

Overcoming In-Building Capacity Constraints with Wi-Fi Offload

Jim Parker, Senior Manager, Antenna Solutions Group, AT&T
jimparker@att.com

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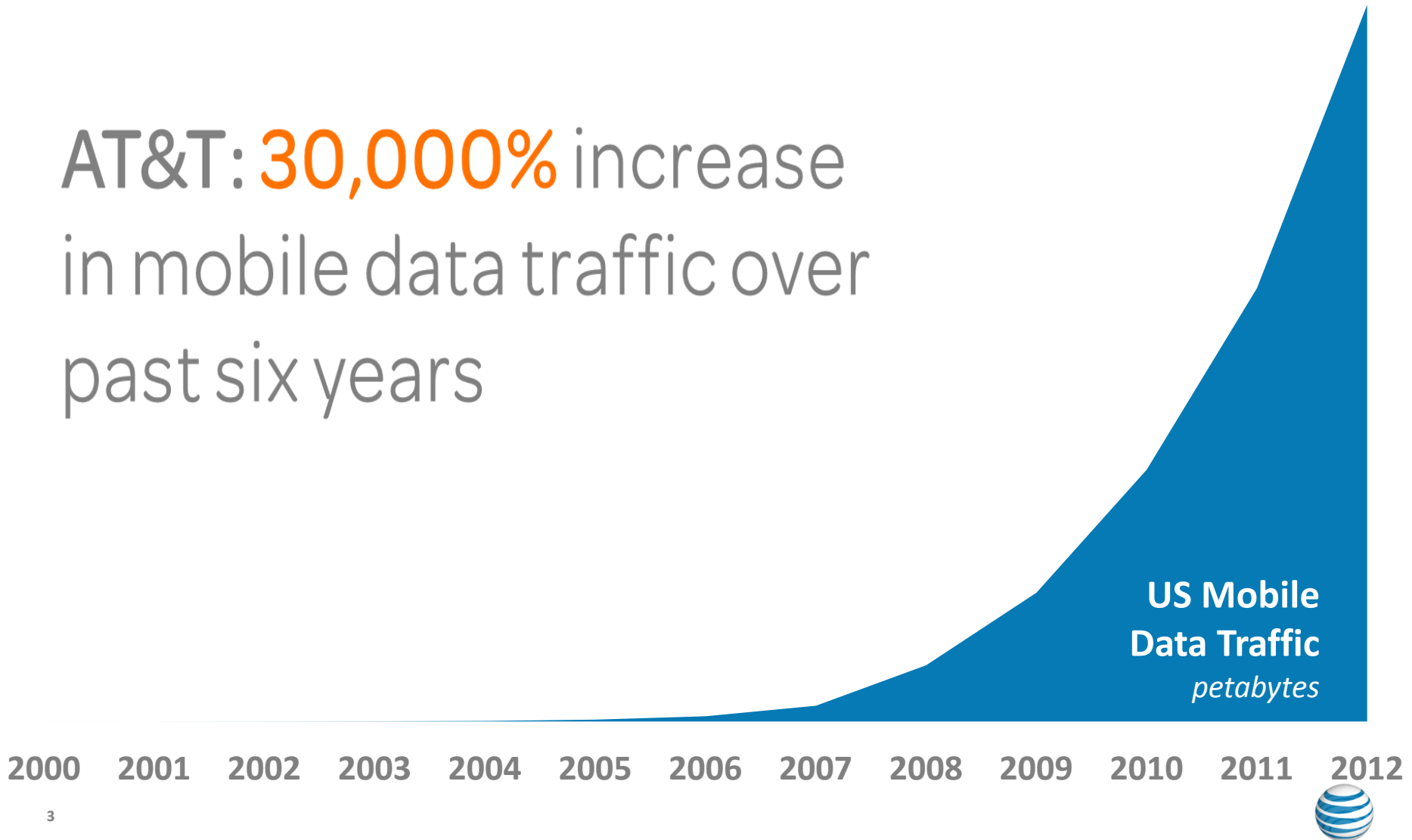
Agenda

