Towards a Zero Delay Supply Chain

CONNECTED FREIGHT
Towards a Zero Delay Supply Chain

Jim Sauerwein

Honeywell
THE POWER OF CONNECTED
Why Visibility is so Important

- **30%** of all shipments are damaged or delayed
- **30%** of all perishable goods don’t reach end destination
- **$60B** economic value was lost due to theft
- **1 in 5K** shipments travelling < 300 miles “victimized”
- **1 in 10K** shipments travelling >300 miles “victimized”

Where are my goods? What condition are they in? Are they secure?

Source: Jabil SCM report - April 2015
System Architecture

Orchestration Layer

Gateway

Data

Tags

REST/HTTPS

Command Control Center
(Honeywell White labeled Interface or DIY)

Host systems
(SAP, Oracle, etc...)

Tags
Logical Architecture
Anatomy of a smart tag

Sensing critical parameters on the Edge
Wireless Sensor Network

Dynamic Network optimized for reliability and power management
WSN In action

Network design minimizes balancing requirements

Beacon RX  Data TX from each client
Data flow

- The gateway understands a series of XML messages formatted as Remote Markup Language (RML).
- RML is an XML schema developed by Honeywell to describe the source and destination of a message, as well as the verbs (actions) and nouns (properties) of a message.
- An RML message can take the form of either a “Command” or a “Notification”.
- The gateway accepts commands and sends notifications.
- Commands will only be received by the gateway while it is connected to the orchestration layer, however, the gateway may send a notification at any time.
Command Control: Near Real-Time View of Your Goods

**SHIPPER ID:** Lynwood_Suite43_E2E

**TRANSPORT COMPANY NAME:** DHL

**RECEIVER:** Honeywell

**DESTINATION:** Hampton

**ORIGIN:** Hampton

**ANTICIPATED DELIVERY WINDOW:** 2017-05-01 18:00:00 - 2017-05-01 18:20:00

**REPORTING FREQUENCY:** 5 (mins)

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**Gateway status:** Powered On (LED on NFC button blinks green 3 times upon pressing the power button once)

**Tag status:** Powered On and functional (See 2 quick green flashes every 30/60 secs)

**Additional comments:**

**Rating (0-5 stars):** 0 stars

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**TEMPERATURE (0 °C - 30 °C), HUMIDITY (0 - 100%), SHOCK (0 - 1000), TILT (50), LIGHT (0 - 1000)**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>TIME/DATE</th>
<th>COMMENT</th>
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<tbody>
<tr>
<td>🚛</td>
<td>2017-05-01 14:39:40</td>
<td>Temperature breach on Pallet: 17030D191AE @ 0.0</td>
</tr>
<tr>
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<td>Temperature breach on Pallet: 17010D0F0E @ 0.0</td>
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**GTW HEALTH**

- **Battery:** 80%
- **Tag ID:** 336B
- **Battery:** 2670.0
- **Tag ID:** 3149
- **Battery:** 2781.0

**Pallet 17030D191AE has highest breach count of 349 and breach duration of 1083 mins:**

- **High:** 55.0 @ 1.9 hr

**Pallet 17010D0F0E has highest breach count of 2 and breach duration of 1713:**

- **High:** 1713 @ 5.1 min

**Refresh**