3scale by Red Hat

RED HAT SUMMIT

RED HAT® MOBILE APPLICATION PLATFORM

Mobile API Management and Integration

A Reference Architecture and Demo

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Solution Architects @ GPTE
2 May 2017

RED HAT® OPENSHIFT Container Platform

Blockchain. Bitcoin.
Hype? Bubble? Or game changer?

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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

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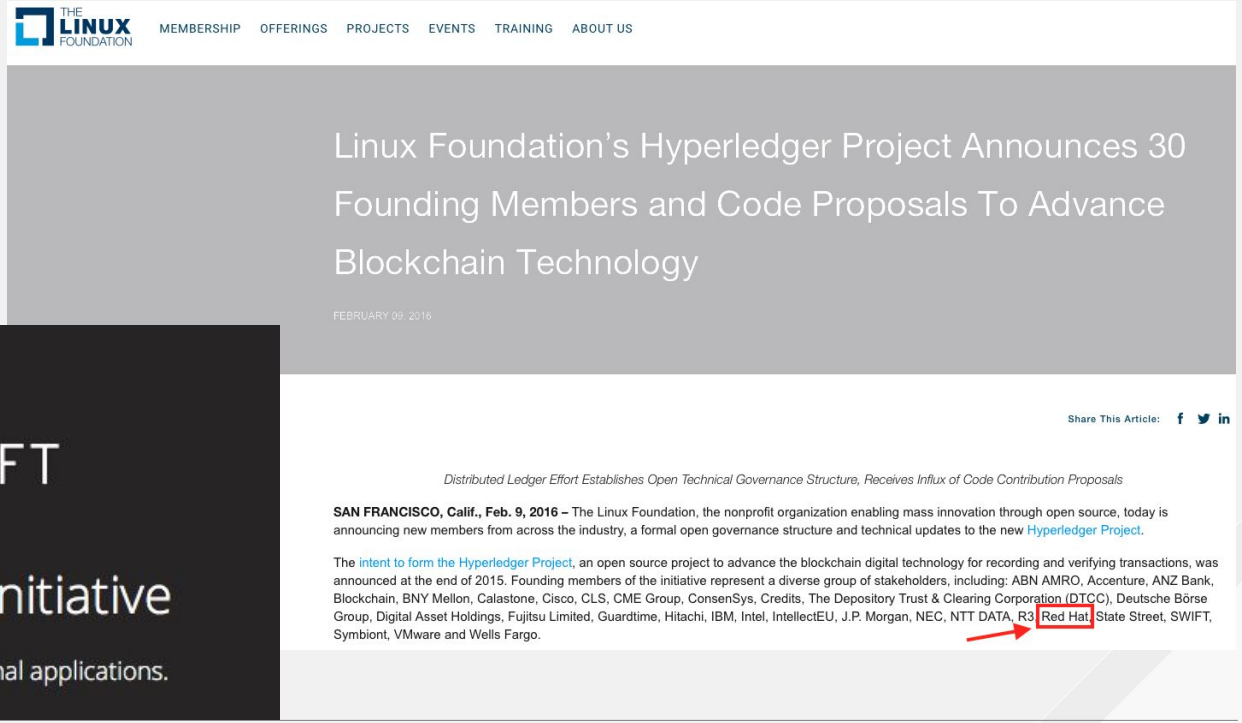
Red Hat and Blockchain

Red Hat OpenShift enables blockchain applications and services development



THE LINUX FOUNDATION

MEMBERSHIP OFFERINGS PROJECTS EVENTS TRAINING ABOUT US

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

FEBRUARY 09, 2016

Share This Article:

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

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.

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, CLS, CME Group, ConsenSys, Credits, The Depository Trust & Clearing Corporation (DTCC), Deutsche Börse Group, Digital Asset Holdings, Fujitsu Limited, Guardtime, Hitachi, IBM, Intel, IntellectEU, J.P. Morgan, NEC, NTT DATA, R3, Red Hat, State Street, SWIFT, Symbiont, VMware and Wells Fargo.

RED HAT® OPENSHIFT Dedicated

OpenShift Blockchain Initiative

Technology for a new generation of transactional applications.

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

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Show me the bitcoins

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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

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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

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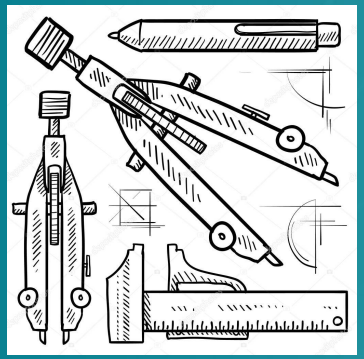
Architecturally speaking



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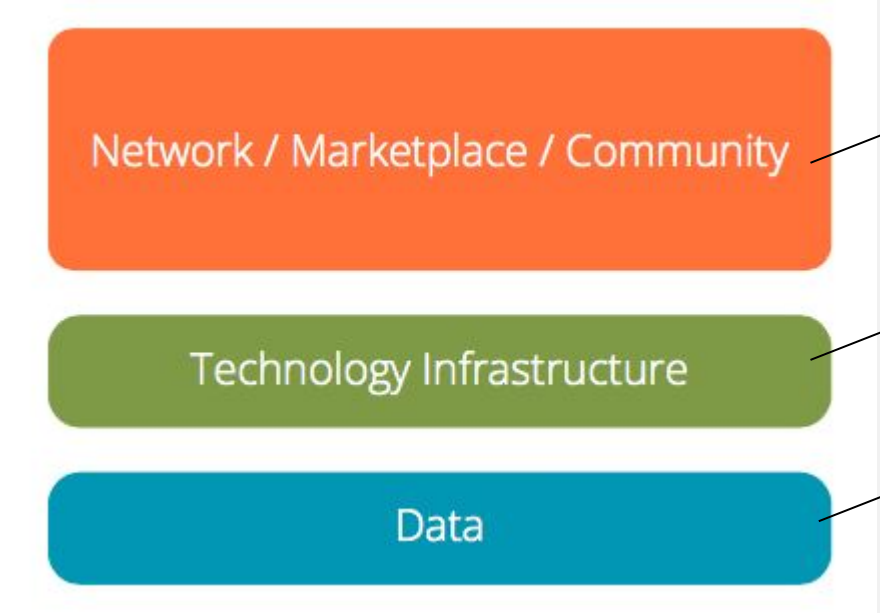
Solution Approach

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



gpteBTC cliente

Red Hat technology

Bitcoin information

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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…

