OPEN SOURCE, IoT &
THE TELCO OPPORTUNITY
WITH RED HAT

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OPEN SOURCE, IoT & TELCO
A STRANGE COMBINATION?

OTT / Network Investment
Not seen as Service Innovator
Digital Transformation (NFV/SDN/Open Source/DevOps)
Identify New Revenues

Telco Context

Not Really...

IoT
Connectivity
Security
Applications
Data
Storage
Processing

Need to Innovate
How can Red Hat help?
TELCO INDUSTRY IS INVESTING
MUCH OF THIS IS ENABLED BY OPEN SOURCE

- Software Defined Networking (SDN)
- Network Functions Virtualization (NFV)
- 5G Networks + Cloud RAN + Mobile Edge Computing
- Video and Content Delivery Network Services
- IoT, M-to-M, Mobile Applications
TELCO INDUSTRY IS INVESTING IN IoT

ONLY INTERESTED IN CONNECTIVITY?

Lots of recent announcements of major Telco’s investing in the 3GPP LPWA technologies such as LTE-M and NB-IoT.
IoT ARCHITECTURE
THE THREE TIERS

IoT ARCHITECTURE & OPEN SOURCE

- Open source: no lock-in, community innovation,…
- 25+ open source projects under Eclipse IoT
- Kapua project launched by Eurotech & Red Hat
- Kura project positioned at the gateway level

Source: http://iot.eclipse.org/white-paper-iot-architectures
IoT ARCHITECTURE
DRIVING DATACENTER FUNCTION TO THE EDGE

- Business processing
- Reporting
- Long-term data analytics
- Data infrastructure
- Enterprise integration
- Software-defined storage

- Communications/messaging
- Data pre-processing
- Real-time data analytics
- Real-time actions/rules
- Software-defined storage
- Security

- Communications/messaging
- Data acquisition
IoT & NFV/SDN

- **Network Functions Virtualization**
  - Virtualization / Containerization e.g. Virtual Evolved Packet Core (vEPC)
  - Mobile Edge Computing e.g. distributed IaaS / PaaS
  - Network slicing

- **Software Defined Networking**
  - Security policies
  - Ability to create network slices
  - Bring in also public cloud provider networks into openstack tenant
  - Programmability of the networks for millions of devices
  - Shipping container securely through SDN
The NG-PoP in future networks

- Virtualized / containerized IoT service enablers
- Reducing latency
- Distributed storage
- Traffic optimization
- Enhanced security (SDN controlled PoP)

Source: Tahar MAMOUNI, Orange Labs, SDN & NFV Summit 2014, Nice, France
IoT & MOBILE EDGE COMPUTING

- Can become a major use case for Containerized VNFs
- Opens for new services and development models in different market verticals (e.g. Edge PaaS for some of the IoT gateway functionalities)
EXAMPLE: TELEFONICA SMART CITIES

- Valencia has selected Telefonica's Global Internet of Things (IoT) platform.

- Allowing citizens to consume real-time information shared by several city facilities like parking, and others, to make their lives easier.

- Platform runs on Red Hat OpenStack, leverages Red Hat Mobile Application Platform and the Red Hat JBoss Fuse solution for IoT to be the foundation for their Smart City project.
EXAMPLE OF PARTNERSHIP - EUROTECH

- Red Hat and Eurotech launch End-to-End, Fully Open Source IoT Cloud Platform Project: Eclipse Kapua
- Contributing, developing and testing code, collaborating with other contributors, and integrating existing open source projects that are integral to IoT solutions (e.g. Apache Camel, ActiveMQ, Drools, etc.)
KEY TAKE-AWAYS

- The IoT opportunity for Telco is real and beyond connectivity
- Telcos are investing today in Open Source, DevOps, NFV and SDN
- Telcos can leverage this investment to provide new IoT-related services
  - IoT application development platforms
  - IoT application hosting e.g. application hosting & data storage
  - IoT service enablers e.g. data analytics, business rules,...
  - IoT security e.g. SDN policy based security, network slicing...
- Evolution towards distributed IaaS (OpenStack) / PaaS (OpenShift) with functions moving to the network’s edge brings new challenges
- Red Hat is helping the Telcos on this IoT journey