

DESIGN AND DEPLOY INTELLIGENT, LOW-POWER AND LOW-COST WIRELESS NETWORKS

NXP SEMICONDUCTORS & THINGSTREAM

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PUBLIC



THINGSTREAM

Learn how to develop & deploy Low Power, Low Cost Wireless Sensor Networks with LPC MCUs & Thingstream technologies; a 2 part Webinar Series

Presenters

Part I: Building intelligent, low power, connected “things” at a low cost. May 10th 2018

Develop and deploy intelligent, low power, connected networks globally, while removing regional wireless standard barriers - all at a low cost. We'll share market trends, connectivity challenges and how to securely connect to the edge.

Part II: How to create, manage & deploy low power IoT devices, 29th May

Manage, monitor and control wireless networks via a simple cloud software platform - bringing value-added services to end customers. We'll dive deeper into the IoT device control and deployment, addressing technical requirements and include demos as we explore the platforms and tools available to help reduce the complexity of IoT deployments.



Neil Hamilton
VP Business Development
Thingstream

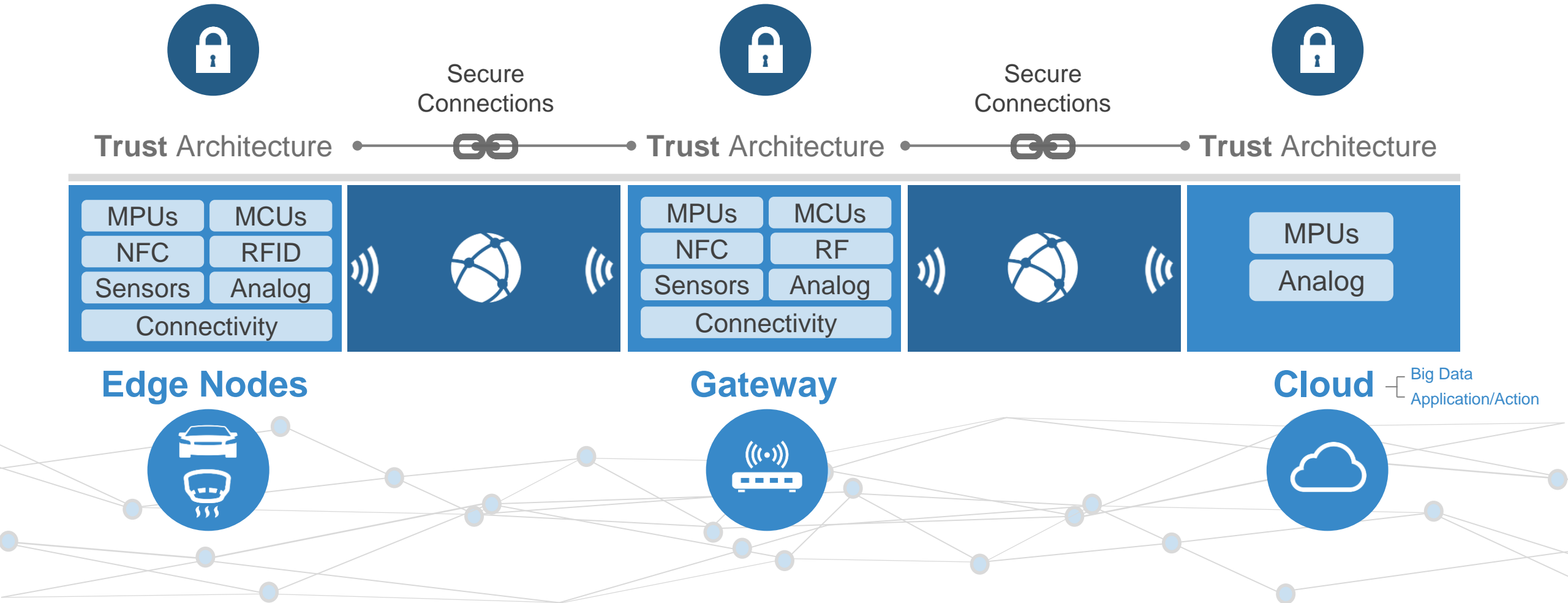


Bruce Jackson
Chief Technology Officer
Thingstream



Gordon Padkin
Regional Marketing
NXP Semiconductors

NXP is focused to deliver secure connections for a smarter world



NXP



Customer Applications

Thingstream Connectivity Stack

NXP MCUXpresso SDK



Cloud Infrastructure NXP & Partner Cloud Software Platforms

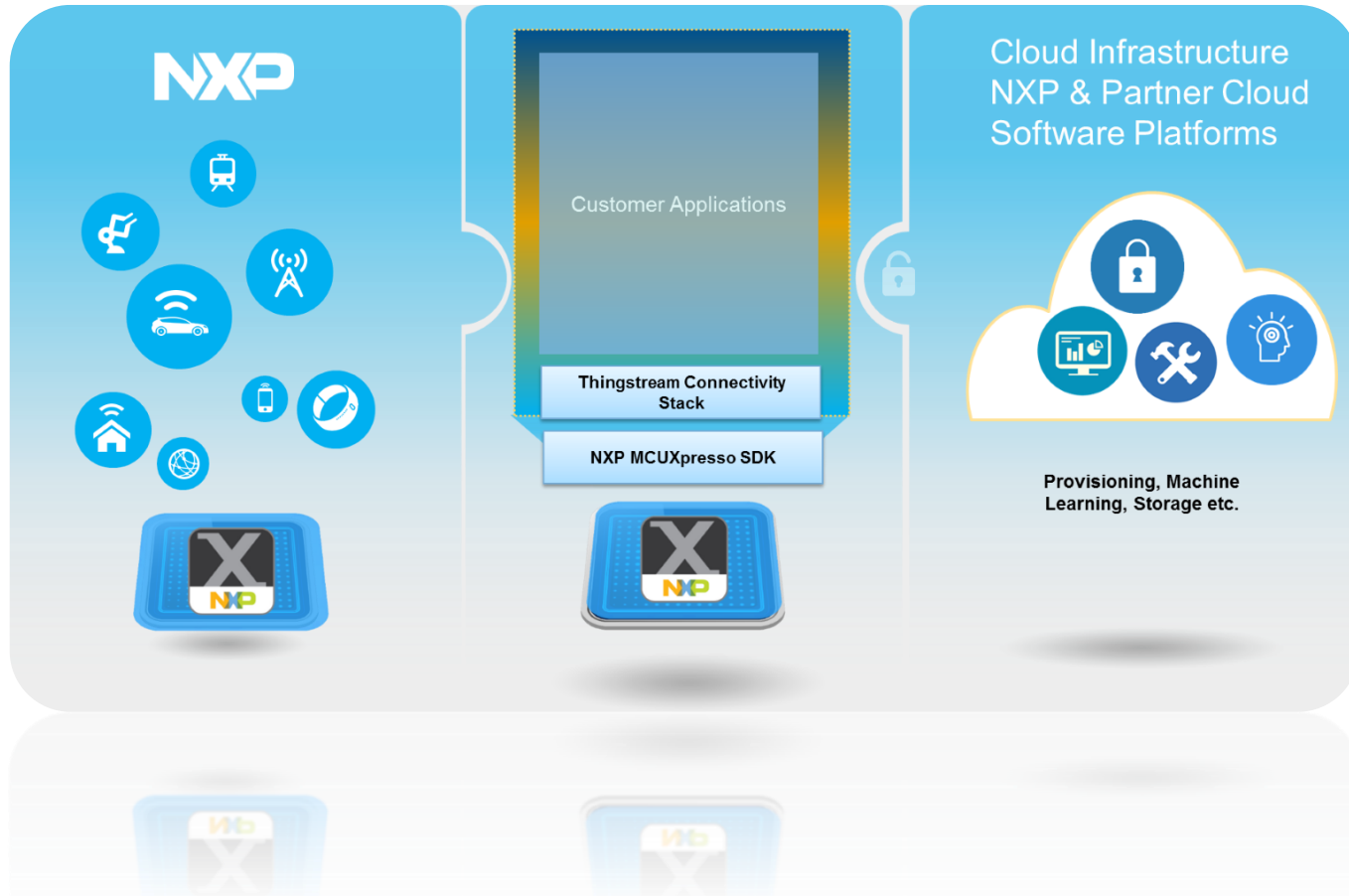


Provisioning, Machine Learning, Storage etc.



