

IP Ethernet in Mobile Backhaul Infrastructure



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Presented by

Michael Howard

Co-founder and Principal Analyst, Carrier and Data Center Networking
Infonetics Research

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Today's Speaker



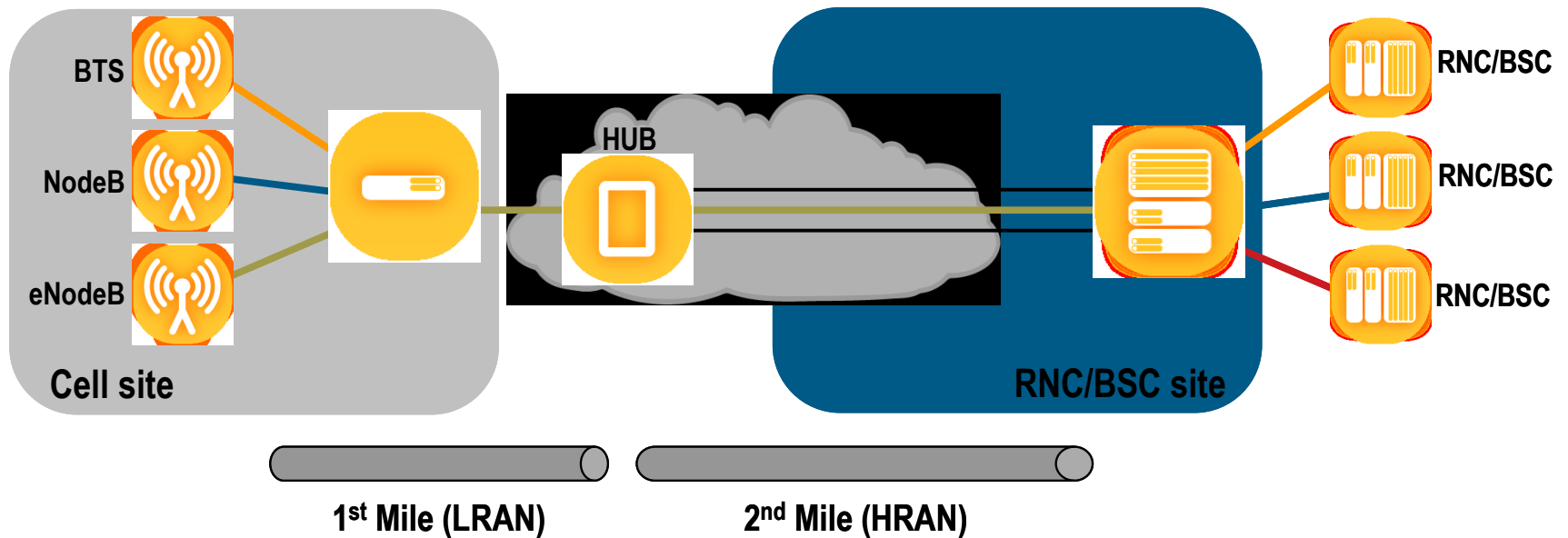
Michael Howard

Principal Analyst and Co-founder

The Ethernet market is moving

