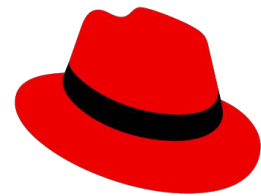
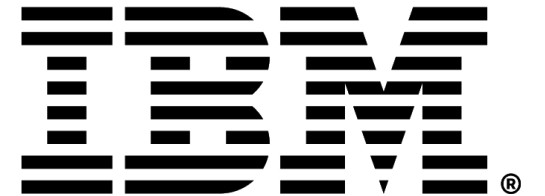


Node.js Success Stories



Red Hat



When you interact with IBM, this serves as your authorization to NodeConf or its vendor to provide your contact information to IBM in order for IBM to follow up on your interaction. IBM's use of your contact information is governed by the IBM Privacy Policy.

About Michael Dawson

Node.js lead for Red Hat and IBM

Active Node.js community member

Community Committee member

Active OpenJS Foundation member

Community Director 2020-2021

Twitter: @mhdawson1

Linkedin: <https://www.linkedin.com/in/michael-dawson-6051282>

Agenda

Real World Node.js Success Stories within IBM and Red Hat

Node.js success within an ecosystem

Some Node.js Customer success stories

Sharing Node.js experience across two large organizations

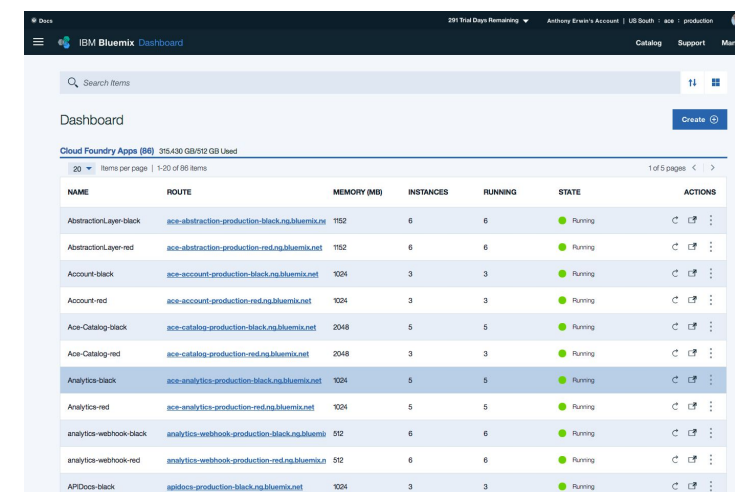
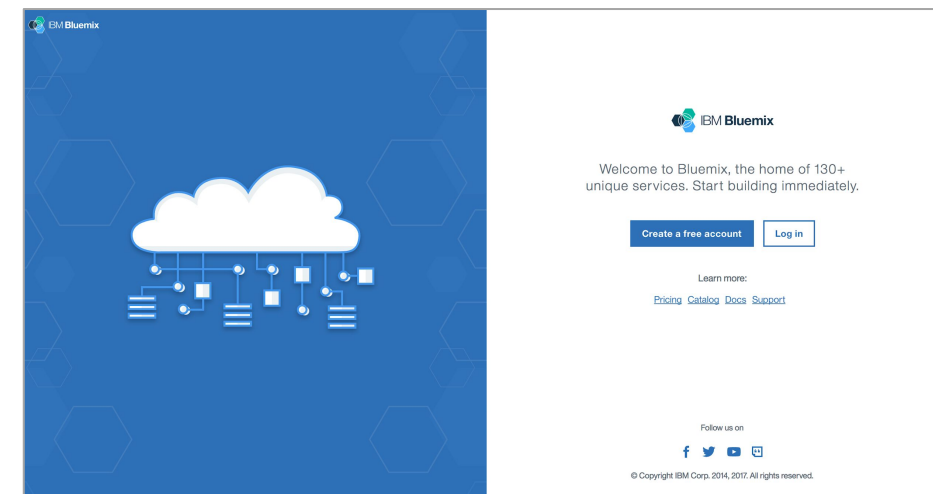
Node.js Success Stories – Within IBM and Red Hat

Node.js Success Stories – Within IBM and Red Hat

- ▶ We don't just help our customers use Node.js, major user internally
 - >45 projects with registered dependencies
 - Slack group with 1692 members
 - Lots of published packages
 - Coverage for all of the Node.js constituencies –
<https://github.com/nodejs/next-10/blob/master/CONSTITUENCIES.md>
- ▶ To start let's look at 2 Large Node.js deployments
 - IBM Cloud UI
 - The Weather Company

