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# MARC ANNUAL Conference 2014

Bill Haas, Senior Corporate Counsel

# Some Telecom Issues are Timeless

**Marriott Hotel, Des Moines, Iowa**

**June 26-29, 1983**

**Program Topics**

- "Rate of Return on Equity - Where is it Going?"
- "Impact of Tax Benefits"
- "Computers in Utility Operations"
- "Toll Settlements and Access Charges"
- "Future Demand for Electricity"
- "Excess Generation Capacity and Utility Rates"
- "Natural Gas Policy Act - Is it Working?"
- "Uniform State Motor Carrier Regulation"

# Magenta – Disrupting Wireless

| | |
|---|---|
| **Mar. 14, 2013** | **Launched first LTE markets** |
| **Mar. 26, 2013** | **Launched Un-carrier 1 - Contract Freedom** |
| **Jul. 10, 2013** | **Launched Un-carrier 2 – JUMP!<br>LTE in 116 Metro areas covering 150 Million** |
| **Oct. 9, 2013** | **Launched Un-carrier 3.0 – International Roaming** |
| **Oct. 23, 2013** | **Launched Un-carrier 3.1 – Tablets unleashed.<br>Up to 200MB free 4G/LTE data per month** |

# Magenta – Disrupting Wireless

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|---|---|
| **Jan. 8, 2014** | **Launched Un-carrier 4, Contract Freedom for Familes** |
| **Mar. 13, 2014** | **Celebrated 1st Anniversary of LTE rollout; 273 metro areas covering 210 million** |
| **Apr. 10, 2014** | **Launched Simple Starter plan, Operation Tablet Freedom and Overage Freedom** |
| **Apr. 30, 2014** | **Closed deal acquiring 700MHz – A Block spectrum** |
| **May 2, 2014** | **Announced 1Q 2014 Results** |

# Un-carrier Results

- Four consecutive quarters with over 1 million total net additions
- Total net additions of 2.4 million in 1Q 2014
  - Fastest growing wireless company
- Fastest nationwide LTE network experience as measured by Ookla's Speedtest.net application
- LTE in 233 markets covering 230 million people (projected 250 million by YE 2014)
- T-Mobile Coverage reaches 96% of Americans

# Benefits of Robust Wireless Competition

- Competition in the wireless broadband marketplace
  - Supports multiple, facilities-based networks for improved redundancy and reliability
  - Promotes rivalry on coverage, pricing, and service
  - Encourages innovative services, terms, and applications

