



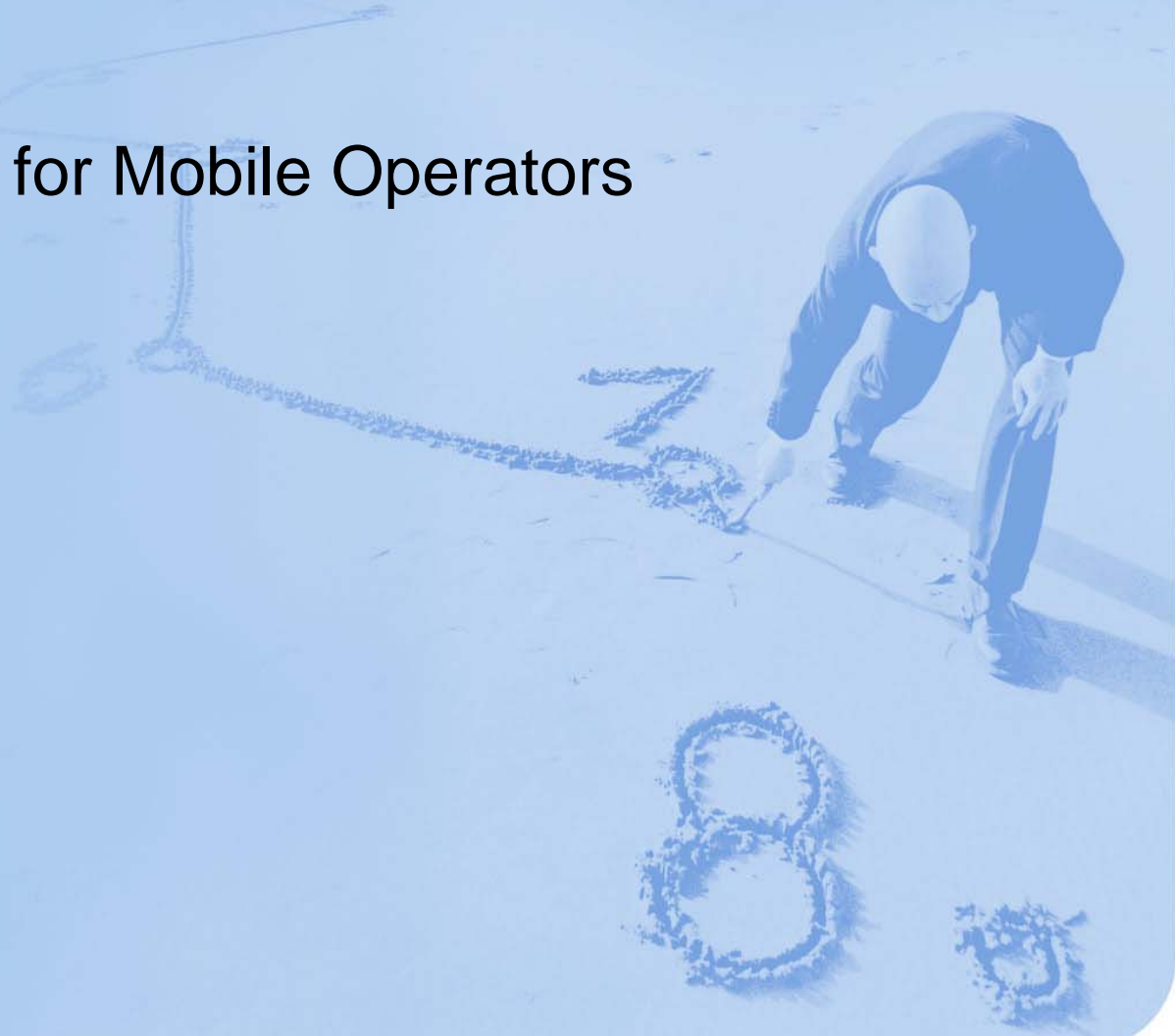
Backhaul Strategies for Mobile Operators

New York, NY

September 22, 2009



FiberTower



FiberTower at a Glance

Company Snapshot

- NASDAQ Listed: FTWR
- Approximately 150 Employees
- First site live: March 2003
- National Licensed Spectrum
- 13 Existing U.S. Markets

Network Services

- Low Capacity: T1
- Mid Capacity: nxT1, Ethernet
- High Capacity: DS-3, OC-n, Ethernet
- Wavelengths: Inter and Intra metro
- TDM to Ethernet Migration

Financial Highlights – Q2 2009

- Annual Revenue \$62.3M
- Yr/Yr Revenue Growth 31%
- Field EBITDA positive July 2008
- Cash & Equivalents \$90M
- Total Assets \$622M