Node.js Success Stories - IBM Cloud Console

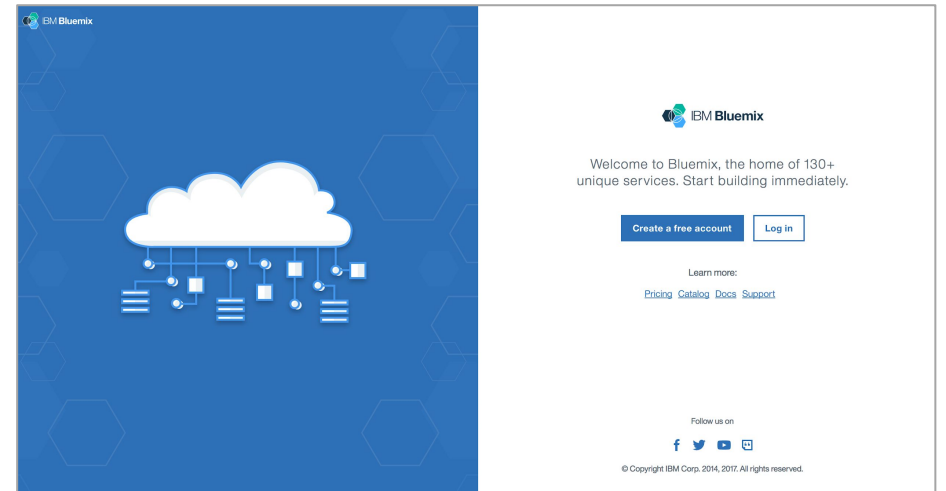
- ▶ Large UI serving as front-end to the IBM Cloud
- ▶ Microservices-based
- ▶ Lets users create, view, and manage PaaS/IaaS resources
 - Kubernetes clusters
 - Virtual servers
 - Bare metal
 - Cloud Foundry apps & services
- ▶ Provides additional functionality for:
 - Registration/onboarding
 - Identity and Access Management (IAM)
 - Billing/usage
 - Docs
- ▶ Serves as the front-end to IBM Cloud

The image is a screenshot of the IBM Bluemix Dashboard. At the top, there's a dark header with the IBM Bluemix logo and navigation links like "Catalog", "Support", and "Manage". Below the header, there's a search bar and a "Create" button. The main section is titled "Cloud Foundry Apps (88)" and shows a table of running applications. The table has columns for NAME, ROUTE, MEMORY (MB), INSTANCES, RUNNING, STATE, and ACTIONS. The table lists several applications, including "AbstractionLayer-black", "AbstractionLayer-red", "Account-black", "Account-red", "Ace-Catalog-black", "Ace-Catalog-red", "Analytics-black", "Analytics-red", "analytics-webhook-black", "analytics-webhook-red", and "APIDocs-black". Each application is shown with its route, memory usage, number of instances, number of running instances, and state (all are "Running").

NAME	ROUTE	MEMORY (MB)	INSTANCES	RUNNING	STATE	ACTIONS
AbstractionLayer-black	ace-abstraction-production-black.ng.bluemix.net	1152	6	6	Running	↶ ↷ ⋮
AbstractionLayer-red	ace-abstraction-production-red.ng.bluemix.net	1152	6	6	Running	↶ ↷ ⋮
Account-black	ace-account-production-black.ng.bluemix.net	1024	3	3	Running	↶ ↷ ⋮
Account-red	ace-account-production-red.ng.bluemix.net	1024	3	3	Running	↶ ↷ ⋮
Ace-Catalog-black	ace-catalog-production-black.ng.bluemix.net	2048	5	5	Running	↶ ↷ ⋮
Ace-Catalog-red	ace-catalog-production-red.ng.bluemix.net	2048	3	3	Running	↶ ↷ ⋮
Analytics-black	ace-analytics-production-black.ng.bluemix.net	1024	5	5	Running	↶ ↷ ⋮
Analytics-red	ace-analytics-production-red.ng.bluemix.net	1024	5	5	Running	↶ ↷ ⋮
analytics-webhook-black	analytics-webhook-production-black.ng.bluemix.net	512	6	6	Running	↶ ↷ ⋮
analytics-webhook-red	analytics-webhook-production-red.ng.bluemix.net	512	6	6	Running	↶ ↷ ⋮
APIDocs-black	api-docs-production-black.ng.bluemix.net	1024	3	3	Running	↶ ↷ ⋮

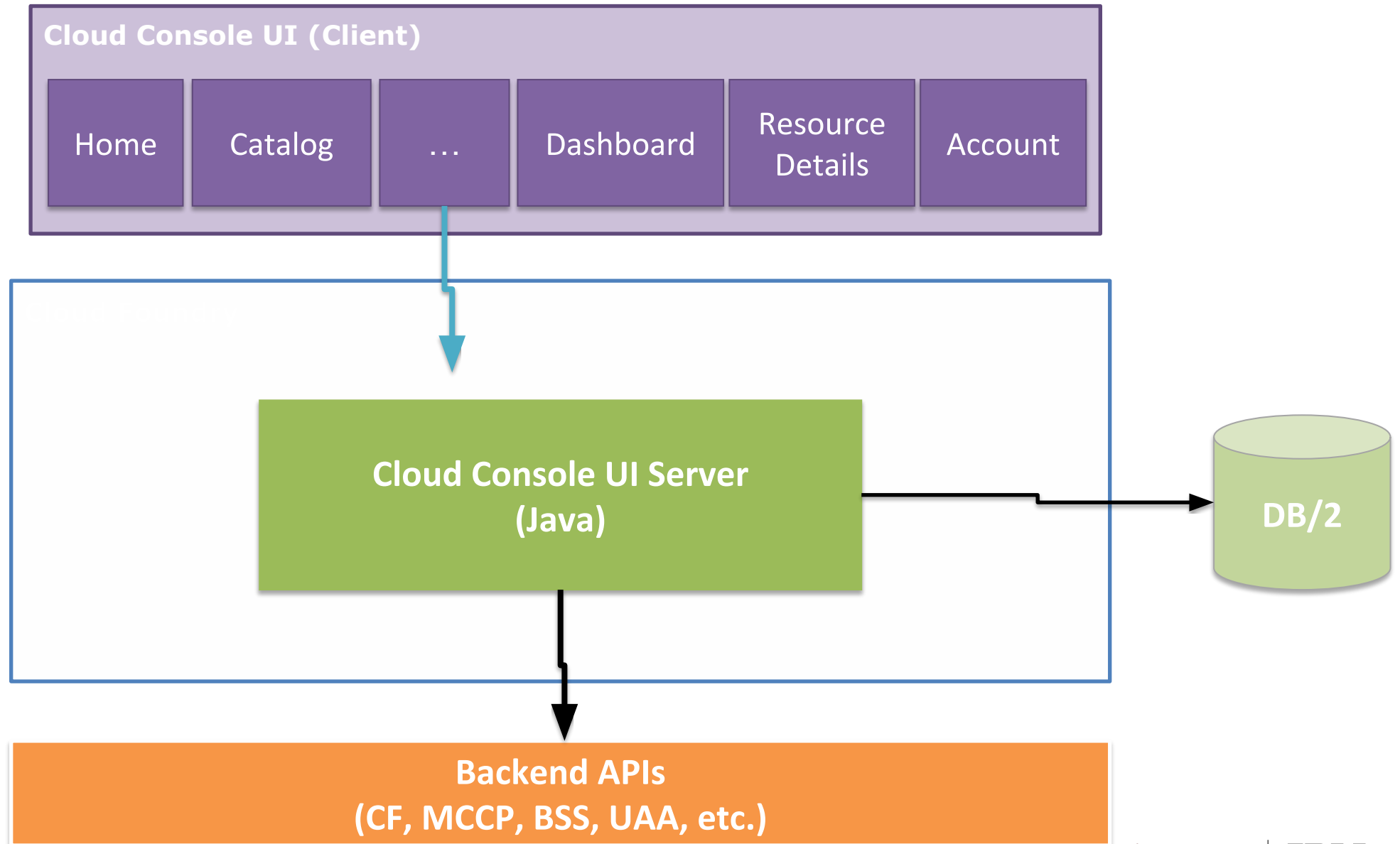
Node.js Success Stories - IBM Cloud Console