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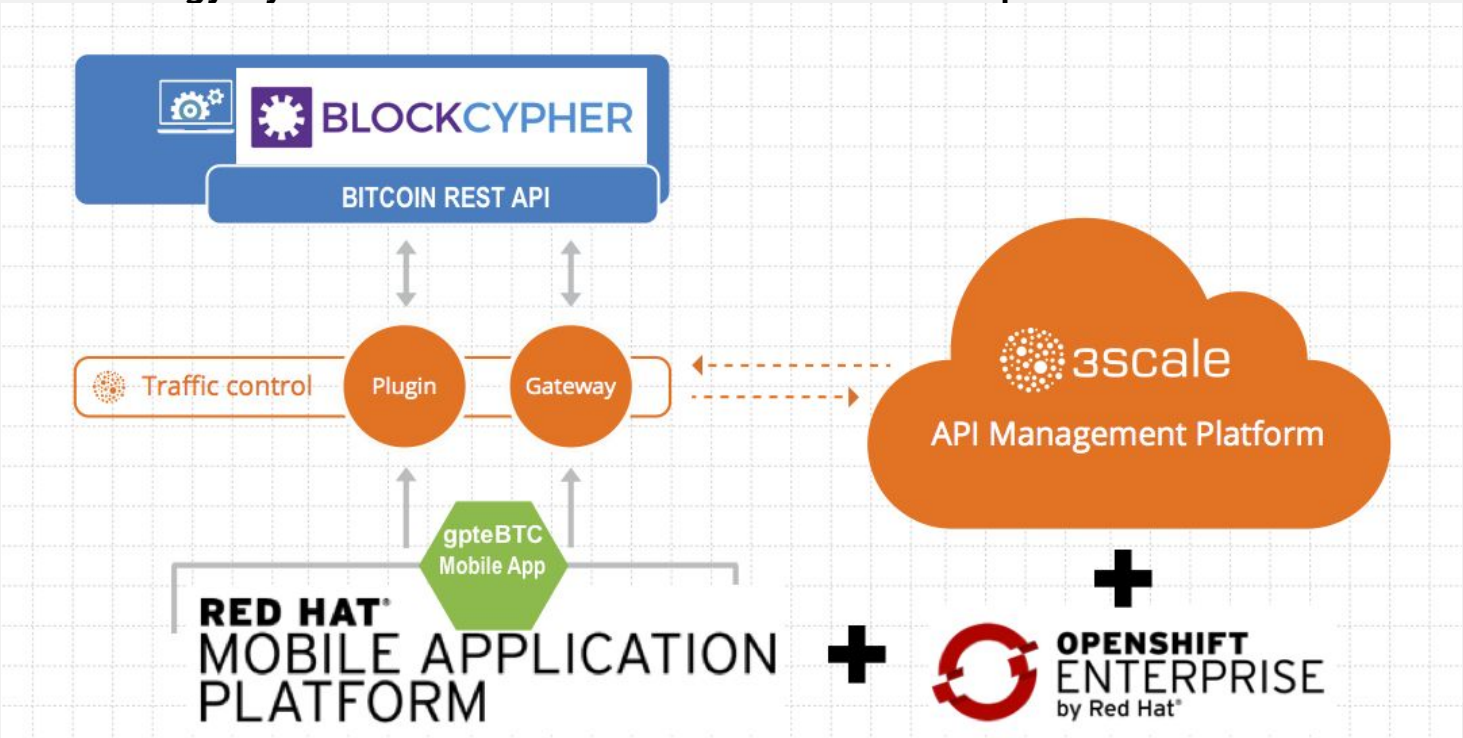
Solution Architecture

The elastic technology layer that scales to the demand of the marketplace



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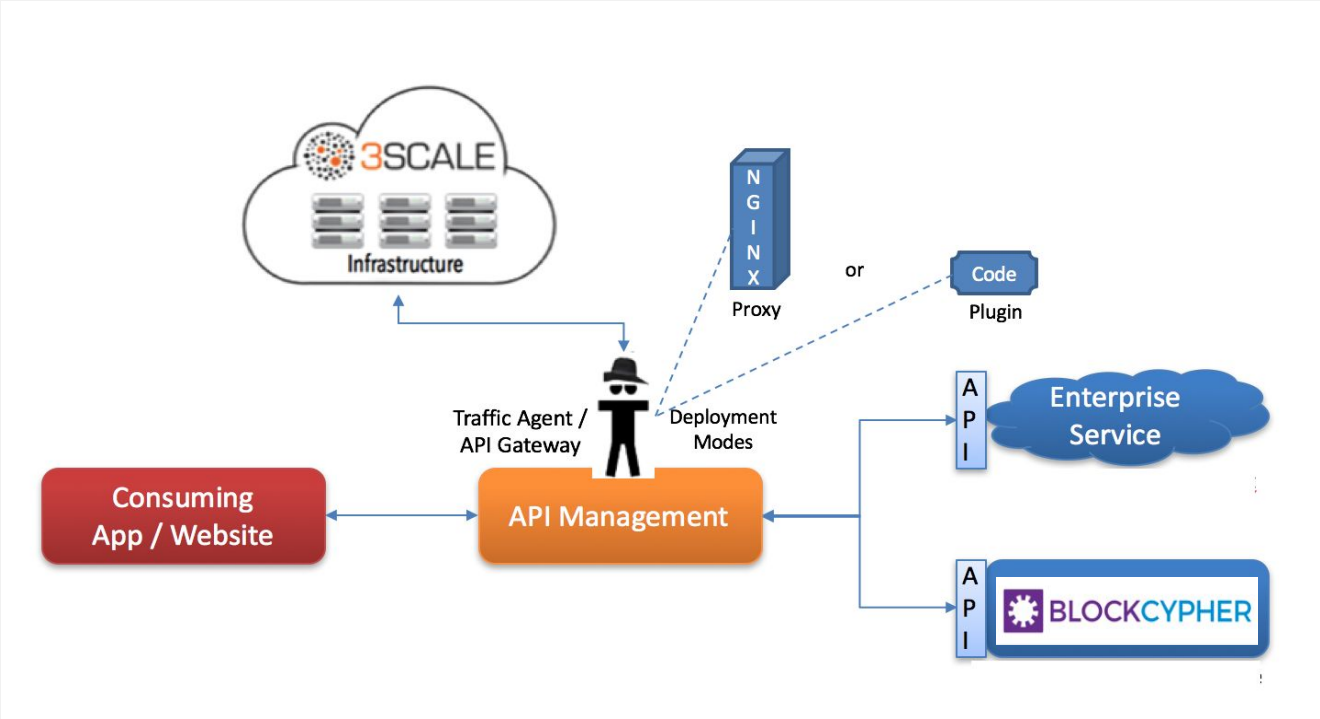
3Scale Deployment Architecture