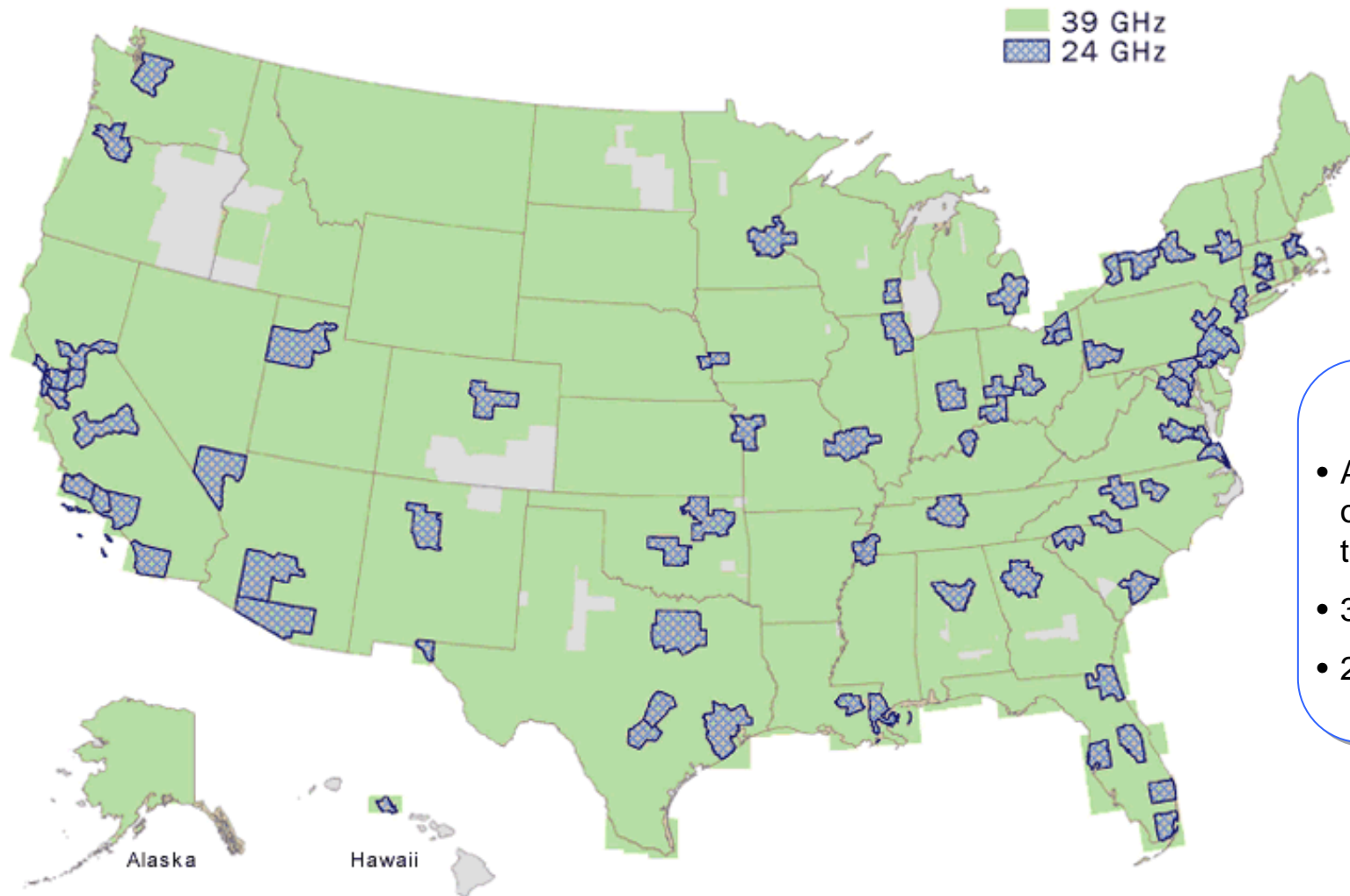
Network Metrics @ Q2 2009

- Deployed Cell Sites > 6,300
- Live Markets 13
- Live LEC regions > 15
- Network Route Miles > 12,800
- Fiber Partners > 20