- Network Business Drivers
- AT&T's Antenna Systems Group
- Wi-Fi offload
- AT&T's investment in Small Cells



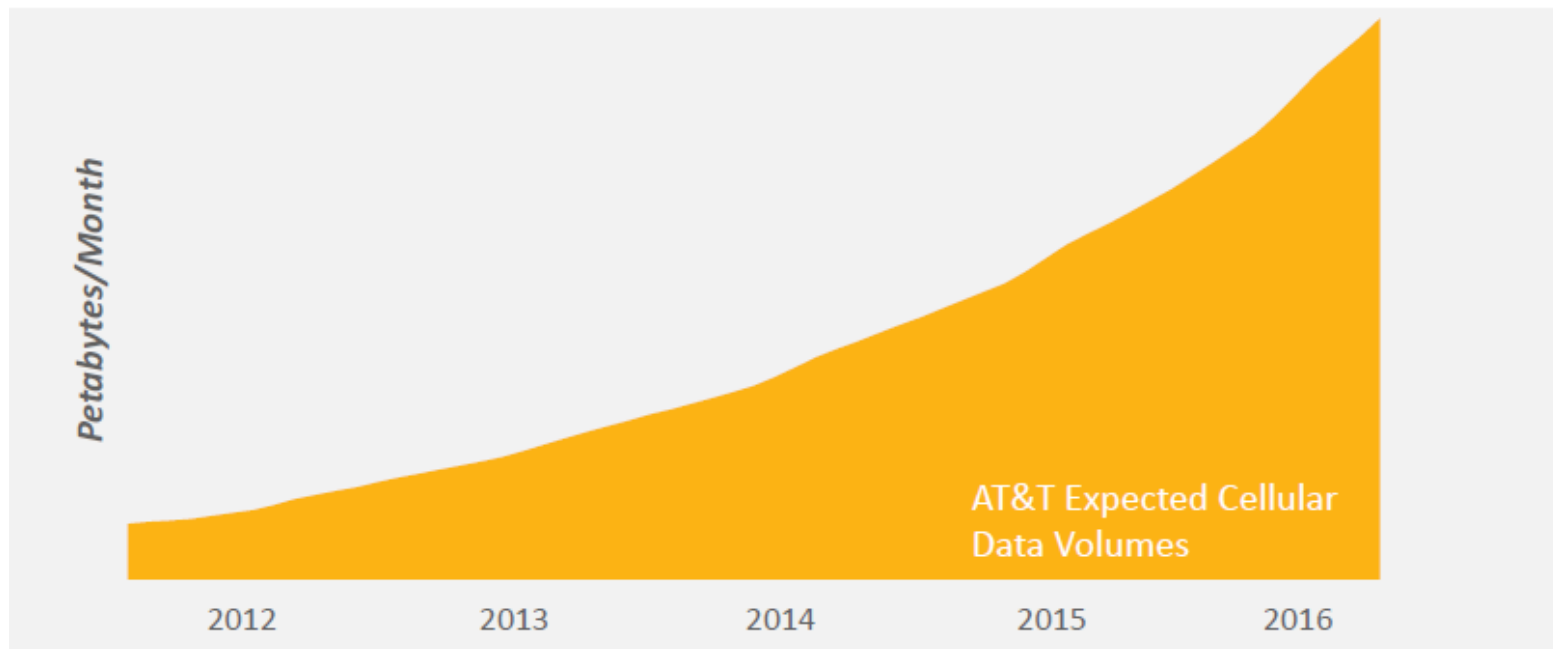
Network Business Drivers

AT&T: **30,000%** increase
in mobile data traffic over
past six years



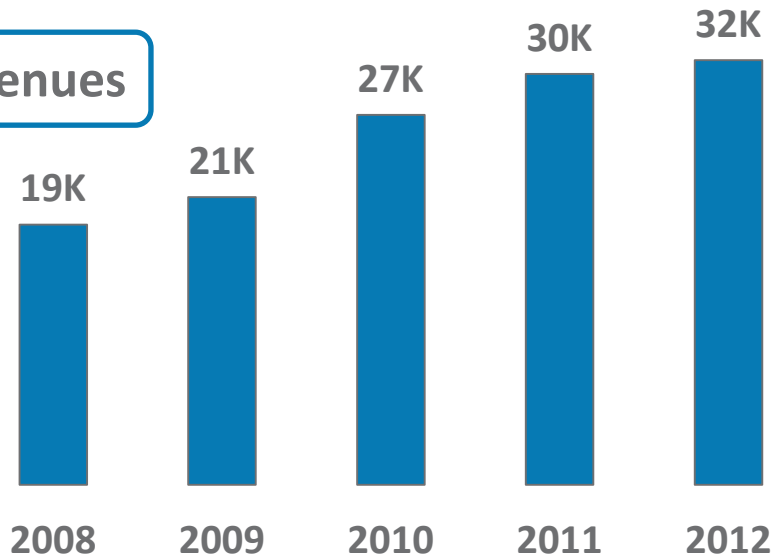
Network Business Drivers

- Mobile data volume growing exponentially
- Smart phone sales outnumber PC sales
- Congested macro networks
