The Internet of Things for Healthcare

Tuesday, March 1, 2016
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Conflict of Interest

Eric Miller, Ascension Health
Has no real or apparent conflicts of interest to report.

Paul Unbehagen, Avaya
Salaried employee of Avaya.
Agenda

• Learning Objectives / Value of Health Steps
• Escalating Risks of Healthcare IoT’s
• The Speed vs. Security Tradeoff
• A Solution Path
Learning Objectives

• Discuss ways to classify your “IoHT” devices organization wide
• Determine the importance of risk models to device classifications
• Explain how to employ automatic secure segmentation
• Discuss integrated inventory management
• Describe a plan for implementation
Benefits for the Value of Health IT

The value steps impacted are:
- Savings
- Satisfaction
- Electronic Secure Data
Estimated Number of Installed IoT Devices by Sector

Source: BI Intelligence Estimates

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Internet of Things for Healthcare

- Safety
- Regulations
- Revenue
- Security
- Management
Speed

Security
A Solution Path

1. Classify your “IoHT” devices organization wide
2. Apply risk models to device classifications
3. Employ automatic secure segmentation
4. Evaluate and employ integrated inventory management
5. Prepare a plan for implementation
Classify Your Healthcare IoT’s
Inventory-Discovery Tools

Open Source
• NMAP
• Netdisco
• GLPi

Commercial
• Solarwinds
• Infoblox
• ServiceNow
Apply Risk Models

Likelihood

Low

High

Consequences

Low

High

Low
## Major Technology Eras

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<thead>
<tr>
<th>Era</th>
<th>Personal Computer</th>
<th>Business Applications</th>
<th>Global Networks</th>
<th>Personal Mobility</th>
<th>Cloud</th>
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### Network Requirements:

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<tr>
<td>File sharing and broadcast</td>
<td>L2 Security</td>
<td>Global connections</td>
<td>L3 security</td>
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<tr>
<td>PC moves, adds, &amp; changes</td>
<td>L3 segmentation</td>
<td>Application Optimization</td>
<td>Network moves, adds, and changes</td>
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### Network Delivery:

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<td>&lt; Ethernet</td>
<td>OSPF</td>
<td>VLAN's</td>
<td>MPLS / VRF's</td>
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<td>Fabrics</td>
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The Power of an End-to-End Fabric

- Automatic Core Provisioning
- Stealth Network Profile
- Native Scalable Multicast
- Active-Active Recovery
- Native L3 Multi-Tenancy
- Auto-Attach
- IP Extension
- From 4-6 Protocols to 1
- End-to-End Fabric & SDN
The Principles of Automation

• Open
• Simplified
• Programmable
The Power of Segmentation

Records   Guest   Imaging   PCI
What IP Scanning Tools See...
Open Networking Adapter

- Open vSwitch
- OpenDaylight
- OpenFlow
- OVSDB
- IEEE Protocol: 802.1Qcj
The Power of Auto-Segmentation

Isolated Imaging Network

Filtering

Imaging Server
How It Works
X-Ray
Ventilator
Ultra Sound
Glucose Meter
Badge Readers
Cardiac Monitor
MD Laptop
Surveillance Cameras
HVAC Systems
Hyperbaric Chamber
Dialysis
MRI
RN Tablet
Evaluate Inventory Models

- Safety
- Positive Device Identification
- On / Off Boarding
- Real-time Network Location
- Open Application Program Interface
- Profiling / Grouping
Prepare Your Plan

Current State
- Inventory
- Risk Profiles

Risk Mitigation
- Eliminate Risk
- Reduce Risk

Future State
- On-boarding
- Audit
- Maintenance
- Off-boarding

Progressive Risk Reduction
A Summary of How Benefits Were Realized for the Value of Health IT

• Savings:
  • 30% capital replacement savings
  • 60% maintenance reduction

• Satisfaction
  • Reduced request fulfillment time
  • Improved reliability

• Electronic Secure Data
  • Method to quantify risk
  • Process to reduce risk
Questions

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