

Overview of mbed Device Connector

ARM

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ARM mbed Connect / Shenzhen, China
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Your hosts



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Who is making decisions
when it comes to IoT?







GET REMINDERS IN THE MOST UNIQUE WAY



Internet of Shit @internetofshit · Aug 8
2016 EVERYONE



2.1K



2.4K



HUGGIES TweetPee

The first diaper that tells mommy when it's time to change.

The number of babies who use TweetPee are growing.

Step to use TweetPee: 1. Attach TweetPee to the back of the diaper.

Step to use TweetPee: 2. TweetPee will vibrate when it's time to change.

Step to use TweetPee: 3. TweetPee will send a tweet to mommy's phone.

Step to use TweetPee: 4. Mommy can check the diaper status from her phone.

Problem
 Parents are busy and don't always know when their baby needs a change. And, if they don't know, they can't check on their baby's diaper.

Idea
 TweetPee is a diaper gadget that sends moms with "diaper status" information, such as when it's time to change, and allows moms to check on their baby's diaper.

Design
 Huggies wanted a small, cute and functional device. It's small enough to fit on any diaper and it's designed for use in the car or on the go. Because we know that moms are always on the go, we wanted to make a device that is easy to use and that will last for a long time.

Results
 Huggies is proud that their TweetPee is now on the shelves and available for sale. There are excited at the possibility that one day every diaper will be able to speak for itself. And TweetPee is the one who says "TweetPee".

The TweetPee. Because actually checking a diaper is harder than checking Twitter.

12 notes

⋮ ↻ ❤

Real life example - Telenor

- ★ Big telecom company
- ★ Owns 4,000 buildings in Norway
- ★ Toilet cleaning schedule made by 'hand'