- ▶ Microservice Based
 - ~**90** Node.js microservices
 - Designed for plugins
- ▶ ~**50** teams have contributed plugins
- ▶ Deployed in **Kubernetes**
- ▶ **10** Geo load-balanced clusters deployed around the world



Node.js Success Stories - IBM Cloud Console

- Released in 2014 as monolithic single-page app (SPA)
- All HTML, CSS, and JavaScript loaded within single web page
- Served from a single Java app (which also provided APIs)
- Totally centered around Cloud Foundry



Node.js Success Stories - Problems with the Monolith

- Bad performance
 - Heavy weight JavaScript loaded to browser was slow (used Dojo framework)
 - Volume of client-initiated AJAX requests created bottlenecks
- Difficult to integrate code from other teams
- Have to push whole product even for small changes
- Poor Search Engine Optimization (SEO)
- New hires wanted nothing to do with Dojo

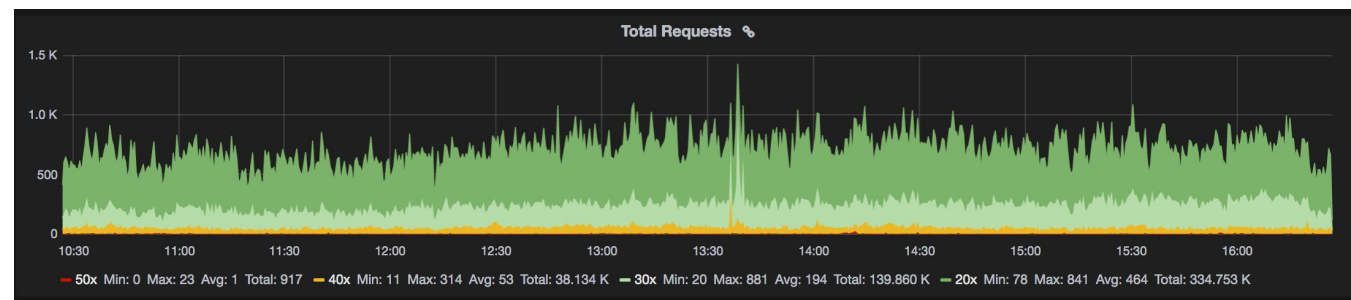
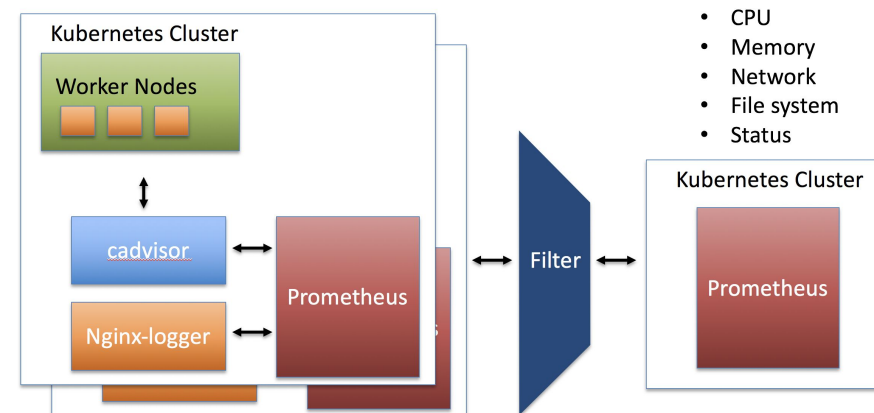
Node.js Success Stories – Moving to a Cloud Native Architecture

