



SK 텔레콤 SDN/NFV 추진전략

SDN/NFV 포럼

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Senior Vice President

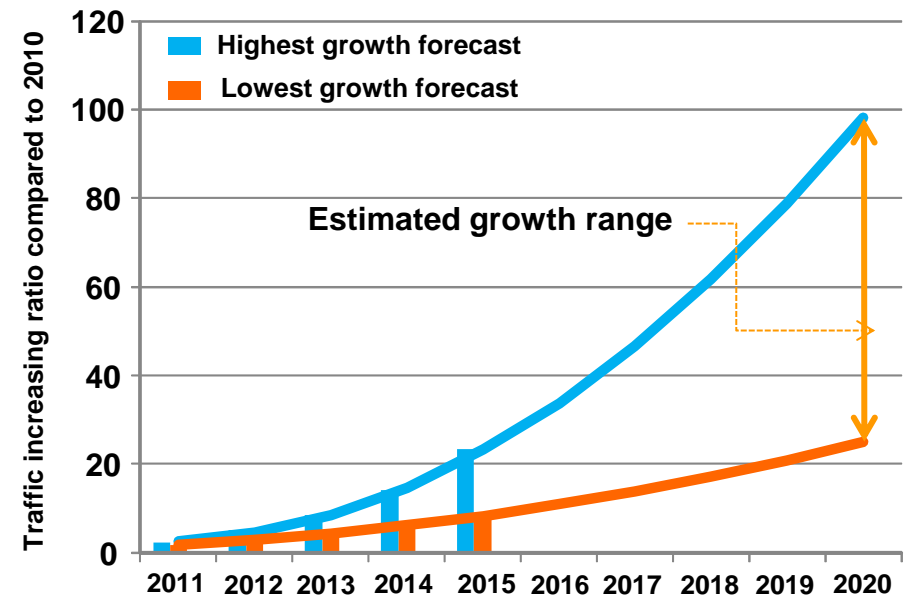
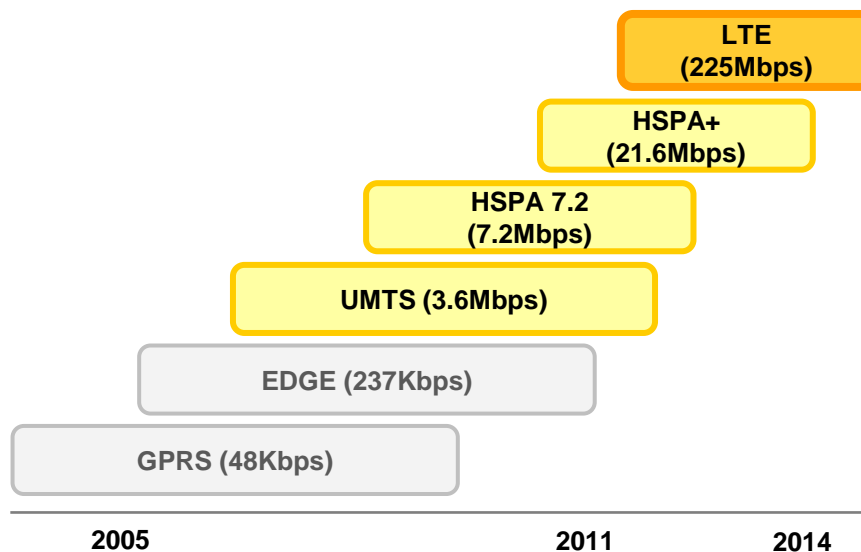
Head of Network R&D Center, SK Telecom



Partner for New Possibilities

Mobility Network is a Big Success

Ever-increasing demand for higher traffic volume, speed, and versatility drive revolutionary changes in mobility network architecture, especially in RAN



- **Mobile Broadband is the fastest growing ICT***
 - 30% growth in subscriber count every year
 - # of mobile users > # of desktop users
 - Decreasing major technology life cycle
- ❖ **Significant gains so far, but reaching theoretical limits: “bps/Hz” is almost saturated**

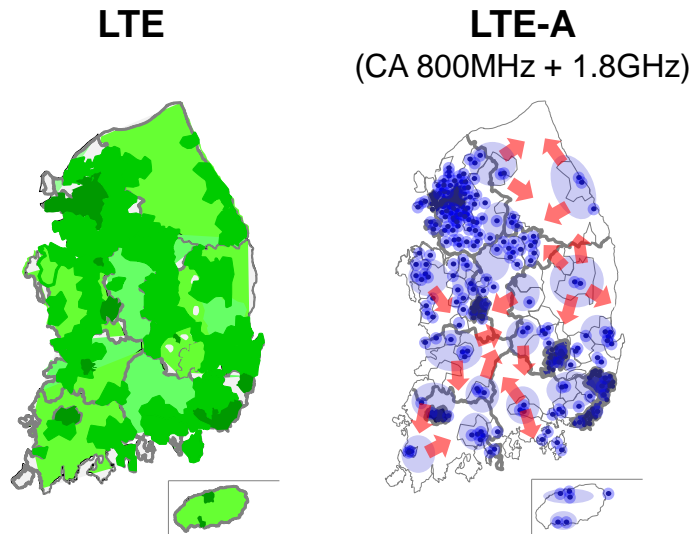
* Broadband commission annual report (September 2013)

