

Enterprise JavaScript

IBM SDK for Node.js - Linux on System Z

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IBM SDK for Node.js Development

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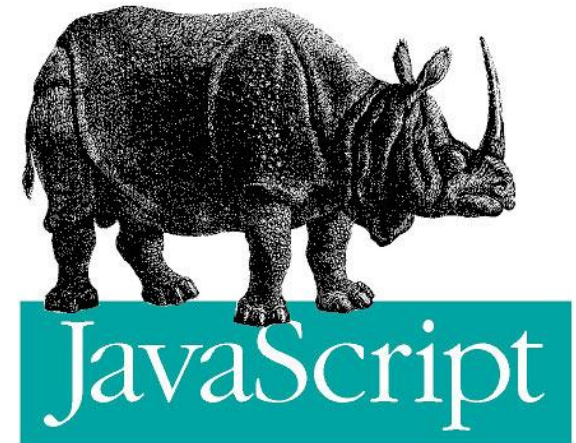
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JavaScript

- Netscape, 1995
- Scripting language for their Navigator browser
- Standardized as ECMAScript (currently v5.1)
- Client-side interaction dynamism to enhance HTML experience
- Realization only within the browser / client-side...



Java != JavaScript

Asynchronous JavaScript and XML (AJAX)



- Since about 2000...
- Dynamic web pages
 - JavaScript sending/receiving XML-based data asynchronously in the background
- Proliferation of JavaScript frameworks
- JavaScript largely interpreted (*Rhino, Nashorn, etc.*)

What is Node.js?



- Server-side JavaScript platform developed by Joyent
- Built on Google's V8 JavaScript runtime
- Goal: Efficiently build fast, scalable, 'real-time' network applications
- Event-oriented, non-blocking, asynchronous I/O framework

Why Node.js?

- It is JavaScript
 - Same language on client and server side
 - Availability of JavaScript talent
- End-to-End JavaScript stack
 - Greater productivity and integration with JSON APIs
- Event-driven, single-threaded model
 - Eliminates concurrency and thread-safety worries
- Thousands of concurrent connections with minimal overhead



Using Node.js for...

- Back-end APIs and services
- Mobile backend as a service (MBaaS)
- “Realtime” applications
- Business analytics
- and more... <http://www.nodejs.org/industry>



JavaScript Landscape - Gartner

Gartner Reports

- *“JavaScript technologies, in particular Node.js, are now the primary technologies supported by vendors offering emerging mobile back-end-as-a-service (MBaaS) space”*

Gartner Recommends

- *“Treat JavaScript experience and expertise as basic requirements for most developers.”*
- *“Build up internal developer JavaScript skill sets to support front-end and back-end mobile app development.”*

Gartner Predicts

- *“Even though they will also be working in other languages, JavaScript will increasingly be part of most projects across a broader range of scenarios”*

“By 2017, JavaScript will be the most in-demand language skill in mobile application development (AD)”

MEAN Stack



M ongoDB	NoSQL Database
E xpress.js	Web Applications framework
A ngular.js	Client-side MVC framework
N ode.js	Server-side JavaScript platform

- Full-stack JavaScript framework

<http://meanjs.org/>

What comprises Node.js?

What's Node made of?



V8 Engine	libuv	core lib
C++ JS	C platform abstraction layer	JavaScript

- Aside from Node.js, V8 itself is also used in:
 - MongoDB
 - therubyracer (Ruby gem)
 - libv8 (Ubuntu)

Anatomy of a Node.js application

1. package.json

- Tracks properties, dependencies, version info, commands, etc.

2. JavaScript source files (i.e. `app.js`)

- To install and execute:

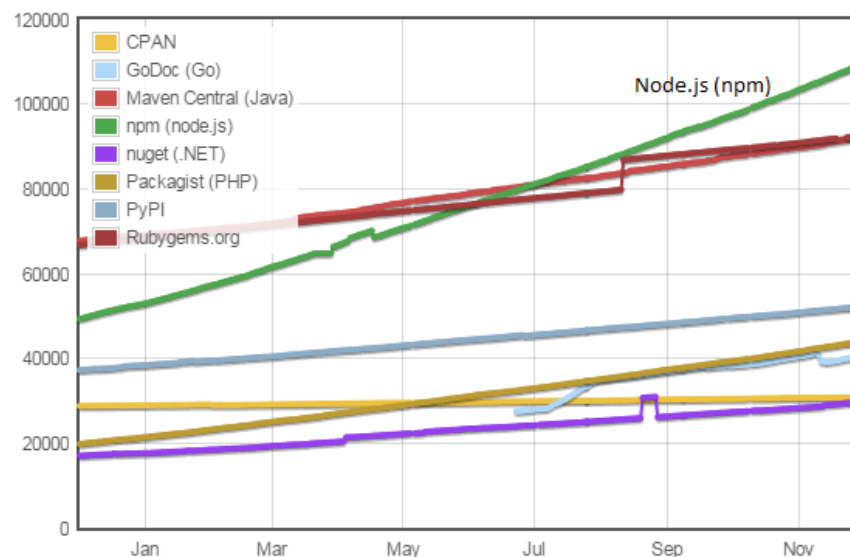
```
> npm install
```

```
> node app.js
```

npm

- Lots of packages / modules for use
 - 109k and growing
- Command line utility to interact with public registry @ npmjs.org
- To install modules, issue:
`npm install <module name>`