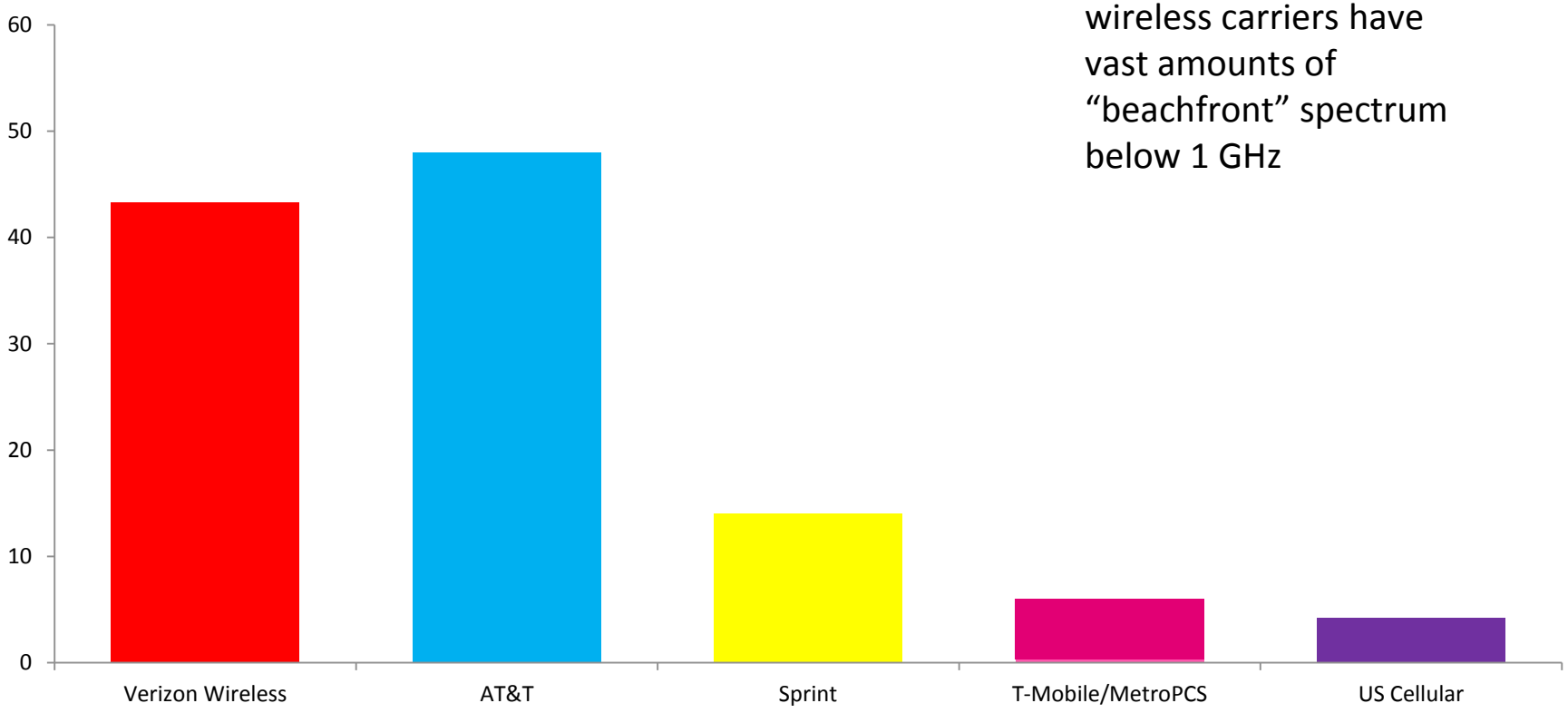
# Upcoming Spectrum Auctions

- Advanced Wireless Spectrum (AWS) - 3
  - 65 MHz of spectrum in the AWS-3 band will be auctioned off
    - AWS-3 band consists of 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz spectrum bands
    - All 65 MHz will be available for commercial use
  - Auction Start date: November 13, 2014
  - Licenses awarded: On or before February 22, 2015 (Spectrum Act)
    - Federal users will need to be cleared before spectrum can be commercially used *(e.g.*, ~$4.6 B to clear 1755-1780 MHz)
- 600 MHz Broadcast Incentive Auction
  - 600 MHz spectrum currently licensed to broadcasters
  - Broadcasters will sell back their low band spectrum for a portion of the auction proceeds
  - Parties will bid on the low band spectrum reclaimed via the broadcast auction
  - Last best chance to secure critical low-band spectrum for the foreseeable future

# Low-Band Spectrum is Uniquely Valuable

- Low-band spectrum delivers un-matched in-building penetration.
- Low-band spectrum expands coverage, especially to areas with lower population densities (e.g., rural), challenging terrain, or other barriers to deployment.
- Low-band spectrum reduces a carrier's cost to compete because it costs materially less (e.g., fewer towers, less backhaul, less equipment) to cover the same geography.

# Low-Band Spectrum Resource Concentration




The nation's two largest wireless carriers have vast amounts of "beachfront" spectrum below 1 GHz

*Source: Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Mobile Conditions with Respect to Commercial Mobile Services*, Sixteenth Report, WT Docket No. 11-186, ¶ 118 (rel. Mar. 21, 2013); Verizon and T-Mobile Assignment Applications, ULS File Nos. 0006090675, 0006090661 (filed Jan. 10, 2014), updated to reflect T-Mobile acquisition of 700MHz A-Block spectrum from Verizon. Left axis reflects current total of 134 MHz in the pool of population weighted nationwide low band spectrum holdings.

# Broadcast Incentive Auction

- FCC adopted rules governing the IA on May 15th
  - FCC recognized the importance of preventing too much consolidation of low-band spectrum between only two nationwide wireless carriers
  - Intend to establish reserved block of low band spectrum to be auctioned to carriers with limited low-band spectrum holdings
    - First time spectrum may be set aside for carriers that are not small business
  - Reserve does not come into existence until after revenue passes a certain threshold sufficient to (a) pay broadcasters, (b) relocate broadcasters who remain and (c) fund remaining obligations of FirstNet Responder Network
  - Once revenues meet the threshold, the FCC will separate the licenses into unreserved and reserved categories

