



Great Lakes Oracle Conference

Apex Day

Crossing the Streams

Streaming IOT Data to Visualize in APEX

Jerry Ward, Viscosity North America

Jerry Ward – About Me

Austin, Texas

Engineer & Developer

Twitter @oraclecoffee

Oracle Apex Nerd

Co-author Oracle Cloud Solutions Guide

Co-founder Viscosity North America

Data Science Specialist JHU

Passion for the Red Grape

Private Pilot



Viscosity Pillars and Delivery Models

DATA

Database

Data Integration

Data Warehousing
Analytics
Golden Gate

IAAS / PAAS

APPS

APEX

EPM Cloud

ERP/SCM/HCM Cloud

PAAS

Mobility

INFRA

IAAS
Public Cloud
Bare Metal Cloud

Engineered Systems
Exa- ZFS @Customer

X86 / Sparc

AWS Azure Bluemix

Workshops

Assessments

Proof of
Concepts

Training

Turnkey
Projects

Managed
Services

About Viscosity

We've written 22 books on Data, Cloud, and Oracle...



A Sampling of our Clients



UNITED
PHYSICIANS
Advancing Physician Performance



meridian
A WellCare Company



WellCare
Beyond Healthcare. A Better You.
IQNAVIGATOR



S&P



Williams



HARRIS COUNTY
TEXAS



Dallas
Independent
School
District



ZEUS



Excellus



ASARCO
GRUPO MEXICO



NeoSystems



McAfee



American
Heart
Association



Dominion
Energy



Schlumberger



afa
american family
association



SCGTS
SC GLOBAL TUBULAR SOLUTIONS



Oildex



PHH
CORPORATION



DART



DFW



DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA



SOFTLAYER
an IBM Company



STgenetics



Capital One



KEMPER



Cummins



TEXAS de BRAZIL
CHURRASCARIA
Brazilian Steakhouse



THE COUNTY OF DALLAS
STATE OF TEXAS



WWF



CLUBCORP
The World Leader in Private Clubs



MERIT ENERGY



AAR



ServiceLink
FNF'S NATIONAL LENDER PLATFORM



COMAU



D.C.I.
DATACENTERINC.COM



LENNOX



briarley+partners



Nationwide
On Your Side



Cash America



LEESAR



U.S. RENAL CARE



targetbase



CNO FINANCIAL GROUP



FIDELITY
NATIONAL FINANCIAL



FIS



experian



VISCOSITY NORTH AMERICA



ORACLE
Platinum
Partner



vizient



Cabot Oil & Gas Corporation
CLEAN ENERGY. STRONGER COMMUNITIES.



LIFEBRIDGE
HEALTH.