▶ Facilities based hybrid fiber wireless cellular backhaul for over 6 years



National Spectrum Footprint



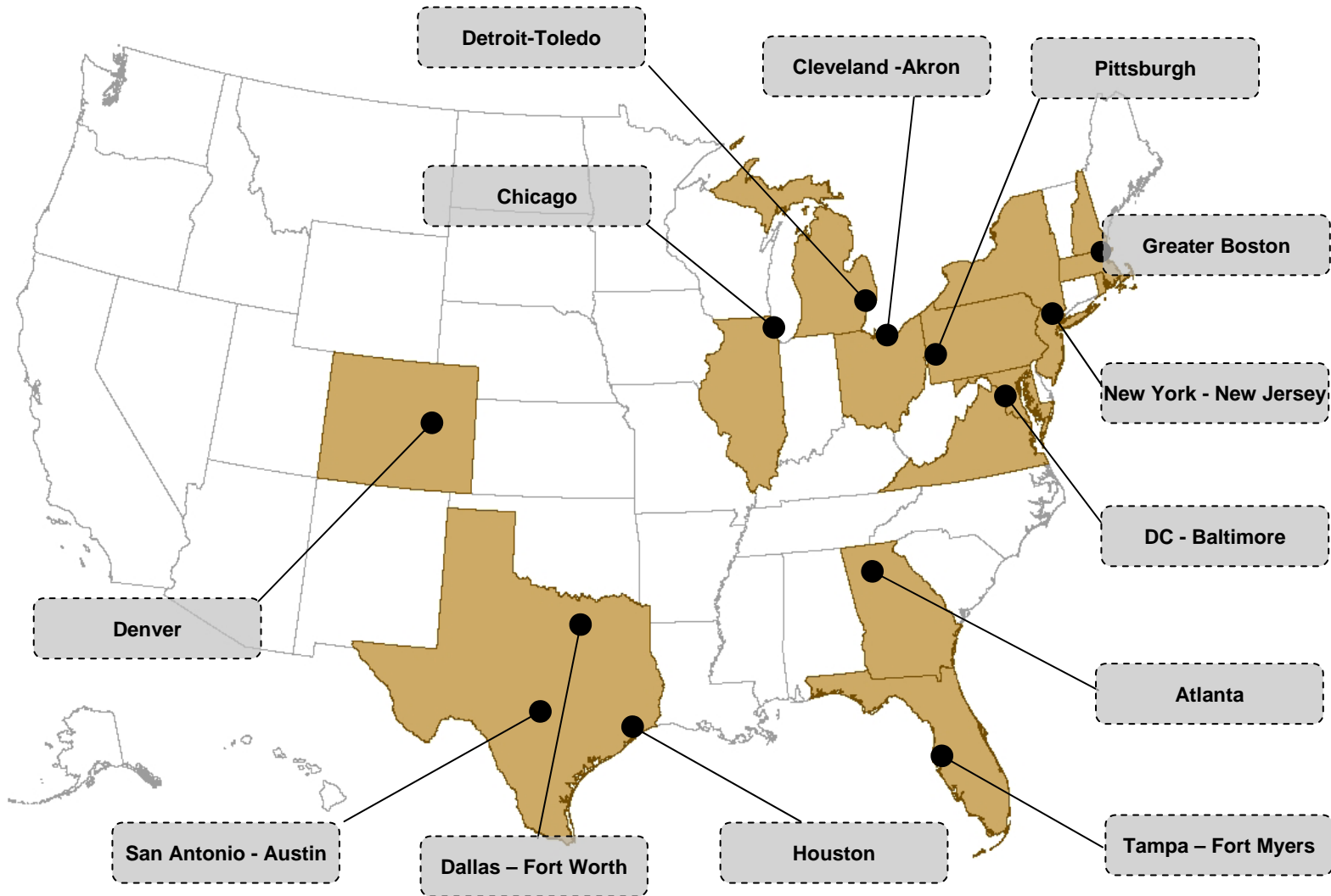
Spectrum Summary

- Average of over 700 MHz of licensed spectrum in the top 30 Markets
- 39 GHz – National Scope
- 24 GHz – Top 77 Markets