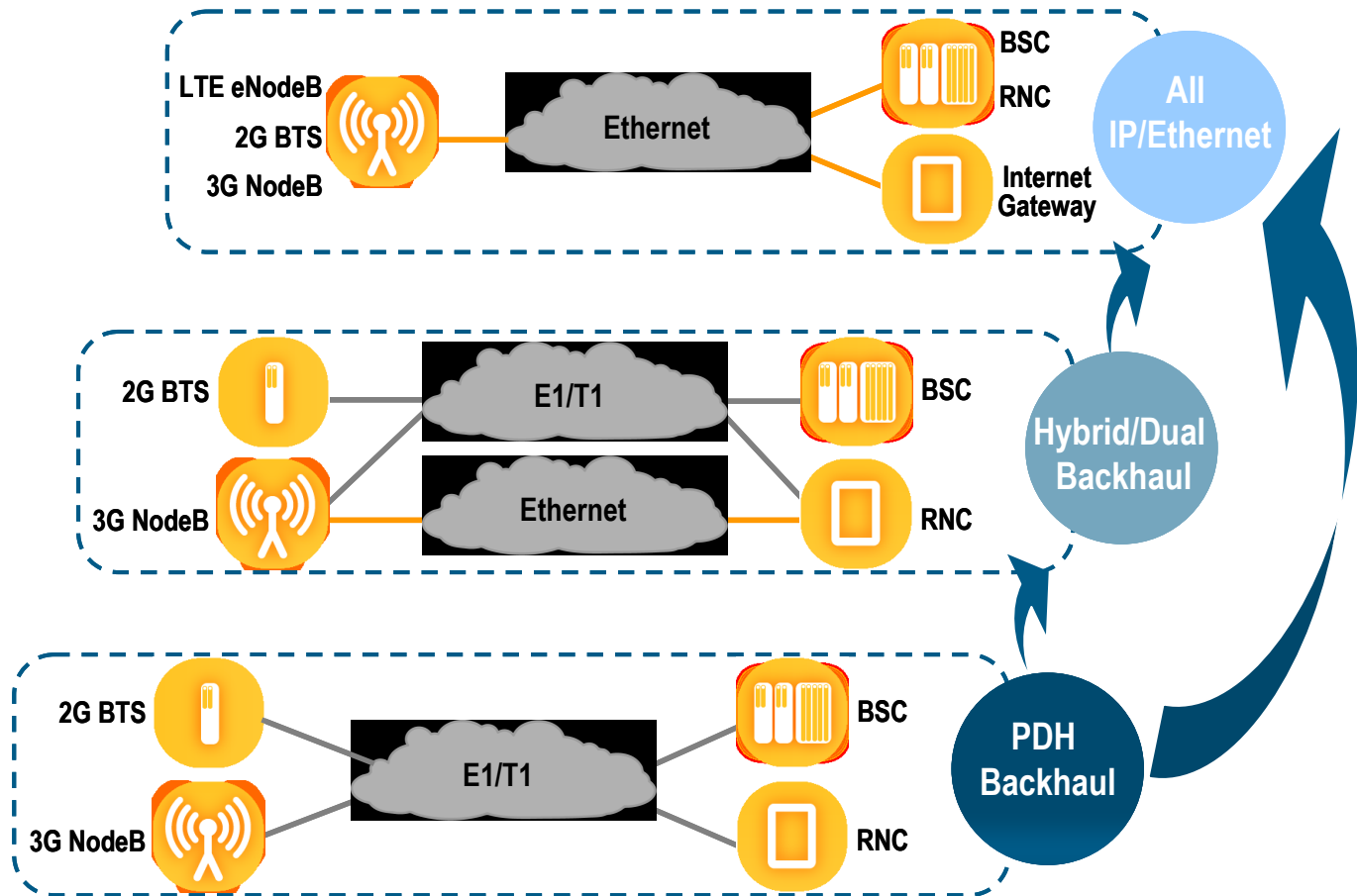
- Providers are investing in **Ethernet *equipment***
 - 2009: **\$22 billion**
 - 2014: **\$32 billion**
 - Cumulative **US\$149 billion** between 2010 and 2014
 - Routers, CE Switches, Ethernet over SDH/SONET and WDM, Ethernet microwave, EPON, VDSL, EADs
- \$Billions of **Ethernet *services*** revenue worldwide
 - 2009: **\$21 billion**
 - 2014: **\$39 billion**

What is mobile cell site backhaul?



