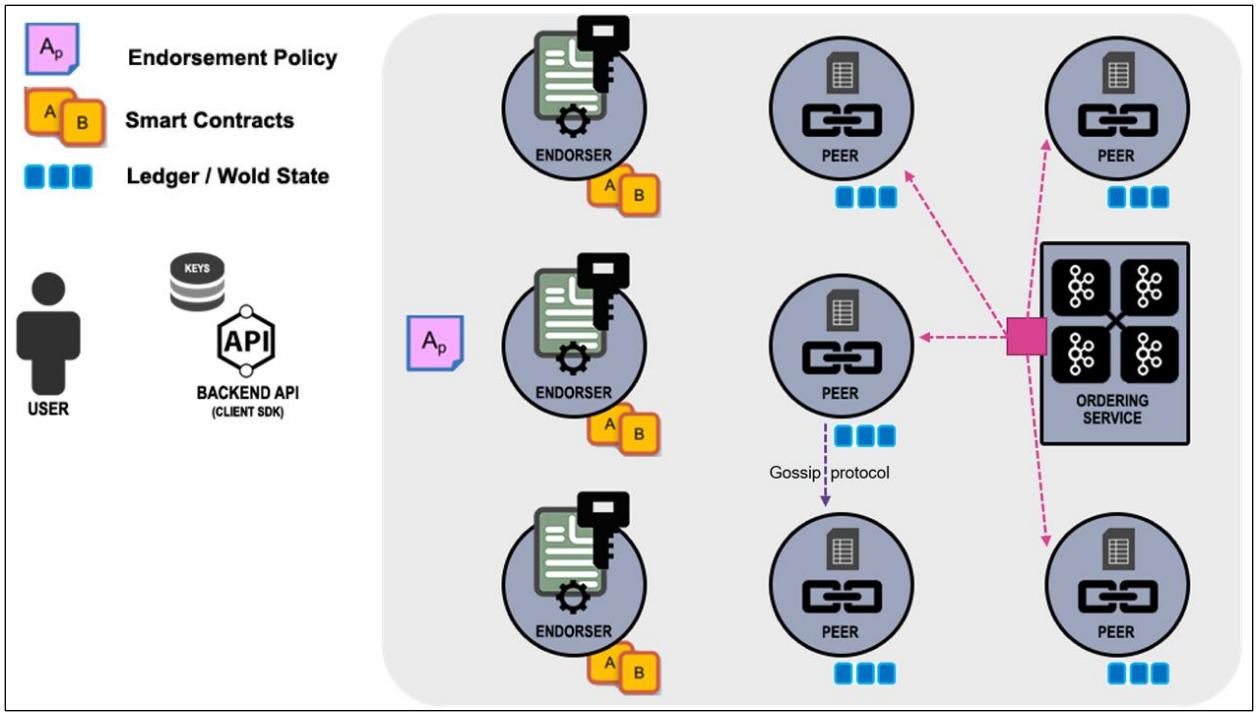

Transaction Log
tx array
block
TX
Reads[]
Writes[]
TX
Reads[]
Writes[]
TX
Reads[]
Writes[]
TX
Reads[]
Writes[]
Last written key/value
State Database
Latest written key/values for use in transaction simulation
Supports keyed queries, composite key queries, key range queries
Key History Index
tracking history of a key
Block Index
blockHash → SegNo + offset
blockNum → SegNo + offset
txId → SegNo + offset
File System
Level DB

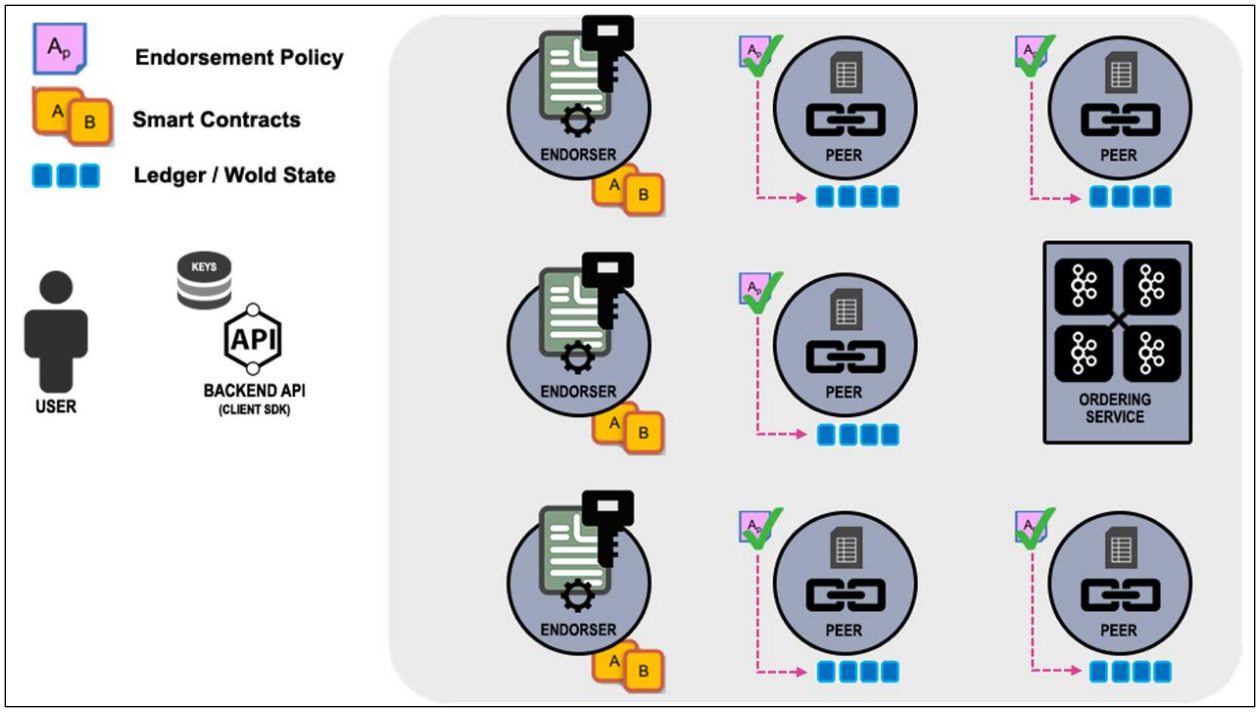

Blockchain Storage
Endorser
Simulates TX
E1
Committer
Applies changes
Peer container
Endorser
Simulates TX
E3
Ledger
Committer
Applies changes
Peer container
Client A
Keys
Fabric SDK
Client B
Keys
Fabric SDK
Orderer
Orderer
Endorser
Simulates TX
E2
Ledger
Ledger
Committer
Applies changes
Peer container
Endorser
Simulates TX
E4
Ledger
Committer
Applies changes
Peer container

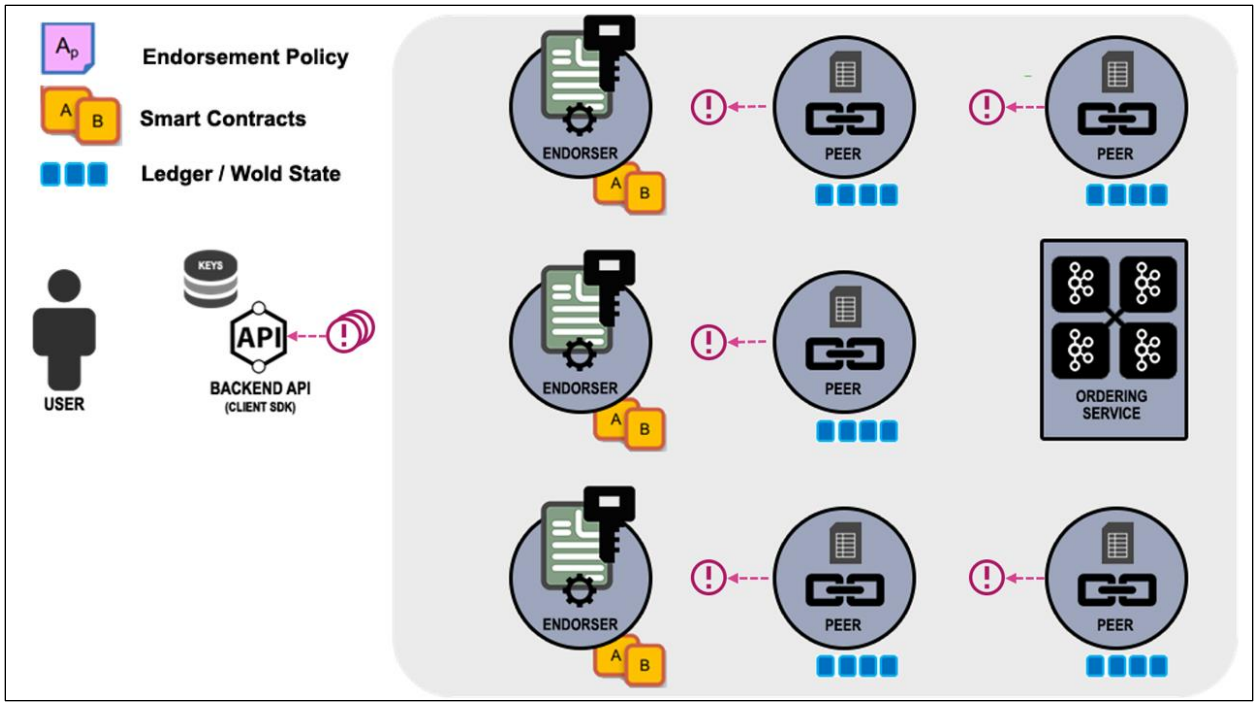

Endorsement Policy
Smart Contracts
Ledger / Wold State
USER
KEYS
API
BACKEND API
(CLIENT SDK)
ENDORSER
ENDORSER
ENDORSER
PEER
PEER
PEER
PEER
PEER
ORDERING SERVICE

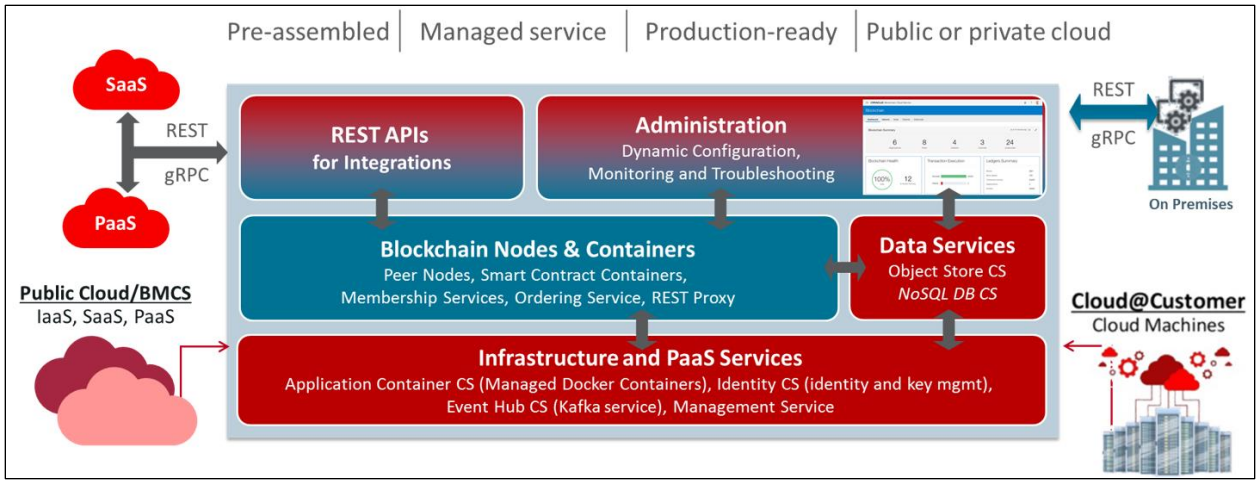

Endorsement Policy
Smart Contracts
Ledger / Wold State
USER
KEYS
API
BACKEND API
(CLIENT SDK)
ENDORSER
PEER
ORDERING SERVICE

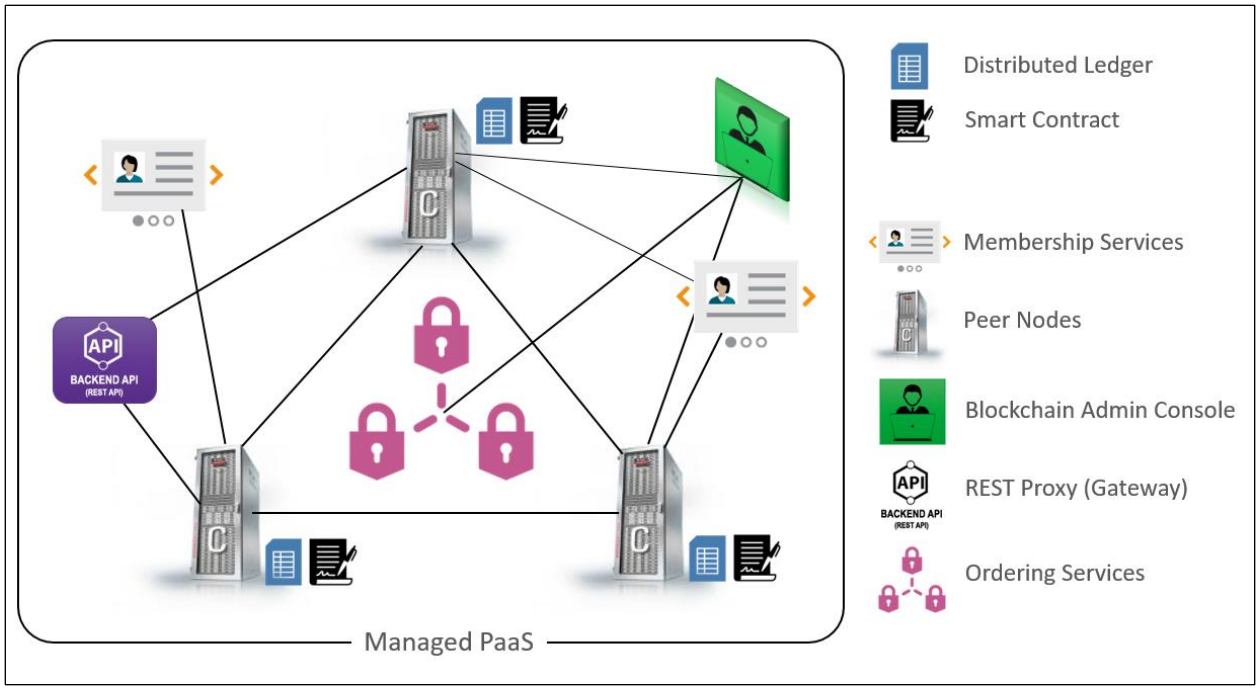

Endorsement Policy
Smart Contracts
Ledger / Wold State
USER
KEYS
API
BACKEND API
(CLIENT SDK)
ENDORSER
PEER
ORDERING SERVICE
Other Applications

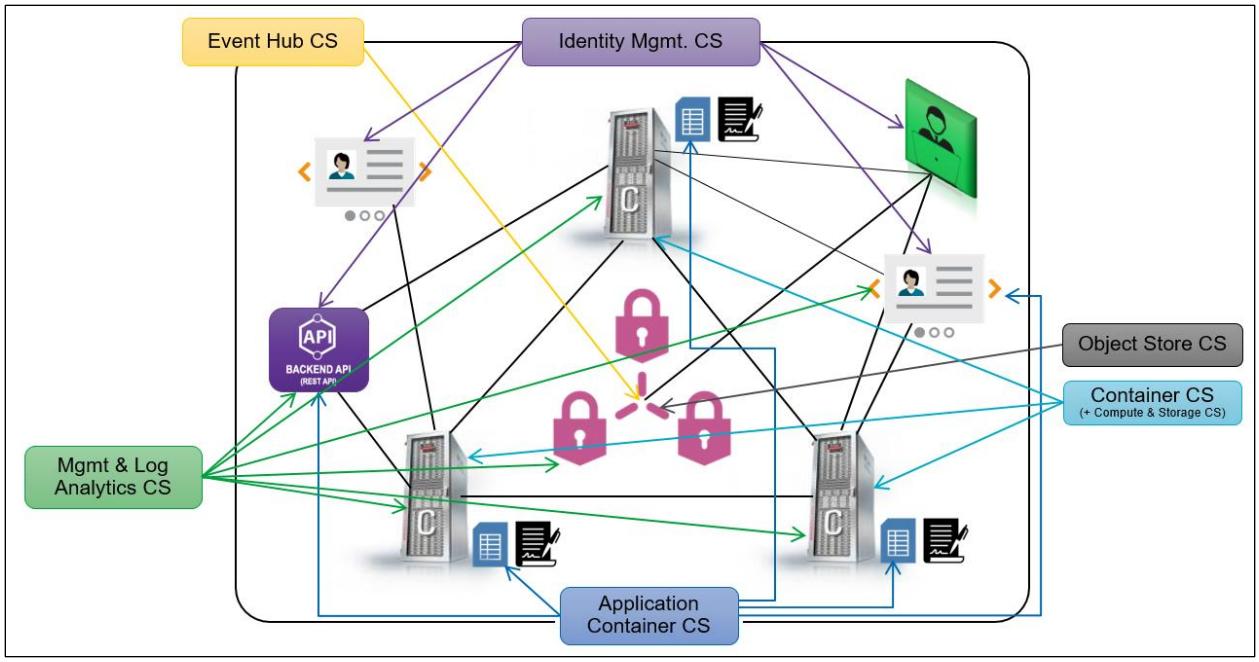

Endorsement Policy
Smart Contracts
Ledger / Wold State
USER
KEYS
API
BACKEND API
(CLIENT SDK)
ENDORSER
PEER
ORDERING SERVICE
Gossip protocol

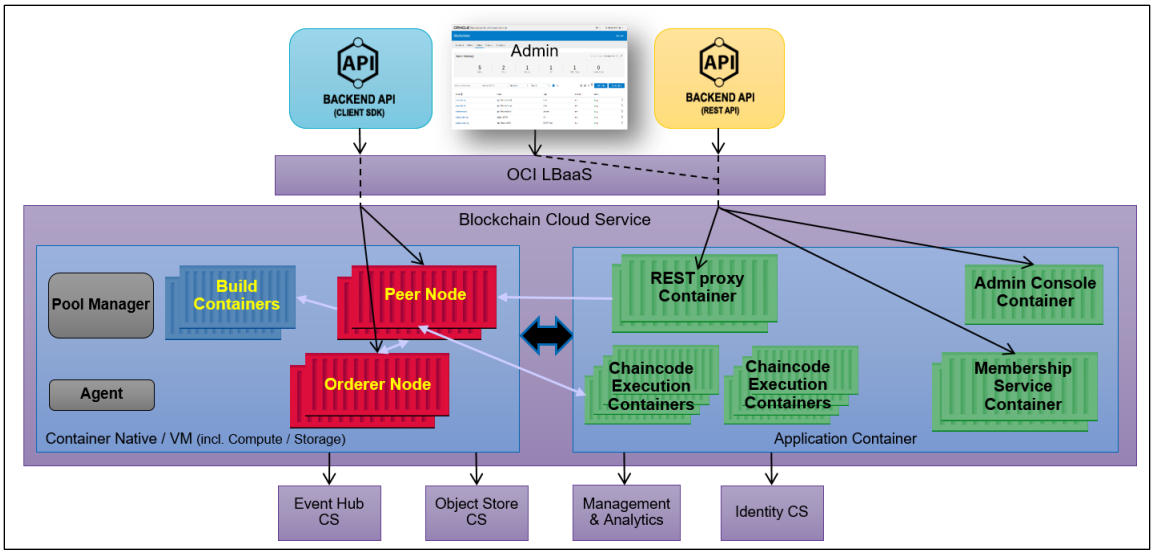

Endorsement Policy
Smart Contracts
Ledger / Wold State
USER
KEYS
API
BACKEND API
(CLIENT SDK)
ENDORSER
PEER
ORDERING SERVICE

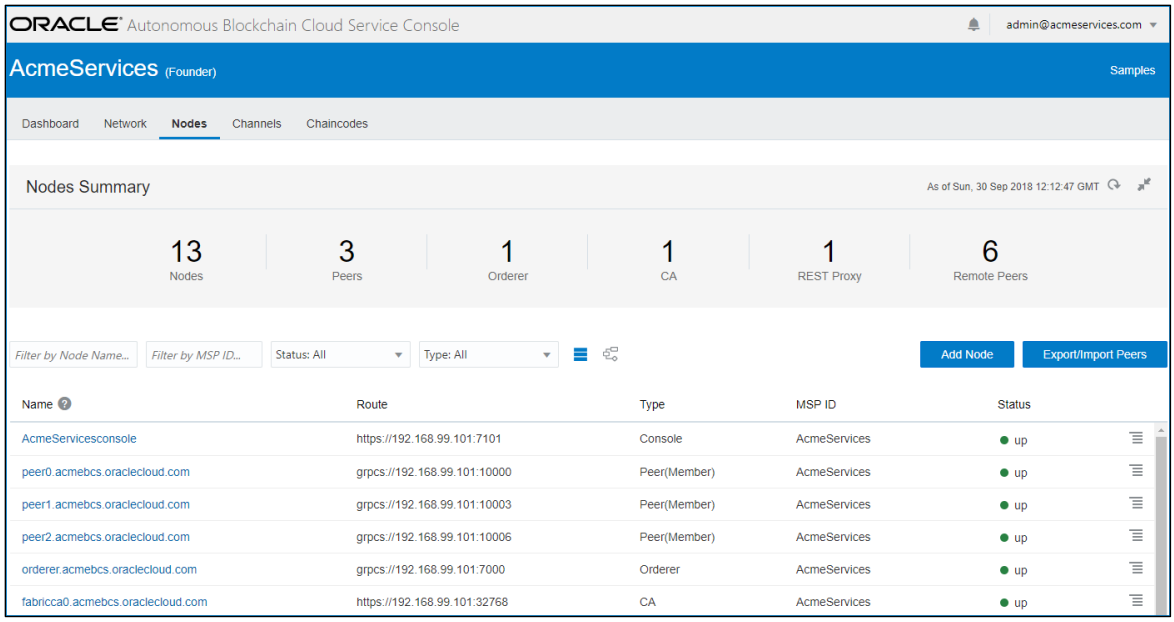

Endorsement Policy
Smart Contracts
Ledger / Wold State
USER
KEYS
API
BACKEND API
(CLIENT SDK)
ENDORSER
PEER
ORDERING SERVICE

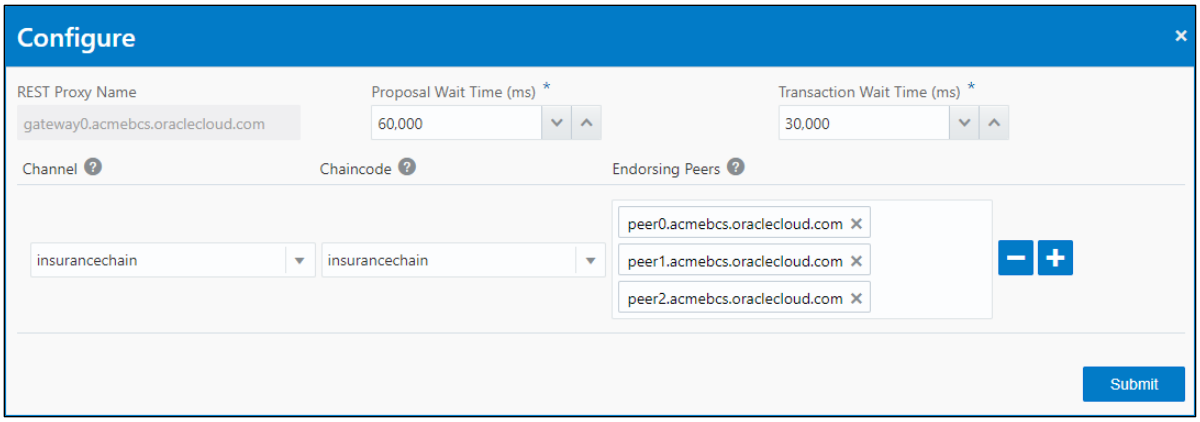

Pre-assembled
Managed service
Production-ready
Public or private cloud
SaaS
PaaS
REST
gRPC
REST APIs for Integrations
Administration
Dynamic Configuration, Monitoring and Troubleshooting
Blockchain Nodes & Containers
Peer Nodes, Smart Contract Containers, Membership Services, Ordering Service, REST Proxy
Data Services
Object Store CS
NoSQL DB CS
Infrastructure and PaaS Services
Application Container CS (Managed Docker Containers), Identity CS (identity and key mgmt), Event Hub CS (Kafka service), Management Service
Public Cloud/BMCS
IaaS, SaaS, PaaS
On Premises
Cloud@Customer
Cloud Machines


Distributed Ledger
Smart Contract
Membership Services
Peer Nodes
Blockchain Admin Console
REST Proxy (Gateway)
Ordering Services
API
BACKEND API
(REST API)
Managed PaaS

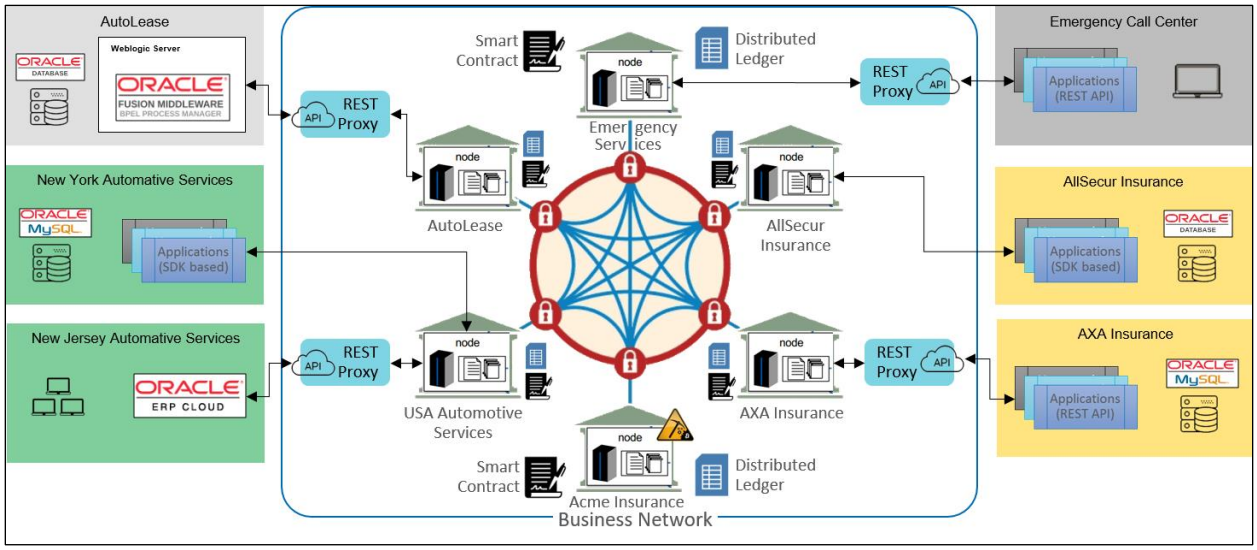

Event Hub CS
Identity Mgmt. CS
Object Store CS
Container CS
(+ Compute & Storage CS)
Mgmt & Log
Analytics CS
Application
Container CS
API
BACKEND API
(REST API)

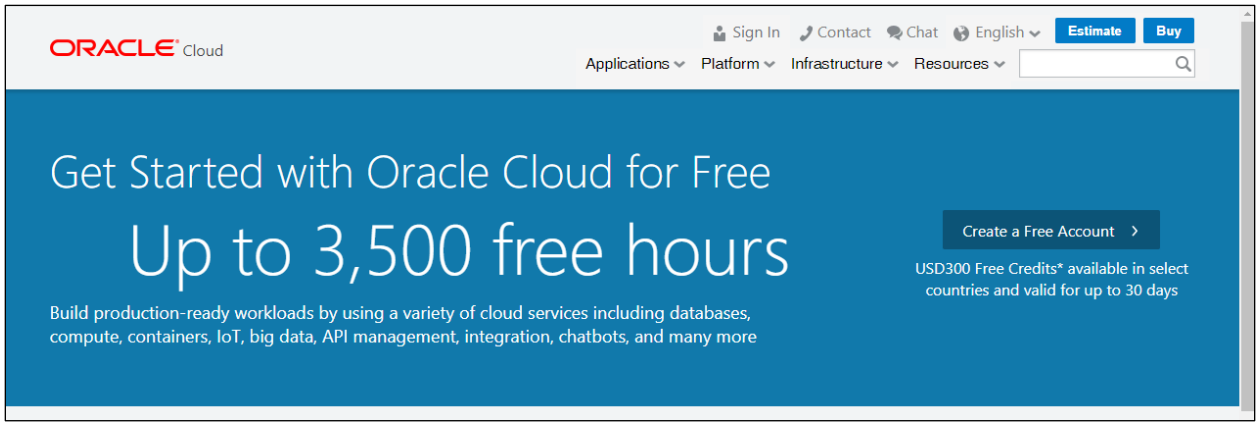

API
BACKEND API
(CLIENT SDK)
Admin
API
BACKEND API
(REST API)
OCI LBaaS
Blockchain Cloud Service
Pool Manager
Build Containers
Peer Node
Agent
Orderer Node
Container Native / VM (incl. Compute / Storage)
REST proxy Container
Admin Console Container
Chaincode Execution Containers
Chaincode Execution Containers
Membership Service Container
Application Container
Event Hub CS
Object Store CS
Management & Analytics
Identity CS

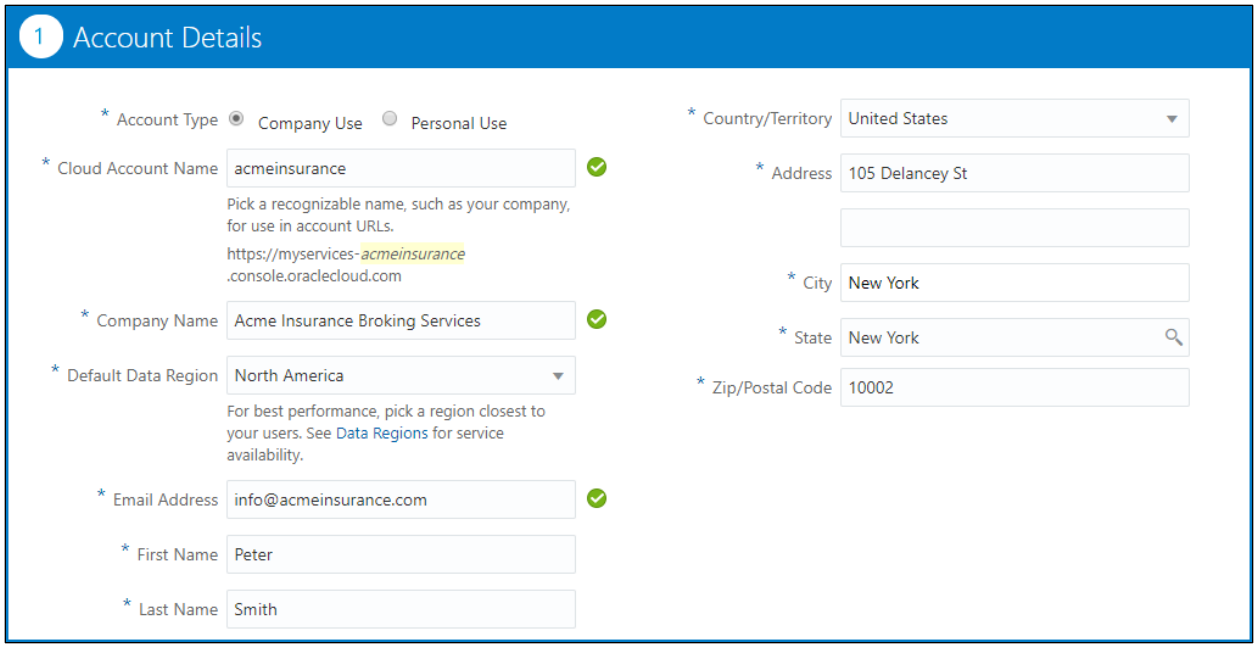

ORACLE Autonomous Blockchain Cloud Service Console
admin@acmeservices.com
AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Nodes Summary
As of Sun, 30 Sep 2018 12:12:47 GMT
13 Nodes
3 Peers
1 Orderer
1 CA
1 REST Proxy
6 Remote Peers
Filter by Node Name...
Filter by MSP ID...
Status: All
Type: All
Add Node
Export/Import Peers
Name
Route
Type
MSP ID
Status
AcmeServicesconsole https://192.168.99.101:7101 Console AcmeServices up
peer0.acmebcs.oraclecloud.com grpcs://192.168.99.101:10000 Peer(Member) AcmeServices up
peer1.acmebcs.oraclecloud.com grpcs://192.168.99.101:10003 Peer(Member) AcmeServices up
peer2.acmebcs.oraclecloud.com grpcs://192.168.99.101:10006 Peer(Member) AcmeServices up
orderer.acmebcs.oraclecloud.com grpcs://192.168.99.101:7000 Orderer AcmeServices up
fabricca0.acmebcs.oraclecloud.com https://192.168.99.101:32768 CA AcmeServices up

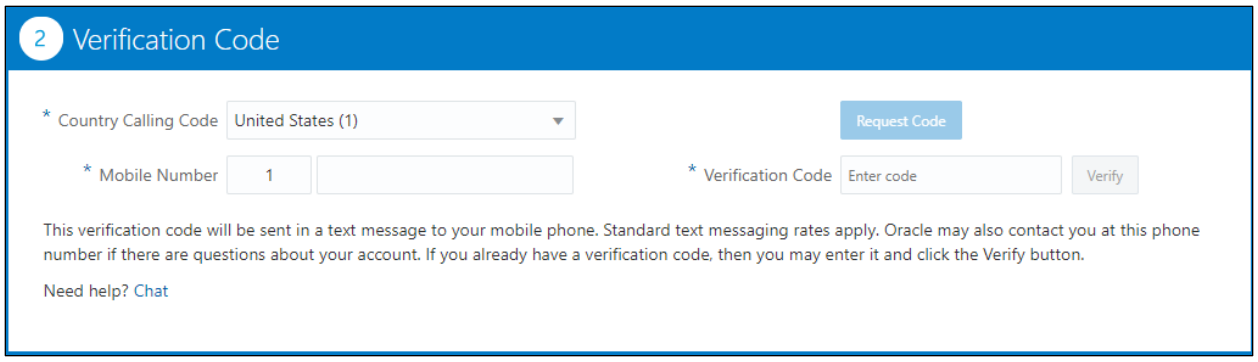

Configure
REST Proxy Name
gateway0.acmebcs.oraclecloud.com
Proposal Wait Time (ms) *
60,000
Transaction Wait Time (ms) *
30,000
Channel
Chaincode
Endorsing Peers
insurancechain
insurancechain
peer0.acmebcs.oraclecloud.com
peer1.acmebcs.oraclecloud.com
peer2.acmebcs.oraclecloud.com
Submit

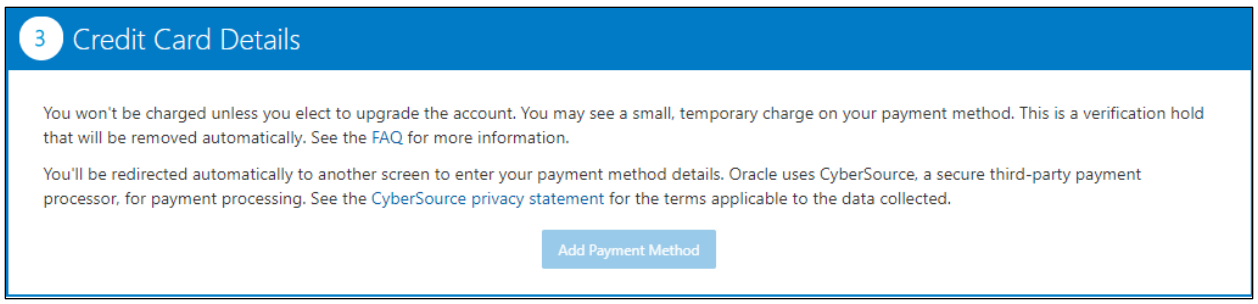
Chapter 11: Setting Up Your Permissioned Blockchain



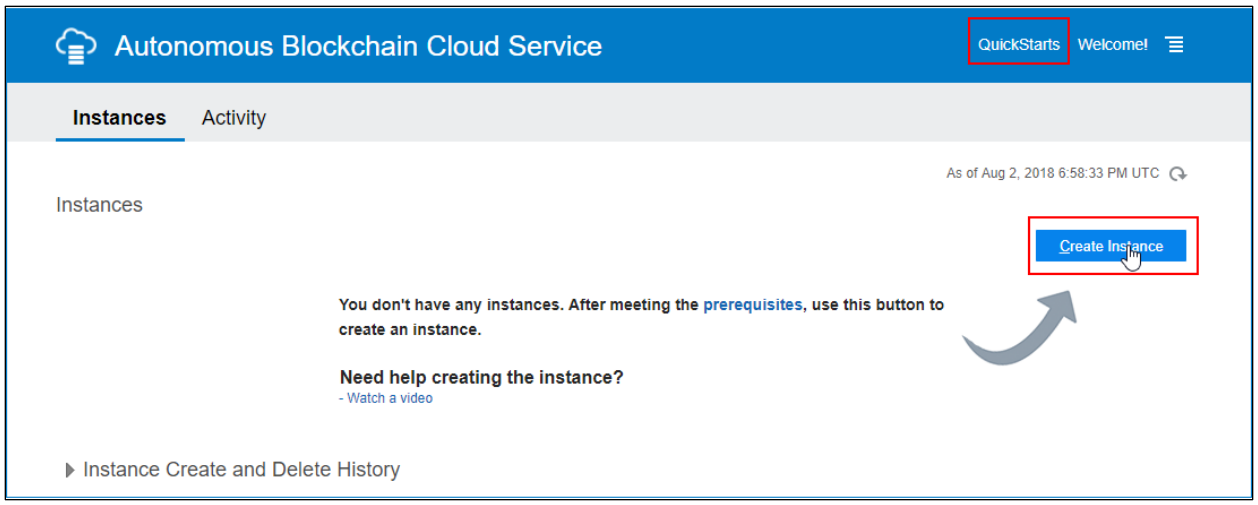


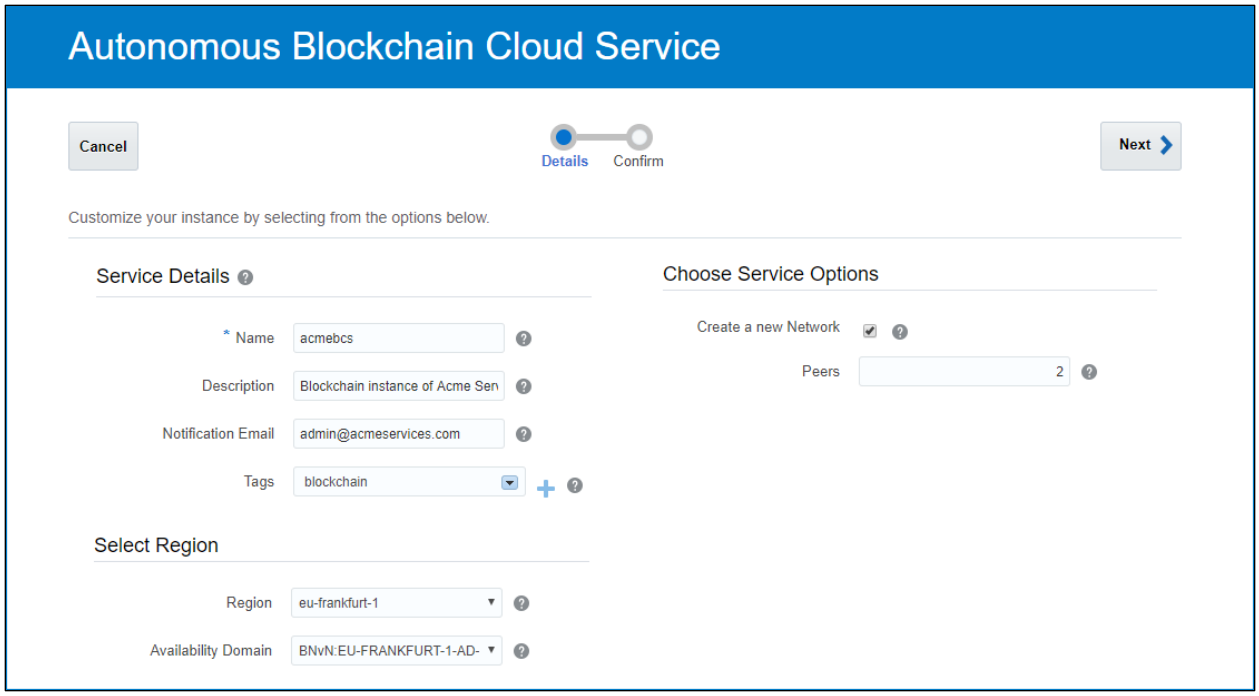

1 Account Details
* Account Type Company Use Personal Use
* Cloud Account Name acmeinsurance
Pick a recognizable name, such as your company, for use in account URLs.
https://myservices-acmeinsurance.console.oraclecloud.com
* Company Name Acme Insurance Broking Services
* Default Data Region North America
For best performance, pick a region closest to your users. See Data Regions for service availability.
* Email Address info@acmeinsurance.com
* First Name Peter
* Last Name Smith
* Country/Territory United States
* Address 105 Delancey St
* City New York
* State New York
* Zip/Postal Code 10002

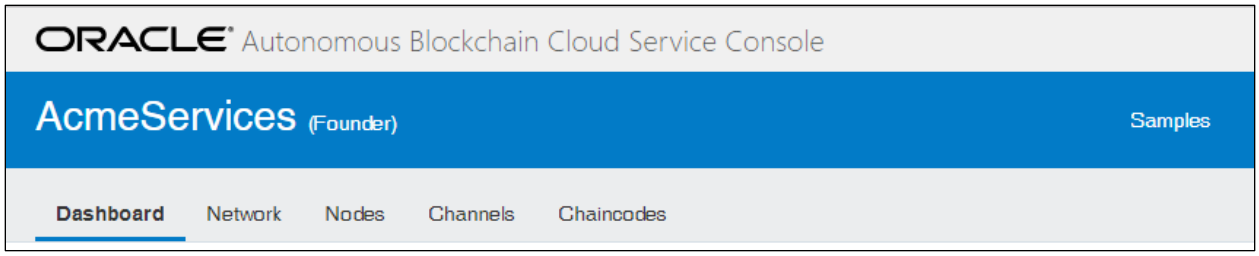

2 Verification Code
* Country Calling Code United States (1)
* Mobile Number 1
Request Code
* Verification Code Enter code
Verify
This verification code will be sent in a text message to your mobile phone. Standard text messaging rates apply. Oracle may also contact you at this phone number if there are questions about your account. If you already have a verification code, then you may enter it and click the Verify button.
Need help? Chat

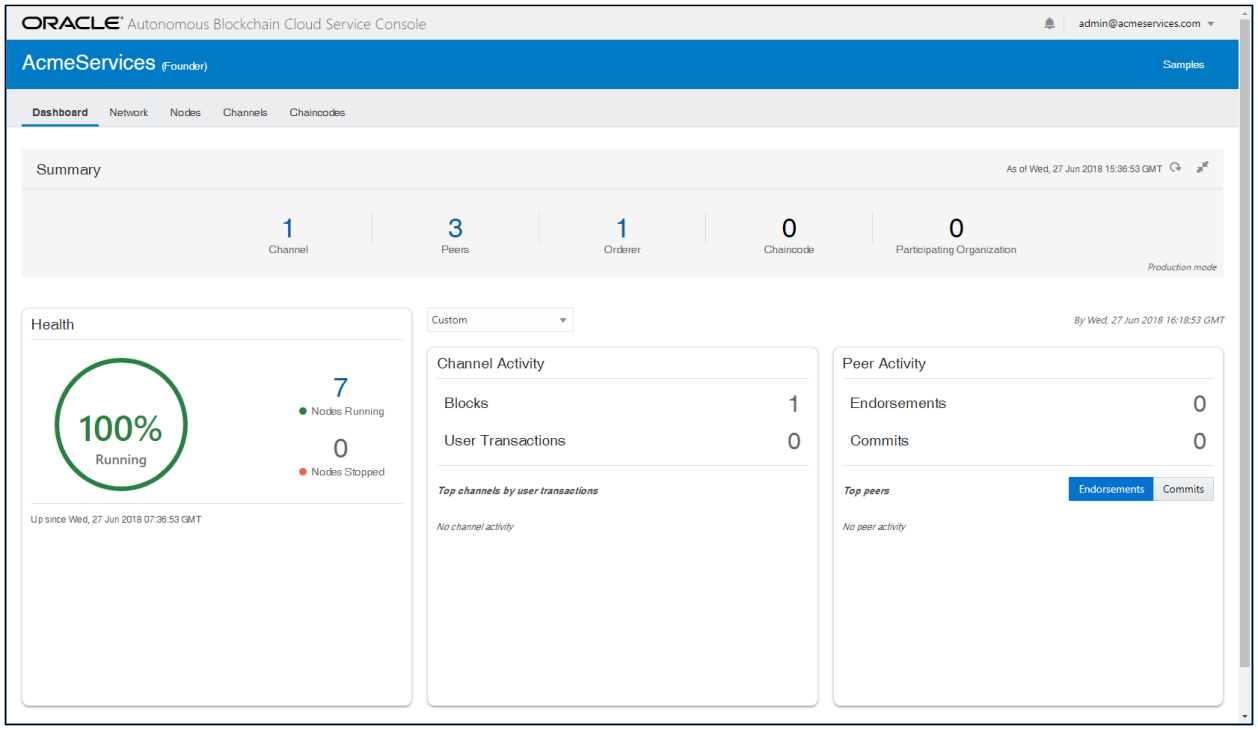

3 Credit Card Details
You won't be charged unless you elect to upgrade the account. You may see a small, temporary charge on your payment method. This is a verification hold that will be removed automatically. See the FAQ for more information.
You'll be redirected automatically to another screen to enter your payment method details. Oracle uses CyberSource, a secure third-party payment processor, for payment processing. See the CyberSource privacy statement for the terms applicable to the data collected.
Add Payment Method