THINGSTREAM

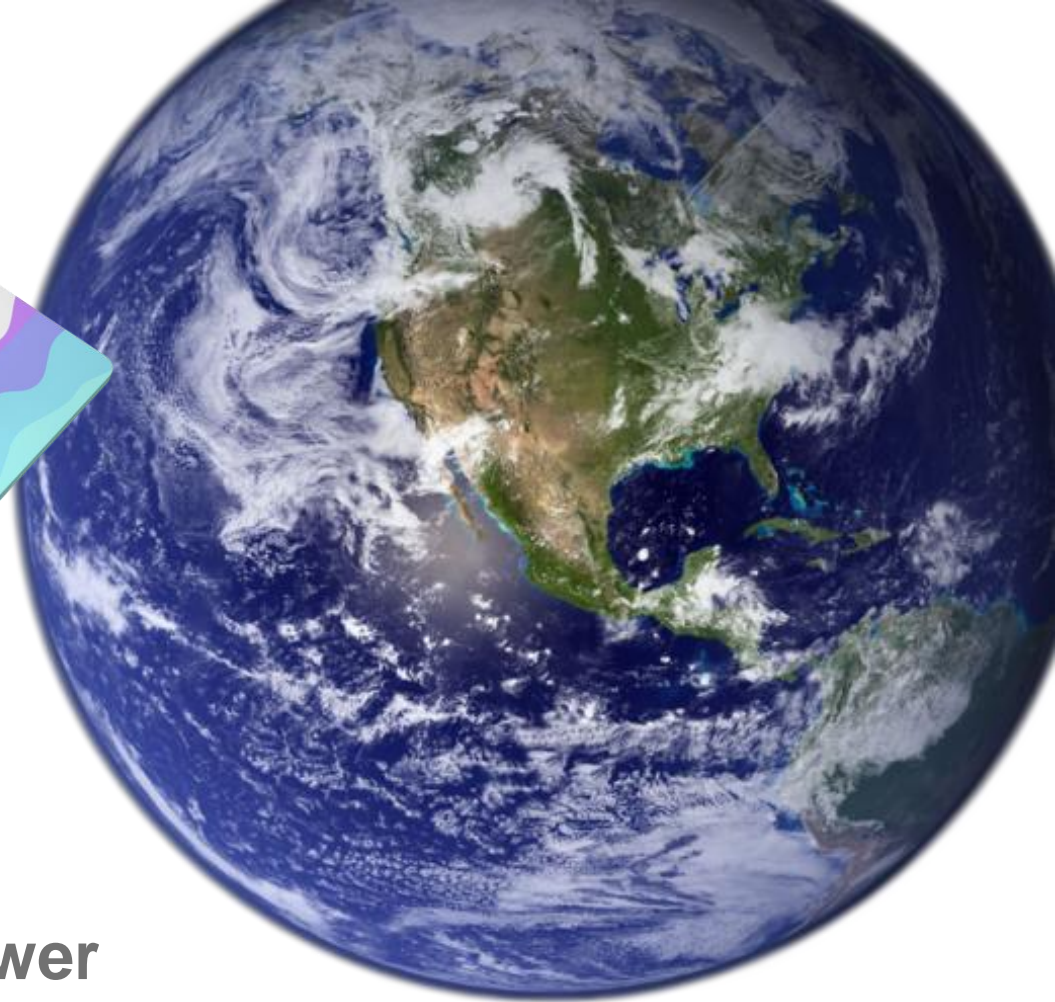
Develop & Connect Low Power “Things” with the Cloud