▶ Ideal spectrum for rapid deployment of cellular backhaul



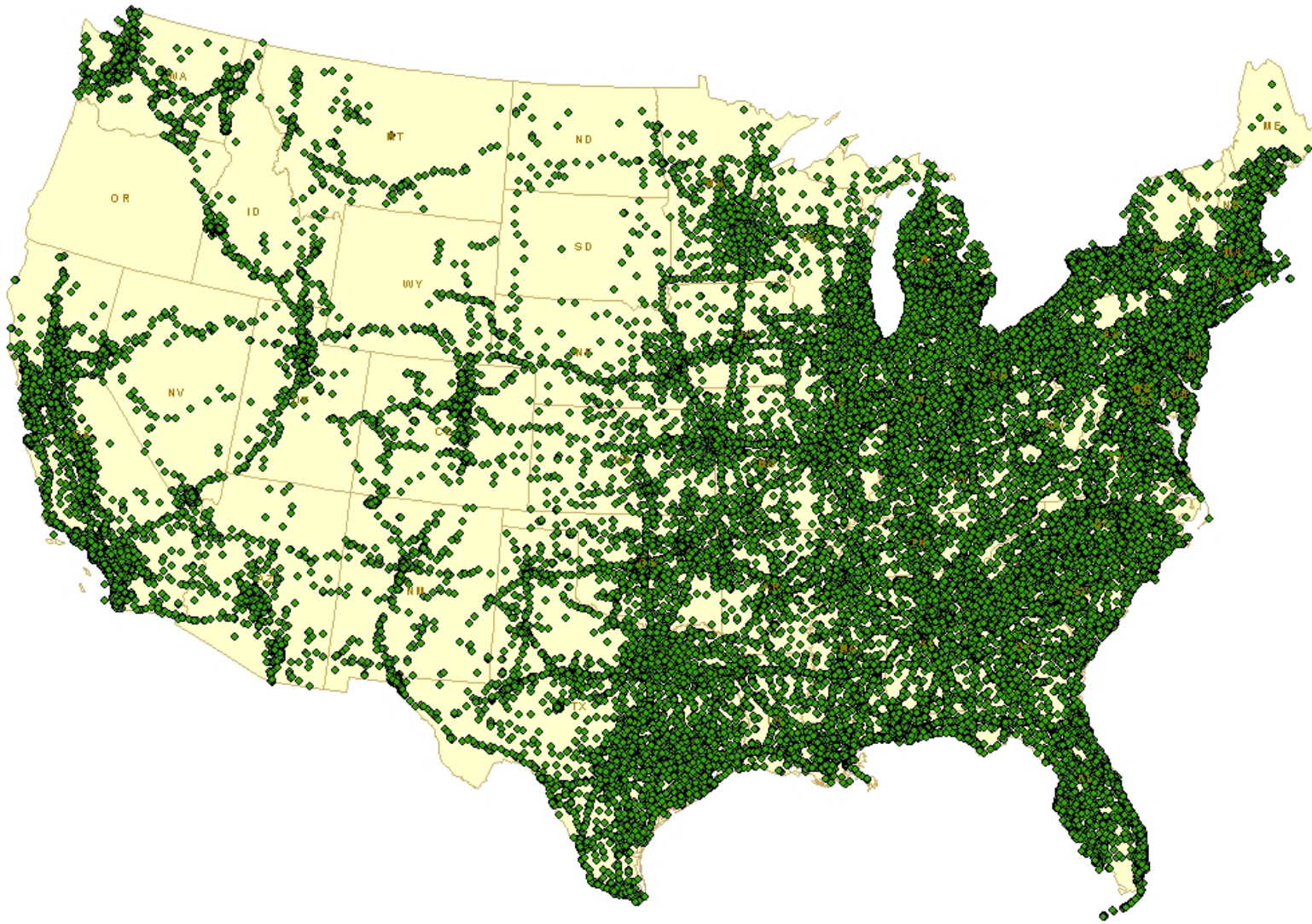
Markets Served



▶ Market presence in greater than 15 LEC regions



National Tower Relationships

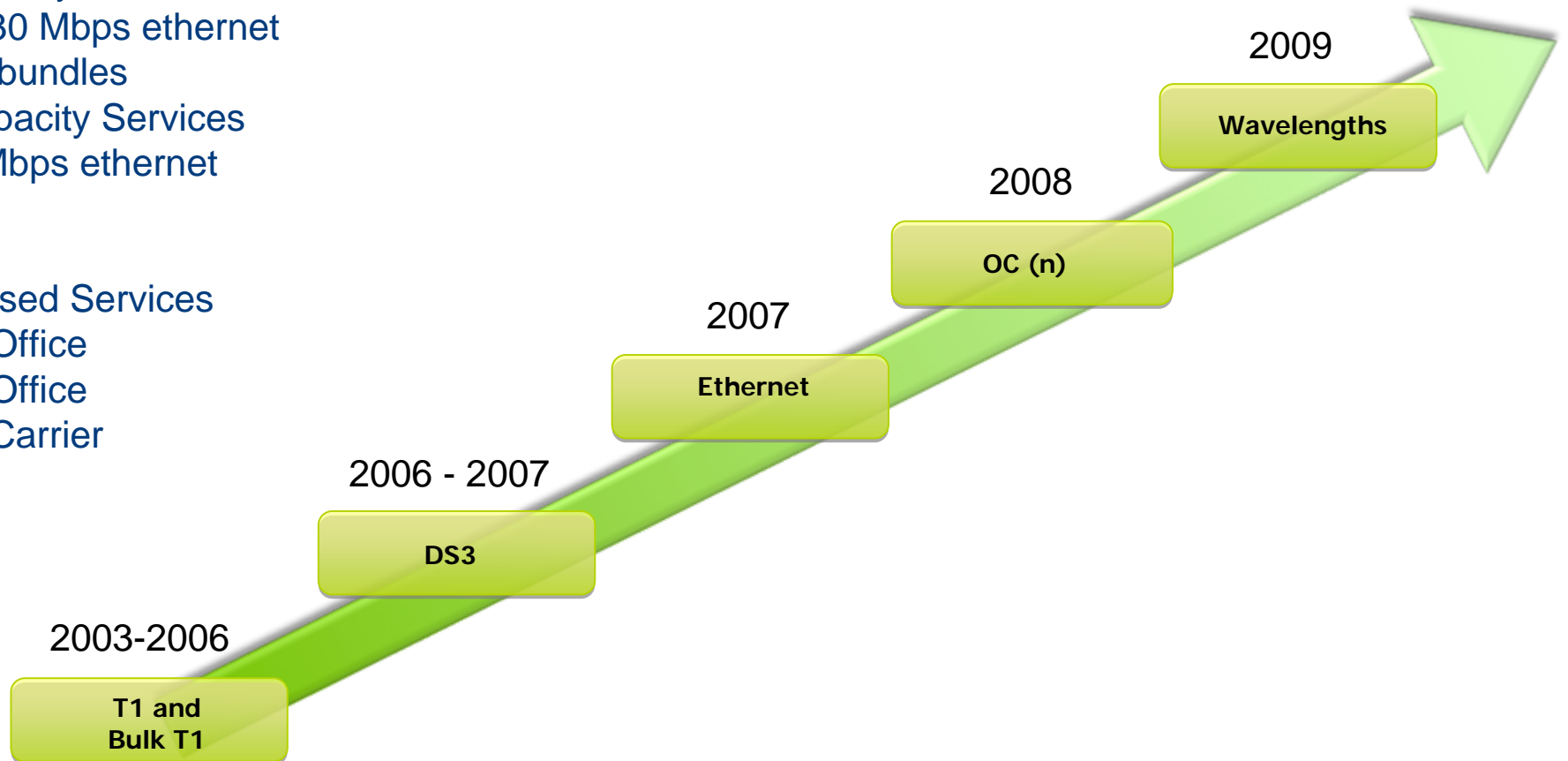


▶ Agreements representing 100,000 towers (Relationship with Crown Castle)