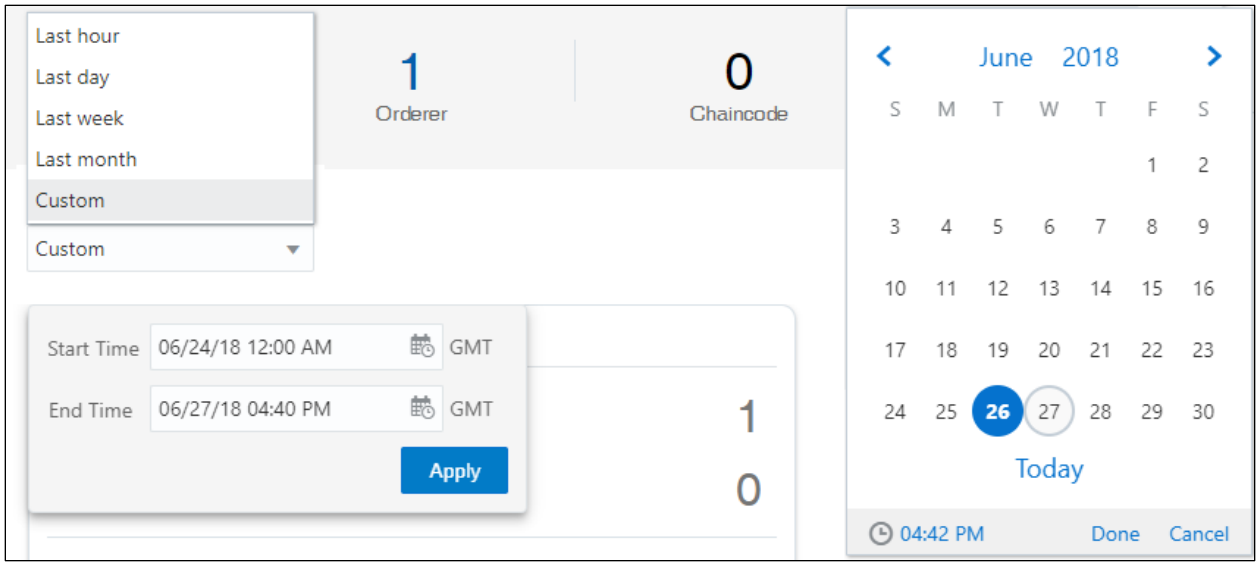
Create Instance
Select the Cloud Service you want to start.
Featured Services
All Services
blockchain
Application Development
Create
Autonomous Blockchain
Subscription Id: 1781464

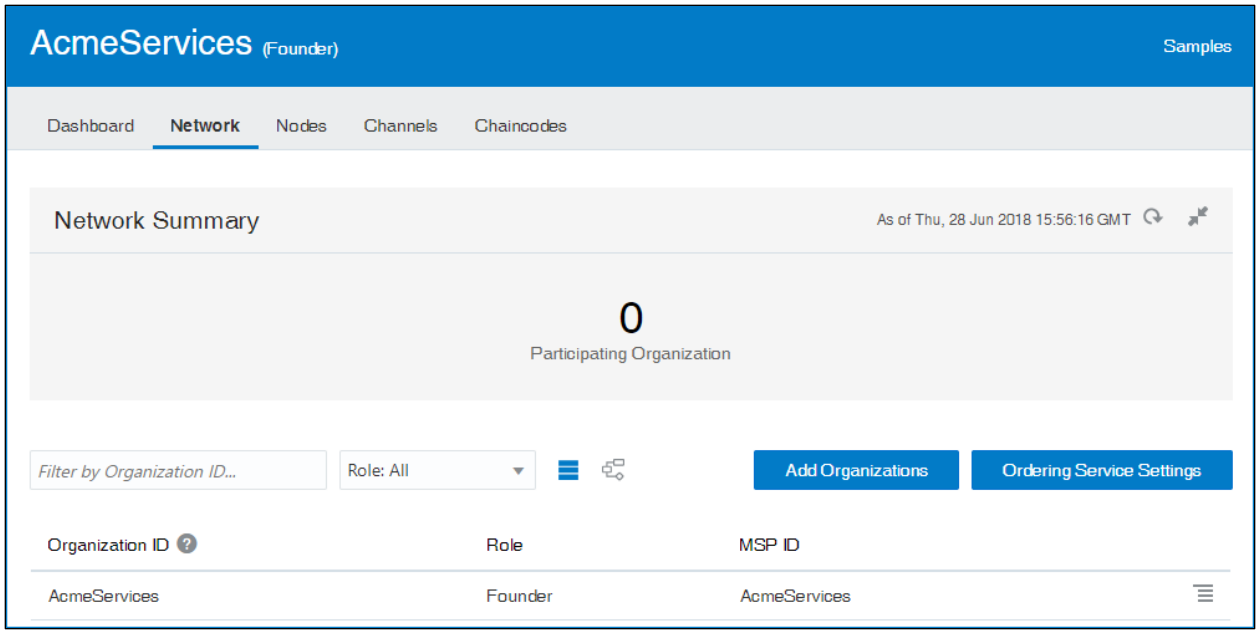

Autonomous Blockchain Cloud Service
QuickStarts
Welcome!
Instances
Activity
As of Aug 2, 2018 6:58:33 PM UTC
Instances
Create Instance
You don't have any instances. After meeting the prerequisites, use this button to create an instance.
Need help creating the instance?
- Watch a video
Instance Create and Delete History

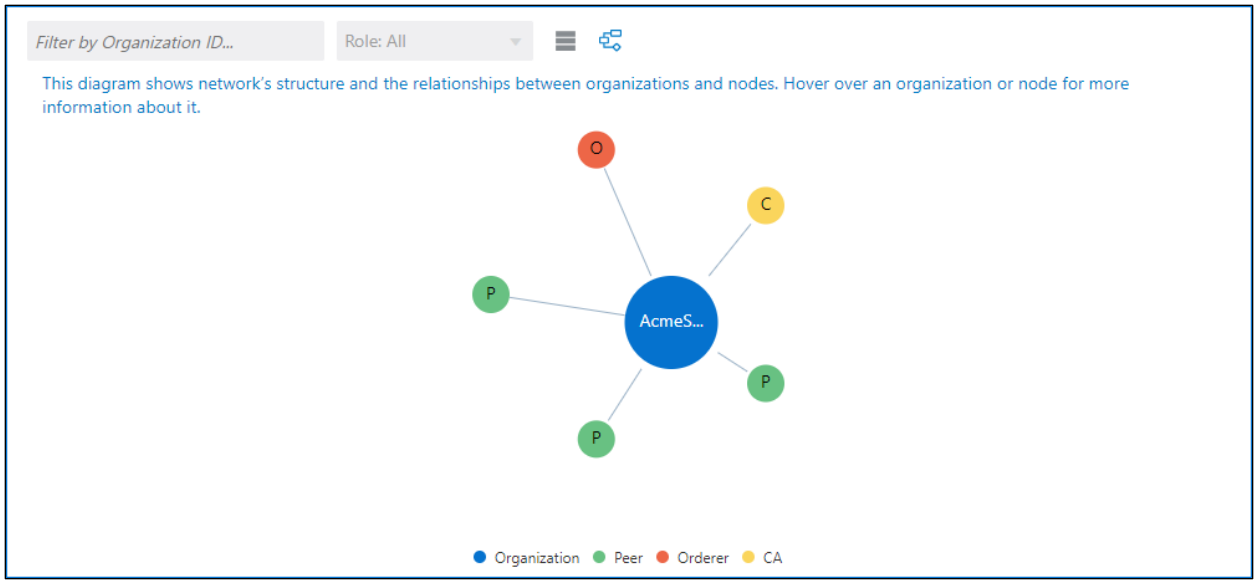

Autonomous Blockchain Cloud Service
Cancel
Details
Confirm
Next
Customize your instance by selecting from the options below.
Service Details
* Name
acmebcs
Description
Blockchain instance of Acme Sen
Notification Email
admin@acmeservices.com
Tags
blockchain
Select Region
Region
eu-frankfurt-1
Availability Domain
BNvN:EU-FRANKFURT-1-AD-
Choose Service Options
Create a new Network
Peers
2

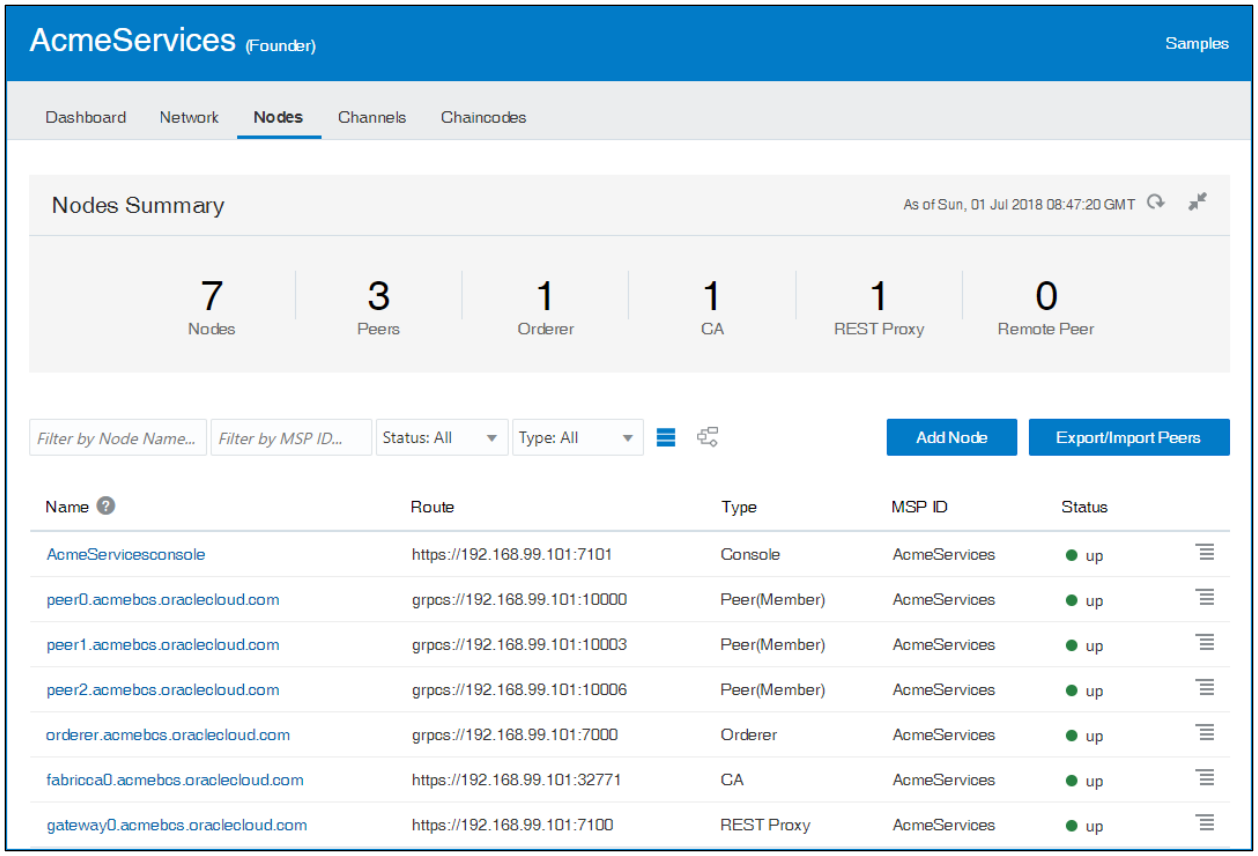

ORACLE Autonomous Blockchain Cloud Service Console
AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes

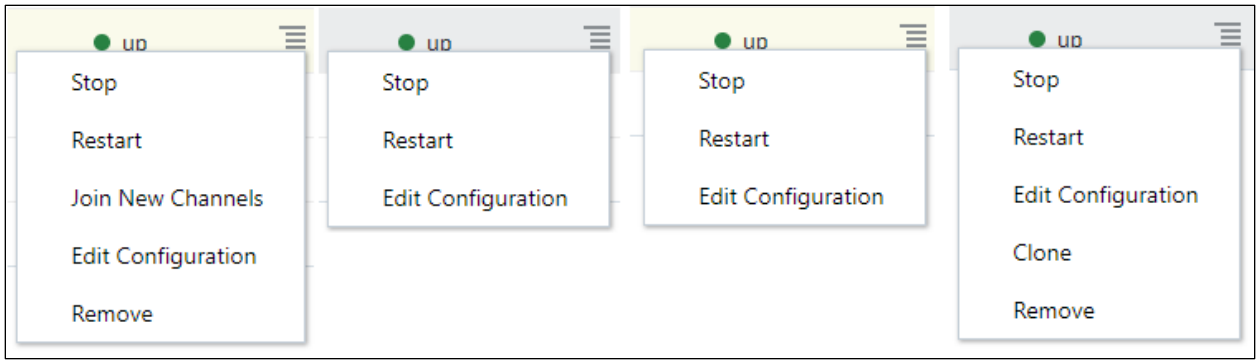

ORACLE Autonomous Blockchain Cloud Service Console
admin@acmeservices.com
AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Summary
As of Wed, 27 Jun 2018 15:36:53 GMT
1
Channel
3
Peers
1
Orderer
0
Chaincode
0
Participating Organization
Production mode
Health
100%
Running
7
Nodes Running
0
Nodes Stopped
Up since Wed, 27 Jun 2018 07:36:53 GMT
Custom
By Wed, 27 Jun 2018 16:18:53 GMT
Channel Activity
Blocks
1
User Transactions
0
Top channels by user transactions
No channel activity
Peer Activity
Endorsements
0
Commits
0
Top peers
Endorsements
Commits
No peer activity

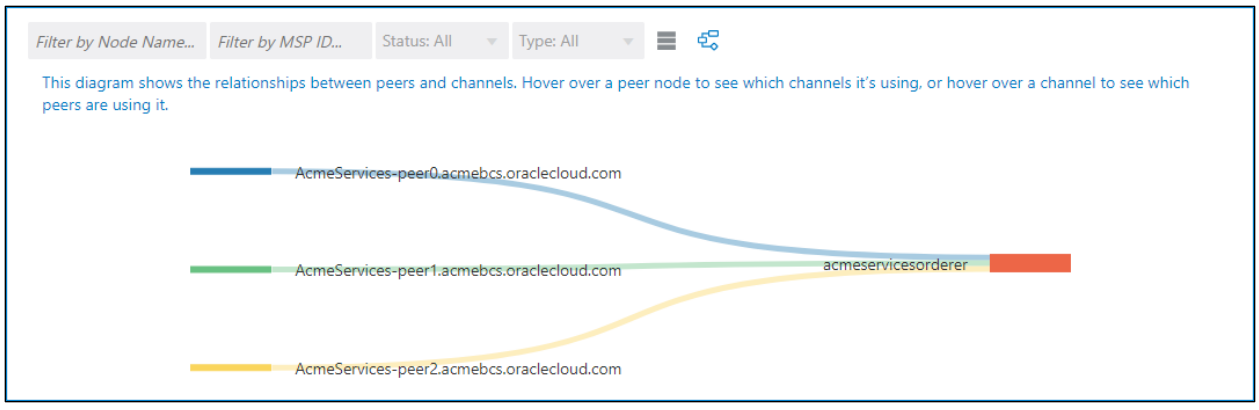

Last hour
Last day
Last week
Last month
Custom
Custom
1
Orderer
0
Chaincode
Start Time
06/24/18 12:00 AM
GMT
End Time
06/27/18 04:40 PM
GMT
Apply
1
0
June
2018
S
M
T
W
T
F
S
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
Today
04:42 PM
Done
Cancel

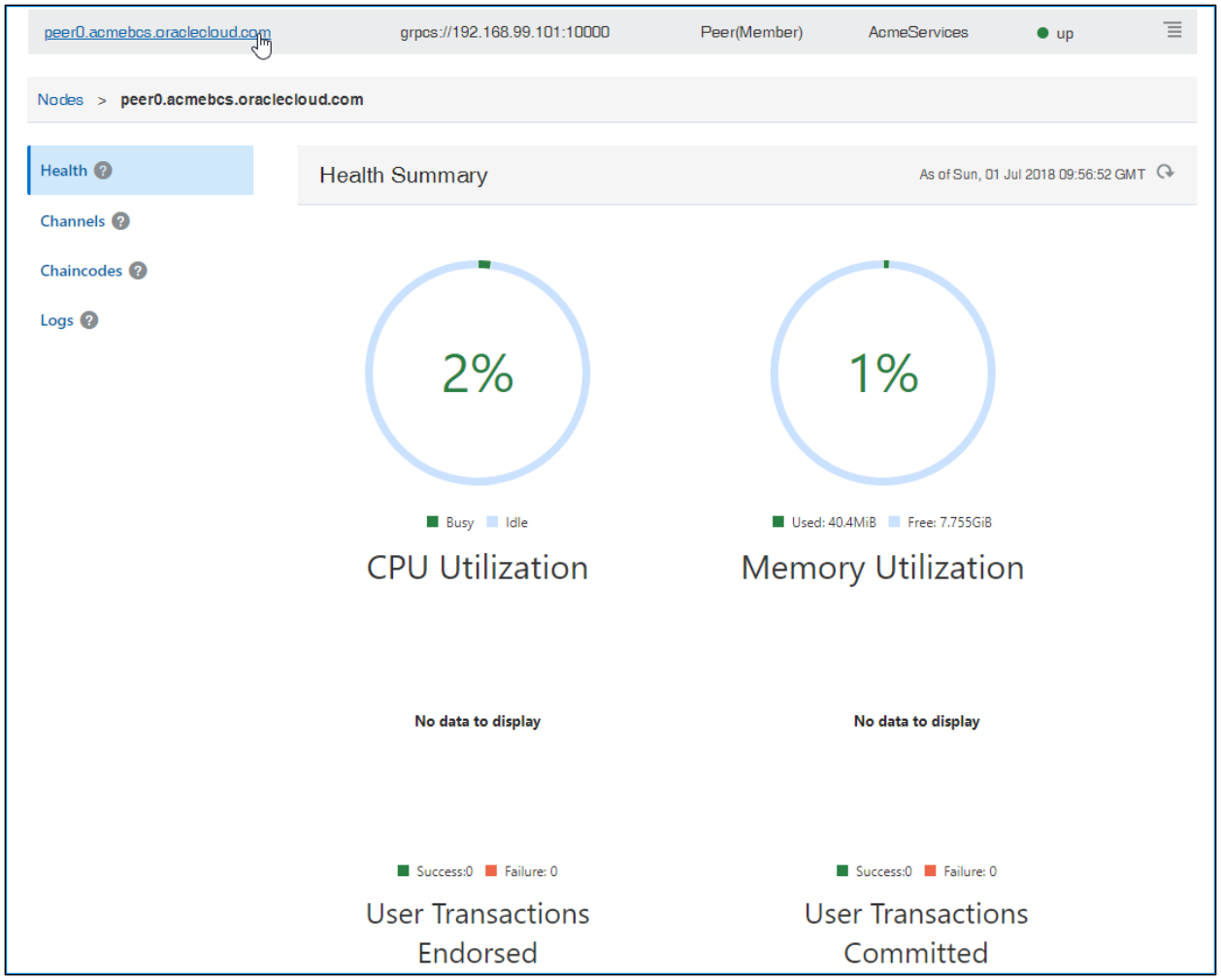

AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Network Summary
As of Thu, 28 Jun 2018 15:56:16 GMT
0
Participating Organization
Filter by Organization ID...
Role: All
Add Organizations
Ordering Service Settings
Organization ID
Role
MSP ID
AcmeServices
Founder
AcmeServices

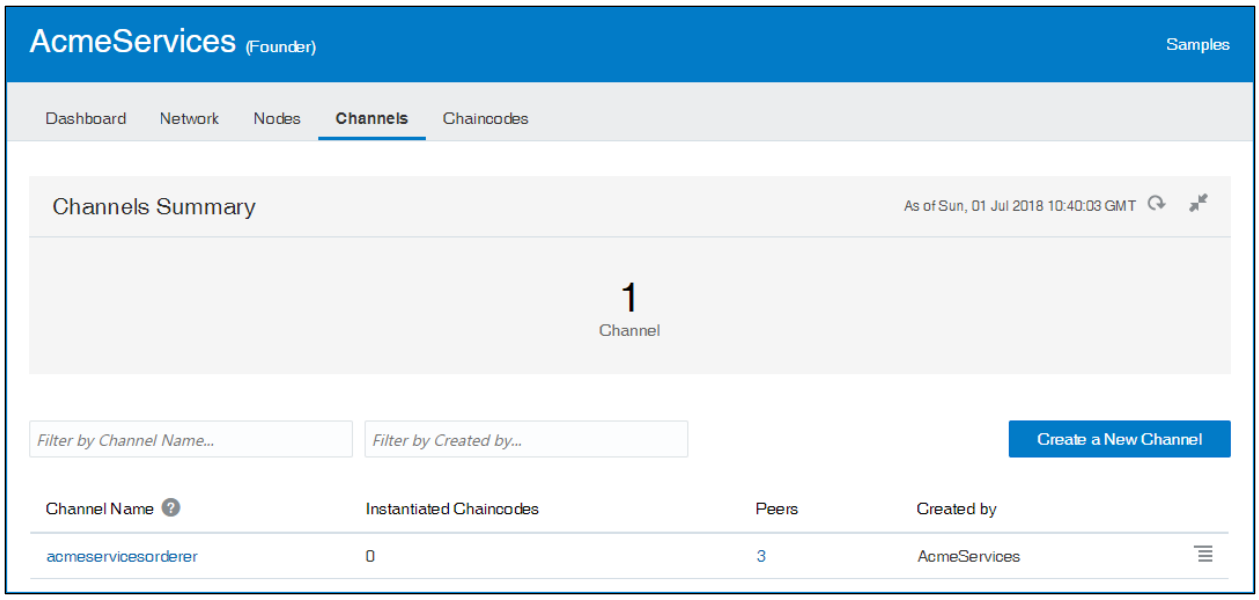

Filter by Organization ID...
Role: All
This diagram shows network's structure and the relationships between organizations and nodes. Hover over an organization or node for more information about it.
O
C
P
AcmeS...
P
P
Organization
Peer
Orderer
CA

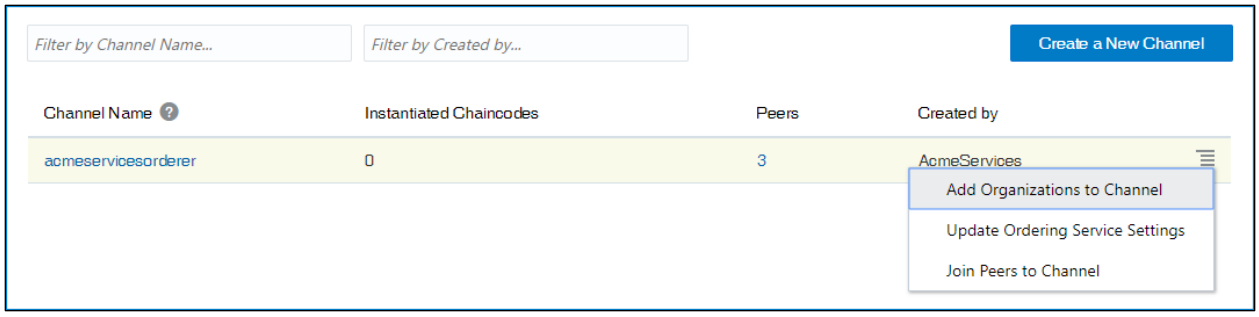

AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Nodes Summary
As of Sun, 01 Jul 2018 08:47:20 GMT
7
Nodes
3
Peers
1
Orderer
1
CA
1
REST Proxy
0
Remote Peer
Filter by Node Name...
Filter by MSP ID...
Status: All
Type: All
Add Node
Export/Import Peers
Name
Route
Type
MSP ID
Status
AcmeServicesconsole
https://192.168.99.101:7101
Console
AcmeServices
up
peer0.acmebcs.oraclecloud.com
grpcs://192.168.99.101:10000
Peer(Member)
AcmeServices
up
peer1.acmebcs.oraclecloud.com
grpcs://192.168.99.101:10003
Peer(Member)
AcmeServices
up
peer2.acmebcs.oraclecloud.com
grpcs://192.168.99.101:10006
Peer(Member)
AcmeServices
up
orderer.acmebcs.oraclecloud.com
grpcs://192.168.99.101:7000
Orderer
AcmeServices
up
fabricca0.acmebcs.oraclecloud.com
https://192.168.99.101:32771
CA
AcmeServices
up
gateway0.acmebcs.oraclecloud.com
https://192.168.99.101:7100
REST Proxy
AcmeServices
up

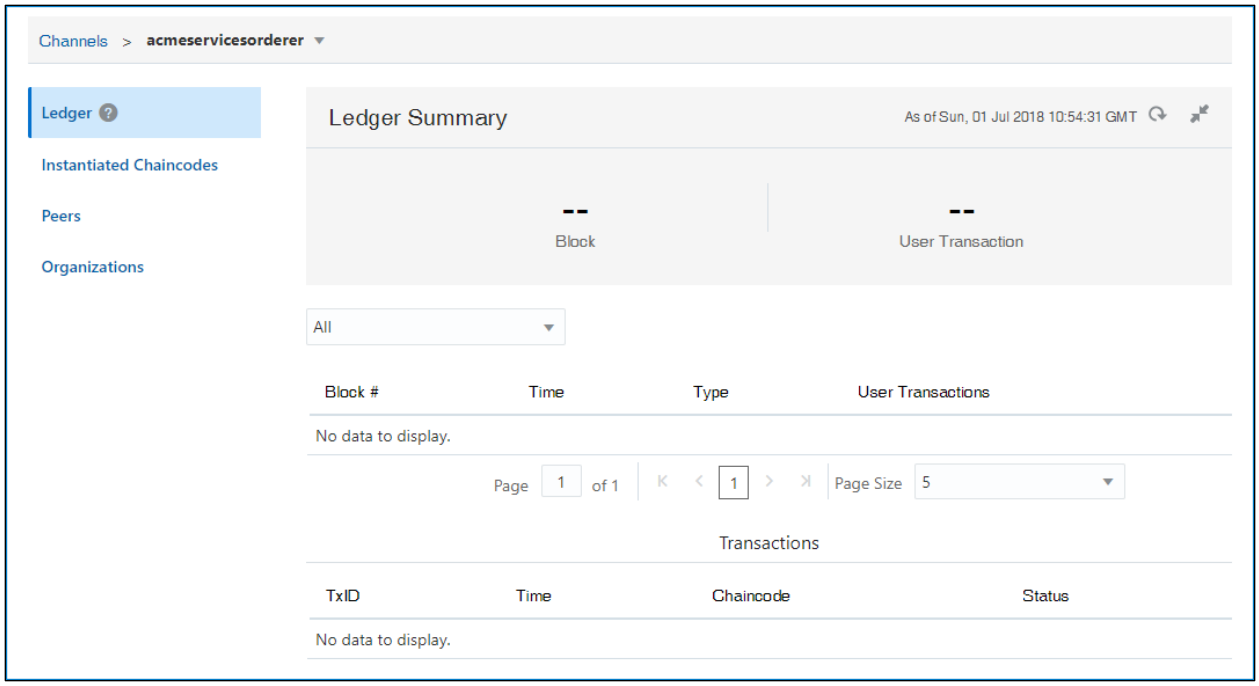

up
Stop
Restart
Join New Channels
Edit Configuration
Remove
up
Stop
Restart
Edit Configuration
up
Stop
Restart
Edit Configuration
up
Stop
Restart
Edit Configuration
Clone
Remove

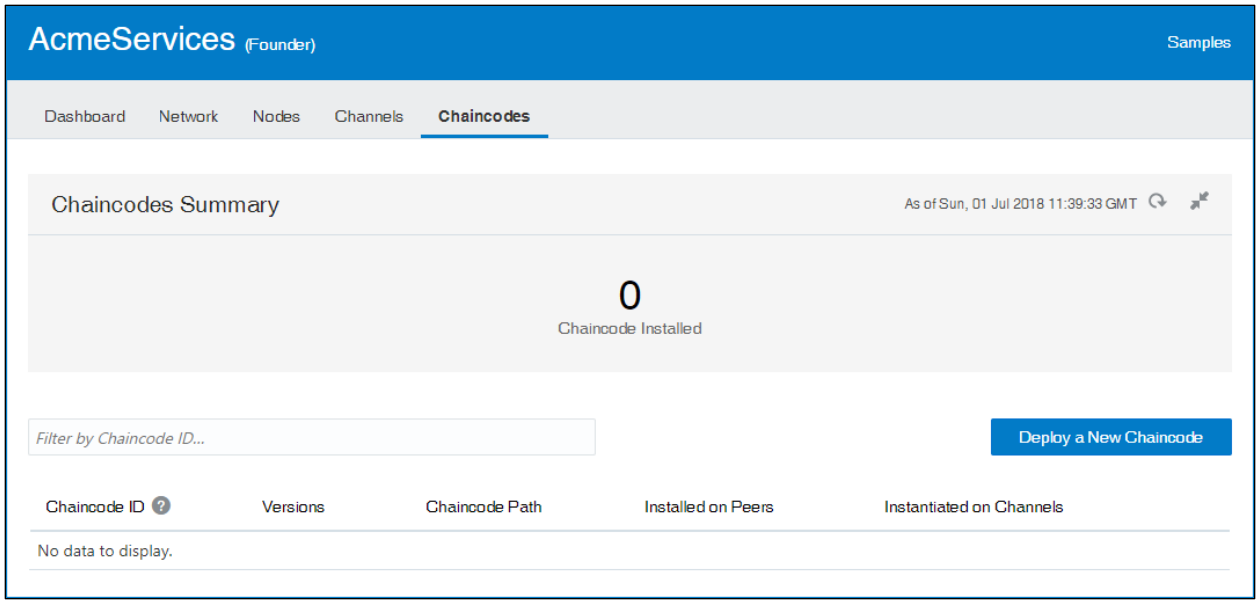

Filter by Node Name...
Filter by MSP ID...
Status: All
Type: All
This diagram shows the relationships between peers and channels. Hover over a peer node to see which channels it's using, or hover over a channel to see which peers are using it.
AcmeServices-peer0.acmebcs.oraclecloud.com
AcmeServices-peer1.acmebcs.oraclecloud.com
AcmeServices-peer2.acmebcs.oraclecloud.com
acmeservicesorderer

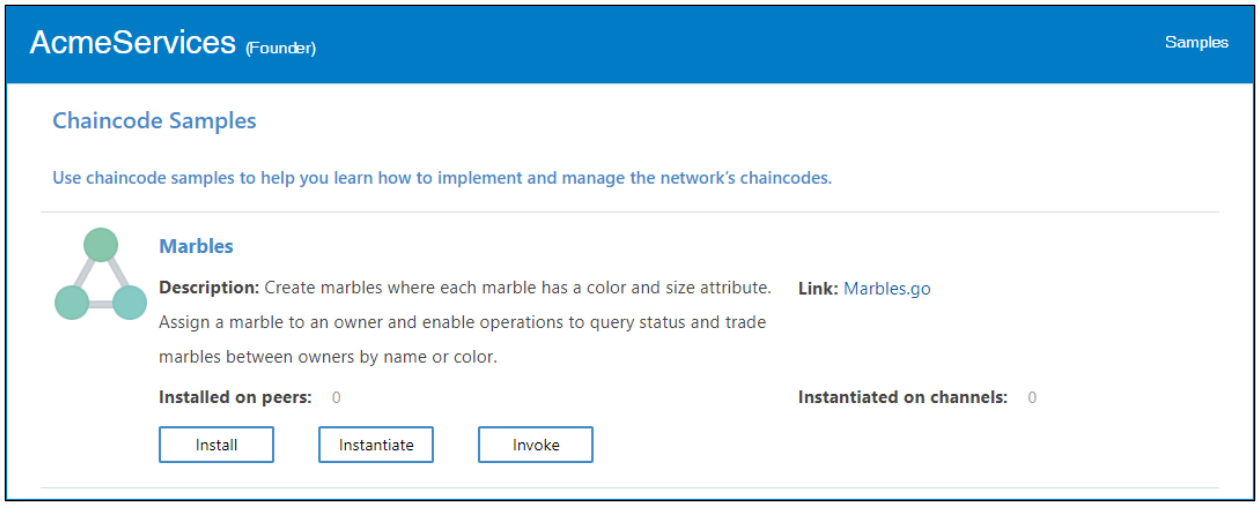

peer0.acmebcs.oraclecloud.com
grpcs://192.168.99.101:10000
Peer(Member)
AcmeServices
up
Nodes > peer0.acmebcs.oraclecloud.com
Health
Channels
Chaincodes
Logs
Health Summary
As of Sun, 01 Jul 2018 09:56:52 GMT
2%
Busy
Idle
CPU Utilization
1%
Used: 40.4MiB
Free: 7.755GiB
Memory Utilization
No data to display
No data to display
Success:0
Failure: 0
User Transactions Endorsed
Success:0
Failure: 0
User Transactions Committed

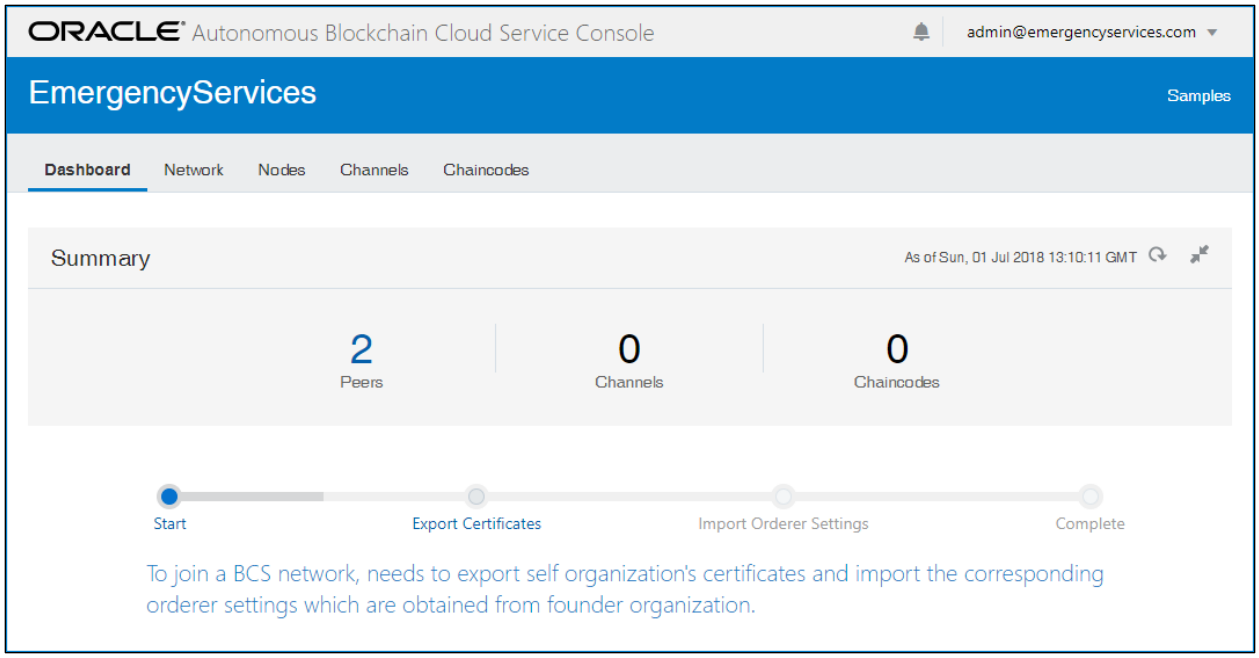

AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Channels Summary
As of Sun, 01 Jul 2018 10:40:03 GMT
1
Channel
Filter by Channel Name...
Filter by Created by...
Create a New Channel
Channel Name
Instantiated Chaincodes
Peers
Created by
acmeservicesorderer
0
3
AcmeServices

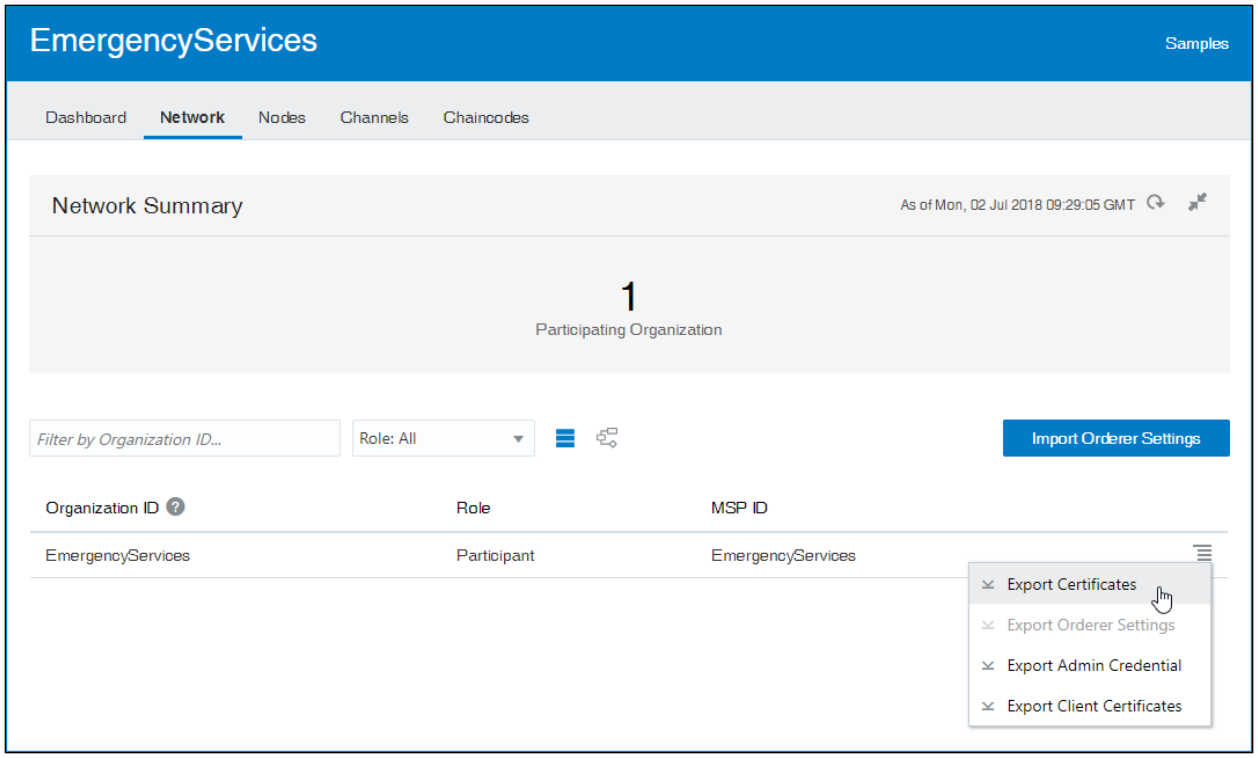

Filter by Channel Name...
Filter by Created by...
Create a New Channel
Channel Name
Instantiated Chaincodes
Peers
Created by
acmeservicesorderer
0
3
AcmeServices
Add Organizations to Channel
Update Ordering Service Settings
Join Peers to Channel


Channels > acmeservicesorderer
Ledger
Instantiated Chaincodes
Peers
Organizations
Ledger Summary
As of Sun, 01 Jul 2018 10:54:31 GMT
--
Block
--
User Transaction
All
Block #
Time
Type
User Transactions
No data to display.
Page 1 of 1
Page Size 5
Transactions
TxID
Time
Chaincode
Status
No data to display.

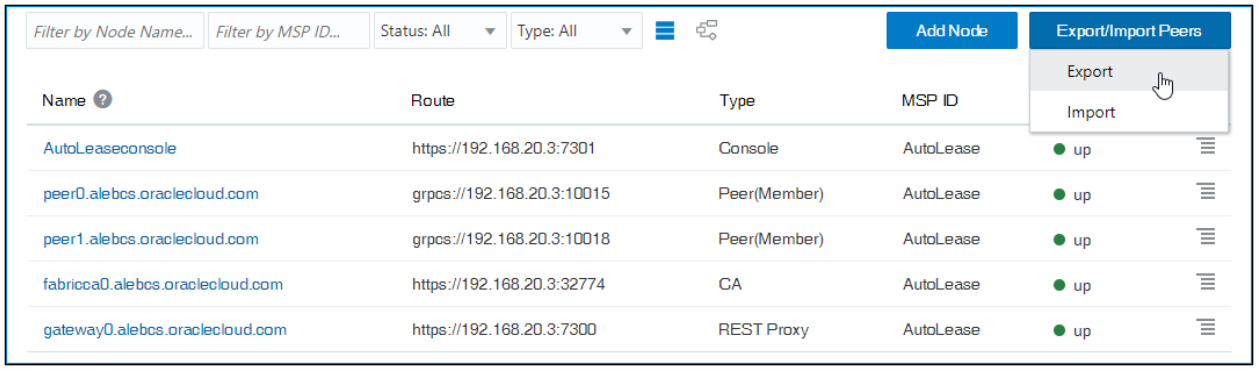

AcmeServices (Founder)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Chaincodes Summary
As of Sun, 01 Jul 2018 11:39:33 GMT
0
Chaincode Installed
Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
Versions
Chaincode Path
Installed on Peers
Instantiated on Channels
No data to display.

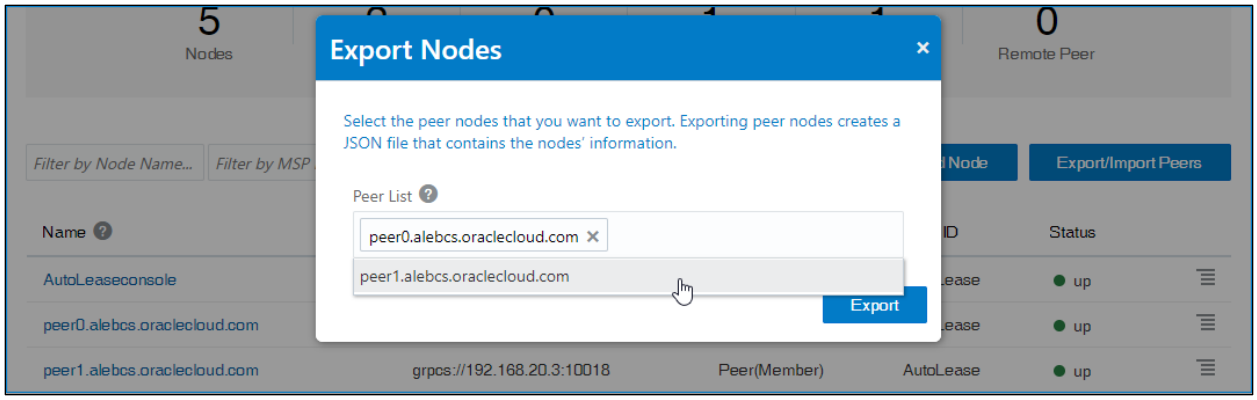

AcmeServices (Founder)
Samples
Chaincode Samples
Use chaincode samples to help you learn how to implement and manage the network's chaincodes.
Marbles
Description: Create marbles where each marble has a color and size attribute. Assign a marble to an owner and enable operations to query status and trade marbles between owners by name or color.
Link: Marbles.go
Installed on peers: 0
Instantiated on channels: 0
Install
Instantiate
Invoke


ORACLE Autonomous Blockchain Cloud Service Console
admin@emergencyservices.com
EmergencyServices
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Summary
As of Sun, 01 Jul 2018 13:10:11 GMT
2
Peers
0
Channels
0
Chaincodes
Start
Export Certificates
Import Orderer Settings
Complete
To join a BCS network, needs to export self organization's certificates and import the corresponding orderer settings which are obtained from founder organization.