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



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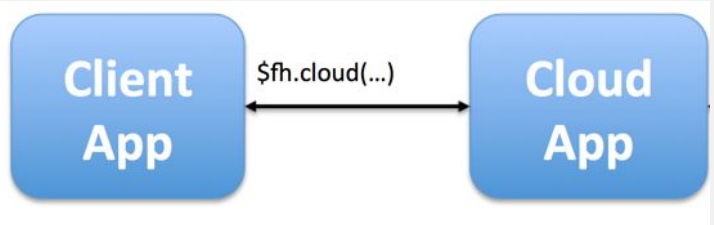
Mobile Application Architecture

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



Phase 1:
2-tier architecture

Phase 2:
3-tier architecture

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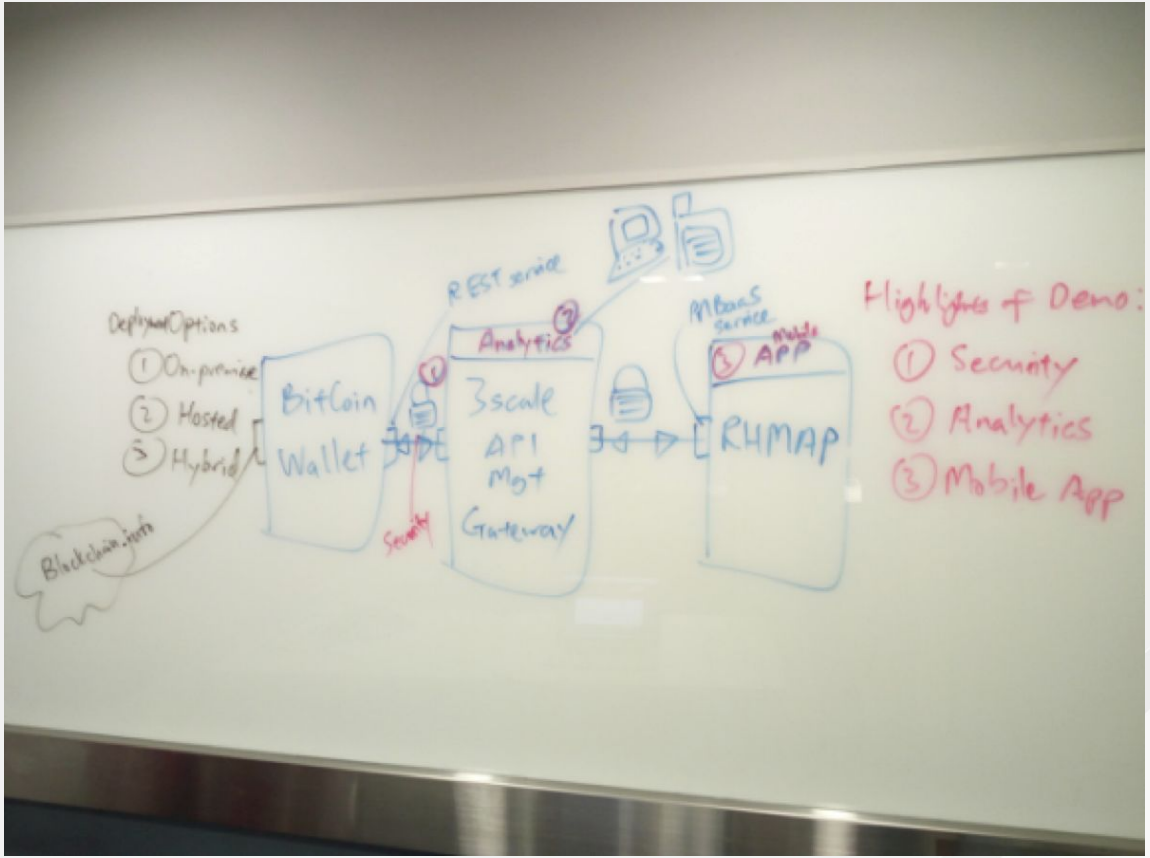
Design Best Practice

Always start with Whiteboarding :-)



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Let’s be practical

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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

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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)
curl https://api.blockcypher.com/v1/btc/main/addrs/1rundZJCMJhUiWQNFS5uT3BvisBuLxkAp?limit=2