- Leverage a truly secure, global network deployed in 190 countries
- Made easy by Thingstream Client Application based MQTT
- Build on top of NXP Entry level, ultra low power Microcontrollers & MCUXpresso

Thingstream Recap

- **Connect anywhere**
 - 190 countries, deep coverage
- **Programmable control**
 - MQTT + NXP MCU Xpresso
- **Secure**
 - No cellular data = No IP
- **Low power**
 - MQTT-SN over USSD channel – low power
- **Low cost**
 - Low device BoM + low connectivity cost



**You're halfway there
when you have your
low power, long life
device...**

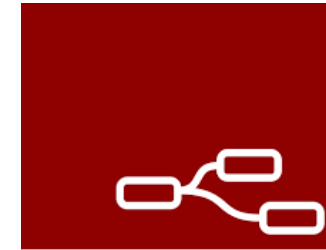
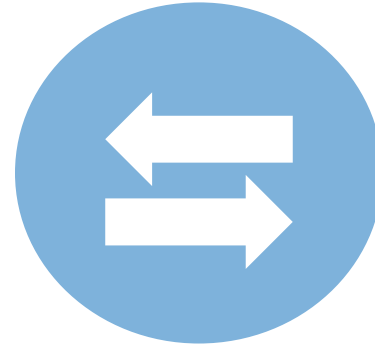
**...now it needs to be
connected to your
application**



Typical next step



MQTT Broker



Node-RED







THINGSTREAM



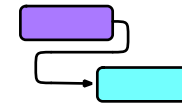
- **Global MQTT MVNO**

- Unique global MQTT SIM
- 627 networks, 190 countries
- Works over 2G/3G/LTE
- MQTT-SN over USSD protocol
- No cellular data needed
- Low power



- **Scalable resilient MQTT broker**

- Compliant with MQTT 3.1.1
- Scales to billions of messages
- Web UI for topic and device management
- Thingstream uses MQTT as the method to get data to and from devices



- **Application platform**

- Flow-based development environment
- Prototype to production
- Autoscaling runtime
- Version control & rollback