EmergencyServices
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Network Summary
As of Mon, 02 Jul 2018 09:29:05 GMT
1
Participating Organization
Filter by Organization ID...
Role: All
Import Orderer Settings
Organization ID
Role
MSP ID
EmergencyServices
Participant
EmergencyServices
Export Certificates
Export Orderer Settings
Export Admin Credential
Export Client Certificates

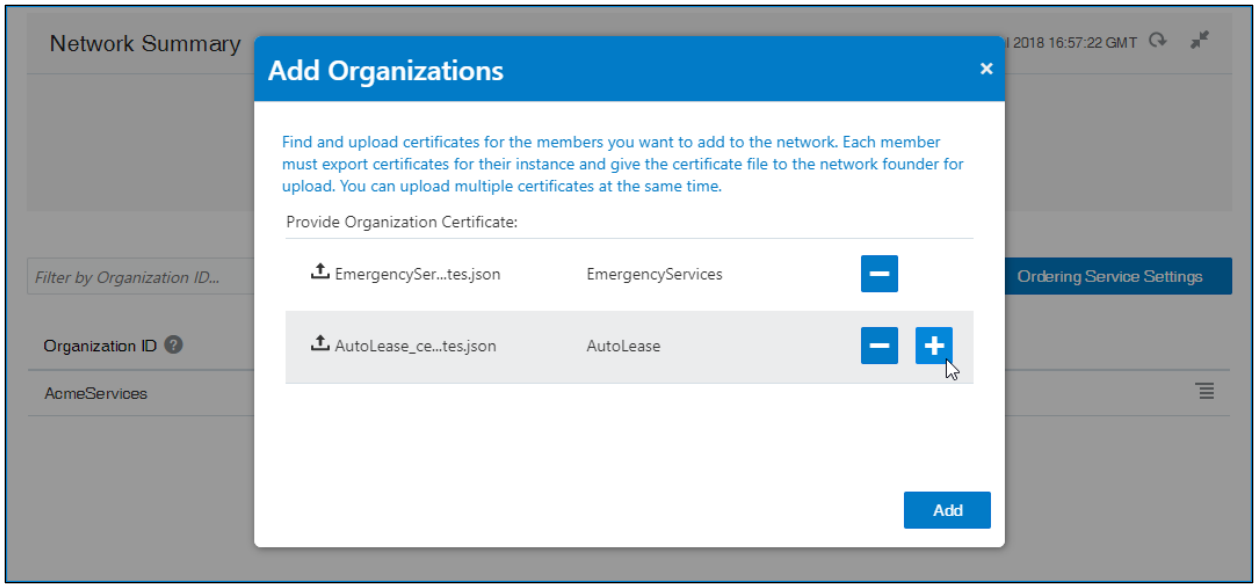
AXAInsurance_certificates.json
Type: JSON File
Date modified: 2-7-2018 13:19
Size: 2,66 KB
AllsecurInsurance_certificates.json
Type: JSON File
Date modified: 2-7-2018 13:19
Size: 2,67 KB
AutoLease_certificates.json
Type: JSON File
Date modified: 2-7-2018 13:18
Size: 2,66 KB
EmergencyServices_certificates.json
Type: JSON File
Date modified: 2-7-2018 13:17
Size: 2,66 KB

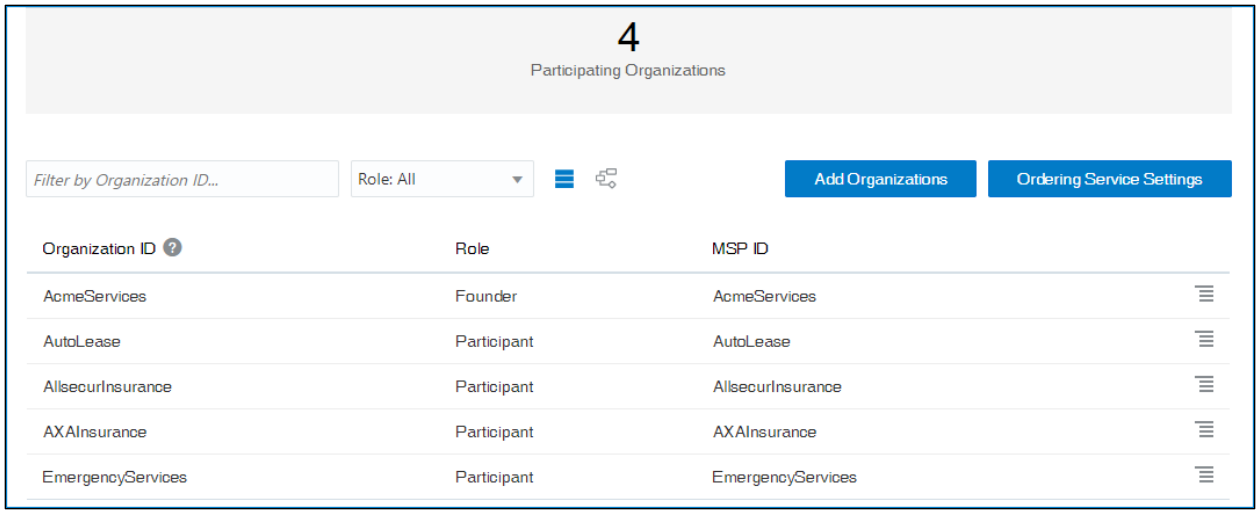

Filter by Node Name...
Filter by MSP ID...
Status: All
Type: All
Add Node
Export/Import Peers
Export
Import
Name
Route
Type
MSP ID
AutoLeaseconsole
https://192.168.20.3:7301
Console
AutoLease
up
peer0.alebcs.oraclecloud.com
grpcs://192.168.20.3:10015
Peer(Member)
AutoLease
up
peer1.alebcs.oraclecloud.com
grpcs://192.168.20.3:10018
Peer(Member)
AutoLease
up
fabricca0.alebcs.oraclecloud.com
https://192.168.20.3:32774
CA
AutoLease
up
gateway0.alebcs.oraclecloud.com
https://192.168.20.3:7300
REST Proxy
AutoLease
up

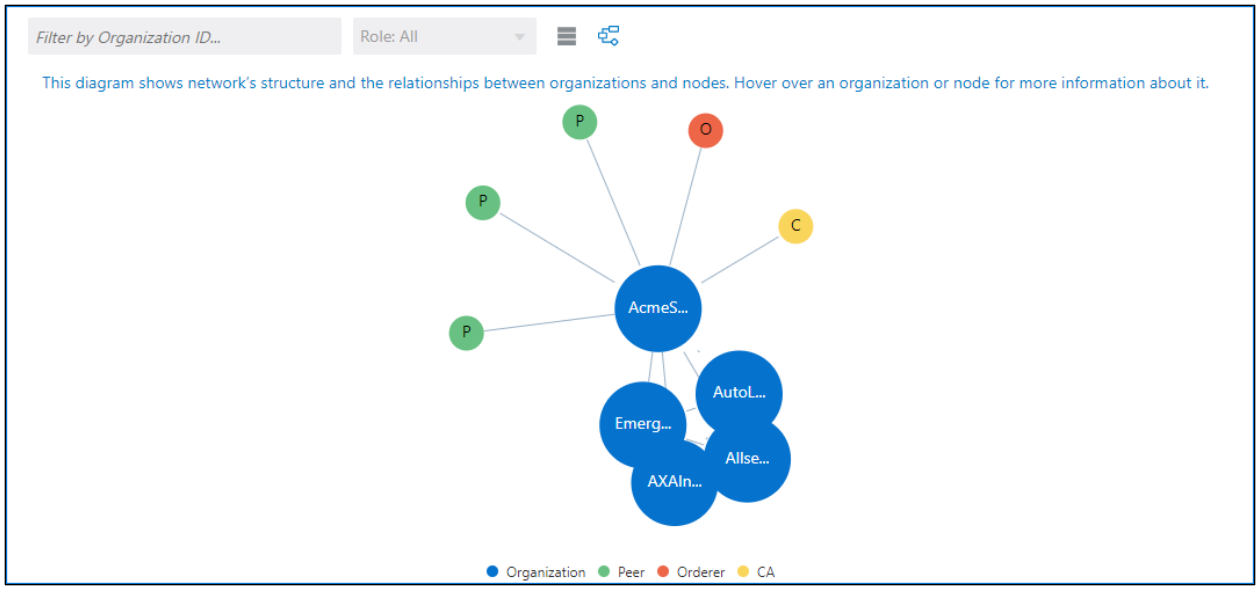

5
Nodes
0
Remote Peer
Export Nodes
Select the peer nodes that you want to export. Exporting peer nodes creates a JSON file that contains the nodes' information.
Peer List
peer0.alebcs.oraclecloud.com
peer1.alebcs.oraclecloud.com
Export
Filter by Node Name...
Export/Import Peers
Name
Status
AutoLeaseconsole
peer0.alebcs.oraclecloud.com
peer1.alebcs.oraclecloud.com
grpcs://192.168.20.3:10018
Peer(Member)
AutoLease
up

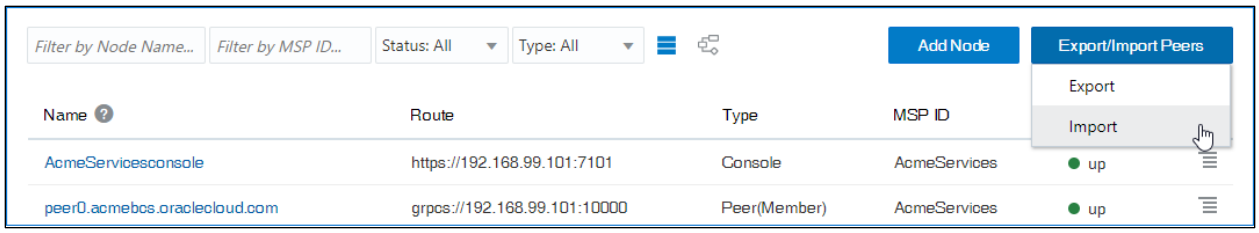
AllsecurInsurance-exportNodesToRemote.json
Type: JSON File
Date modified: 4-7-2018 18:32
Size: 1,32 KB
AXAInsurance-exportNodesToRemote.json
Type: JSON File
Date modified: 4-7-2018 18:31
Size: 1,31 KB
EmergencyServices-exportNodesToRemote.json
Type: JSON File
Date modified: 4-7-2018 18:30
Size: 1,71 KB
AutoLease-exportNodesToRemote.json
Type: JSON File
Date modified: 4-7-2018 18:10
Size: 1,70 KB

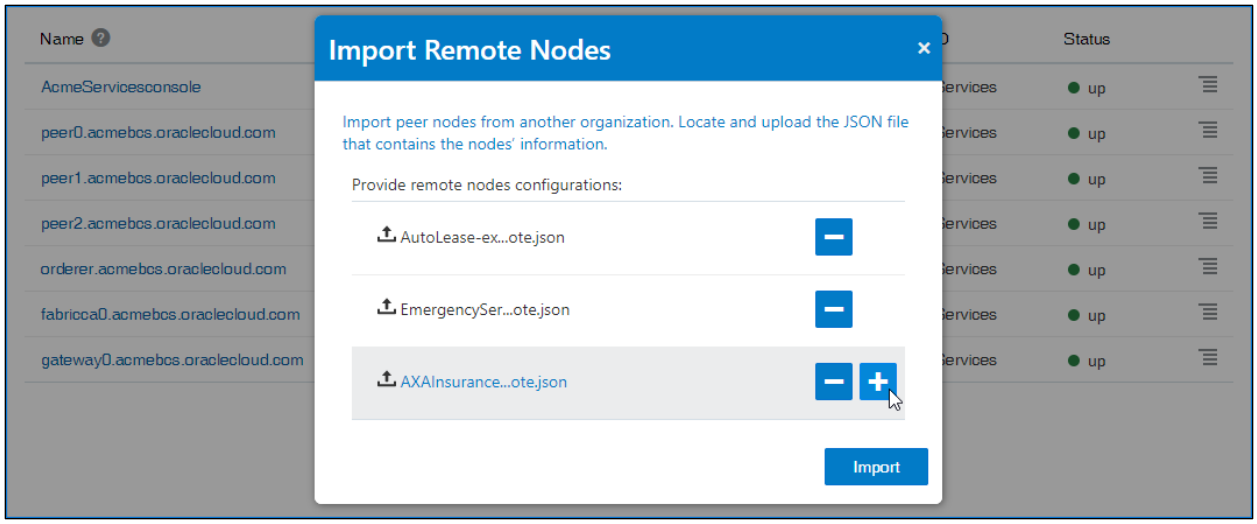
Filter by Organization ID...
Role: All
Add Organizations
Ordering Service Settings
Organization ID
Role
MSP ID
AcmeServices
Founder
AcmeServices

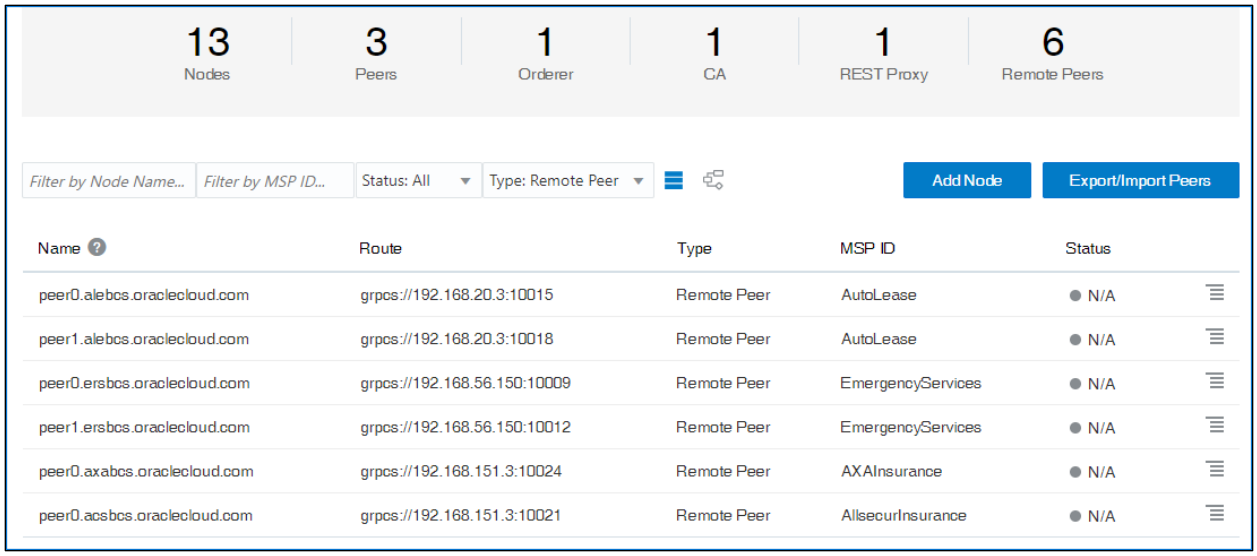

Network Summary
Add Organizations
Find and upload certificates for the members you want to add to the network. Each member must export certificates for their instance and give the certificate file to the network founder for upload. You can upload multiple certificates at the same time.
Provide Organization Certificate:
EmergencySer...tes.json
EmergencyServices
AutoLease_ce...tes.json
AutoLease
Add
Filter by Organization ID...
Ordering Service Settings
Organization ID
AcmeServices

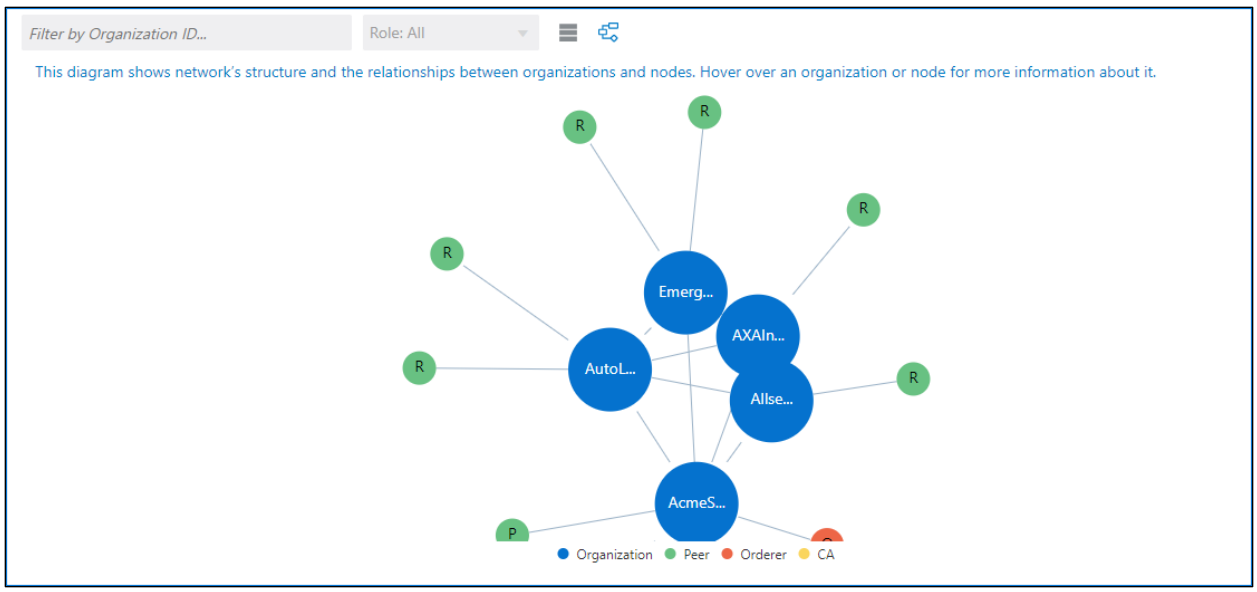

4
Participating Organizations
Filter by Organization ID...
Role: All
Add Organizations
Ordering Service Settings
Organization ID
Role
MSP ID
AcmeServices
Founder
AcmeServices
AutoLease
Participant
AutoLease
AllsecurInsurance
Participant
AllsecurInsurance
AXAInsurance
Participant
AXAInsurance
EmergencyServices
Participant
EmergencyServices

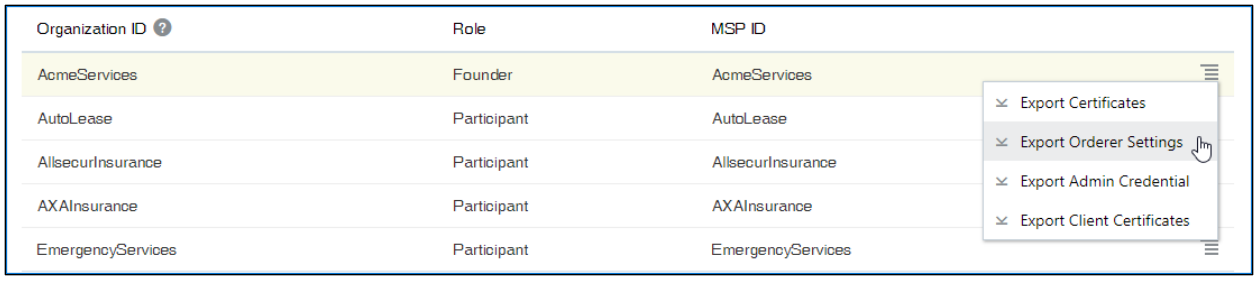

Filter by Organization ID...
Role: All
This diagram shows network's structure and the relationships between organizations and nodes. Hover over an organization or node for more information about it.
P
O
P
C
P
AcmeS...
AutoL...
Emerg...
Allse...
AXAIn...
Organization
Peer
Orderer
CA

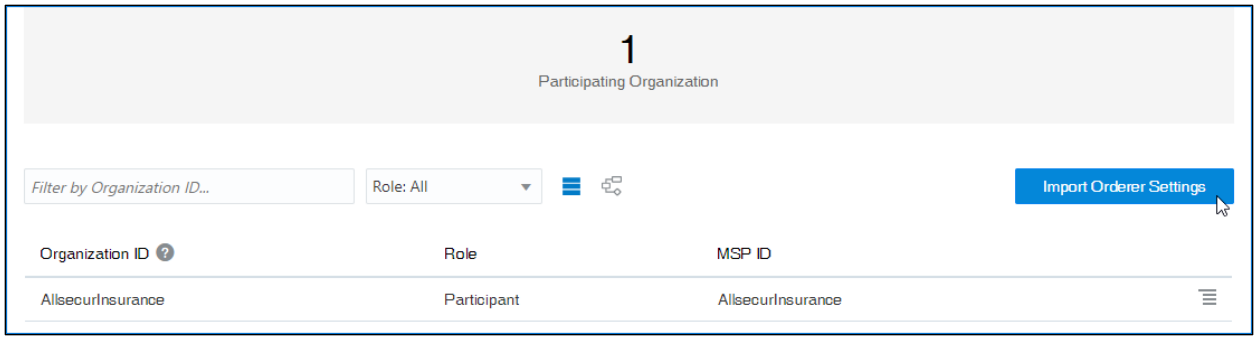

Filter by Node Name...
Filter by MSP ID...
Status: All
Type: All
Add Node
Export/Import Peers
Export
Import
Name
Route
Type
MSP ID
AcmeServicesconsole
https://192.168.99.101:7101
Console
AcmeServices
up
peer0.acmebcs.oraclecloud.com
grpcs://192.168.99.101:10000
Peer(Member)
AcmeServices
up

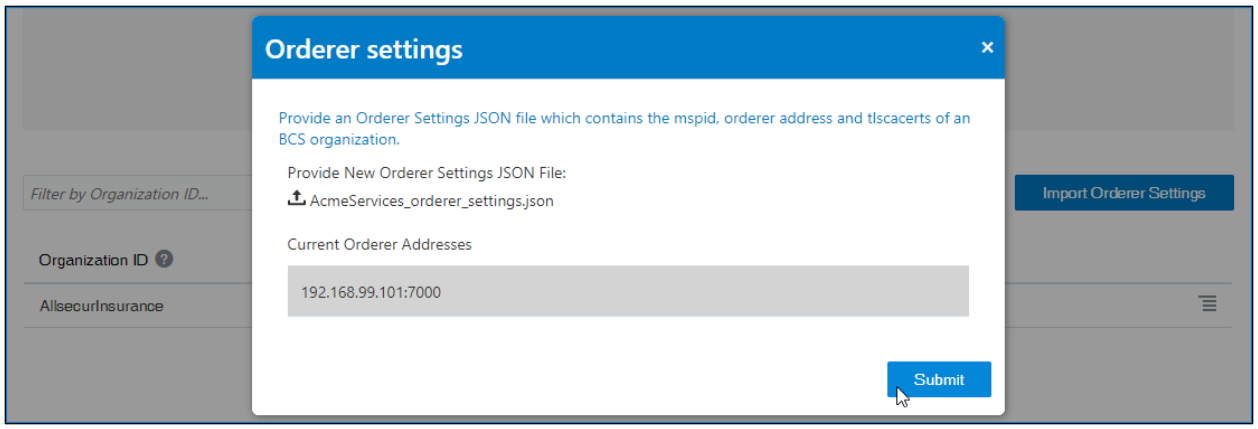

Name
Status
AcmeServicesconsole
peer0.acmebcs.oraclecloud.com
peer1.acmebcs.oraclecloud.com
peer2.acmebcs.oraclecloud.com
orderer.acmebcs.oraclecloud.com
fabricca0.acmebcs.oraclecloud.com
gateway0.acmebcs.oraclecloud.com
up
Import Remote Nodes
Import peer nodes from another organization. Locate and upload the JSON file that contains the nodes' information.
Provide remote nodes configurations:
AutoLease-ex...ote.json
EmergencySer...ote.json
AXAInsurance...ote.json
Import

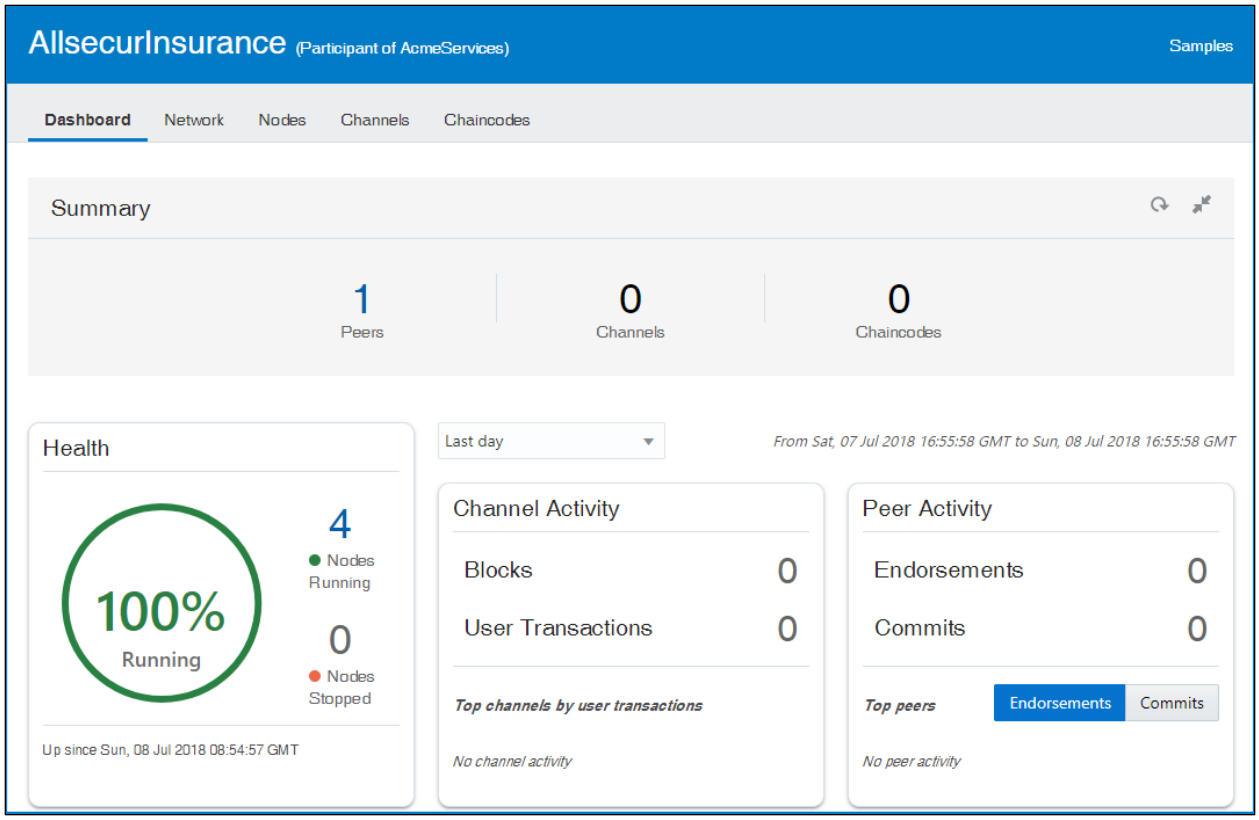

13 Nodes
3 Peers
1 Orderer
1 CA
1 REST Proxy
6 Remote Peers
Filter by Node Name...
Filter by MSP ID...
Status: All
Type: Remote Peer
Add Node
Export/Import Peers
Name
Route
Type
MSP ID
Status
peer0.alebcs.oraclecloud.com grpcs://192.168.20.3:10015 Remote Peer AutoLease N/A
peer1.alebcs.oraclecloud.com grpcs://192.168.20.3:10018 Remote Peer AutoLease N/A
peer0.ersbcs.oraclecloud.com grpcs://192.168.56.150:10009 Remote Peer EmergencyServices N/A
peer1.ersbcs.oraclecloud.com grpcs://192.168.56.150:10012 Remote Peer EmergencyServices N/A
peer0.axabcs.oraclecloud.com grpcs://192.168.151.3:10024 Remote Peer AXAInsurance N/A
peer0.acsbcs.oraclecloud.com grpcs://192.168.151.3:10021 Remote Peer AllsecurInsurance N/A

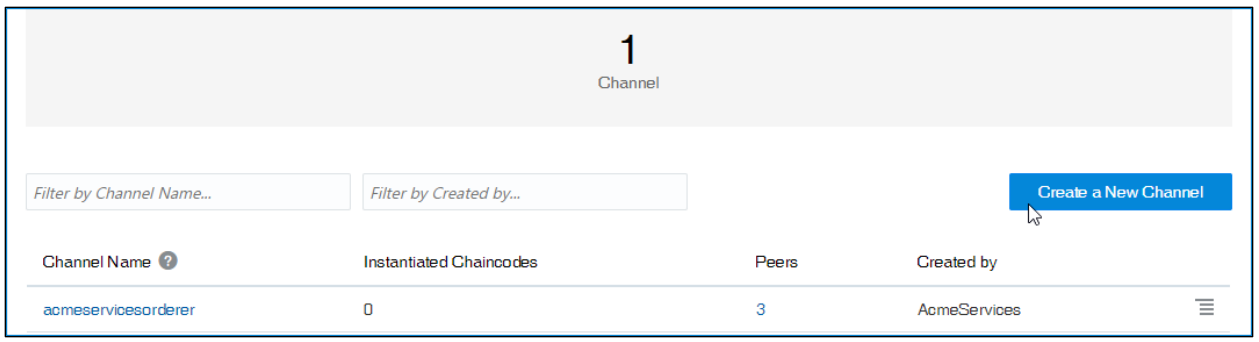

Filter by Organization ID...
Role: All
This diagram shows network's structure and the relationships between organizations and nodes. Hover over an organization or node for more information about it.
Emerg...
AXAIn...
AutoL...
Allse...
AcmeS...
Organization
Peer
Orderer
CA

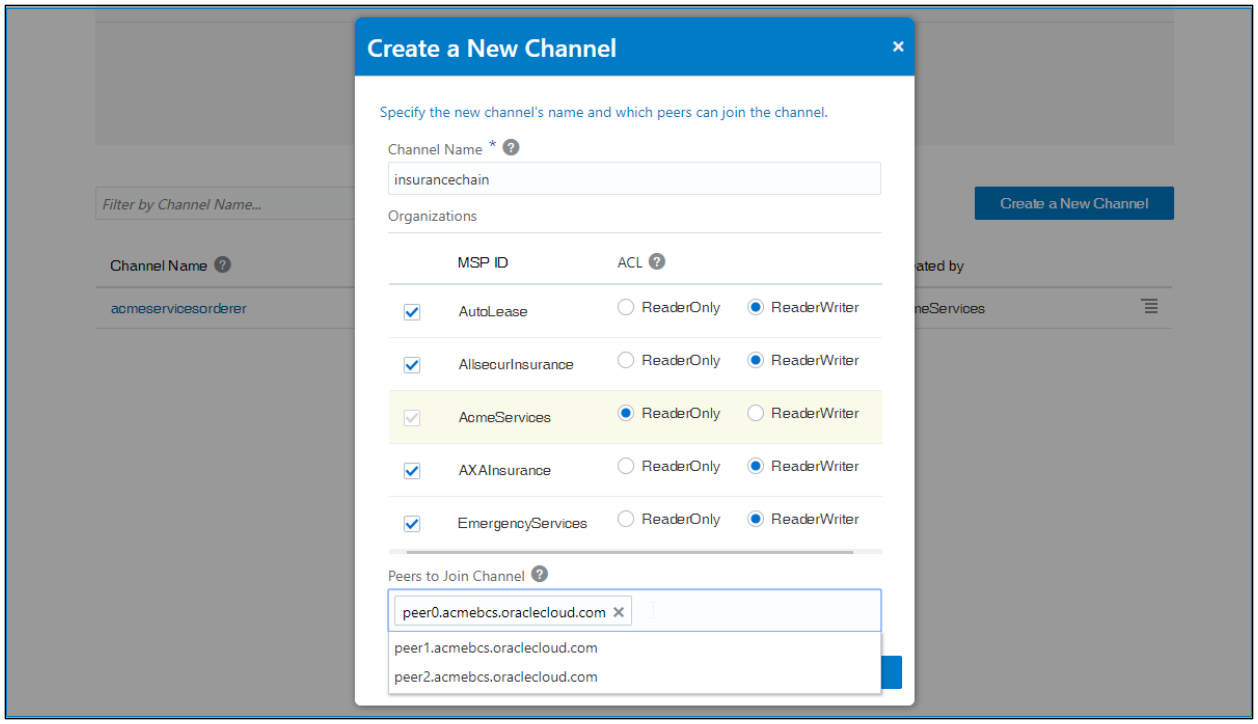

Organization ID
Role
MSP ID
AcmeServices
Founder
AcmeServices
AutoLease
Participant
AutoLease
AllsecurInsurance
Participant
AllsecurInsurance
AXAInsurance
Participant
AXAInsurance
EmergencyServices
Participant
EmergencyServices
Export Certificates
Export Orderer Settings
Export Admin Credential
Export Client Certificates

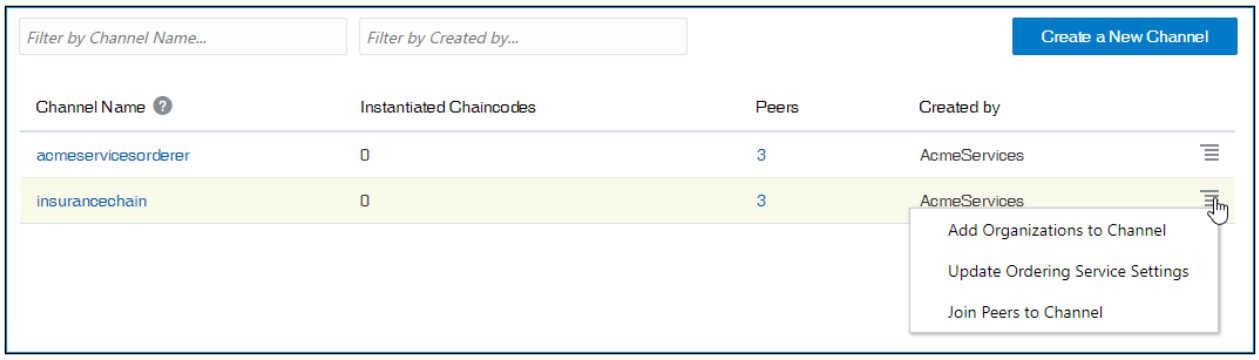

1
Participating Organization
Filter by Organization ID...
Role: All
Import Orderer Settings
Organization ID
Role
MSP ID
AllsecurInsurance
Participant
AllsecurInsurance

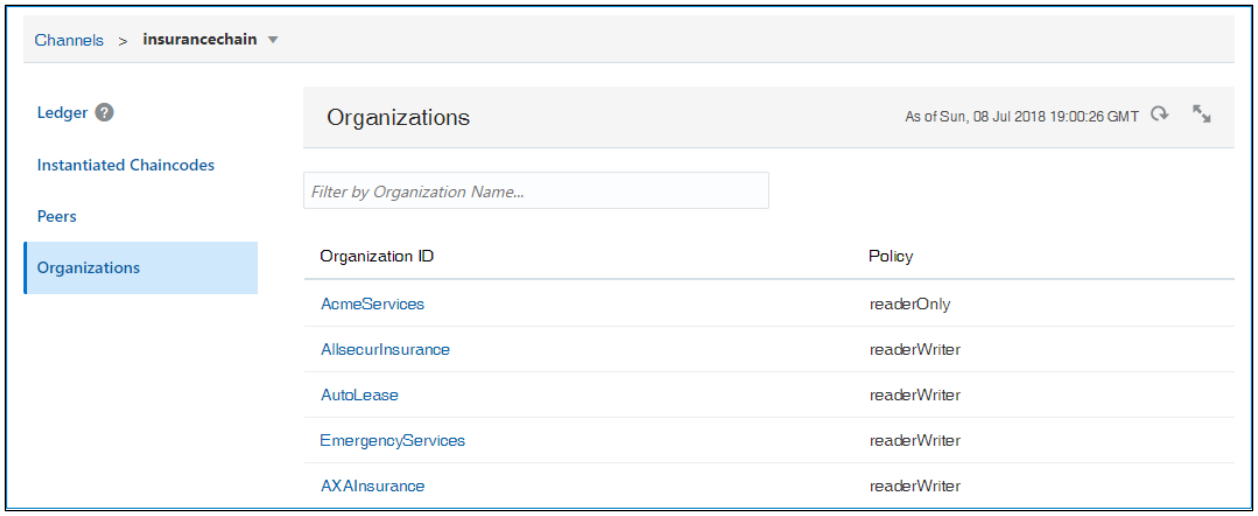

Orderer settings
Provide an Orderer Settings JSON file which contains the mspid, orderer address and tlscacerts of an BCS organization.
Provide New Orderer Settings JSON File:
AcmeServices_orderer_settings.json
Current Orderer Addresses
192.168.99.101:7000
Submit
Filter by Organization ID...
Import Orderer Settings
Organization ID
AllsecurInsurance

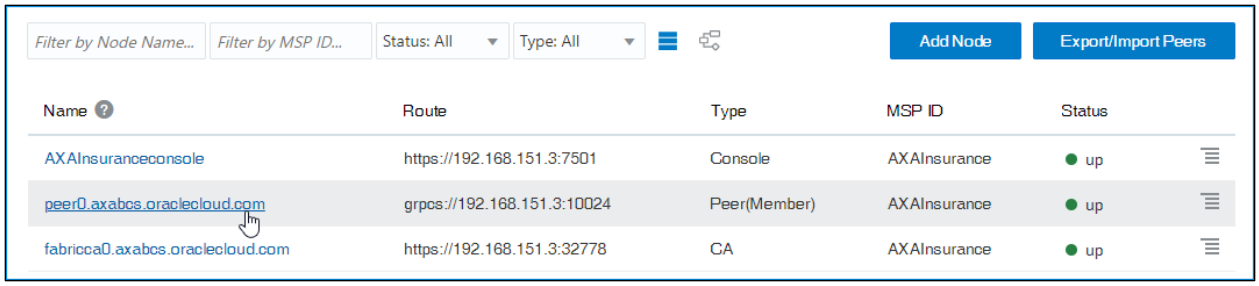

AllsecurInsurance (Participant of AcmeServices)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Summary
1
Peers
0
Channels
0
Chaincodes
Health
100%
Running
4
Nodes Running
0
Nodes Stopped
Up since Sun, 08 Jul 2018 08:54:57 GMT
Last day
From Sat, 07 Jul 2018 16:55:58 GMT to Sun, 08 Jul 2018 16:55:58 GMT
Channel Activity
Blocks
0
User Transactions
0
Top channels by user transactions
No channel activity
Peer Activity
Endorsements
0
Commits
0
Top peers
Endorsements
Commits
No peer activity

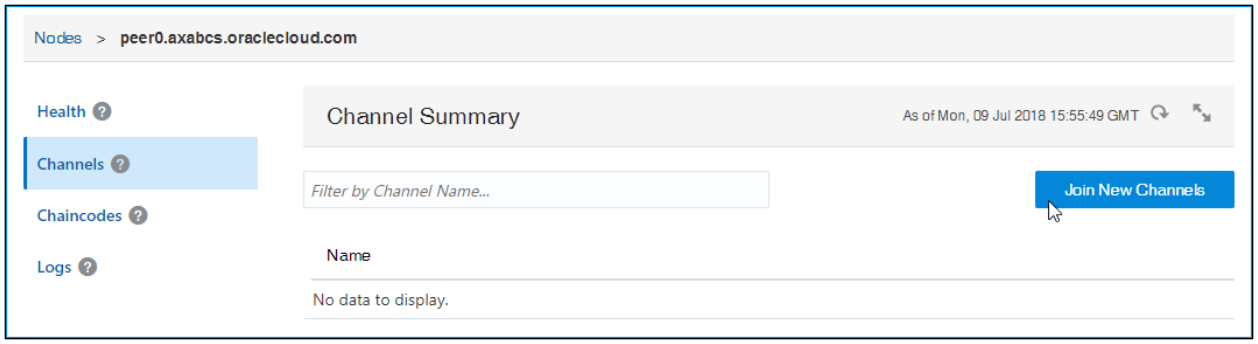

1
Channel
Filter by Channel Name...
Filter by Created by...
Create a New Channel
Channel Name
Instantiated Chaincodes
Peers
Created by
acmeservicesorderer
0
3
AcmeServices

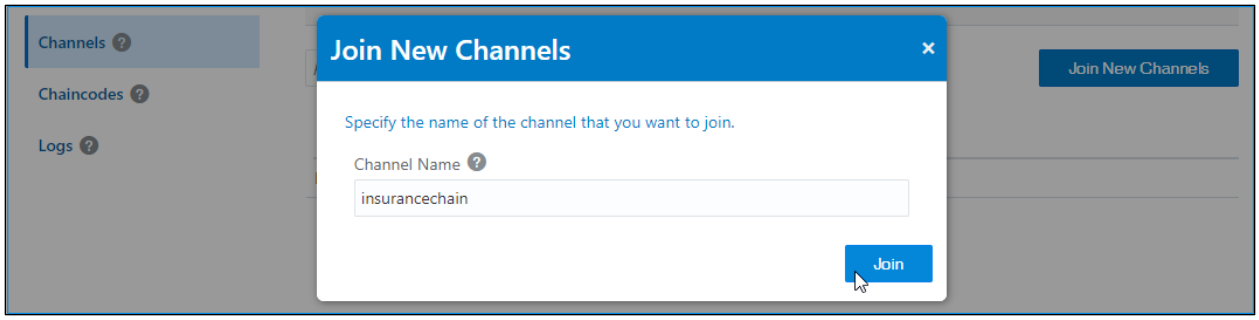

Create a New Channel
Specify the new channel's name and which peers can join the channel.
Channel Name *
insurancechain
Organizations
MSP ID
ACL
AutoLease
AllsecurInsurance
AcmeServices
AXAInsurance
EmergencyServices
ReaderOnly
ReaderWriter
Peers to Join Channel
peer0.acmebcs.oraclecloud.com
peer1.acmebcs.oraclecloud.com
peer2.acmebcs.oraclecloud.com
Filter by Channel Name...
Create a New Channel
Channel Name
acmeservicesorderer

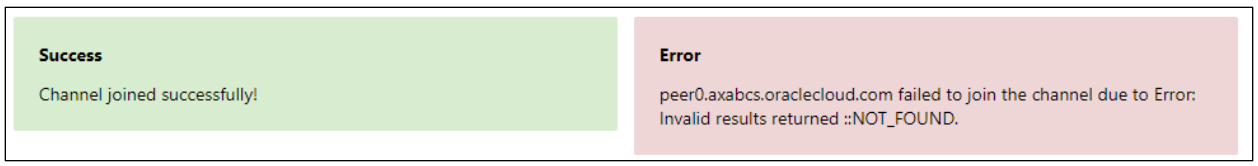

Filter by Channel Name...
Filter by Created by...
Create a New Channel
Channel Name
Instantiated Chaincodes
Peers
Created by
acmeservicesorderer
0
3
AcmeServices
insurancechain
0
3
AcmeServices
Add Organizations to Channel
Update Ordering Service Settings
Join Peers to Channel

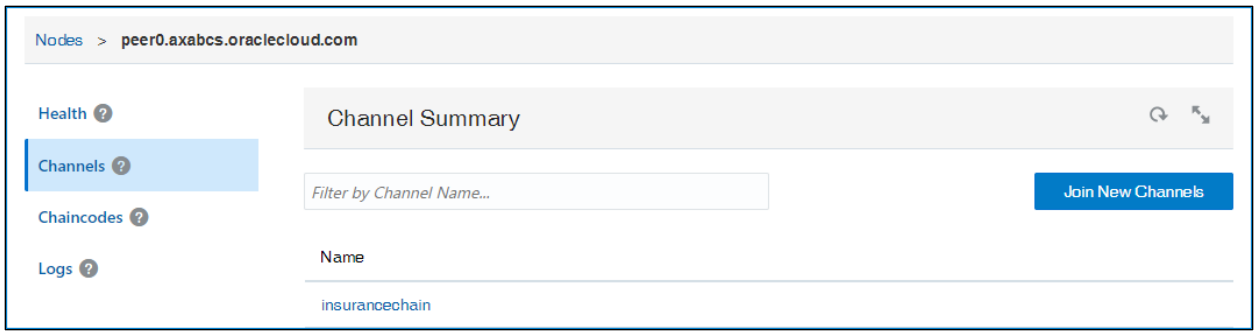

Channels > insurancechain
Ledger
Instantiated Chaincodes
Peers
Organizations
Organizations
As of Sun, 08 Jul 2018 19:00:26 GMT
Filter by Organization Name...
Organization ID
Policy
AcmeServices
readerOnly
AllsecurInsurance
readerWriter
AutoLease
readerWriter
EmergencyServices
readerWriter
AXAInsurance
readerWriter


Filter by Node Name...
Filter by MSP ID...
Status: All
Type: All
Add Node
Export/Import Peers
Name
Route
Type
MSP ID
Status
AXAInsuranceconsole
https://192.168.151.3:7501
Console
AXAInsurance
up
peer0.axabcs.oraclecloud.com
grpcs://192.168.151.3:10024
Peer(Member)
AXAInsurance
up
fabricca0.axabcs.oraclecloud.com
https://192.168.151.3:32778
CA
AXAInsurance
up

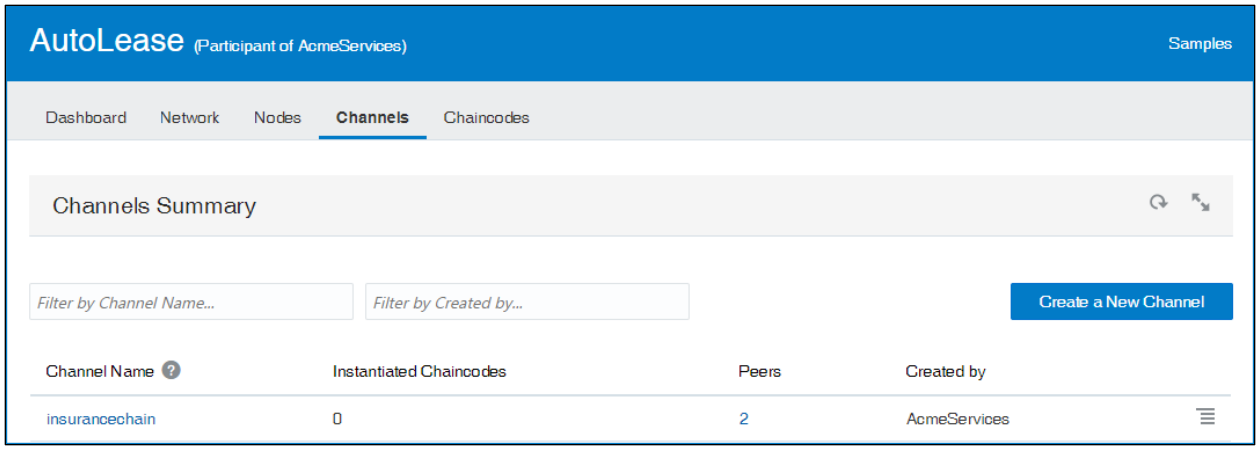

Nodes > peer0.axabcs.oraclecloud.com
Health
Channels
Chaincodes
Logs
Channel Summary
As of Mon, 09 Jul 2018 15:55:49 GMT
Filter by Channel Name...
Join New Channels
Name
No data to display.