- Wireless providers looking for more tools to supplement the macro network

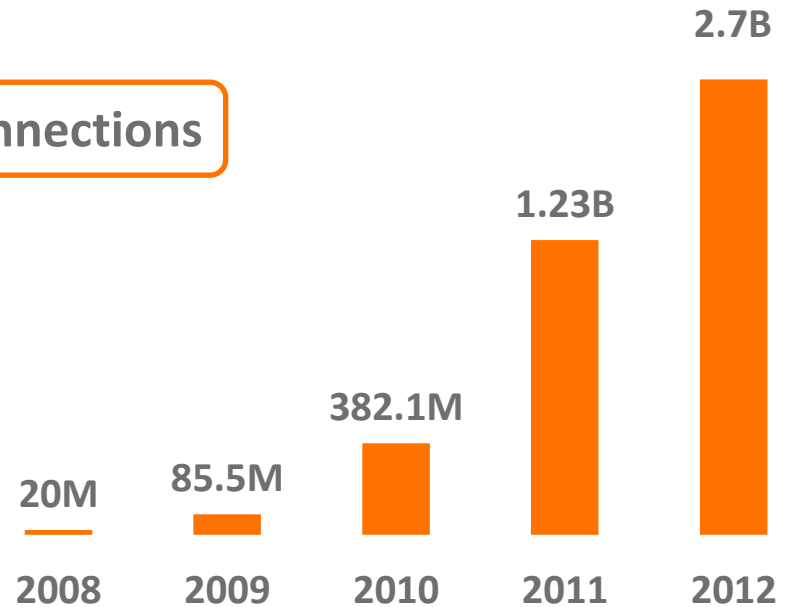


AT&T Has Seen Tremendous Wi-Fi Growth

Venues



Connections



- Since 2008, expanded Wi-Fi to more types of venues – including hotels, restaurants, retail locations, stadiums, airports, universities, and hot zones
- In 4Q12 mobile devices carried **+3x more data traffic than 4Q11.**