# 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
```


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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

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And the demonstration begins

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Demo

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

Mobile App Developer

Integration Architect

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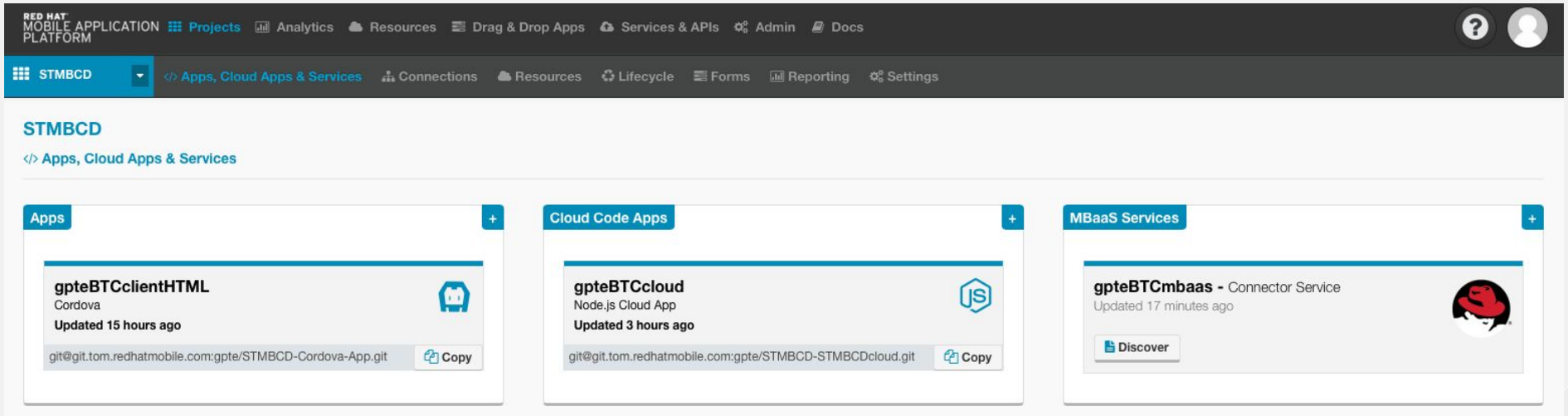