- **The network is expected to grow at a fast rate****
 - Forecasted to be from 11x to 100x by 2020
 - Emerging new applications and new devices accelerate the mobile data explosion
- **Very competitive market**
 - Demanding users

** ITU-R M.2290 report (December 2013)

The Network Becomes Increasingly Costly

Aggressive and continuous network expansion and architectural changes led to heterogeneous and complex network that is expensive and difficult to manage

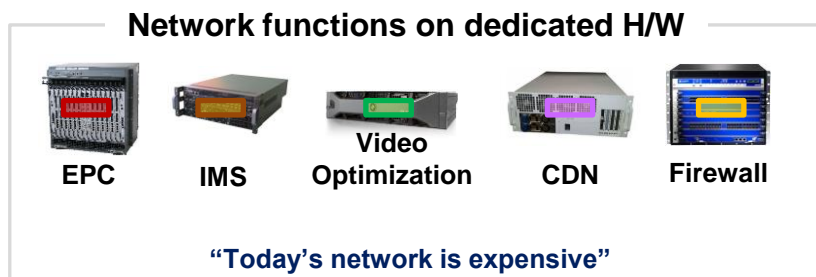
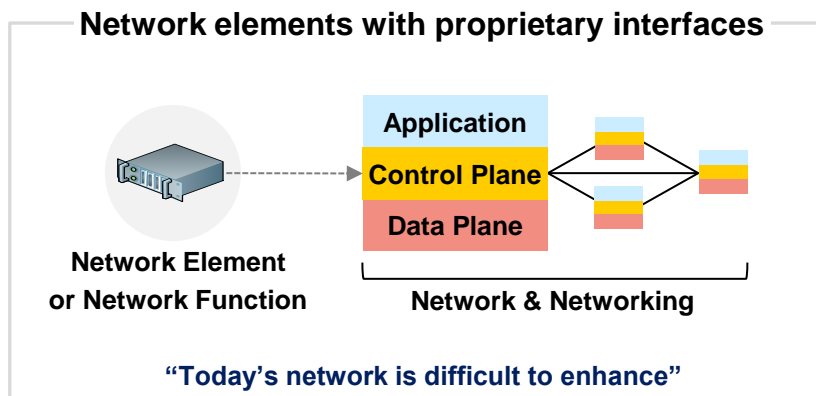


- **Aggressive network evolution and expansion**
 - Completed nation-wide 99% role-out of LTE
 - LTE-A covers major 84 cities (13.8)
- **Topology reshaping with small-cells is on-going**
 - Needs huge amount of investments and time
 - Complexity grows tremendously
- **Total Cost of Ownership (TCO) is significant**
 - CAPEX and OPEX are to be \$37B and \$56B*
 - ARPU stays about the same (or even decreases)
- **Time-to-market (TTM) has increased**
- **Other deficiencies were started to get exposed:**
 - Limited flexibility
 - Inefficient use of energy

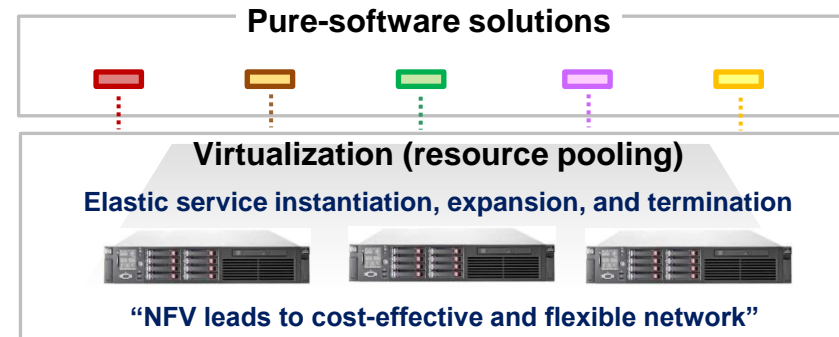
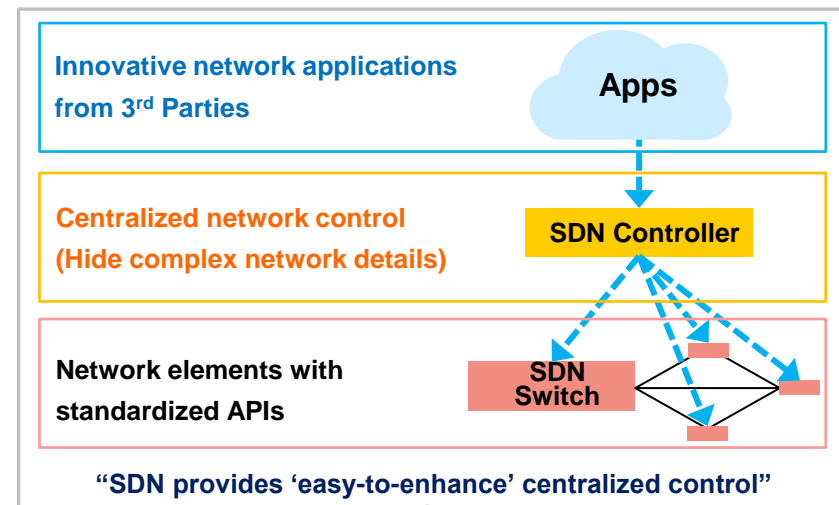
Infrastructural Innovation is Inspired