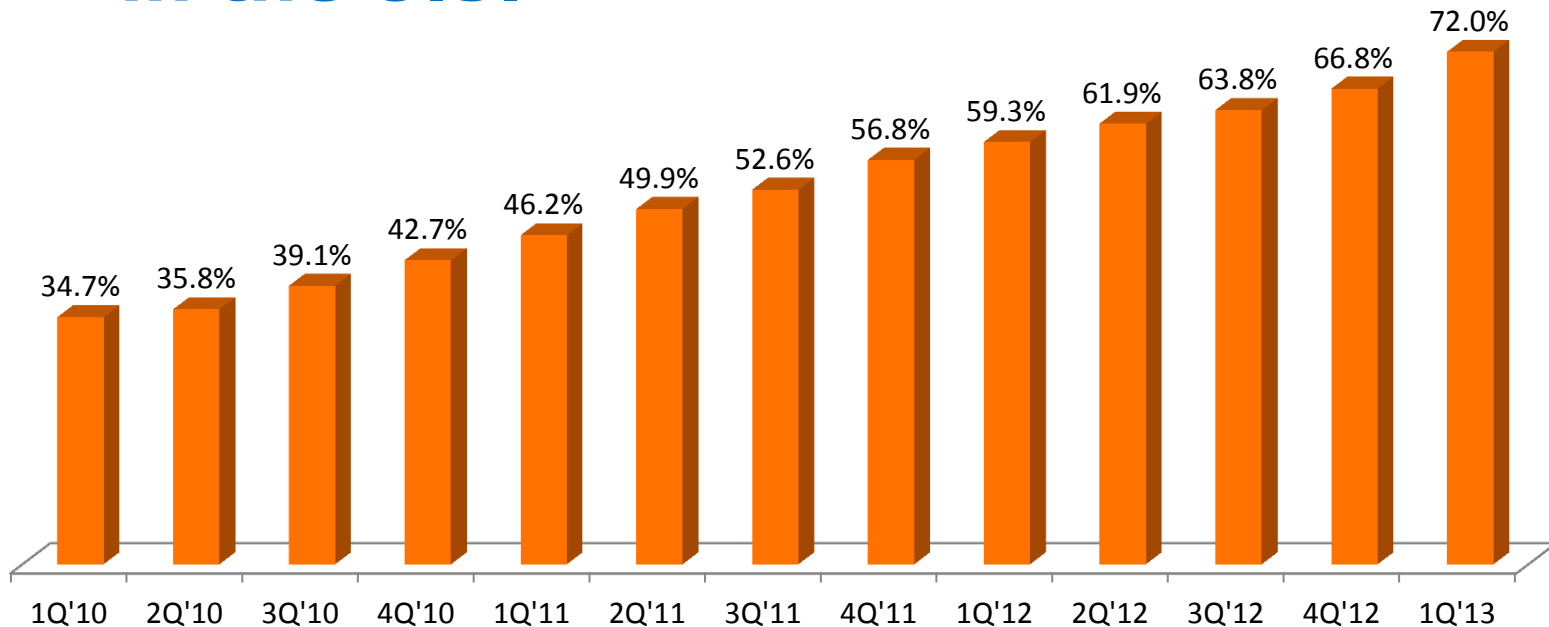
- In 4Q12, 705.5M connections were made to the AT&T Wi-Fi Network – **More than 5000 connections per minute**
- **+40% connections made in 4Q12** from mobile smartphone and tablet devices versus 2011.



Network Business Drivers



**AT&T is the leading
smartphone provider
in the U.S.**



AT&T Smartphone Penetration



AT&T's Antenna Solutions Group

- AT&T's Antenna Solutions Group (ASG) is responsible for extending the capabilities of AT&T's cellular network within large public venues or enterprises providing our customers the best mobile broadband experience
- Once the venue is under contract, ASG will turn over responsibility to AT&T's Towers group to market the system to the other wireless carriers, visit: www.atttowers.com



What's in the Toolbox?



Neutral-Host
Distributed
Antenna Systems
(DAS)