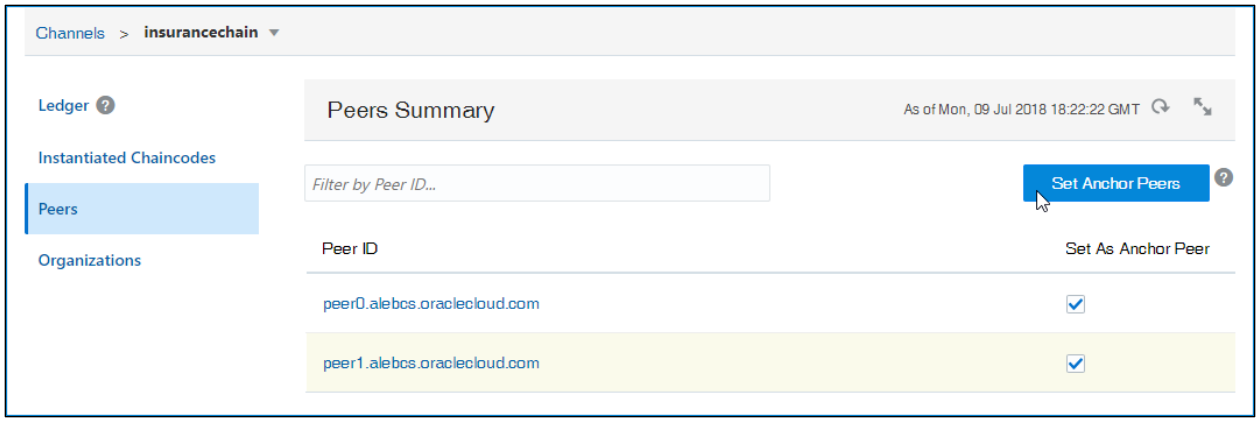

Channels
Chaincodes
Logs
Join New Channels
Join New Channels
Specify the name of the channel that you want to join.
Channel Name
insurancechain
Join

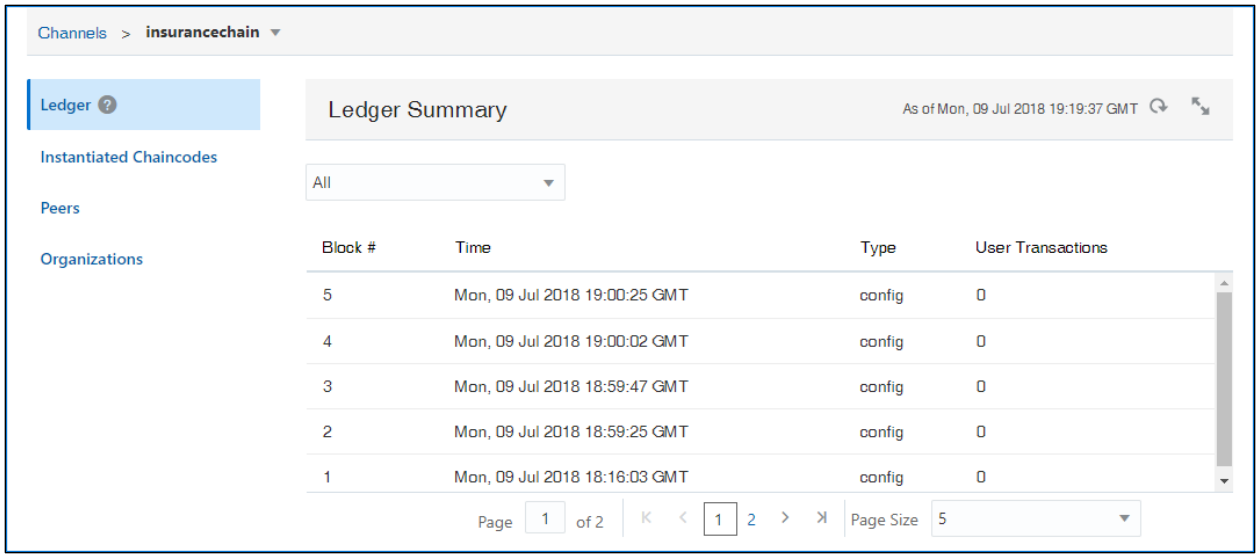

Success
Channel joined successfully!
Error
peer0.axabcs.oraclecloud.com failed to join the channel due to Error: Invalid results returned ::NOT_FOUND.

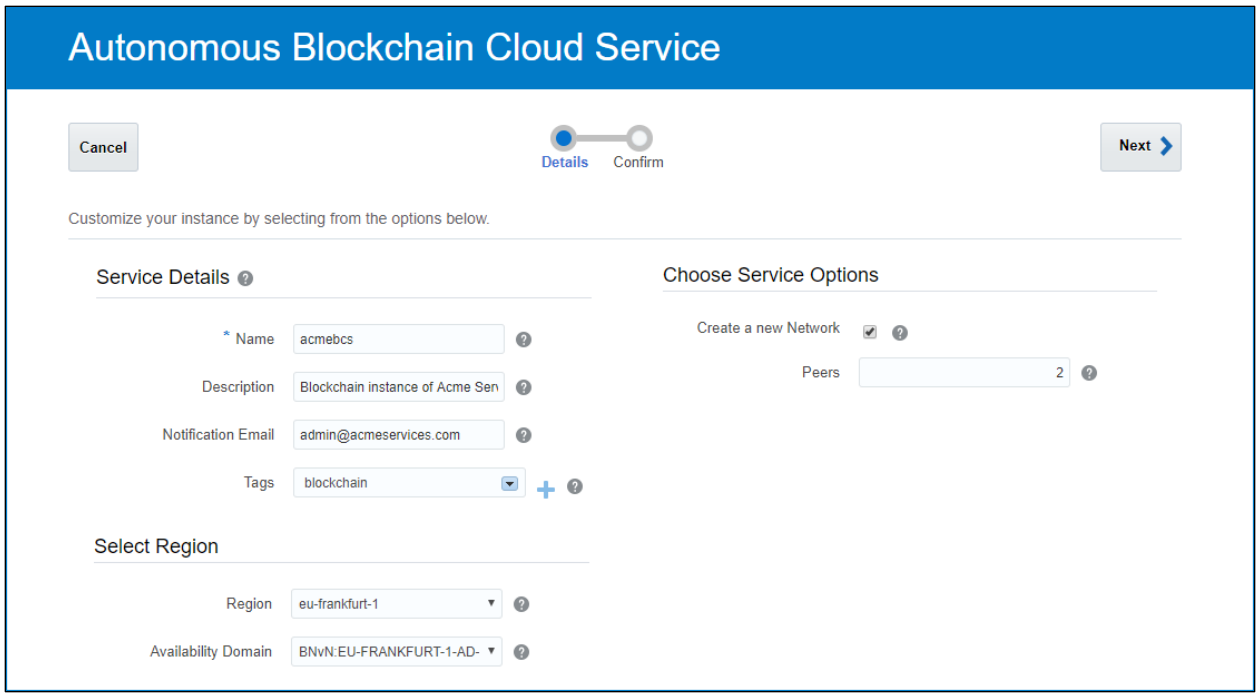

Nodes > peer0.axabcs.oraclecloud.com
Health
Channels
Chaincodes
Logs
Channel Summary
Filter by Channel Name...
Join New Channels
Name
insurancechain

peer0.alebcs.oraclecloud.com
Peer(Member)
AutoLease
up
peer1.alebcs.oraclecloud.com
Peer(Member)
AutoLease
fabricca0.alebcs.oraclecloud.com
CA
AutoLease
gateway0.alebcs.oraclecloud.com
REST Proxy
AutoLease
Stop
Restart
Join New Channels
Edit Configuration

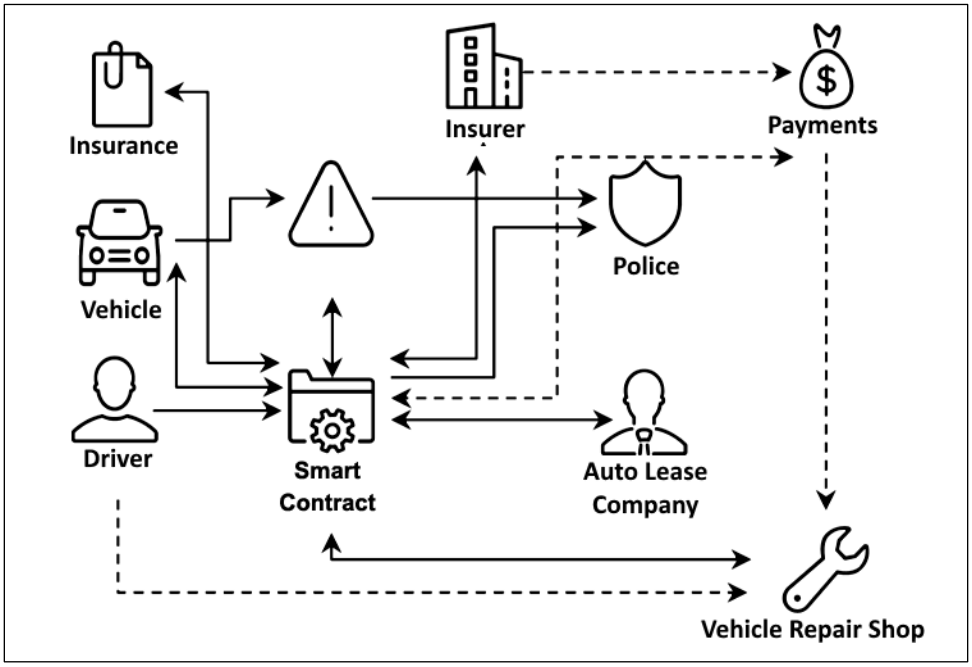

AutoLease (Participant of AcmeServices)
Samples
Dashboard
Network
Nodes
Channels
Chaincodes
Channels Summary
Filter by Channel Name...
Filter by Created by...
Create a New Channel
Channel Name
Instantiated Chaincodes
Peers
Created by
insurancechain
0
2
AcmeServices

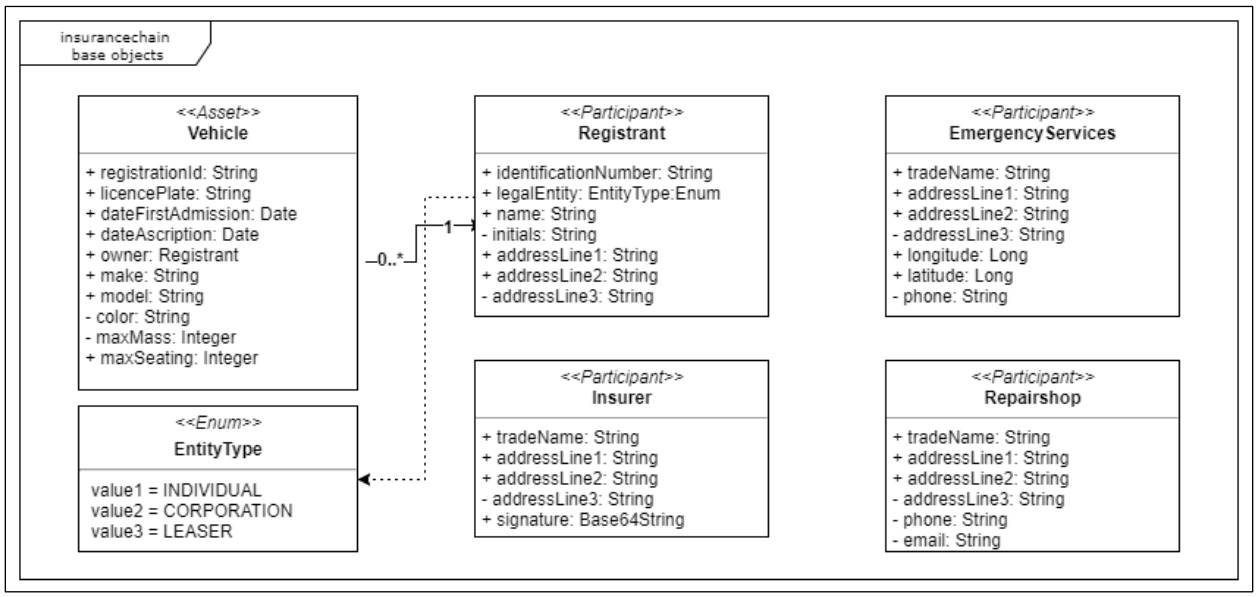

Channels > insurancechain
Ledger
Instantiated Chaincodes
Peers
Organizations
Peers Summary
As of Mon, 09 Jul 2018 18:22:22 GMT
Filter by Peer ID...
Set Anchor Peers
Peer ID
Set As Anchor Peer
peer0.alebcs.oraclecloud.com
peer1.alebcs.oraclecloud.com

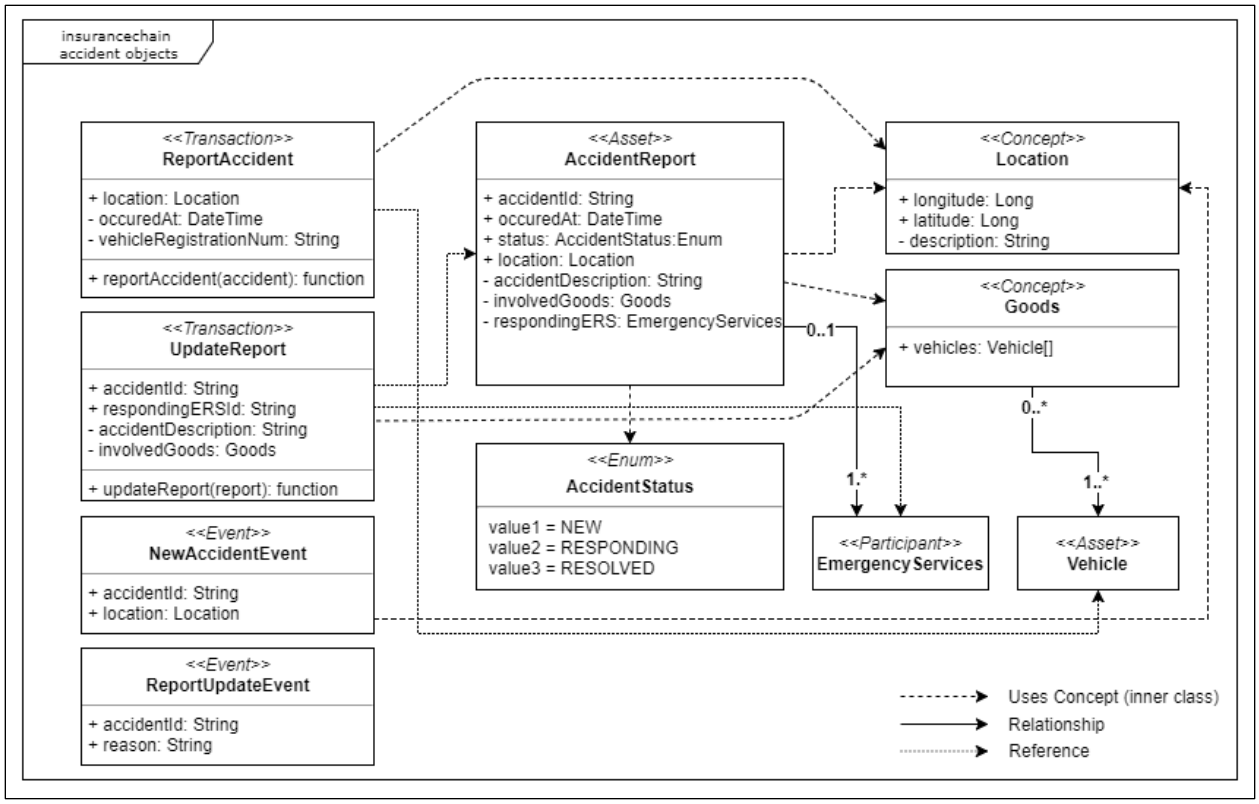

Channels > insurancechain
Ledger
Instantiated Chaincodes
Peers
Organizations
Ledger Summary
As of Mon, 09 Jul 2018 19:19:37 GMT
All
Block # Time Type User Transactions
5 Mon, 09 Jul 2018 19:00:25 GMT config 0
4 Mon, 09 Jul 2018 19:00:02 GMT config 0
3 Mon, 09 Jul 2018 18:59:47 GMT config 0
2 Mon, 09 Jul 2018 18:59:25 GMT config 0
1 Mon, 09 Jul 2018 18:16:03 GMT config 0
Page 1 of 2
1 2
Page Size 5

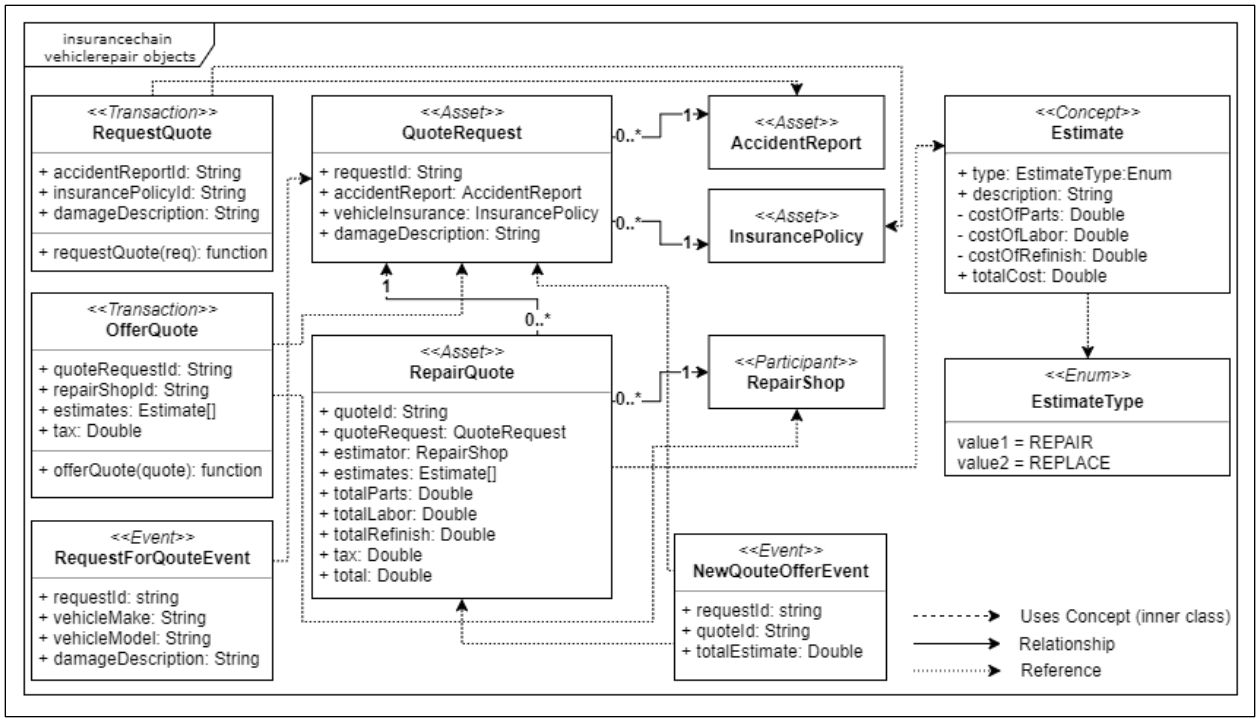

Autonomous Blockchain Cloud Service
Cancel
Details
Confirm
Next
Customize your instance by selecting from the options below.
Service Details
* Name acmebcs
Description Blockchain instance of Acme Ser
Notification Email admin@acmeservices.com
Tags blockchain
Select Region
Region eu-frankfurt-1
Availability Domain BNvN:EU-FRANKFURT-1-AD-
Choose Service Options
Create a new Network
Peers 2

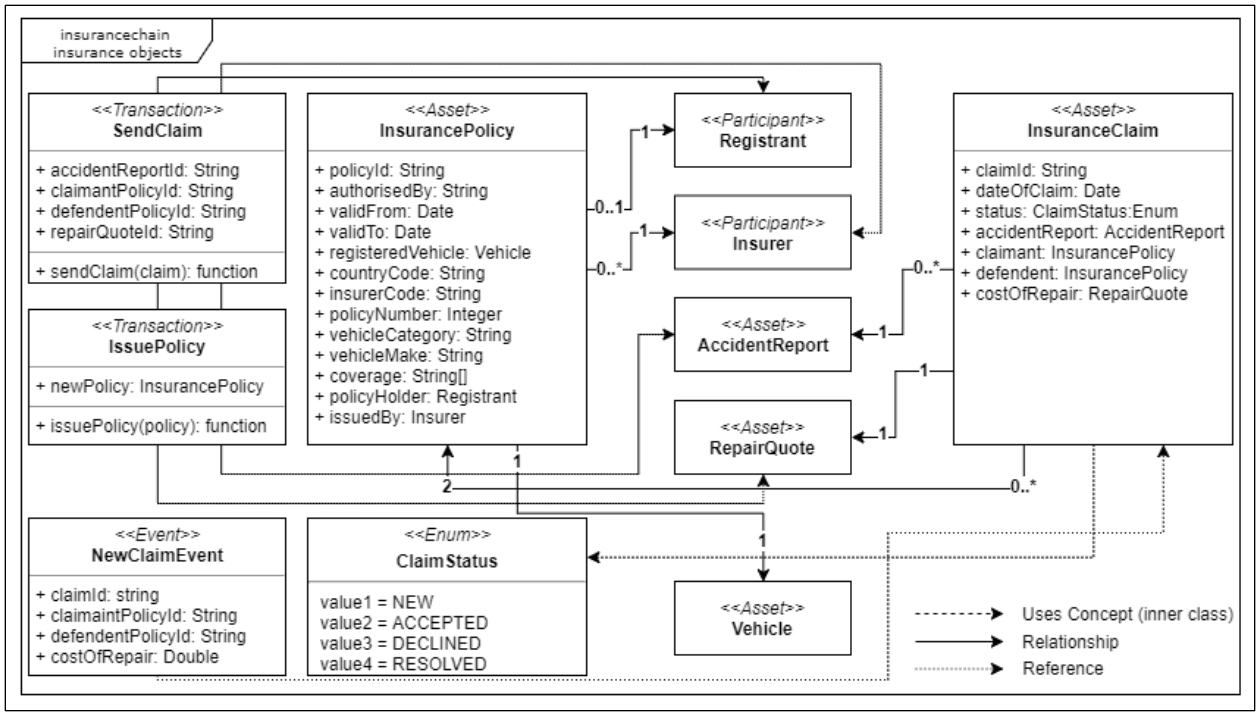
Chapter 12: Designing and Developing Your First Smart Contract

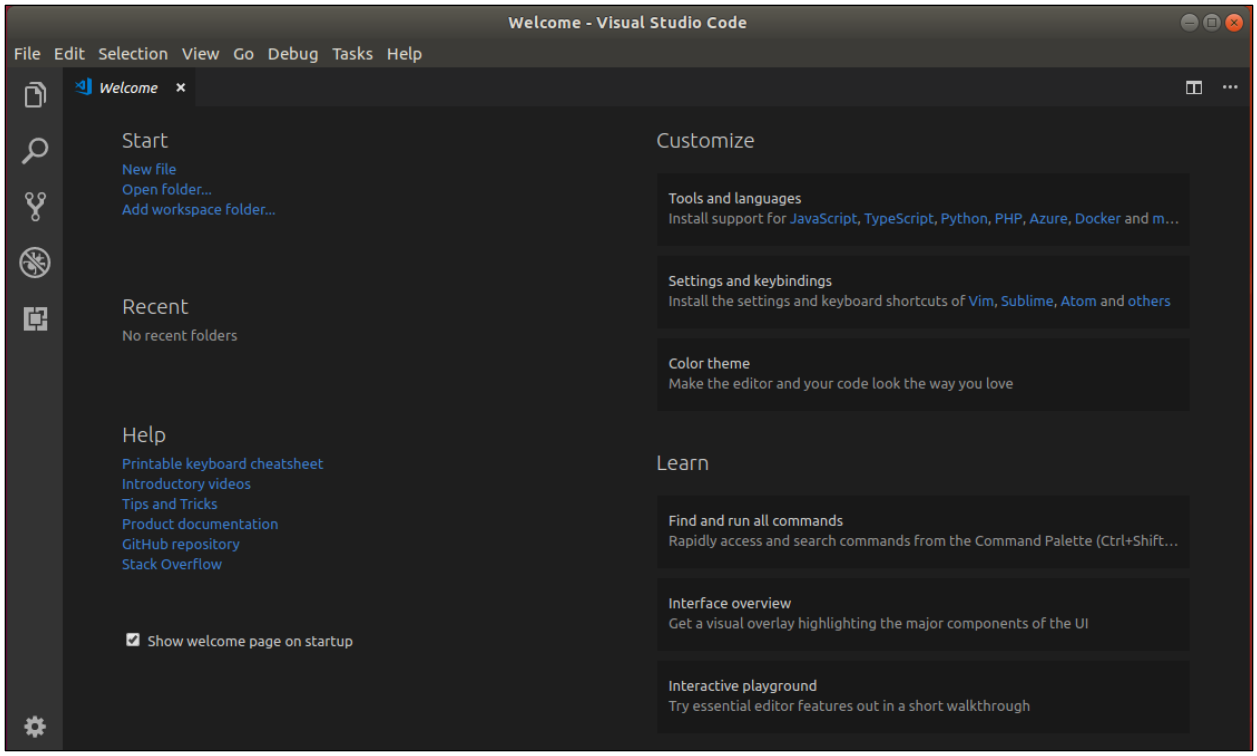


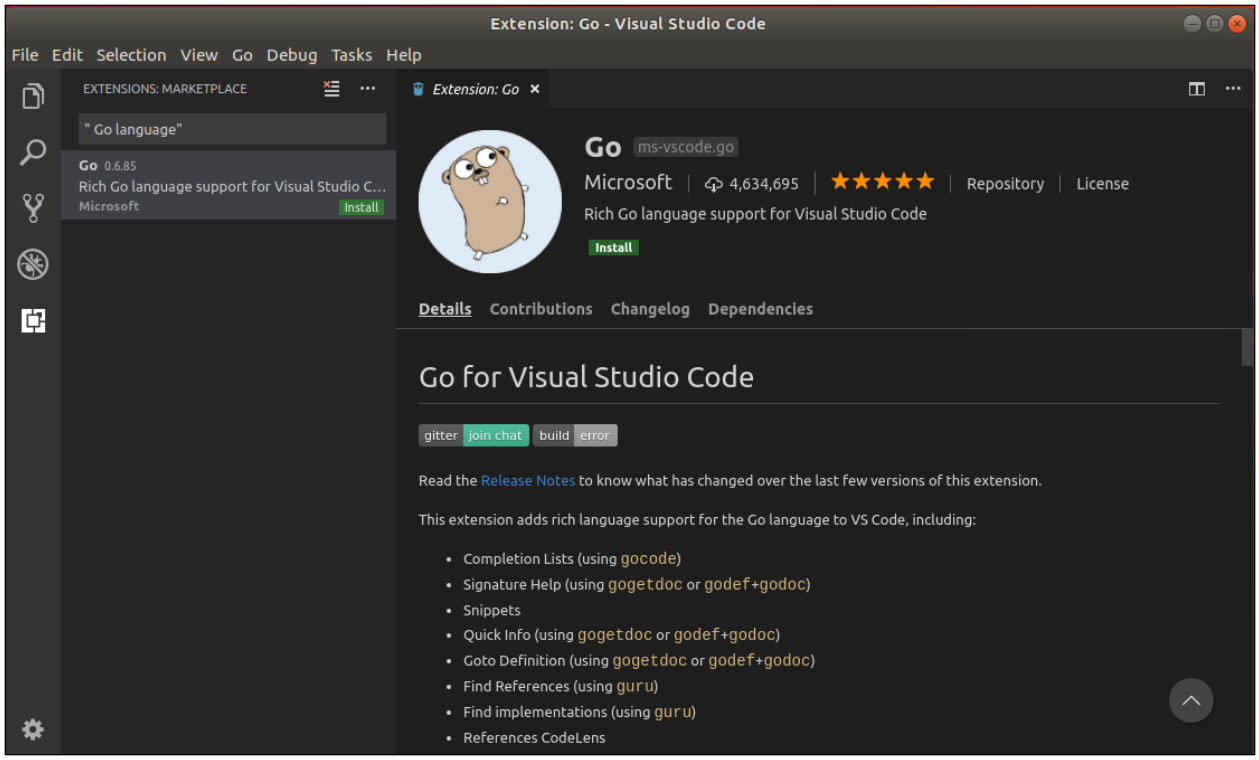


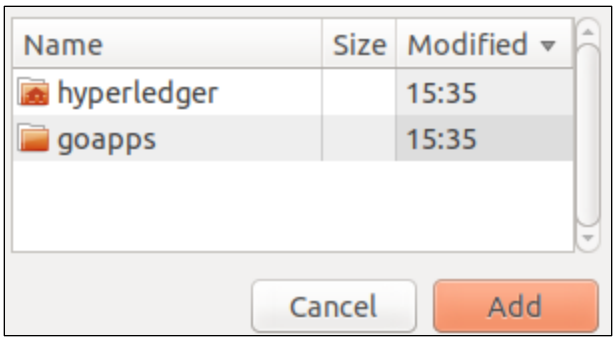

insurancechain
accident objects
<<Transaction>>
ReportAccident
+ location: Location
- occuredAt: DateTime
- vehicleRegistrationNum: String
+ reportAccident(accident): function
<<Transaction>>
UpdateReport
+ accidentId: String
+ respondingERSId: String
- accidentDescription: String
- involvedGoods: Goods
+ updateReport(report): function
<<Event>>
NewAccidentEvent
+ accidentId: String
+ location: Location
<<Event>>
ReportUpdateEvent
+ accidentId: String
+ reason: String
<<Asset>>
AccidentReport
+ accidentId: String
+ occuredAt: DateTime
+ status: AccidentStatus:Enum
+ location: Location
- accidentDescription: String
- involvedGoods: Goods
- respondingERS: EmergencyServices
<<Enum>>
AccidentStatus
value1 = NEW
value2 = RESPONDING
value3 = RESOLVED
<<Concept>>
Location
+ longitude: Long
+ latitude: Long
- description: String
<<Concept>>
Goods
+ vehicles: Vehicle[]
<<Participant>>
Emergency Services
<<Asset>>
Vehicle
0..1
1..*
0..*
1..*
Uses Concept (inner class)
Relationship
Reference

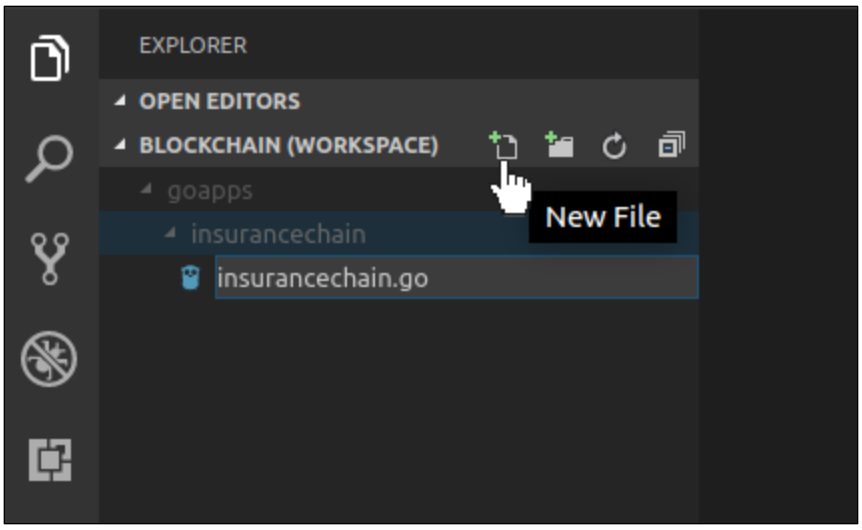

insurancechain
vehiclerepair objects
<<Transaction>>
RequestQuote
+ accidentReportId: String
+ insurancePolicyId: String
+ damageDescription: String
+ requestQuote(req): function
<<Transaction>>
OfferQuote
+ quoteRequestId: String
+ repairShopId: String
+ estimates: Estimate[]
+ tax: Double
+ offerQuote(quote): function
<<Event>>
RequestForQouteEvent
+ requestId: string
+ vehicleMake: String
+ vehicleModel: String
+ damageDescription: String
<<Asset>>
QuoteRequest
+ requestId: String
+ accidentReport: AccidentReport
+ vehicleInsurance: InsurancePolicy
+ damageDescription: String
<<Asset>>
RepairQuote
+ quoteId: String
+ quoteRequest: QuoteRequest
+ estimator: RepairShop
+ estimates: Estimate[]
+ totalParts: Double
+ totalLabor: Double
+ totalRefinish: Double
+ tax: Double
+ total: Double
<<Event>>
NewQouteOfferEvent
+ requestId: string
+ quoteId: String
+ totalEstimate: Double
<<Asset>>
AccidentReport
<<Asset>>
InsurancePolicy
<<Participant>>
RepairShop
<<Concept>>
Estimate
+ type: EstimateType:Enum
+ description: String
- costOfParts: Double
- costOfLabor: Double
- costOfRefinish: Double
+ totalCost: Double
<<Enum>>
EstimateType
value1 = REPAIR
value2 = REPLACE
0..*
1
1
0..*
1
0..*
1
0..*
Uses Concept (inner class)
Relationship
Reference

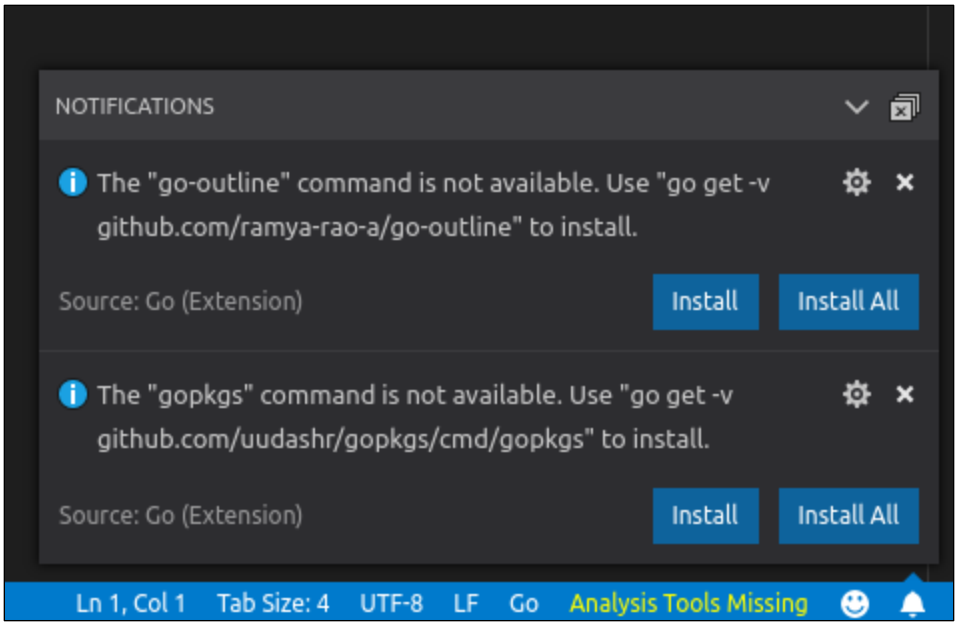

insurancechain
insurance objects
<<Transaction>>
SendClaim
+ accidentReportId: String
+ claimantPolicyId: String
+ defendentPolicyId: String
+ repairQuoteId: String
+ sendClaim(claim): function
<<Transaction>>
IssuePolicy
+ newPolicy: InsurancePolicy
+ issuePolicy(policy): function
<<Asset>>
InsurancePolicy
+ policyId: String
+ authorisedBy: String
+ validFrom: Date
+ validTo: Date
+ registeredVehicle: Vehicle
+ countryCode: String
+ insurerCode: String
+ policyNumber: Integer
+ vehicleCategory: String
+ vehicleMake: String
+ coverage: String[]
+ policyHolder: Registrant
+ issuedBy: Insurer
<<Participant>>
Registrant
<<Participant>>
Insurer
<<Asset>>
AccidentReport
<<Asset>>
RepairQuote
<<Asset>>
InsuranceClaim
+ claimId: String
+ dateOfClaim: Date
+ status: ClaimStatus:Enum
+ accidentReport: AccidentReport
+ claimant: InsurancePolicy
+ defendent: InsurancePolicy
+ costOfRepair: RepairQuote
<<Event>>
NewClaimEvent
+ claimId: string
+ claimaintPolicyId: String
+ defendentPolicyId: String
+ costOfRepair: Double
<<Enum>>
ClaimStatus
value1 = NEW
value2 = ACCEPTED
value3 = DECLINED
value4 = RESOLVED
<<Asset>>
Vehicle
1
0..1
0..*
2
Uses Concept (inner class)
Relationship
Reference

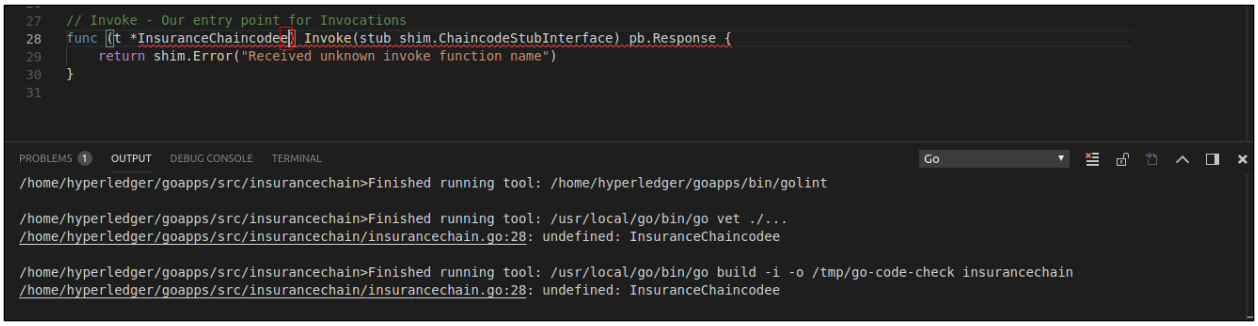

Welcome - Visual Studio Code
File Edit Selection View Go Debug Tasks Help
Welcome
Start
New file
Open folder...
Add workspace folder...
Recent
No recent folders
Help
Printable keyboard cheatsheet
Introductory videos
Tips and Tricks
Product documentation
GitHub repository
Stack Overflow
Show welcome page on startup
Customize
Tools and languages
Install support for JavaScript, TypeScript, Python, PHP, Azure, Docker and m...
Settings and keybindings
Install the settings and keyboard shortcuts of Vim, Sublime, Atom and others
Color theme
Make the editor and your code look the way you love
Learn
Find and run all commands
Rapidly access and search commands from the Command Palette (Ctrl+Shift...
Interface overview
Get a visual overlay highlighting the major components of the UI
Interactive playground
Try essential editor features out in a short walkthrough


Extension: Go - Visual Studio Code
File Edit Selection View Go Debug Tasks Help
EXTENSIONS: MARKETPLACE
" Go language"
Go 0.6.85
Rich Go language support for Visual Studio C...
Microsoft
Install
Extension: Go
Go
ms-vscode.go
Microsoft
4,634,695
Repository
License
Rich Go language support for Visual Studio Code
Install
Details
Contributions
Changelog
Dependencies
Go for Visual Studio Code
gitter
join chat
build
error
Read the Release Notes to know what has changed over the last few versions of this extension.
This extension adds rich language support for the Go language to VS Code, including:
Completion Lists (using gocode)
Signature Help (using gogetdoc or godef+godoc)
Snippets
Quick Info (using gogetdoc or godef+godoc)
Goto Definition (using gogetdoc or godef+godoc)
Find References (using guru)
Find implementations (using guru)
References CodeLens

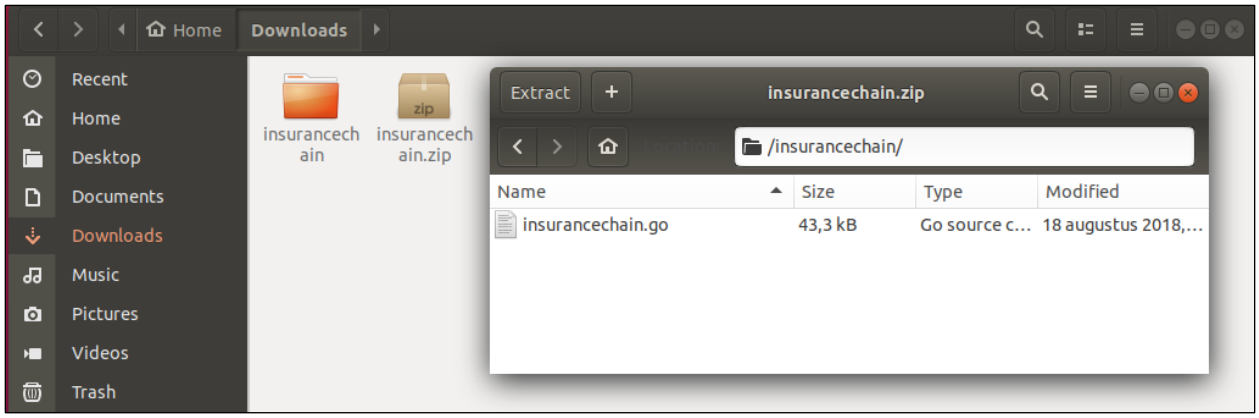

Name
Size
Modified
hyperledger
15:35
goapps
15:35
Cancel
Add

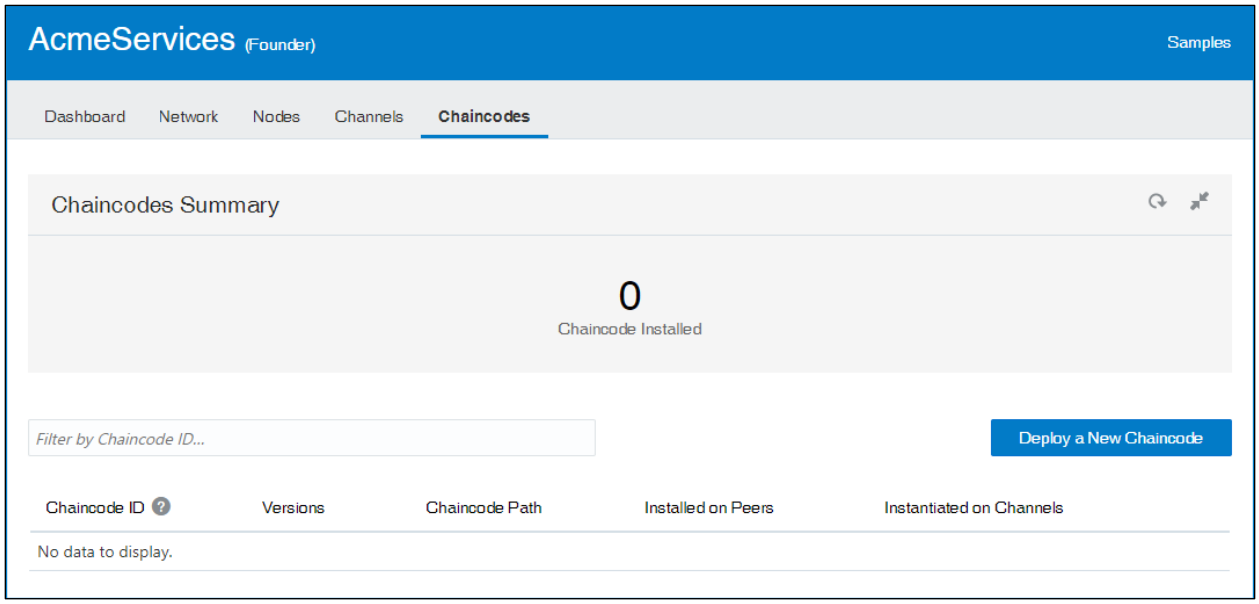

EXPLORER
OPEN EDITORS
BLOCKCHAIN (WORKSPACE)
goapps
insurancechain
insurancechain.go
New File

