Dessert Deity
A Recipe for Splunk, Raspberry Pi, Kali, Wi-Fi

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This idea was born out of a conversation with DPS Co-worker:

- I wish there was a way to alert when someone leaves work

So naturally we came up with an idea that centered around Splunk. This was my take.
<table>
<thead>
<tr>
<th>Sources of Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>A little bit of column A, a little bit of column B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Log on and Log Off events</td>
</tr>
<tr>
<td>▶ Successful email access</td>
</tr>
<tr>
<td>▶ Web Portal activity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Networking Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ DHCP leases</td>
</tr>
<tr>
<td>▶ Static IP traffic</td>
</tr>
<tr>
<td>▶ DNS queries, or firewall sessions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Timecard Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Clocking in</td>
</tr>
<tr>
<td>▶ Clocking out</td>
</tr>
<tr>
<td>▶ I’m not even supposed to be working today</td>
</tr>
</tbody>
</table>
Wi-fi And Your Data Plan

- While Data plans are common, so are Wireless hotspots

- From airports, and coffee shops, to libraries, and even the zoo

- Wi-Fi is a fire and forget technology to the customer. Enable once, and it’ll likely stay enabled. It makes it easier to connect to hot spots, at work and home, and sometimes it’ll even inform you when a wireless signal is available.
The recipe isn’t new, but we’ve thrown in a couple of twists.

- Image 1 part Kali Linux for ARM onto a MicroSD
- Fully bake into a Raspberry Pi
- Season properly with Scripts
- Serve with Universal Forwarder
### Raw Data

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
|              | <client-manuf>Raspberry Pi Foundation</client-manuf>  
|              | <type>Probe Request</type>  
|              | <max-rate>54.000000</max-rate>  
|              | <channel>5</channel>  
|              | <maxseenrate>1.000000</maxseenrate>  
|              | <carrier>IEEE 802.11b+</carrier>  
|              | <encoding>CCK</encoding> |
Time Series Results

Busiest Hour Today: 7
Busiest Hour over 7 Days: 17
Busiest Minute Today: 08:09
Busiest Minute over 7 Days: 11/30/2016 16:02

Day by Day

- Saturday
- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Event Time:
- Sat Nov 26 2016
- Mon Nov 28
- Wed Nov 30
- Fri Dec 2

_times
<table>
<thead>
<tr>
<th>User</th>
<th>Device MAC Address</th>
<th>Device Type</th>
<th>Device Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60:92:3n:12:r9:29</td>
<td>Apple, Inc</td>
<td>Cretaceous Cell</td>
</tr>
</tbody>
</table>

First Appearance: Mon Jul 31 08:02:52 2017  
Last Appearance: Mon Jul 31 12:58:31 2017

Device Readings dBm

```
<table>
<thead>
<tr>
<th>Time</th>
<th>dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM Mon Jul 31 2017</td>
<td></td>
</tr>
<tr>
<td>9:00 AM Mon Jul 31 2017</td>
<td></td>
</tr>
<tr>
<td>10:00 AM Mon Jul 31 2017</td>
<td></td>
</tr>
<tr>
<td>11:00 AM Mon Jul 31 2017</td>
<td></td>
</tr>
<tr>
<td>12:00 PM Mon Jul 31 2017</td>
<td></td>
</tr>
</tbody>
</table>
```
An Unusual Source Of Information
Mobile Devices and Wi-Fi

- Am I connected to a wireless network?
  - Preferred network 1, are you there?
  - Preferred network 2, are you there?
  - Preferred network 9, are you there?
  - Is anybody listening to me?
SSID Results

List of SSIDs from a single, well traveled device.

- other (8)
- destinychristianchurch.com
- TasteBuds
- Sanders-guest
- Linksys08430-guest
- LaQuinta
- ESP_994ADD
- ESP_99883D
- BMC-Guest
- BrunswickZoneXL
- FBWarner
SSID Results

- tmph-meeting
- tidepool_cottage
- tidepool-alt
- slcairport.wifi
- randomperson06
- ppc_wlan
- nybc-d14
- markguest
- library2-free-wifi
- library-staff-wifi
- leap4lache
- jye-g8fsnheonxbnt
- iPhone
- 2WIRE989
- 8McDonalds Free WiFi
- Aria D59629
- Aviano Guest
- BestBuy
- C6016B
- Chick-fil-A Wi-Fi
- CoxWiFi
- Incognita
- OpenSCCWifi
- SouthwestWiFi
- TURTLE BAY
- attwifi
Objectives

- See how the system operates while driving
- Survey the neighborhood security posture (WPA vs WEP)
- Try it out on the freeway
- Don’t look suspicious
“PSA: Please do not Splunk and Drive”
Wireless Wanderer

Encryption Stats

- 450 Unique access point MAC addresses
- 80%+ use WPA based encryption
- 16% use no security at all
- 0.25% use WEP…
- That’s 1 WEP signal in 10 minutes of driving
<table>
<thead>
<tr>
<th>ssid</th>
<th>encryption</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP-Print-6E-Officejet Pro 8600</td>
<td>None</td>
</tr>
<tr>
<td>HP-Print-D6-ENVEY 5530 series</td>
<td>None</td>
</tr>
<tr>
<td>HP-Print-4A-ENVEY 4500 series</td>
<td>None</td>
</tr>
<tr>
<td>HP-Print-08-Officejet 4630</td>
<td>WPA+PSK</td>
</tr>
<tr>
<td></td>
<td>WPA+AES-CCM</td>
</tr>
<tr>
<td>DIRECT-EC-HP OfficeJet 4650</td>
<td>WPA+PSK</td>
</tr>
<tr>
<td></td>
<td>WPA+AES-CCM</td>
</tr>
<tr>
<td>HP-Print-99-ENVEY 4500 series</td>
<td>WPA+PSK</td>
</tr>
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</table>
Possible Applications

- Municipalities measuring live reactions to road closures
- Live custom heat maps showing non-joined but still present mobile devices
- Vector and velocity of an anonymous device between two probes
- Measuring the effectiveness of a physical advertisement campaign
- Evaluation of security education on protecting mobile devices outside of the corporate environment
- Getting to know your employees, customers, and the habits of those in your general area
- Real Estate advertisement evaluation: How many people are driving by, and how many actually see the property?
- Red team activities, specifically social engineering
Thank You!
And don’t forget about the search party!

- Documentation/Links

- Contact Info
  - Ryan.Adler@defpoint.com
  - Or just talk to me. I’ll be wandering around .conf17 too!
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