Wi-Fi

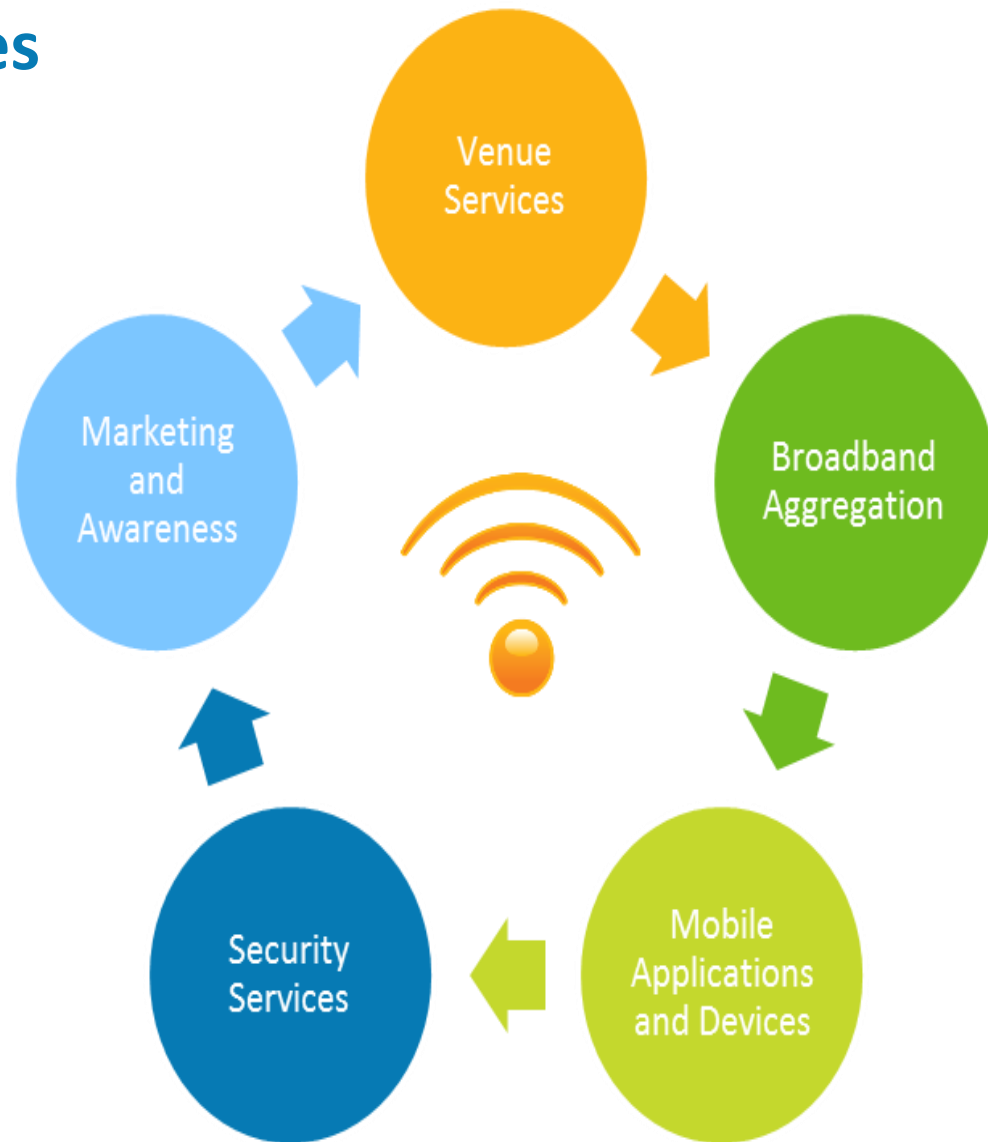


Small Cells



AT&T Wi-Fi Venue Services

- Professionally designed & installed **Public / Private** Wi-Fi network Services
- Experience gained from managing over **32,000 AT&T Wi-Fi hotspots** and more than 2.7 **billion** connections in 2012
- Fully Managed Wi-Fi network, with **around-the-clock monitoring** and customer support
- Support for Wired and Wireless End Points with **Flexible Security Options**
- Primary Service Enabler in the **End-to-End Solution**



Wi-Fi Offloading

Many of AT&T's smart phones will automatically authenticate on AT&T's Wi-Fi networks, benefits:

Customer

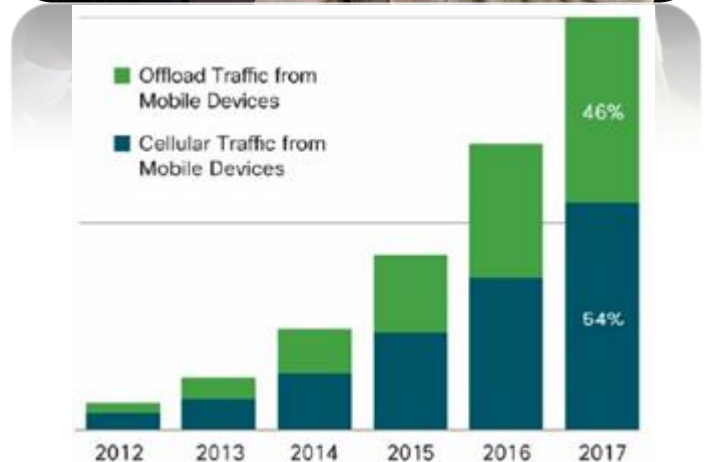
- Higher data rates
- Does not count towards wireless data cap

