# The 1000X mobile capacity challenge

QUALCOMM®

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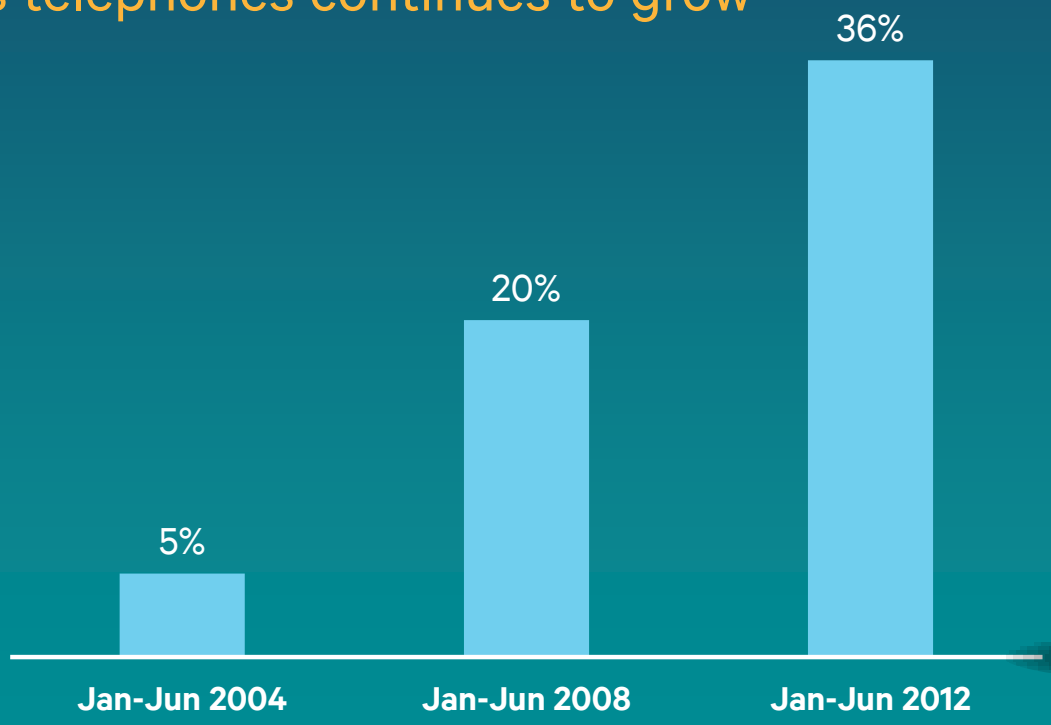
# Wireless-only is becoming the norm

## Percentage of American homes with only wireless telephones continues to grow



Source: CDC/NCHS, National Health Interview Survey

# Mobile data traffic growth

Global data traffic growth

**~2x**

from 2010–2011*

Preparing for

**1000x**

data traffic growth

Network efficiency

Small cells

More spectrum

Source: Cisco, Feb '11

# The future of wireless networks

**Extreme densification with small cells**

3G/4G

**Continuous 3G/4G evolution**

**LTE broadcast**

**Device-to-device communications**

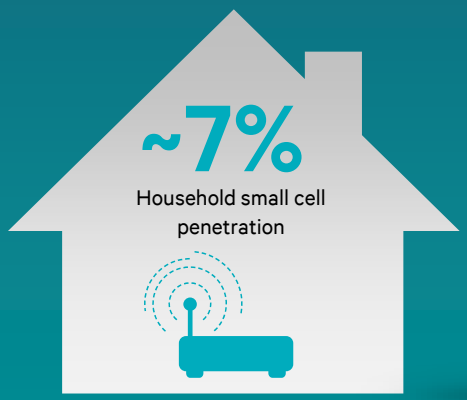
# Accessing spectrum resources

| Licensed spectrum auctions | Authorized shared access | Unlicensed |
|---|---|---|

# Small cells everywhere

## Low cost, small size and ease of deployment

# Tests show indoor small cells providing coverage outside



Signal strength [dBm]