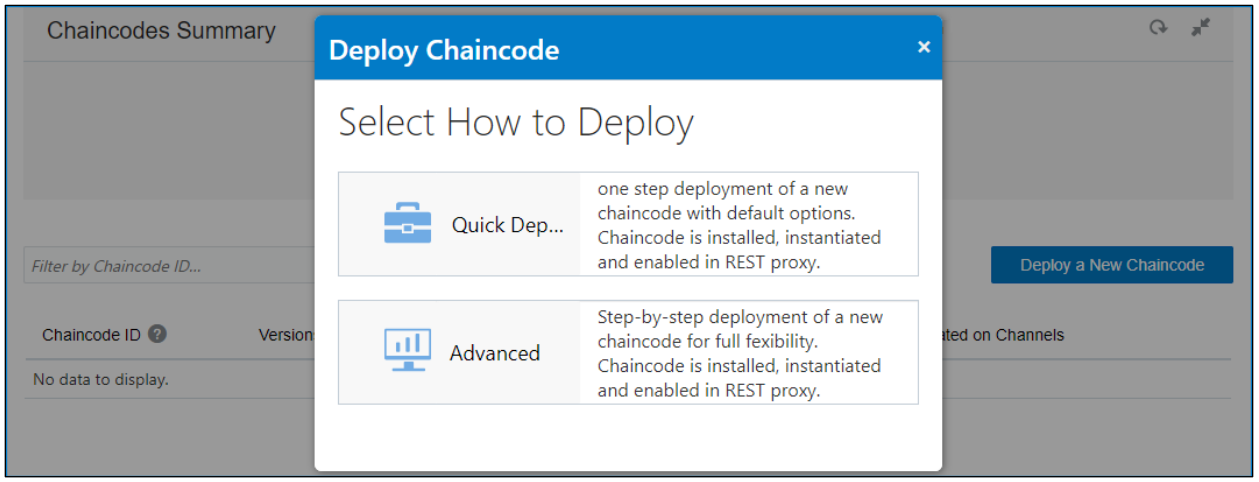

NOTIFICATIONS
The "go-outline" command is not available. Use "go get -v github.com/ramya-rao-a/go-outline" to install.
Source: Go (Extension)
Install
Install All
The "gopkgs" command is not available. Use "go get -v github.com/uudashr/gopkgs/cmd/gopkgs" to install.
Source: Go (Extension)
Install
Install All
Ln 1, Col 1
Tab Size: 4
UTF-8
LF
Go
Analysis Tools Missing

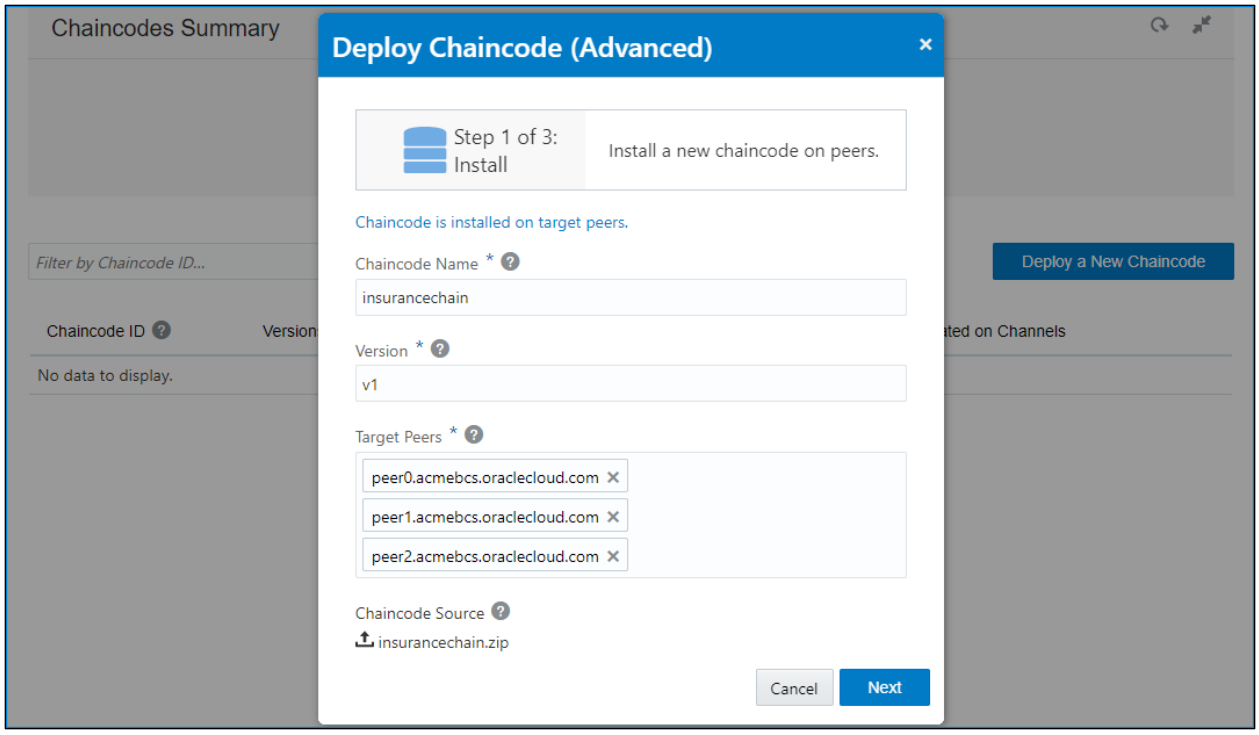

// Invoke - Our entry point for Invocations
func (t *InsuranceChaincodee) Invoke(stub shim.ChaincodeStubInterface) pb.Response {
return shim.Error("Received unknown invoke function name")
}
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
Go
/home/hyperledger/goapps/src/insurancechain>Finished running tool: /home/hyperledger/goapps/bin/golint
/home/hyperledger/goapps/src/insurancechain>Finished running tool: /usr/local/go/bin/go vet ./...
/home/hyperledger/goapps/src/insurancechain/insurancechain.go:28: undefined: InsuranceChaincodee
/home/hyperledger/goapps/src/insurancechain>Finished running tool: /usr/local/go/bin/go build -i -o /tmp/go-code-check insurancechain
/home/hyperledger/goapps/src/insurancechain/insurancechain.go:28: undefined: InsuranceChaincodee

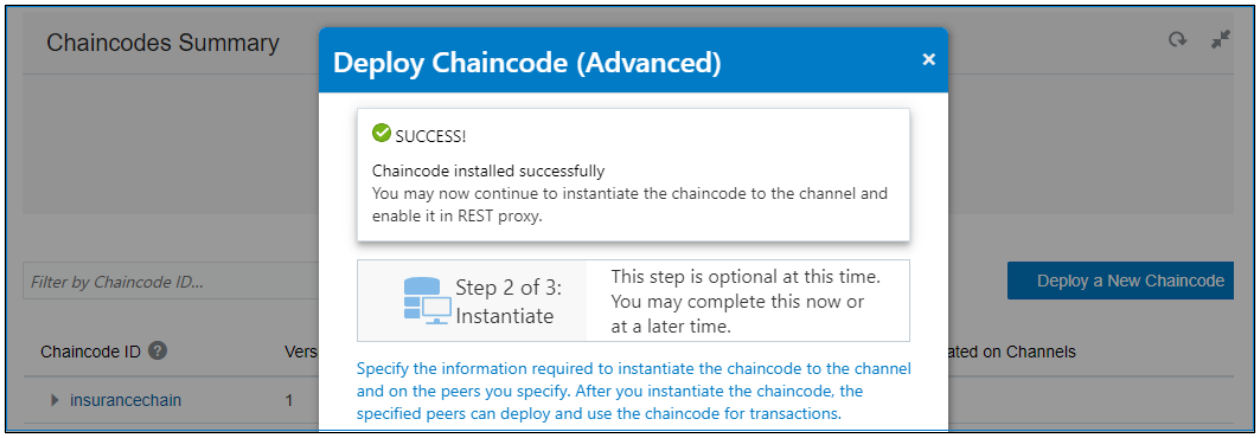
Chapter 13: Deploying and Testing Your First Smart Contract

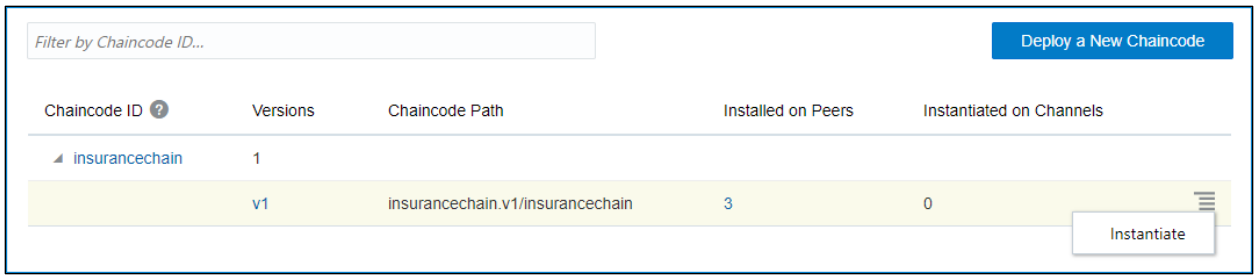


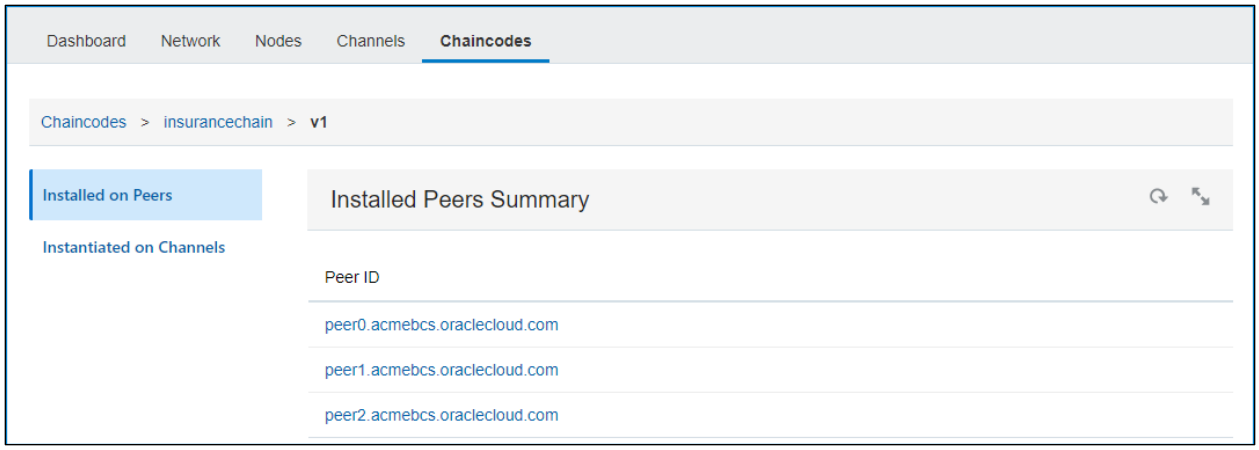


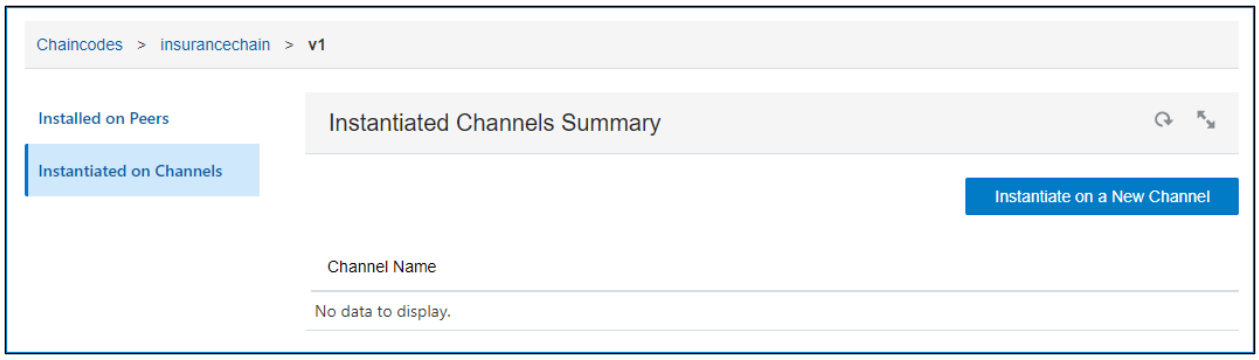


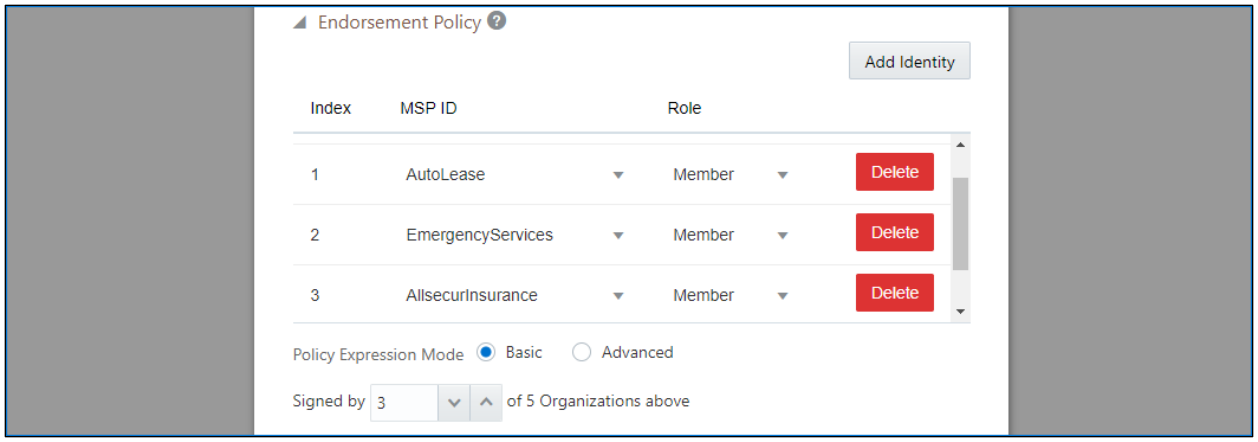

Chaincodes Summary
Deploy Chaincode (Advanced)
Step 1 of 3: Install
Install a new chaincode on peers.
Chaincode is installed on target peers.
Chaincode Name *
insurancechain
Version *
v1
Target Peers *
peer0.acmebcs.oraclecloud.com
peer1.acmebcs.oraclecloud.com
peer2.acmebcs.oraclecloud.com
Chaincode Source
insurancechain.zip
Cancel
Next
Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
Version
No data to display.

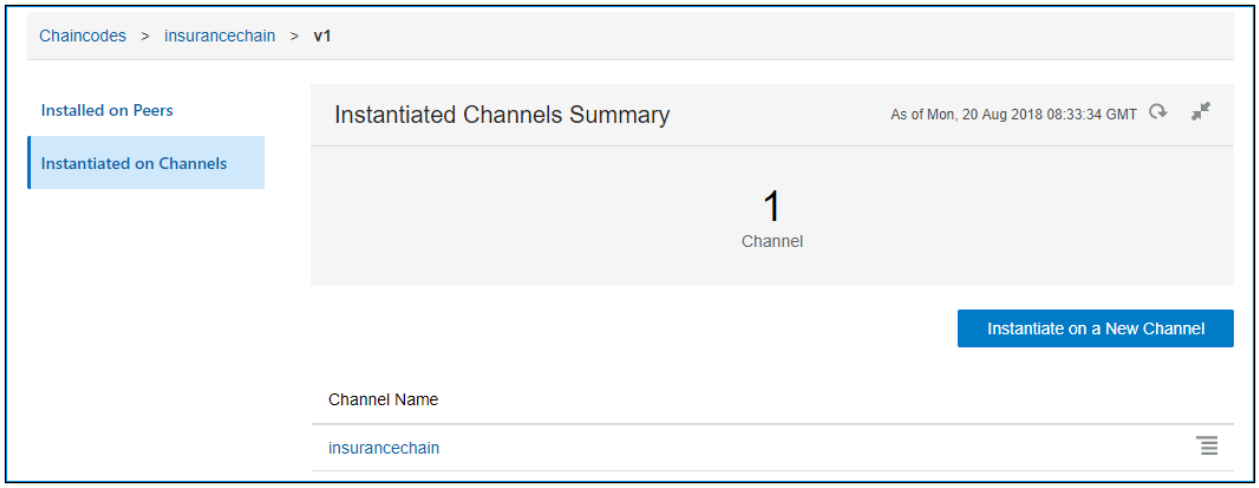

Chaincodes Summary
Deploy Chaincode (Advanced)
SUCCESS!
Chaincode installed successfully
You may now continue to instantiate the chaincode to the channel and enable it in REST proxy.
Step 2 of 3: Instantiate
This step is optional at this time. You may complete this now or at a later time.
Specify the information required to instantiate the chaincode to the channel and on the peers you specify. After you instantiate the chaincode, the specified peers can deploy and use the chaincode for transactions.
Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
insurancechain
1

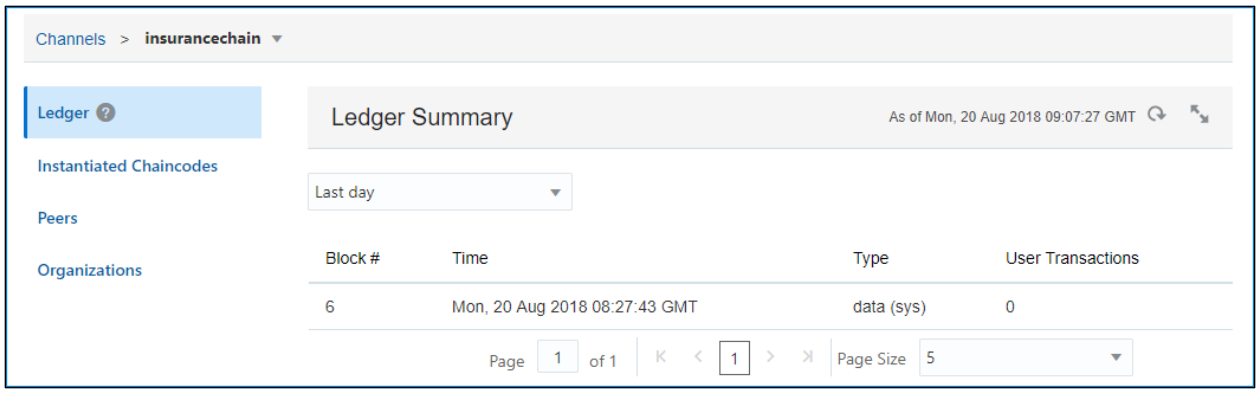

Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
Versions
Chaincode Path
Installed on Peers
Instantiated on Channels
insurancechain
1
v1
insurancechain.v1/insurancechain
3
0
Instantiate

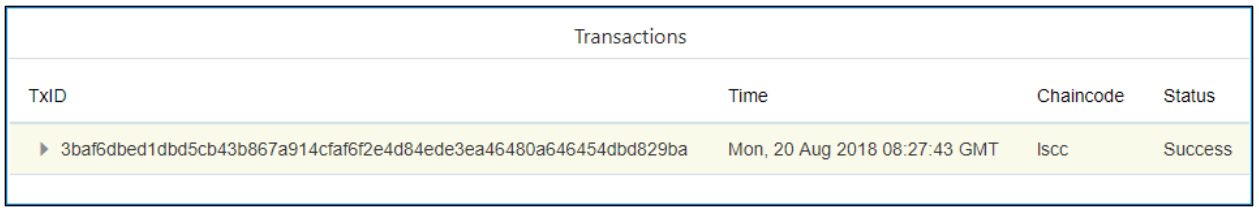

Dashboard
Network
Nodes
Channels
Chaincodes
Chaincodes > insurancechain > v1
Installed on Peers
Instantiated on Channels
Installed Peers Summary
Peer ID
peer0.acmebcs.oraclecloud.com
peer1.acmebcs.oraclecloud.com
peer2.acmebcs.oraclecloud.com

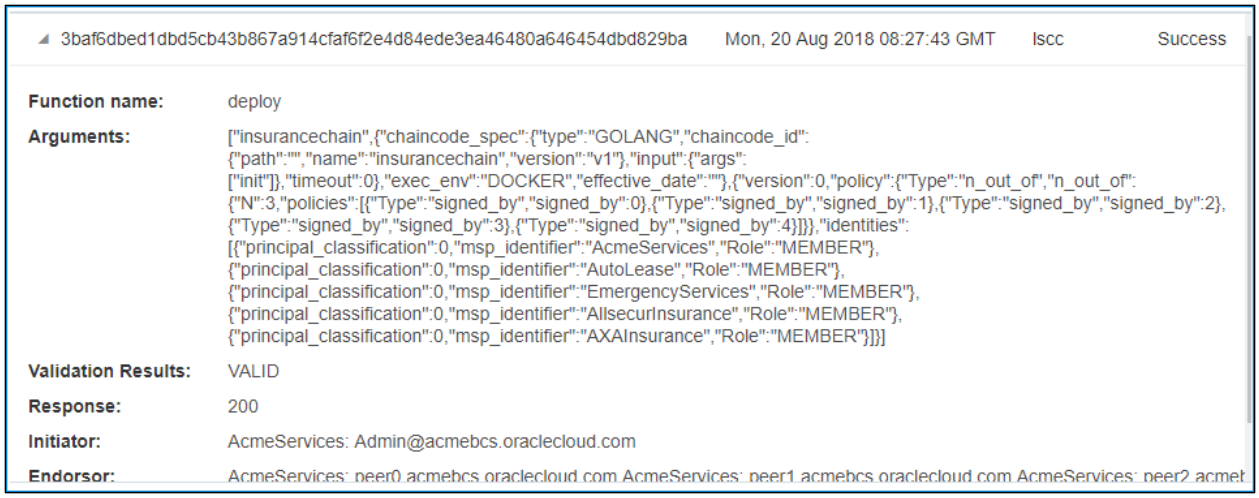

Chaincodes > insurancechain > v1
Installed on Peers
Instantiated on Channels
Instantiated Channels Summary
Instantiate on a New Channel
Channel Name
No data to display.


Endorsement Policy
Add Identity
Index
MSP ID
Role
1
AutoLease
Member
Delete
2
EmergencyServices
Member
Delete
3
AllsecurInsurance
Member
Delete
Policy Expression Mode
Basic
Advanced
Signed by 3 of 5 Organizations above


Chaincodes > insurancechain > v1
Installed on Peers
Instantiated on Channels
Instantiated Channels Summary
As of Mon, 20 Aug 2018 08:33:34 GMT
1
Channel
Instantiate on a New Channel
Channel Name
insurancechain

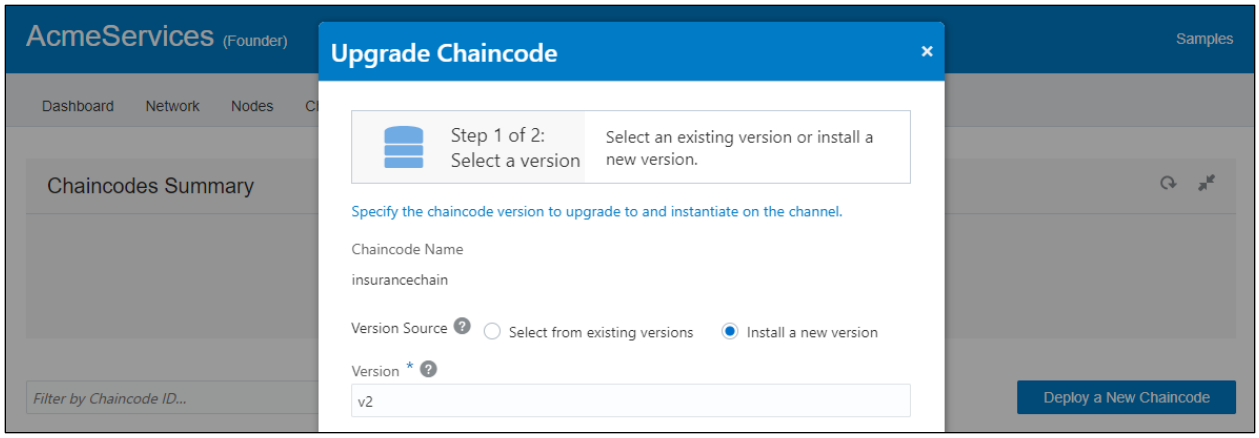

Channels > insurancechain
Ledger
Instantiated Chaincodes
Peers
Organizations
Ledger Summary
As of Mon, 20 Aug 2018 09:07:27 GMT
Last day
Block #
Time
Type
User Transactions
6
Mon, 20 Aug 2018 08:27:43 GMT
data (sys)
0
Page 1 of 1
Page Size 5


Transactions
TxID
Time
Chaincode
Status
3baf6dbed1dbd5cb43b867a914cfaf6f2e4d84ede3ea46480a646454dbd829ba
Mon, 20 Aug 2018 08:27:43 GMT
lscc
Success


3baf6dbed1dbd5cb43b867a914cfaf6f2e4d84ede3ea46480a646454dbd829ba
Mon, 20 Aug 2018 08:27:43 GMT
lscc
Success
Function name:
deploy
Arguments:
["insurancechain",{"chaincode_spec":{"type":"GOLANG","chaincode_id":
{"path":"","name":"insurancechain","version":"v1"},"input":{"args":
["init"]},"timeout":0},"exec_env":"DOCKER","effective_date":""},{"version":0,"policy":{"Type":"n_out_of","n_out_of":
{"N":3,"policies":[{"Type":"signed_by","signed_by":0},{"Type":"signed_by","signed_by":1},{"Type":"signed_by","signed_by":2},
{"Type":"signed_by","signed_by":3},{"Type":"signed_by","signed_by":4}]}},"identities":
[{"principal_classification":0,"msp_identifier":"AcmeServices","Role":"MEMBER"},
{"principal_classification":0,"msp_identifier":"AutoLease","Role":"MEMBER"},
{"principal_classification":0,"msp_identifier":"EmergencyServices","Role":"MEMBER"},
{"principal_classification":0,"msp_identifier":"AllsecurInsurance","Role":"MEMBER"},
{"principal_classification":0,"msp_identifier":"AXAInsurance","Role":"MEMBER"}]}]
Validation Results:
VALID
Response:
200
Initiator:
AcmeServices: Admin@acmebcs.oraclecloud.com
Endorsor:
AcmeServices: peer0.acmebcs.oraclecloud.com AcmeServices: peer1.acmebcs.oraclecloud.com AcmeServices: peer2.acmet

Chaincode ID	Versions	Chaincode Path	Installed on Peers	Instantiated on Channels
insurancechain	1			
	v1	insurancechain.v1/insurancechain	3	1

Upgrade
Enable in REST Proxy



Chaincode ID	Versions	Chaincode Path	Installed on Peers	Instantiated on Channels
insurancechain	2			
	v1	insurancechain.v1/insurancechain	3	0
	v2	insurancechain.v2/insurancechain	3	1

TxID	Time	Chaincode	Status
4a1d1db5025e5dc6578638184c8173d66b9563af394bcc1d20fc8099b0c9fffe	Mon, 20 Aug 2018 10:53:18 GMT	lscc	Success

Function name: upgrade

Arguments: ["insurancechain",{"chaincode_spec":{"type":"GOLANG","chaincode_id":{"path":"","name":"insurancechain","version":"v2"},"input":{"args":["init"]},"timeout":0},"exec_env":"DOCKER","effective_date":""},{"version":0,"policy":{"Type":"n_out_of","n_out_of":{"N":3,"policies":[{"Type":"signed_by","signed_by":0},{"Type":"signed_by","signed_by":1},{"Type":"signed_by","signed_by":2},{"Type":"signed_by","signed_by":3},{"Type":"signed_by","signed_by":4}]}},"identities":[{"principal_classification":0,"msp_identifier":"AcmeServices","Role":"MEMBER"},{"principal_classification":0,"msp_identifier":"AutoLease","Role":"MEMBER"},{"principal_classification":0,"msp_identifier":"EmergencyServices","Role":"MEMBER"},{"principal_classification":0,"msp_identifier":"AllsecurInsurance","Role":"MEMBER"},{"principal_classification":0,"msp_identifier":"AXAInsurance","Role":"MEMBER"}]}]

Validation Results: VALID

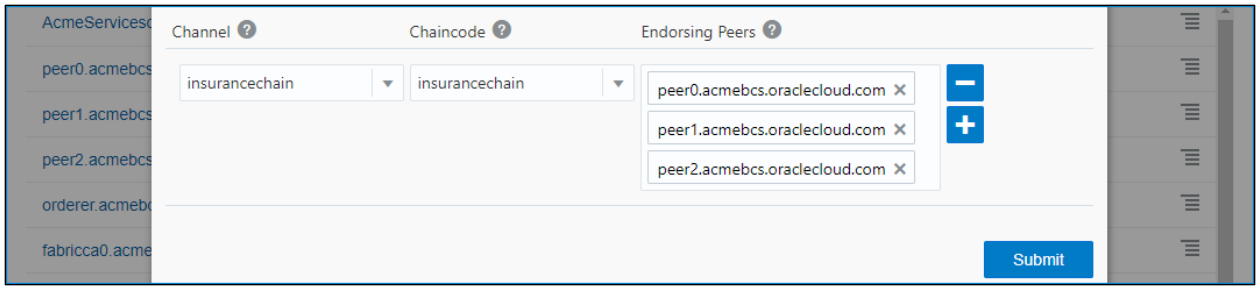
Response: 200

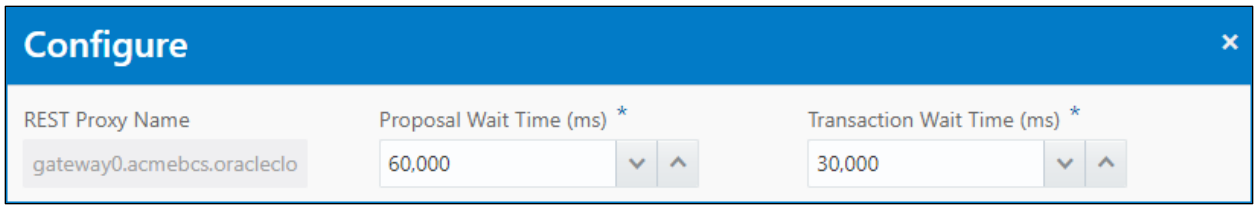
Initiator: AcmeServices: Admin@acmebcs.oraclecloud.com

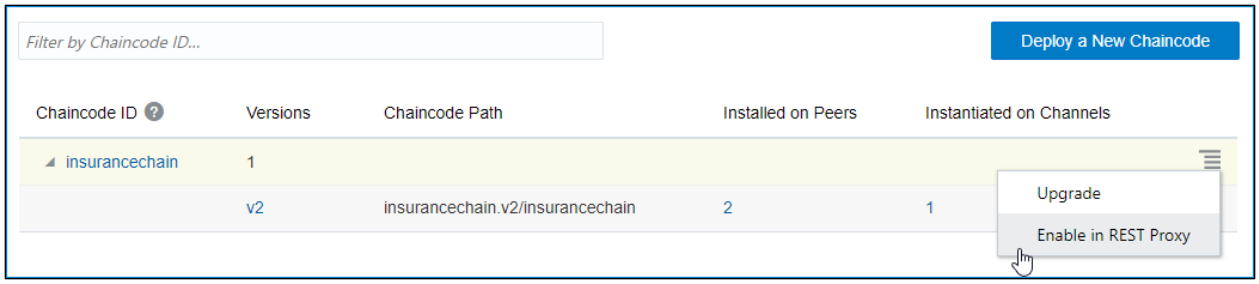
Endorsor: AcmeServices: peer0.acmebcs.oraclecloud.com

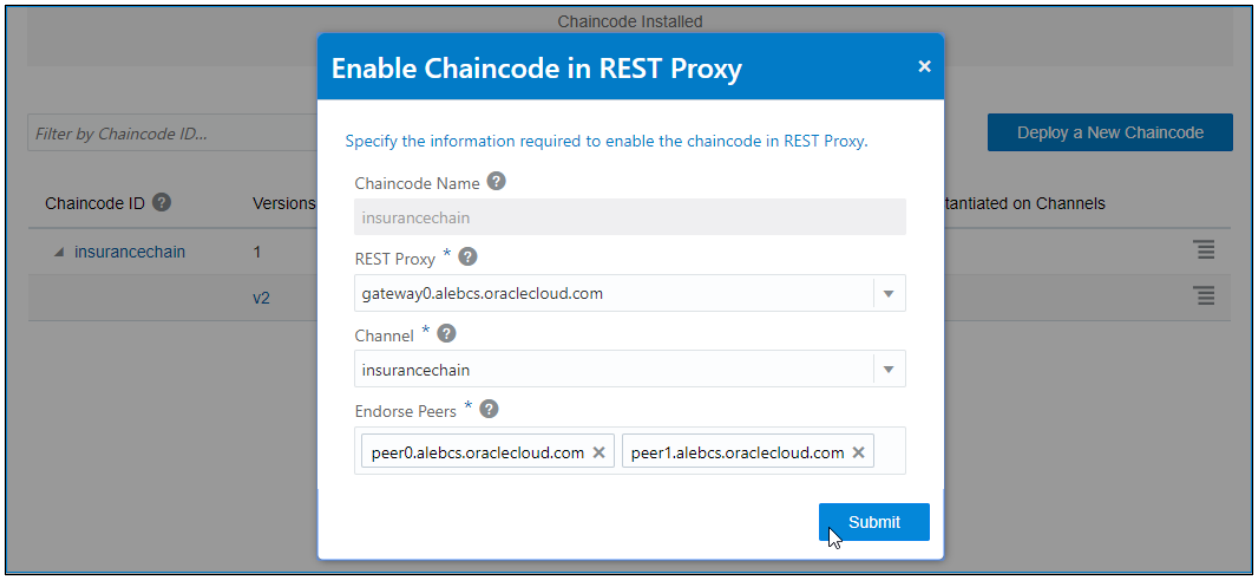
Chaincode ID	Versions	Chaincode Path	Installed on Peers	Instantiated on Channels
insurancechain	1			
	v2	insurancechain.v2/insurancechain	2	1

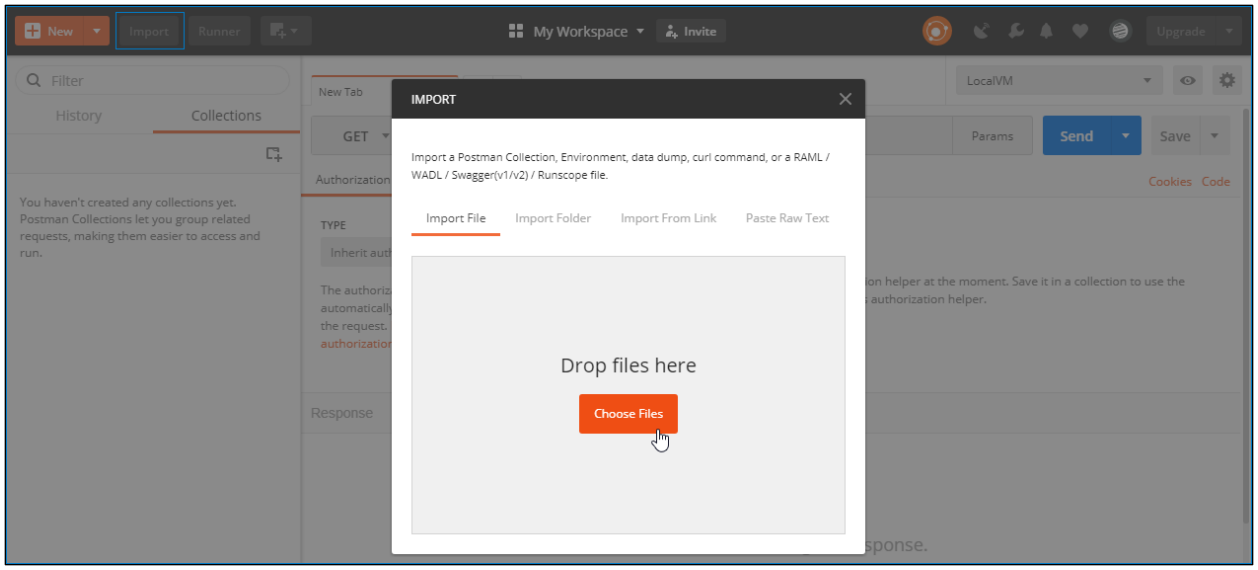
Name	Route	Type	MSP ID	Status
AcmeServicesconsole	https://192.168.99.101:7101	Console	AcmeServices	up
peer0.acmebcs.oraclecloud.com	grpcs://192.168.99.101:10000	Peer(Member)	AcmeServices	up
peer1.acmebcs.oraclecloud.com	grpcs://192.168.99.101:10003	Peer(Member)	AcmeServices	up
peer2.acmebcs.oraclecloud.com	grpcs://192.168.99.101:10006	Peer(Member)	AcmeServices	up
orderer.acmebcs.oraclecloud.com	grpcs://192.168.99.101:7000	Orderer	AcmeServices	up
fabricca0.acmebcs.oraclecloud.com	https://192.168.99.101:32768	CA	AcmeServices	up
gateway0.acmebcs.oraclecloud.com	https://192.168.99.101:7100	REST Proxy	AcmeServices	up
peer0.alebcs.oraclecloud.com	grpcs://192.168.20.3:10015	Remote Peer	AutoLease	N/A

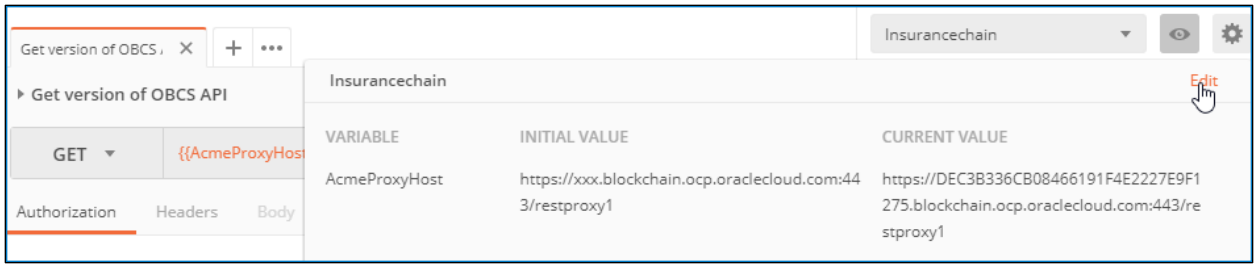


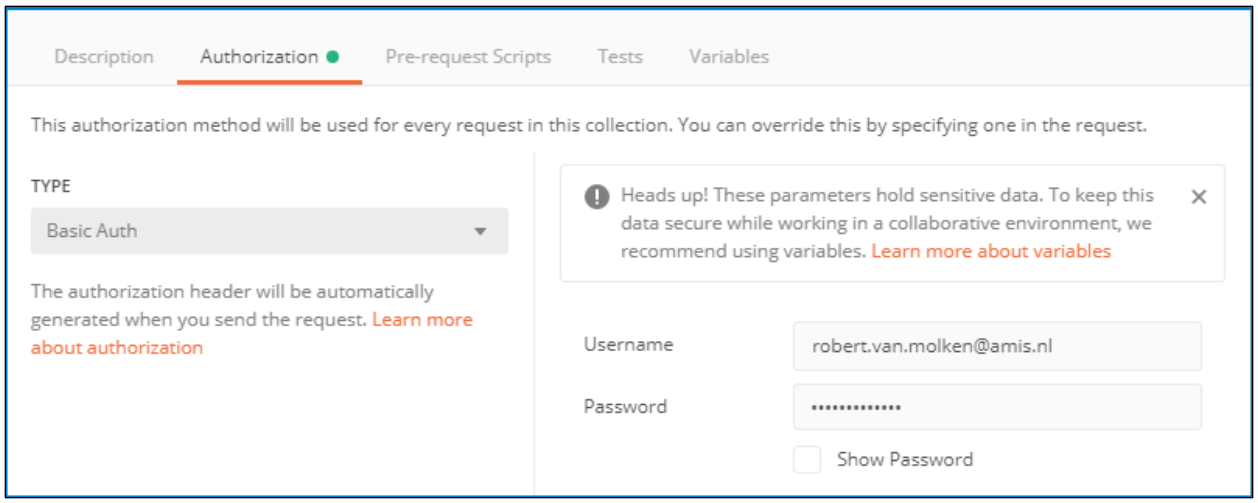


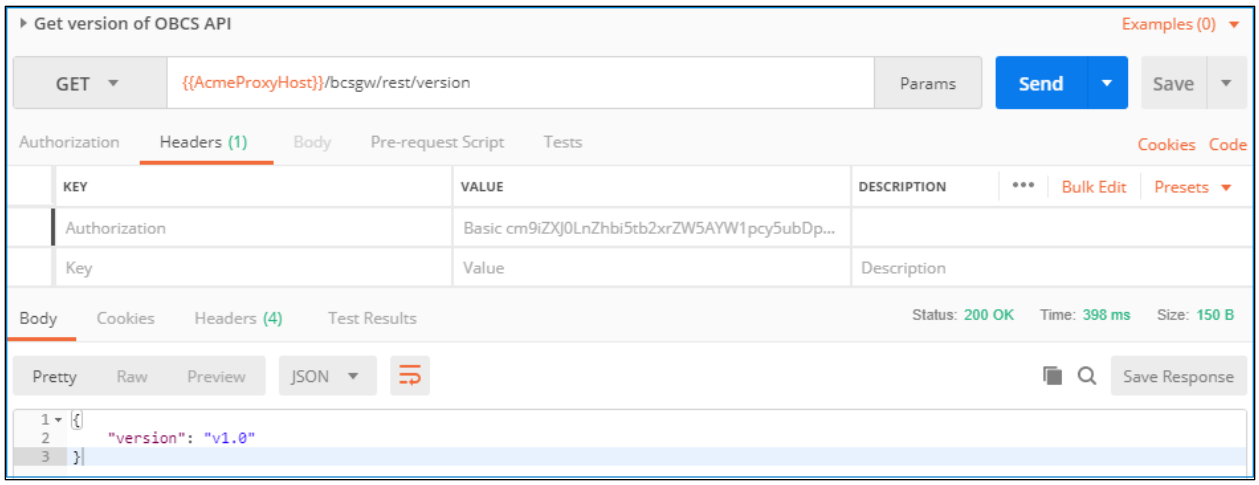

Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
Versions
Chaincode Path
Installed on Peers
Instantiated on Channels
insurancechain
1
v2
insurancecha
in.v2/insurancechain
2
1
Upgrade
Enable in REST Proxy

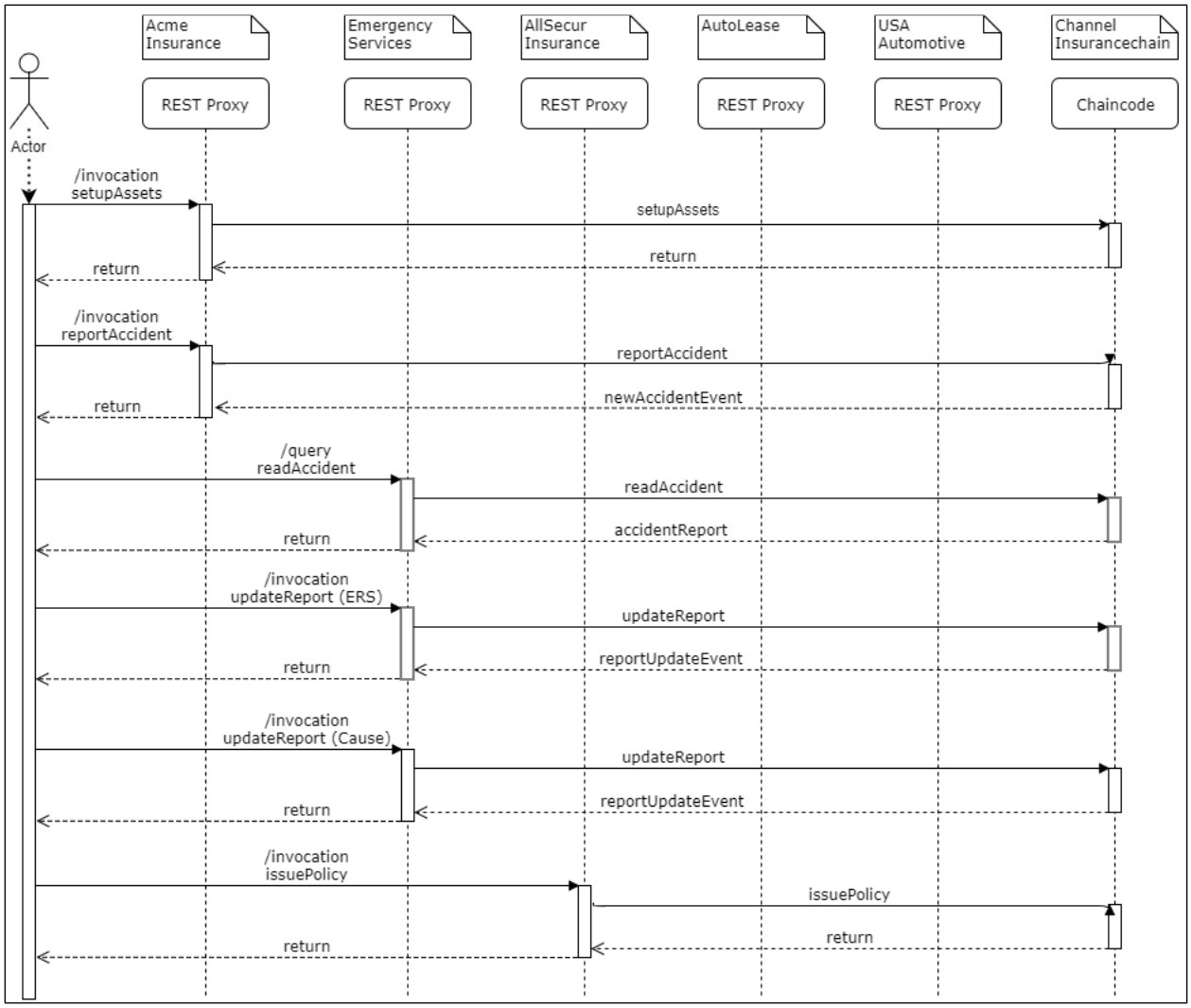

Chaincode Installed
Enable Chaincode in REST Proxy
Specify the information required to enable the chaincode in REST Proxy.
Chaincode Name
insurancechain
REST Proxy *
gateway0.alebcs.oraclecloud.com
Channel *
insurancechain
Endorse Peers *
peer0.alebcs.oraclecloud.com
peer1.alebcs.oraclecloud.com
Submit
Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
Versions
tantiated on Channels
insurancechain
1
v2