Service Offerings

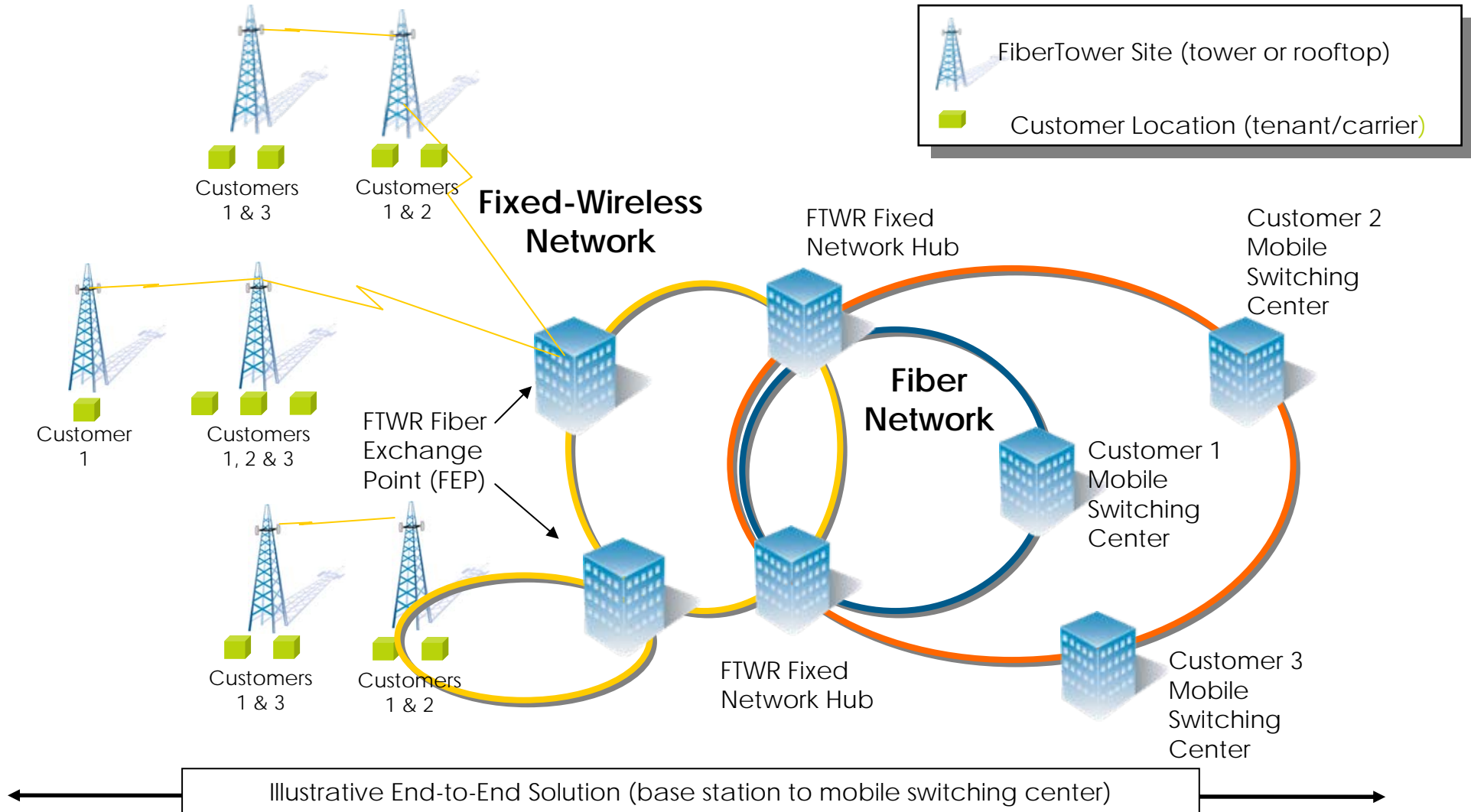
- National Scope Pricing
- Mid Capacity Services
 - 10 – 30 Mbps ethernet
 - nxT1 bundles
- High Capacity Services
 - 50+ Mbps ethernet
 - DS-3
 - OC-3
- Fiber Based Services
 - Intra Office
 - Inter Office
 - Inter Carrier