Benefits of Loosely-coupled microservices

- ▶ Flexibility
 - Teams can deploy at their own schedule
 - Teams use stack of their choosing
 - Teams don't have to wait on others
 - Allows paced migration to more modern, lighter-weight stack without starting over
- ▶ Performance
 - small services optimized for speed and page size (Performance!)
- ▶ Productivity
 - Increases developer productivity with less chance of breaking other parts of the product
 - Improves cross-team UI consistency via microservice composition

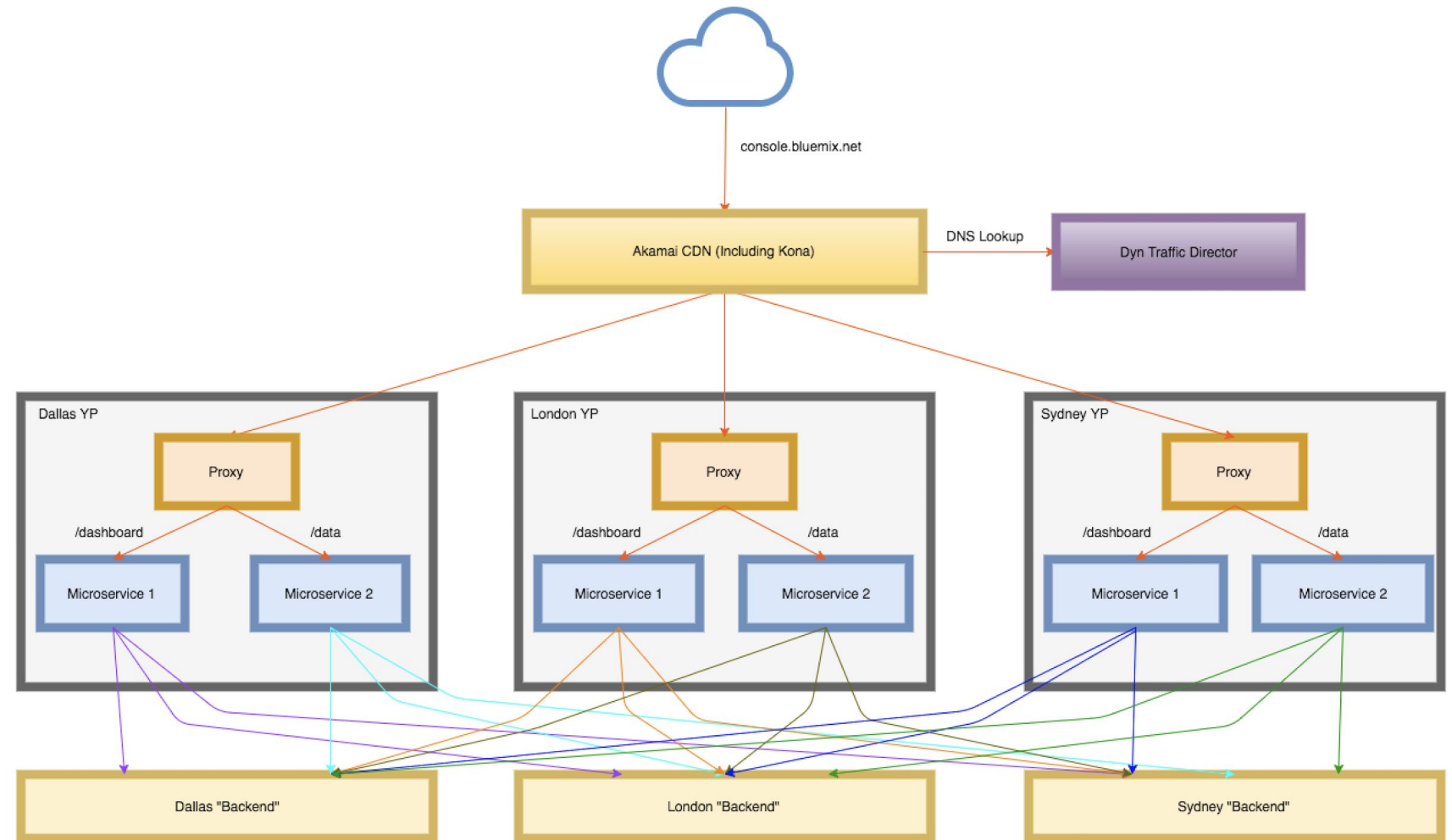
Node.js Success Stories - Lessons Learned

- Monitor is critical
 - Lots of things can go wrong
 - Root cause determination can be difficult
- Some of the required metrics:
 - Data for every inbound/outbound request for every microservice
 - Response time
 - Response code
 - Memory usage, CPU usage, and uptime for every microservice
 - General health of ourselves and dependencies
- Metrics gathered through Prometheus and heavy use of OpenCensus/OpenTelemetry (<https://github.com/open-telemetry>)