COLLEGE of AMERICAN
PATHOLOGISTS



DTCC



UMassMemorial
Health Care

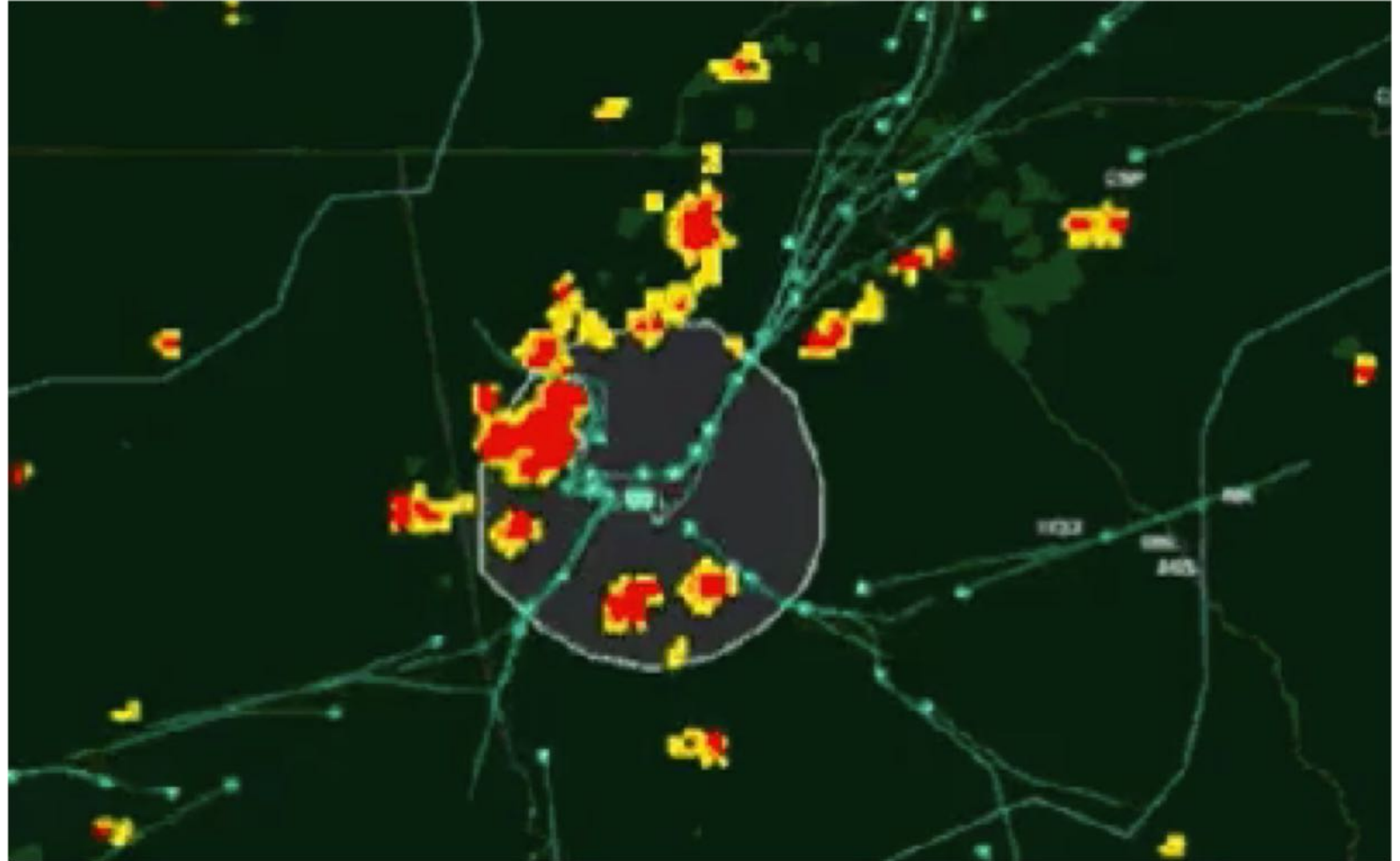


sinclair
research

Modern Air Traffic Control

What happens when a thunderstorm hits the worlds largest airport?

Traffic and weather visualized from the ADS-B System at the Atlanta-Hartfield Airport.



RADAR

- Radio Detection And Ranging
- Uses radio waves to detect range (distance), altitude, velocity of aircraft
- Pre-1940
- Ground Based
- Expensive
- Limited Range



ADSB – Automatic Dependent Broadcast - Surveillance

- Determines position via satellite (GPS)
- US, Canada, Australia, India
- Could replace radar as the primary control method for aircraft worldwide
- Used for inexpensive flight tracking, planning, and dispatch
- Also includes weather

