

# 12 Factor Apps in Heroku to Feature your Work in any Language



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<https://tinyurl.com/NFJSHeroku>

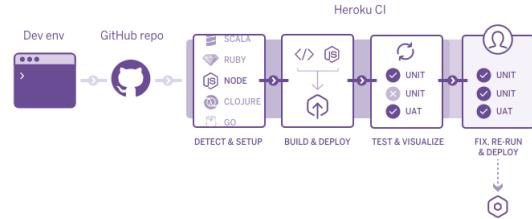
**<https://www.productivecloudinnovation.com/lessons>**



HEROKU



Design Principles  
12 Factor Apps



Heroku CI



Heroku Use cases



Heroku Private Spaces



Heroku Connect



Configuration

# What is Heroku?



Heroku is a Service



# Heroku is a Service

## ➤ Accelerate Developer Productivity

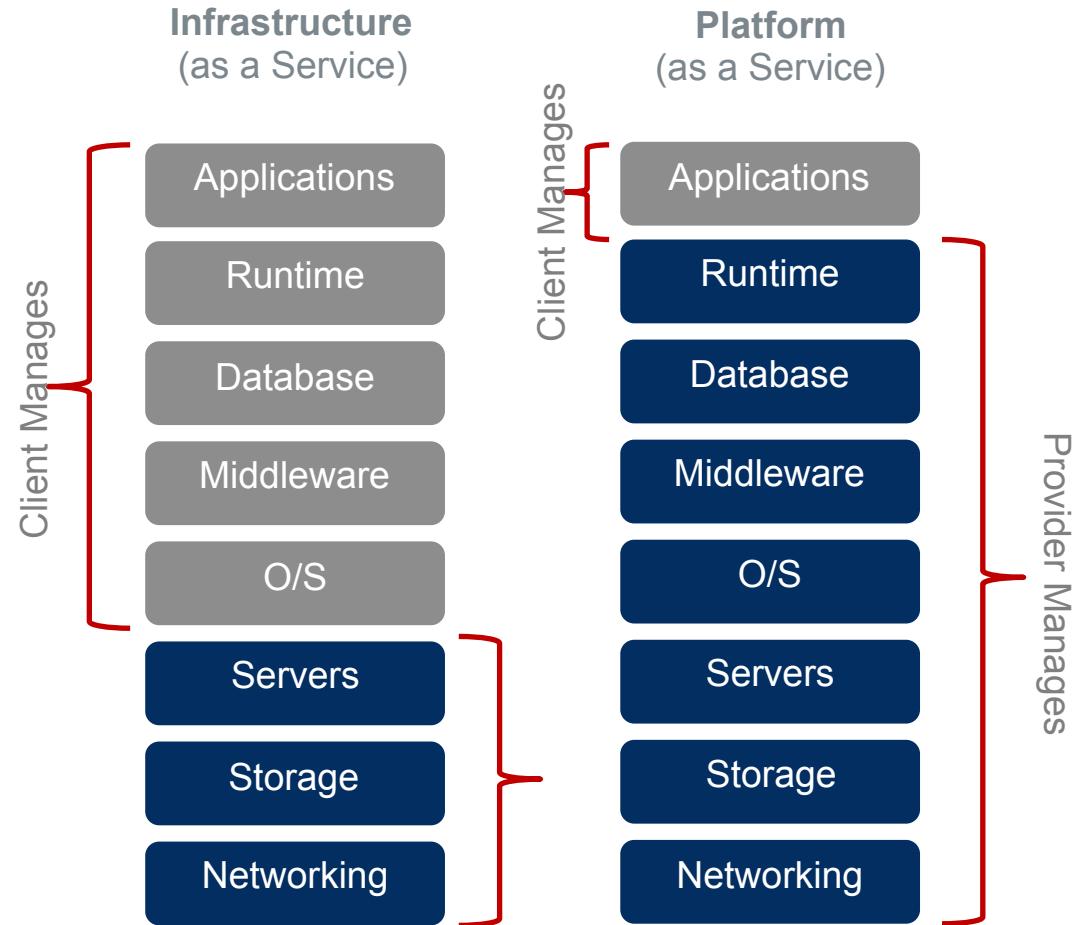
Accelerate time to market through a rich set of app and data services

## ➤ Lower Operational Complexity

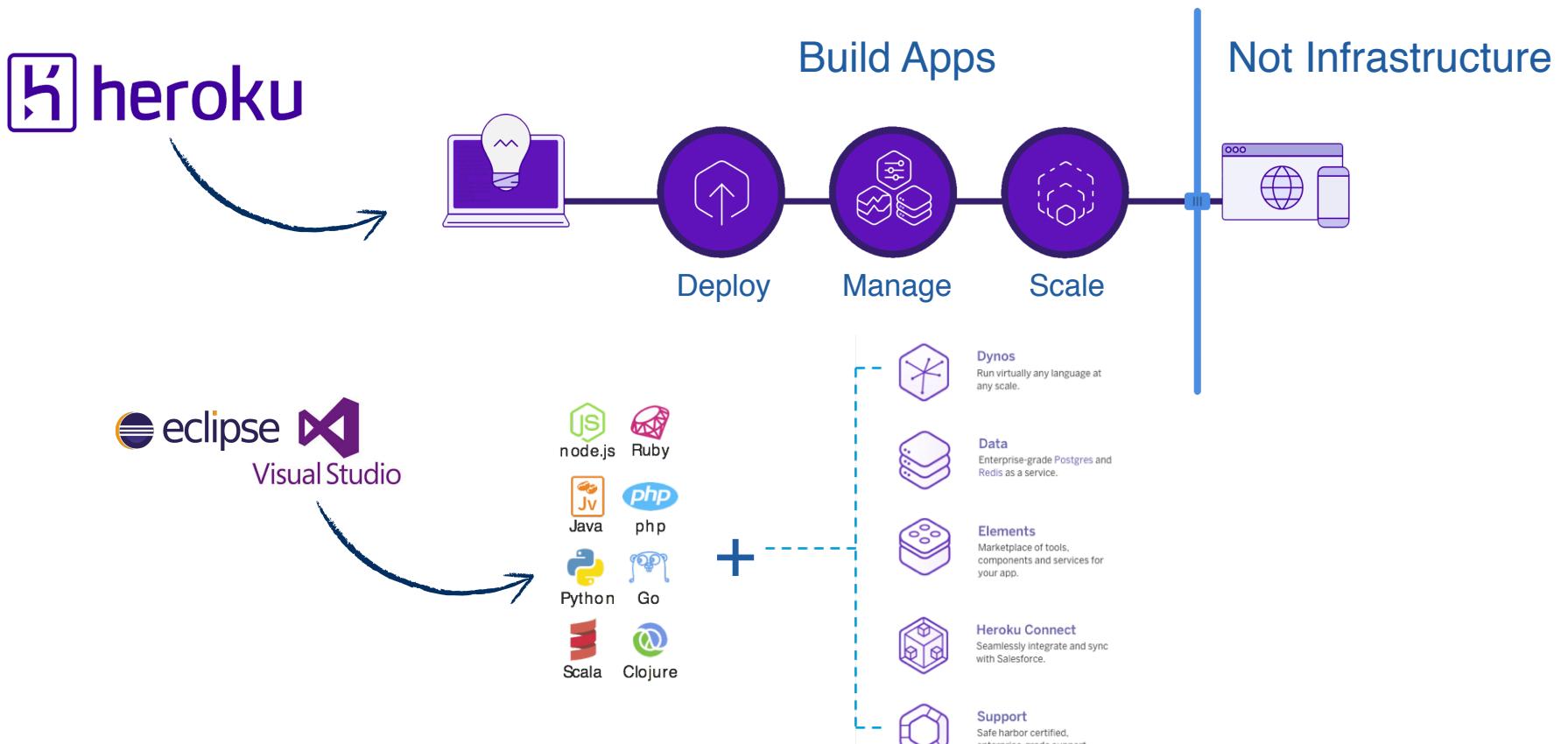
Reduce cloud operations overhead by letting Salesforce manage your platform for you

## ➤ Connect to Salesforce

Heroku Connect provides simple, high-performance bidirectional sync with your Salesforce data



# Build Great Applications



# Introduction

- <https://tinyurl.com/NFJSHeroku>

# Powered by Amazon



#1 IaaS

64.3%

Lower TCO

68.1%

More efficient IT staff operations

\$76,800

Additional revenue per year per application

118.4%

More applications delivered

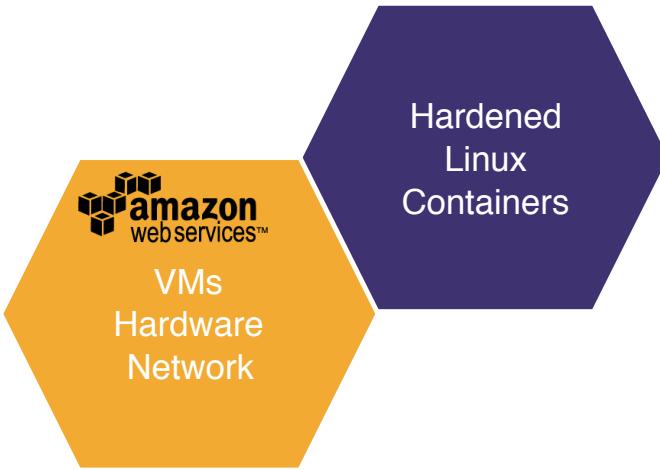
81.7%

Less downtime

*Compared to on-premises infrastructure ([IDC, 2015](#))*

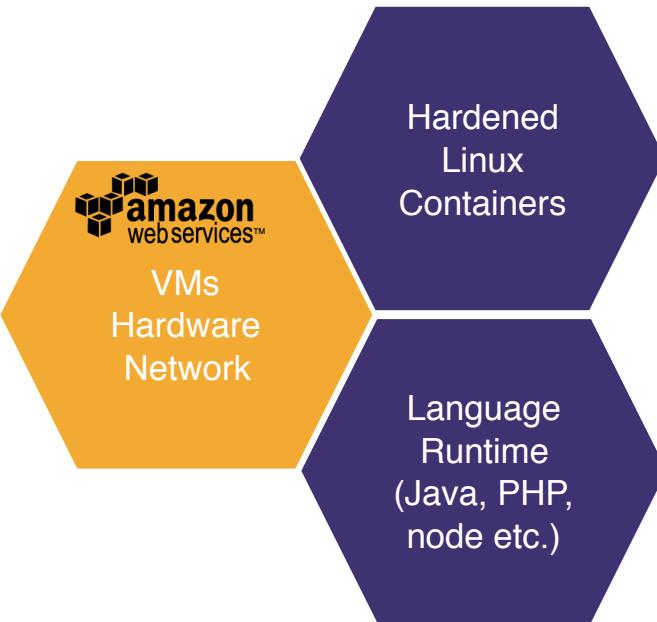
*Focus: Developer productivity with Enterprise control and security*

# Developer PaaS on AWS



*Focus: Developer productivity with Enterprise control and security*

# Developer PaaS on AWS

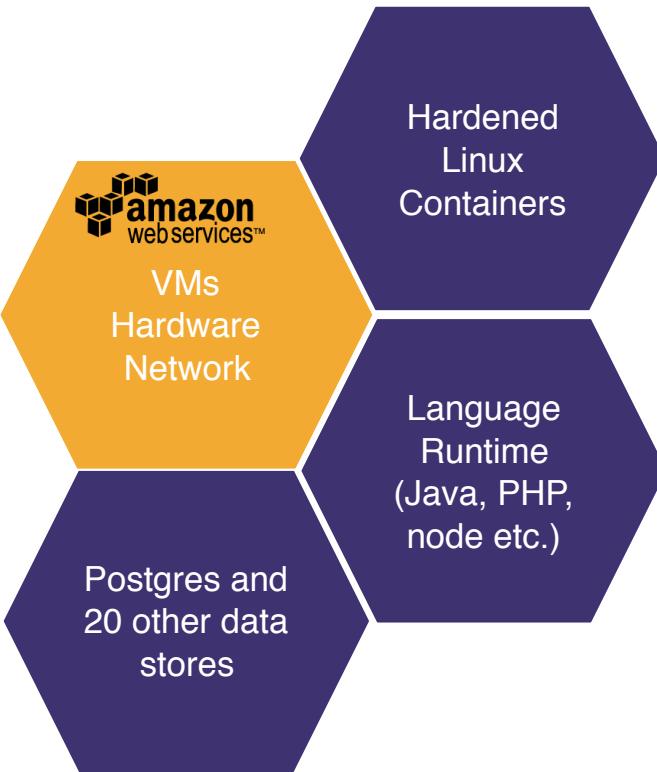


Automatically deployed  
8 managed by Heroku  
4,100 open source  
You have 100% control  
Patched and monitored  
We manage the runtime SERVICES so you don't have to build and manage them.

*Focus: Developer **productivity** with Enterprise control and **security***

# Developer PaaS on AWS

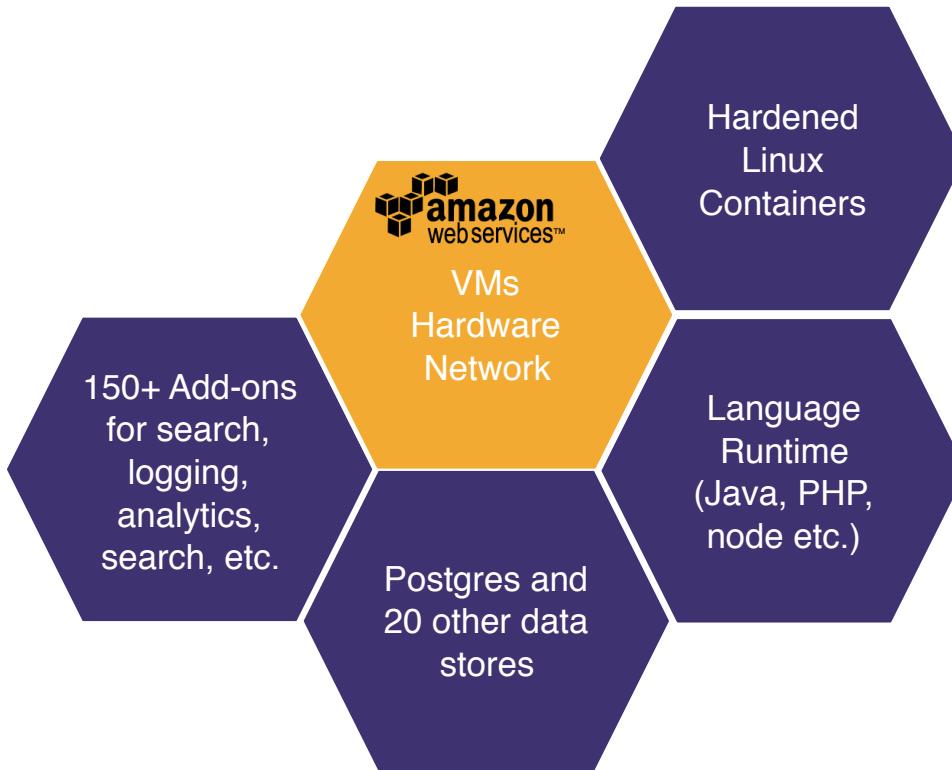
salesforce heroku



One click deploy  
Free trial plans  
Mix and match as needed  
Automatic backups  
Visual performance tools  
1.2M clusters in our fleet  
Patched and monitored  
We manage the database SERVICES so you don't have to build and manage them.