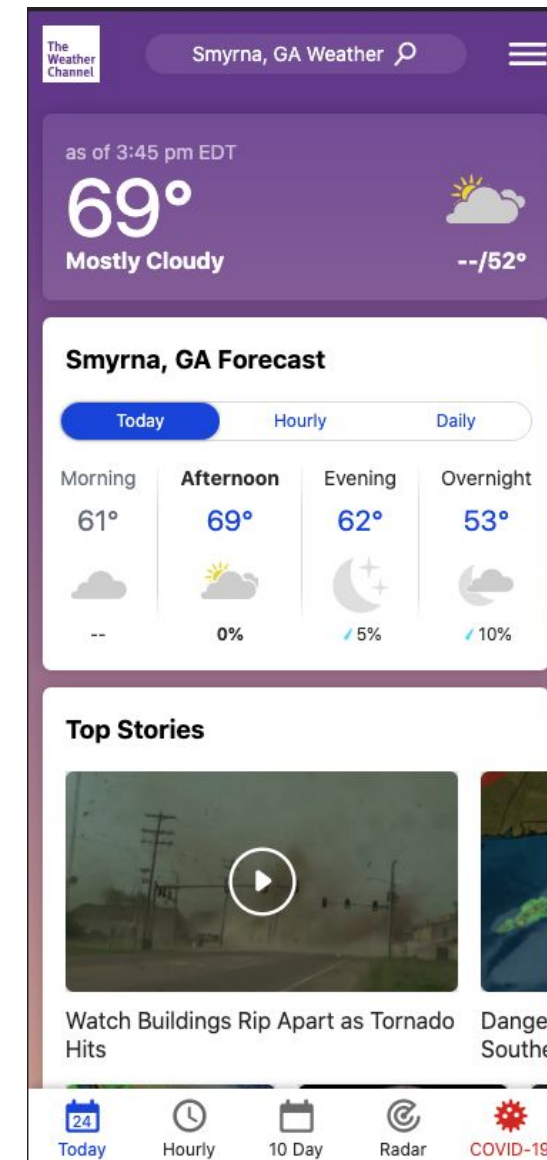
Node.js Success Stories - Lessons Learned

- Microservices should *not* be tied to specific region
 - E.g., Dallas microservice ought to be able to work with API & resources in London



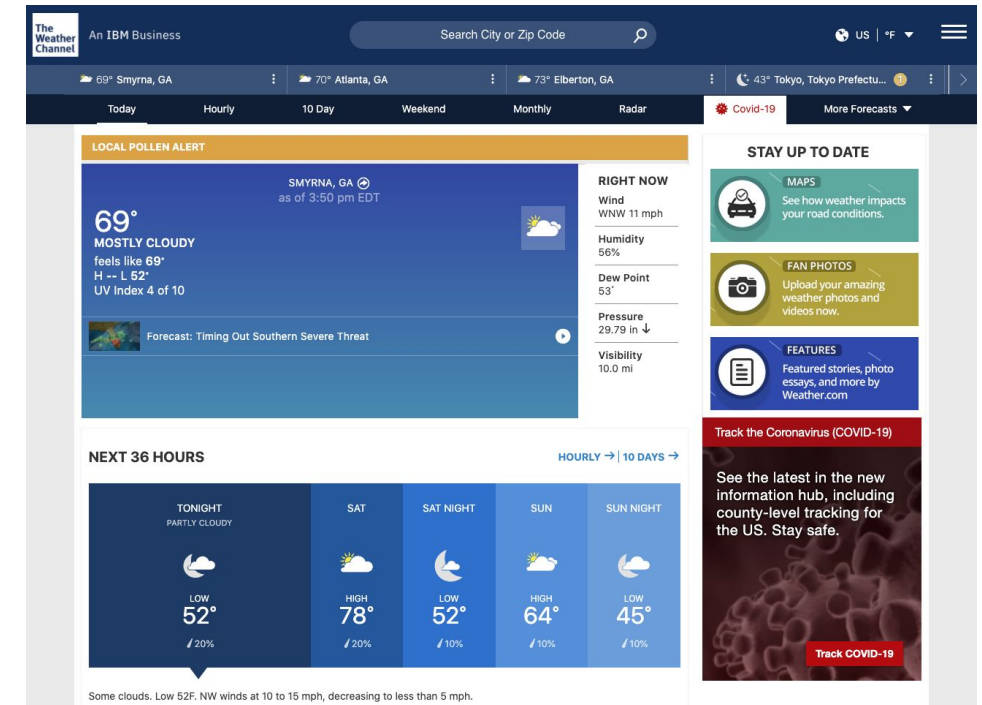
Node.js Success Stories - The Weather Company

- <https://www.ibm.com/weather>
 - Outage Prediction
 - Weather Signals
 - Advanced Insights
 - Breaking Weather News
- www.weather.com
 - Powered by



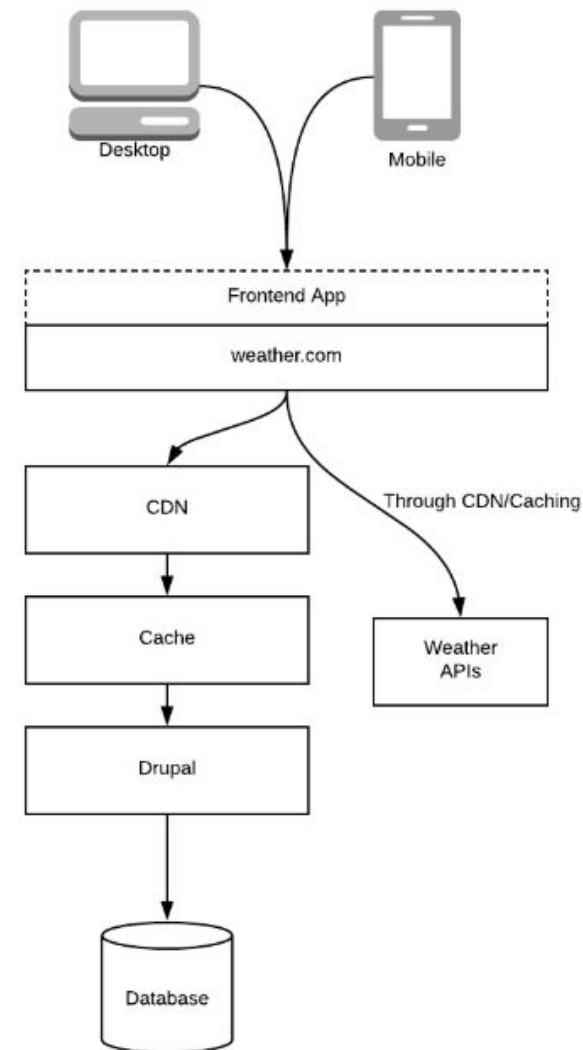
Node.js Success Stories – The Weather Company