DEVELOPING A SIMPLE APPLICATION WITH MCUXPRESSO AND THINGSTREAM

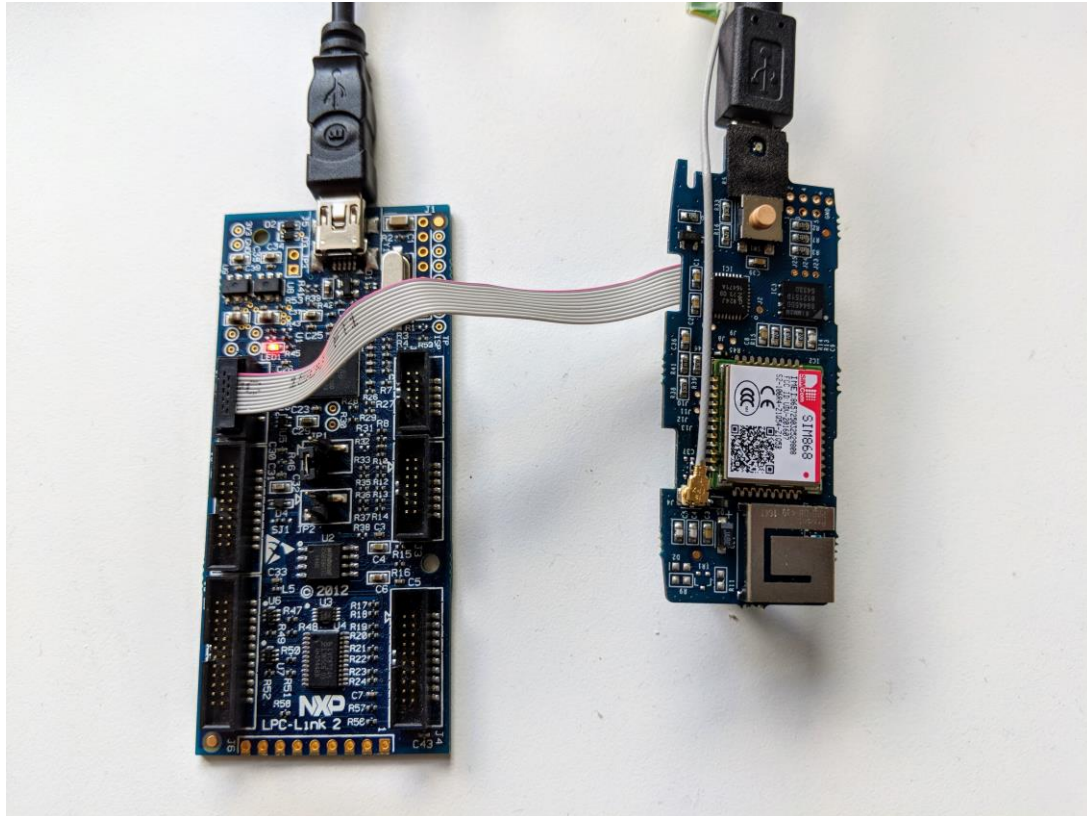


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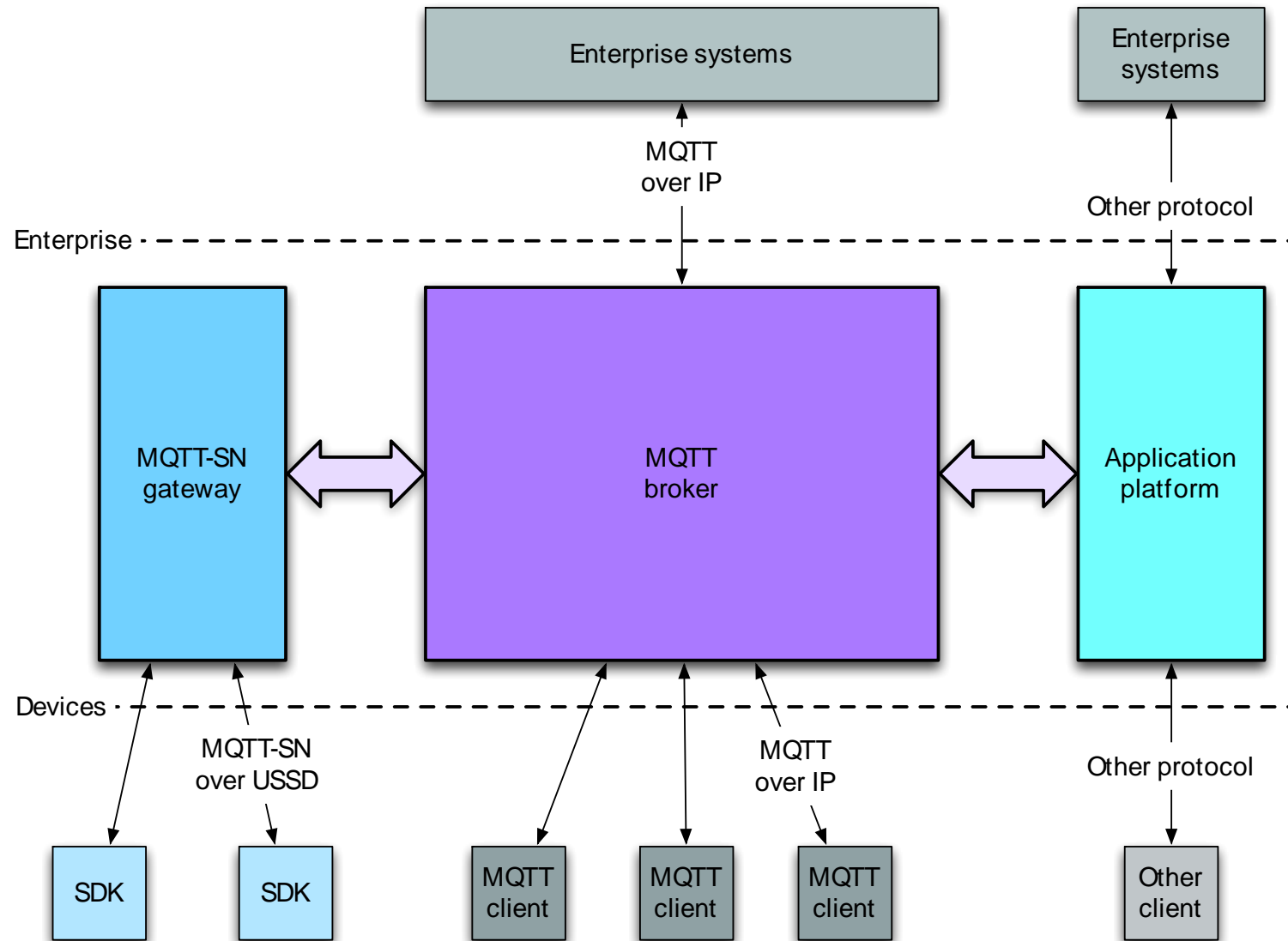
Development environment