Venue Owner

- Potential to create custom “landing” page
- Custom applications
- Revenue opportunities through increased sales

Carrier

- Offloads traffic from macro network
- Better wireless spectrum utilization
- Wi-Fi per MB cost less than equivalent capacity on macro network

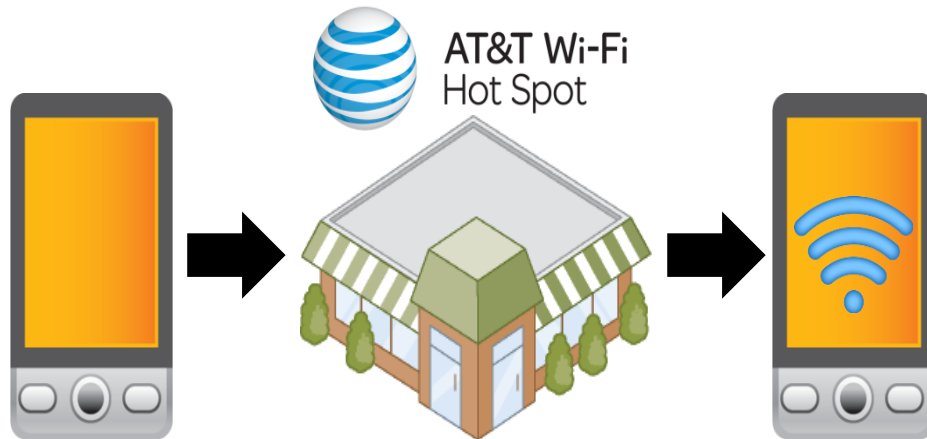


Cisco forecasts that 46% of handset & tablet traffic will be offloaded in 2017



Mobile Guest Experience - AT&T Auto-Authentication

Consumers depend on a quality and consistent broadband experience to maintain the way they communicate, obtain information, or entertain.



1

Consumers with **select AT&T Smart Devices & eligible devices** enter into range of the AT&T Wi-Fi network.

2

AT&T Wi-Fi Hot Spot Network **automatically** recognizes these devices and connects them to the "attwifi" SSID.

3

Device is connected **seamlessly** to the Wi-Fi network with no user effort!

Consumers with select AT&T Smart Devices & other eligible devices connect seamlessly and easily to the AT&T Wi-Fi network

- No connection pages requiring user action
- Bypasses the browser-based log-on
- Auto-Authentication at **more than 32,000** US locations
- Browser based log-on still available to users with devices that don't auto authenticate

Emerging Devices that Connect via Auto-Authentication to the AT&T Wi-Fi Network

- Amazon **Kindle**
- Barnes & Noble **Nook**
- **Eye-Fi** memory cards
- Sony **Mylo & Cybershot**
- Nikon **Coolpix**
- Microsoft **Zune**

AT&T Auto-Authentication simplifies the consumer experience in connecting to the AT&T Wi-Fi hotspot network

AT&T Spotlight on **SXSW**



AT&T in Austin

- 4G** Launched in January 2012
- 325** network enhancements made in 2011
- 215** AT&T Wi-Fi Hot Spots

KEY

- AT&T Wi-Fi Hot Zone Locations
> 35 Wi-Fi Access Points
- AT&T Temporary SXSW Wi-Fi Locations
> 45 Wi-Fi Access Points
- LTE Enabled DAS
- Cellular on Wheels
- AT&T Charging Station

Auditorium Shores

21 Wi-Fi Access Points

#SXSWMusic



Austin Convention Center #ATTXSXSW

x6



AT&T Lounge



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Spotlight on the
Democratic National Convention
Charlotte, NC | September 4-6, 2012



AT&T in Charlotte

- LTE Launched November 2011
- 2 Five-Beam Multi-Beam Antennas
- >22 LTE Capable DAS and oDAS
- >10 Cellular on Wheels
- >585 Temporary Wi-Fi Access Points
- >180 AT&T Wi-Fi Hot Spots
- >400 Wireless network upgrades made in 2011