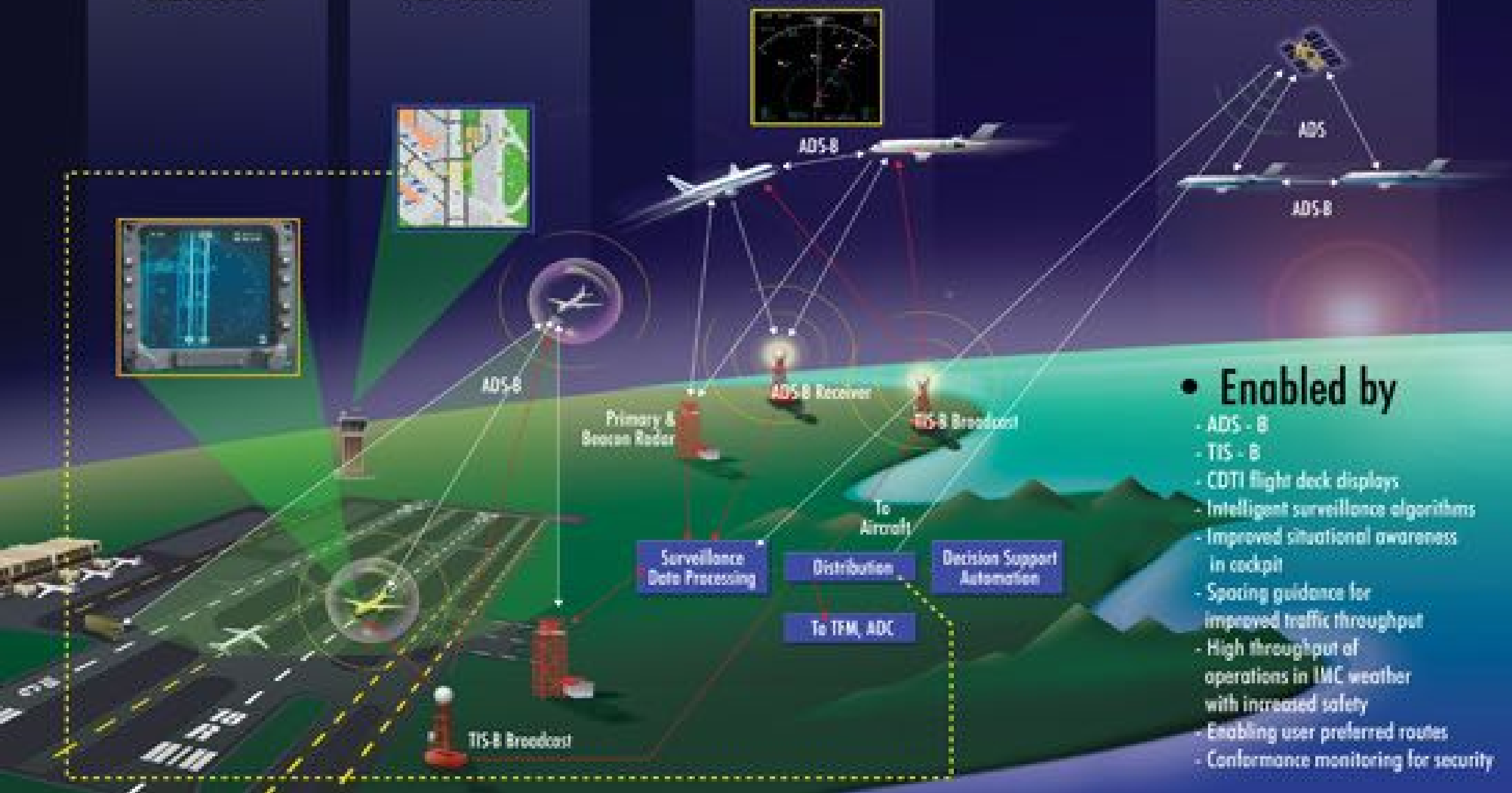


Surface

Terminal

Enroute

Ocean/Remote



• Enabled by

- ADS - B
- TIS - B
- CDTI flight deck displays
- Intelligent surveillance algorithms
- Improved situational awareness in cockpit
- Spacing guidance for improved traffic throughput
- High throughput of operations in IMC weather with increased safety
- Enabling user preferred routes
- Conformance monitoring for security

The Software



- <http://stratux.me>
- <https://github.com/cyoung/stratux>
- Chris Young

Stratux

Hello! Stratux is a **homebuilt ADS-B In receiver** for pilots. It's easy to assemble from inexpensive, off-the-shelf hardware, and probably already works with your electronic flight bag (EFB) of choice. Even better, if you're so inclined, the software is open-source and hackable so you can build the system that's right for you.

To get started, order the parts from the shopping list below, plug everything in, and load up the software.