Module Counts



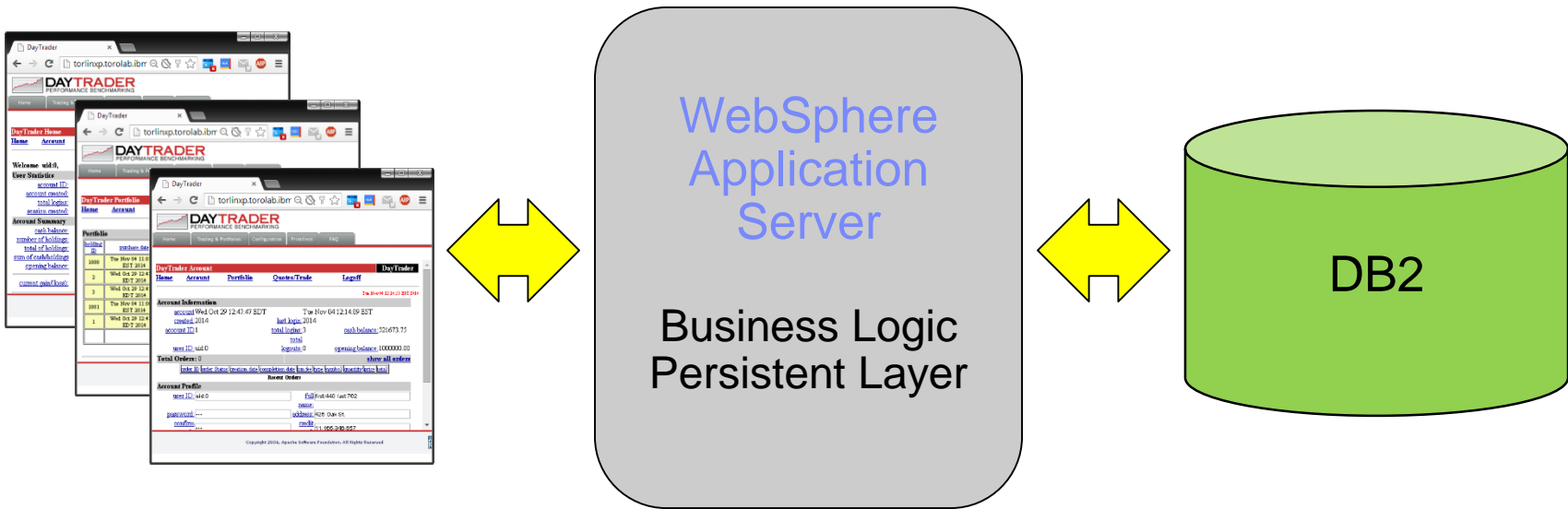
- 3x Growth Rate vs other runtimes

November 30, 2014

<http://www.modulecounts.com>

Example: Take Existing Application

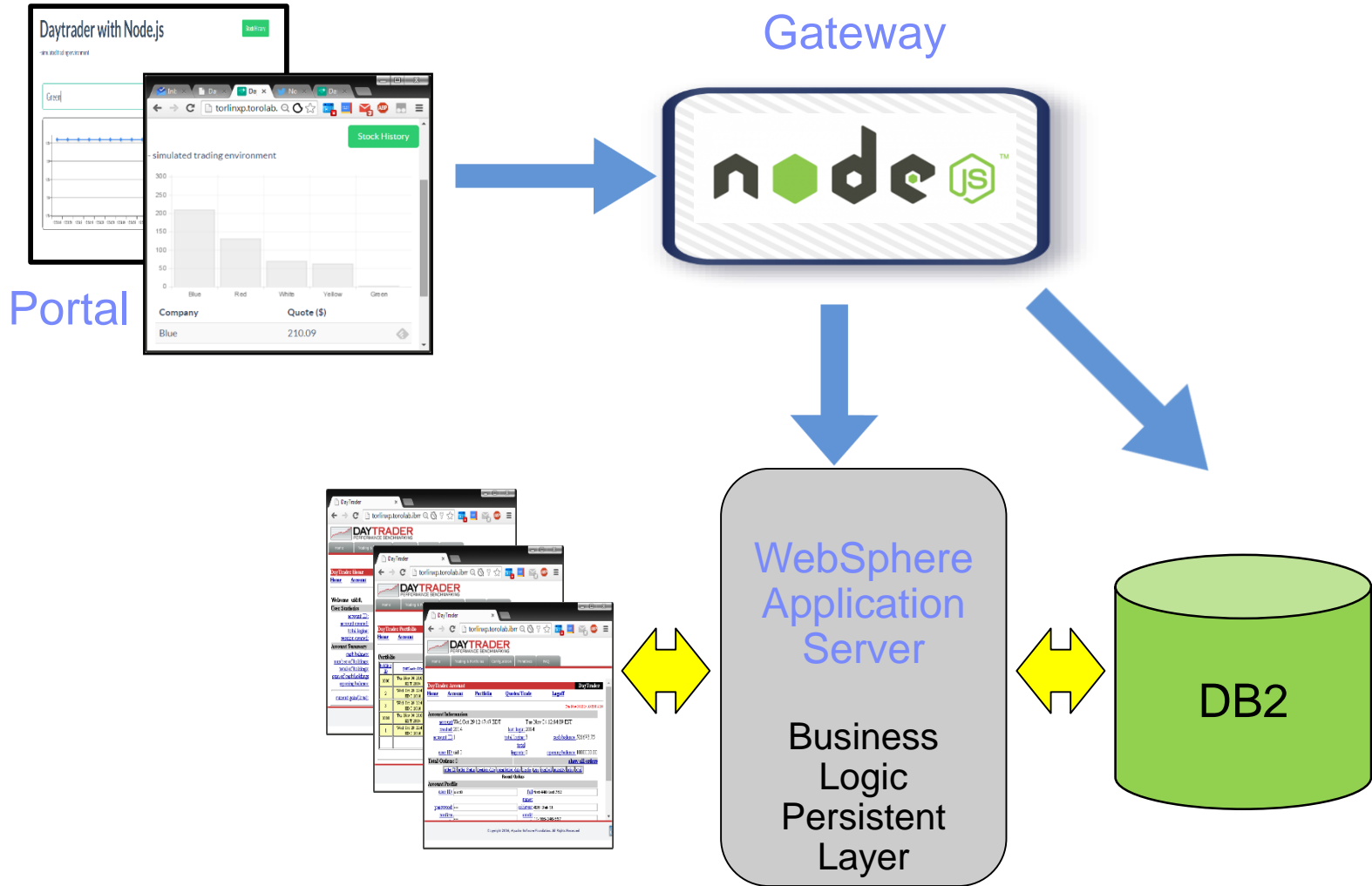
- Existing Java EE Online Stock Trading System