▶ Expanded portfolio to address the growing needs of wireless carriers



Network Architecture



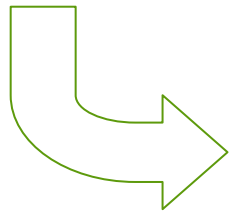
▶ Facilities based, Hybrid Fiber – Wireless Network, 100% licensed



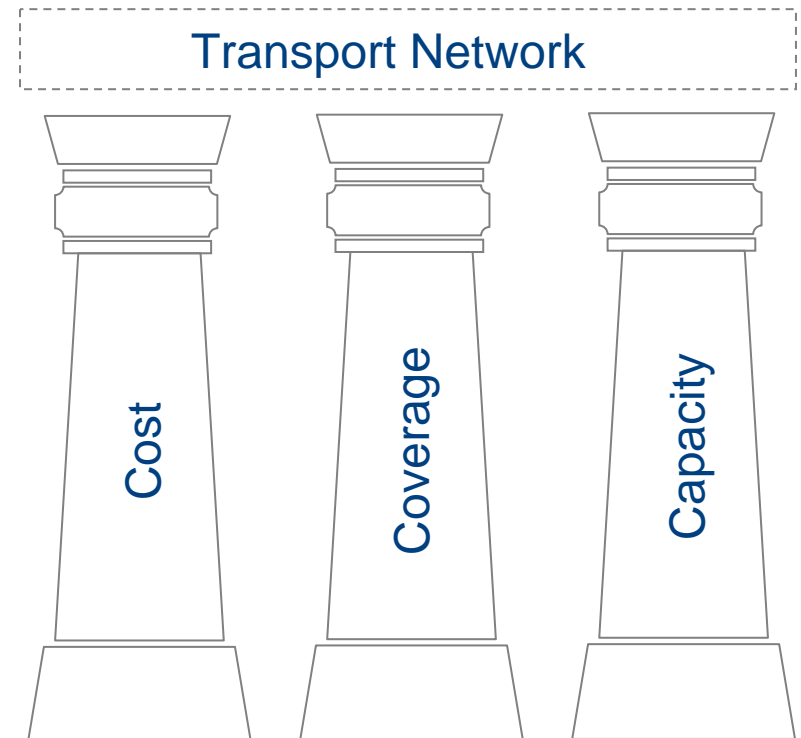
3G / 4G Backhaul Requirements – Common Themes

- Long-term backhaul solutions that can scale with their business needs
- Help solve the data backhaul divergence dilemma
- Balance the “Three C’s”

Key Requirements	
Capacity	•Clear path to >100 Mb/s per site
Coverage	•Solution for the majority of sites in a market
Cost	•Rapidly declining cost structure (\$/Mb/s)
Quality	•TDM-like quality (BER, availability, MTTR, diversity/protection)
Ethernet support	•Quality of service + ability to support a graceful migration from TDM



Ethernet Performance Specs	
Latency	< 7 ms (one-way)
Jitter	< 1 ms
Packet Loss	< 6.25 x 10 ⁻⁵ %
Failover	< 50 ms

