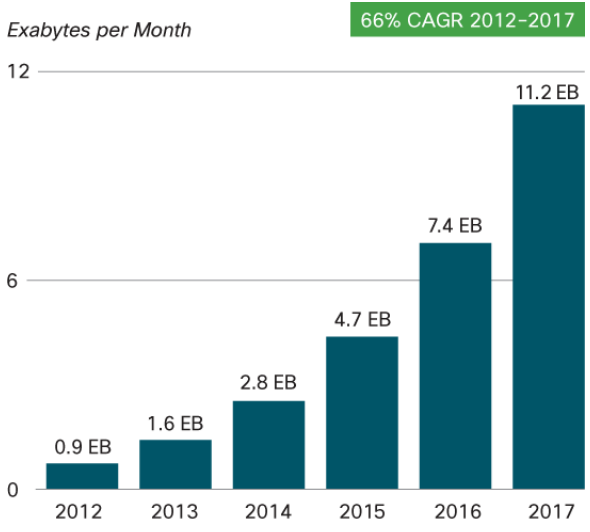
Rethink Possible®

Spectrum Requirements for Commercial Wireless Operators

Spectrum Crunch is Real

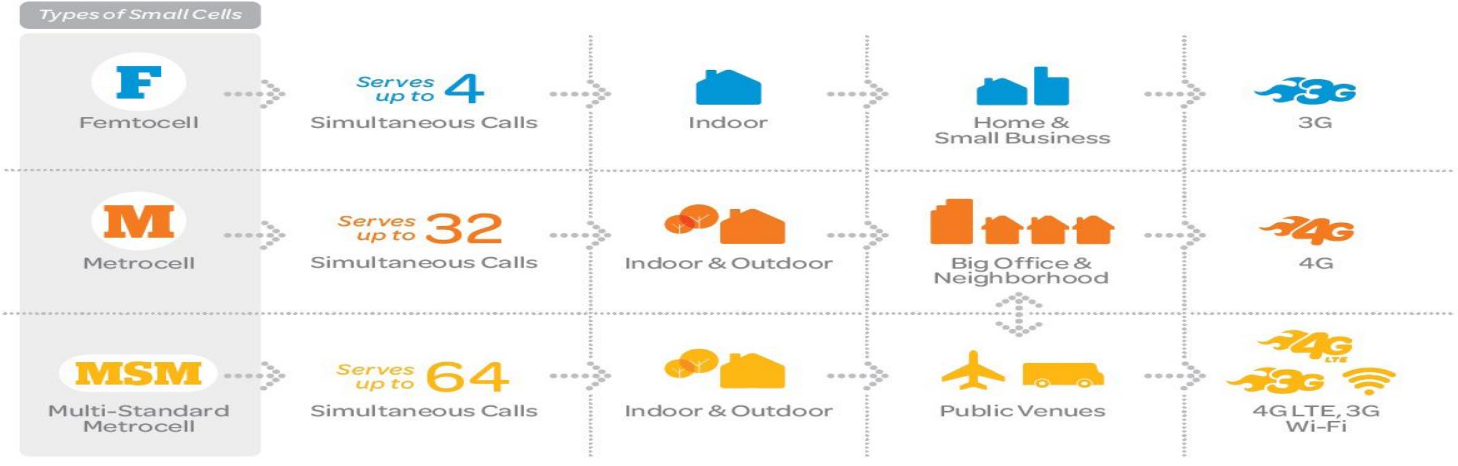
- Last year's mobile data traffic was nearly twelve times the size of the entire global Internet in 2000
- Average smartphone usage grew 81 percent in 2012
- Smartphones represented 92 percent of total global handset traffic
- Tablets will exceed 10 percent of global mobile data traffic in 2016.
- Two-thirds of the world's mobile data traffic will be video by 2017
- Global mobile data traffic will increase 13-fold between 2012 and 2017
- By the end of 2013, the number of mobile devices will exceed the earth's population



Source: Cisco VNI Mobile Forecast, 2013

Small Cells and “Het-Nets” May Ease Crunch - Doesn’t Solve

- Small cell offloading eases network congestion in high demand areas.
  - Also provides additional coverage in buildings and some rural environments
- Small cells promise cost efficient RAN infrastructure, improved spectrum use
  - Can use 3G, 4G, WiFi and support multiple standards
- AT&T’s “densification” program will deploy 40,000 small cells by 2015
  - Initial Cells HSPA – 4G/LTE and WiFi Future



Exclusive Use vs. Shared Use Spectrum

- Operators need licensed, exclusive-use spectrum below 3 GHz for mobile broadband
  - Primary focus to solve spectrum crunch
  - 700 & AWS auctions produced $30B
  - Projected to creates 300-600K jobs by 2016
- Licensed or unlicensed shared-use spectrum may be feasible for small cell infrastructure
  - Carriers off-load to WiFi in high demand markets today
  - Indoor deployments (Femto/Pico)
  - Additional capacity improvements
- 3.5 GHz proceeding excellent start to explore commercially licensed, shared use spectrum
  - Significant effort is required to ensure this is viable