- Truly Global Application
 - Billions of locations
 - Cities, Zip codes, specific latitude and longitude combinations
 - 60 Languages and 230+ Locals
- Global Infrastructure
 - 4 regions
 - 7 Kubernetes Clusters
 - 400+ worker nodes
 - Dozens of services scaled from 3 to 100+ replicas
 - All running on IBM Cloud
- Running 24/7 serving large public audience



Node.js Success Stories - The old days

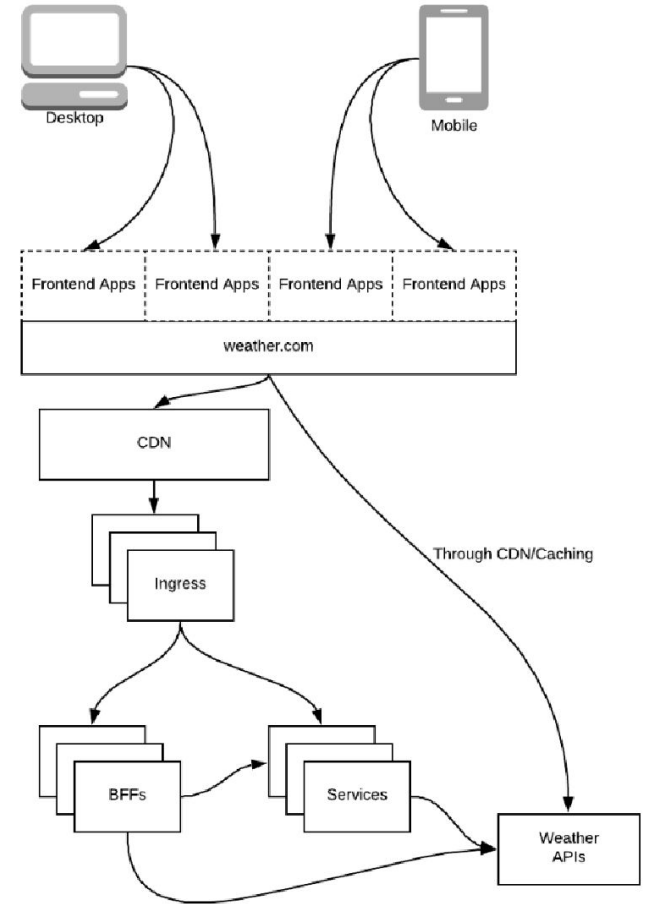
- Monolith
- Problems, Problems, Problems
 - Performance (Costing \$\$\$s)
 - Stability
 - Velocity
 - JS Developers not familiar with Drupal or PHP



Node.js Success Stories - Today's Cloud Native Architecture

- Backend for Frontends Pattern
 - Decoupling page frontends
- Server Side Rendering
- Node.js Microservices to expose APIs

Weather.com - Backend for Frontends



Node.js Success Stories – Node.js benefits to www.weather.com

- Velocity
 - JS on back and front End
 - Easier for developers to contribute across the stack
- Stability
 - Common tooling helped (eslint, jest, etc.)
 - Better CI/CD pipeline
 - Easier and more reliable deployments
 - Smaller/modular deployments helped here
- Performance
- Read more about it here:
 - <https://developer.ibm.com/articles/nodejs-weather-company-success-story/>


Node.js Success Stories - An Ecosystem Success

Node.js Success Stories – An Ecosystem Success


[Power Systems](#) [Hardware](#) [OS](#) [Software](#) [Resources](#)

IBM i Customer Stories

For over thirty years, IBM i has supported thousands of customers worldwide and continues to be the backbone of their infrastructure into the future. Read why customers are continuing to choose IBM i as their platform of choice.




See innovation at work in the IBM i community

SAIB



Increasing Productivity with IBM i and Alexa for Business

[Read the customer story →](#)

IRIS Financial Services S.A., a Canon Company



Encouraging the Sustainability of Archived Financial Data with IBM i

[Read the customer story →](#)

Brain Staff Consultants


Improving the Student Experience with IBM i and AI

[Read the customer story →](#)

CRT Services


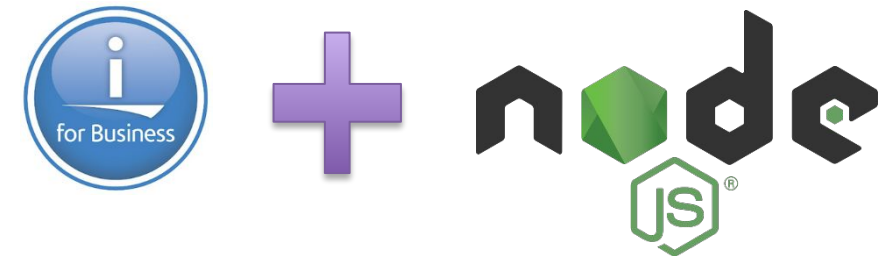
Speeding Up Reimbursement with IBM i

[Read the customer story →](#)