Dual Band (**most common**) Shopping List [~\$129.66]

1. Raspberry Pi 3 Motherboard
2. Pre-programmed SD card with Stratux software
3. Stratux 1090ES & UAT - Radios and High Gain Antennas
4. Stratux Case with Fan, White ABS
5. Pass-through charging battery pack with cable
6. GPS (optional): GPYes or Vk-162 (remote mount, better signal)

Single Band (**cheapest**) Shopping List [~\$94.98]

1. Raspberry Pi kit (preloaded with Stratux)
2. Pass-through charging battery pack with cable
3. GPS (optional): Vk-162 (remote mount, better signal)

The Components for a Homemade ADS-B Receiver



- Raspberry Pi 3
- 1090 Mhz Radio & Antenna
- 978 Mhz Radio & Antenna
- Micro SD Memory Card
- Fan
- Battery
- Miscellaneous Cables

Software (dump1090)

- Radio Deocoder (mode S) designed for software defined radios
- <https://github.com/antirez/dump1090>
- Decodes 1090 mhz (newer)
- Decodes 978 mhz (dump978)

Normal usage

To capture traffic directly from your RTL device and show the captured traffic on standard output, just run the program without options at all:

```
./dump1090
```

To just output hexadecimal messages:

```
./dump1090 --raw
```

To run the program in interactive mode:

```
./dump1090 --interactive
```

To run the program in interactive mode, with networking support, and connect with your browser to <http://localhost:8080> to see live traffic:

```
./dump1090 --interactive --net
```



Salvatore Sanfilippo
antirez

Computer programmer based in Sicily, Italy. I mostly write OSS software. 40 years old. Not a puritan.

Block or report user

 Redis Labs

 Campobello di Licata, Sicily, It...

 <http://invece.org>

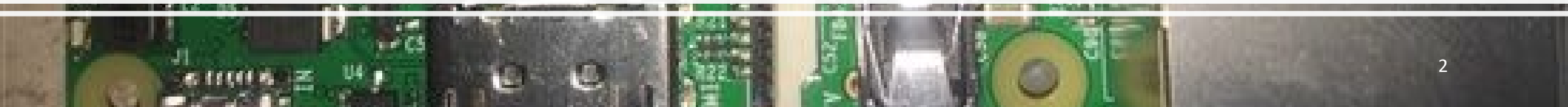
Netcat (nc)

"the tcp/ip swiss army knife"

Netcat 1.10
=====

Netcat is a simple Unix utility which reads and writes data across network connections, using TCP or UDP protocol. It is designed to be a reliable "back-end" tool that can be used directly or easily driven by other programs and scripts. At the same time, it is a feature-rich network debugging and exploration tool, since it can create almost any kind of connection you would need and has several interesting built-in capabilities. Netcat, or "nc" as the actual program is named, should have been supplied long ago as another one of those cryptic but standard Unix tools.