Demo

Perspective of the Mobile App Developer



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Demo

Visit http://people.redhat.com/cdarby/block/

OR

Install the gpteBTC mobile app

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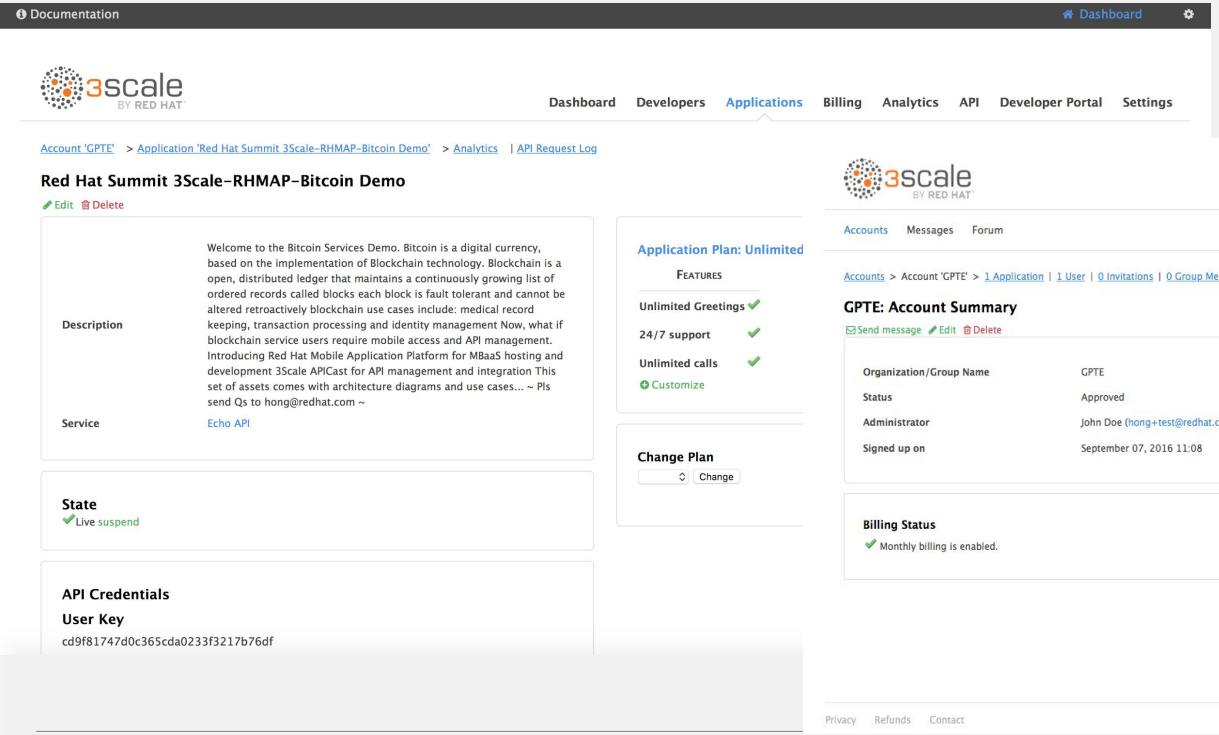
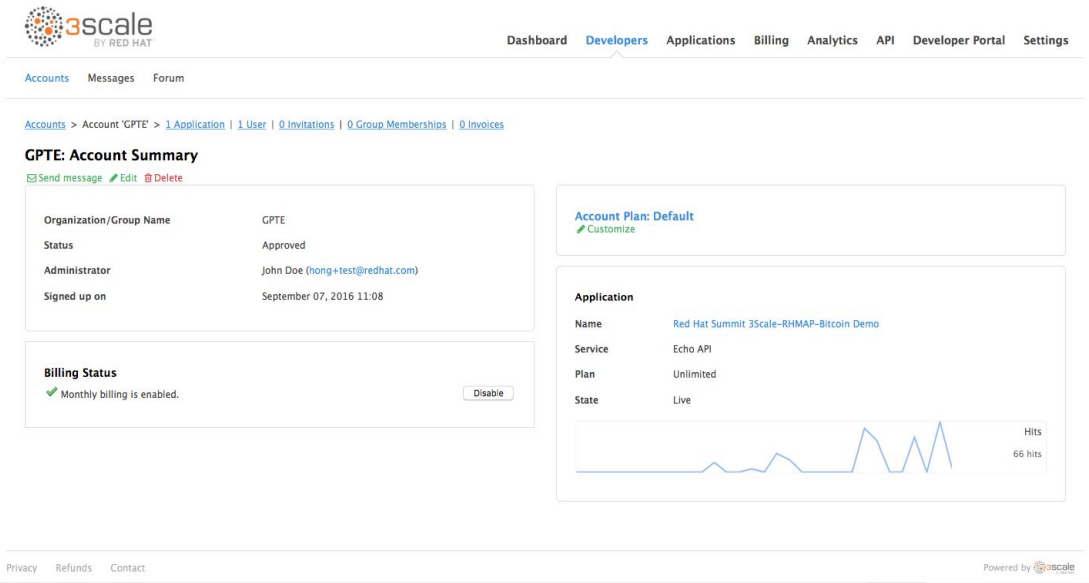
Demo

Perspective of the Integration Architect





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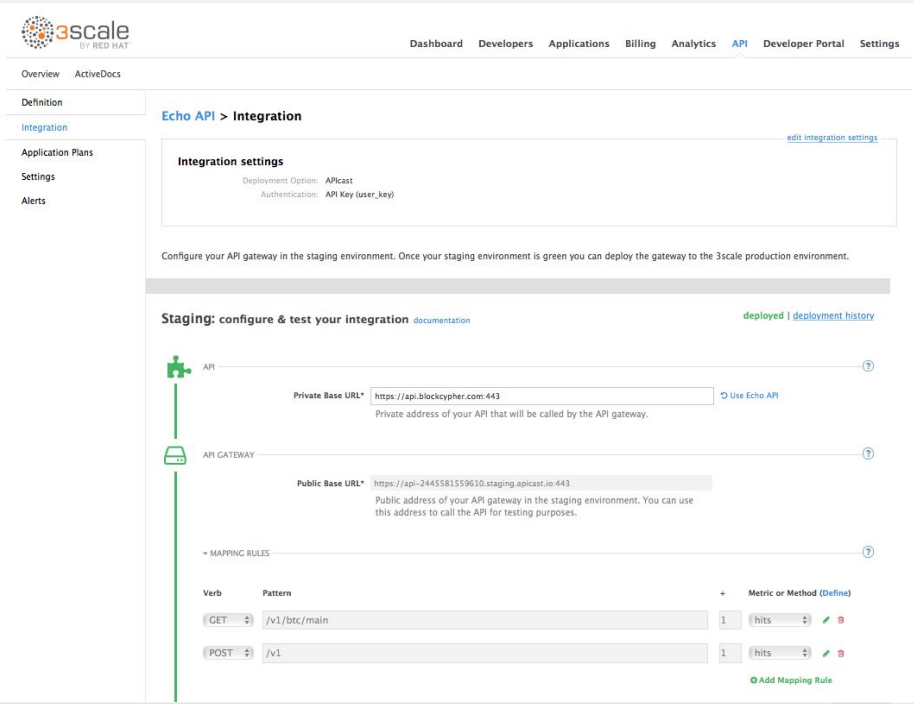
Demo