<http://geronimo.apache.org/GMOxDOC20/daytrader.html>

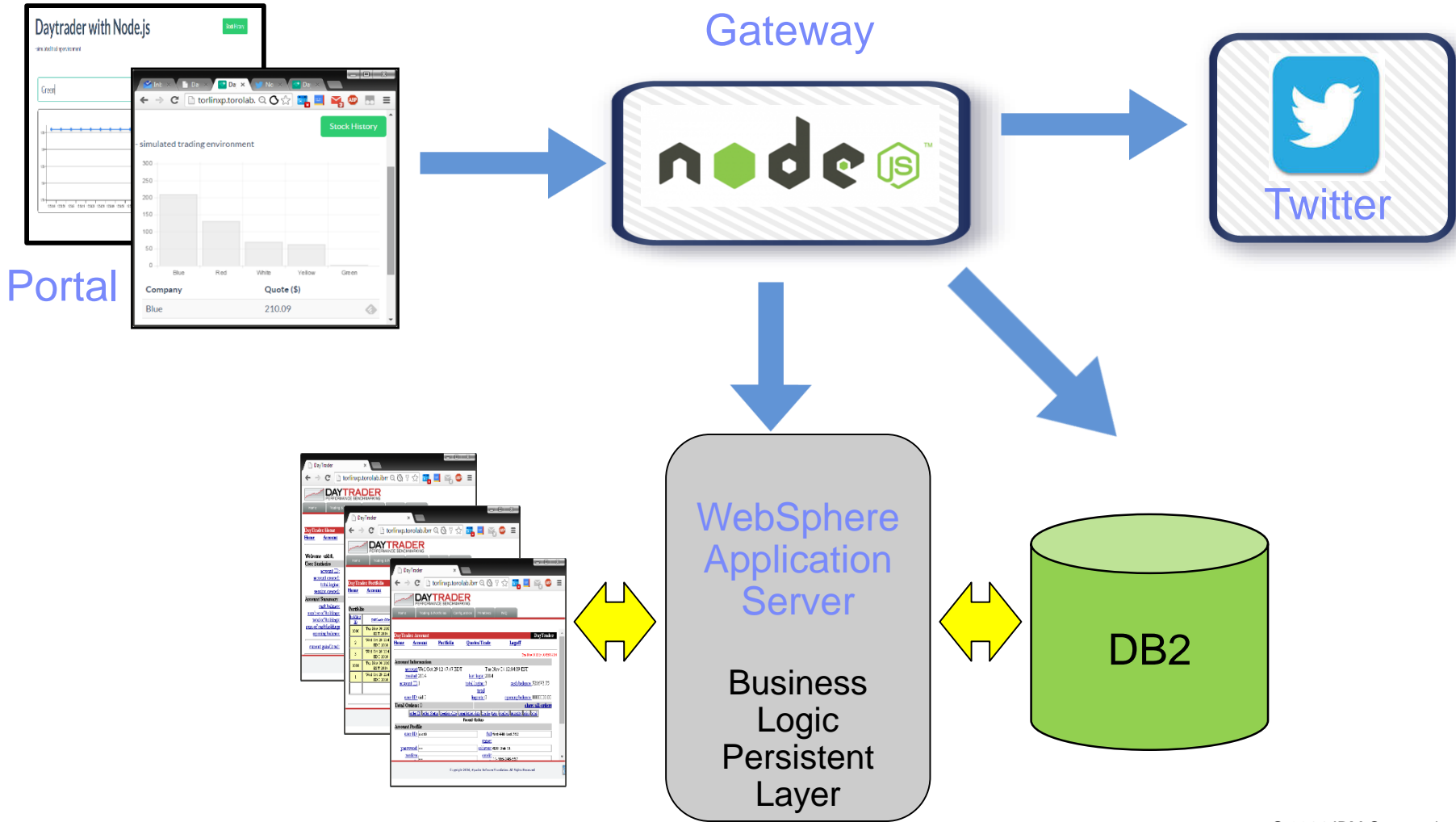
New Portal with Node.js

- Introduce a Real-time Stock Portal (i.e. mobile)