# Broadcast Incentive Auction

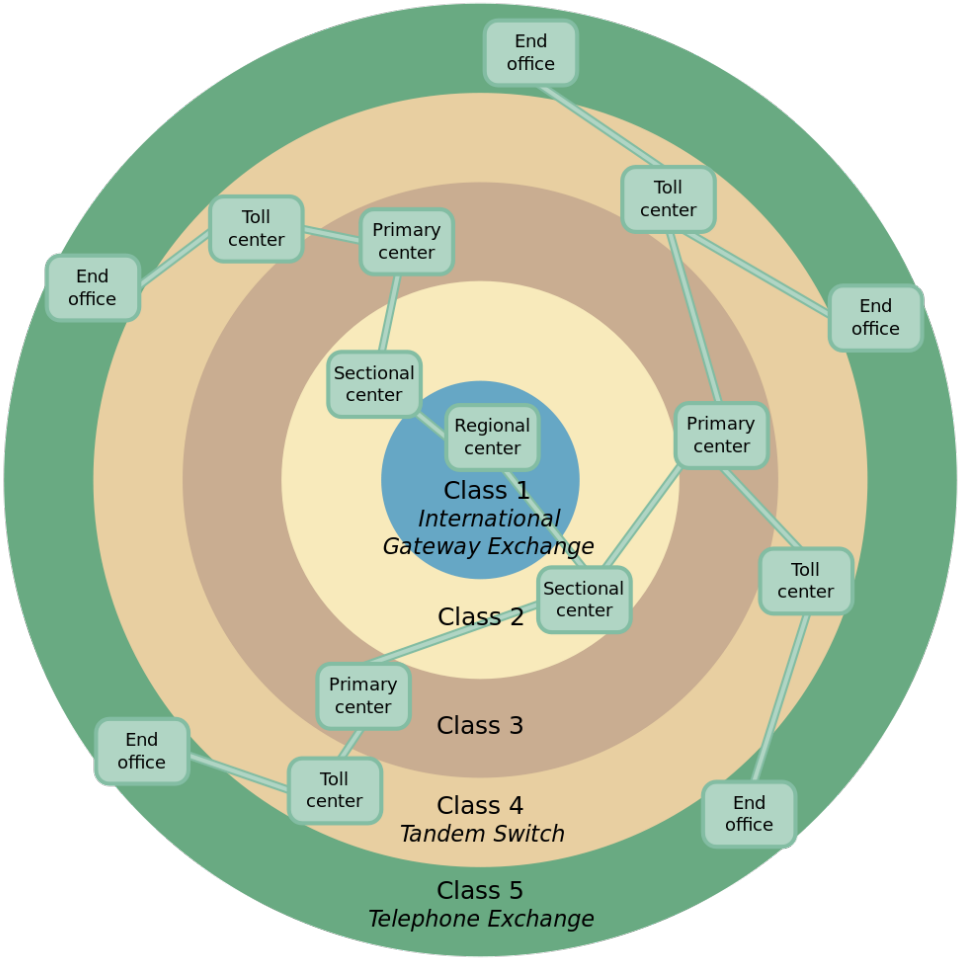
- Unreserved open to all bidders
- Reserved open to bidders that are either (a) non-nationwide carriers or (b) carriers with currently less than 45MHz of low-band spectrum below 1MHz in a given geographic area
- Spectrum available in the forward auction will vary depending on how much spectrum is recaptured from broadcasters
  - 70 MHz or more cleared = 30 MHz reserve
  - 60 MHz cleared = 20 MHz reserve
  - 50 MHz cleared = 10 MHz reserve
  - 40 MHz cleared = 10 MHz reserve