-55 to -65*

-65 to -75

-75 to -85

-85 to -95

-95 to -105

-105 to -115

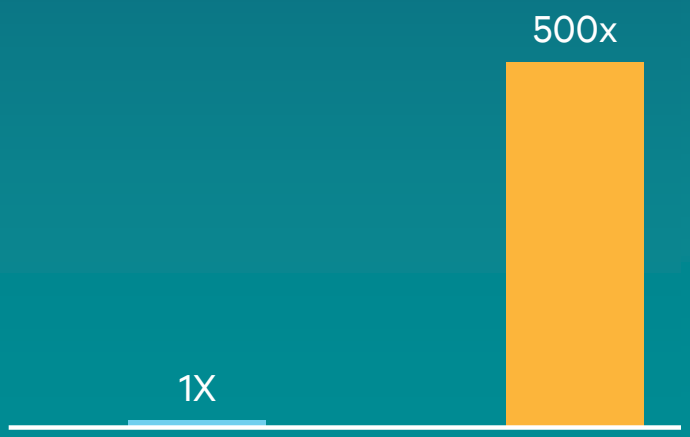
Excellent performance

Very good performance

~700kbps

Acceptable performance

Source: Qualcomm Research; shows actual measured received pilot strength for small cell deployment; -115dBm results in ~700kpbs for Rel-7 5MHz in thermal noise limited case; points with RSCP less than -115dBm is not shown on the plots



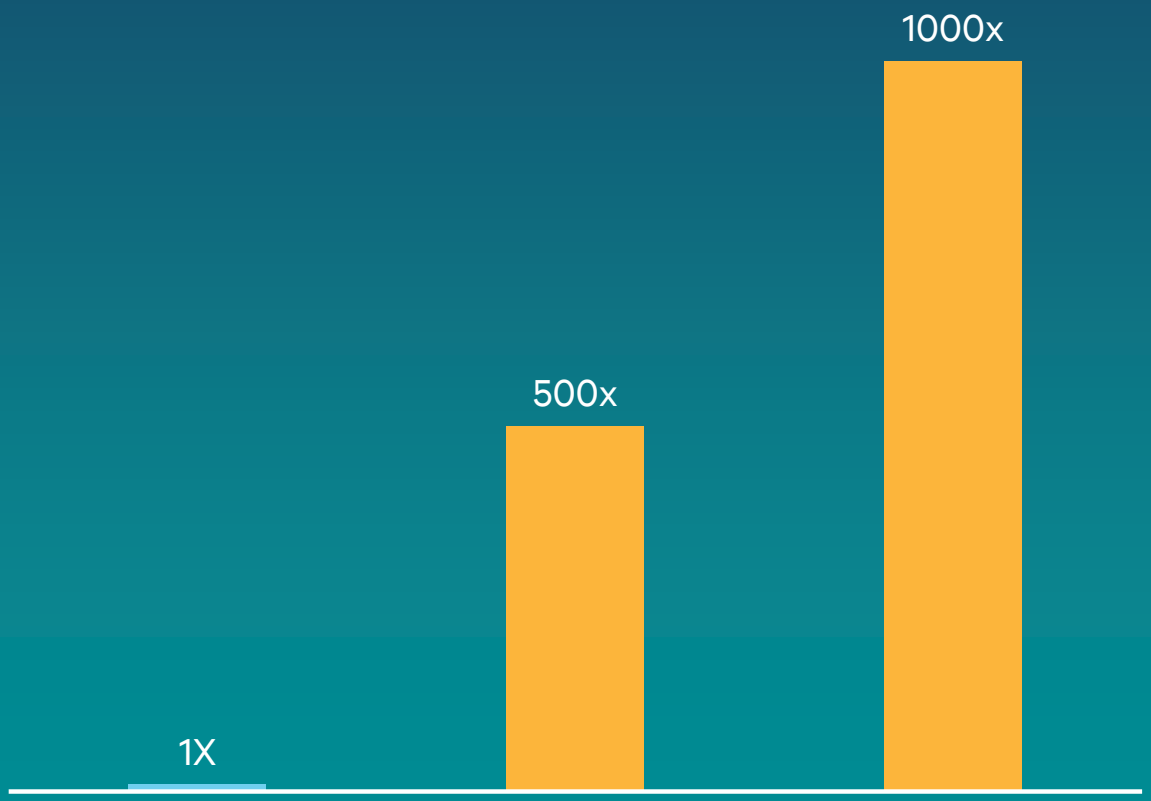

# 9%

Small cells

# 10x

Additional spectrum

Source: Qualcomm research




**20%**

Small cells

**10x**

Additional spectrum

Source: Qualcomm research

# Thank you

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