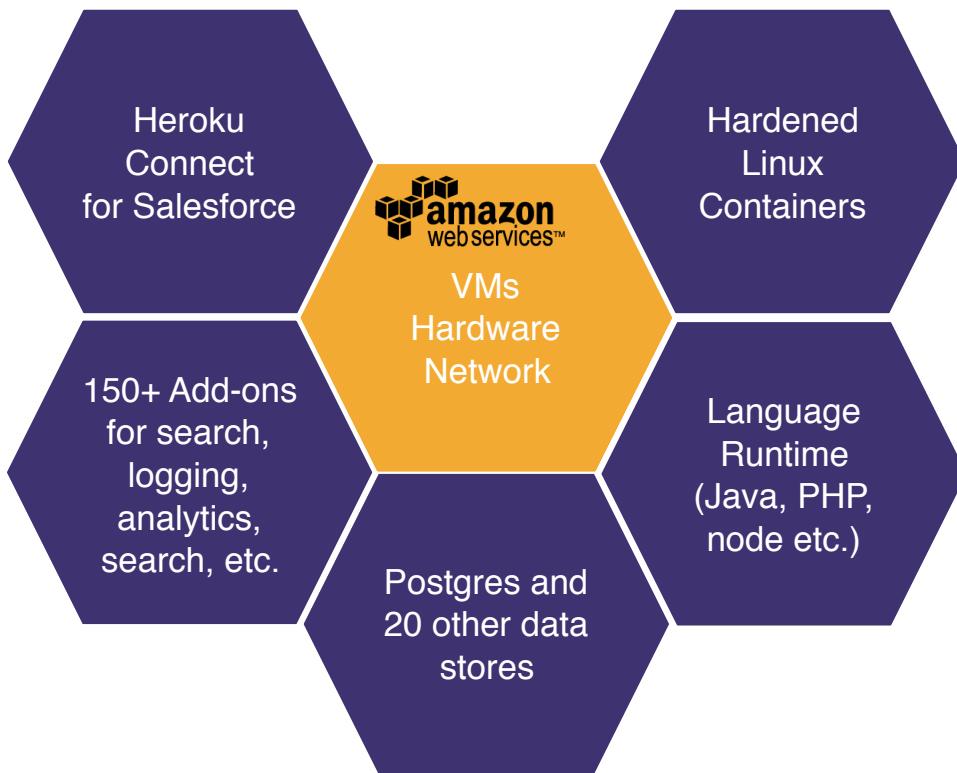
*Focus: Developer **productivity** with Enterprise **control** and **security***

# Developer PaaS on AWS



One click deploy  
Free trial plans  
Curated for customer / consumer apps  
Make smart architecture choices early in dev  
Simple scale-up for test and production  
Patched and monitored  
We manage the Add-on SERVICES so you don't have to build and manage them.

# Developer PaaS on AWS



Data synchronization with Lightning Platform  
One click deploy  
Scalable cloud service  
No Code setup  
Avoids Lightning API Transaction limits  
Patched and monitored  
We manage the integration SERVICE so you don't have to build and manage one.

# Operated by Salesforce



Manage entire app portfolio  
Continuous Integration  
Continuous Delivery  
Control access to apps  
Control access to dev, prod, test  
Manage costs and resources  
Patched and monitored  
We manage the CI/CD and ALM SERVICES so you don't have to build and manage them.

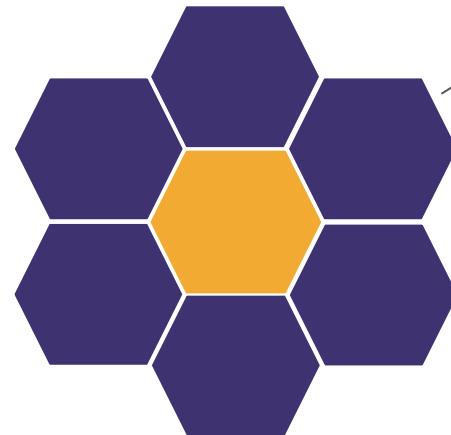
# Lower Operational Complexity

**Generating more revenue** by addressing business opportunities with more tailored business applications in less time

**Driving higher user productivity** through earlier delivery of high-performing business applications that leverage business data

**Increasing the productivity** of application development teams by providing an easy-to-use, robust application development platform

**Optimizing the use of IT staff time** and IT infrastructure by using the cloud-based Salesforce platform-as-a-service solution



**50%**  
faster application development life cycle

**59%**  
less time to release new application or feature

**38%**  
more efficient IT infrastructure management

**44%**  
more new apps developed per year

**478%**  
five-year ROI

**7 month**  
breakeven point

([IDC, 2016](#))

# Node JS Exercise

- <https://tinyurl.com/NFJSHeroku>

# app.json

Branch: master ▾ [flow-demo / app.json](#) Find file Copy path

 rohitbhardwaj added all files 78c7be0 22 hours ago  
1 contributor

Executable File | 18 lines (17 sloc) | 197 Bytes Raw Blame History

```
1 {
2   "name": "sample-node-app",
3   "scripts": {
4     },
5   "formation": {
6     "web": {
7       "quantity": 1
8     }
9   },
10  "addons": [
11    ],
12  "buildpacks": [
13    {
14      "url": "heroku/nodejs"
15    }
16  ]
17 }
18 }
```

<https://devcenter.heroku.com/articles/app-json-schema>

# **Heroku is a Service – You are in charge of service**

Heroku is a Service that enables Customers to spend their time developing and delivering apps that immediately start producing value.

# IT's Included with the Service

Patch security vulnerabilities (DROWN OpenSSL, Heartbleed: same day remediation)

Auto-fail over apps and databases

Auto-cluster all apps

Ensure 100% consistency between dev, test, stage, prod

Maintain 99.99+% availability (<https://status.heroku.com/uptime>)

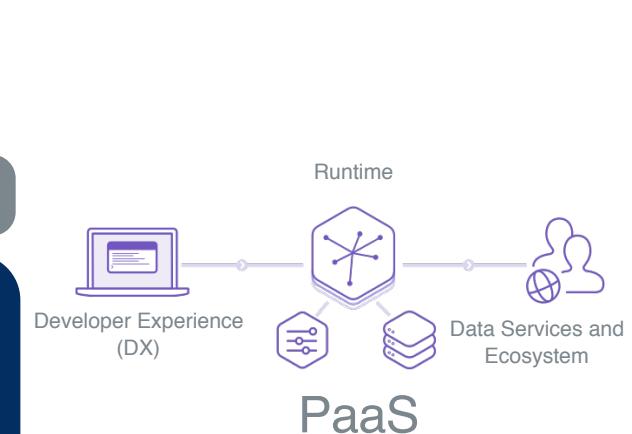
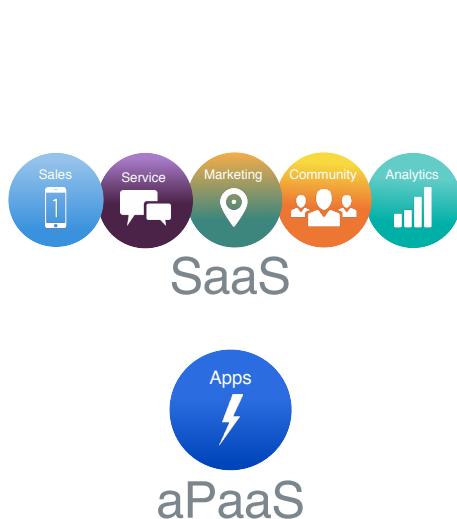
Enforce 2-Factor authentication

White list services available by project (e.g. Elasticsearch, Redis, Hadoop)

Report on and enforce resource consumption and spend by app

Deliver zero touch world class DBA services

# Salesforce Platform

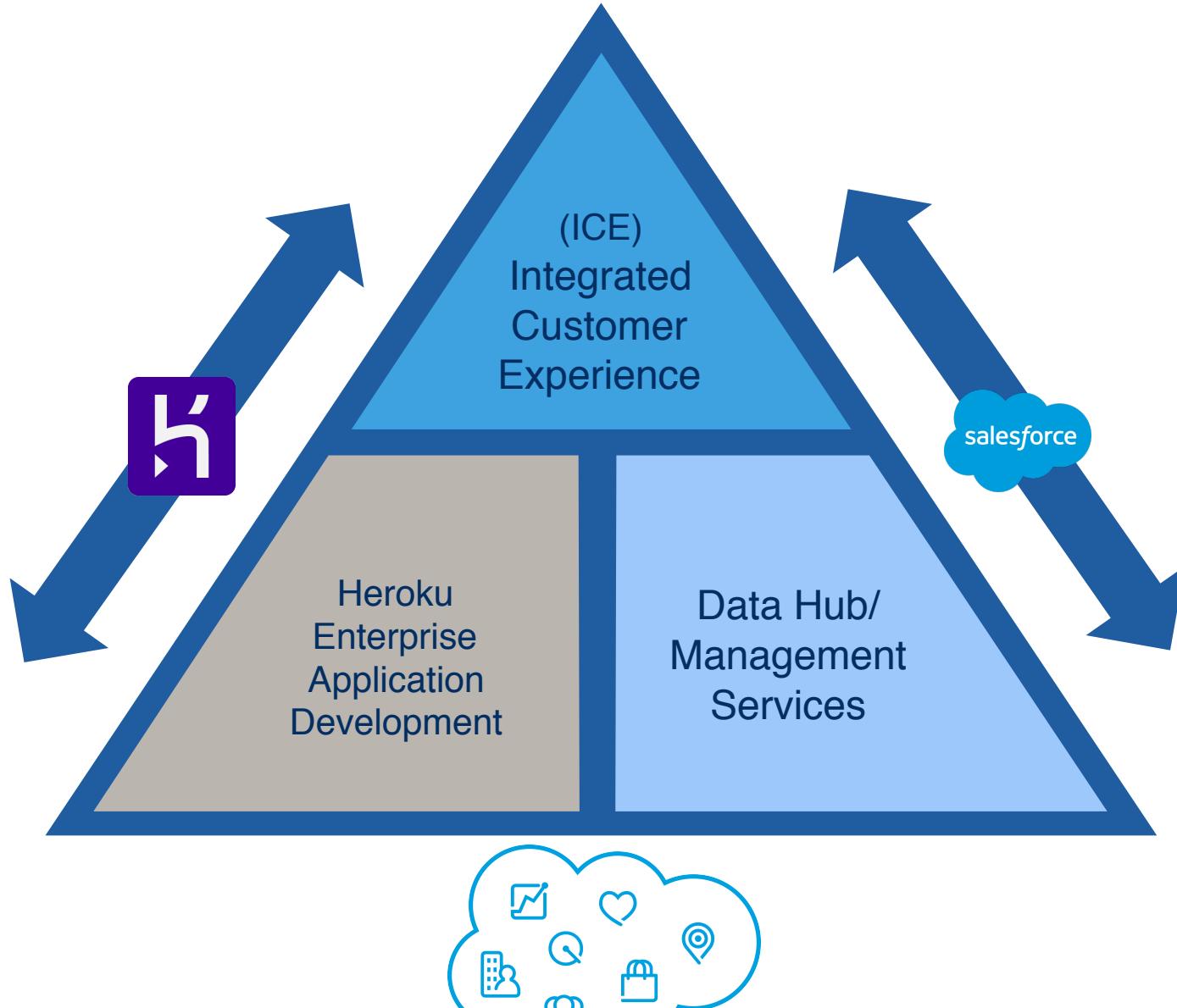


**No Code / Low Code**  
Solve for the Developer Gap



**Pro Code**  
Build Innovative, Engaging Apps

# Go-to-Market Model



# Heroku is a Platform

Heroku is a Platform which enables  
developers to go from zero to H E R O.

Fast!

# What is Heroku?

## **Heroku is a Platform**

- Heroku is a Service

# Heroku is a Platform

Heroku is a cloud platform based on a managed container system, with integrated data services and a powerful ecosystem, for deploying and running modern apps.

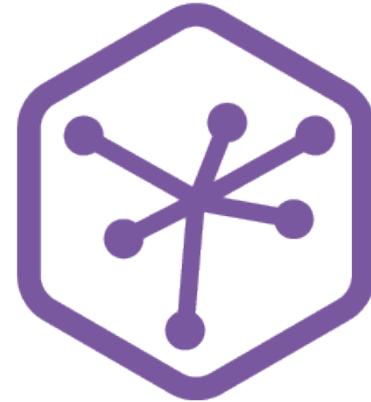


*Build, deliver, monitor, and scale*

# Heroku is a Platform

- managed containers

The building blocks that power any Heroku app – Dynos are lightweight, isolated environments that provide compute, memory, an OS, and an ephemeral filesystem.



Dynos

*Build, deliver, monitor, and scale*

# Heroku is a Platform

- managed containers
- integrated data services

Heroku provides four fully-managed Data Service Add-ons

- ✓ Heroku Postgres
- ✓ Heroku Redis
- ✓ Heroku Kafka
- ✓ Heroku Connect

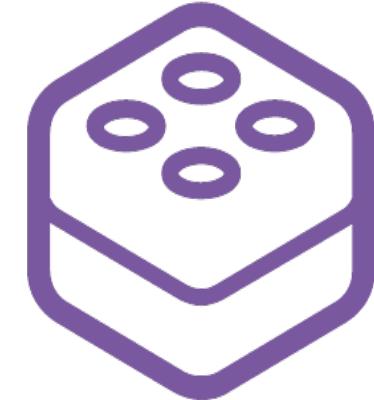


Data

*Build, deliver, monitor, and scale*

# Heroku is a Platform

- managed containers
- integrated data services
- powerful ecosystem



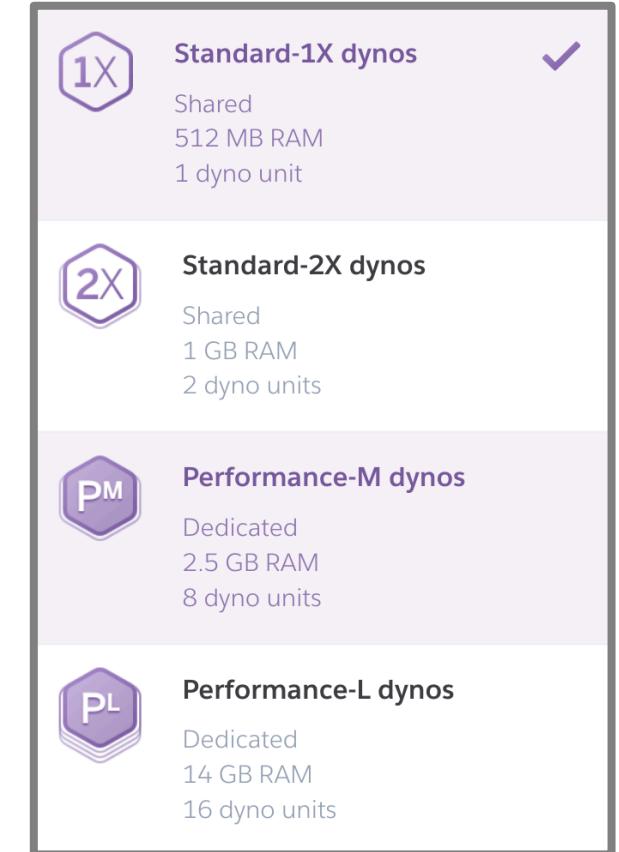
Add-ons

With over 150+ fully-managed cloud services for building, operating, or managing apps, Add-ons are 3rd party cloud services that developers can use to immediately extend their apps with a range of functionality such as data stores, logging, monitoring and more.