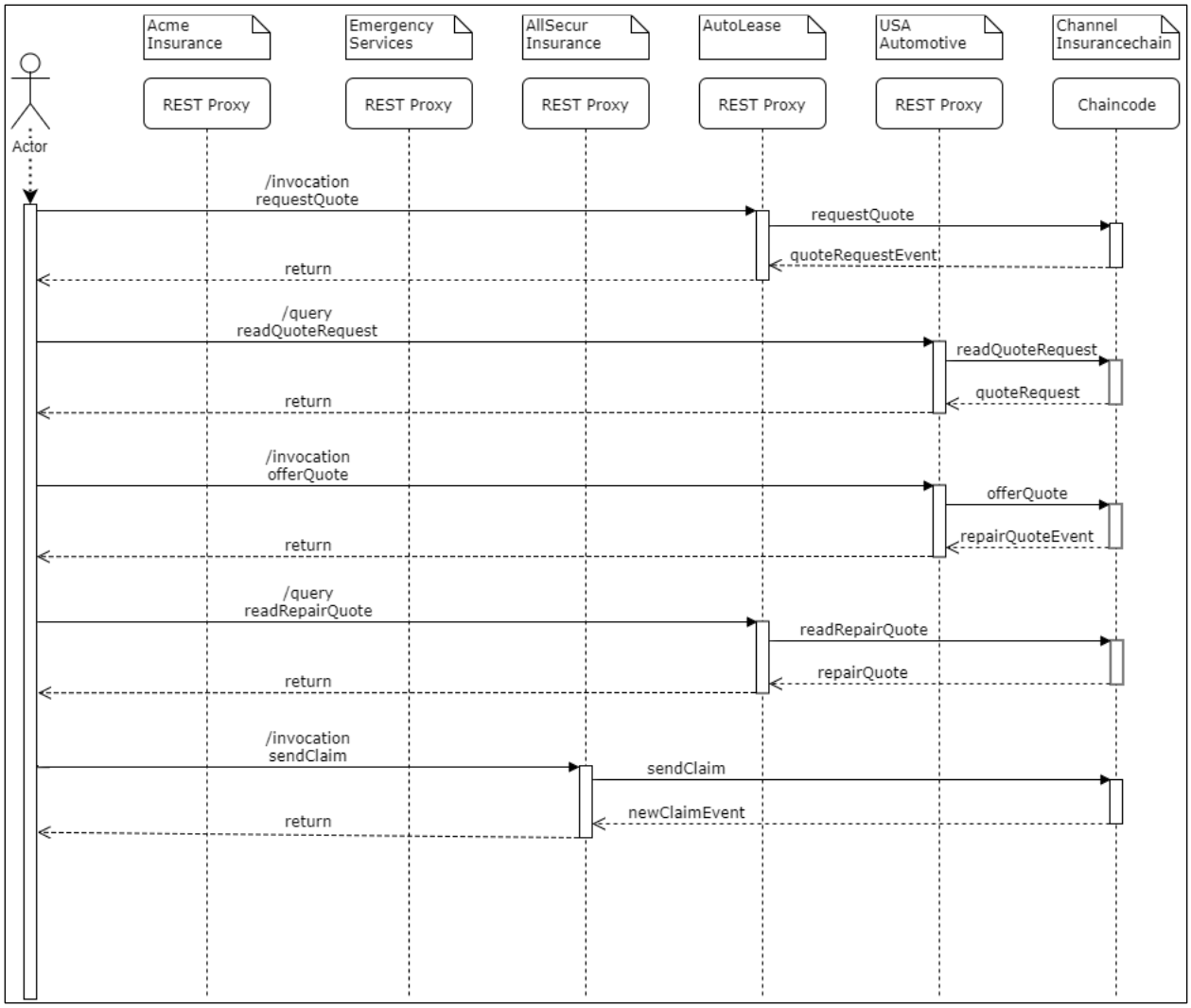

New
Import
Runner
My Workspace
Invite
Upgrade
Filter
History
Collections
You haven't created any collections yet.
Postman Collections let you group related requests, making them easier to access and run.
New Tab
GET
Authorization
TYPE
Response
LocalVM
Params
Send
Save
Cookies
Code
IMPORT
Import a Postman Collection, Environment, data dump, curl command, or a RAML / WADL / Swagger(v1/v2) / Runscope file.
Import File
Import Folder
Import From Link
Paste Raw Text
Drop files here
Choose Files

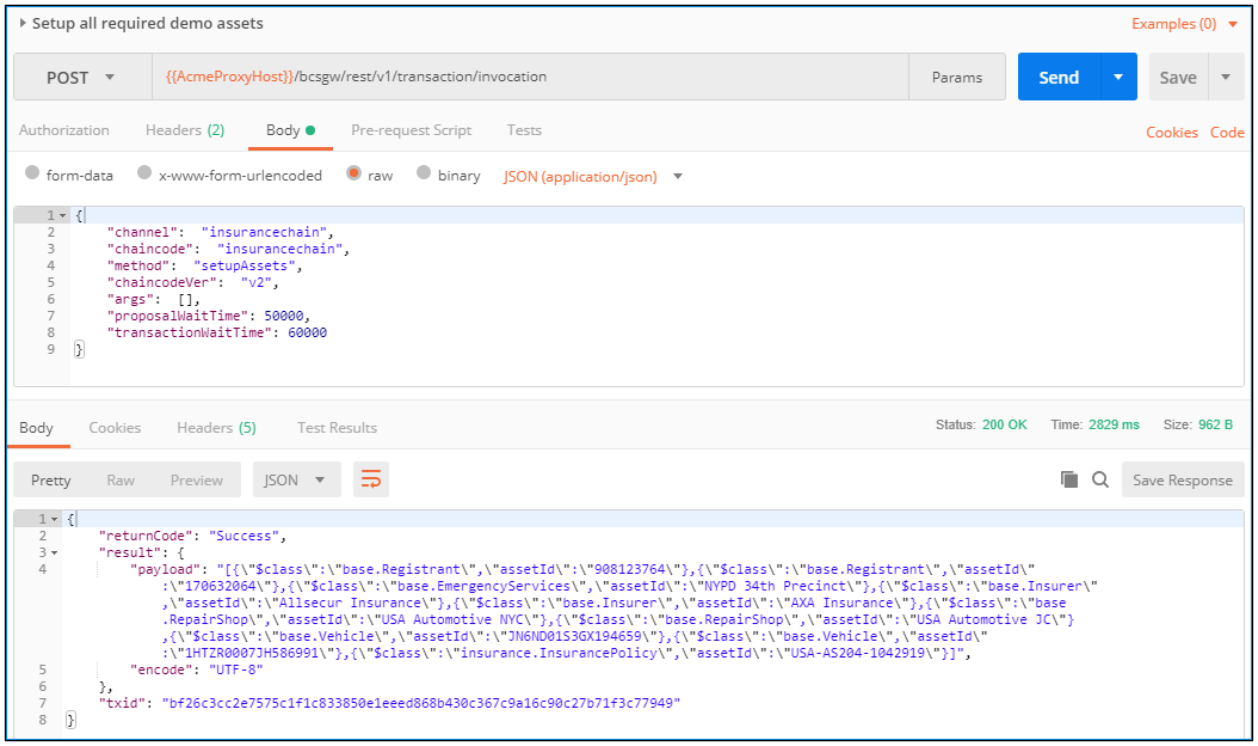

Get version of OBCS
Get version of OBCS API
GET
{{AcmeProxyHost
Authorization
Headers
Body
Insurancechain
Insurancechain
Edit
VARIABLE
INITIAL VALUE
CURRENT VALUE
AcmeProxyHost
https://xxx.blockchain.ocp.oraclecloud.com:443/restproxy1
https://DEC3B336CB08466191F4E2227E9F1275.blockchain.ocp.oraclecloud.com:443/restproxy1


Description
Authorization
Pre-request Scripts
Tests
Variables
This authorization method will be used for every request in this collection. You can override this by specifying one in the request.
TYPE
Basic Auth
The authorization header will be automatically generated when you send the request. Learn more about authorization
Heads up! These parameters hold sensitive data. To keep this data secure while working in a collaborative environment, we recommend using variables. Learn more about variables
Username
robert.van.molken@amis.nl
Password
Show Password


Get version of OBCS API
Examples (0)
GET
{{AcmeProxyHost}}/bcsgw/rest/version
Params
Send
Save
Authorization
Headers (1)
Body
Pre-request Script
Tests
Cookies
Code
KEY
VALUE
DESCRIPTION
Bulk Edit
Presets
Authorization
Basic cm9iZXJ0LnZhbi5tb2xrZW5AYW1pcy5ubDp...
Key
Value
Description
Body
Cookies
Headers (4)
Test Results
Status: 200 OK
Time: 398 ms
Size: 150 B
Pretty
Raw
Preview
JSON
Save Response
{
"version": "v1.0"
}

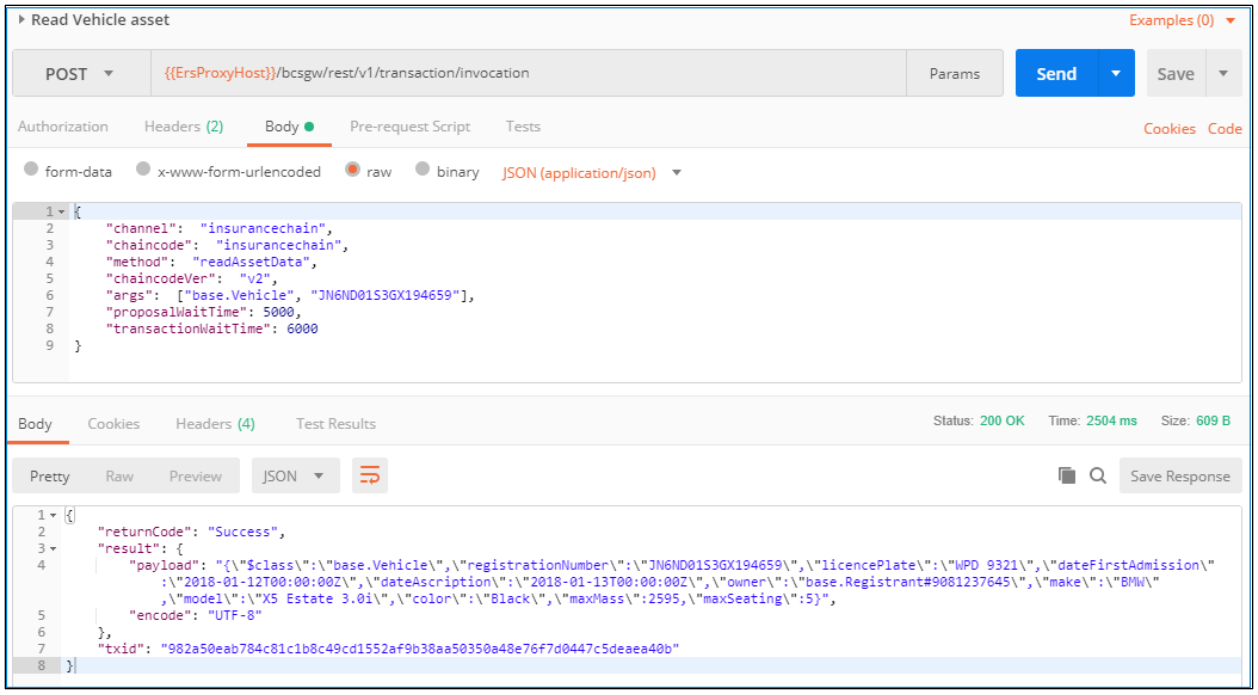

Acme Insurance
Emergency Services
AllSecur Insurance
AutoLease
USA Automotive
Channel Insurancechain
Actor
REST Proxy
REST Proxy
REST Proxy
REST Proxy
REST Proxy
Chaincode
/invocation setupAssets
setupAssets
return
return
/invocation reportAccident
reportAccident
return
newAccidentEvent
/query readAccident
readAccident
return
accidentReport
/invocation updateReport (ERS)
updateReport
return
reportUpdateEvent
/invocation updateReport (Cause)
updateReport
return
reportUpdateEvent
/invocation issuePolicy
issuePolicy
return
return


Acme Insurance
Emergency Services
AllSecur Insurance
AutoLease
USA Automotive
Channel Insurancechain
Actor
REST Proxy
REST Proxy
REST Proxy
REST Proxy
REST Proxy
Chaincode
/invocation requestQuote
requestQuote
quoteRequestEvent
return
/query readQuoteRequest
readQuoteRequest
quoteRequest
return
/invocation offerQuote
offerQuote
repairQuoteEvent
return
/query readRepairQuote
readRepairQuote
repairQuote
return
/invocation sendClaim
sendClaim
newClaimEvent
return

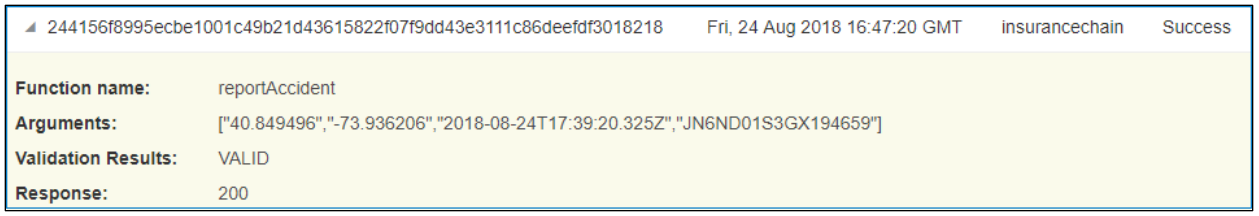


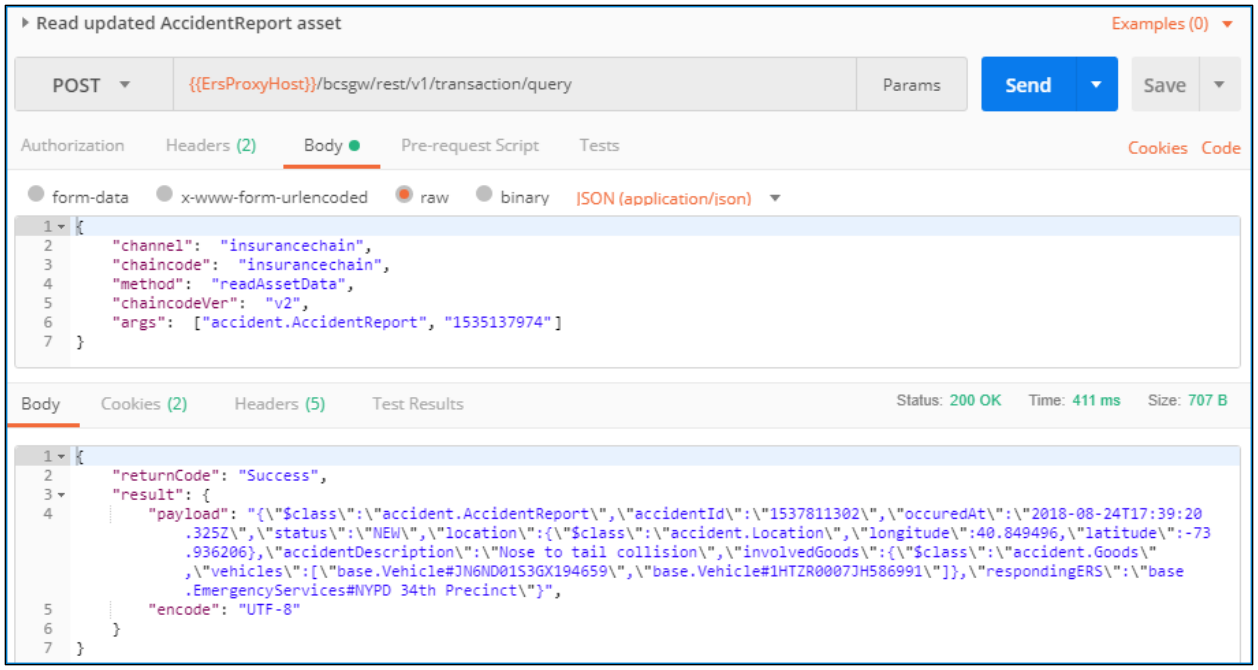
TxID	Time	Chaincode	Status
bf26c3cc2e7575c1f1c833850e1eeed868b430c367c9a16c90c27b71f3c77949	Fri, 24 Aug 2018 10:55:32 GMT	insurancechain	Success

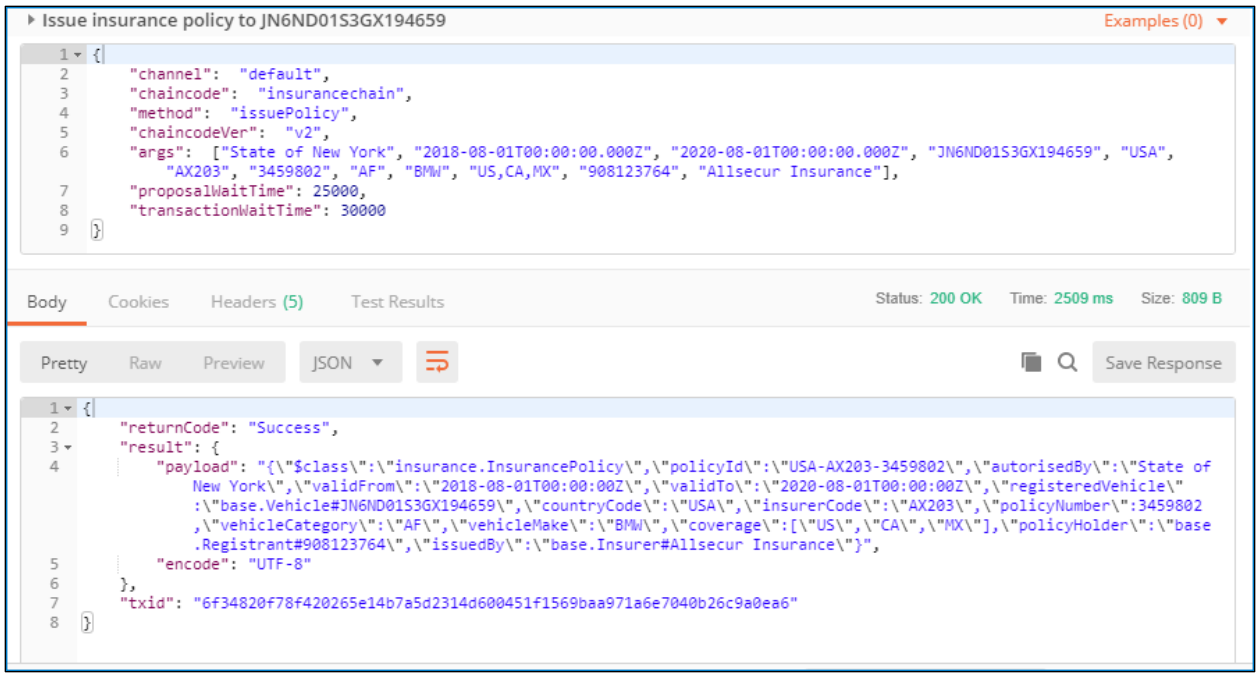
Function name: setupAssets
Arguments: N/A
Validation Results: VALID
Response: 200
Initiator: acmeservices: restproxy1
Endorser: autolease: peer0-1,acmeservices: peer1-1,emergencyservices: peer0-2


Read Vehicle asset
Examples (0)
POST
{{ErsProxyHost}}/bcsgw/rest/v1/transaction/invocation
Params
Send
Save
Authorization
Headers (2)
Body
Pre-request Script
Tests
Cookies
Code
form-data
x-www-form-urlencoded
raw
binary
JSON (application/json)
{
"channel": "insurancechain",
"chaincode": "insurancechain",
"method": "readAssetData",
"chaincodeVer": "v2",
"args": ["base.Vehicle", "JN6ND01S3GX194659"],
"proposalWaitTime": 5000,
"transactionWaitTime": 6000
}
Body
Cookies
Headers (4)
Test Results
Status: 200 OK
Time: 2504 ms
Size: 609 B
Pretty
Raw
Preview
JSON
Save Response
{
"returnCode": "Success",
"result": {
"payload": "{\"$class\":\"base.Vehicle\",\"registrationNumber\":\"JN6ND01S3GX194659\",\"licencePlate\":\"WPD 9321\",\"dateFirstAdmission\"
:\"2018-01-12T00:00:00Z\",\"dateAscription\":\"2018-01-13T00:00:00Z\",\"owner\":\"base.Registrant#9081237645\",\"make\":\"BMW\"
,\"model\":\"X5 Estate 3.0i\",\"color\":\"Black\",\"maxMass\":2595,\"maxSeating\":5}",
"encode": "UTF-8"
},
"txid": "982a50eab784c81c1b8c49cd1552af9b38aa50350a48e76f7d0447c5deaea40b"
}

5ed44eb1d9e29ffed9b5c71363792e9a6c91832d35fce8a6e18cf81d45da79be
Fri, 24 Aug 2018 14:55:09 GMT
insurancechain
Success
Function name:
readAssetData
Arguments:
["base.Vehicle","JN6ND01S3GX194659"]
Validation Results:
VALID
Response:
200
Initiator:
emergencyservices: restproxy1
Endorser:
emergencyservices: peer0-1,acmeservices: peer1-1,axainsurance: peer0-1


244156f8995ecbe1001c49b21d43615822f07f9dd43e3111c86deefdf3018218
Fri, 24 Aug 2018 16:47:20 GMT
insurancechain
Success
Function name:
reportAccident
Arguments:
["40.849496","-73.936206","2018-08-24T17:39:20.325Z","JN6ND01S3GX194659"]
Validation Results:
VALID
Response:
200


Read updated AccidentReport asset
Examples (0)
POST
{{ErsProxyHost}}/bcsgw/rest/v1/transaction/query
Params
Send
Save
Authorization
Headers (2)
Body
Pre-request Script
Tests
Cookies
Code
form-data
x-www-form-urlencoded
raw
binary
JSON (application/json)
{
"channel": "insurancechain",
"chaincode": "insurancechain",
"method": "readAssetData",
"chaincodeVer": "v2",
"args": ["accident.AccidentReport", "1535137974"]
}
Body
Cookies (2)
Headers (5)
Test Results
Status: 200 OK
Time: 411 ms
Size: 707 B
{
"returnCode": "Success",
"result": {
"payload": "{\"$class\":\"accident.AccidentReport\",\"accidentId\":\"1537811302\",\"occuredAt\":\"2018-08-24T17:39:20
.325Z\",\"status\":\"NEW\",\"location\":{\"$class\":\"accident.Location\",\"longitude\":40.849496,\"latitude\":-73
.936206},\"accidentDescription\":\"Nose to tail collision\",\"involvedGoods\":{\"$class\":\"accident.Goods\"
,\"vehicles\":[\"base.Vehicle#JN6ND01S3GX194659\",\"base.Vehicle#1HTZR0007JH586991\"]},\"respondingERS\":\"base
.EmergencyServices#NYPD 34th Precinct\"}",
"encode": "UTF-8"
}
}


Issue insurance policy to JN6ND01S3GX194659
Examples (0)
{
"channel": "default",
"chaincode": "insurancechain",
"method": "issuePolicy",
"chaincodeVer": "v2",
"args": ["State of New York", "2018-08-01T00:00:00.000Z", "2020-08-01T00:00:00.000Z", "JN6ND01S3GX194659", "USA",
"AX203", "3459802", "AF", "BMW", "US,CA,MX", "908123764", "Allsecur Insurance"],
"proposalWaitTime": 25000,
"transactionWaitTime": 30000
}
Body
Cookies
Headers (5)
Test Results
Status: 200 OK
Time: 2509 ms
Size: 809 B
Pretty
Raw
Preview
JSON
Save Response
{
"returnCode": "Success",
"result": {
"payload": "{\"$class\":\"insurance.InsurancePolicy\",\"policyId\":\"USA-AX203-3459802\",\"autorisedBy\":\"State of
New York\",\"validFrom\":\"2018-08-01T00:00:00Z\",\"validTo\":\"2020-08-01T00:00:00Z\",\"registeredVehicle\"
:\"base.Vehicle#JN6ND01S3GX194659\",\"countryCode\":\"USA\",\"insurerCode\":\"AX203\",\"policyNumber\":3459802
,\"vehicleCategory\":\"AF\",\"vehicleMake\":\"BMW\",\"coverage\":[\"US\",\"CA\",\"MX\"],\"policyHolder\":\"base
.Registrant#908123764\",\"issuedBy\":\"base.Insurer#Allsecur Insurance\"}",
"encode": "UTF-8"
},
"txid": "6f34820f78f420265e14b7a5d2314d600451f1569baa971a6e7040b26c9a0ea6"
}

◢ 6f34820f78f420265e14b7a5d2314d600451f1569baa971a6e7040b26c9a0ea6	Sat, 25 Aug 2018 14:13:37 GMT	insurancechain	Success

Function name: issuePolicy

Arguments: ["State of New York","2018-08-01T00:00:00.000Z","2020-08-01T00:00:00.000Z","JN6ND01S3GX194659","USA","AX203","3459802","AF","BMW","US,CA,MX","908123764","Allsecur Insurance"]

Validation Results: VALID

Response: 200

Initiator: allsecur: restproxy1

Endorser: axainsurance: peer0-1,acmeservices: peer1-1,autolease: peer0-2

TxID	Time	Chaincode	Status
◢ 36862f38b775cee114d587cc4df0ab79f32133241a5a4c8524fe7e6b9b9e6b91	Sat, 25 Aug 2018 17:45:01 GMT	insurancechain	Success

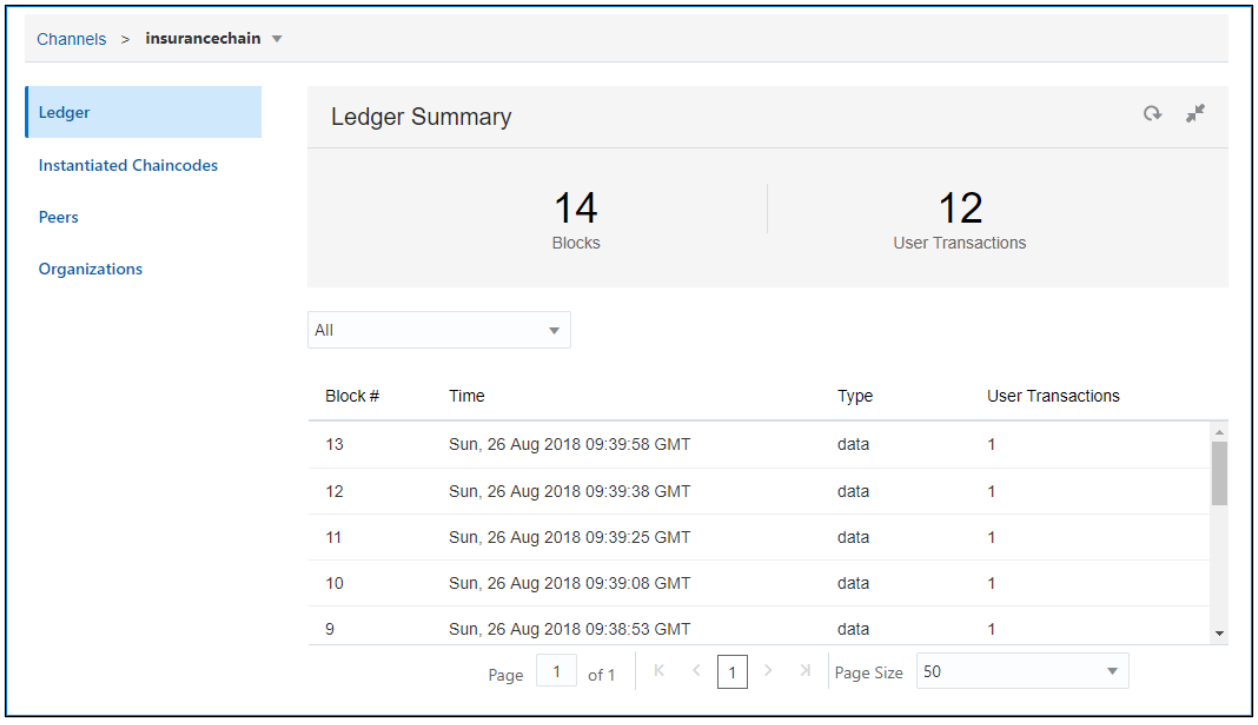
Function name: offerQuote

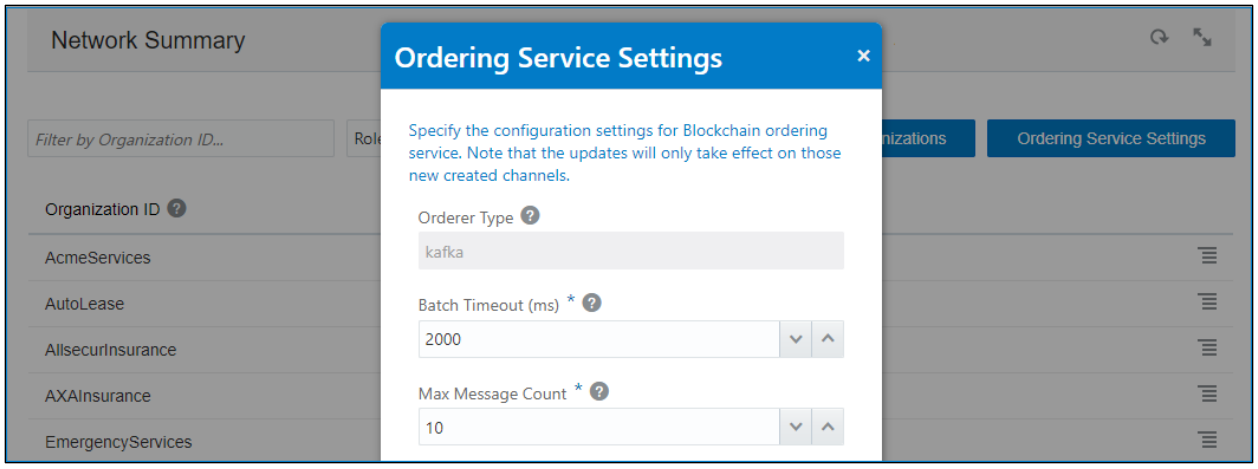
Arguments: ["1535212371","USA Automotive NYC","[{\"type\":\"REPAIR\",\"description\":\"Scratch removal\",\"costOfParts\":30.6,\"costOfLabor\":100.0,\"totalCost\":130.6}]","11"]

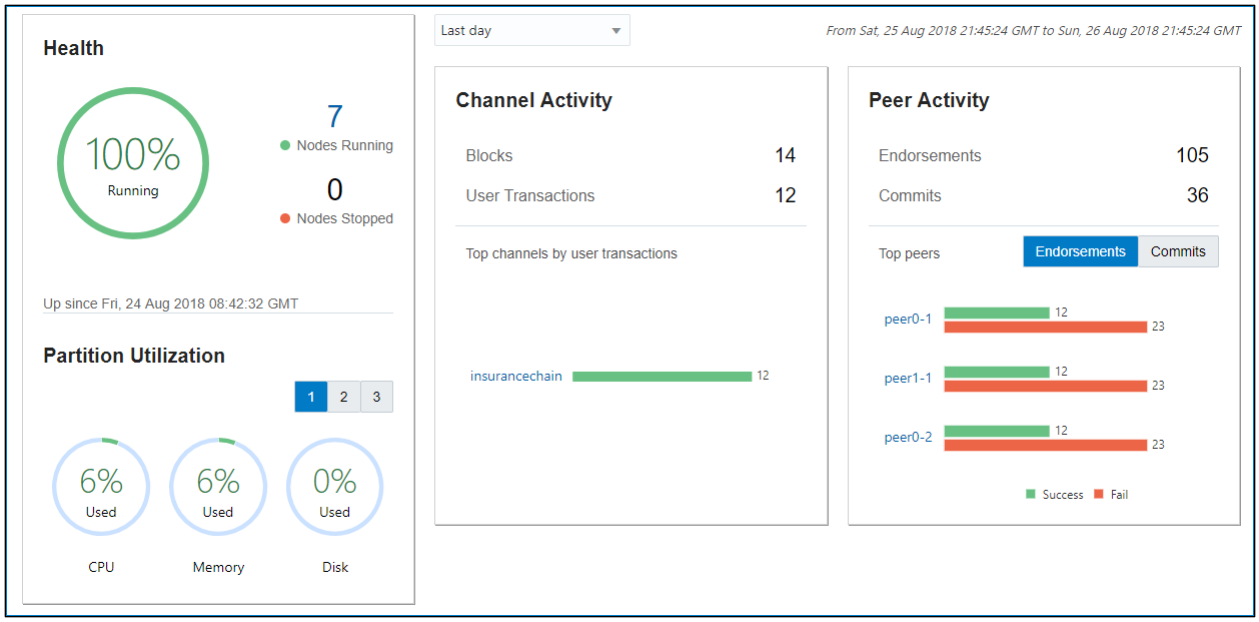
Validation Results: VALID

Response: 200

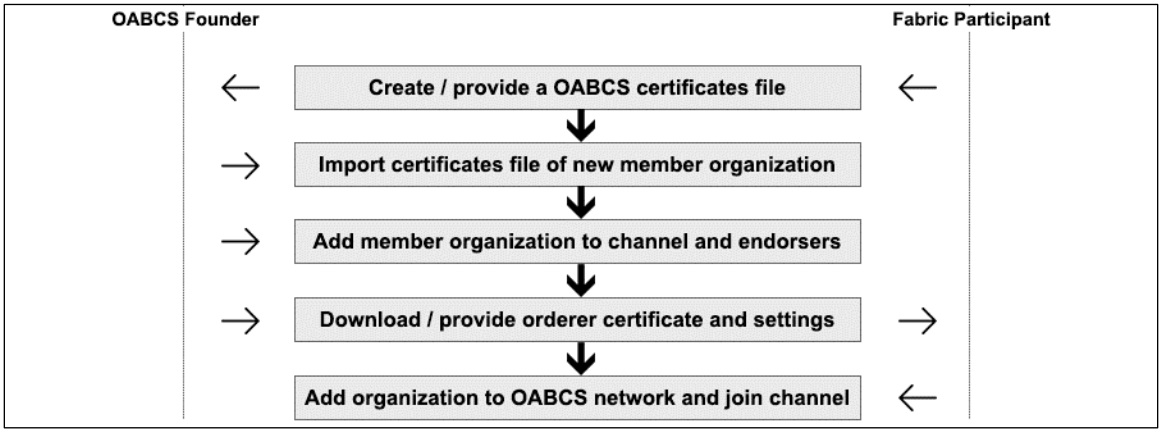
Initiator: acmeservices: restproxy1




Network Summary
Filter by Organization ID...
Ordering Service Settings
Organization ID
AcmeServices
AutoLease
AllsecurInsurance
AXAInsurance
EmergencyServices
Ordering Service Settings
Specify the configuration settings for Blockchain ordering service. Note that the updates will only take effect on those new created channels.
Orderer Type
kafka
Batch Timeout (ms) *
2000
Max Message Count *
10


Health
100%
Running
7
Nodes Running
0
Nodes Stopped
Up since Fri, 24 Aug 2018 08:42:32 GMT
Partition Utilization
1
2
3
6%
Used
CPU
6%
Used
Memory
0%
Used
Disk
Last day
From Sat, 25 Aug 2018 21:45:24 GMT to Sun, 26 Aug 2018 21:45:24 GMT
Channel Activity
Blocks
14
User Transactions
12
Top channels by user transactions
insurancechain
12
Peer Activity
Endorsements
105
Commits
36
Top peers
Endorsements
Commits
peer0-1
12
23
peer1-1
12
23
peer0-2
12
23
Success
Fail

Chapter 14: Configuring, Extending, and Monitoring Your Network



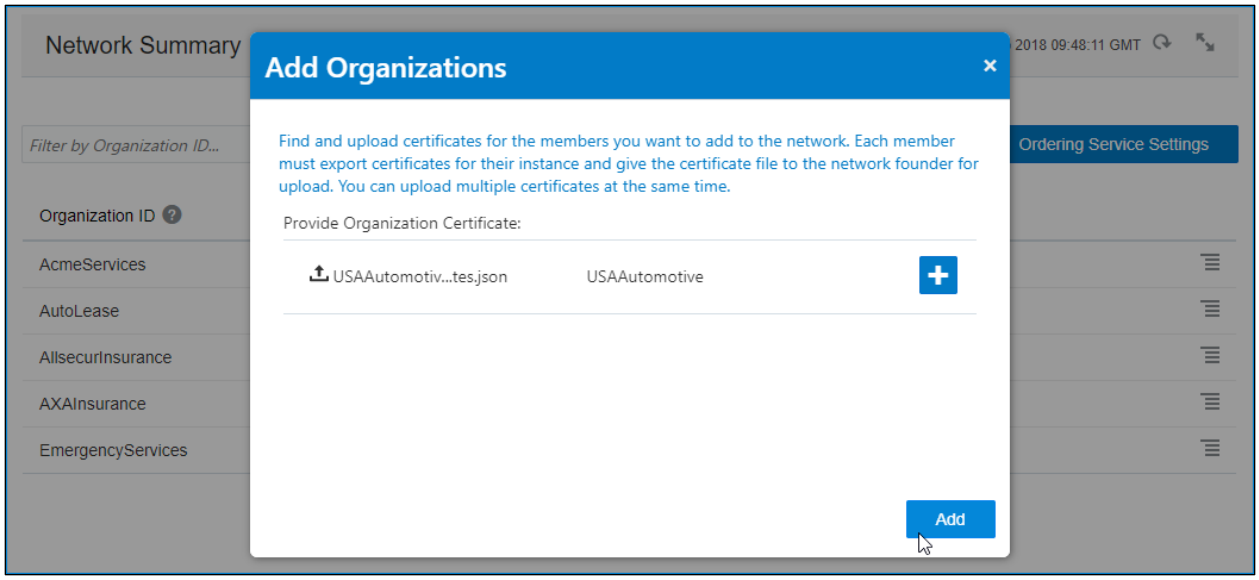
Admin@org1.example.com-cert.pem ca.org1.example.com-cert.pem tlsca.org1.example.com-cert.pem

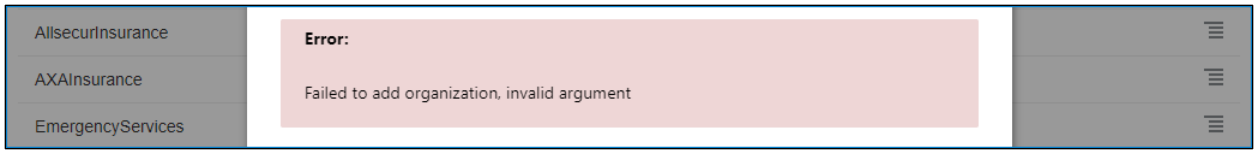
```
-----BEGIN CERTIFICATE-----
MIICGTCCAcCgAwIBAgIRAMCc/yZzVaMiIOT+9Ym3cuswCgYIKoZIzj0EAwIwczEL
MAkGA1UEBhMCVVMxEzARBgNVBAgTCkNhbGlmb3JuaWExFjAUBgNVBAcTDVNhbiBG
cmFuY2lzY28xGTAXBgNVBAoTEG9yZzEuZXhhbXBsZS5jb20xHDAaBgNVBAMTE2Nh
Lm9yZzEuZXhhbXBsZS5jb20wHhcNMTgwOTIyMTQwNjE0WhcNMjgwOTE5MTQwNjE0
WjBbMQswCQYDVQQGEwJVUzETMBEGA1UECBMKQ2FsaWZvcm5pYTEWMBQGA1UEBxMN
U2FuIEZyYW5jaXNjbzEfMB0GA1UEAwwWQWRtaW5Ab3JnMS5leGFtcGxlLmNvbTBZ
MBMGByqGSM49AgEGCCqGSM49AwEHA0IABDDNmHjKB/eDvdUQXOVzogl6kwlSVXhg
4uwiXLzxRmzLToBYF3dQUT6MhFJDEdgj90SBmgdwih0+OBBpRip9WrWjTTBLMA4G
A1UdDwEB/wQEAwIHgDAMBgNVHRMBAf8EAjAAMCsGA1UdIwQkMCKAIE6Ru85xwF81
Y1TshoMDow2J6LuUQhRZ4bJGt5pAQbObMAoGCCqGSM49BAMCA0cAMEQCIEmxId7l
fdNHKiK/oGEhdDfGMFqg96ZV9VtRb3kSObgWAiA18n3kyvzu1KrOvptBJxRVubGR
1qPBm8ISkyiN+BWY9g==
-----END CERTIFICATE-----
```

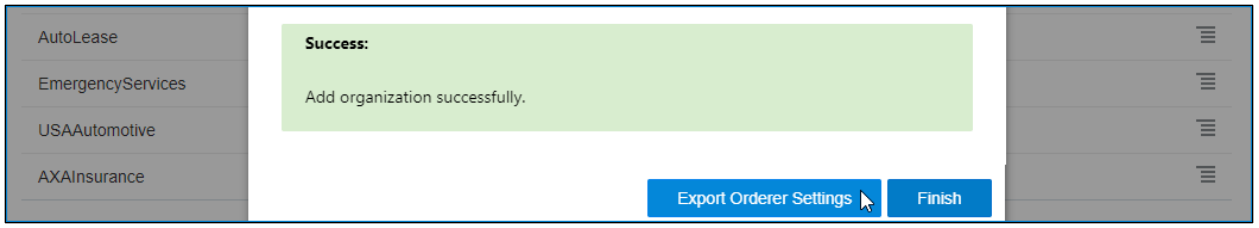
USAAutomotive_certificates.json

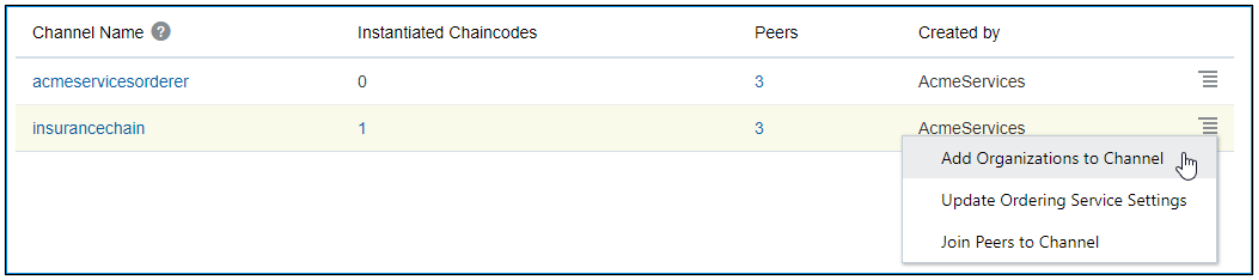
```
{
    "mspID": "USAAutomotive",
    "certs": {
      "admincert": "-----BEGIN CERTIFICATE-----\nMIICGTCCAcCgAwIBAgIRAMCc/yZzVaMiIOT+9Ym3cuswCgYIKoZIzj0E
      "cacert": "-----BEGIN CERTIFICATE-----\nMIICQzCCAemgAwIBAgIQPxy+kEntvw5JYTG+BoNEyjAKBggqhkjOPQQDAjB
      "tlscacert": "-----BEGIN CERTIFICATE-----\nMIICSTCCAe+gAwIBAgIQVdmOOkz4MjnxJaZi3kBzUjAKBggqhkjOPQQD
    }
}
```

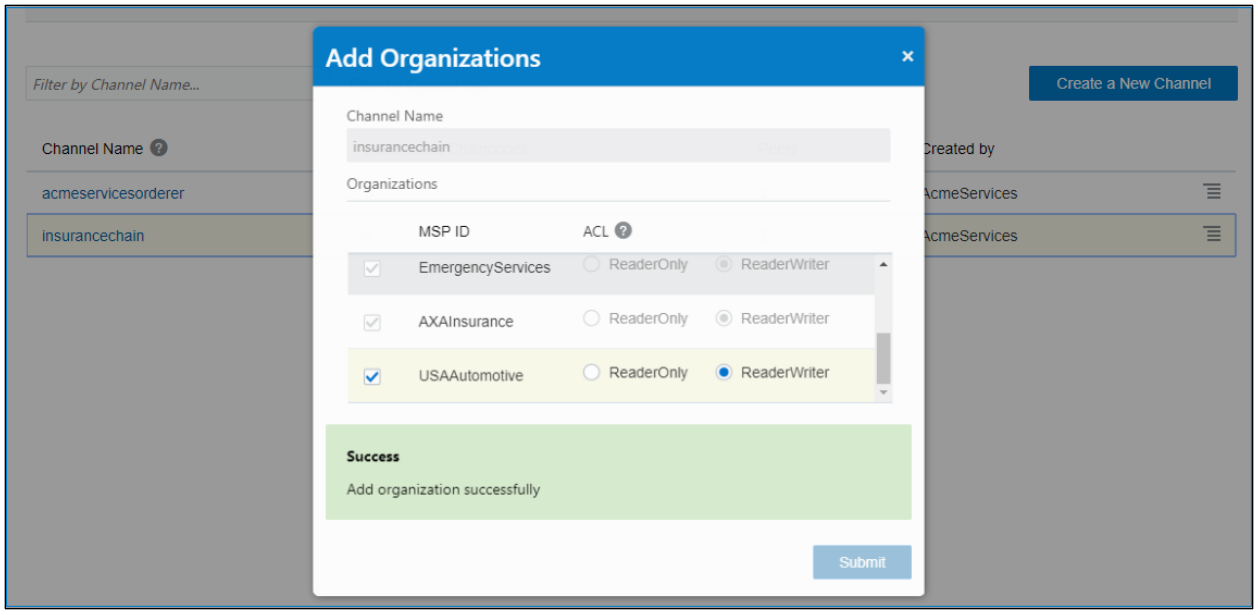
Filter by Organization ID...
Role: All
Add Organizations
Ordering Service Settings
Organization ID
Role
MSP ID
AcmeServices
Founder
AcmeServices