Bank of America
Stadium



DNC Convention
Site



.2 miles

Map Key

- AT&T Wi-Fi Hot Spot
- AT&T Wi-Fi Hot Zone Area
- Charging Station
- AT&T Store

Download the Official 2012
Democratic National Convention app

Stay Connected. Stay Social. #DNC2012

www.att.com/2012conventions



No text is worth dying for. Take the pledge and join the movement: [Pledge - itcanwait.org](http://Pledge-itcanwait.org)



Spotlight on the
Republican National Convention
Tampa Bay, FL | August 27-30, 2012



Courtney Campbell Cswy

60

I-275

Mabry Hwy

AT&T in Tampa Bay

- Launched February 2012
- 4 Five-Beam Multi-Beam Antennas
- Up to 10 Cellular on Wheels
- >310 Temporary Wi-Fi Access Points
- >270 AT&T Wi-Fi Hot Spots
- >575 wireless network upgrades made in 2011

Gandy Blvd.

92

Tampa Convention Center



RNC Convention Site



Map Key

- AT&T Wi-Fi Hot Spot
- Charging Station
- AT&T Store

2.0 miles

Channelside Walkway

.2 miles

Download the Official 2012
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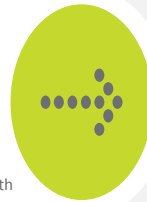
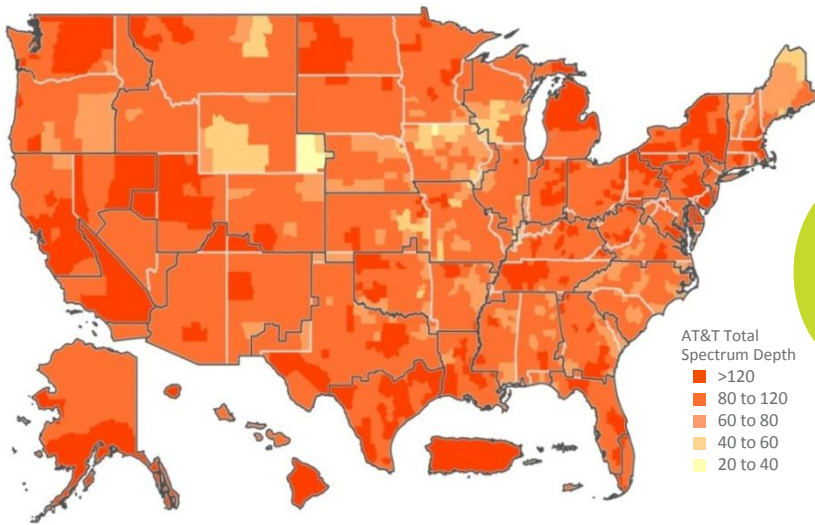


AT&T's Investment in Small Cells



Premier Mobile Network: *Densification*

Supporting Growing Customer Demand



Densification of Wireless Grid

Enhances AT&T's ability to offer best-in-class voice and data services

Supports launching Voice over LTE

Multiple technology deployments **PLANNED***:

- 10,000+ new macro sites
- 1,000+ distributed antenna systems
- 40,000+ small cells

**Over plan period for Project VIP (2013-2015)*

Lead to Better Customer Experience, Usage and Revenue



Premier Mobile Network: *Small Cell Technologies*

Small Cells: Delivering Flexible Coverage Where It's Most Needed

Improve spectrum efficiencies

Cost efficient radio access networks

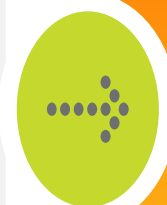
Improve in-building coverage

Multi-technology UMTS/HSPA+/LTE/Wi-Fi

- Initially 3G UMTS and 4G HSPA+
 - 4Q12: First field application
 - 1Q13: Start general deployment
- 2014: Future evolution to 4G LTE and Wi-Fi

50+%

*of densification
program to use Small
Cell Technology
by 2015*



Thank-you!