*Build, deliver, monitor, and scale*

# Managed Containers

- Run any language, with support for Ruby, Node, Java, Python, PHP, Go, Scala, and Clojure
- Isolated, virtualized Linux containers
- Elastic scalability
- Dyno Manager ensures HA and routing
- Restarted every 24 hours, for that “fresh server” smell



*Dynos, and meshes, and routing – oh my!*

# Integrated Data Services

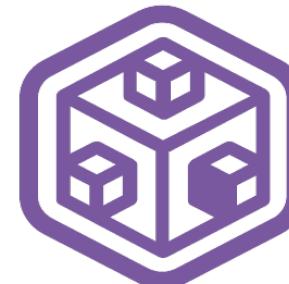
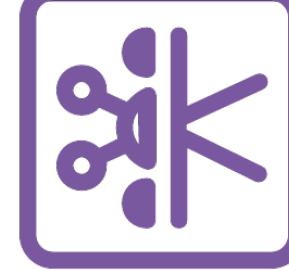


Data

*Postgres, Redis, Kafka, Connect – all Heroku*

# Integrated Data Services

- Heroku Postgres – single-tenant, industrial strength relational database that is HIPAA and PCI compliant
- Heroku Redis – in-memory key-value store as a Service
- Apache Kafka on Heroku - a durable, distributed message broker
- Heroku Connect – data bridge to Salesforce

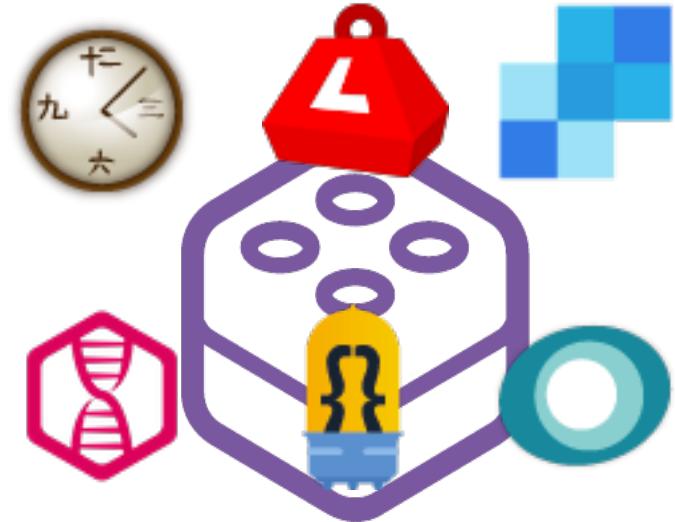


*Postgres, Redis, Kafka, Connect – all Heroku*

# Powerful Ecosystem

Add-ons are fully managed cloud services to help you develop, operate, and manage your apps.

- One-click install
- Integrated billing
- Centralized management
- Freemiums let you try before you buy



## Add-ons



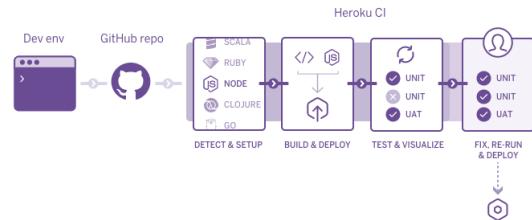
*Many hands make light work, and build apps faster*



HEROKU



Design Principles  
12 Factor Apps



Heroku CI



Heroku Use cases



Heroku Private Spaces



Heroku Connect



Configuration

# Design Principles

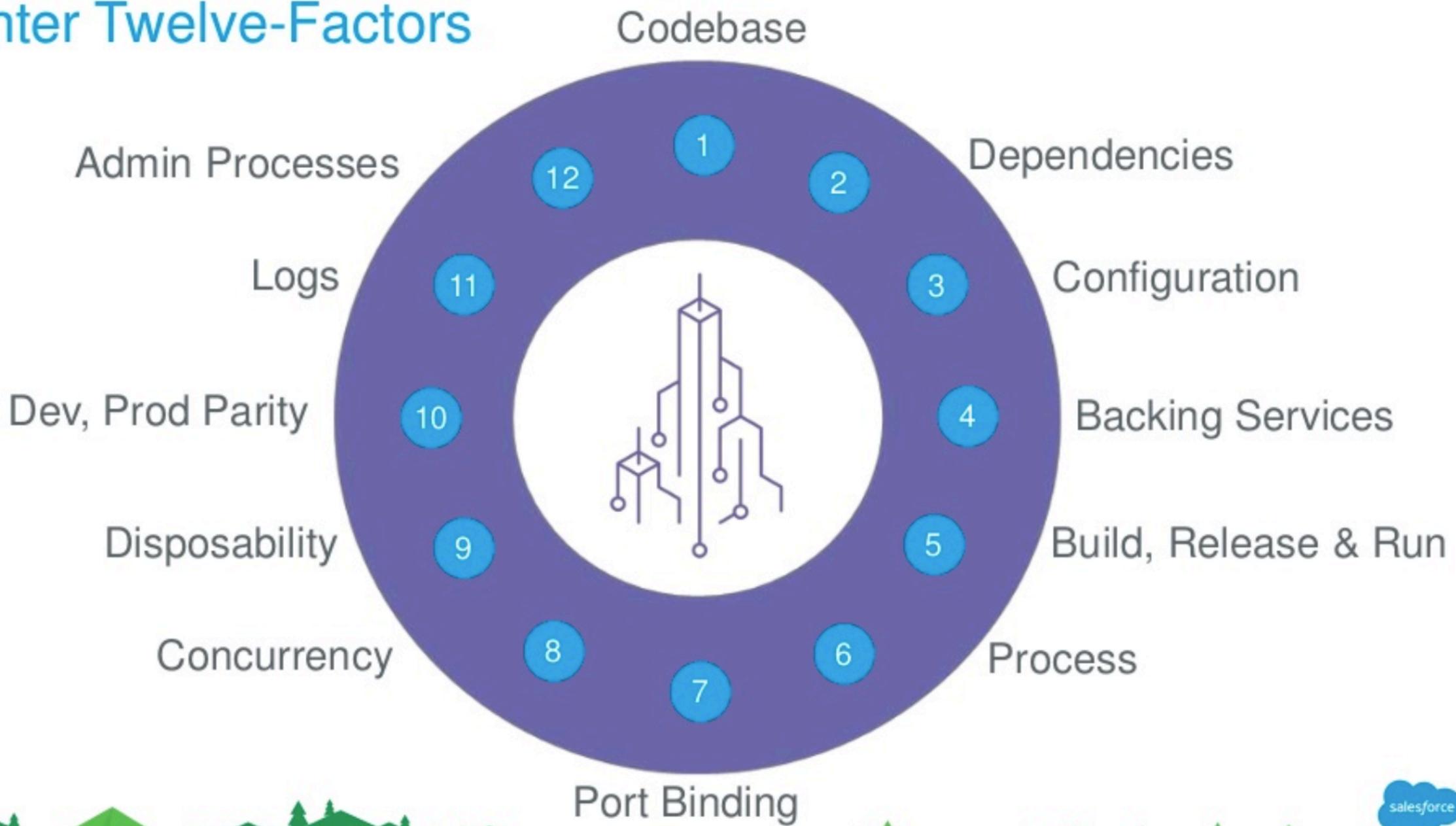
## 12 Factor Apps



# 12 Factor App

- Use **declarative formats** for setup automation, to minimize time and cost for new developers joining the project
- Have a **clean contract** with the underlying operating system, offering maximum portability between execution environments;
- Are suitable for **deployment** on modern **cloud platforms**, obviating the need for servers and systems administration;
- **Minimize divergence** between development and production, enabling **continuous deployment** for maximum agility;
- And can **scale up** without significant changes to tooling, architecture, or development practices.

# Enter Twelve-Factors



# 1. Codebase

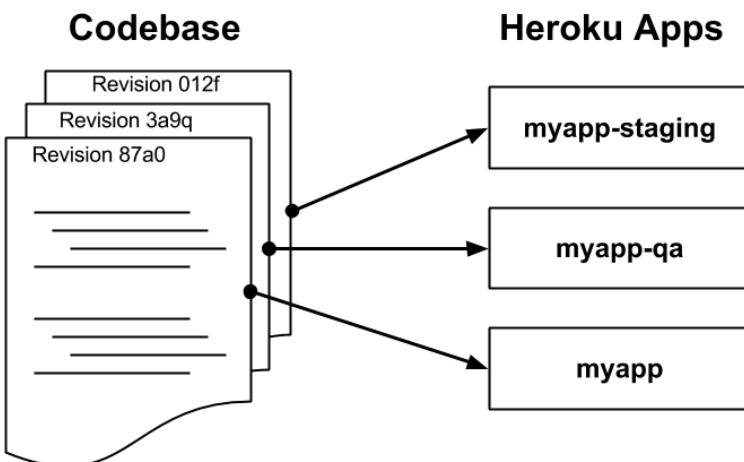
Git, GitHub, SVN etc.

Code base in single repository

App is single codebase

Many apps should not share same code base

Create shared Libraries & Frameworks



Screenshot of the Heroku GitHub integration settings page. The top navigation bar includes links for 'Jump to Favorites, Apps, Pipelines, Spaces...', 'Deployment method', 'Heroku Git Use Heroku CLI', 'GitHub Connected' (with a green checkmark), 'Container Registry Use Heroku CLI', and a gear icon. The main section shows 'App connected to GitHub' with a note about code diffs, manual and auto deploys. It also displays a connection to 'rohitbhardwaj/heroku-salesforce-connect' with options for 'Disconnect...', 'Releases in the activity feed link to GitHub to view commit diffs', and 'Automatically deploys from develop'. Below this, there are sections for 'Automatic deploys' (which are enabled for the 'develop' branch) and 'Manual deploy' (which deploys the current state of a GitHub branch). A 'Choose a branch to deploy' dropdown is set to 'develop' with a 'Deploy Branch' button.

# 2. Dependencies

Automate dependencies with tools & package managers

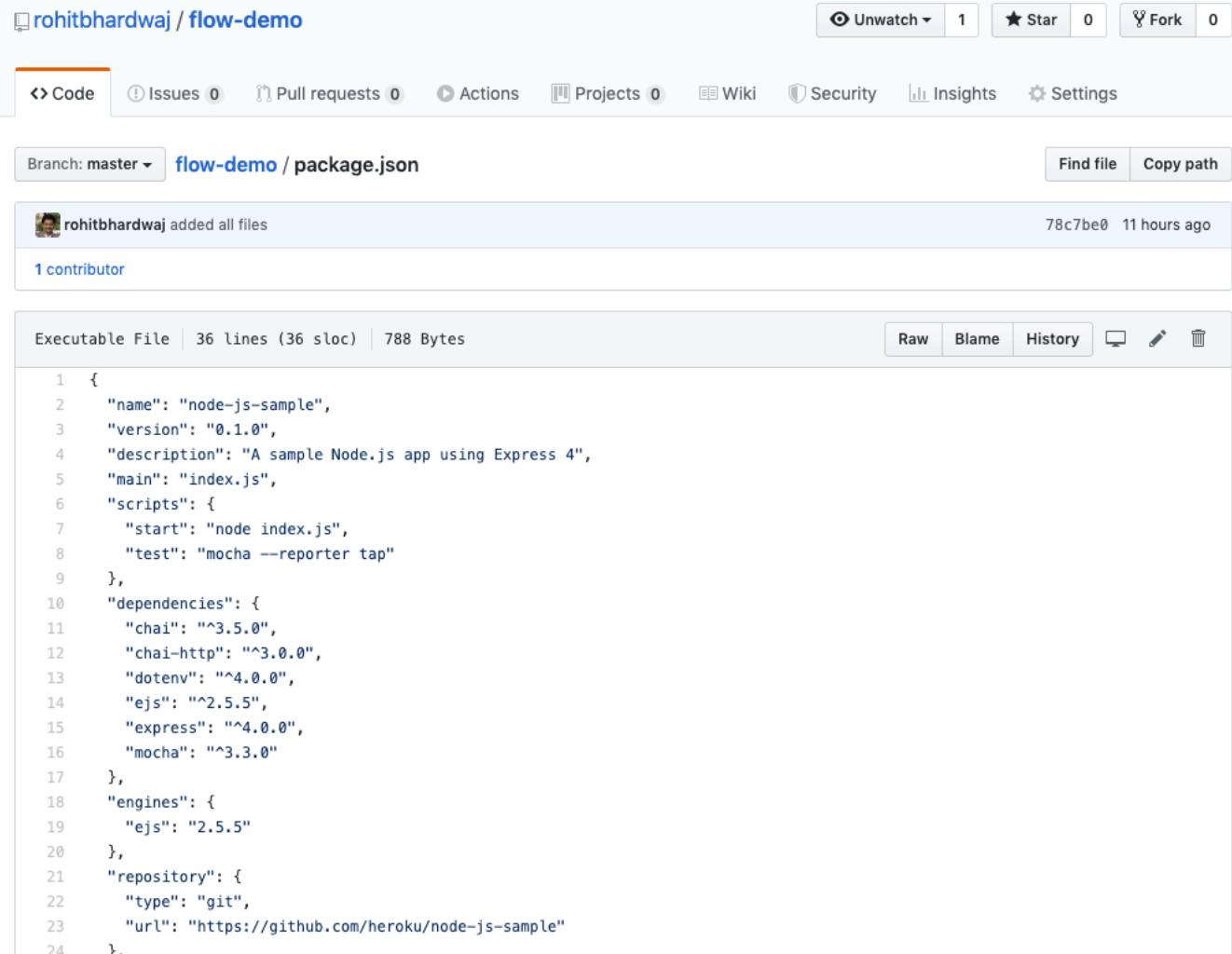
Use package manager when available

Node.js & JS – NPM

Java – Maven, Gradle, sbt

Ruby [bundler](#)

Python [Pip](#) and [Virtualenv](#)

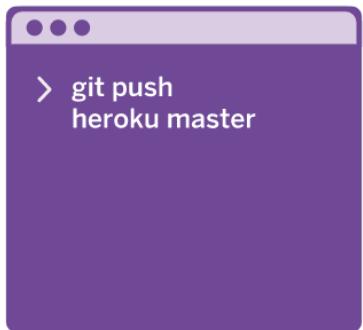


The screenshot shows a GitHub repository page for 'rohitbhardwaj / flow-demo'. The repository has 1 star, 0 forks, and 0 issues. The 'Code' tab is selected. The branch is 'master'. The file 'flow-demo / package.json' is shown. The commit history shows 'rohitbhardwaj added all files' at 78c7be0 11 hours ago. There is 1 contributor. The file content is an executable JSON object:

```
1  {
2    "name": "node-js-sample",
3    "version": "0.1.0",
4    "description": "A sample Node.js app using Express 4",
5    "main": "index.js",
6    "scripts": {
7      "start": "node index.js",
8      "test": "mocha --reporter tap"
9    },
10   "dependencies": {
11     "chai": "^3.5.0",
12     "chai-http": "^3.0.0",
13     "dotenv": "^4.0.0",
14     "ejs": "^2.5.5",
15     "express": "^4.0.0",
16     "mocha": "^3.3.0"
17   },
18   "engines": {
19     "ejs": "2.5.5"
20   },
21   "repository": {
22     "type": "git",
23     "url": "https://github.com/heroku/node-js-sample"
24   },
25 }
```

1

Deploy code to Heroku

A purple rectangular box representing a terminal window. In the top-left corner, there is a small white icon of three dots in a horizontal row, followed by a vertical line and two smaller dots. Below this icon, the text 'git push' is followed by 'heroku master' on a new line.

```
> git push  
heroku master
```

# 3. Configuration

Anything which varies with environments

DB connections

## Config Vars

Config vars change the way your app behaves. In addition to creating your own, some add-ons come with their own.