Realtime insight

Automatic planning

Less people needed

F



Internet of Things is
sensors + data intelligence

Plenty of services doing data intelligence

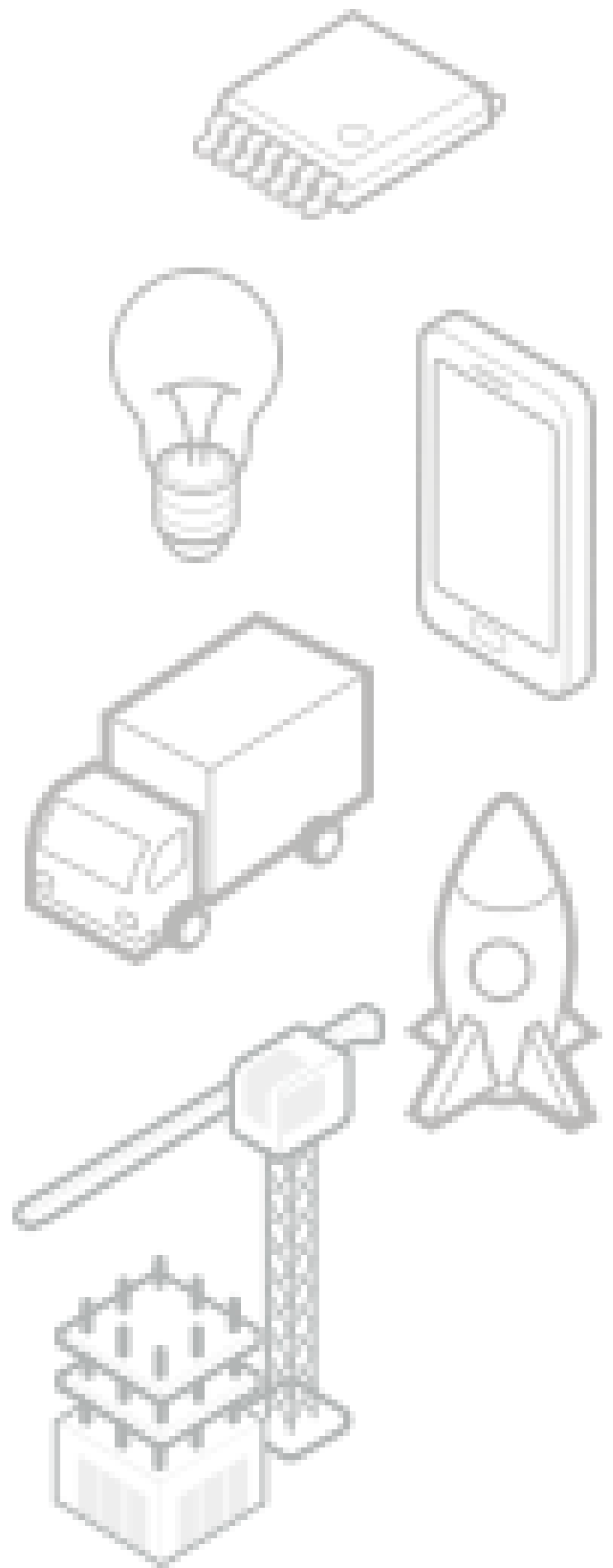