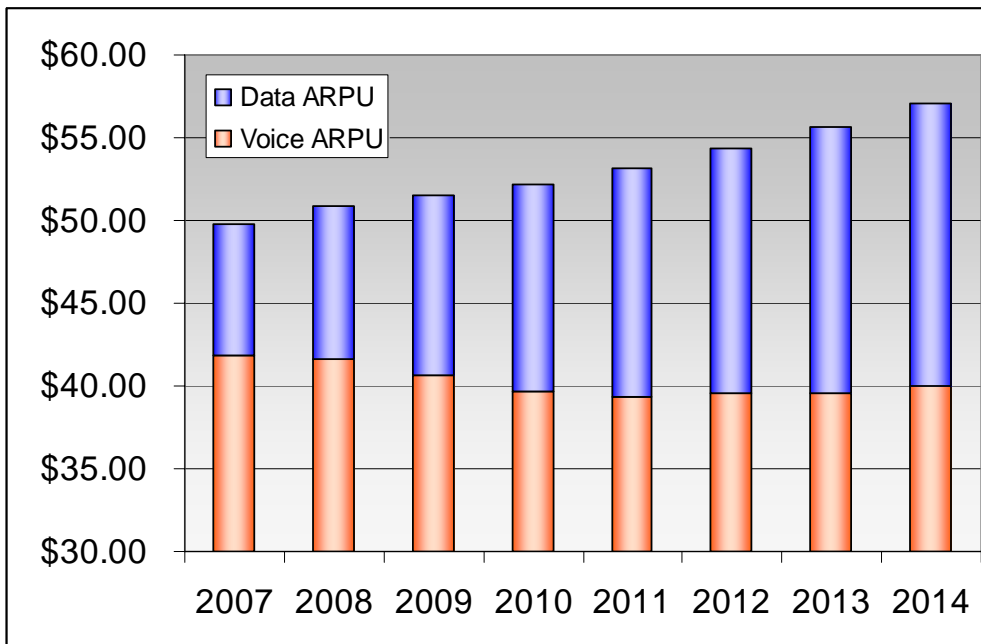


▶ Ethernet specifications mirror SONET standards

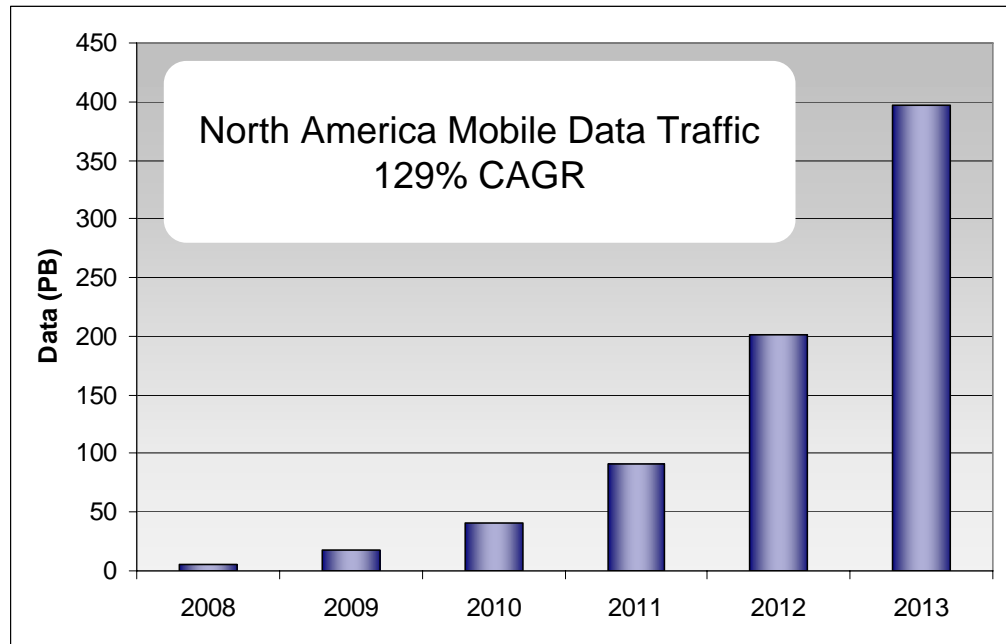


Data Uptake – How big of a problem is this?

