70th ANNUAL
NECPUC SYMPOSIUM
There’s an App for That

IoT, 5G and Big Mobile Data from T-Mobile

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WE ARE THE UN-CARRIER
REAL, NATIONWIDE, MOBILE 5G
INTERNET OF THINGS

A CONNECTED WORLD OF ENDLESS POSSIBILITIES

“IoT has a total potential economic impact of $3.9 trillion to $11.1 trillion a year by 2025.”

—McKinsey – Unlocking the potential of the IOT.
Spectrum + Speed = New Class of Applications

Spectrum: Low Band, Mid-Band, High-Band – why all three are equally important...

Speed: 250MB’s + Burstable Speeds up to 1GB+ with fiber at each site...
## The Un-Carrier takes on IoT

### COMPLEX & CONFUSING

**PROHIBITIVE COSTS**
- Costly rate plans and billing plan management
- Multiple certifications complexity
- Multi-carrier and 4G module expenses

**LACKING CONTROL**
- Data threats and ownership
- Multi-carrier management
- Global roaming

**SHORTFALLS**
- Lack of secure or open standards
- Competing standards
- Access to sales and support resources
- 2G sunset

### THE UN-CARRIER APPROACH

**SIMPLE**
- Simple pricing: throughput and usage-based
- Low cost, wide area, and low power Cat1 to NB-IoT
- Industry standard roadmap, low cost modules

**OPEN**
- The most open and comprehensive developer offering
  Innovative partnerships
- Self-serve capabilities through the Hub

**INNOVATIVE**
- Clear 5G product path, Cat1 LTE today, NB LTE by 2018
- Leader in LTE rollout and penetration
- 5G Immersion and testing
IoT and 5G In Healthcare

5G Connected Smart Bandages To Monitor Wounds
The bandages are to use nano-sensors to detect wound conditions, relaying this and other patient data to doctors over 5G networks.

Patient Tracking Nano-Sensors
Sensors are used to track newborns and also alert families when their loved one is out of surgery.

Tele-Medicine and Real Time Care over 5G Networks
Physicians and Patients can have real time interactive care discussions via mobile networks; anywhere, anytime.
6.4B connected things will be in use worldwide in 2016, up 30% from 2015, and will reach 20.8 billion by 2020.
—Gartner (November 2015)

...The number of devices will more than double from the current level, with 40.9 billion forecasted for 2020. 75% of the growth between today and the end of the decade will come from non-hub devices: sensor nodes and accessories...
—ABI RESEARCH (August 2014)

...The application of this technology can reduce maintenance costs by up to 25%, cut unplanned outages by up to 50%, and extend the lives of machines by years...
—FORTUNE(JULY 2015)
T-Mobile’s LTE network is on par with Verizon

**Source: Opensignal**

**Q4 2016 LTE speeds as of Dec 2016. Source: Based on T-Mobile analysis of Ookla® Speedtest® results provided by Ookla.**
T-Mobile Un-Carrier for IoT

CONNECTIVITY

CERTIFICATION

MANAGEMENT
Connectivity
Flexible, simple, and transparent pricing

**ACCESS UNLIMITED**
Pay per use
- Global data coverage
- One simplified access fee
- Industry leading price plans
- Easy for everyone

**ACCESS PACK BUNDLE**
Disruptive bundled pricing
- Annual plan
- Cat 1 Module at 2G prices
- Unlimited data option
- Great for developers, mftr

**TWO options**

THE BEST PRICING FOR IOT Period.
Simple certification

“Safe for Network” certification path on T-Mobile gives you:

- Select from pre-certified modules to best fit your use case
- Fastest onboarding path with consolidated testing and lower testing costs
- Leverage third party vendor labs and self-testing
- Potential exceptions for devices already certified on ATT/VZ
- TMUS engineering support on certified devices to optimize your products

SAVE TIME. SAVE MONEY.
Open connectivity management platforms

**Netcracker**
Highly configurable, best for large customers and resellers

**Hub**
Self manageable through the web, fits most customer needs

**Twilio**
Supports developers and specialized requirements

### NETWORK CONNECTIVITY
- Public or Private Static IP capability to support partner specific M2M/IoT use cases
- Provide partner with eSIM (GSMA 3.1 compliant) directly through HUB GUI

### BILLING AND RATING
- Wholesale pooled scalable plans to share buckets of data
- Delayed billing to provide partners trial and/or test period use or other specific partner delayed billing use cases

### WEB PORTAL AND CUSTOMER SERVICE
- Integrated SIM stock management or easy SIM order fulfillment
- Direct GUI access for eSIM management

### REPORTING AND ALERTS
- Partner configurable alerting and notifications
In summary...

**Fastest**
growing and best network for LTE, period

**Easiest**
to do business with simple, transparent pricing

**Most innovative,**
we’re obsessed with making our network, your network