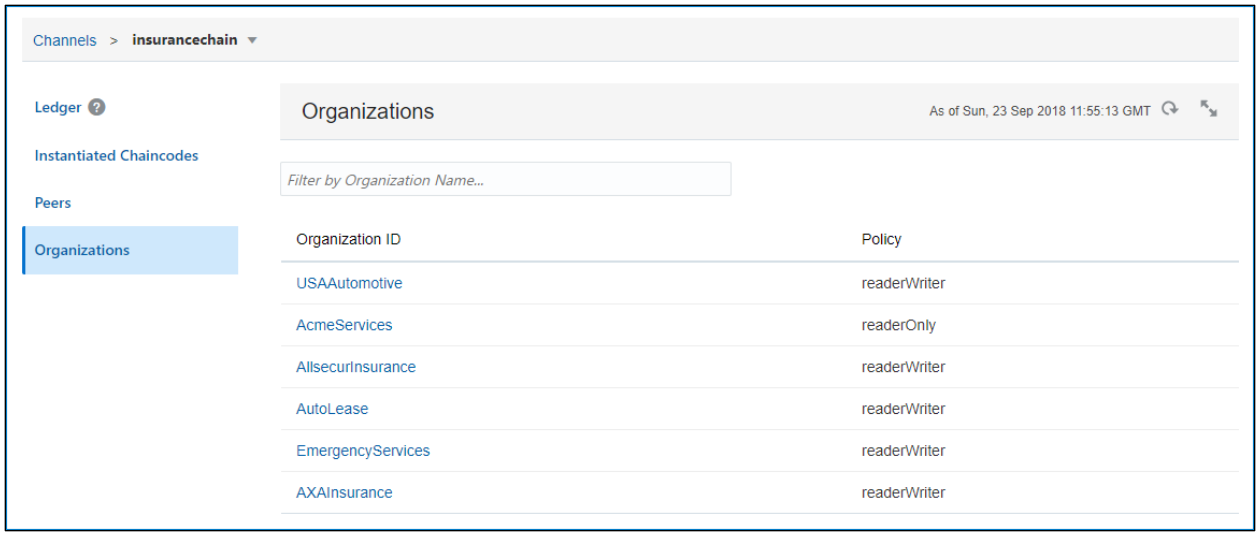

Network Summary
2018 09:48:11 GMT
Add Organizations
Find and upload certificates for the members you want to add to the network. Each member must export certificates for their instance and give the certificate file to the network founder for upload. You can upload multiple certificates at the same time.
Provide Organization Certificate:
USAAutomotiv...tes.json
USAAutomotive
Add
Filter by Organization ID...
Ordering Service Settings
Organization ID
AcmeServices
AutoLease
AllsecurInsurance
AXAInsurance
EmergencyServices

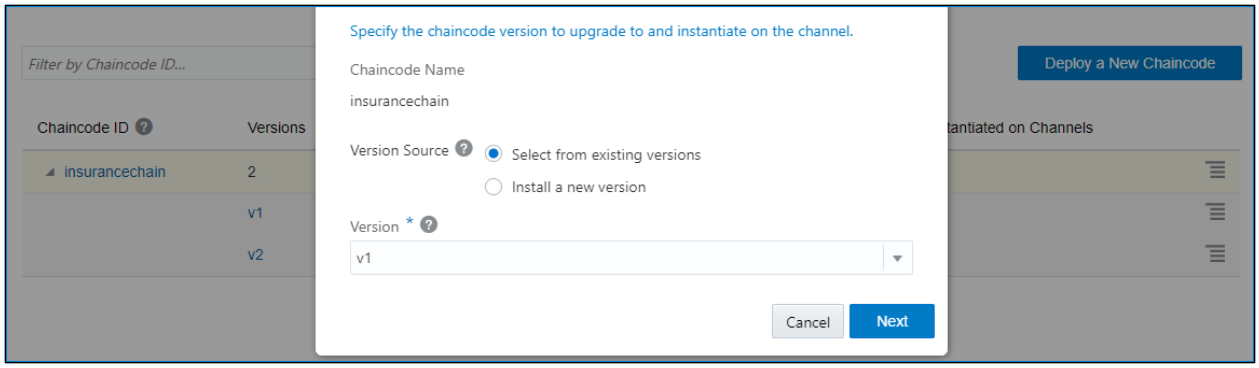

AllsecurInsurance
AXAInsurance
EmergencyServices
Error:
Failed to add organization, invalid argument

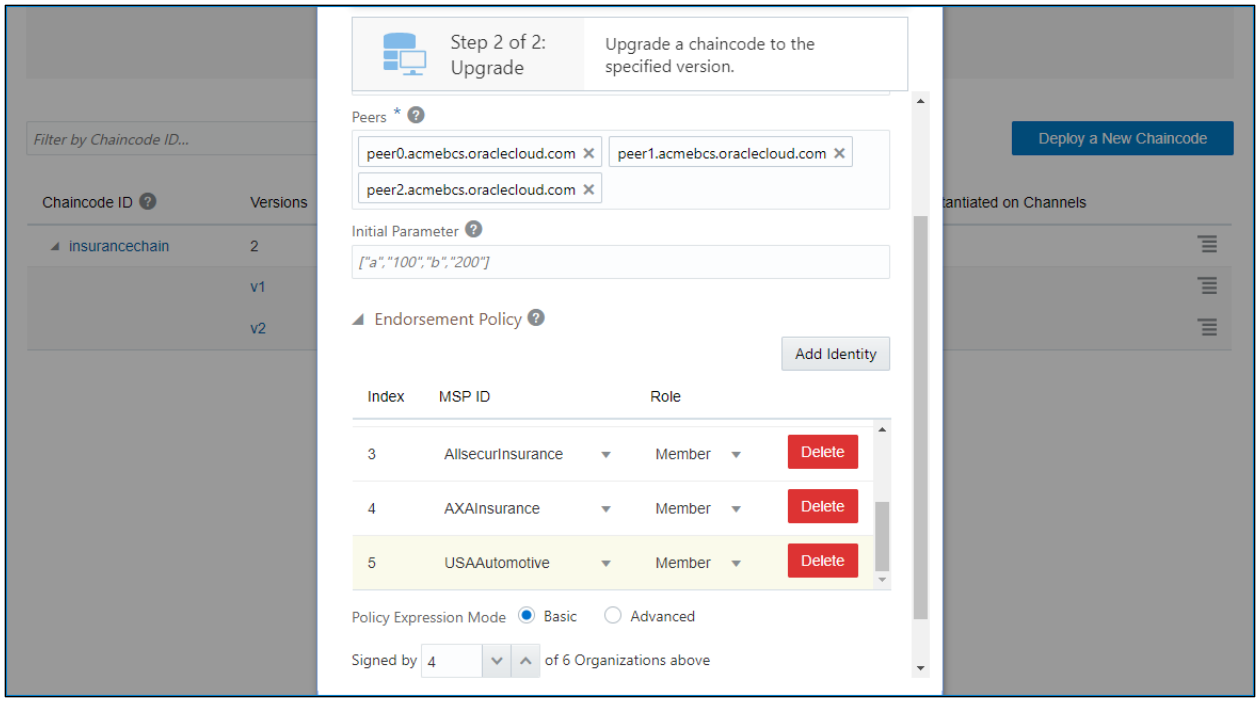

AutoLease
EmergencyServices
USAAutomotive
AXAInsurance
Success:
Add organization successfully.
Export Orderer Settings
Finish

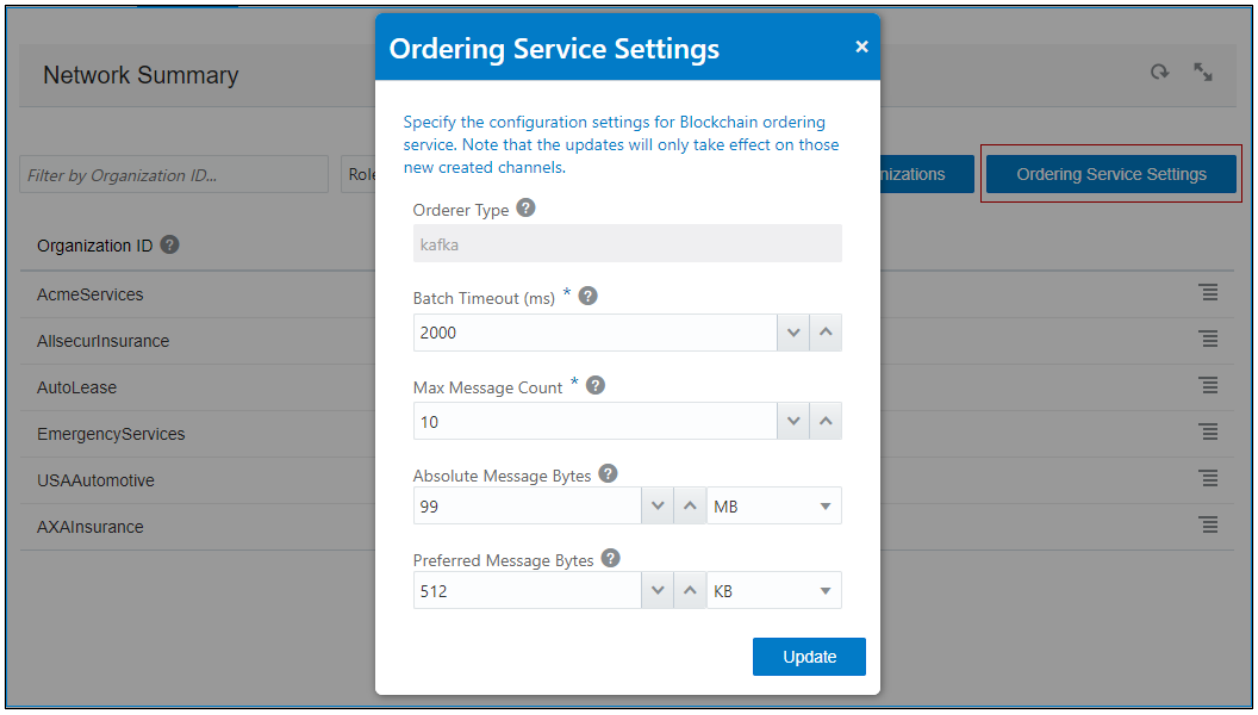

Channel Name
Instantiated Chaincodes
Peers
Created by
acmeservicesorderer
0
3
AcmeServices
insurancechain
1
3
AcmeServices
Add Organizations to Channel
Update Ordering Service Settings
Join Peers to Channel

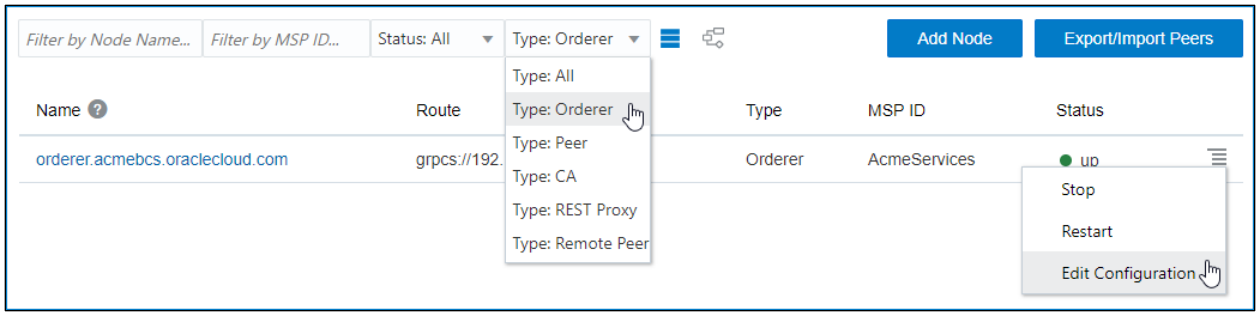

Add Organizations
Channel Name
insurancechain
Organizations
MSP ID
ACL
EmergencyServices
ReaderOnly
ReaderWriter
AXAInsurance
ReaderOnly
ReaderWriter
USAAutomotive
ReaderOnly
ReaderWriter
Success
Add organization successfully
Submit
Filter by Channel Name...
Create a New Channel
Channel Name
Created by
acmeservicesorderer
AcmeServices
insurancechain
AcmeServices

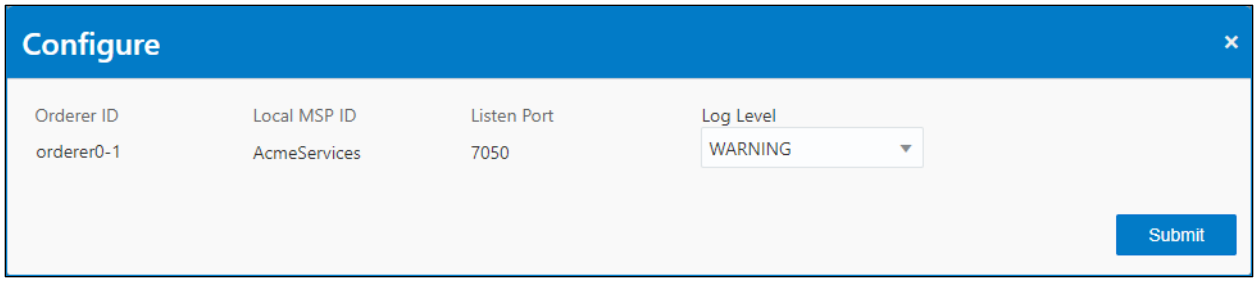

Channels > insurancechain
Ledger
Instantiated Chaincodes
Peers
Organizations
Organizations
As of Sun, 23 Sep 2018 11:55:13 GMT
Filter by Organization Name...
Organization ID
Policy
USAAutomotive
readerWriter
AcmeServices
readerOnly
AllsecurInsurance
readerWriter
AutoLease
readerWriter
EmergencyServices
readerWriter
AXAInsurance
readerWriter

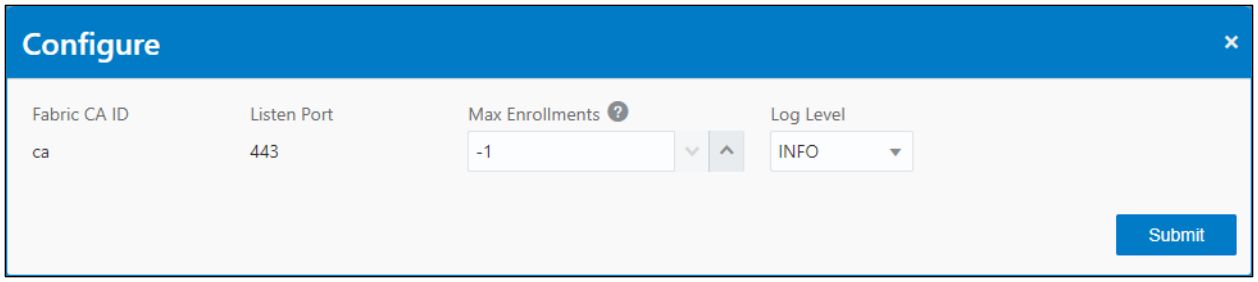

Specify the chaincode version to upgrade to and instantiate on the channel.
Chaincode Name
insurancechain
Version Source
Select from existing versions
Install a new version
Version *
v1
Cancel
Next
Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
Versions
insurancechain
2
v1
v2

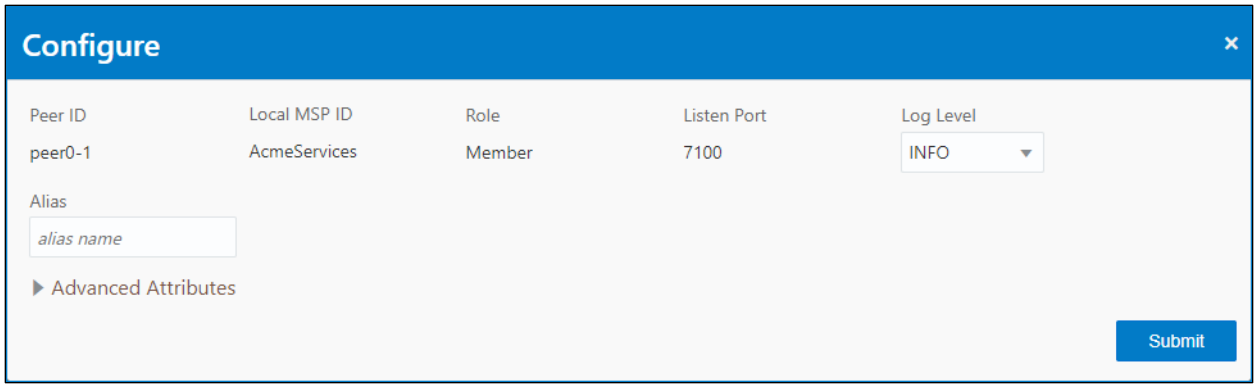

Step 2 of 2: Upgrade
Upgrade a chaincode to the specified version.
Peers *
peer0.acmebcs.oraclecloud.com
peer1.acmebcs.oraclecloud.com
peer2.acmebcs.oraclecloud.com
Initial Parameter
["a","100","b","200"]
Endorsement Policy
Add Identity
Index
MSP ID
Role
3
AllsecurInsurance
Member
Delete
4
AXAInsurance
Member
Delete
5
USAAutomotive
Member
Delete
Policy Expression Mode
Basic
Advanced
Signed by 4 of 6 Organizations above
Filter by Chaincode ID...
Deploy a New Chaincode
Chaincode ID
Versions
insurancechain
2
v1
v2

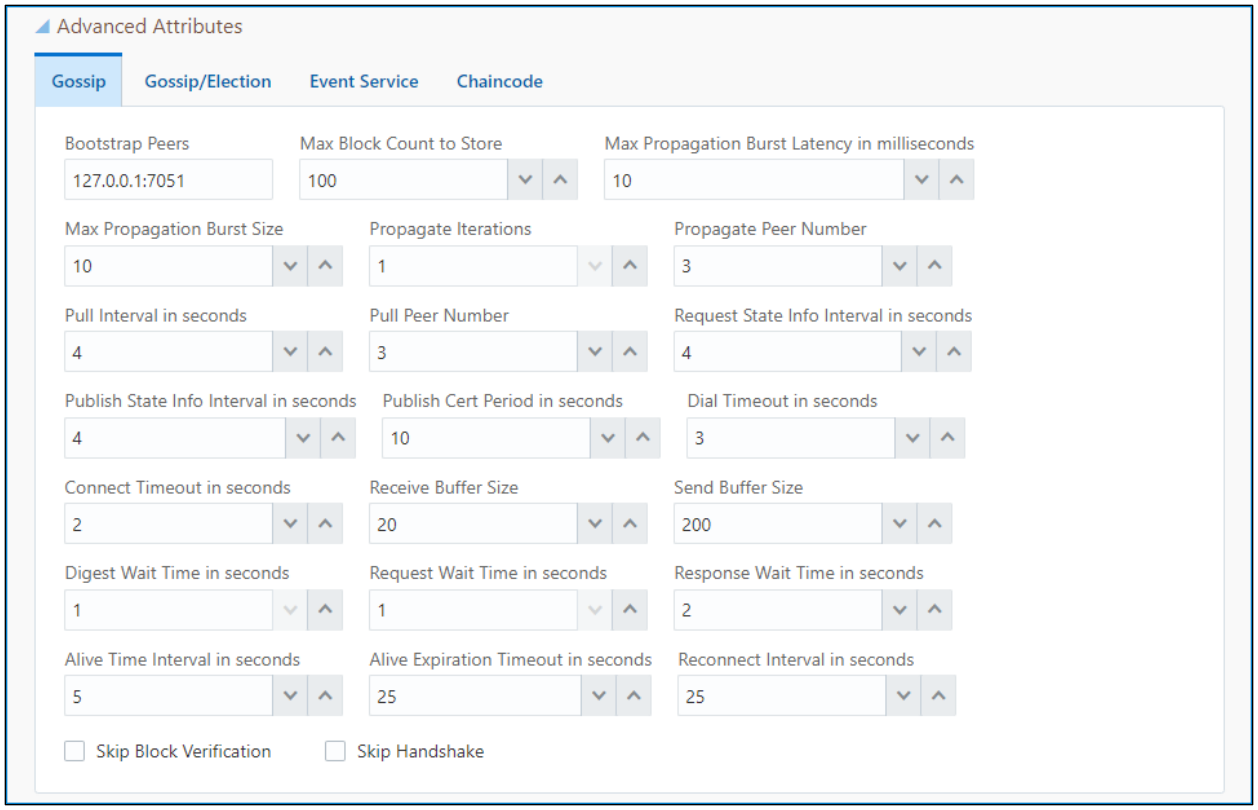

Network Summary
Ordering Service Settings
Specify the configuration settings for Blockchain ordering service. Note that the updates will only take effect on those new created channels.
Orderer Type
kafka
Batch Timeout (ms) *
2000
Max Message Count *
10
Absolute Message Bytes
99
MB
Preferred Message Bytes
512
KB
Update
Filter by Organization ID...
Ordering Service Settings
Organization ID
AcmeServices
AllsecurInsurance
AutoLease
EmergencyServices
USAAutomotive
AXAInsurance

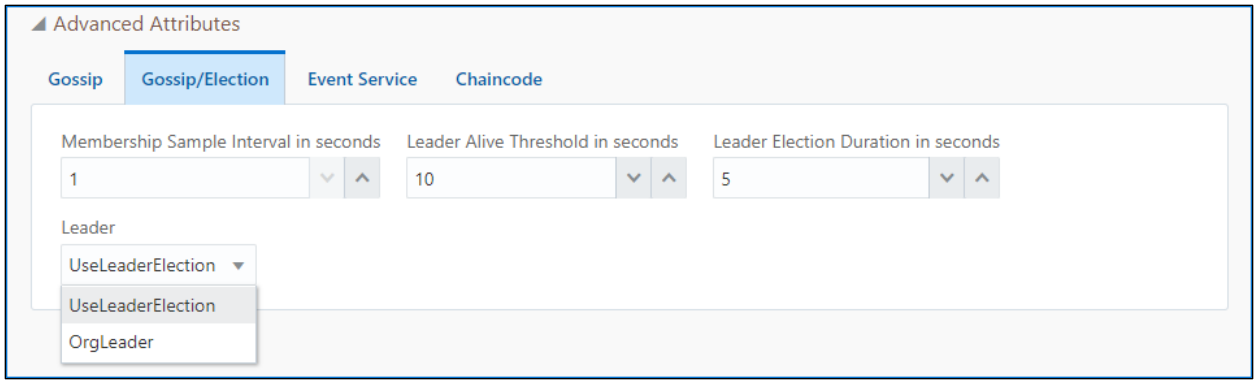

Filter by Node Name...
Filter by MSP ID...
Status: All
Type: Orderer
Add Node
Export/Import Peers
Type: All
Type: Orderer
Type: Peer
Type: CA
Type: REST Proxy
Type: Remote Peer
Name
Route
Type
MSP ID
Status
orderer.acmebcs.oraclecloud.com
grpcs://192.
Orderer
AcmeServices
up
Stop
Restart
Edit Configuration

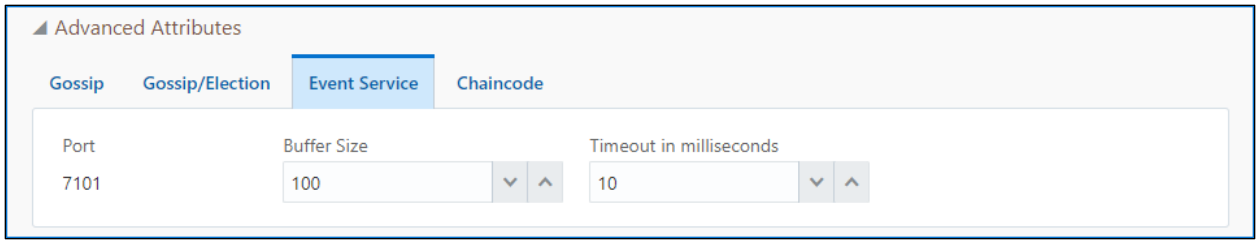

Configure
Orderer ID
orderer0-1
Local MSP ID
AcmeServices
Listen Port
7050
Log Level
WARNING
Submit

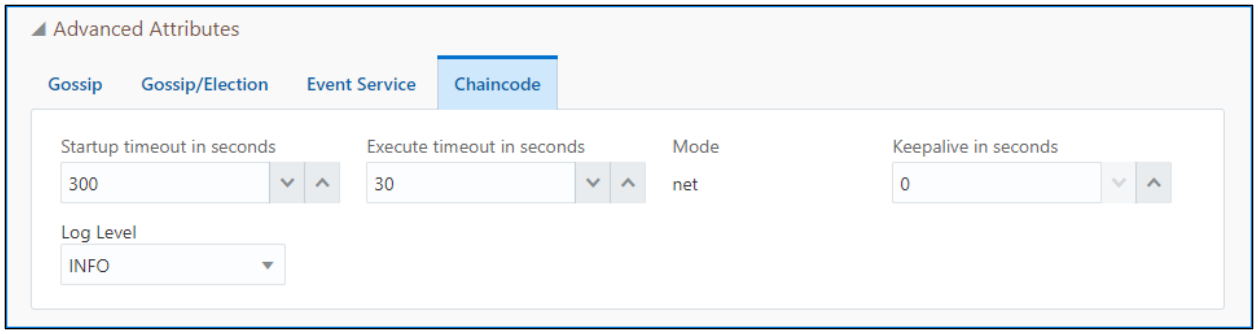

Configure
Fabric CA ID
ca
Listen Port
443
Max Enrollments
-1
Log Level
INFO
Submit

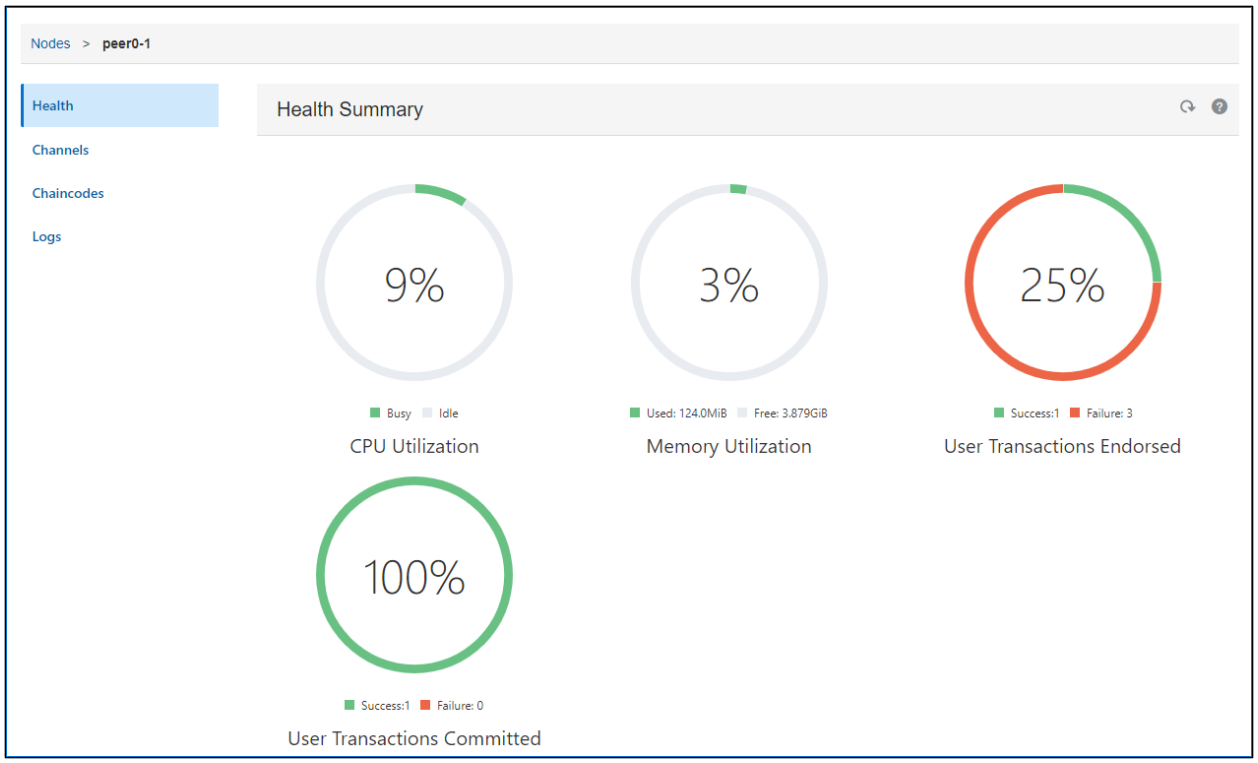

Configure
Peer ID
peer0-1
Local MSP ID
AcmeServices
Role
Member
Listen Port
7100
Log Level
INFO
Alias
alias name
Advanced Attributes
Submit

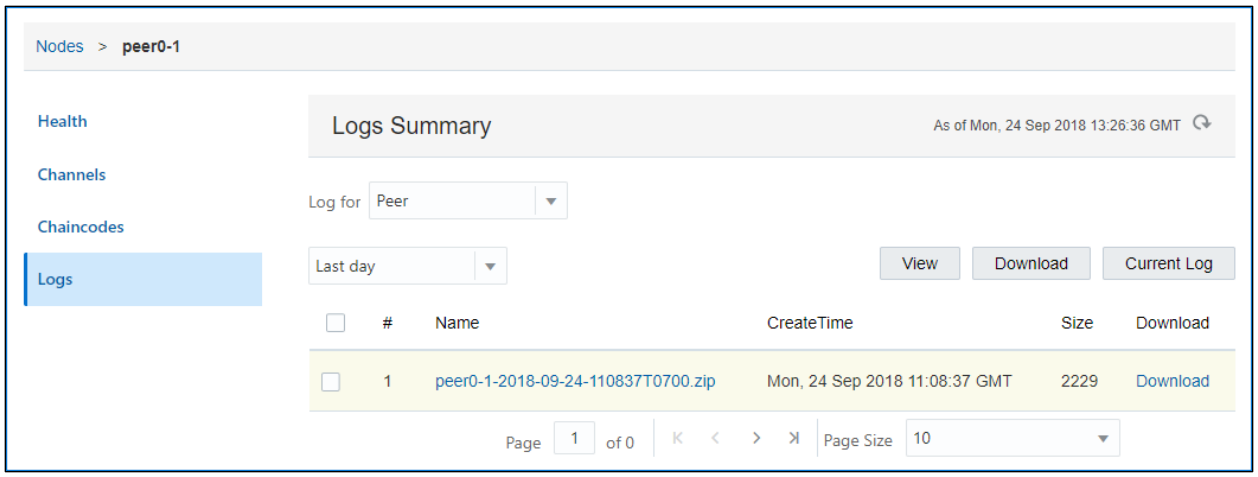

Advanced Attributes
Gossip
Gossip/Election
Event Service
Chaincode
Bootstrap Peers
127.0.0.1:7051
Max Block Count to Store
100
Max Propagation Burst Latency in milliseconds
10
Max Propagation Burst Size
10
Propagate Iterations
1
Propagate Peer Number
3
Pull Interval in seconds
4
Pull Peer Number
3
Request State Info Interval in seconds
4
Publish State Info Interval in seconds
4
Publish Cert Period in seconds
10
Dial Timeout in seconds
3
Connect Timeout in seconds
2
Receive Buffer Size
20
Send Buffer Size
200
Digest Wait Time in seconds
1
Request Wait Time in seconds
1
Response Wait Time in seconds
2
Alive Time Interval in seconds
5
Alive Expiration Timeout in seconds
25
Reconnect Interval in seconds
25
Skip Block Verification
Skip Handshake

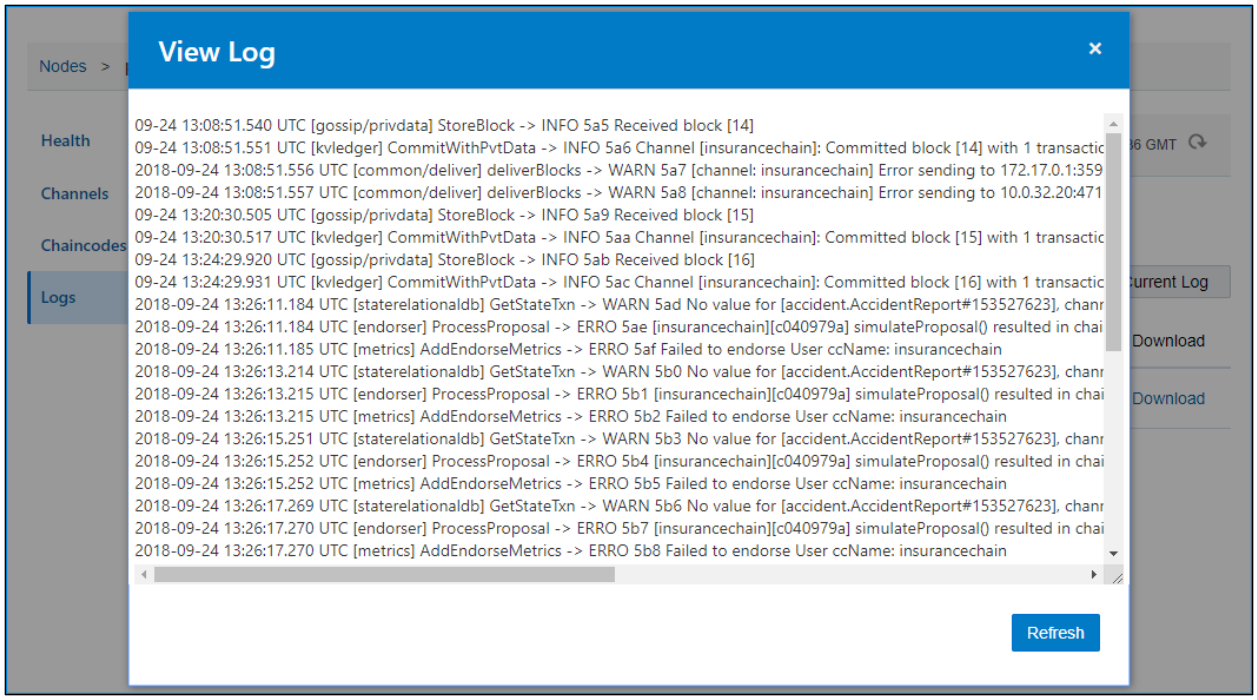

Advanced Attributes
Gossip
Gossip/Election
Event Service
Chaincode
Membership Sample Interval in seconds
1
Leader Alive Threshold in seconds
10
Leader Election Duration in seconds
5
Leader
UseLeaderElection
UseLeaderElection
OrgLeader

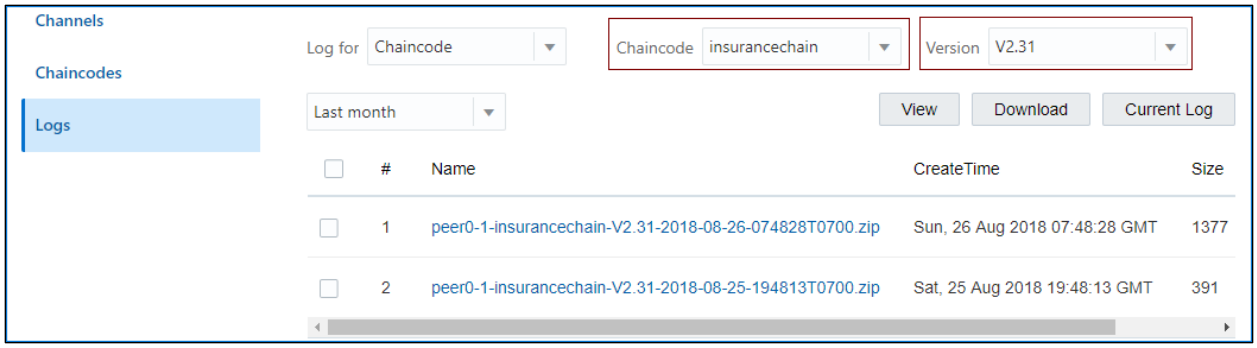

Advanced Attributes
Gossip
Gossip/Election
Event Service
Chaincode
Port
7101
Buffer Size
100
Timeout in milliseconds
10

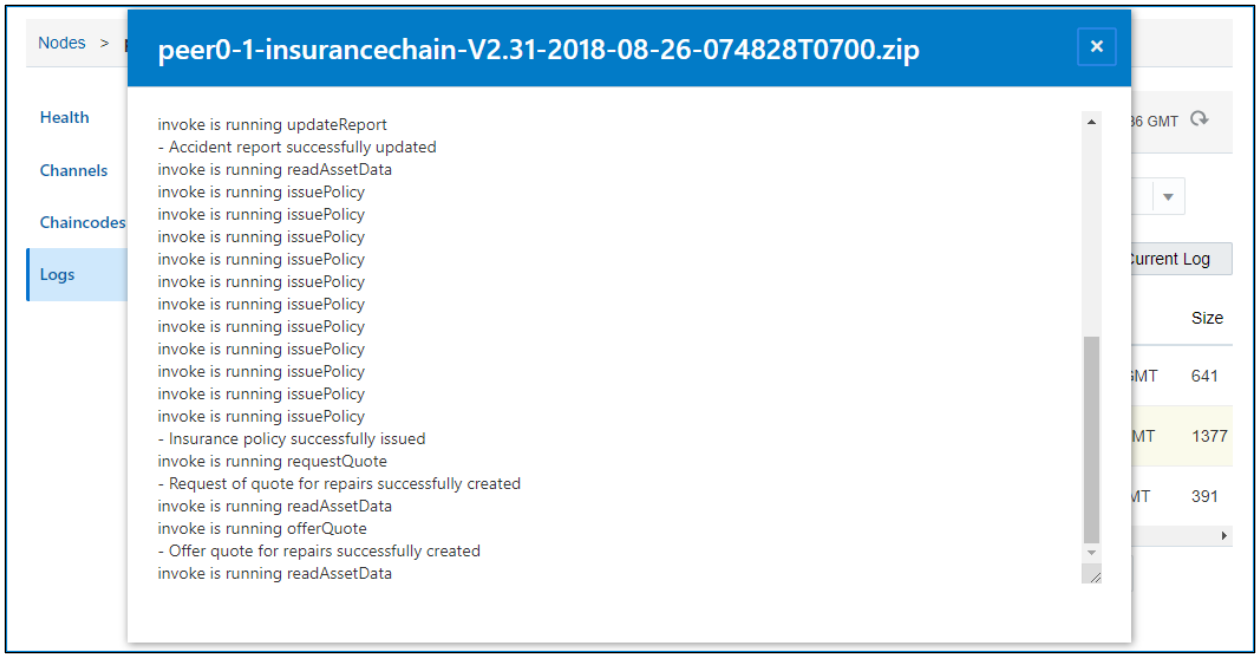

Advanced Attributes
Gossip
Gossip/Election
Event Service
Chaincode
Startup timeout in seconds
300
Execute timeout in seconds
30
Mode
net
Keepalive in seconds
0
Log Level
INFO

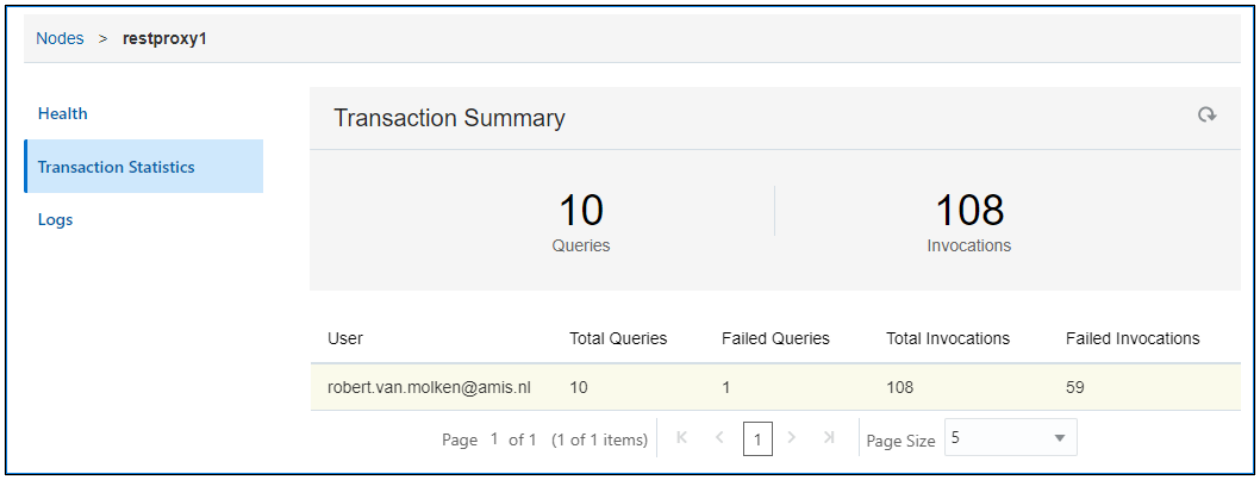

Nodes > peer0-1
Health
Channels
Chaincodes
Logs
Health Summary
9%
Busy
Idle
CPU Utilization
3%
Used: 124.0MiB
Free: 3.879GiB
Memory Utilization
25%
Success:1
Failure: 3
User Transactions Endorsed
100%
Success:1
Failure: 0
User Transactions Committed

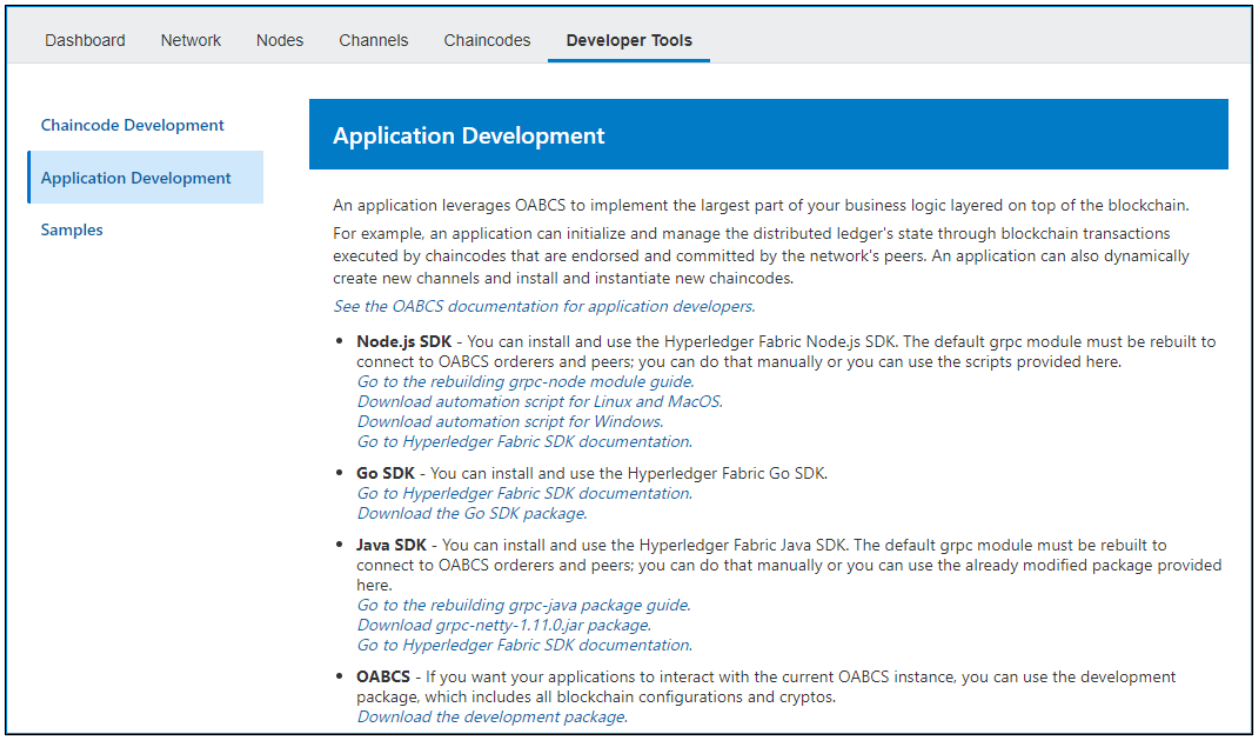

Nodes > peer0-1
Health
Channels
Chaincodes
Logs
Logs Summary
As of Mon, 24 Sep 2018 13:26:36 GMT
Log for
Peer
Last day
View
Download
Current Log
Name CreateTime Size Download
1 peer0-1-2018-09-24-110837T0700.zip Mon, 24 Sep 2018 11:08:37 GMT 2229 Download
Page 1 of 0
Page Size 10