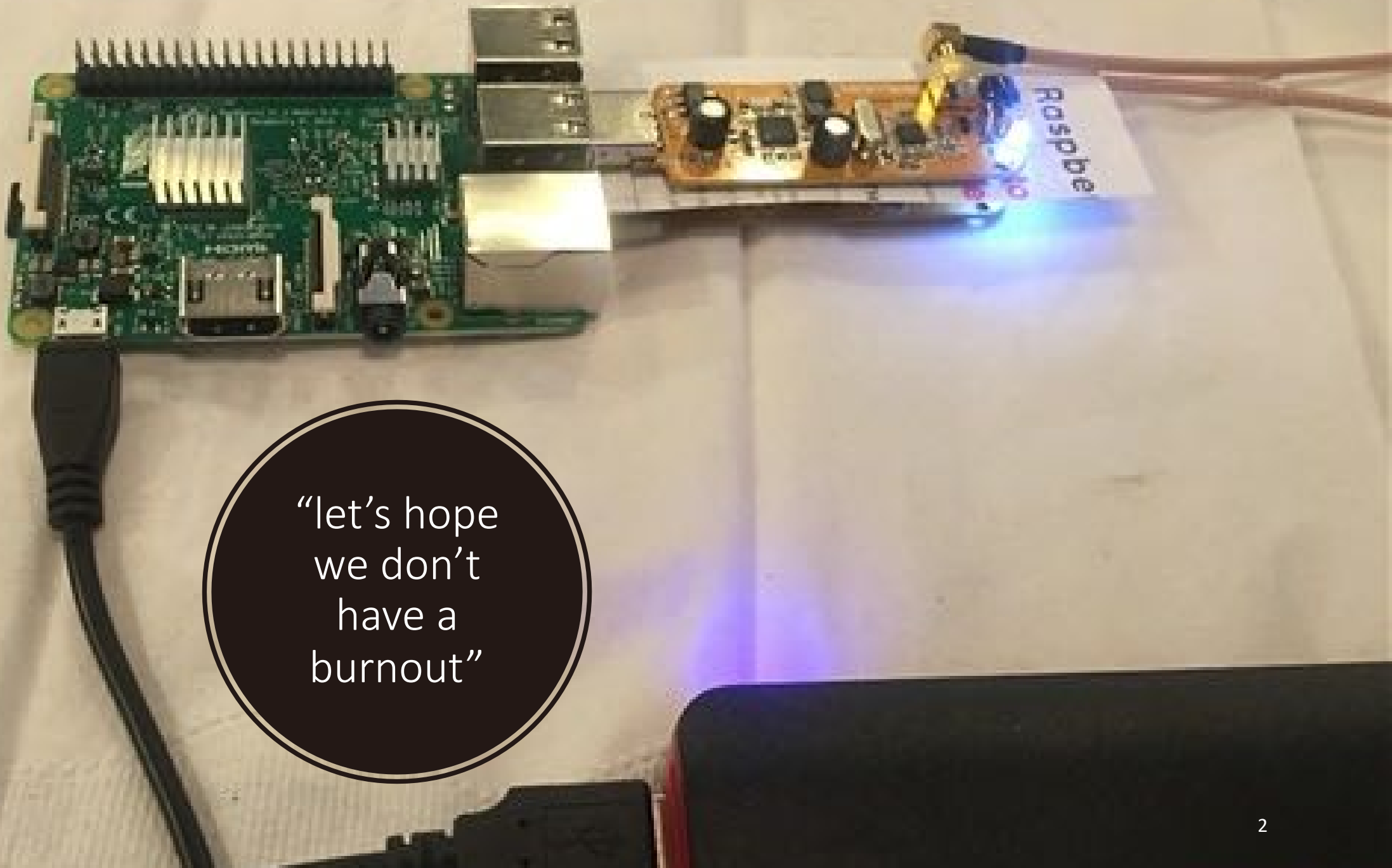




Installing the Heat Syncs



Installing the Radios



“let’s hope
we don’t
have a
burnout”