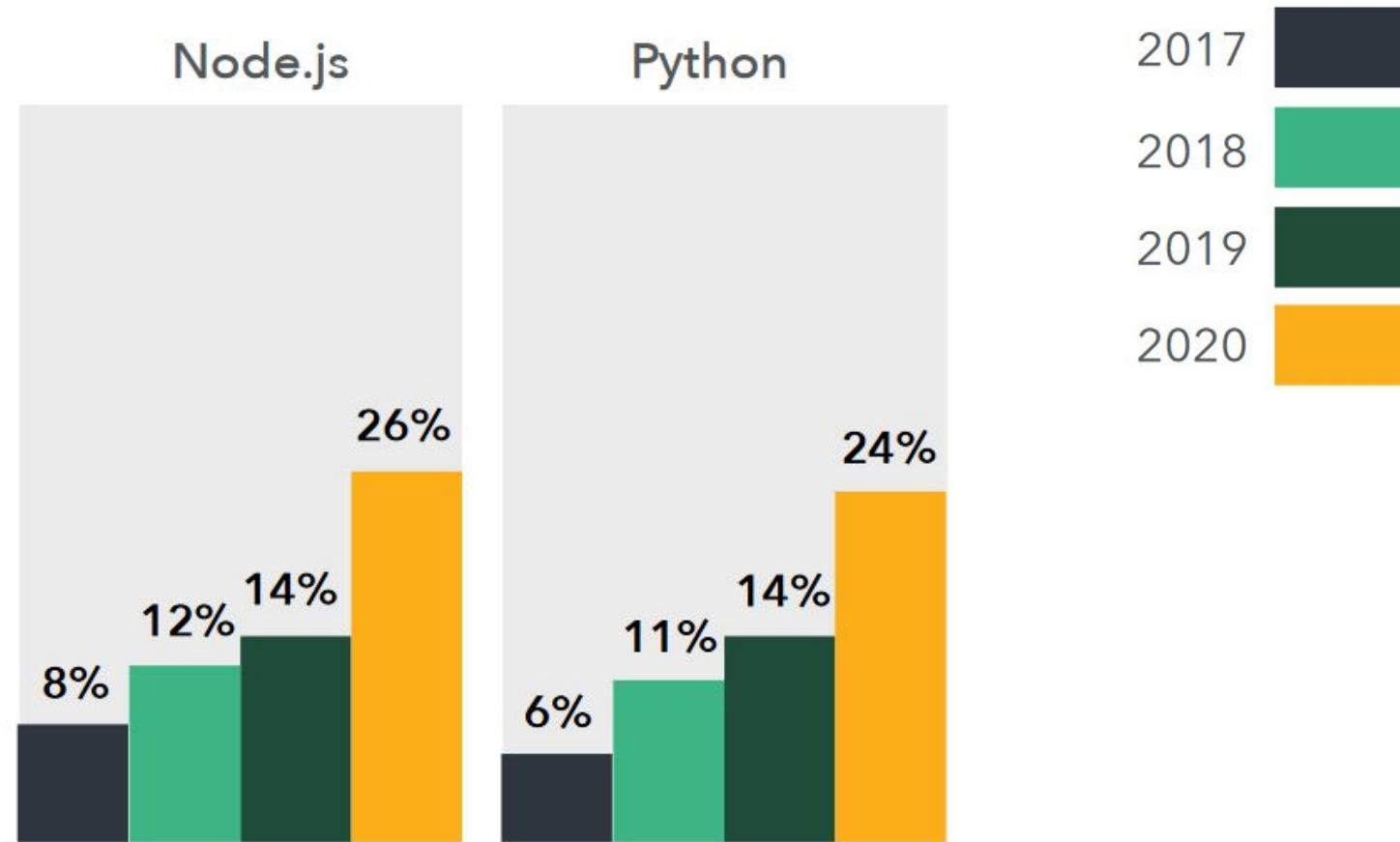
Let's talk

Node.js Success Stories - An Ecosystem Success

- npm modules for direct IBM i integration
 - idb-connector
 - Traditional callback-style access to Db2
 - idb-pconnector
 - Promise-based Db2 access
 - Comes with connection pooling
 - odbc
 - ODBC bindings for IBM i
 - Runs on IBM i, Windows, Linux, or (soon) Mac
 - Comes with connection pooling
 - itoolkit
 - Supports calling RPG, Db2, CL, COBOL, and much more
 - Connect from anywhere
- Ecosystem integration
 - Loopback connector for IBM i
 - See <http://loopback.io>
 - Sequelize Dialect for IBM i
 - sequelize-ibmi module



Node.js Success Stories - An Ecosystem Success



Results from IBM i Marketplace Survey

<https://www.helpsystems.com/resources/guides/ibm-i-marketplace-survey-results>

Node.js Success Stories – Customer Success Stories

Node.js Success Stories – Customer Success Stories

Well just going to be “story” since I don’t have time to cover them all

8 just on the IBM i success stories site alone:

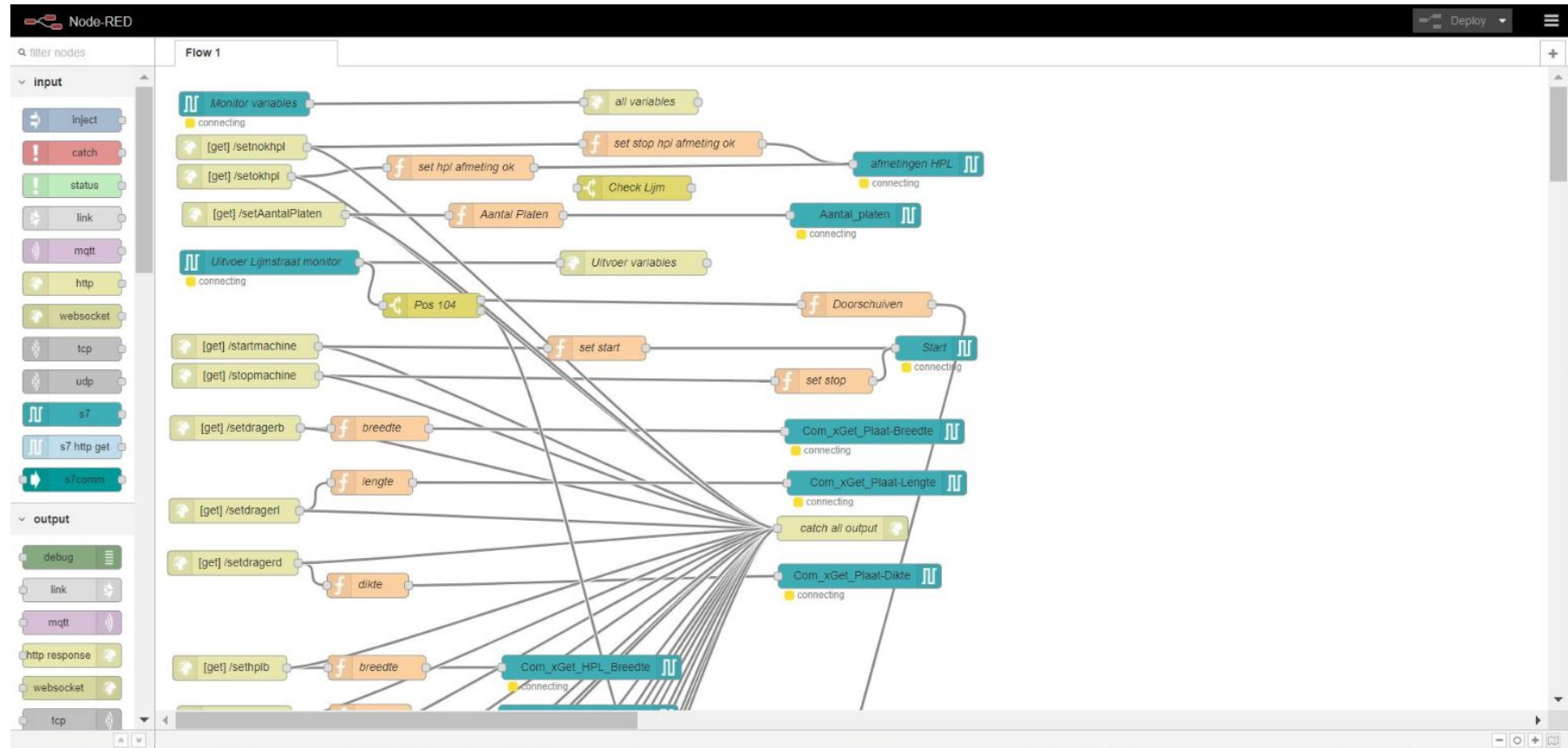
- SAIB
- FormaServ
- Krengeltech
- Mutual Distributing Company
- Geodis
- RPC Superfos
- HT Bendix A/S
- Kuehne + Nagel S.à.r.l.

<http://ibm.biz/ibmistories>

Node.js Success Stories - Customer Success Stories

- ▶ Who
 - Cras creates wood products to order, adjusting humidity, temperature and other factors in its plants to meet precise customer requirements.
- ▶ The scenario
 - Evaluating implementations for transformation effort
 - Trouble linking all the PLCs (problem logic controllers)
- ▶ The Solution
 - With Node-RED, BP was able to link all the PLCs directly and easily

Node.js Success Stories - Some Customer Success Stories



Building cloud-native AI-infused web apps with Node-RED
Wednesday, 4 November | 12:00-13:30

Node.js Success Stories - Sharing Across Large organizations

Node.js Success Stories - Sharing Across Large organizations


Innovation is good, but you don't always need to innovate

Innovate where it matters

Follow standard practice for your organization where it doesn't

But what is standard practice ?

From npm a few weeks ago

 By the numbers

Packages

1,419,779

Agreeing on Standard Practice

- Don't make it mandatory
 - Often a good reasons to use something else, don't stifle innovation where it matters !
- Don't claim it's the "best", just what we "know best"
- Base recommendations on real world experience, not just research....
- Ensure broad involvement and build consensus
- In the end just try to provide an answer if somebody wants an answer to

"What do you think I should use"

Node.js Success Stories - Sharing Across Large organizations

If you want to follow our efforts on this front:

<https://github.com/nodeshift/nodejs-reference-architecture>



Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.

 linkedin.com/company/red-hat

 youtube.com/user/RedHatVideos

 facebook.com/redhatinc

 twitter.com/RedHat

Copyright and Trademarks

© Red Hat. All Rights Reserved

Red Hat, the Red Hat logos are trademarks or registered trademarks of Red Hat

IBM, the IBM logo, ibm.com are trademarks or registered trademarks of International Business Machines Corp.,
registered in many jurisdictions worldwide.

A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at
www.ibm.com/legal/copytrade.shtml

Node.js is an official trademark of Joyent. IBM SDK for Node.js is not formally related to or endorsed by the official Joyent
Node.js open source or commercial project.

Java, JavaScript and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its
affiliates.

npm is a trademark of npm, Inc.

Other trademarks or logos are owned by their respective owners.