Generic cloud



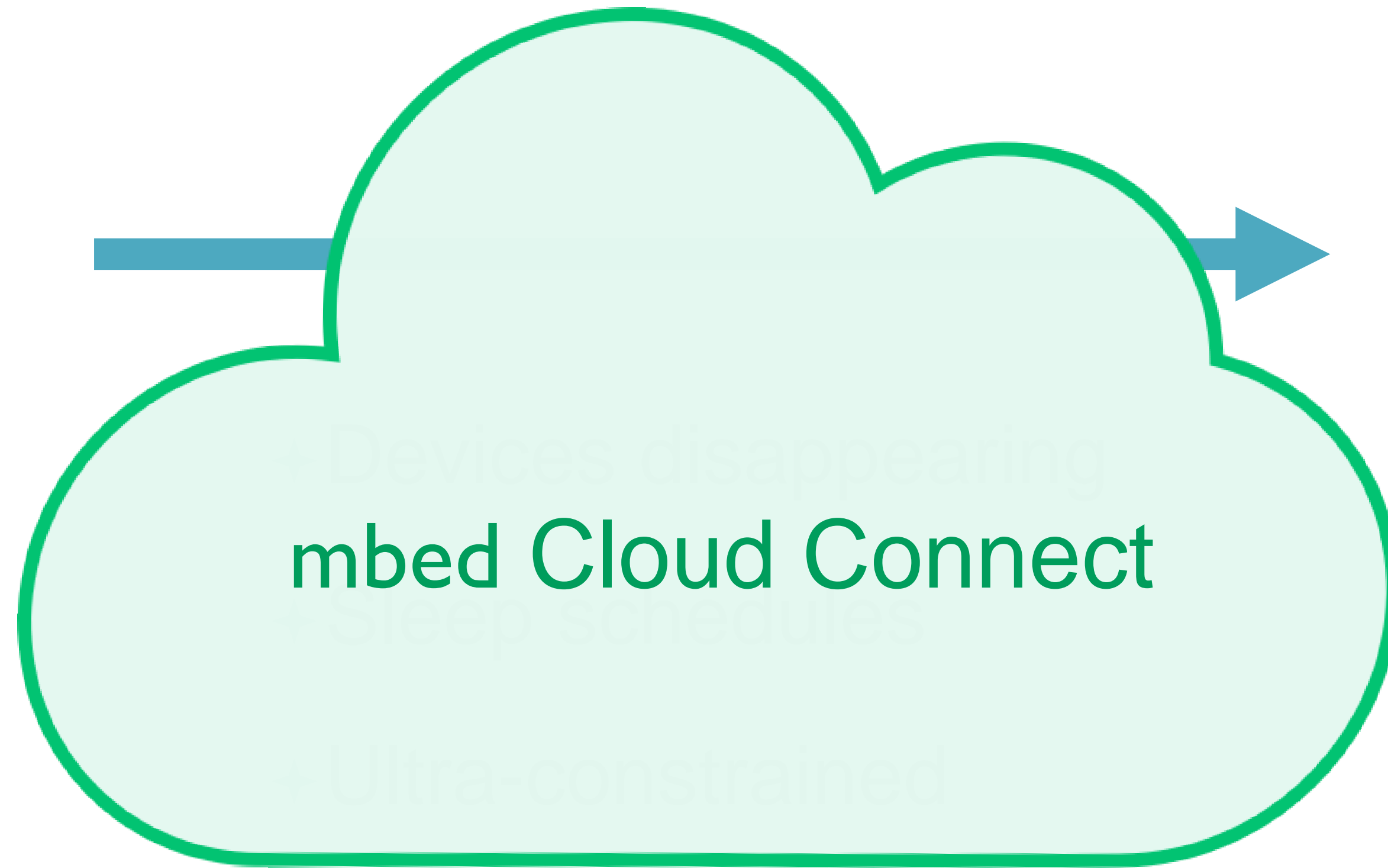
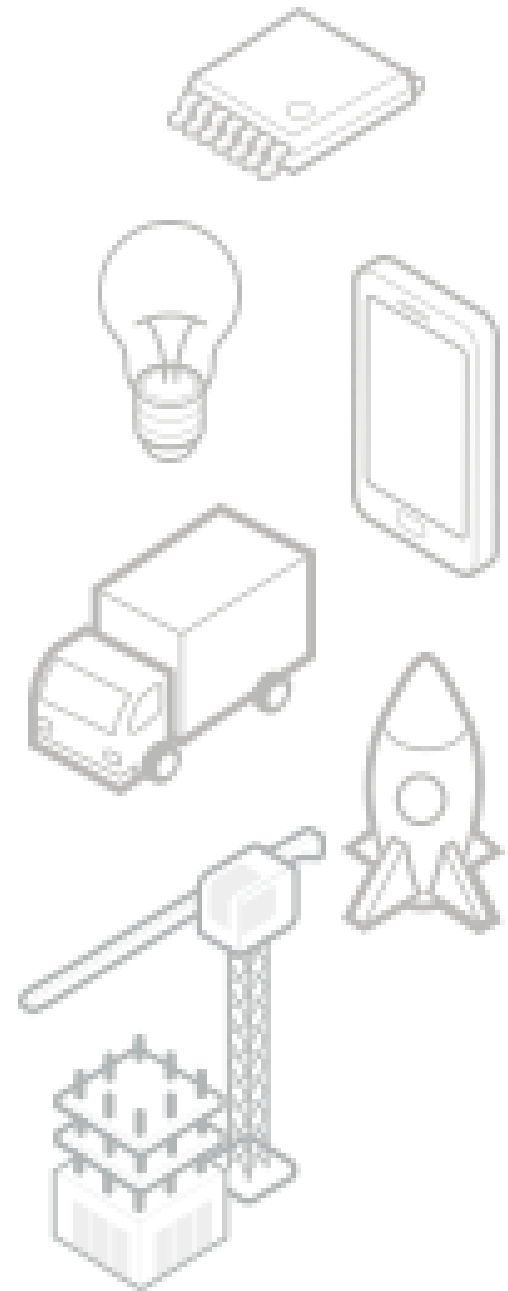
Application specific



Many connectivity methods



Many boring parts...