SDN and NFV complement each other to increase network agility, reduce costs, and can potentially create new eco-system for innovative network applications

Traditional Networks

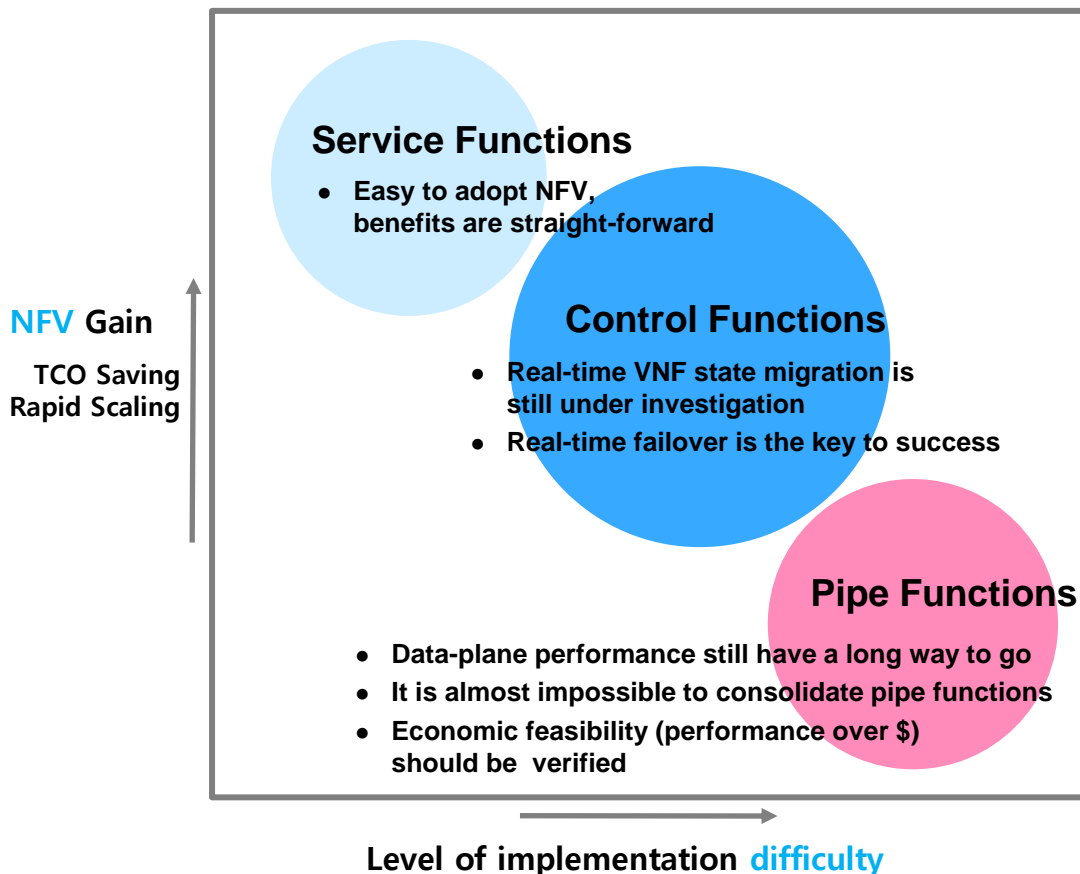


Networks with SDN & NFV



**This new architecture is not yet fully accepted by the conservative operators
A clear understanding of the dynamics and the interaction must precede**

Lessons Learned



- **Physical appliances won't suddenly disappear**
 - Existing physical appliances are becoming more cost effective, while the cost of software function is not (yet) so attractive
 - ❖ Hybrid (mixed virtual and physical functions) network model must be considered
- **SDN and NFV concept is (still) a culture shock**
 - Much security, availability, and interestingly job-security concerns
 - ❖ Need more killer applications of SDN and NFV

- **Networking paradigm shift is just around the corner**
 - Against the ever-growing network complexity and user demands, Telco's today face yet another critical architectural challenge
 - SDN and NFV can potentially be the solution and more
 - SK Telecom is transforming the network in a cost-effective way for TCO reduction, service agility, and improved risk management by taking advantage of SDN & NFV
- **Mind the Gap**
 - The technology should address the real world MNO-specific requirements
 - Operators and vendors should work together to make the technology be fully qualified
- **SK Telecom's aggressive efforts in this domain will continue**
 - Lessons learned from Use Case Proof-of-Concepts and Pilots will be shared
 - Carrier-grade and innovative applications by 3rd parties must be encouraged and supplied in order to realize the "open" innovation

Thank You

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