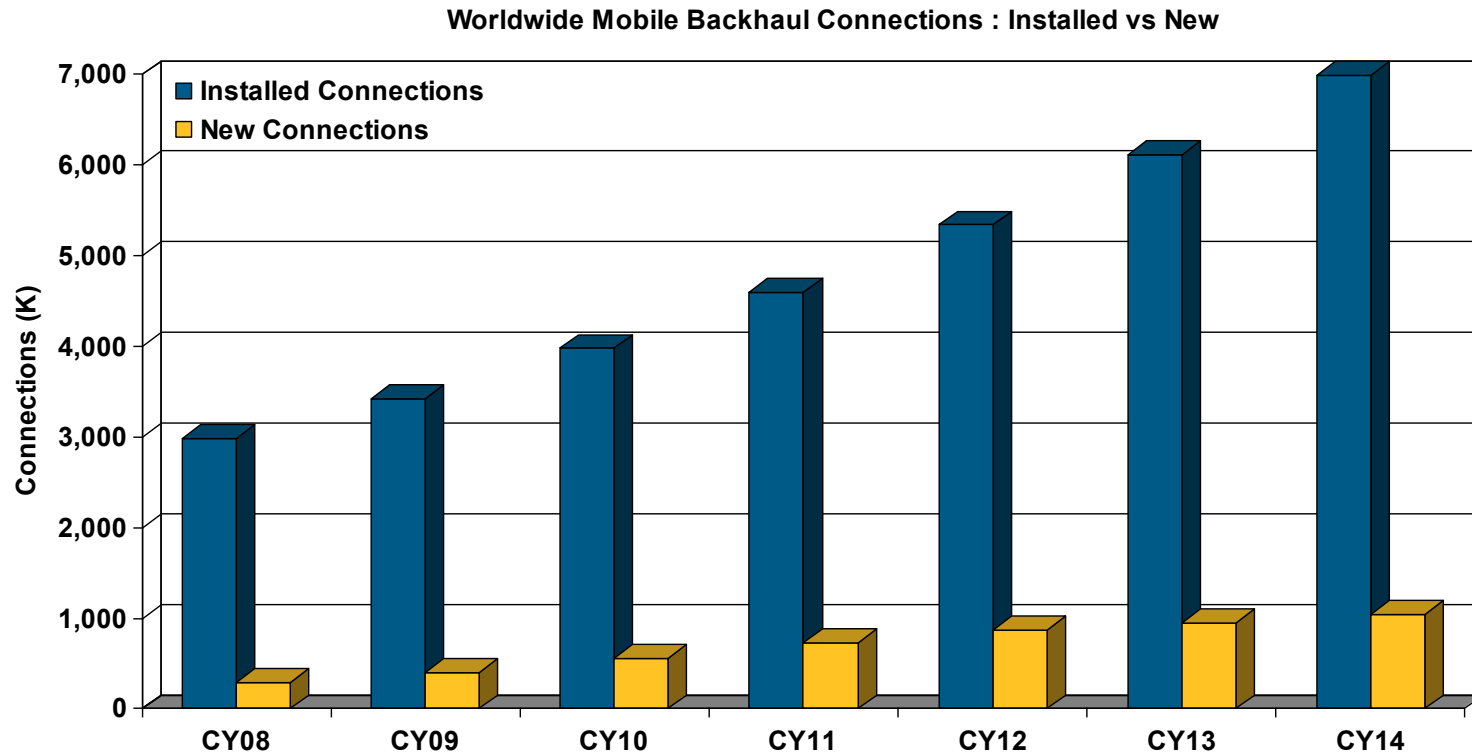
Network between the BTS/NodeBs at a cell site to the BSC/RNC site, whether over air, copper, or fiber

3 stages of IP/Ethernet backhaul to LTE



IP/Ethernet backhaul solves ARPU-traffic disconnect today and backhaul problem for HSPA today...and LTE tomorrow