Perspective of the Integration Architect



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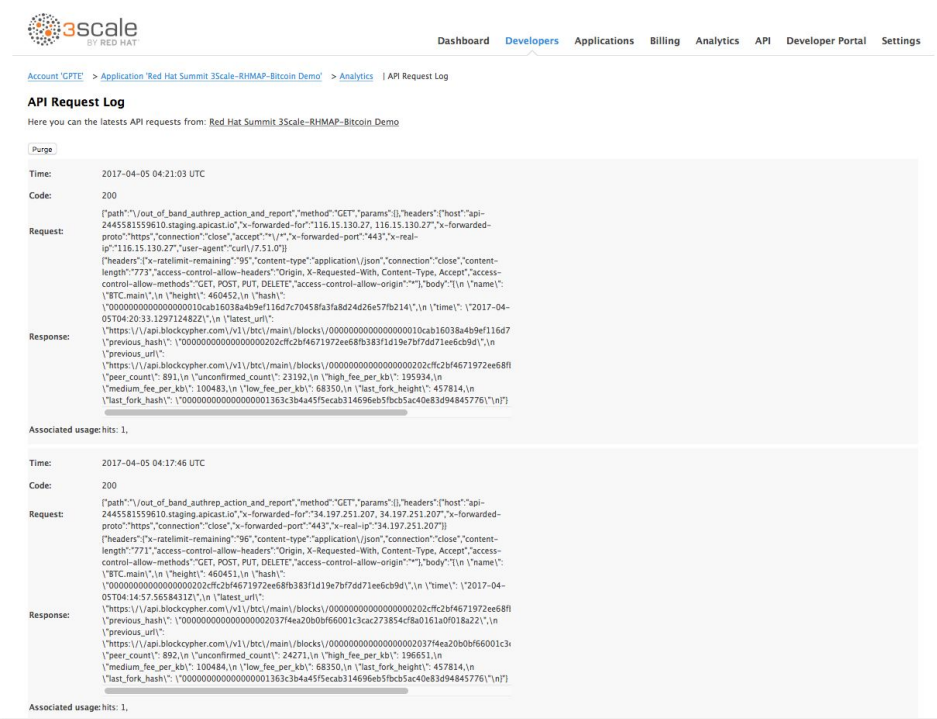
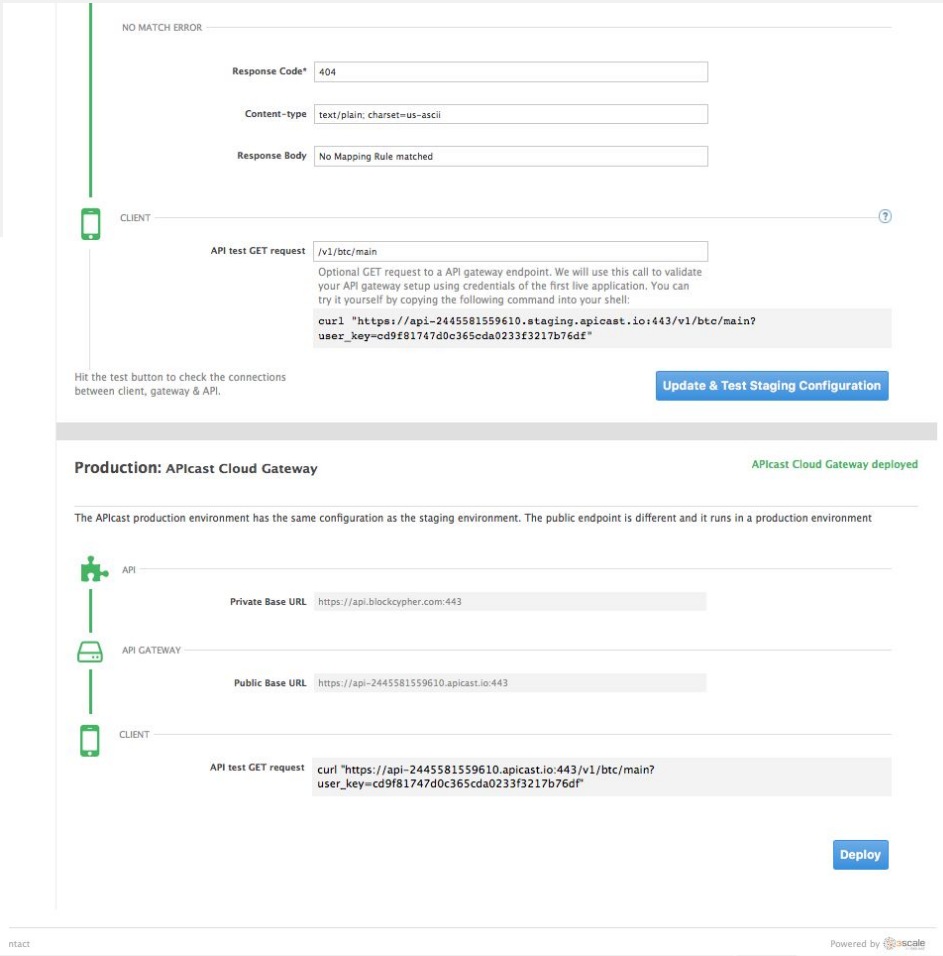
Demo

Perspective of the Integration Architect





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Demo

Come on, demo it already !

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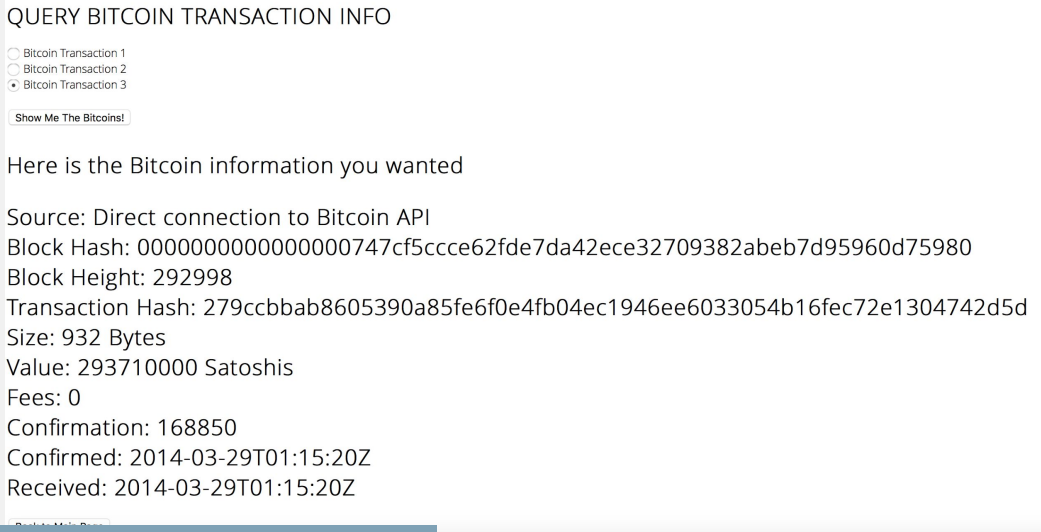
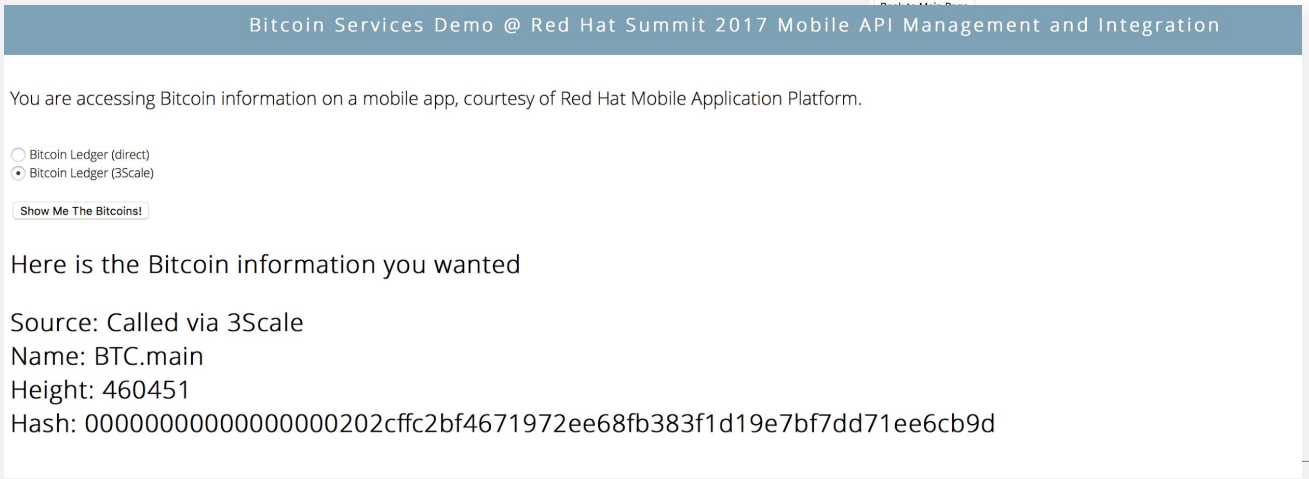
Demo

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