- FCC also revised its spectrum screen rules and adopted a band plan

# IP Transition

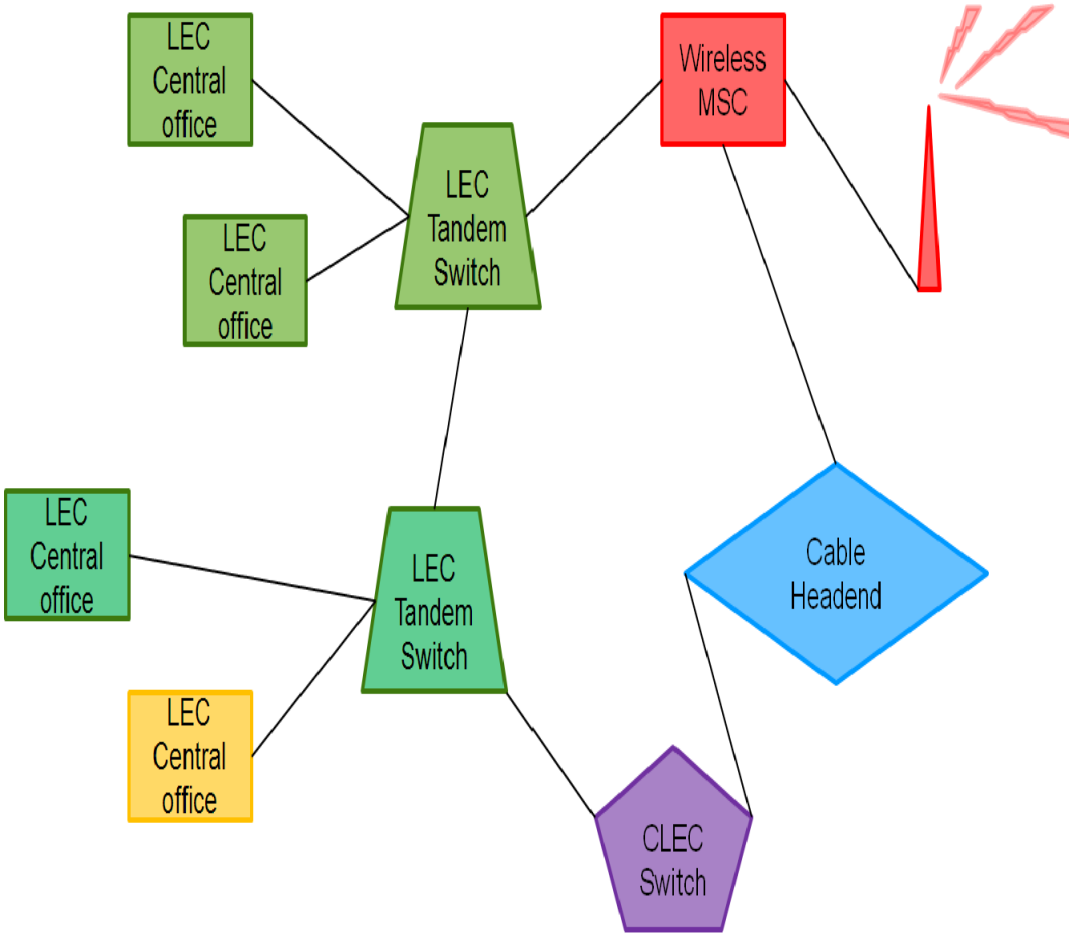
- Telecommunications networks have been constantly evolving
  - Individual carriers typically upgrade segments to new technology at different times within their own networks
- Evolution to all IP infrastructure has been a long time coming
  - Long haul fiber introduced at least 35 years ago
  - Over time ILECs deployed fiber deeper into their local networks
    - Interoffice transport, FTTN, FTTC, FTTH
  - Switching has evolved from manual, analog, digital to IP-based
    - Some LECs stopped deploying local circuit-based switches before 2000, exclusively deploying softswitches capable of providing IP-based voice (and data) services, and also capable of routing traditional circuit-switched voice traffic
- Transition of voice customers to IP-based services has been ongoing since the introduction of softswitches
  - Pricing or feature incentives incent many customers to voluntarily switch
- Ongoing industry trial of the customer transition to IP services for more than a decade on the wireline side