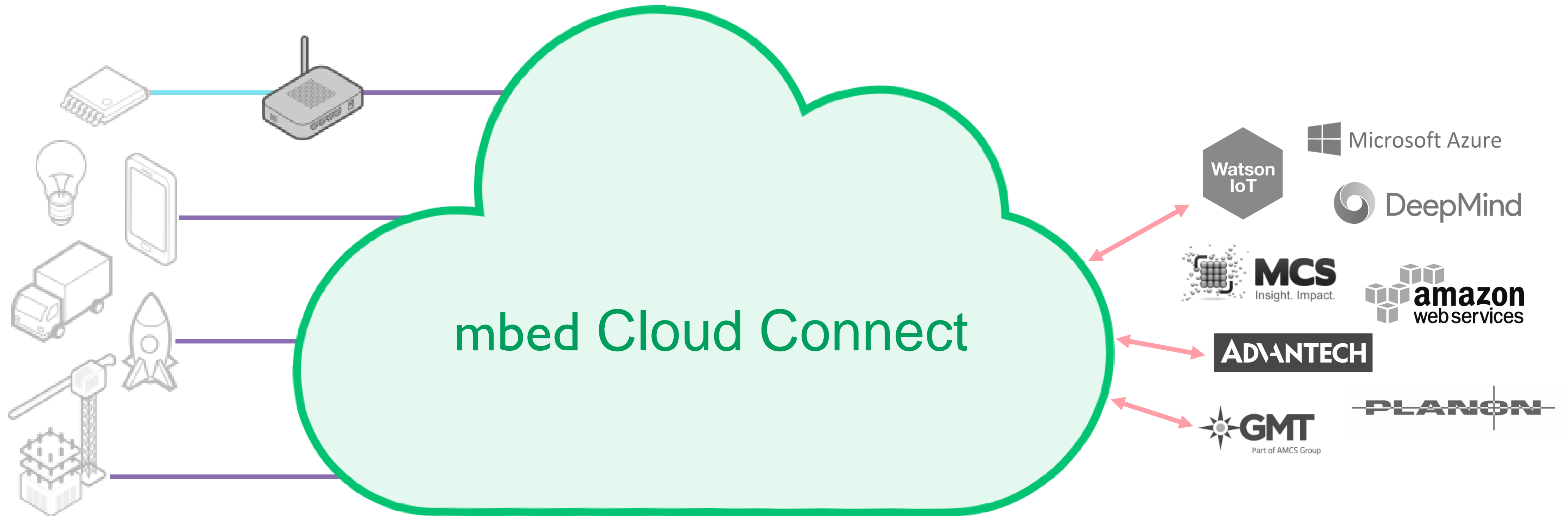




devices

✦ IP vs. non-IP



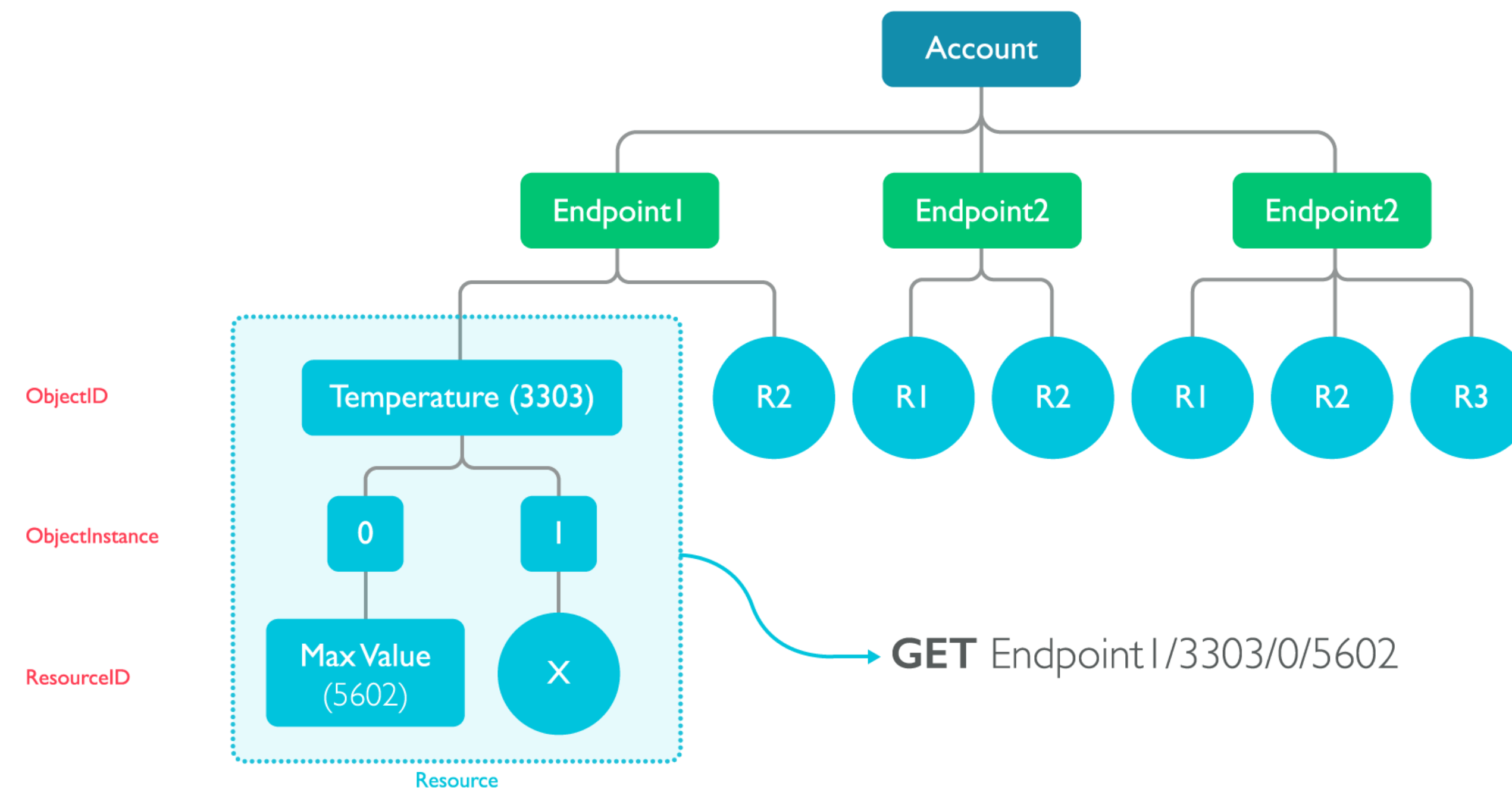
Handling connectivity



-  mbed Cloud Client
-  Proprietary protocol

Single way of talking to devices

- ✦ Regardless of connectivity method - IP or non-IP
- ✦ LWM2M abstraction for objects and resources



