Mobile API Management and Integration

A Reference Architecture and Demo

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Blockchain. Bitcoin. Hype? Bubble? Or game changer?
What is Blockchain?
Blockchain is an open, distributed ledger

- that maintains a continuously growing list of ordered records called blocks
- each block is fault tolerant and cannot be altered retroactively
- blockchain use cases include: medical record keeping, transaction processing and identity management
Red Hat and Blockchain

Red Hat OpenShift enables blockchain applications and services development

Linux Foundation’s Hyperledger Project Announces 30 Founding Members and Code Proposals To Advance Blockchain Technology

SAN FRANCISCO, Calif., Feb. 9, 2016 – The Linux Foundation, the nonprofit organization enabling mass innovation through open source, today is announcing new members from across the industry, a formal open governance structure and technical updates to the new Hyperledger Project.

Distributed Ledger Effort Establishes Open Technical Governance Structure, Receives Influ of Code Contribution Proposals

The intent to form the Hyperledger Project, an open source project to advance the blockchain digital technology for recording and verifying transactions, was announced at the end of 2015. Founding members of the initiative represent a diverse group of stakeholders, including: ABN AMRO, Accenture, ANZ Bank, Blockchain, BNY Mellon, Calastone, Cisco, CME Group, ConsenSys, Credits, The Depository Trust & Clearing Corporation (DTCC), Deutsche Börse Group, Digital Asset Holdings, Fujitsu Limited, Guantime, Hitachi, IBM, Intel, Inteledger, J.P. Morgan, NEC, NTT DATA, R3, Red Hat, State Street, SWIFT, Symbiont, VMware and Wells Fargo.
What is Bitcoin?

Bitcoin is an implementation of Blockchain

- specific to the needs of the financial services industry
- except it is more transparent than most financial services instruments and services
Show me the bitcoins
Business Opportunity

Bitcoin investors want to trade anywhere, and they need financial pricing in real-time

- Consumers and investors demand Bitcoin information everywhere even on mobile
- “gpteBTC”, a fictitious Bitcoin information provider, aims to provide financial information from existing Bitcoin exchanges to the finger-tips of their clients
Business Opportunity

Bitcoin investors and owners want to trade with one another anywhere, and they need financial pricing in real-time

- Enabling mobile channels
- Growing an ecosystem
- Increasing reach of the service provider
- Powering new business models
- Driving new innovation on the mobile front
Architecturally speaking
Solution Approach

Add an elastic technology layer that scales to the demand of the marketplace

- gpteBTC cliente
- Red Hat technology
- Bitcoin information
Solution Approach

Bitcoin investors and owners require mobile access to financial information, and that information platform must scale elastically

- Introduction of a scalable platform for Bitcoin data consumers
  - Red Hat Mobile Application Platform (RHMAP) for MBaaS hosting and application development
  - Red Hat 3Scale API Management Platform for API management and integration

- Now comes the architectures and use cases...
Solution Architecture

The elastic technology layer that scales to the demand of the marketplace
3Scale Deployment Architecture

An integration layer for various enterprise services, including a Bitcoin information service
Mobile Application Architecture

The gpteBTC mobile application is built on NodeJS and FeedHenry APIs, using and hosted on RHMAP.

**Phase 1:**
2-tier architecture

- **Client App** to **Cloud App**
  - $fh.cloud(...)  

**Phase 2:**
3-tier architecture

- **Client App** to **Cloud App** to **mBaaS Service**
  - $fh.cloud(...) to $fh.service(...)
Design Best Practice

Always start with Whiteboarding :-)
Let’s be practical
Use case: Bitcoin REST Service

Implement a MBaaS application for a hosted Bitcoin REST service

- **BLOCKCYPHER** is a Bitcoin service provider
- Payment processing and acceptance
- Blockchain ledger hosting
Use case: Bitcoin REST Service

Execute these commands in a terminal window

# retrieve blocks and transactions
curl -s https://api.blockcypher.com/v1/btc/main

# get a couple transactions from a known address (supposedly Silk Road)

# get one of the two transactions (a big one)
curl https://api.blockcypher.com/v1/btc/main/txs/a40c283de4c26b027a5734ff89ce78ade1220fc313befa107ec6c245c24bdec0

# retrieve the block it was included in by height
curl https://api.blockcypher.com/v1/btc/main/blocks/319957
Use case: Bitcoin REST Service

3Scale API Management Platform is required for high-valued service management functionality, like

1. API Access Control
2. Developer Portal for ease of API re-use
3. Billing and Metric Measurement
4. Service aggregation layer for multiple enterprise services
5. Proxy layer for backend enterprise services
And the demonstration begins
Demo

2 crucial technology roles, supported on the Red Hat OpenShift Container Platform

Mobile App Developer

Integration Architect
Demo
Perspective of the Mobile App Developer
Demo
Visit http://people.redhat.com/cdarby/block/

OR

Install the gpteBTC mobile app

Download Artifact

-- or --

Use this OTA link or scan the QR code to install this build directly onto a device

http://henr.ie/2p1rxBC
Demo

Perspective of the Integration Architect
Demo

Perspective of the Integration Architect

Usage statistics for Red Hat Summit 3Scale - RHMAP-Bitcoin Demo / CPTE

Configure your API gateway in the staging environment. Once your staging environment is green you can deploy the gateway to the 3scale production environment.
Demo

Perspective of the Integration Architect
Demo

Come on, demo it already!

“I’ve got it! How about a funny picture! People love funny pictures!”
Demo

Visit http://people.redhat.com/cdarby/block/
OR install the gpteBTC mobile app

1. Test drive the gpteBTC app
   on your web browser or on your phone
Demo

cURL those API calls!

2. Test the API mapping to the Bitcoin REST service - courtesy of Red Hat 3Scale APICast

1. Execute this command

```
Docker-Swarm:~ hchin$ curl "https://api-2445581559610.staging.apicast.io:443/v1/btc/main?user_key=cd9f81747d0c365cda0233f3217b76df"
```

2. Observe JSON response
Demo

Love that Swagger

3. Learn how Swagger is used in Bitcoin API integration on the gpteBTC Developer Portal
Demo

Give me some of that NodeJS

4. View the source code
Demo

Go mobile

5. Install and test the gpteBTC app on your smartphone
Demo

Be creative. Code away!

6. Fork the code from [Github](https://github.com/honghuac/gpteBTC)

https://github.com/honghuac/gpteBTC
That’s all folks?
Mobile Lightning Talks

MongoDB.
Artificial Intelligence.
App Security.
Microservices.
Come get some.
THANK YOU

We love your feedback!

Chad Darby

Hong Hua

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