# Network Architecture of the Past



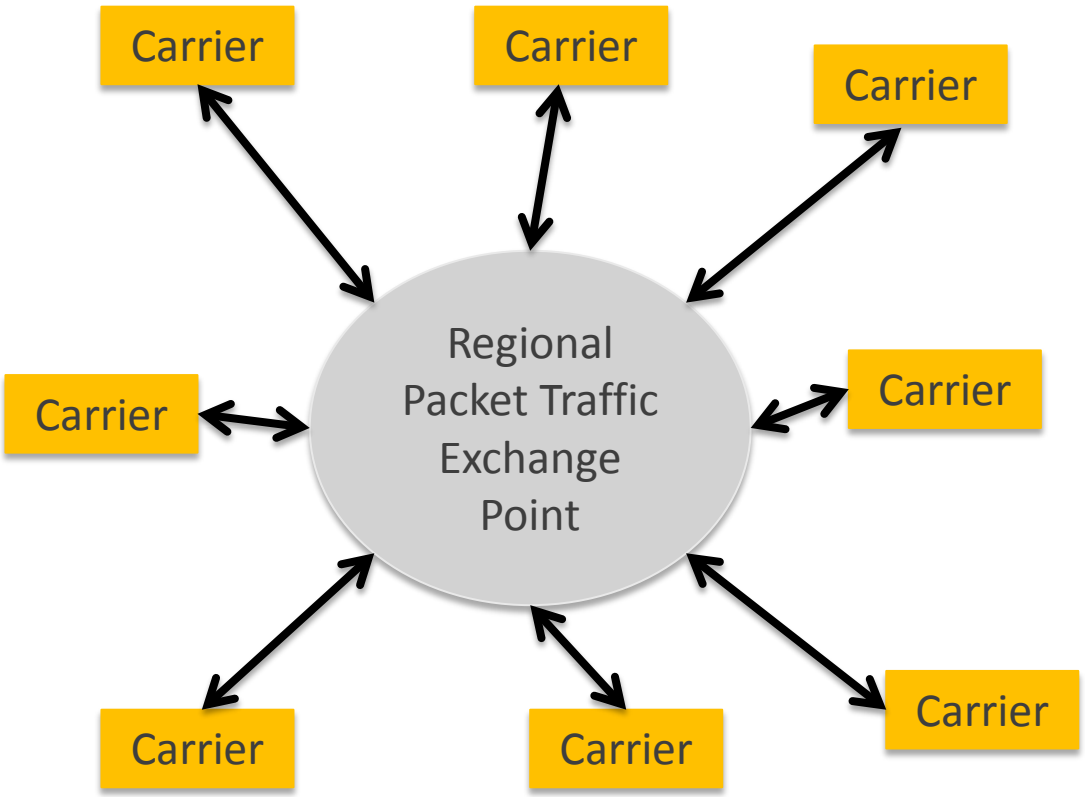

- Hierarchical
- Generally: links up and down, but not “sideways”
- Common ownership (except for “independent” class 5 offices and some tandems)

# Network Architecture of the Present




- Flatter
- Multiple connections (both direct and indirect interconnections)
- Diverse ownership, but key points under RBOC control

# Network Architecture of the Future




- Flat
- Route diversity with regional exchange points
- Diverse ownership without RBOC concentration

# IP Interconnection

- Critical element of the IP transition
  - independent wireless, cable, competitive wireline and many RLECs continue to require access to interconnection with the largest ILECs on just and reasonable terms to exchange voice traffic in IP format
  - Interconnection is the lynchpin of competitive communication markets
  - Conversion to packet-switched IP technology, if properly implemented, should result in significant improvements in resiliency and redundancy due to significantly fewer points of interconnection

# IP Interconnection - Key Considerations

- IP voice exchange points should be "carrier-neutral": they should not be under the exclusive control of any carrier.
- Incumbent carriers with existing voice interconnection points on their premises have an incentive to maintain their control.
- Fewer points of interconnection ("POIs") required.
- "Bill and Keep" for all traffic.

# IP Interconnection - Key Considerations (con't)

- Section 251 of the Act will continue to apply to LECs during and after the transition to IP networks
  - Duty to negotiate in good faith
  - Duty to exchange traffic on a reciprocal basis
- Voluntary negotiations preferred and contemplated under the 251/252 regime, but a regulatory backstop under Section 251 is required for the negotiation process to consistently produce arrangements that facilitate and protect competition
  - Little, if any historical, basis to believe that relying strictly on "commercial negotiations" for IP interconnection will protect the competitive environment

# IP Trials

- January 2014 - FCC asked parties to propose trials for the IP transition
  - Iowa Network Services proposed to trial centralized equal access service as it transitioned from traffic CEA traffic using a TDM circuit switch to an IP switch
    - Proposed trial was withdrawn after Tier 1 carriers objected to the trial
  - AT&T proposed to trial transition of customers to IP-based services in two wire centers
    - Both wire centers situated in the Southeast
    - AT&T trial focuses on transitioning its retail customers
    - AT&T does not specify replacement wholesale services, including interconnection
    - As proposed, interconnecting carriers would be required to convert IP to TDM to hand off to AT&T in the trial markets
  - AT&T's limited trial proposal should not delay moving the industry forward on important issues impacting competitive choice such as IP interconnection

Questions?

Email: william.haas@t-mobile.com