Credentials

Environment variables

Automatic refresh of Certificate management

GitHub repo [rohitbhardwaj/heroku-salesforce-connect](#)  
Heroku git URL <https://git.heroku.com/heroku-salesforce-connect-dev.git>

Config Vars

Hide Config Vars

KEY	VALUE	Edit	Delete
DATABASE_URL	postgres://impfavldczljlh:95348f2e9071@heroku-salesforce-connect-dev.herokuapp.com:5432/impfavldczljlh		
LANG	en_US.UTF-8		
RACK_ENV	production		
		Add	

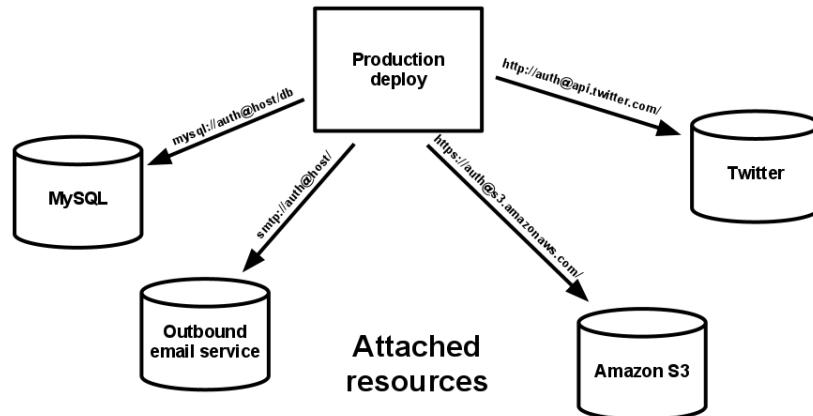
# 4. Backing Services

Define clean dependencies

Heroku – AWS S3

DB, Salesforce

Mobile – REST APIs, services

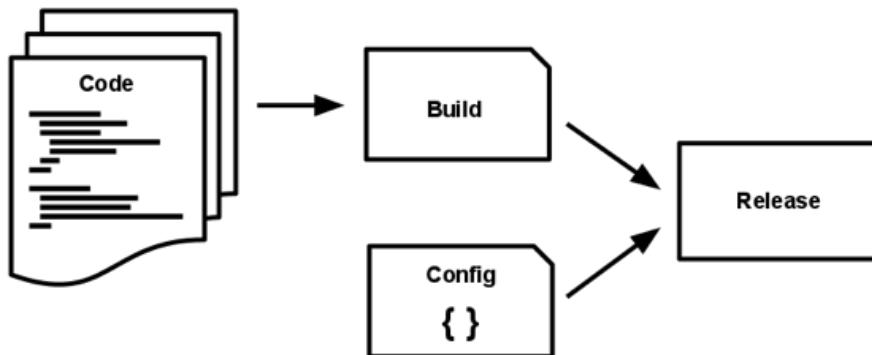


The screenshot shows the Heroku dashboard for the application 'heroku-salesforce-connect-dev'. The top navigation bar includes links for Personal, heroku-salesforce-connect-dev, GitHub, and the current develop branch. Below the navigation are tabs for Overview, Resources, Deploy, Metrics, Activity, Access, and Settings. The Overview section shows the dyno configuration: web, ruby, app.rb, with a total cost of \$0.00. The Resources section lists the attached add-ons: Heroku Connect (Demo Edition, Free), Heroku Postgres (Attached as DATABASE, Hobby Dev, Free), and Papertrail (Attached as PAPERTRAIL, Choklad, Free). A note indicates that the Papertrail add-on has been installed. The bottom of the page shows the estimated monthly cost of \$0.00.

# 5. Build, Release and Run

Same Build code base is deployed to prod

Deploy the tested binary code



The screenshot shows the Heroku web interface for the application "heroku-appjava-getting-started". The URL is [heroku-appjava-getting-started](#). The page includes navigation links for Overview, Resources, Deploy, Metrics, Activity, Access, and Settings. The Activity Feed section shows a link to the Build Log. The Build Log details the deployment process:

```
[INFO] Installing /tmp/build_68a6bf0bde7a4e8b868256b306a57d9b/target/java-getting-started-1.0.jar to /app/tmp/cache/.m2/repository/com/example/java-getting-started/1.0/java-getting-started-1.0.jar
[INFO] Installing /tmp/build_68a6bf0bde7a4e8b868256b306a57d9b/pom.xml to /app/tmp/cache/.m2/repository/com/example/java-getting-started/1.0/java-getting-started-1.0.pom
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 16.966 s
[INFO] Finished at: 2020-03-19T16:44:08Z
[INFO] -----
-----> Discovering process types
  Procfile declares types -> web
-----> Compressing...
  Done: 71M
-----> Launching...
  Released v5
Build finished
```

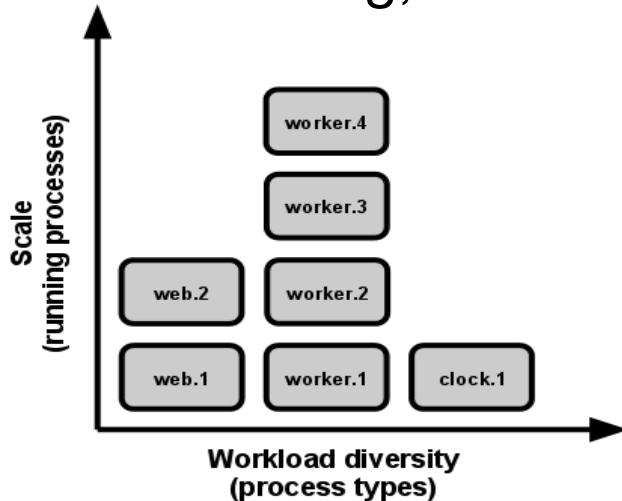
# 6. Process

Code need to be stateless

Microservices

If State important- keep in external reliable store

Heroku Dynos – isolated, lightweight, share nothing, Linux containers



Screenshot of the Heroku dashboard for the app "heroku-appjava-getting-started". The dashboard includes:

- Header: HEROKU, Personal, heroku-appjava-started-develop, heroku-appjava-getting-started, GitHub, rohitbhardwaj/heroku-java-getting-started, develop.
- Navigation: Overview, Resources, Deploy, Metrics, Activity, Access, Settings.
- Free Dynos section: web java -jar target/java-getting-started-1.0.jar, \$0.00.
- Add-ons section: Heroku Postgres attached as DATABASE, Hobby Dev, Free, \$0.00.

# 7. Port Binding

Webservices – HTTP port

Node.js Express framework

The screenshot shows a GitHub repository page for 'rohitbhardwaj / flow-demo'. The repository has 1 unwatched star, 0 forks, and 0 issues. The 'Code' tab is selected, showing the file 'index.js'. The code defines an Express app, sets a port, and defines routes for '/' and '/api'. The commit history shows a single commit by 'rohitbhardwaj' adding all files 11 hours ago.

```
Executable File | 27 lines (22 sloc) | 681 Bytes
Raw Blame History ⚡ 🖊 🗑️

● You're using code navigation to jump to definitions or references. Learn more or give us feedback

1 var express = require('express');
2 var app = express();
3
4 require('dotenv').config()
5
6 app.set('port', (process.env.PORT || 5000));
7 app.engine('html', require('ejs').renderFile);
8 app.set('view engine', 'ejs');
9 app.set('views', __dirname + '/public');
10
11 app.get('/', function(request, response) {
12   var env = process.env.APP_ENV;
13   if (env == 'staging') {
14     var envName = 'staging'
15   } else if (env == 'production') {
16     var envName = 'production'
```

# 8. Concurrency

Run code as lots of small processes

Node.js multiple processes - "clustering"

```
var WORKERS = process.env.WEB_CONCURRENCY || 1;
```

Second, we define a `start` function that will be the entry point for each newly clustered process:

```
function start() {  
  // ...  
}
```

Finally, we use `throng` to cluster the app into multiple processes. We specify a lifetime of `Infinity` to tell `throng` that, if a worker dies, it should be respawned - so we will always have `WORKERS` processes running:

```
throng({  
  workers: WORKERS,  
  lifetime: Infinity  
}, start);
```

```
$ npm start  
  
> example-concurrency@1.0.0 start example-concurrency  
> node server.js  
  
Listening on 3000
```

```
$ WEB_CONCURRENCY=4  
  
$ npm start  
  
> example-concurrency@1.0.0 start example-concurrency  
> node server.js  
  
Listening on 3000  
Listening on 3000  
Listening on 3000  
Listening on 3000
```

# 9. Disposability

Launch quickly

< 30 seconds HTTP requests

Graceful degradation

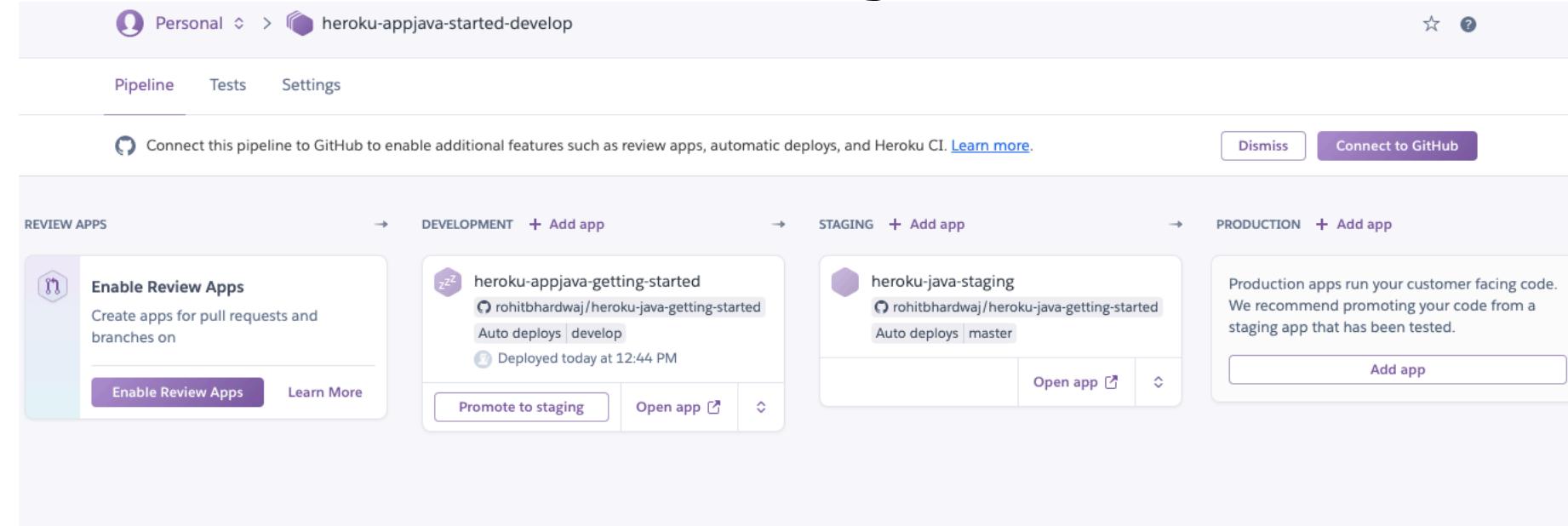
Shutdown / Interruptions

# 10. Development, Production Parity

Simple Heroku Pipeline

Automated deployment  
CI

Pipeline promotion



- **The time gap**
- **The personnel gap:** Developers write code, ops engineers deploy it.
- **The tools gap:** Developers may be using a stack like Nginx, SQLite, and OS X, while the production deploy uses Apache, MySQL, and Linux.

# 11. Logs

Monitor Logs

Listen to log events & errors

Filter events and actions

The screenshot shows the Papertrail log viewer. At the top, there's a navigation bar with links for Papertrail, Dashboard, Events (which is the active tab), Alerts, Settings, and Support. On the far right are buttons for 'Give Feedback', a grid icon, and a search icon. Below the navigation, a message says 'Oldest event reached' and asks if the user wants to 'Download archives' or 'change plans'. A note indicates that logs need to be searched before March 17 at 8:26 PM. The main area displays a log stream for a Heroku application named 'heroku-salesforce-connect...'. The log entries show various deployment and shutdown events for process 'heroku/web.1' on March 19, 2020. The log entries include:

```
Mar 19 18:19:17 app app/api Running release v3 commands by user rohit.bhardwaj@salesforce.com
Mar 19 18:19:17 app app/api Release v4 created by user rohit.bhardwaj@salesforce.com
Mar 19 18:19:17 app app/api Attach PAPERTRAIL (@ref:papertrail-amorphous-91435) by user rohit.bhardwaj@salesforce.com
Mar 19 18:19:17 app app/api @ref:papertrail-amorphous-91435 completed provisioning, setting PAPERTRAIL_API_TOKEN. by user rohit.bhardwaj@salesforce.com
Mar 19 18:22:35 heroku-salesforce-connect-stag app/api Deploy 1e73bed8 by user rohit.bhardwaj@salesforce.com
Mar 19 18:22:35 heroku-salesforce-connect-stag app/api Scaled to console@0:Free web@1:Free by user rohit.bhardwaj@salesforce.com
Mar 19 18:22:36 heroku-salesforce-connect-stag app/api Release v5 created by user rohit.bhardwaj@salesforce.com
Mar 19 18:22:37 heroku-salesforce-connect-stag heroku/web.1 Starting process with command `ruby app.rb`
Mar 19 18:22:40 heroku-salesforce-connect-stag app/web.1 [2020-03-20 01:22:40] INFO  WEBrick 1.4.2
Mar 19 18:22:40 heroku-salesforce-connect-stag app/web.1 [2020-03-20 01:22:40] INFO  ruby 2.6.5 (2019-10-01) [x86_64-linux]
Mar 19 18:22:40 heroku-salesforce-connect-stag app/web.1 == Sinatra (v2.0.7) has taken the stage on 24990 for production with backup from WEBrick
Mar 19 18:22:40 heroku-salesforce-connect-stag app/web.1 [2020-03-20 01:22:40] INFO  WEBrick::HTTPServer#start: pid=4 port=24990
Mar 19 18:22:40 heroku-salesforce-connect-stag heroku/web.1 State changed from starting to up
Mar 19 18:56:38 heroku-salesforce-connect-stag heroku/web.1 Idling
Mar 19 18:56:38 heroku-salesforce-connect-stag heroku/web.1 State changed from up to down
Mar 19 18:56:39 heroku-salesforce-connect-stag app/web.1 == Sinatra has ended his set (crowd applauds)
Mar 19 18:56:39 heroku-salesforce-connect-stag app/web.1 [2020-03-20 01:56:39] INFO  going to shutdown ...
Mar 19 18:56:39 heroku-salesforce-connect-stag app/web.1 [2020-03-20 01:56:39] INFO  WEBrick::HTTPServer#start done.
Mar 19 18:56:39 heroku-salesforce-connect-stag heroku/web.1 Stopping all processes with SIGTERM
Mar 19 18:56:39 heroku-salesforce-connect-stag heroku/web.1 Process exited with status 0
```

At the bottom, there's a search bar with the query 'H12 OR status=5 OR "Starting process" -png', and a toolbar with icons for help, bookmark, search, time range, metrics, settings, and a 'NEW' button.