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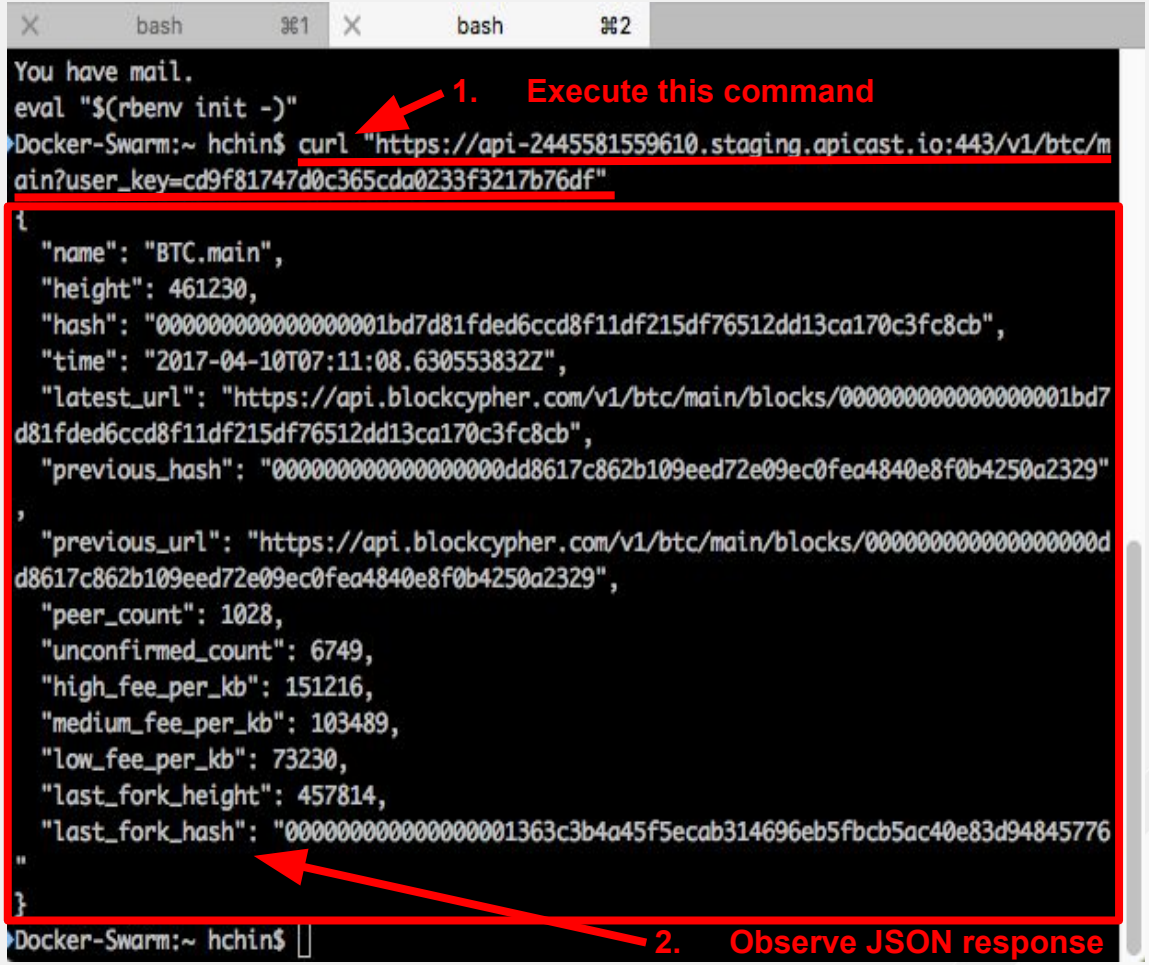
Demo

cURL those API calls !

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



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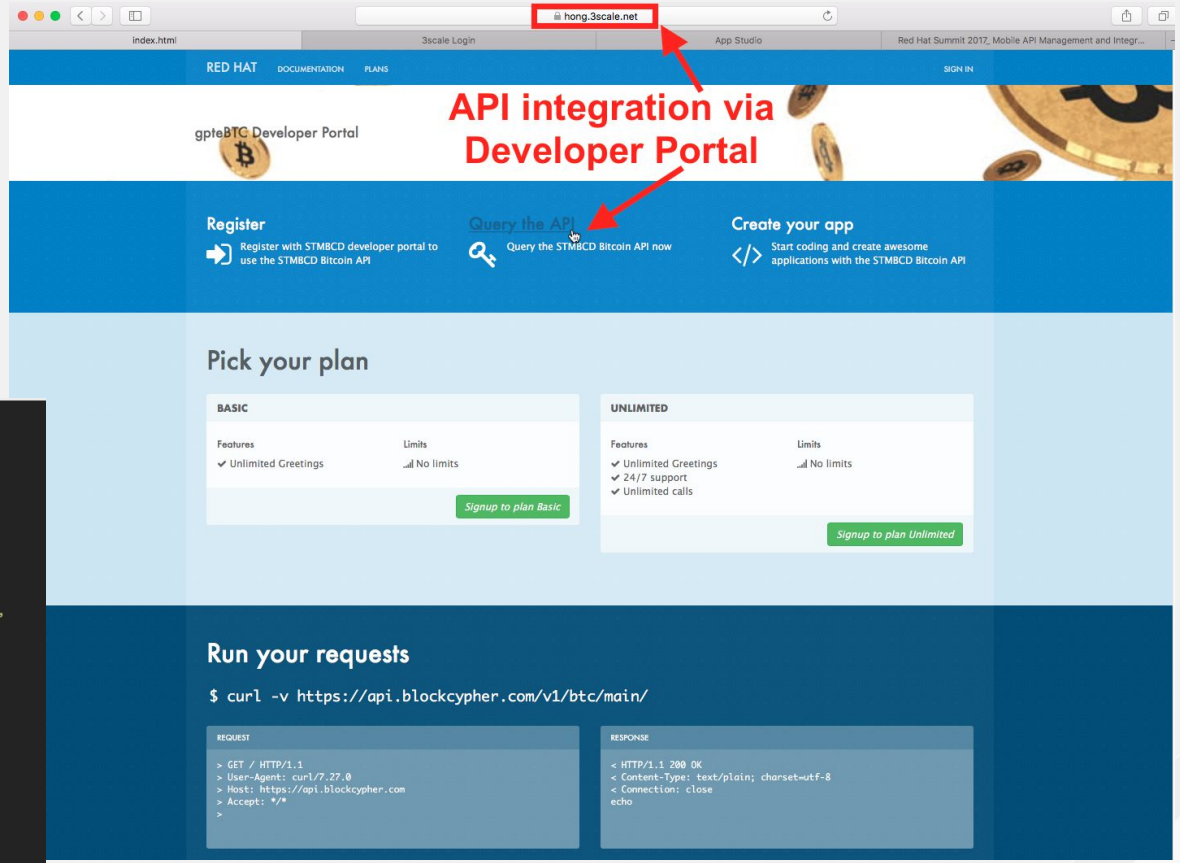
Demo

Love that Swagger

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



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Demo

Give me some of that NodeJS

4. View the source code

btc3scale.js ✖ btccloud.js ✖