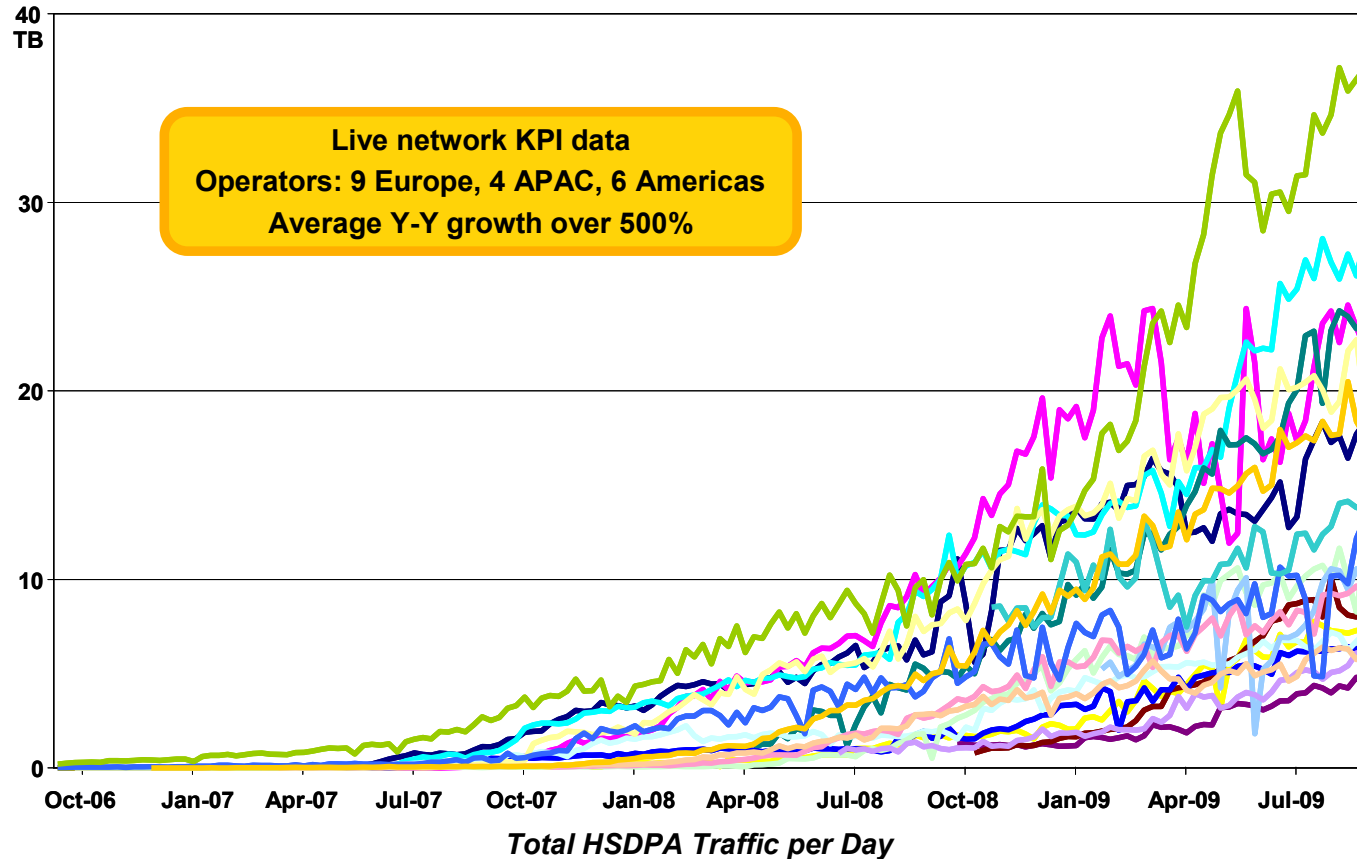
Cell site backhaul connections increase quickly



- 2010-2014 new: ~1.4 billion mobile subs, ~1.2 billion mobile broadband subs
 - More base stations, cell site connections (and equipment for each), higher backhaul capacities
- Connections and bandwidth per connection drive equipment spending