Communicating with a device

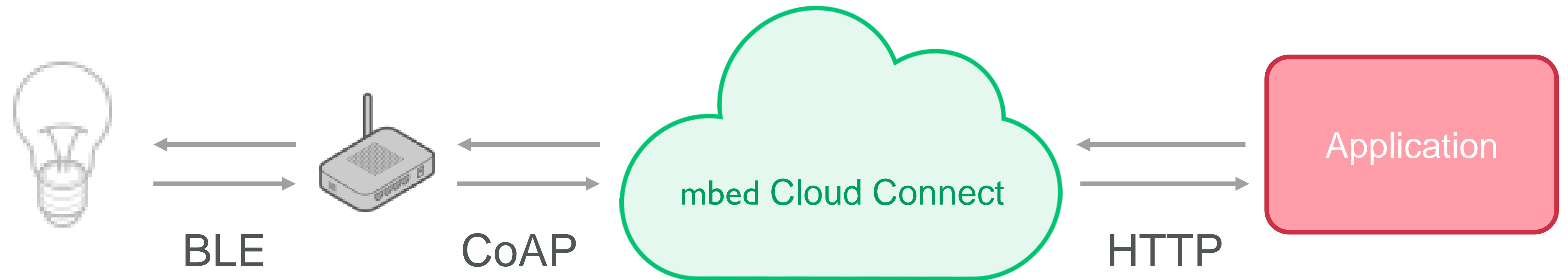
Device running mbed Client



- 1 - Application makes HTTPS REST call - GET /light/intensity
- 2 - mbed Cloud sends CoAP request to device
- 3 - Asynchronously device sends state over CoAP
- 4 - Response is delivered to application (asynchronously)