# 12. Admin Processes

Console is critical administrative and debugging tool

Heroku Toolbelt provides command line administration

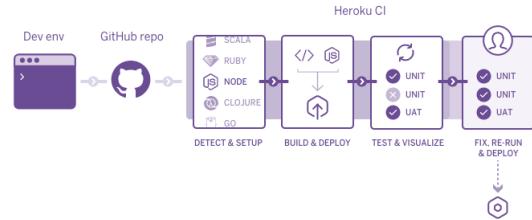
Can be scripted & automated



HEROKU



Design Principles  
12 Factor Apps



Heroku CI



Heroku Use cases



Heroku Private Spaces

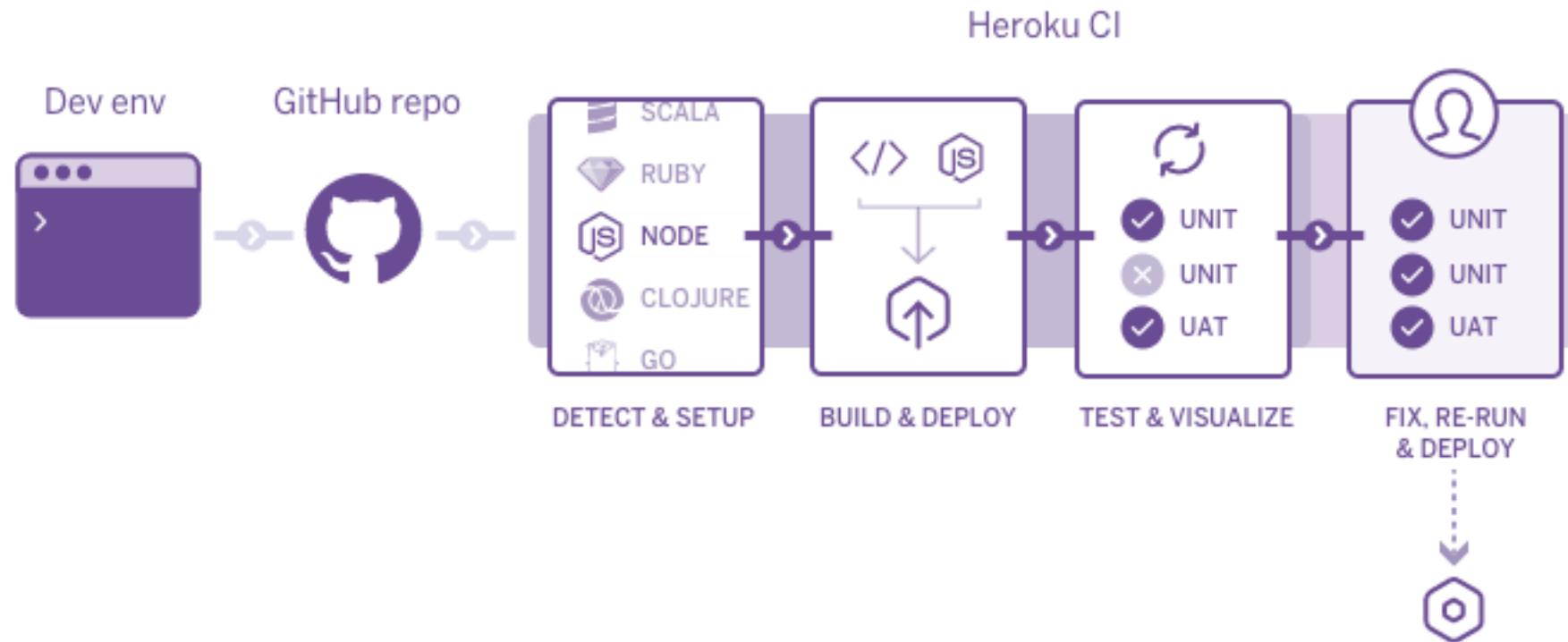


Heroku Connect



Configuration

# Heroku CI



# Demo – Java Application

The screenshot shows a GitHub repository page for 'rohitbhardwaj/heroku-java-getting-started'. The repository has 2 commits, 2 branches, 0 packages, 0 releases, 1 contributor, and an MIT license. The latest commit was made 21 hours ago by 'rohitbhardwaj' and involved initial commits for 'docs', 'src/main', '.DS\_Store', 'LICENSE', 'Procfile', 'README.md', and 'app.json'.

rohitbhardwaj / heroku-java-getting-started

Code Issues 0 Pull requests 0 Actions Projects 0 Wiki Security Insights Settings

Heroku Java sample for getting started

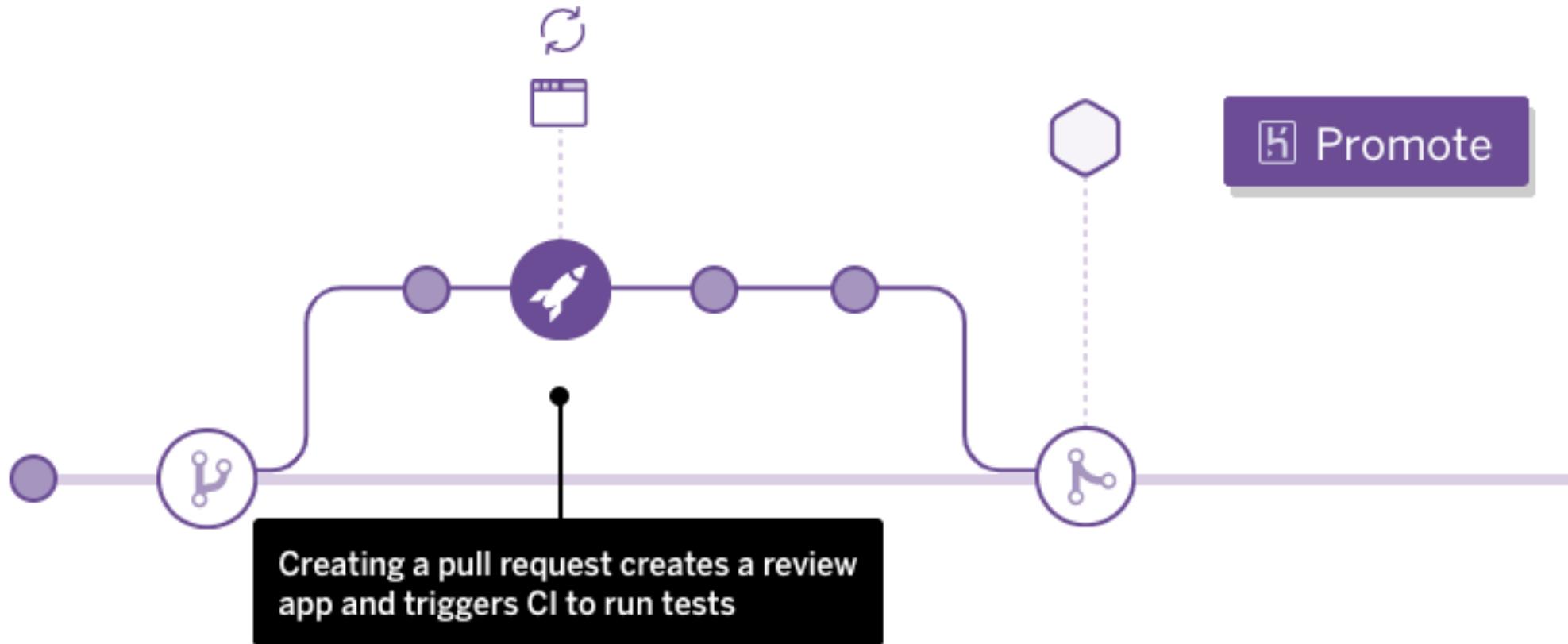
Manage topics

2 commits 2 branches 0 packages 0 releases 1 contributor MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

File	Commit Message	Time Ago
docs	initial commit	21 hours ago
src/main	initial commit	21 hours ago
.DS_Store	initial commit	21 hours ago
LICENSE	initial commit	21 hours ago
Procfile	initial commit	21 hours ago
README.md	initial commit	21 hours ago
app.json	initial commit	21 hours ago

# Review Apps



# Review apps exercise

The screenshot shows a GitHub repository page for 'rohitbhardwaj / flow-demo'. The repository name is at the top left, followed by a search bar and navigation links for Pull requests, Issues, Marketplace, and Explore. On the right, there are buttons for Unwatch (with 1 watch), Star (0 stars), Fork (0 forks), and a bell icon. Below the header, there's a navigation bar with tabs for Code (selected), Issues (0), Pull requests (0), Actions, Projects (0), Wiki, Security, Insights, and Settings.

The main content area displays the repository details: Heroku Flow Demo, Manage topics, 9 commits, 3 branches, 0 packages, 0 releases, 4 environments, and 1 contributor. Below this, there are buttons for Branch: master (dropdown), New pull request, Create new file, Upload files, Find file, and Clone or download (green button). A list of commits is shown, starting with a recent commit from rohitbhardwaj to master:

File	Commit Message	Time
public	commit to master	21 hours ago
test	added all files	22 hours ago
Procfile	added all files	22 hours ago
README.md	added all files	22 hours ago
app.json	added all files	22 hours ago
index.js	added all files	22 hours ago
package.json	added all files	22 hours ago

# app.json

Branch: master ▾ [flow-demo / app.json](#)

[Find file](#) [Copy path](#)

 [rohitbhardwaj](#) added all files 78c7be0 22 hours ago

[1 contributor](#)

Executable File | 18 lines (17 sloc) | 197 Bytes

[Raw](#) [Blame](#) [History](#)

```
1  {
2    "name": "sample-node-app",
3    "scripts": {
4      },
5    "formation": {
6      "web": {
7        "quantity": 1
8      }
9    },
10   "addons": [
11     ],
12   "buildpacks": [
13     {
14       "url": "heroku/nodejs"
15     }
16   ]
17 }
18 }
```

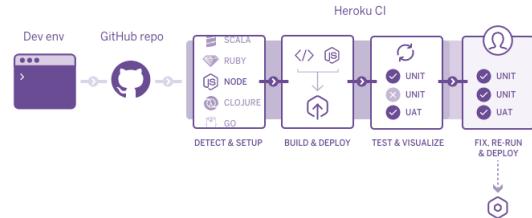
<https://devcenter.heroku.com/articles/app-json-schema>



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# Heroku Use cases



# Heroku Use Cases with Salesforce

## Perform Complex Processing

- Run code that is complex or involves lot
- Scheduled or Batch processing
- IOT data



# Heroku Use Cases with Salesforce

## Manage Large Volumes of Data

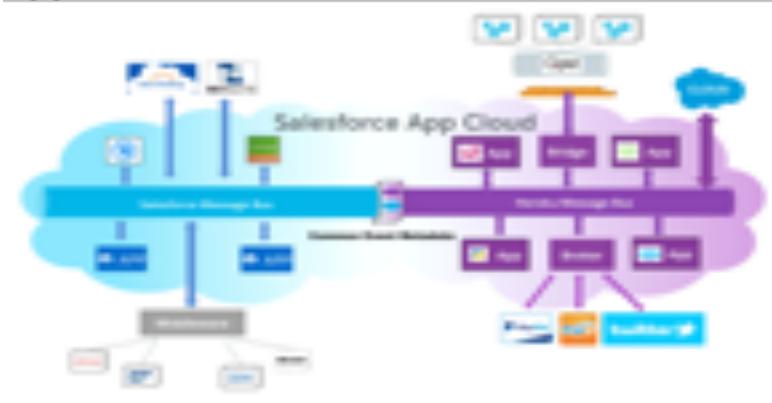
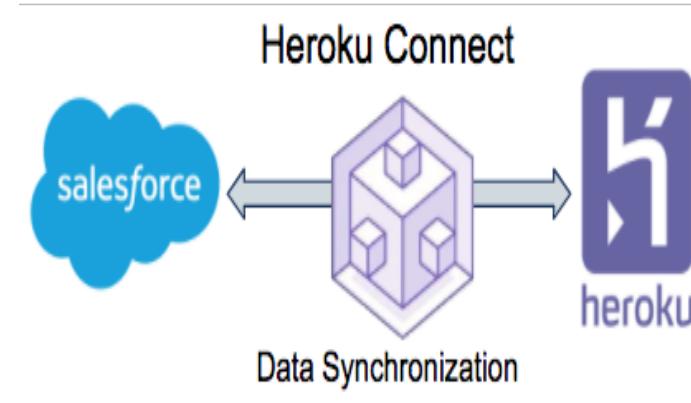
- Data not operationally significant in Salesforce but still part of the system
- Aggregate/Transform data from multiple Salesforce Orgs, Active Archives



# Heroku Use Cases with Salesforce

## Integrate

- Host Web Services, External Systems, Back Office
- Heroku Connect to Salesforce, and Canvas



# Heroku Use Cases with Salesforce



## Leverage Elastic Scale

- Blockchain, Image Processing
- PDF Generation, Transaction Volumes

# Heroku Use Cases with Salesforce

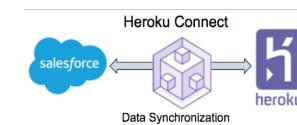
## Manage Large Volumes of Data

- Data not operationally significant in Salesforce but still part of the solution
- Aggregate/Transform data from multiple Salesforce Orgs, Active Archive



## Integrate

- Host Web Services, External Systems, Back Office
- Heroku Connect to Salesforce, and Canvas



## Leverage Elastic Scale

- Blockchain, Image Processing
- PDF Generation, Transaction Volumes



# Heroku Non Use Cases with Salesforce

Application do not follow 12 factor App principles

Application use local file system for processing

Application uses non standard ports

Application uses proprietary software

# Heroku Use Cases with Salesforce

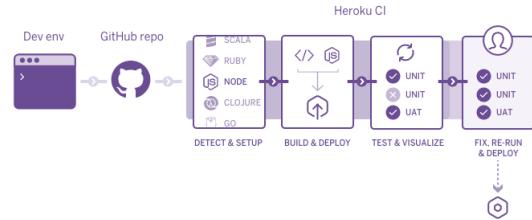
	Pros	Cons
Lift-and-Shift	<ul style="list-style-type: none"><li>• Minimal work required to move application</li><li>• Faster migration and deployment</li></ul>	<ul style="list-style-type: none"><li>• Typically does not take advantage of native features of the cloud platform</li><li>• May cost more to operate in a cloud</li></ul>
Partial Refactor	<ul style="list-style-type: none"><li>• Only parts of the application are modified</li><li>• Faster migration and deployment than complete refactoring</li></ul>	<ul style="list-style-type: none"><li>• Only takes advantage of some features of the cloud</li><li>• May cost more to operate in a cloud</li></ul>
Complete Refactor	<ul style="list-style-type: none"><li>• Applications typically offer higher performance</li><li>• Applications can be optimized to operate at lower costs</li></ul>	<ul style="list-style-type: none"><li>• Much higher cost since much of the application must change</li><li>• Slower time to deployment</li></ul>



HEROKU



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Heroku Private Spaces



Heroku Connect



Configuration

# Heroku Private Spaces

A Private Space, part of Heroku Enterprise, is a network isolated group of apps and data services with a dedicated runtime environment, provisioned to Heroku in a geographic region you specify.