Source: Infonetics Research *Mobile Backhaul Equipment and Services*, April 2010

...And data dramatically increases traffic load

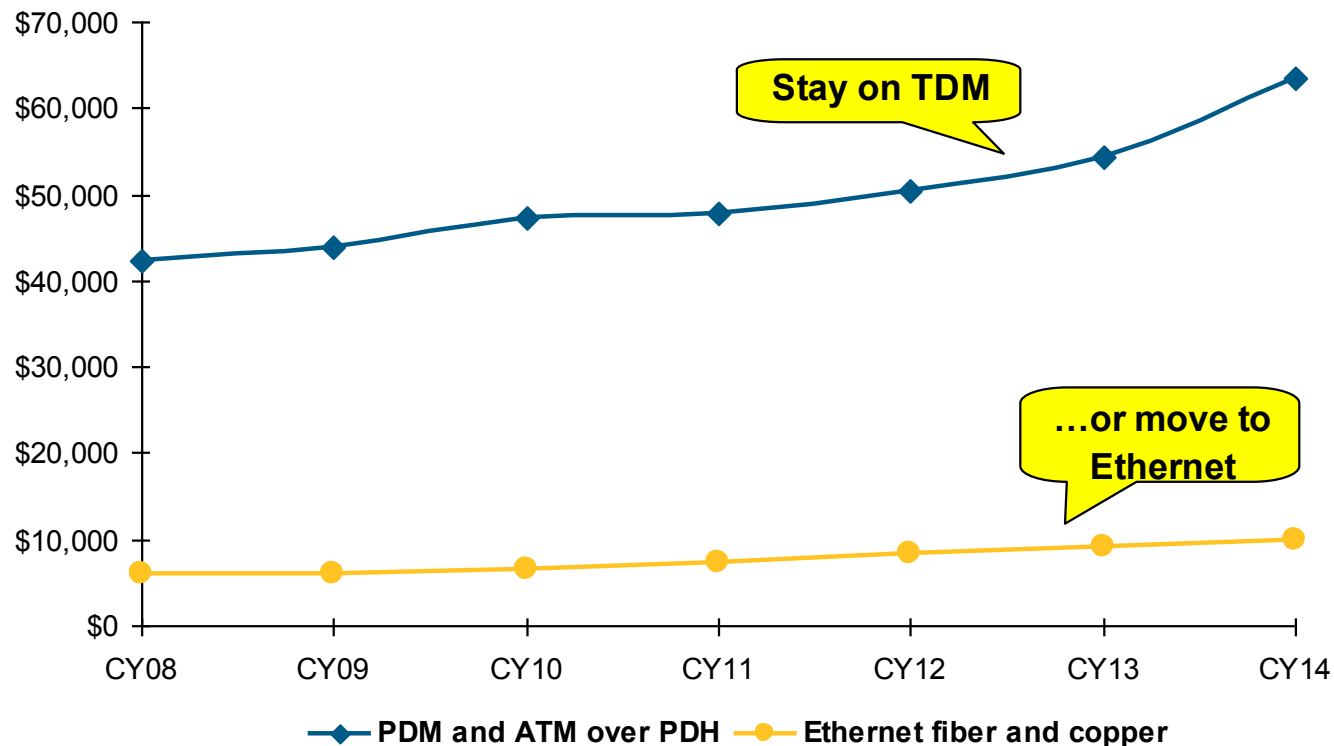


Source: Nokia Siemens Networks

Operators increasing capacities via EDGE, EV-DO, HSPA, WiMAX, LTE

.....But flat to slow ARPU changes

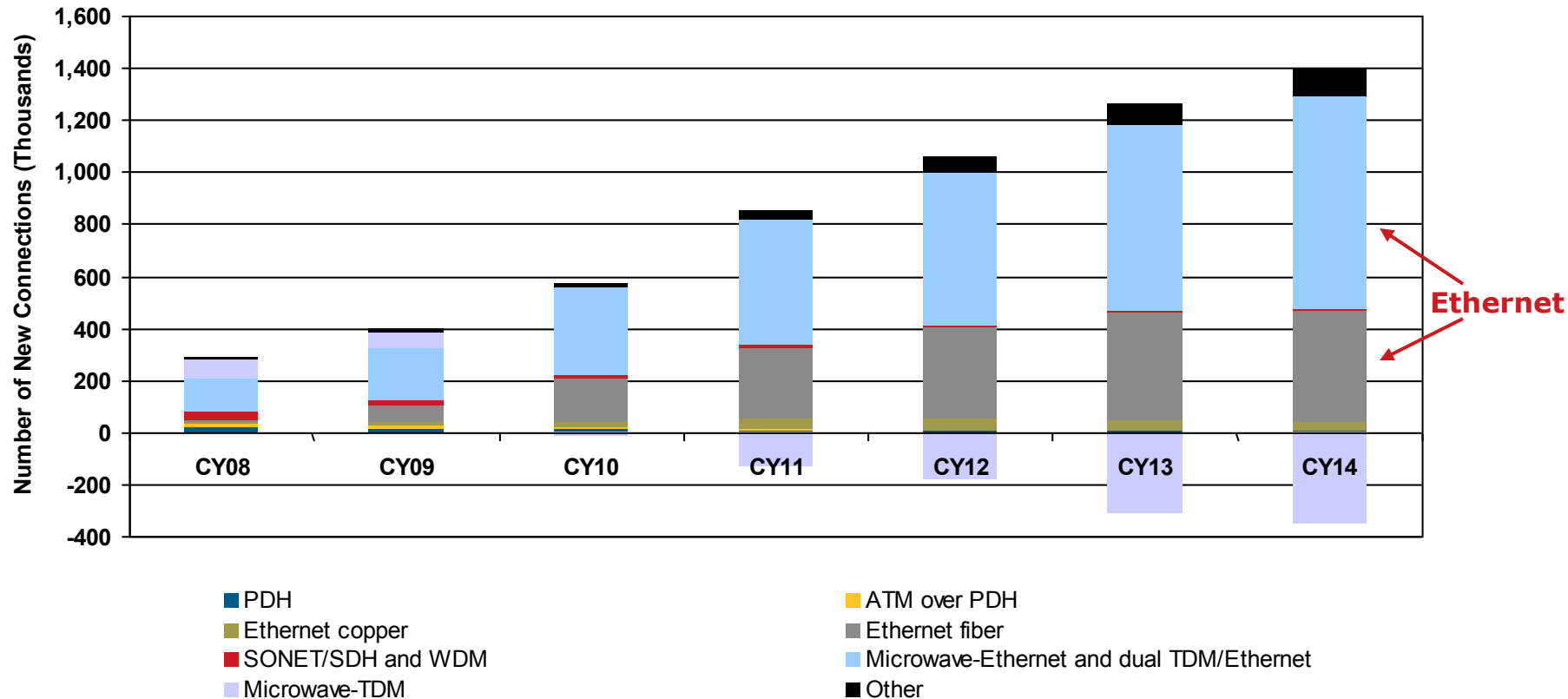
Costs drive operators to IP/Ethernet backhaul



- Costs based on backhaul capacities required by technology, and MRCs for services
- Ethernet offers huge drop in cost-per-bit of bandwidth that almost matches the 2x to 10x traffic increases HSPA delivers
- IP/Ethernet naturally fits WiMAX and LTE as well

New cell site connections go Ethernet

Worldwide Mobile Backhaul New Connections by Technology



New connections move quickly to mostly IP/Ethernet, whether fiber, copper or air

Mobile backhaul 2010 issues

- Ethernet solidly in operator MBH strategies
 - Majority plan dual/hybrid approach
 - Predict 50 operators will be committed to single IP/Ethernet backhaul (were 25 at end 2009)
 - LTE planning drives more Ethernet
- Mobile broadband growth continues to drive traffic and costs
- Cellsites not fiberized fast enough—opportunity for microwave and copper
- New Ethernet chipsets include MBH functions: 1588v2, SynchE, Eth OAM

Summary

- Backhaul costs are the principal driver, due to traffic growth
- Operators are making the investment to move to the IP/Ethernet backhaul networks
- IP/Ethernet backhaul
 - Solves ARPU-traffic disconnect today
 - Solves backhaul problem for HSPA today
 - ...and LTE tomorrow

Thank You

Michael Howard

Co-founder and Principal Analyst, Carrier and Data Center Networks

Infonetics Research

+1 408.583.3351

michael@infonetics.com

www.infonetics.com

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