- NXP LPC-Link2
- NXP MCUXpresso 10.0.0
- Thingstream button and SDK 1.13

- Thingstream web UI
- MQTT BOX (Chrome plugin)

Platform architecture



Key Links for more information / Q&A

NXP

- nxp.com/lpc
- nxp.com/kinetis

Thingstream

- <http://thingstream.io>



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**SECURE CONNECTIONS
FOR A SMARTER WORLD**


LPC800 – Entry-Level Microcontroller

8-bit Simplicity, learn more @ [nxp.com/lpc800](https://www.nxp.com/lpc800)

Easy to Use

- The **ARM® Cortex®-M0+** handles 32-bit data more efficiently than an 8-bit processor by requiring less code, memory and 30% less dynamic power
- **Low pin count** allows for easily sharing system-critical pins and enabling hand-solder during assembly
- **Power profile APIs** for simple runtime power optimization
- Leverage **Sample Code Bundles & MCUXpresso** to jump-start your design

Design Flexibility

- **Switch matrix** () enables you to easily assign peripherals to any pin, allowing you to scale-up package size as requirements change
- **State configurable timer (SCT)** generates virtually any timing or PWM function found on popular 8-bit MCUs without requiring MCU intervention
- **Pattern match engine (PME)** allows you to generate different interrupts based on pin inputs
- **Expanded family** will provide more memory and greater analog and peripheral integration



NXPs Kinetis L series

Scalable Ultra-Low-Power M0+ MCUs

Learn more @ [nxp.com/kinetis](https://www.nxp.com/kinetis)



Ultra Low High, Highly Integrated M0+ MCUs

Architected for power efficiency, the Kinetis L series takes advantage of ARM's ultra low power Cortex-M0+ processor and features peripherals that help you optimize power consumption. Kinetis L series provide ultra low dynamic consumption, ultra low static consumption, rich low power modes and innovative low power peripherals.



Offering more performance per mm2

Built on NXP leading technology, Kinetis L series provide rich package options from 8x8mm² 121XFBGA, 10x10mm² 100LQFP all the way down to world's smallest KL03 20WLCSP with 1.6x2mm² ultra small scale device.



Offering Broad Scalability and Integration

Built on the ARM Cortex-M0+ core, the Kinetis L series simplifies development with an upward migration path to Kinetis K and X series. With a comprehensive enablement bundle including low cost Tower System and Freedom Tools, Kinetis Design Studio IDE, Kinetis Software Development Kit, MQX RTOS and the ARM support ecosystem, development is super simple. Expanding on well-known features of the Kinetis platform with leading scalability, best-in-class integration with rich analog features and low-power connectivity, the Kinetis L series redefines entry-level.