```
var express = require('express');
var request = require('request');
var bodyParser = require('body-parser');
var cors = require('cors');

function BTCQuery() {
    var query = new express.Router();
    var loc = 'https://api.blockcypher.com/v1/btc/main';
    var apiloc = 'https://api-2445581559610.staging.apicast.io:443/v1/btc/main?user_key=cd9f81747d0c365cda02
    var height = '454448';

    query.use(cors());
    query.use(bodyParser());

    query.get('/', function(req, res) {

        console.log(new Date(), 'Bitcoin Service GET / req.query=', req.query);

        var selection = req.query.selection;

        console.log("req.body=" + JSON.stringify(req.body));

        console.log("selection = " + selection);

        if (selection == "btcledger_direct") {
            console.log('>> Direct connection to Bitcoin API');

            request(loc, function(error, response, body) {
                console.log("Body received from API call\n" + body);

                var stuff = JSON.parse(body);

                var output = {
                        "source" : "Direct connection to Bitcoin API",
                        "data" : stuff
                }

                console.log("Output sending to the client\n" + JSON.stringify(output));

                res.json(output);
            })
```


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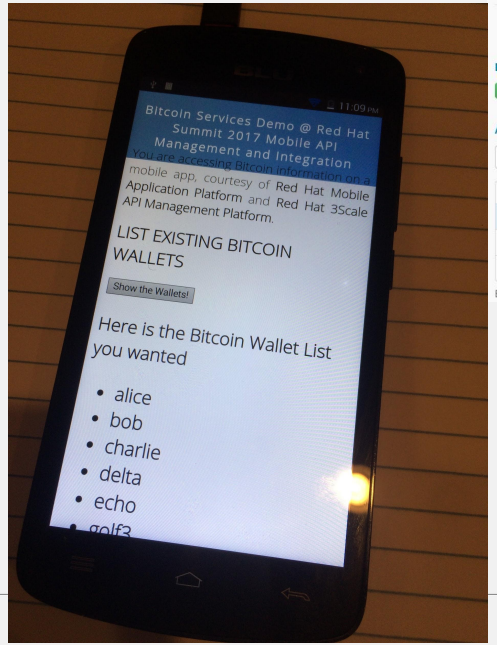
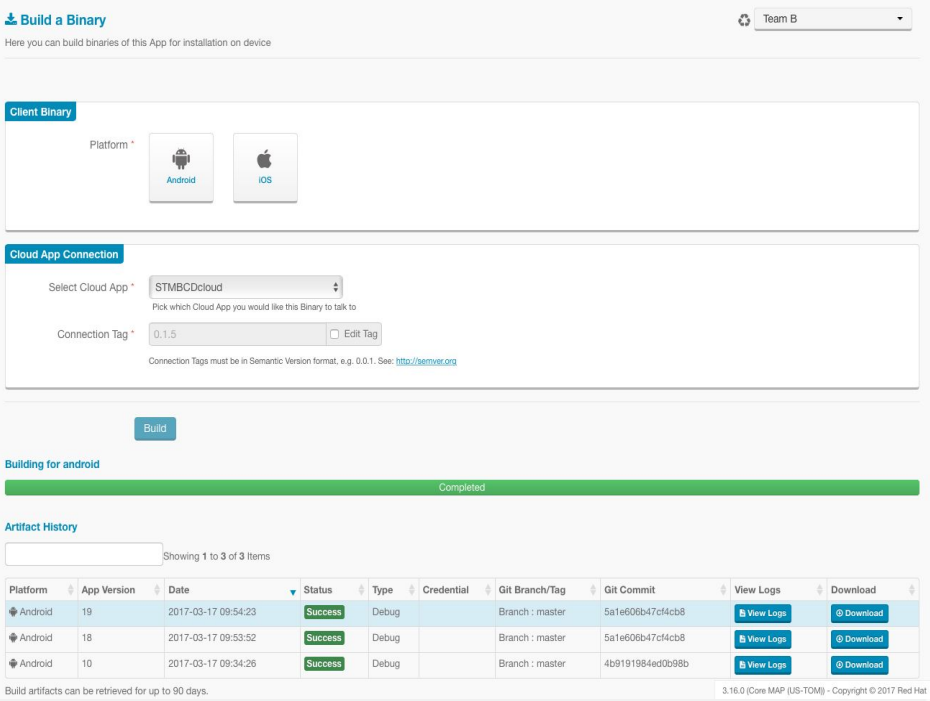
Demo

Go mobile

5. Install and test the gpteBTC app on your smartphone





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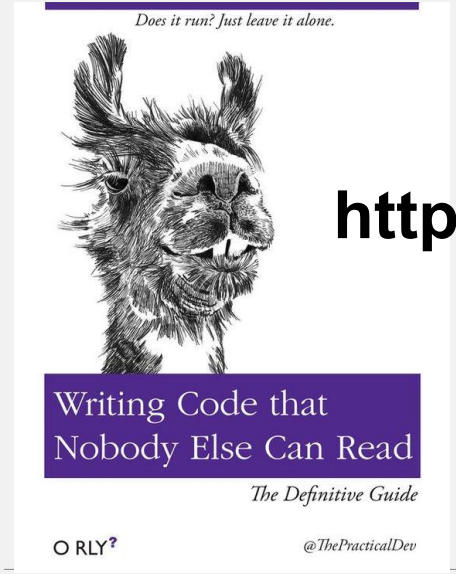
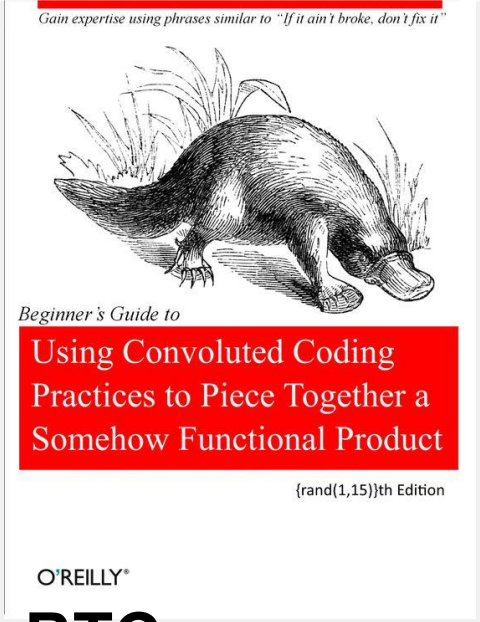
Demo

Be creative. Code away !

6. Fork the code from Github



https://github.com/honghuac/gpteBTC



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That’s all folks?

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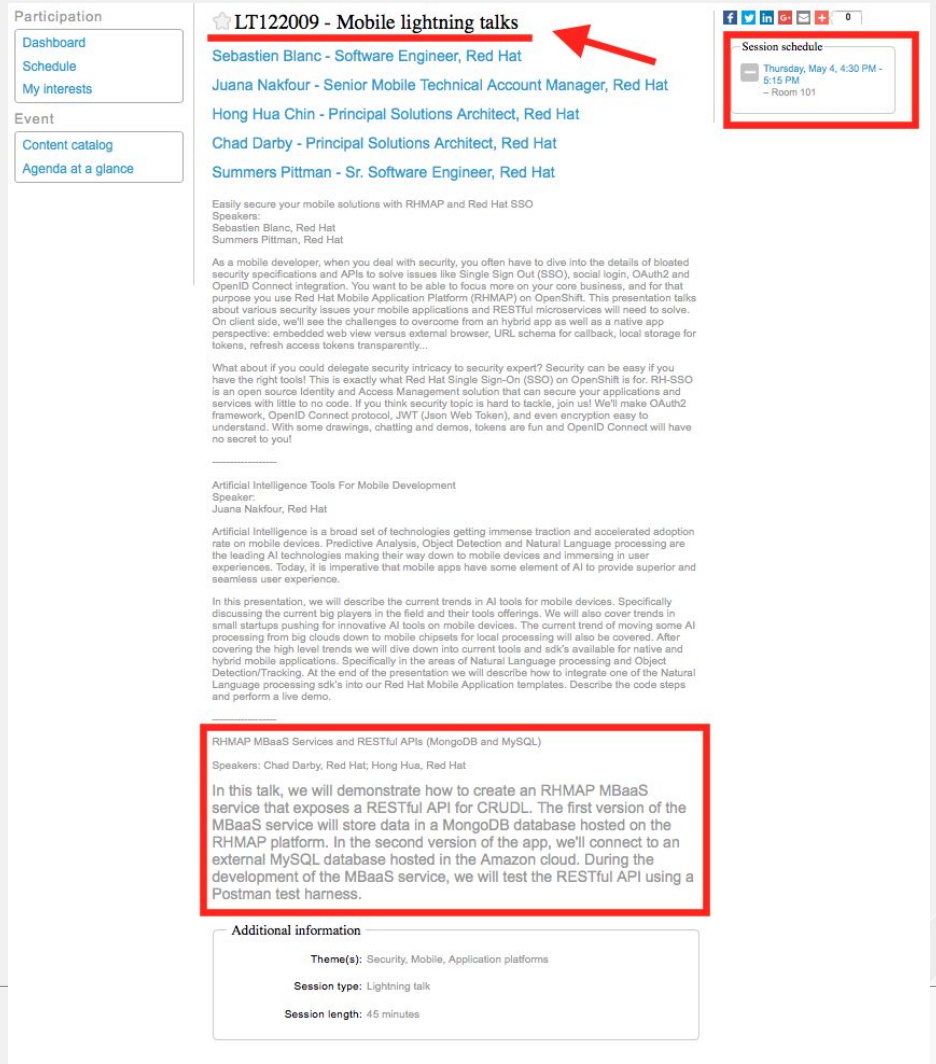
Mobile Lightning Talks

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



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