

Building IoT Applications ++

Adrian Hornsby, Cloud Architecture Evangelist @ AWS Twitter: @adhorn





4 September 1882

The Pearl Street Generating Station



4 September 1882

The Pearl Street Generating Station



The lightbulb was a product of networked innovations, all linked together to create the magic of electric light.





How would you reinvent the lightbulb today?





http://bit.ly/adhornlightbulb









Leveraging the Cloud



Fast Prototyping & Building



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Why IoT? Data for Competitive Advantage



- Customer segmentation
- Marketing spend optimization
- Financial modeling & forecasting
- Ad targeting & real-time bidding
- Clickstream analysis
- Fraud detection
- Security threat detection



AWS Blog

AWS IoT - Cloud Services for Connected Devices

by Jeff Barr | on 08 OCT 2015 | in Amazon Internet Of Things, AWS Re:Invent | Permalink | Demonstration Comments

Have you heard about the Internet of Things (IoT)? Although critics sometimes dismiss it as nothing more than "put a chip in it," I believe that the concept builds upon some long-term technology trends and that there's something really interesting and valuable going on.

To me, the most relevant trends are the decreasing cost of mass-produced compute power, the widespread availability of IP connectivity, and the ease with which large amounts of information can be distilled into intelligence using any number of big data tools and techniques:

 Mass-produced compute power means that it is possible to crank out powerful processors that consume modest amounts of power, occupy very little space, and cost very little. These attributes allow the processors to be unobtrusively embedded in devices of all shapes and sizes.

- Widespread IP connectivity (wired or wireless) lets these processors talk to each other and to the cloud.
 While this connectivity is fairly widespread, it is definitely not ubiquitous.
- Big data allows us to make sense of the information measured, observed, or collected, by the processors running in these devices.

We could also add advances in battery & sensor technology to the list of enabling technologies for the Internet of Things. Before too long, factory floors, vehicles, health care systems, household appliances, and much more will become connected "things." Two good introductory posts on the topic are 20 Real World Problems Solved by IoT and Smart IoT: IoT as a Human Agent, Human Extension, and Human Complement. My friend Sudha Jamthe has also written on the topic; her book IoT Disruptions focuses on new jobs and careers that will come about as IoT becomes more common.





https://aws.amazon.com/solutions/case-studies/telenor-connexio

Telenor Connexion Case Study

How Telenor Connexion Boosts IoT Innovation, Cuts Development Time in Half Using AWS



Using AWS, our ARTS platform took just four and a half months to launch and achieved a return on investment in six months. It would have taken at least double the time if we'd run it as an in-house project.

Anders Bresell

Head of Technology Development



PHILIPS

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https://aws.amazon.com/solutions/case-studies/philips/



And many more ...





AWS IoT: Key features

Registry

Establishes an identity for devices and manages metadata such as the devices' attributes and capabilities

Shadows

Apps and devices can access "RESTful" Shadow (Thing's State) that is in sync with the device

Rules and Actions

Match patterns and take actions to send data to other AWS services or republish



Registry

AWS IoT: Key features

Multi-protocol Message Gateway Millions of devices and apps can connect over MQTT or HTTP or WebSockets.

Elastic Pub Sub Broker Go from 1 to 1-billion long-lived connections with zero provisioning

Secure by Default Connect securely via X509 Certs and TLS v1.2 Client Mutual Auth





AWS IoT Platform





Typical use-case?



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http://bit.ly/adhorncolorcube







Some data will never reach the cloud





Medical equipment



Industrial machinery



Extreme environments



Law of physics











AWS Greengrass

Intelligence at the edge





Managing a fleet of trucks helps mining company save millions

2

intel



AWS SERVICES

APPLICATIONS

- Limited connectivity requires local storage and processing
- Greengrass-enabled Intel gateways pre-process sensor data on the trucks
- Road roughness models help improve asset utilization & increase worker safety

RioTinto

So what's next?







AWS Greengrass ML Inference

(Preview Today)

Run Machine Learning at the edge



Build and train models in the cloud



Use AWS Greengrass console to transfer models to your devices



Inference on the device



Devices take action quickly – even when disconnected



NEL

Build in the cloud, deploy at the edge





Model Training in the Cloud

Inference at the Edge with AWS DeepLens



Thank you!

Questions?