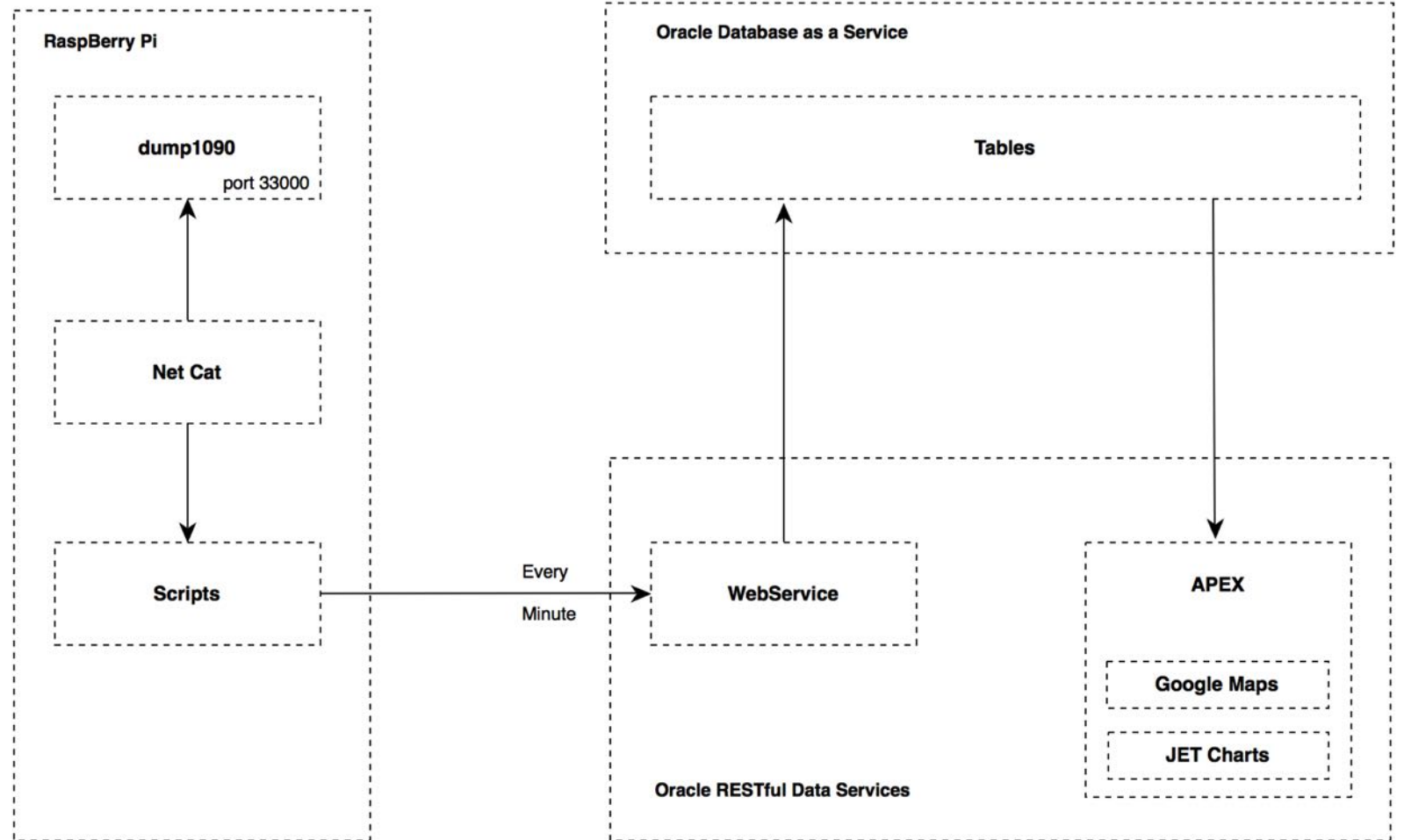


Finding the perfect enclosure



The road test

Initial Data Flow



Setting Up the Confluent Platform

- Download and start the confluent platform
- Create the Kafka Topics
- Install the Kafka connector and generate sample data
- Create and write to a stream table using KSQL
- View your stream in the control center
- Stop the confluent platform
- <https://docs.confluent.io/current/quickstart/ce-quickstart.html>

./confluent start

This CLI is intended for development only, not for production
<https://docs.confluent.io/current/cli/index.html>

```
Using CONFLUENT_CURRENT: /var/folders/kr/fw22kvxs5dvgvll58g6bmmcr0000gn/T/confluent.gAnSGrw9
Starting zookeeper
zookeeper is [UP]
Starting kafka
kafka is [UP]
Starting schema-registry
schema-registry is [UP]
Starting kafka-rest
kafka-rest is [UP]
Starting connect
connect is [UP]
Starting ksql-server
ksql-server is [UP]
Starting control-center
control-center is [UP]
```

```
./confluent-hub install \  
--no-prompt confluentinc/kafka-connect-datagen:0.1.0
```

Running in a "--no-prompt" mode

Implicit acceptance of the license below:

The Apache License, Version 2.0

<https://www.apache.org/licenses/LICENSE-2.0>

Downloading component Kafka Connect Datagen 0.1.0, provided by Confluent, Inc. from Confluent Hub and installing into /Users/zihiah/downloads/confluent-5.2.1/share/confluent-hub-components

Adding installation directory to plugin path in the following files:

/Users/zihiah/downloads/confluent-5.2.1/etc/kafka/connect-distributed.properties

/Users/zihiah/downloads/confluent-5.2.1/etc/kafka/connect-standalone.properties

/Users/zihiah/downloads/confluent-5.2.1/etc/schema-registry/connect-avro-distributed.properties

/Users/zihiah/downloads/confluent-5.2.1/etc/schema-registry/connect-avro-standalone.properties

/var/folders/kr/fw22kvxs5dvgvll58g6bmmcr0000gn/T/confluent.gAnSGrw9/connect/connect.properties

/var/folders/kr/fw22kvxs5dvgvll58g6bmmcr0000gn/T/confluent.gAnSGrw9/connect/connect.properties

Completed

http://localhost:9021/