Shield



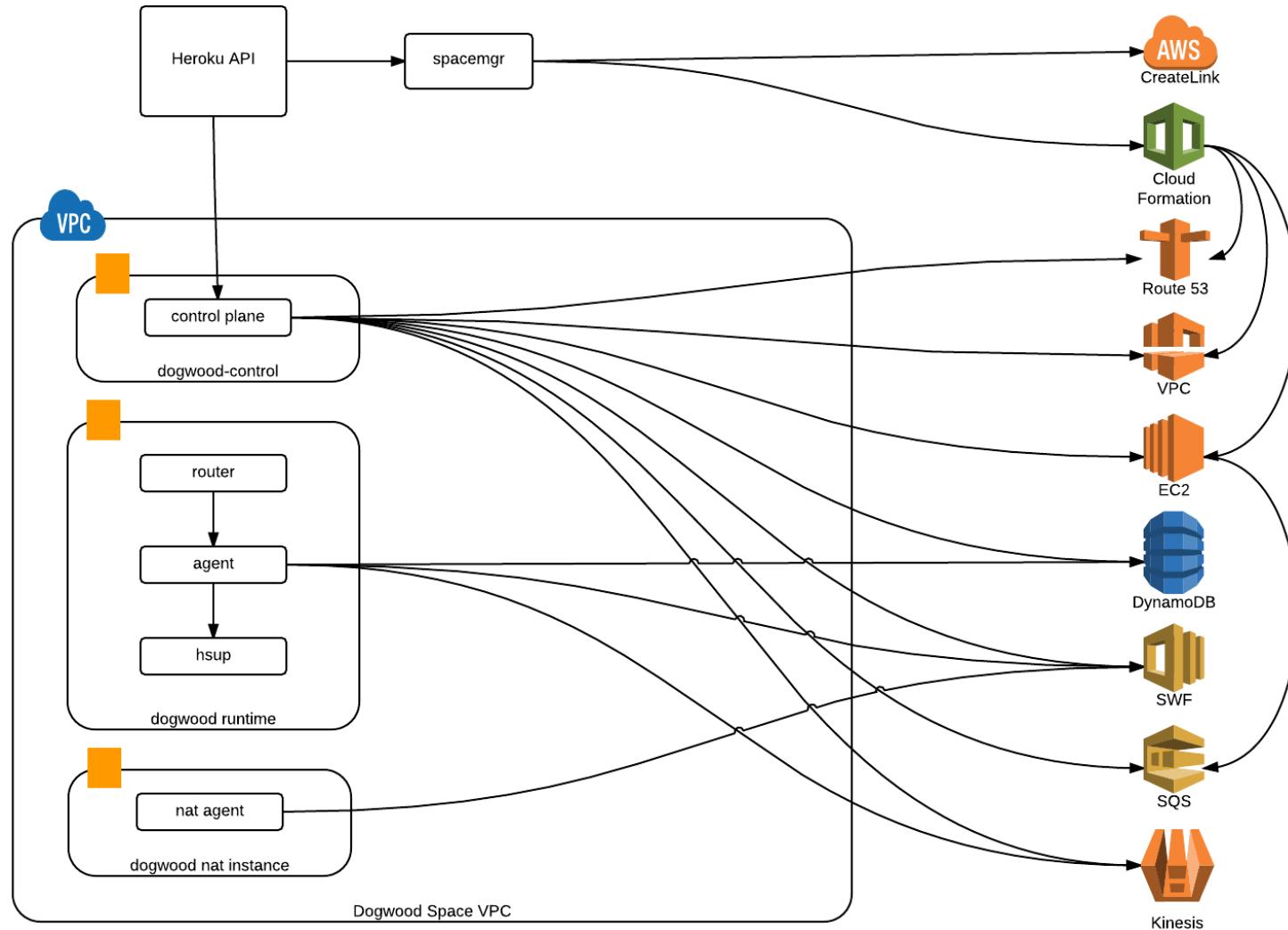
Private  
Spaces

- HIPAA
- PCI

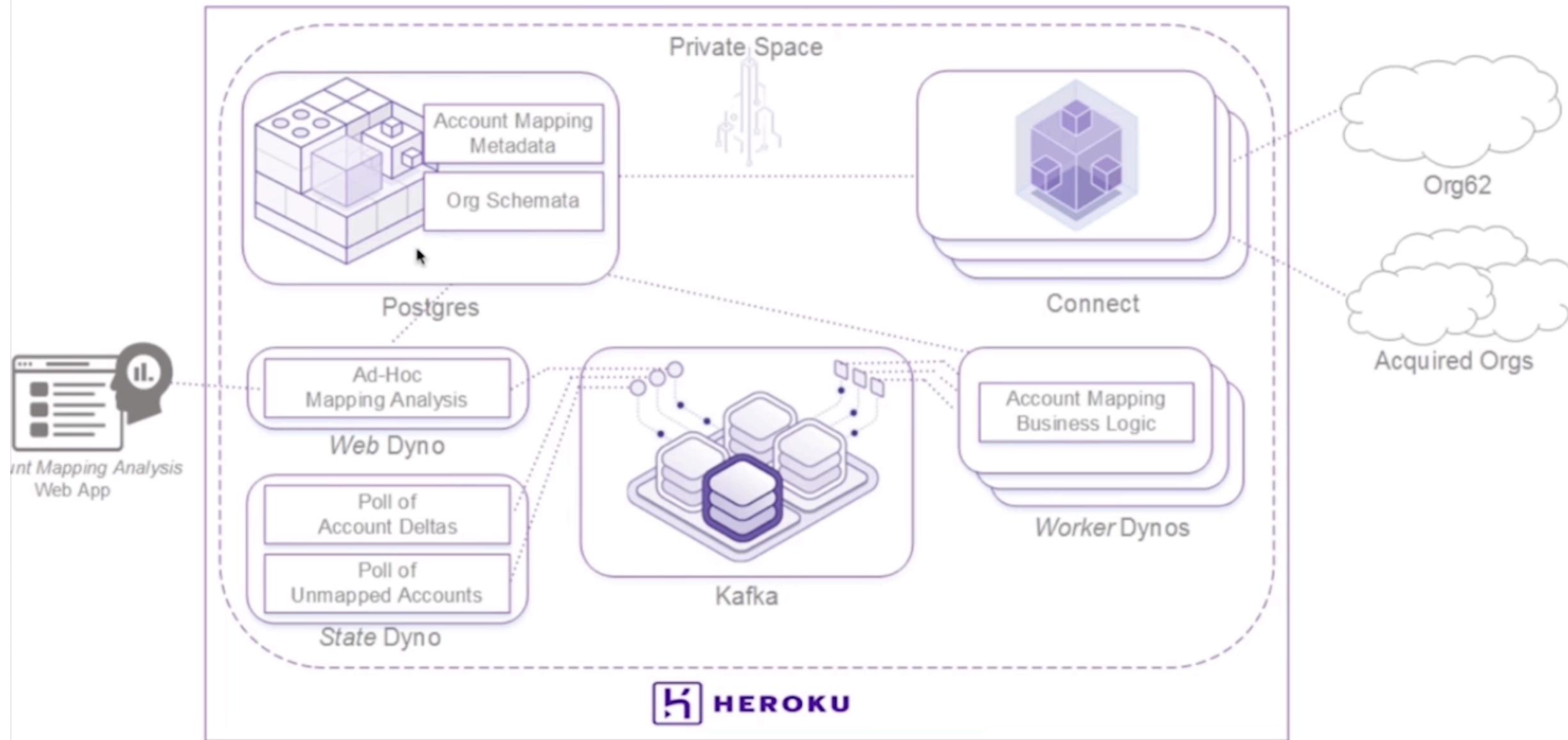
*Like a Cone-of-Silence, but Privater*

# Heroku Private Spaces

- Dedicated private network
- Private data service
- Trusted IP ranges
- Selectable regions
- VPC peering



*8 minutes – no fuss, no muss*





sfdc-aloha > sandbox-playnice

Apps Access Network Settings

### Trusted IP Ranges

Which external IPs are allowed to connect to web dynos in this Space (use CIDR notation to specify inbound IP whitelists). [Learn More.](#)

0.0.0.0/0

e.g. 172.16.180.7/23



Add

### Space Outbound IPs

All traffic originating from apps within this Space comes from these IP addresses via network address translation (NAT). [Learn more.](#)

34.193.70.215  
34.192.222.1  
34.193.40.206  
34.193.94.166

### Peering

Manage VPC peering connections between this Private Space and other AWS accounts. [Learn more.](#)

Peering management is not available  
Only Team Admins can manage VPC peering connections

# Lift and shift: Fork lifting

The screenshot shows the Heroku dashboard with three main sections:

- Space Outbound IPs**: A list of IP addresses: 34.193.70.215, 34.192.222.1, 34.193.40.206, 34.193.94.166.
- Peering**: A note stating "Peering management is not available" and "Only Team Admins can manage VPC peering connections".
- Private VPN**: A note stating "Private VPN management is not available" and "Only Team Admins can manage VPN settings".

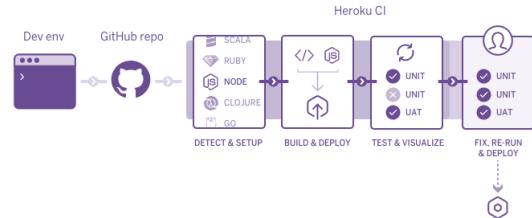
At the bottom, there are links for heroku.com, Blogs, Careers, Documentation, Support, Terms of Service, Privacy, Cookies, and © 2020 Salesforce.com.



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Heroku Private Spaces

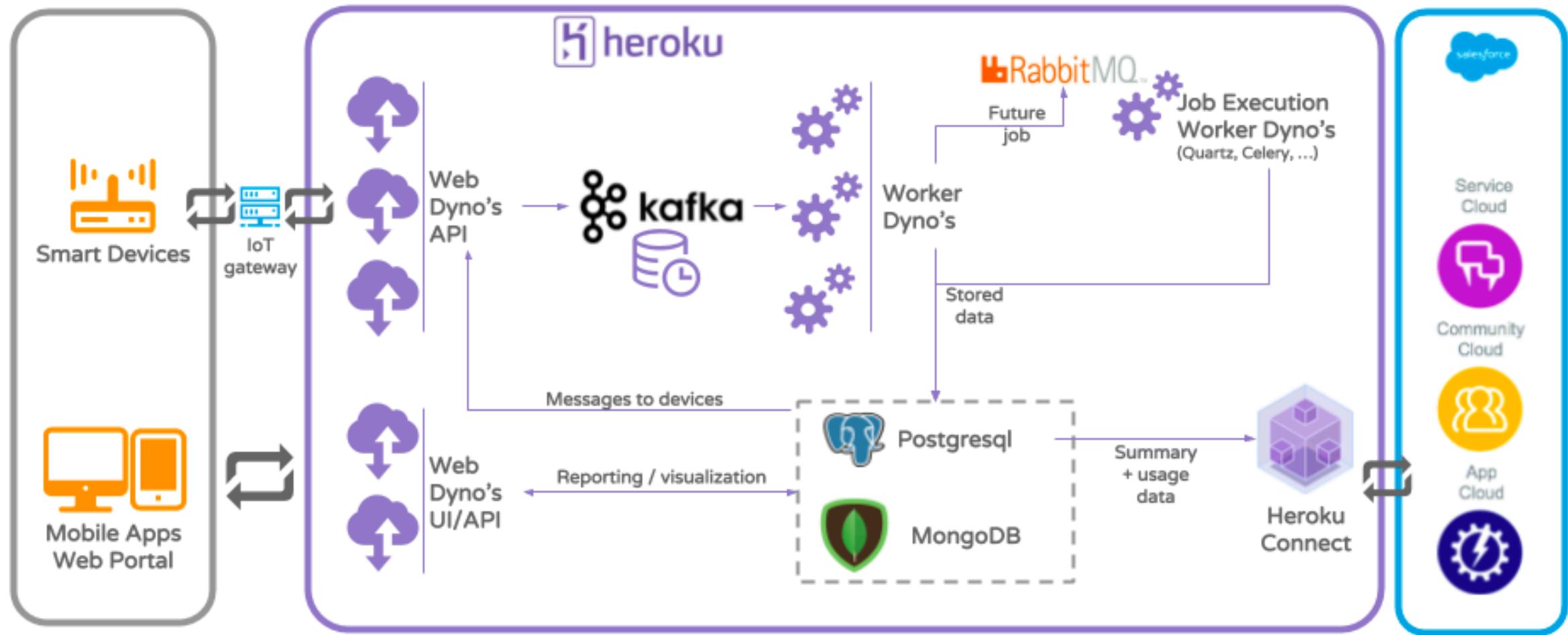


Heroku Connect

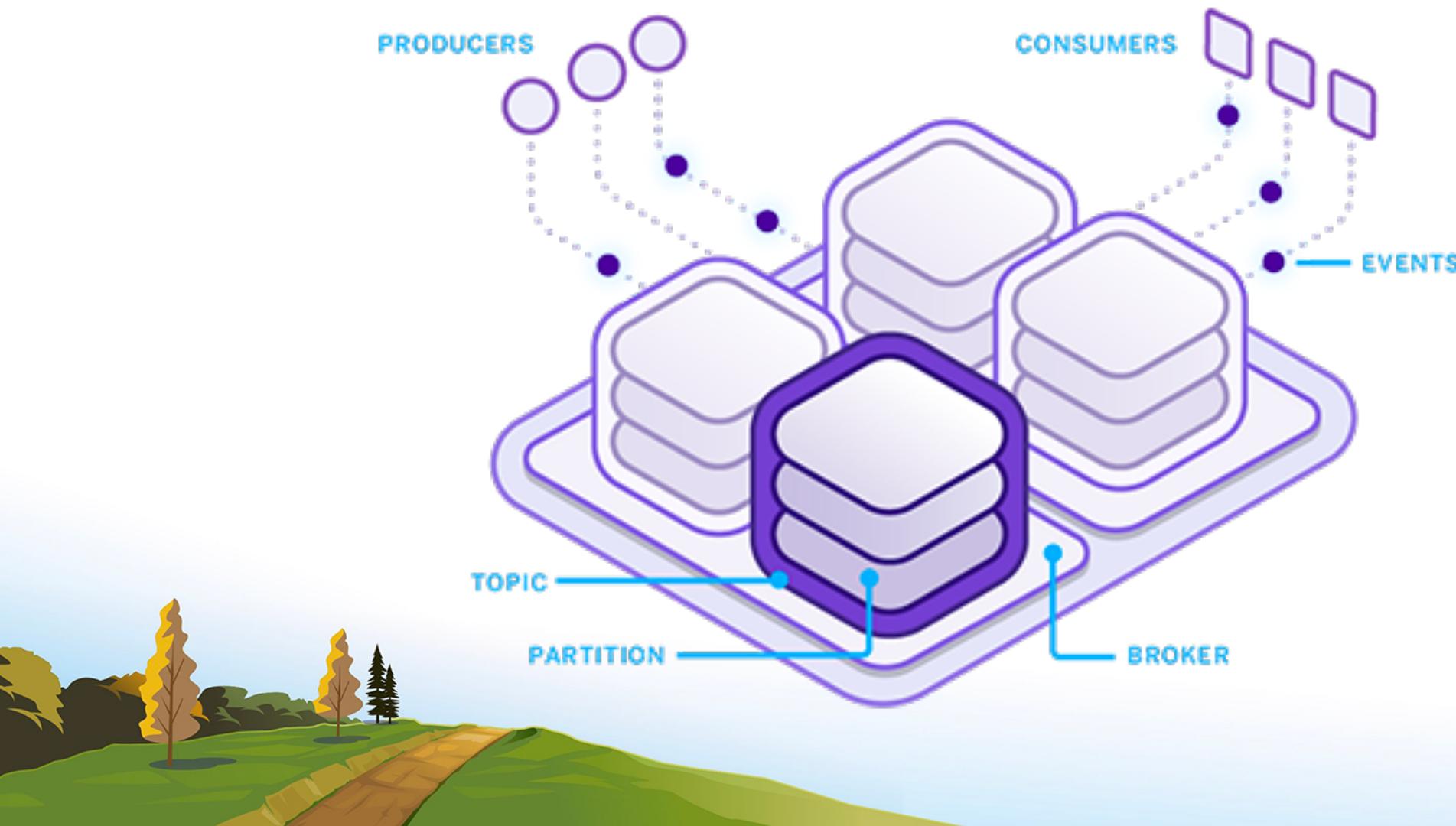


Configuration

# Heroku Sample Architecture



# Kafka demo



# Heroku Connect to Lightning



The screenshot shows the Heroku Connect interface. At the top, there are three external objects listed: "conferencemx (IDLE)", "demo-leadconnect (IDLE)", and "nibs2 (IDLE)". Below this is a navigation bar with tabs: Overview, Logs, Explorer, and Settings. The main area displays database information: "HEROKU\_POSTGRESQL\_GOLD\_URL" is mapped to "salesforce", and "SFDC 24 Hour API Usage: -". It also shows authentication details: "david@baliles.com". The "Activity" section indicates "No activity data available for that time period". The "Mappings" section lists five objects with their sync status:

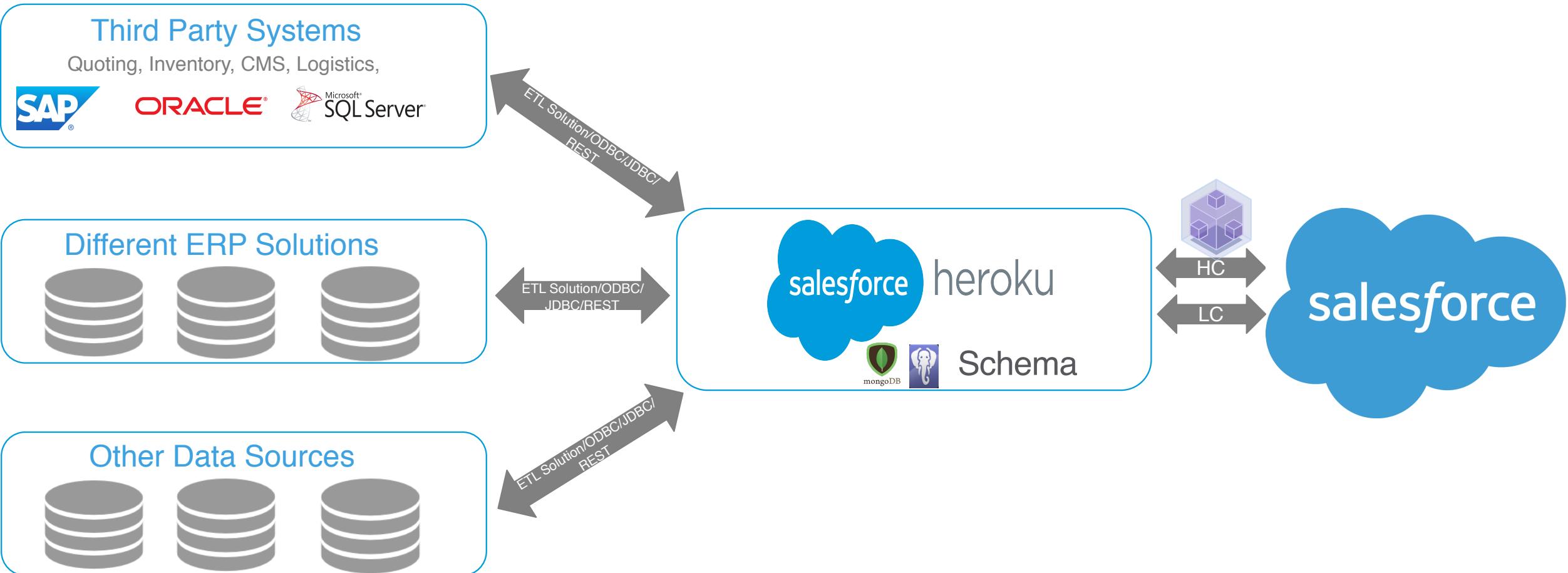
Status	Object	SF Rows	DB Rows	Pending writes to SFDC	Errored Rows
✓ OK	Account	13	13	-	-
✓ OK	CallCenter	-	-	-	-
✓ OK	Case	26	26	-	-
✓ OK	CaseStatus	4	4	-	-
✓ OK	Contact	22	22	-	-

Total Synced Rows: 65

- Bi-directional data sync
- Point and click configuration
- Create External Objects using OData
- Does not consume API Transactions

*No-code integration to unleash your CRM, Service, and Custom Data*

# Heroku – Database as a Service - Data Aggregation/Data Warehousing



# Salesforce Connect

The screenshot shows the Heroku Pipeline interface for the 'heroku-salesforce-connect-dev' pipeline. At the top, there's a purple header bar with the Heroku logo and a search bar labeled 'Jump to Favorites, Apps, Pipelines, Spaces...'. Below the header, the pipeline name 'heroku-salesforce-connect-dev' is displayed, along with navigation links for 'Pipeline', 'Tests', and 'Settings'. A note encourages connecting the pipeline to GitHub for review apps and CI. The pipeline interface is divided into three stages: REVIEW APPS, DEVELOPMENT, and STAGING, connected by arrows.

**REVIEW APPS**

**Enable Review Apps**  
Create apps for pull requests and branches on

[Enable Review Apps](#) [Learn More](#)

**DEVELOPMENT** + Add app

**heroku-salesforce-connect-dev**  
rohitbhardwaj/heroku-salesforce-connect  
Auto deploys | develop  
1e73bed8 Deployed yesterday at 9:10 PM

No changes to promote [Open app](#) ⚙️

**STAGING** + Add app

**heroku-salesforce-connect-stag**  
rohitbhardwaj/heroku-salesforce-connect  
Auto deploys | master  
1e73bed8 Deployed yesterday at 9:22 PM

[Open app](#) ⚙️

# Heroku is a Platform

Heroku is a Platform which enables  
developers to go from zero to H E R O.

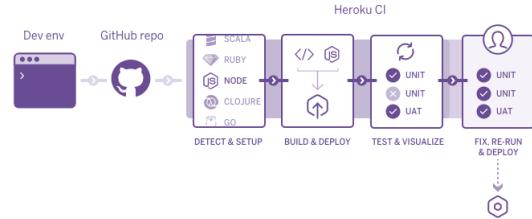
Fast!



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# ChatOps



**Heroku ChatOps** APP 3:47 PM Only visible to you

Connect your Heroku account

Heroku

Please [sign in to Heroku](#).

GitHub

Please [sign in to GitHub](#).

Connect your GitHub account

Heroku

You're [scotton@heroku.com](mailto:scotton@heroku.com).

GitHub

Please [sign in to GitHub](#).

You're all set

Heroku

You're [scotton@heroku.com](mailto:scotton@heroku.com).

GitHub

You're [stellacotton](#).



**Stella Cotton** 4:07 PM

/h deploy paipu to staging



**Heroku ChatOps** APP 4:07 PM



Deployed [paipu-app-staging](#)

heroku/paipu-repo - ref: master - SHA: 576d16a9 - duration: 43s

[4 replies](#) Last reply today at 4:08 PM

## Thread

Heroku ChatOps



**Heroku ChatOps** APP Today at 4:07 PM  
in #tools-ops



stellacotton  
**Deployed paipu-app-staging**

heroku/paipu-repo - ref: master - SHA: 576d16a9 -  
duration: 43s

4 replies



**Heroku ChatOps** APP 1 minute ago



stellacotton  
**Deploying paipu-app-staging**

heroku/paipu-repo - ref: master - SHA:  
576d16a9 - duration: 1s



**Heroku ChatOps** APP < 1 minute ago



stellacotton  
**Releasing paipu-app-staging**

heroku/paipu-repo - ref: master - SHA:  
576d16a9 - duration: 40s



**Heroku ChatOps** APP < 1 minute ago



stellacotton  
**Restarting paipu-app-staging**

heroku/paipu-repo - ref: master - SHA:  
576d16a9 - duration: 42s



**Heroku ChatOps** APP < 1 minute ago



stellacotton  
**Deployed paipu-app-staging**

heroku/paipu-repo - ref: master - SHA:  
576d16a9 - duration: 43s



Reply...





# Troubleshooting & Support

[Heroku Status](#)

[Error Pages](#)

[Request Timeout](#)

[R14 - Memory Quota Exceeded in Ruby \(MRI\)](#)

[Wrong Version of Ruby or Rake in App](#)

[Support Channels](#)

[Heroku Error Codes](#)

[Understanding Heroku Postgres Log Statements and Common Errors](#)

[Recovering an Offline Application](#)

[Troubleshooting Memory Issues in Java Applications](#)

[Paid Support](#)





# Security

Additional security features, such as network isolation with Private Spaces, are available as part of [Heroku Enterprise](#).

## App Security

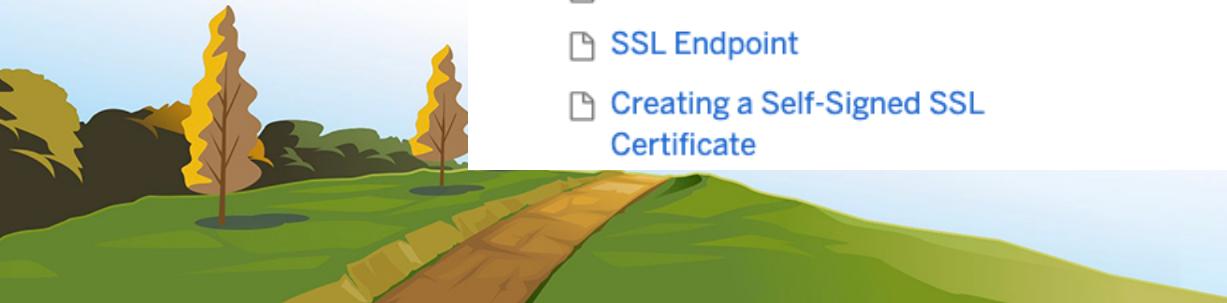
- [Understanding SSL on Heroku](#)
- [Automated Certificate Management](#)
- [Heroku SSL](#)
- [Manually Acquiring an SSL/TLS Certificate](#)
- [WebSocket Security](#)
- [Penetration Testing and Network Scanning](#)
- [Cookies and the Public Suffix List](#)
- [SSL Endpoint](#)
- [Creating a Self-Signed SSL Certificate](#)

## Identities & Authentication

- [Two-factor Authentication](#)

## Compliance

- [Heroku Security, Privacy, and Compliance](#)
- [PCI Compliance](#)
- [Heroku and GDPR](#)



# Troubleshooting

Environment Variable	Description
HEROKU_DEBUG=1	Shows debugging information mostly related to Heroku API interactions
HEROKU_DEBUG_HEADERS=1	Alongside HEROKU_DEBUG=1, shows HTTP headers
DEBUG=*	Shows very verbose debugging information

# Troubleshooting

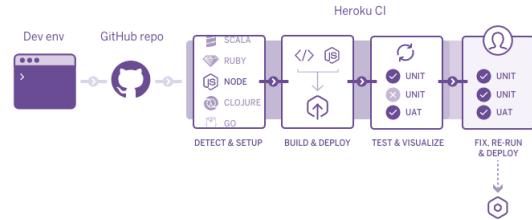
OS	Location
macOS	<code>~/Library/Caches/heroku/error.log</code>
Windows	<code>%LOCALAPPDATA%\heroku\error.log</code>
Linux/Other	<code>~/.cache/heroku/error.log</code> (or <code>XDG_CACHE_HOME</code> if set)



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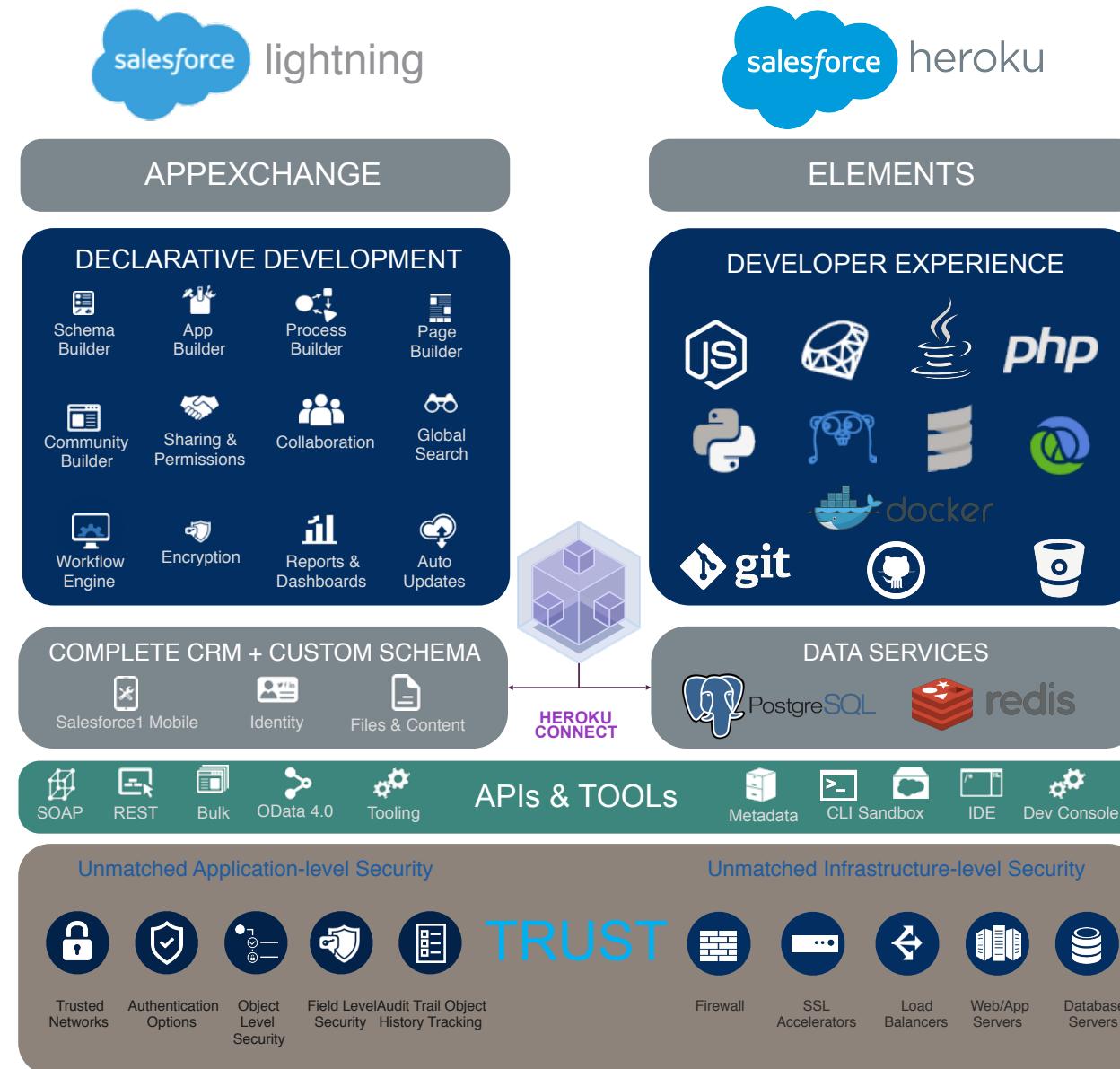
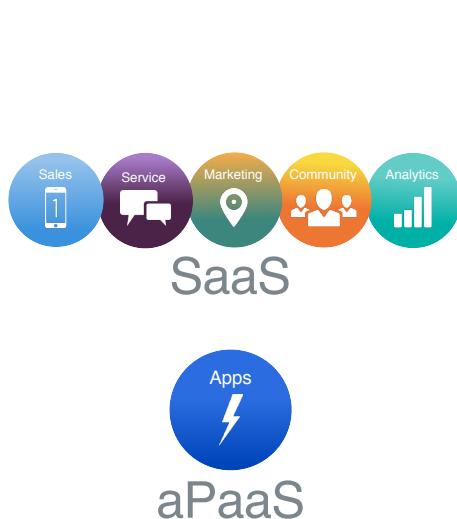