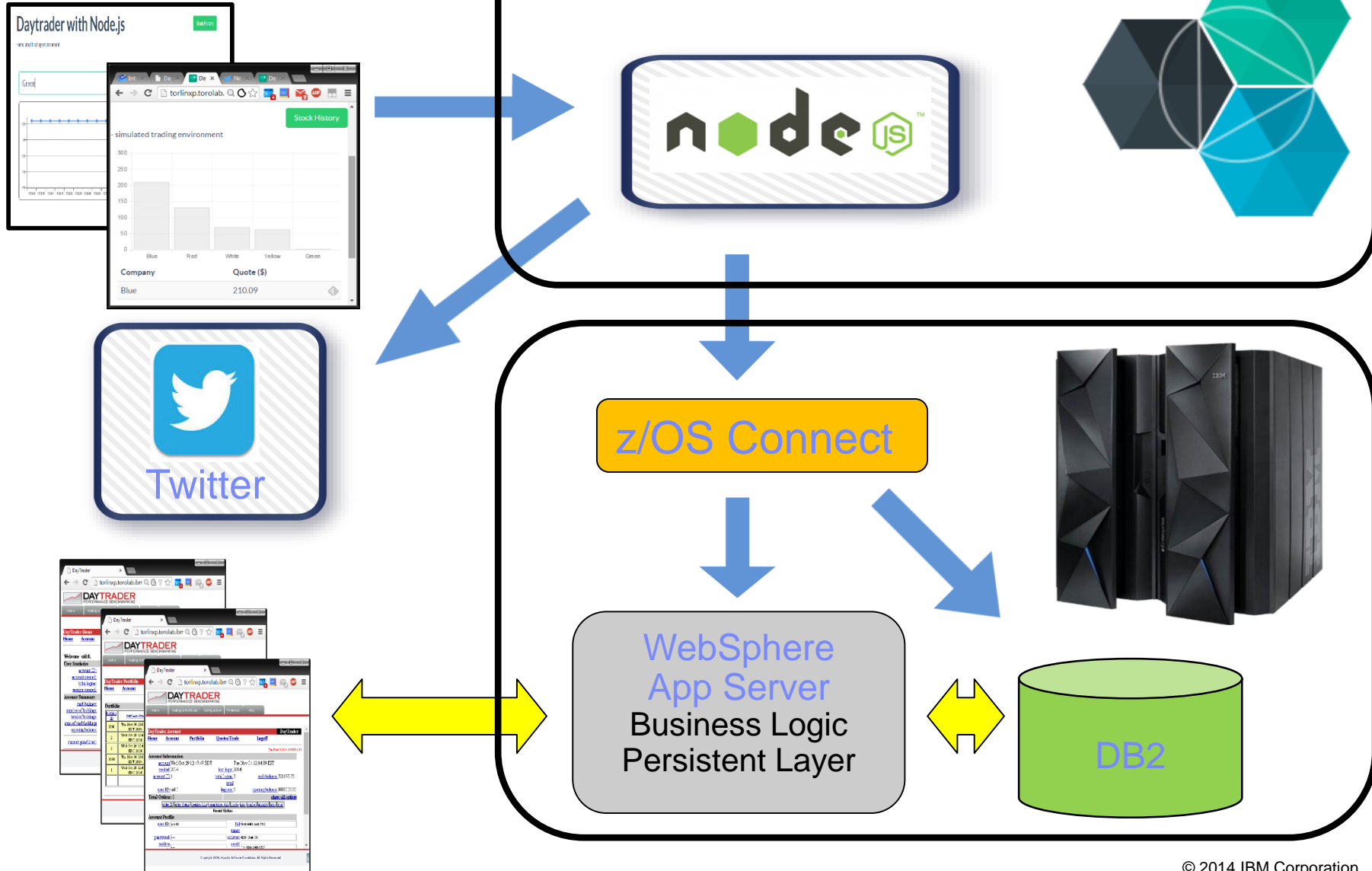


We want to Twit!