Communicating with a device

Ultra-constrained device with BLE



Characteristics

- ✦ Calls to mbed Cloud Connect always yield a call to the device
 - ✦ Unless...
- ✦ All APIs are asynchronous - devices can be asleep
- ✦ Secured from cloud to edge-node:
 - ✦ To the device with mbed Client
 - ✦ Gateway responsible for last mile

- ✦ Not a data store!



From Cloud Connect to application

- ✦ Rely on notifications - minimize traffic to device
- ✦ Notifications can be delivered to any URL

- ✦ Simple use case:
 - ✦ Forward data straight into application cloud
- ✦ Advanced use case:
 - ✦ Device management APIs
 - ✦ Manage devices straight from application cloud

Managing devices through Watson IoT

IBM Watson IoT Platform

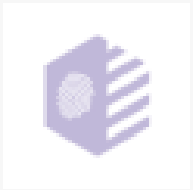


QUICKSTART SERVICE STATUS DOCUMENTATION BLOG

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+ Add Extension

Extensions

Extensions are optional service integrations which can be added to your Watson IoT Platform to provide additional functions or integrate with third-party services.

 <p>Single Sign On The Single Sign On (SSO) extension allows additional authentication options to be enabled. Status: Not Configured</p> <p>Setup</p>	 <p>Email The email extension configures options for the SendGrid and SMTP user invitation methods. Status: Not Configured</p> <p>Setup</p>	 <p>ARM mbed Connector This integration enables ARM mbed Connector devices to integrate with IBM's Watson IoT Platform and exchange messages bi-directionally. Status: Configured</p>
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Configure ARM mbed Connector

Cancel

This integration enables ARM mbed Connector devices to integrate with IBM's Watson IoT Platform and exchange messages bi-directionally. To enable this integration, you first need to create a [mbed Connector account here](#) and then provide the requested connection information to your Watson IoT configuration.

Managing devices through Watson IoT

IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG

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Devices

Browse | Diagnose | Action | Device Types | Manage Schemas

Refresh + Add Device

<input type="checkbox"/>	Device ID	Device Type	Class ID	Date Added	Location			
<i>Results 1-2 of 2</i>								
<input type="checkbox"/>	cc69e7c5-c24f-43cf-8365-8d23bb01c707	mbed-endpoint	Device	Oct 12, 2016 1:08:39 PM				
<input type="checkbox"/>	e11cccde-33e8-4428-960a-4d7994dad082	parking-meter	Device	Oct 12, 2016 12:54:07 PM				



Bridges

Bridges

- ✦ Open source bindings to application clouds running in Docker
- ✦ Best practices:
 - ✦ Watchdog, isolation, logging
- ✦ For Azure, IBM, AWS, generic MQTT
- ✦ Two-way communication
 - ✦ E.g. node-red on IBM Watson
- ✦ [https://github.com/armmbed/?utf8=✓ &query=bridge](https://github.com/armmbed/?utf8=✓&query=bridge)

Don't need the full bridge?

- ✦ Quick bindings using Python, node.js
APIs
- ✦ Use own datastore, or external cloud
- ✦ Binding to Telit Cloud written in 1.5hr



Quickly build web applications?

✦ *Konekuta*

- ✦ Highly-opiniated node.js framework
- ✦ Internally developed for demo's and workshops
- ✦ Combining best practices:
 - ✦ State and UI syncing, caching device data, error handling...
- ✦ <https://github.com/ARMmbed/konekuta>



Demo time

Thank you!

<http://connector.mbed.com>

