M2M on CDMA: Challenges and Opportunities

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Outlines

- The Era of Internet of Things
- M2M – The Future of Communications
- Overall M2M System Architecture
  - CDMA Network is “Readily Available” for M2M
- M2M Opportunities over CDMA
  - Example: Mobile Triage Service
- M2M Challenges over CDMA
- Time for Action
The Era of “Internet of Things”

- **M2M is known as machine-to-machine/man/mobile**
  - Communication involves one or more entities that do not necessarily need human interaction
  - Human unaware communications
- **From 6 billion people to 50 billion machines**
M2M - The Future of Communications

- **Incubation phase**
  - A few small M2M Apps in the existing network

- **Take-off phase**
  - With more M2M device/traffic, there is a need to update/ optimize the network for M2M applications.

- **Explosion phase**
  - M2M device/traffic becomes far beyond that of H2H
  - The network should be designed for M2M

Impact on H2H/H2M users

M2M object/traffic

We are here now
Messages from Huawei Management

• **From CEO – Mr. Ren, Zhengfei**
  - We foresee broad market development opportunities in mobile and home broadband networks, fixed mobile convergence, business operation support systems and smart devices.

• **From Chairman of the Board – Ms. Sun, Yafang**
  - New businesses, represented by the "Internet of Things", mobile broadband, cloud computing and home networks, will lead us into an exciting new decade.
  - As telecom markets become saturated, the telecom industry will evolve from connecting people to connecting machines.
Overall M2M System Architecture

Sensor Network (capillary)

Local Radio Accesses (ZigBee, WiFi, Proprietary, PAN, City Mesh)

Radio Access Network

Individual M2M module/Smartphones

3GPP2 RAN&CN

Network

M2M Relay (DAP, Local Gateway)

Service Gateway

M2M Service Platform

Packet core network

Landline

Service Network

Internet

M2M Server

3GPP2 RAN&CN
CDMA Network is “Available” for M2M

Source: 3GPP2 X50-20100913-032 (Qualcomm)
M2M Opportunities over CDMA

- Never take “One-Size Fits All” approach for M2M Apps.
- Choose the right applications and right model that CDMA (WAN) presents an edge over other accesses.
- Adopt Tiered Network Architecture for M2M
  - Leverage the features of different access in lower tier
- CDMA (WAN) Advantages:
  - Matured and worldwide deployed networks (ready to use)
  - Full mobility, roaming, flexible data-rate, reliable RAN
  - Network management and security mechanism available
  - Full global standard support
    - 3GPP2, TIA, IETF, OMA, ITU and others
- Need High-Value-Added Applications to kick-off M2M.
M2M Opportunities over CDMA (2)

- CDMA is a clear winner for Mobility required M2M Apps
- CDMA can work with other Access Technologies through Tiered Network Structure for Efficiency and Cost-Effectiveness
CDMA Serves Well for all M2M Systems
Example: Mobile Triage Service

Use **Tiered CDMA Network** structure to integrate multiple M2M Applications into a more valuable Service.

Medical Team is ready with pre-diagnosis and required resources to save lives.

- Transmit Patient’s Vital Signs, Medical Images, Medical History, through **CDMA Network Systems**
- Fetch Patient’s Medical History through **In-Home Gateway**
- **M2M Applications**
  - Vehicular Telematics
  - Medical Imaging
  - eHealth In-Home Care
  - eHealth Personal Care
  - Emergency Care
  - Home Security
  - …

**WiFi, ZigBee, Internet**
M2M Challenges over CDMA

- **Cost of the CDMA Modules**
  - Chipset cost is higher than chipsets for other accesses.
  - In short-term, may be justified by high-value-added applications.

- **Network Efficiency due to the use of M2M Devices**
  - Is the user behavior of M2M devices really much different than smartphone users?

- **Operators: Data-pipe vs. Walled Garden**

- **Need Large Scale Value-Added M2M Services**
  - Silos of Small M2M Applications

- **Regulatory, Liability, Personal Concerns (Privacy)**

Standard efforts to solve efficiency and application interworking, regulatory and publicity issues - For example, through 3GPP2, TIA TR50.1, CDG
Time for Action

- Too many talks, Too much worry, Too few actions
- Network Congestion will be an issue for M2M only if the usage builds up
- Network Efficiency issues can be addressed through standardization efforts from the CDMA community
- Cost-Effectiveness on CDMA M2M devices depends on the volume
- M2M Applications can be integrated through standardization
- Operators can be great M2M Service Providers
  - Credibility, Service Management Experience, Marketing, Distribution Channels, Field Deployment and Services, Financial Supports, Government and Industrial Relations
- Paradigm shift from H2H to M2M takes time.