Heroku Connect



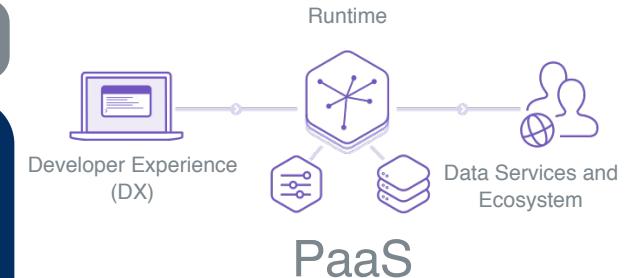
Configuration

# Salesforce Platform

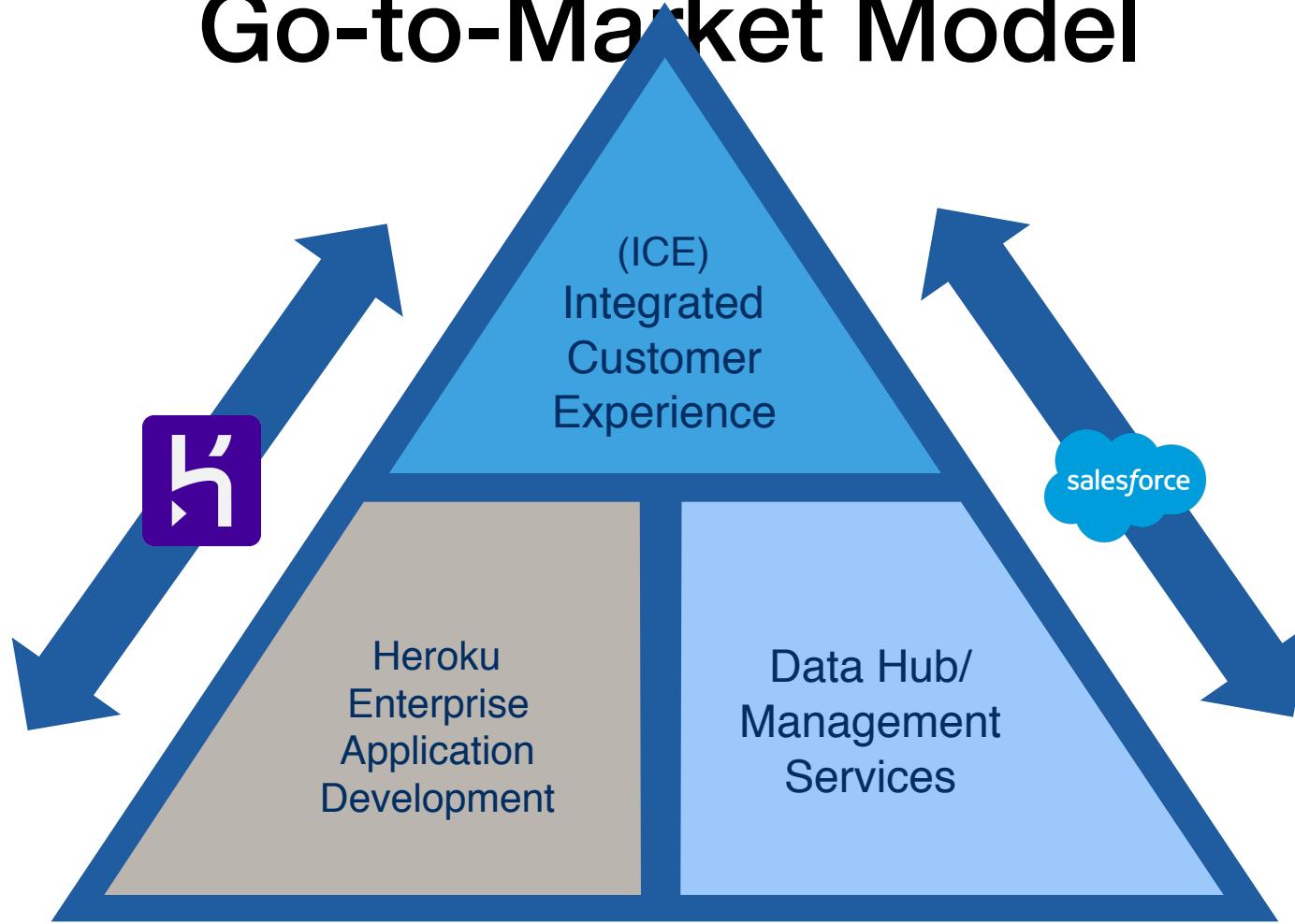


**No Code / Low Code**  
Solve for the Developer Gap

**Pro Code**  
Build Innovative, Engaging Apps



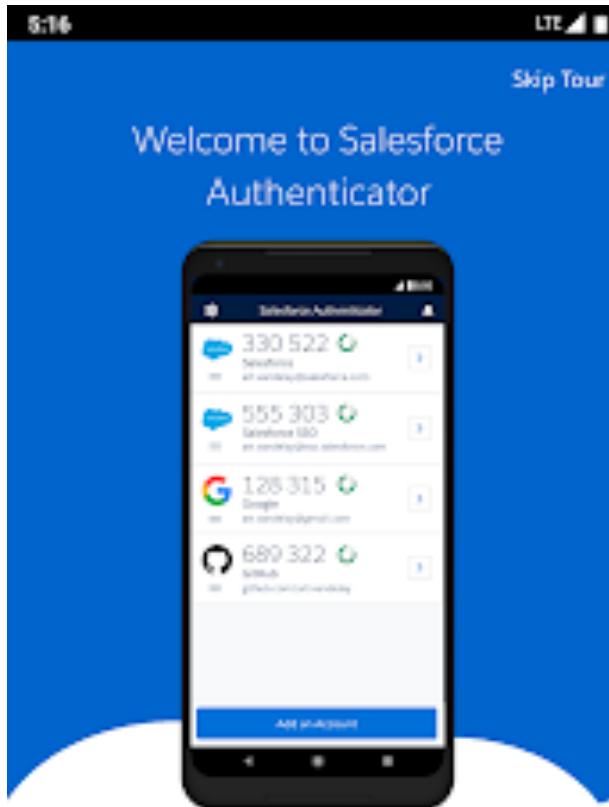
# Go-to-Market Model



# Salesforce DX



# Salesforce Authenticator



Now it's even easier to keep your online accounts secure.



# trust.salesforce.com

salesforce Trust | Status ▾ ? ⚙️ 📈 🎉

Home

PRODUCTS

- All
- Sales Cloud
- Service Cloud
- Marketing Cloud
- B2C Commerce Cloud
- Social Studio
- LiveAgent / Omni-Channel
- Lightning Platform
- Community Cloud
- Einstein Analytics
- Financial Services Cloud
- Health Cloud
- CPQ and Billing

Welcome to Salesforce Status!

We provide transparency around service availability and performance for Salesforce products.



Search Instance, Domain, POD, or MID

ID	SUBJECT	INSTANCES	SERVICES
416	Authentication issues when completing transaction activity on the store.salesforce.com - Resolved	General Message	-
414	Salesforce Coronavirus (COVID-19) Update	General Message	-

Recently Viewed Instances

No recent instances

Trail



# Develop Apps with Heroku Enterprise

Build enterprise apps with open languages and frameworks on Heroku that integrate seamlessly with Salesforce.

5 hrs 10 mins

Developer

Intermediate



[https://trailhead.salesforce.com/trails/heroku\\_enterprise](https://trailhead.salesforce.com/trails/heroku_enterprise)

 Heroku Dev Center    By Language ▾    Develop ▾    Support    More ▾

⚡ Getting Started    📖 Reference    📚 Learning

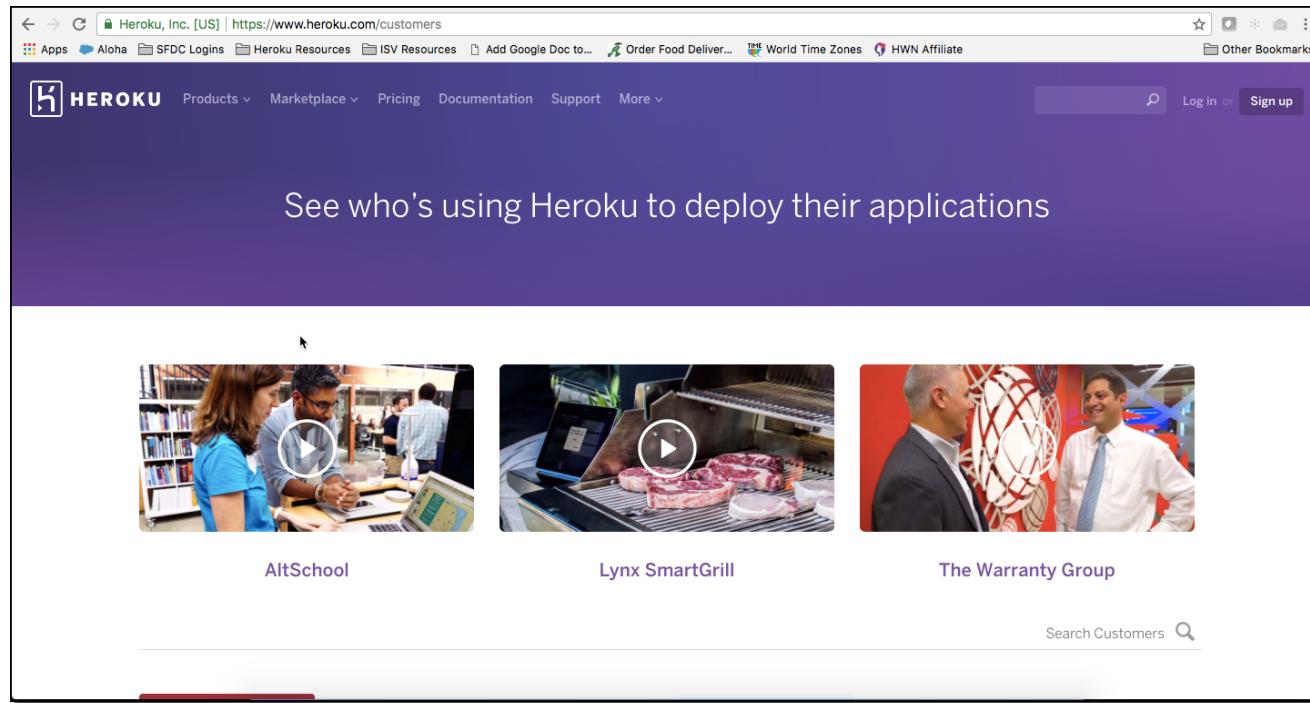
Learn about building, deploying and managing your apps on Heroku.

---

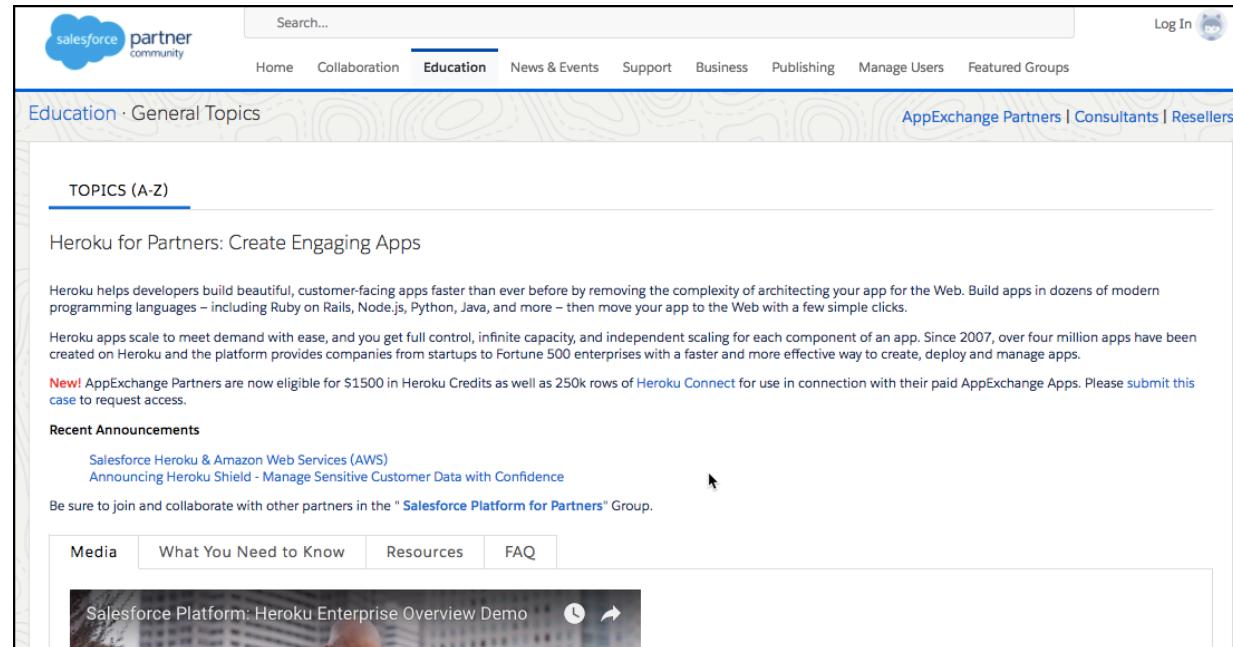
 Node.js     Ruby     Java     PHP     Python     Go     Scala     Clojure

Haven't used Heroku yet? [Get started](#)

<http://devcenter.heroku.com>



<http://www.heroku.com/customers>



The screenshot shows the Salesforce Partner Community website. The top navigation bar includes the Salesforce logo, a search bar, and a "Log In" button. Below the navigation is a horizontal menu with links: Home, Collaboration, Education (which is underlined), News & Events, Support, Business, Publishing, Manage Users, and Featured Groups. The main content area has a header "Education · General Topics" and a sub-header "AppExchange Partners | Consultants | Resellers". A section titled "TOPICS (A-Z)" lists "Heroku for Partners: Create Engaging Apps". Below this, a paragraph describes Heroku's capabilities and its history. It also mentions a new benefit for AppExchange Partners regarding Heroku Credits and Connect. A "Recent Announcements" section highlights "Salesforce Heroku & Amazon Web Services (AWS)" and "Announcing Heroku Shield - Manage Sensitive Customer Data with Confidence". A call-to-action encourages users to join the "Salesforce Platform for Partners" group. At the bottom, there are tabs for "Media", "What You Need to Know", "Resources", and "FAQ", followed by a video thumbnail for a "Salesforce Platform: Heroku Enterprise Overview Demo".

<http://p.force.com/heroku>

Menu  Contact Sales Products Solutions Pricing Getting Started More English My Account Create an AWS Account

 | 

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Modernize your enterprise applications and drive new value from customer data. Salesforce and AWS have expanded their global presence to make these unified solutions available to more customers around the world.

[Watch The Video](#) [Read the eGuide](#) [Read the Brochure](#)

### Build Engaging Applications with Salesforce Heroku and AWS

Building and releasing cutting-edge applications quickly can be difficult when you lack proper tooling and integrated customer data. Salesforce Heroku delivers a cloud-native, developer-friendly platform that streamlines application development by integrating formerly siloed customer data and removing the burden of infrastructure management, allowing developers to focus their attention solely on creating customer-centric applications.

[Learn more](#) | [Download the Solution Brief](#) | [Download the eBook](#) | [Read the Case Study](#) | [Read Our Blog](#)

<http://aws.amazon.com/featured-partners/Salesforce>

# Thanks



**Rohit Bhardwaj**

**Hands-on Senior Architect, Salesforce**

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**LinkedIn: [www.linkedin.com/in/rohit-bhardwaj-cloud](https://www.linkedin.com/in/rohit-bhardwaj-cloud)**

**<https://www.productivecloudinnovation.com/lessons>**