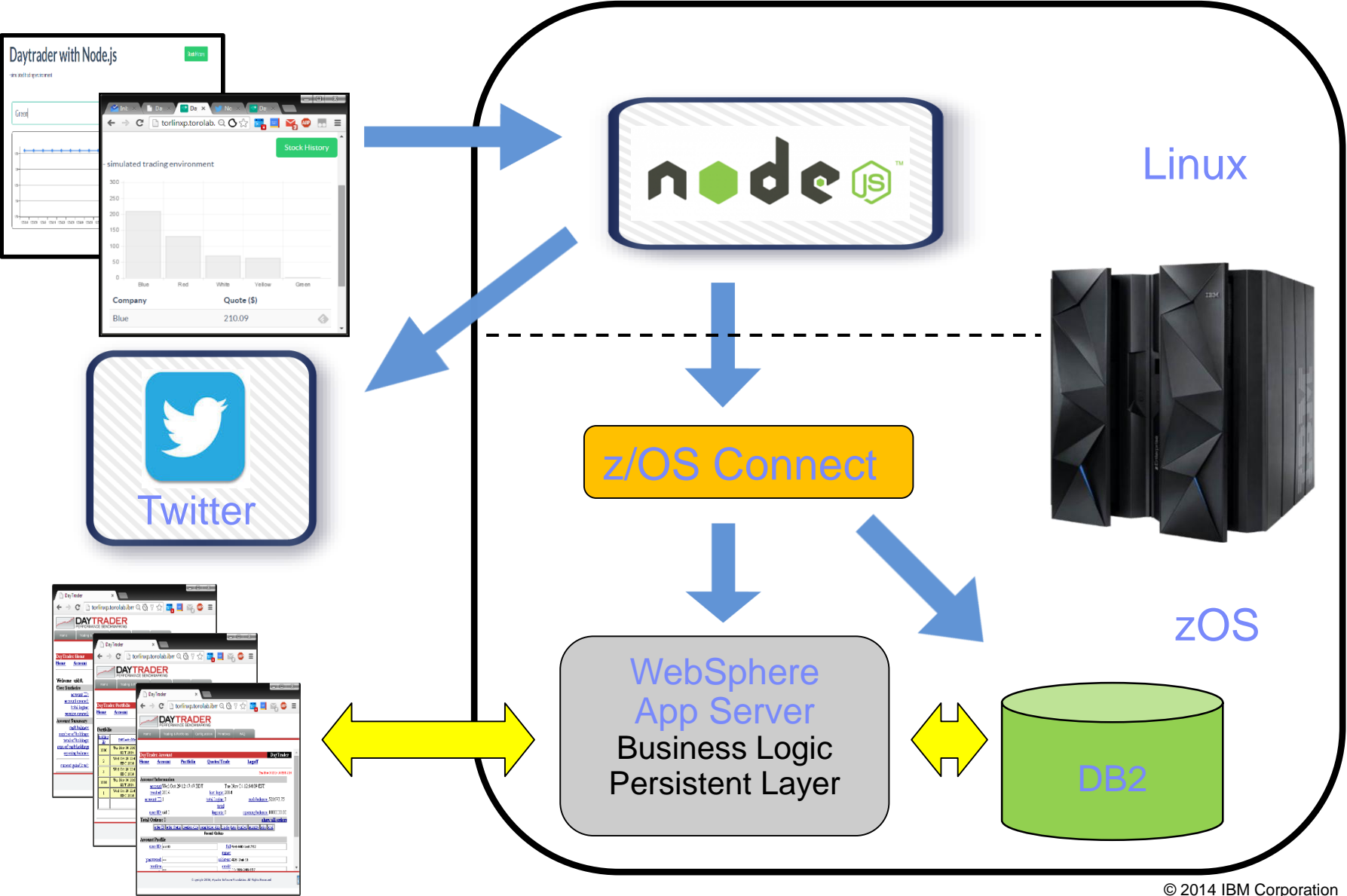
- Social Media, Push Notifications, etc.



On BlueMix



On System Z



Why Node.js on Linux on System Z?

- **Co-location** of Node.js server application with data and transactions on z/OS **reduces latency of access to z/OS data.**
- **Availability and scalability** of Linux on System Z as an environment for both Node.js development, test and production
- All traditional advantages of **consolidating** multiple distributed servers onto Linux on System Z: Reduce data center footprint, simpler management, energy savings.
- Leverages the trusted environments of System Z to maximize **security** and **uptime** of critical Node.js applications

IBM SDK for Node.js™, Version 1.1

Combine modern web JavaScript + Node.js applications with the benefits of System Z hardware, monitoring, and security

High Performance JavaScript for Linux on System Z

- Highly scalable, event-driven platform with non-blocking I/O
- Thousands of concurrent connections with minimal overhead
- Unified JavaScript ecosystem for client and server
- Up to 29% better performance over Intel on AcmeAir*
- One of the fastest growing eco-systems
 - +109k modules @ npmjs.org

System Z Connectivity

- Co-locate Node.js applications for reduced latency accessing z/OS data/services

Security and Dependability

- Leverages the trusted environments of System Z to maximize security and uptime of critical Node.js applications.

Unified Diagnostics and Monitoring with IBM SDKs for Java®

- Support for IBM SDK for Node.js in IBM Support Assistant (ISA)

Compatible with latest Joyent Node.js v0.10.* releases

<http://www.ibm.com/developerworks/web/nodesdk>



*(Controlled measurement environment, results may vary)

Getting Node.js on Linux on System Z

- IBM SDK for Node.js, Version 1.1
 - Equivalent to latest Joyent Node.js version 0.10.X
 - <http://www.ibm.com/developerworks/web/nodesdk>
- 31-bit / 64-bit drivers available for Linux on System Z!
- Fork Us on GitHub @
 - S390 V8: github.com/andrewlow/v8z
 - Node: github.com/andrewlow/node