Nodes >
Health
Channels
Chaincodes
Logs
View Log
09-24 13:08:51.540 UTC [gossip/privdata] StoreBlock -> INFO 5a5 Received block [14]
09-24 13:08:51.551 UTC [kvledger] CommitWithPvtData -> INFO 5a6 Channel [insurancechain]: Committed block [14] with 1 transactic
2018-09-24 13:08:51.556 UTC [common/deliver] deliverBlocks -> WARN 5a7 [channel: insurancechain] Error sending to 172.17.0.1:359
2018-09-24 13:08:51.557 UTC [common/deliver] deliverBlocks -> WARN 5a8 [channel: insurancechain] Error sending to 10.0.32.20:471
09-24 13:20:30.505 UTC [gossip/privdata] StoreBlock -> INFO 5a9 Received block [15]
09-24 13:20:30.517 UTC [kvledger] CommitWithPvtData -> INFO 5aa Channel [insurancechain]: Committed block [15] with 1 transactic
09-24 13:24:29.920 UTC [gossip/privdata] StoreBlock -> INFO 5ab Received block [16]
09-24 13:24:29.931 UTC [kvledger] CommitWithPvtData -> INFO 5ac Channel [insurancechain]: Committed block [16] with 1 transactic
2018-09-24 13:26:11.184 UTC [staterelationaldb] GetStateTxn -> WARN 5ad No value for [accident.AccidentReport#153527623], chanr
2018-09-24 13:26:11.184 UTC [endorser] ProcessProposal -> ERRO 5ae [insurancechain][c040979a] simulateProposal() resulted in chai
2018-09-24 13:26:11.185 UTC [metrics] AddEndorseMetrics -> ERRO 5af Failed to endorse User ccName: insurancechain
2018-09-24 13:26:13.214 UTC [staterelationaldb] GetStateTxn -> WARN 5b0 No value for [accident.AccidentReport#153527623], chanr
2018-09-24 13:26:13.215 UTC [endorser] ProcessProposal -> ERRO 5b1 [insurancechain][c040979a] simulateProposal() resulted in chai
2018-09-24 13:26:13.215 UTC [metrics] AddEndorseMetrics -> ERRO 5b2 Failed to endorse User ccName: insurancechain
2018-09-24 13:26:15.251 UTC [staterelationaldb] GetStateTxn -> WARN 5b3 No value for [accident.AccidentReport#153527623], chanr
2018-09-24 13:26:15.252 UTC [endorser] ProcessProposal -> ERRO 5b4 [insurancechain][c040979a] simulateProposal() resulted in chai
2018-09-24 13:26:15.252 UTC [metrics] AddEndorseMetrics -> ERRO 5b5 Failed to endorse User ccName: insurancechain
2018-09-24 13:26:17.269 UTC [staterelationaldb] GetStateTxn -> WARN 5b6 No value for [accident.AccidentReport#153527623], chanr
2018-09-24 13:26:17.270 UTC [endorser] ProcessProposal -> ERRO 5b7 [insurancechain][c040979a] simulateProposal() resulted in chai
2018-09-24 13:26:17.270 UTC [metrics] AddEndorseMetrics -> ERRO 5b8 Failed to endorse User ccName: insurancechain
Refresh
Download
Download
Current Log

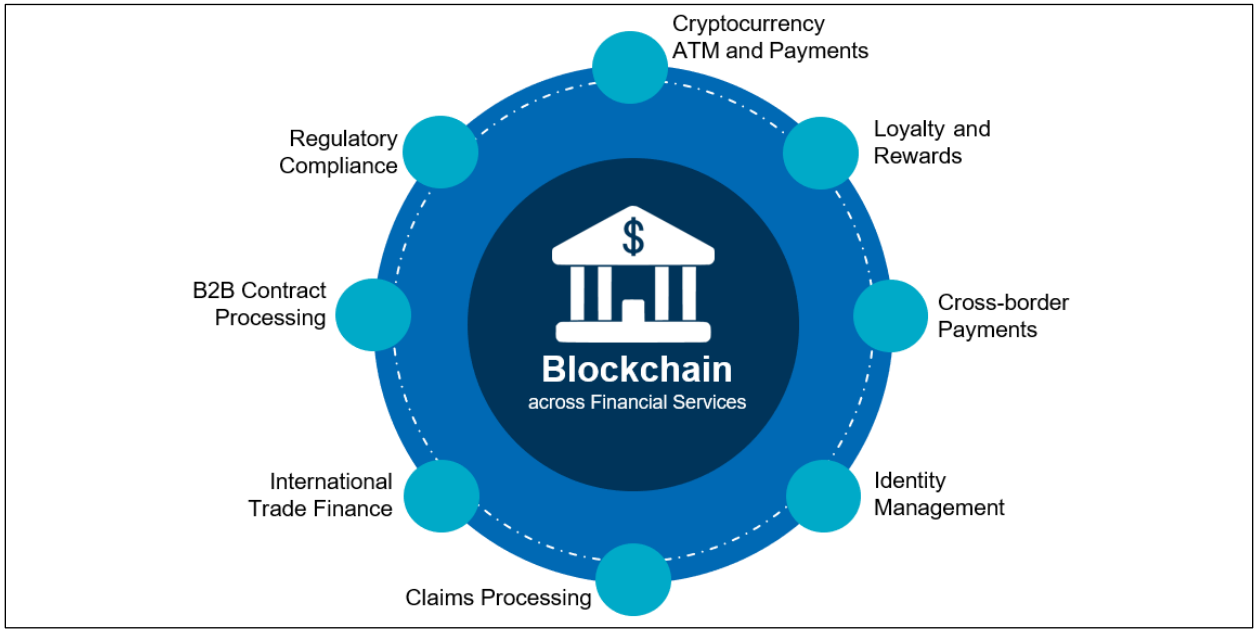

Channels
Chaincodes
Logs
Log for Chaincode
Chaincode insurancechain
Version V2.31
Last month
View
Download
Current Log
Name CreateTime Size
1 peer0-1-insurancechain-V2.31-2018-08-26-074828T0700.zip Sun, 26 Aug 2018 07:48:28 GMT 1377
2 peer0-1-insurancechain-V2.31-2018-08-25-194813T0700.zip Sat, 25 Aug 2018 19:48:13 GMT 391

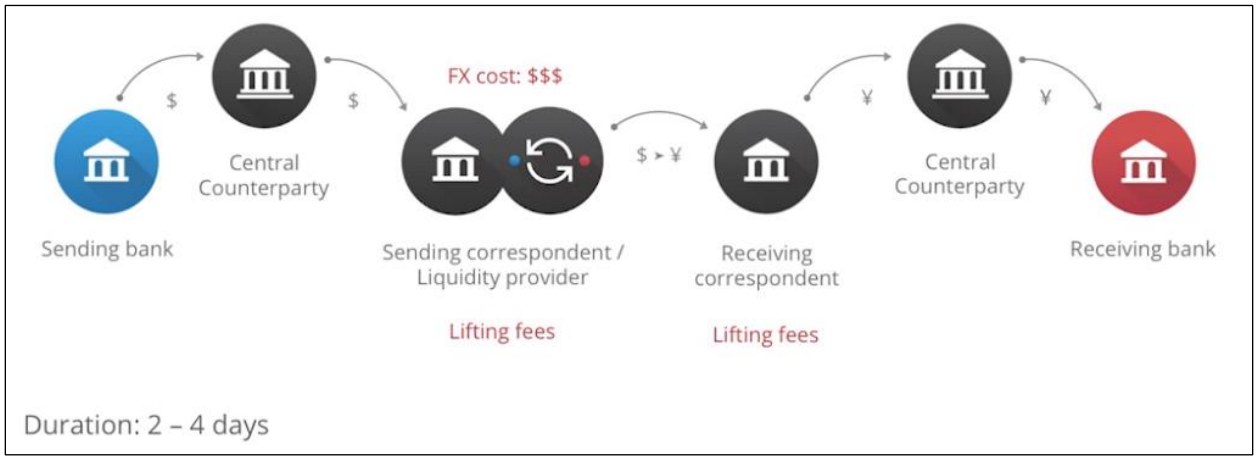

Nodes >
Health
Channels
Chaincodes
Logs
peer0-1-insurancechain-V2.31-2018-08-26-074828T0700.zip
invoke is running updateReport
- Accident report successfully updated
invoke is running readAssetData
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
invoke is running issuePolicy
- Insurance policy successfully issued
invoke is running requestQuote
- Request of quote for repairs successfully created
invoke is running readAssetData
invoke is running offerQuote
- Offer quote for repairs successfully created
invoke is running readAssetData
Current Log
Size
641
1377
391

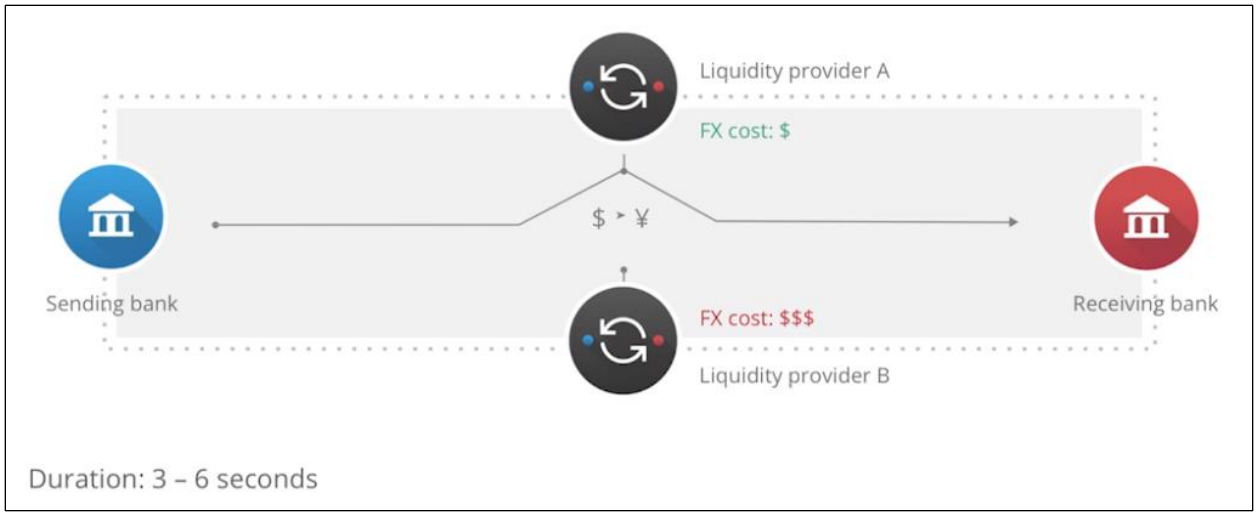

Nodes > restproxy1
Health
Transaction Statistics
Logs
Transaction Summary
10
Queries
108
Invocations
User
Total Queries
Failed Queries
Total Invocations
Failed Invocations
robert.van.molken@amis.nl
10
1
108
59
Page 1 of 1 (1 of 1 items)
1
Page Size 5


Dashboard
Network
Nodes
Channels
Chaincodes
Developer Tools
Chaincode Development
Application Development
Samples
Application Development
An application leverages OABCS to implement the largest part of your business logic layered on top of the blockchain.
For example, an application can initialize and manage the distributed ledger's state through blockchain transactions executed by chaincodes that are endorsed and committed by the network's peers. An application can also dynamically create new channels and install and instantiate new chaincodes.
See the OABCS documentation for application developers.
Node.js SDK - You can install and use the Hyperledger Fabric Node.js SDK. The default grpc module must be rebuilt to connect to OABCS orderers and peers; you can do that manually or you can use the scripts provided here.
Go to the rebuilding grpc-node module guide.
Download automation script for Linux and MacOS.
Download automation script for Windows.
Go to Hyperledger Fabric SDK documentation.
Go SDK - You can install and use the Hyperledger Fabric Go SDK.
Go to Hyperledger Fabric SDK documentation.
Download the Go SDK package.
Java SDK - You can install and use the Hyperledger Fabric Java SDK. The default grpc module must be rebuilt to connect to OABCS orderers and peers; you can do that manually or you can use the already modified package provided here.
Go to the rebuilding grpc-java package guide.
Download grpc-netty-1.11.0.jar package.
Go to Hyperledger Fabric SDK documentation.
OABCS - If you want your applications to interact with the current OABCS instance, you can use the development package, which includes all blockchain configurations and cryptos.
Download the development package.

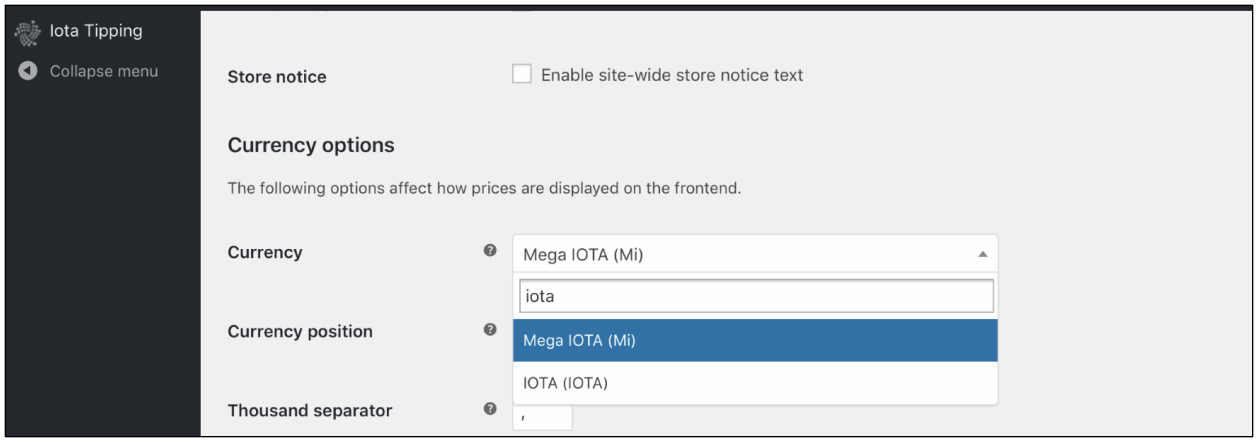
Chapter 15: Blockchain Across the Financial Services Industry

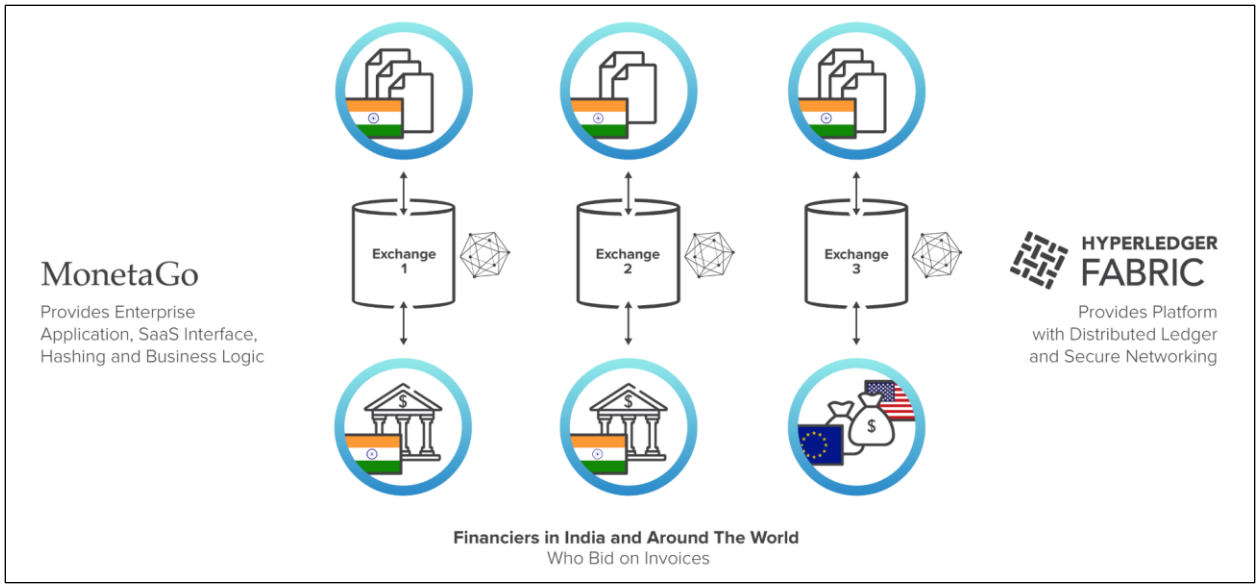




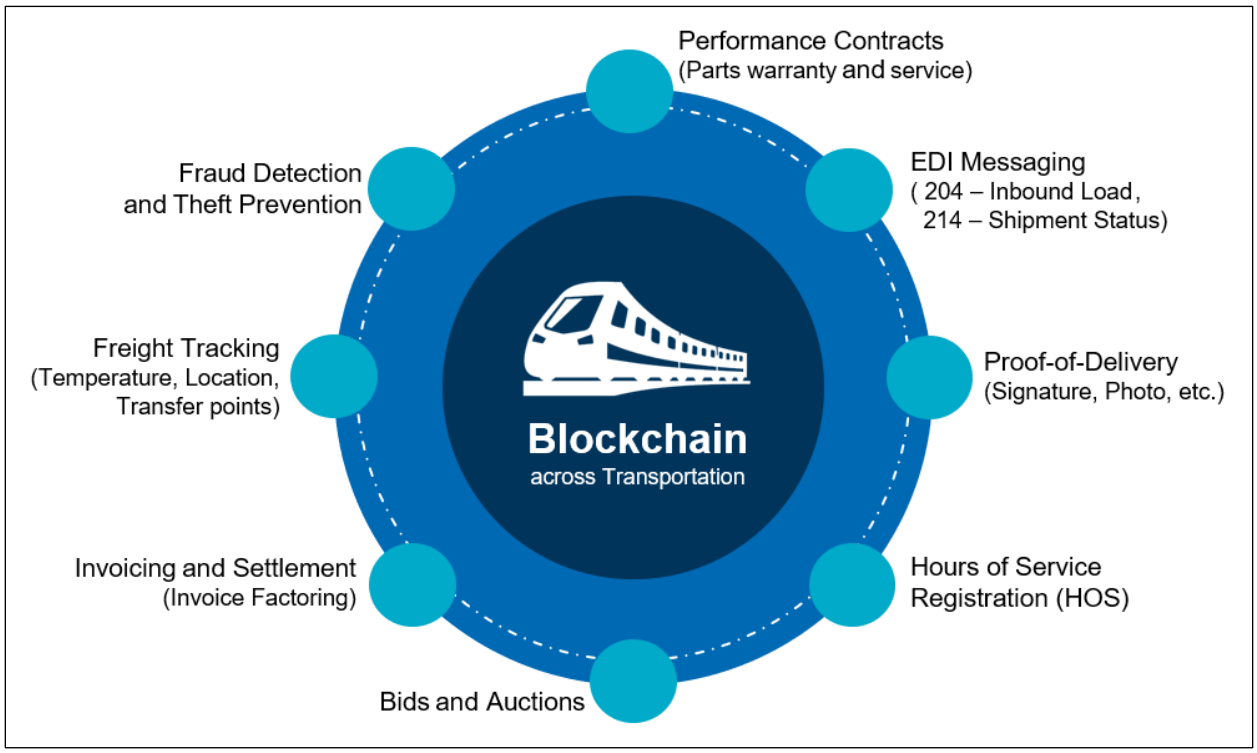

Liquidity provider A
FX cost: $
$ ▸ ¥
Sending bank
Receiving bank
FX cost: $$$
Liquidity provider B
Duration: 3 – 6 seconds

MUFG
MUFG Bank
LianLian Pay
Santander
Standard Chartered
Westpac
CRÉDIT AGRICOLE
AMERICAN EXPRESS
MoneyGram
AXIS BANK
SBI Remit
SEB
BMO


Iota Tipping
Collapse menu
Store notice
Enable site-wide store notice text
Currency options
The following options affect how prices are displayed on the frontend.
Currency
Mega IOTA (Mi)
iota
Currency position
Mega IOTA (Mi)
IOTA (IOTA)
Thousand separator
,


MonetaGo
Provides Enterprise Application, SaaS Interface, Hashing and Business Logic
Exchange 1
Exchange 2
Exchange 3
HYPERLEDGER FABRIC
Provides Platform with Distributed Ledger and Secure Networking
Financiers in India and Around The World
Who Bid on Invoices

Chapter 16: Blockchain Across the Transportation Industry



TRADELENS

BREAK INFORMATION SILOS

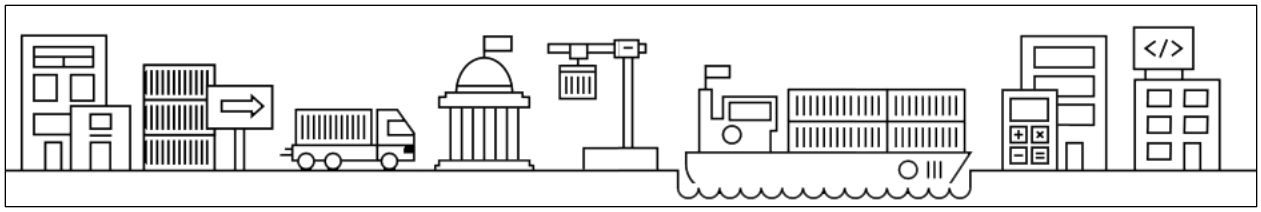
Ability for trade, transportation and logistics providers to share real-time, end-to-end information about your shipments

STREAMLINE BUSINESS PROCESSES

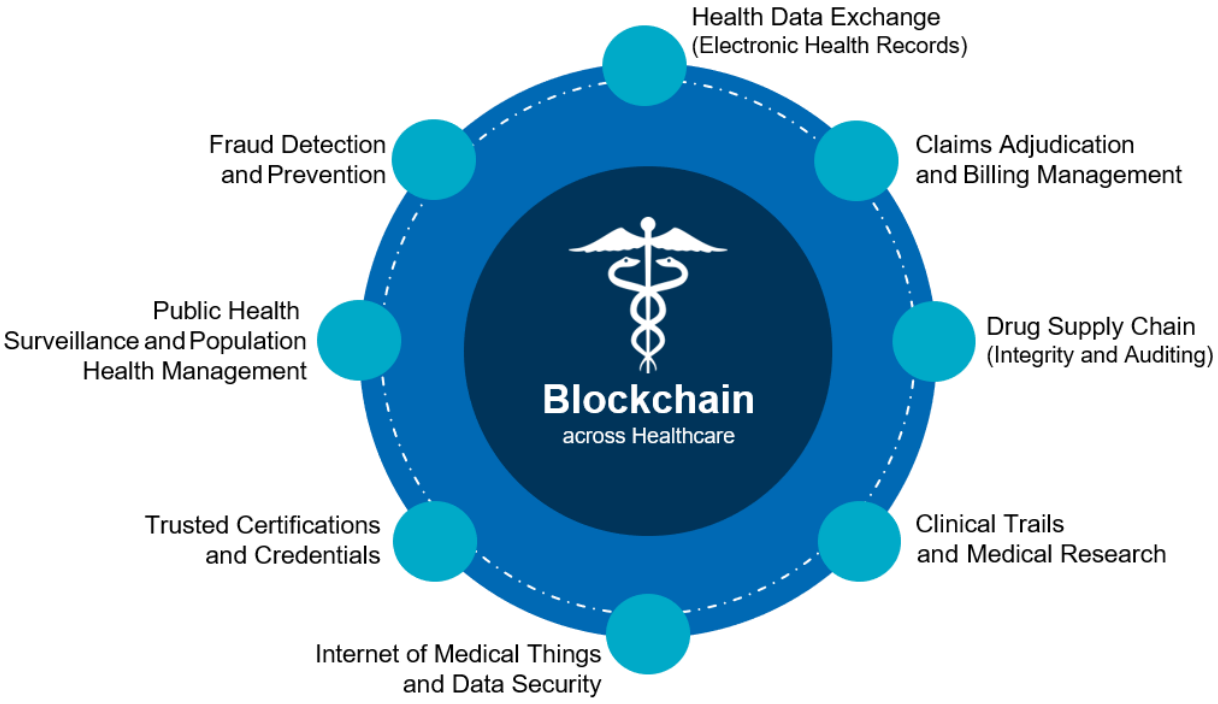
Seamlessly and securely share trade documents across organizations to automate customs clearance, trade finance and more.

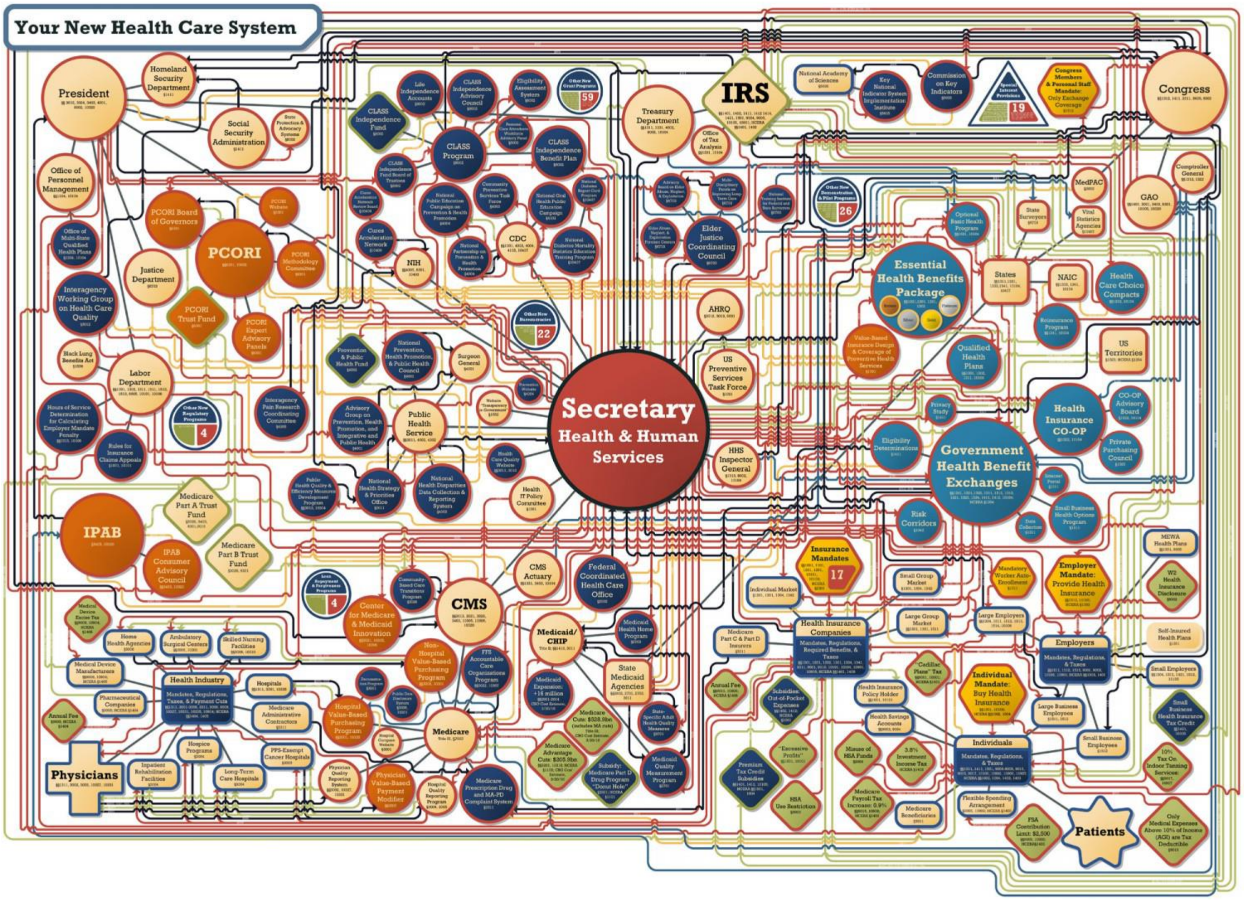
MAXIMIZE ASSET UTILIZATION

Empowering you to take control of your supply chain by delivering you full information for managing your physical and financial assets.

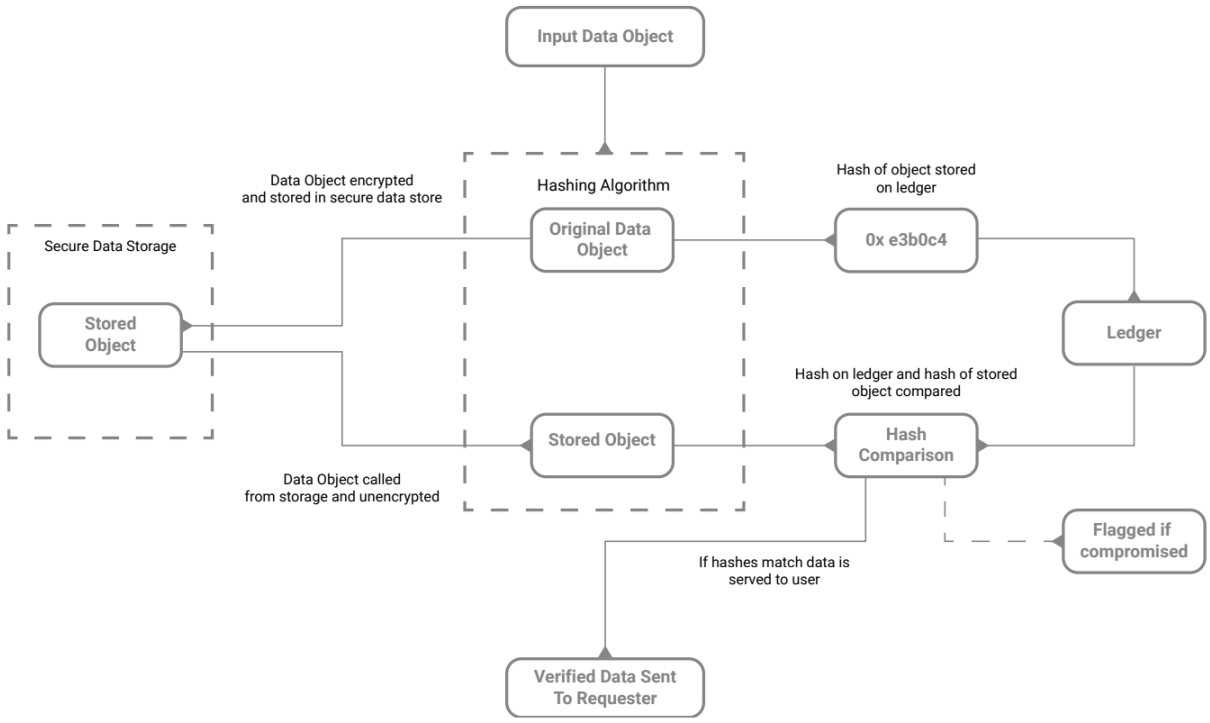


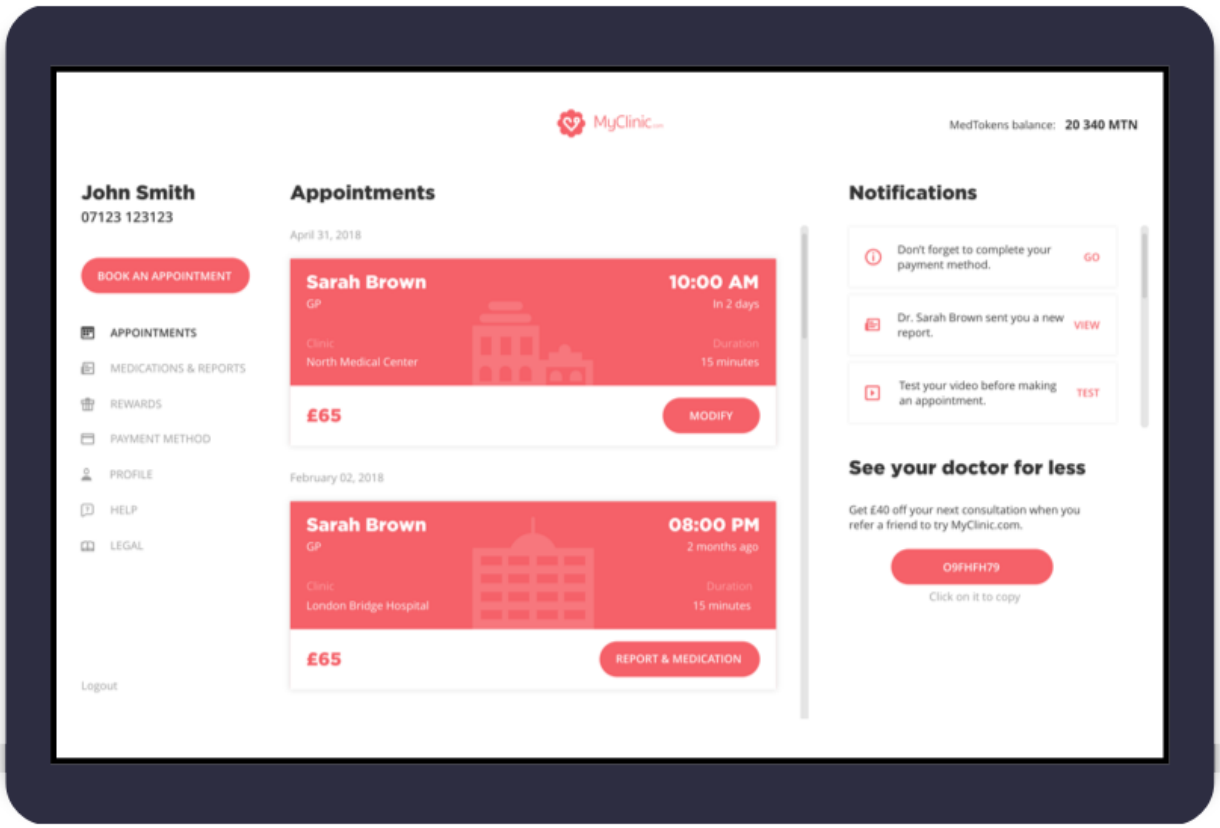
Chapter 17: Blockchain Across the Healthcare Industry




Your New Health Care System
President
Homeland Security Department
Social Security Administration
Office of Personnel Management
PCORI Board of Governors
PCORI
Justice Department
Interagency Working Group on Health Care Quality
PCORI Trust Fund
Labor Department
IPAB
Medicare Part A Trust Fund
Medicare Part B Trust Fund
IPAB Consumer Advisory Council
CLASS Independence Fund
CLASS Program
CLASS Independence Benefit Plan
CDC
NIH
Public Health Service
Surgeon General
Treasury Department
IRS
Office of Tax Analysis
Elder Justice Coordinating Council
AHRQ
US Preventive Services Task Force
HHS Inspector General
Secretary
Health & Human Services
CMS
CMS Actuary
Center for Medicare & Medicaid Innovation
Federal Coordinated Health Care Office
Medicaid/CHIP
State Medicaid Agencies
Medicare
Health Industry
Physicians
Congress
GAO
MedPAC
Essential Health Benefits Package
States
NAIC
Health Care Choice Compacts
Qualified Health Plans
Health Insurance CO-OP
Government Health Benefit Exchanges
US Territories
Risk Corridors
Insurance Mandates
Health Insurance Companies
Employer Mandate: Provide Health Insurance
Employers
Individual Mandate: Buy Health Insurance
Individuals
Patients

48%
OF
CLINICAL TRIALS
UNREPORTED
40%
OF
DATA RECORDS
FILLED WITH
ERRORS
$380
PER RECORD
LEAKED IN DATA
BREACHES


Input Data Object
Hashing Algorithm
Data Object encrypted
and stored in secure data store
Hash of object stored
on ledger
Secure Data Storage
Original Data
Object
0x e3b0c4
Stored
Object
Ledger
Hash on ledger and hash of stored
object compared
Stored Object
Hash
Comparison
Data Object called
from storage and unencrypted
Flagged if
compromised
If hashes match data is
served to user
Verified Data Sent
To Requester


MyClinic
MedTokens balance: 20 340 MTN
John Smith
07123 123123
BOOK AN APPOINTMENT
APPOINTMENTS
MEDICATIONS & REPORTS
REWARDS
PAYMENT METHOD
PROFILE
HELP
LEGAL
Logout
Appointments
April 31, 2018
Sarah Brown
GP
10:00 AM
In 2 days
Clinic
North Medical Center
Duration
15 minutes
£65
MODIFY
February 02, 2018
Sarah Brown
GP
08:00 PM
2 months ago
Clinic
London Bridge Hospital
Duration
15 minutes
£65
REPORT & MEDICATION
Notifications
Don't forget to complete your payment method.
GO
Dr. Sarah Brown sent you a new report.
VIEW
Test your video before making an appointment.
TEST
See your doctor for less
Get £40 off your next consultation when you refer a friend to try MyClinic.com.
O9FHFH79
Click on it to copy

INITIAL HEALTH THREAT TARGETS

Worldwide infectious diseases

- Tuberculosis
- Zika
- Malaria
- Dengue
- Chagas

Research and treatments to combat antimicrobial resistance (AMR)

Oncology research and treatments for:

- Pancreatic cancer
- Brain cancer

Virology research and treatments for:

- Hepatitis B & C
- Influenza A & B
- Respiratory Syncytial Virus

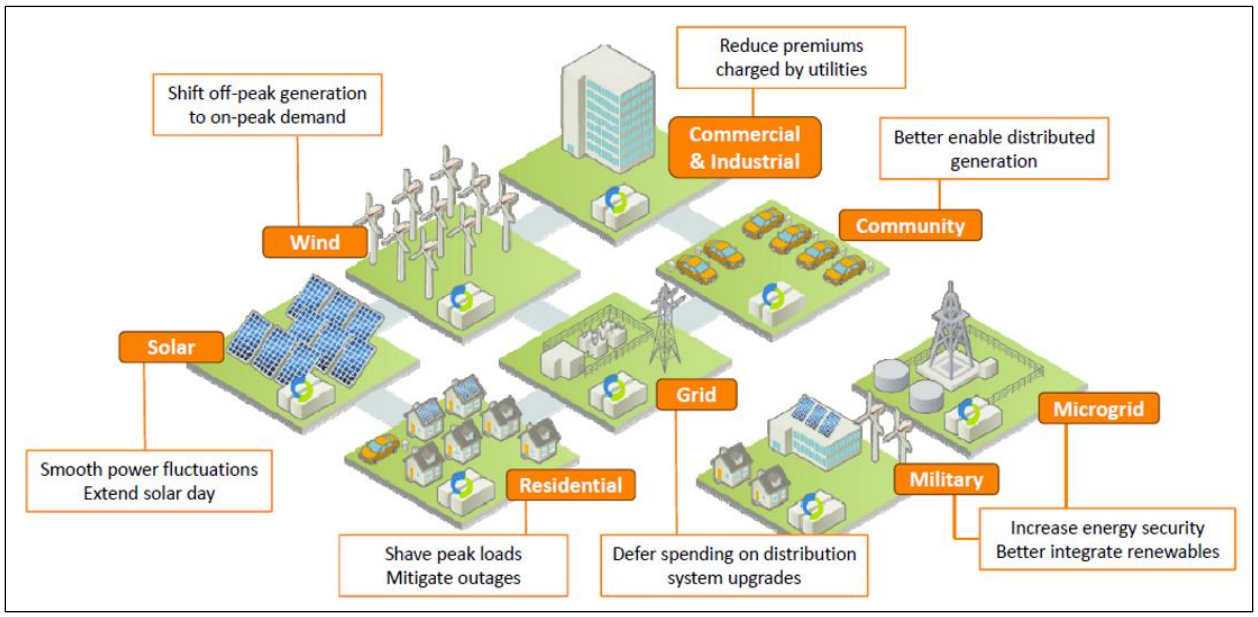
Bacteriology research and treatments for:

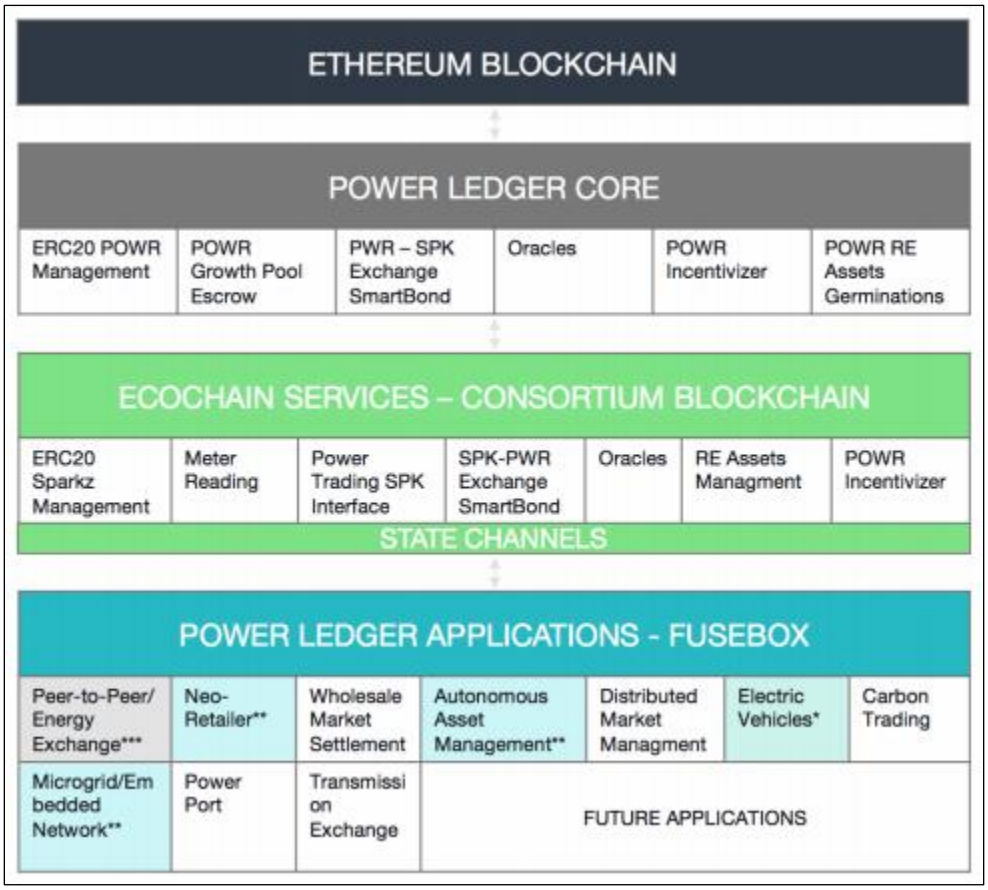
- Methicillin-resistant Staphylococcus aureus (MRSA)
- Clostridium difficile (C. Diff)

Neurology research and treatments for:

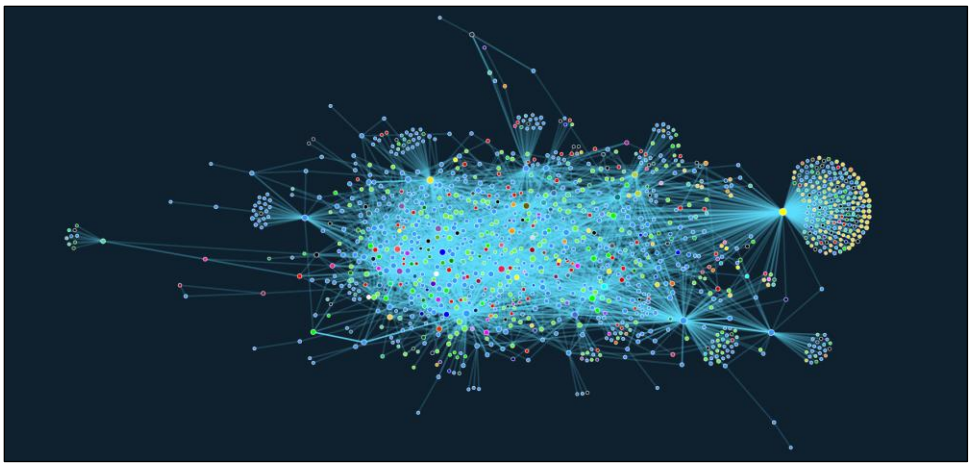
- Alzheimer's disease

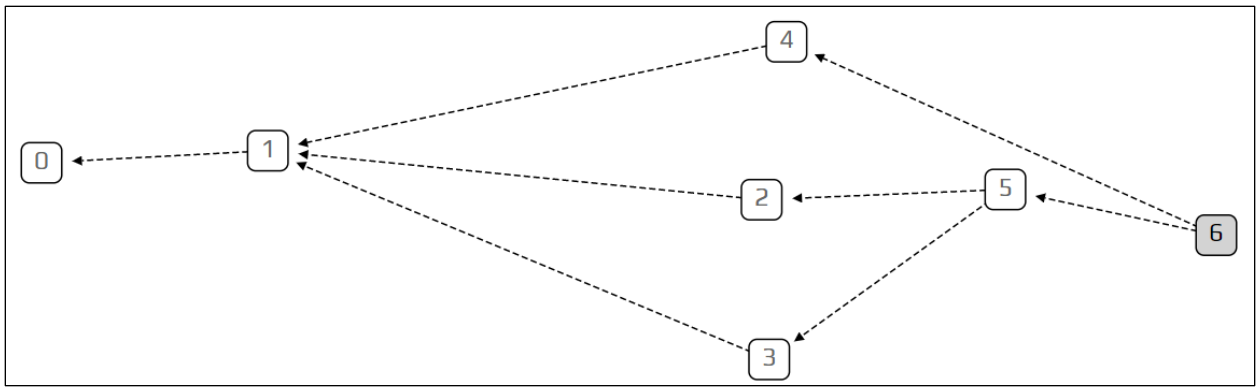
Chapter 18: Future Industry and Technology Directions





250 miles




4
0
1
2
5
6
3