- 2008: 1.3 Exabytes (10^{18}) transferred from mobile devices (*source: ABI research*)
- May 2009 : US Wireless Data Revenues expected to be \$42B (*source: Washington Post*)
- 2014: Estimated 1.6 Exabytes transferred per month (*source: Cisco Systems*)
- Video streaming will grow at a CAGR of 62% between 2008 and 2014 (*source : ABI research*)
- Smartphone sales are expected to increase 95% to more than 300M by 2013 (*source: Juniper Research*)



Source: Visant Strategies



Source: Cisco Systems

▶ Data must be dealt with today, including upstream traffic requirements



Backhaul Technology Alternatives

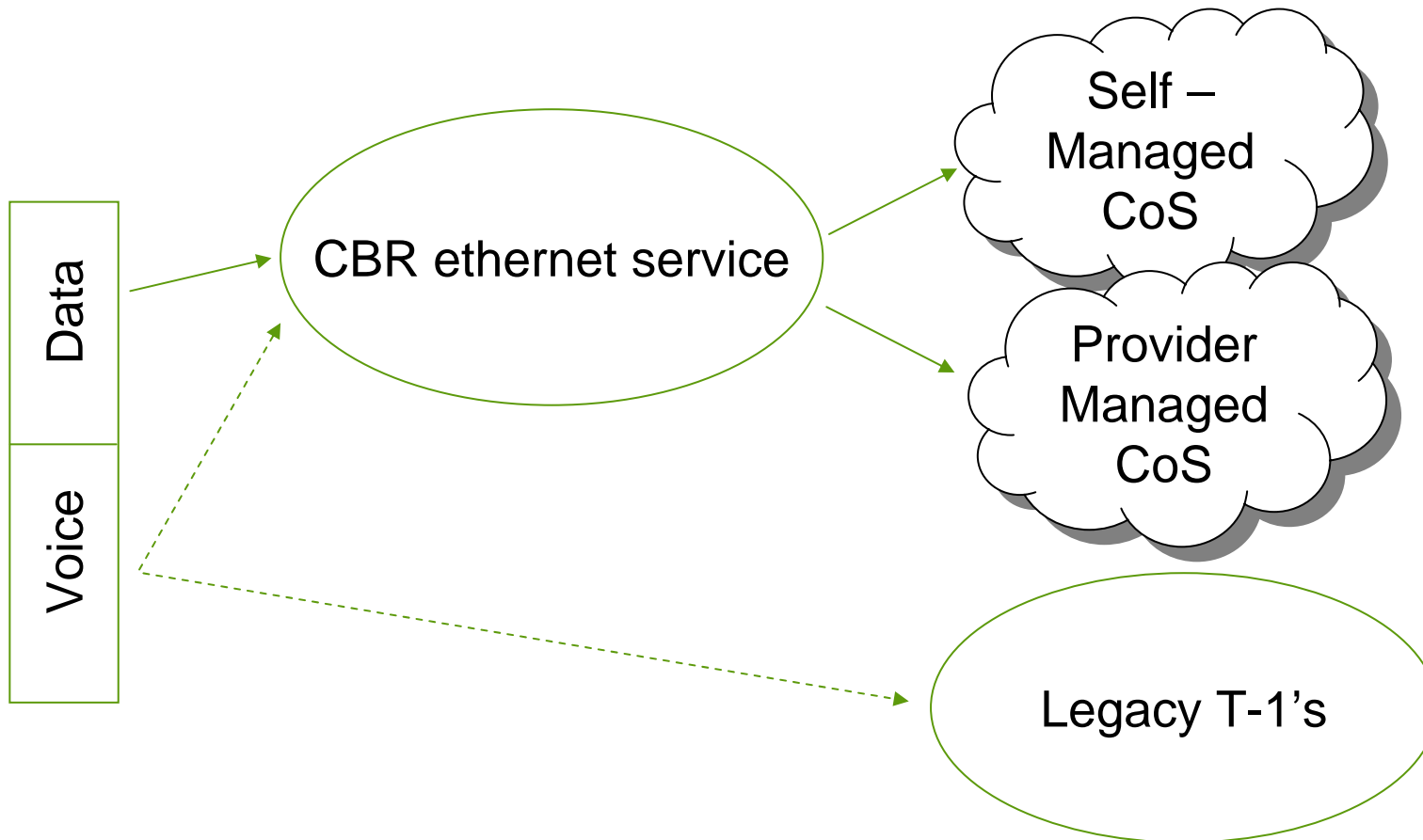
	Copper/xDSL (e.g., VDSL2)	Fiber (PTP, ring or GPON)	Microwave	Hybrid Fiber- Microwave
Capacity	Up to 100 Mb/s, depending on # of pairs used, quality and distance	>>1 Gb/s	Up to 1 Gb/s, depending on distance and topology	Up to 1 Gb/s, depending on distance and topology
Coverage	Limited and variable based on quality and availability of plant	Economically limited to ~1000' from fiber backbone	Tradeoff between capacity and coverage	Very good (>70%)
Cost	Low incremental cost, where viable	Economically limited to ~1000' from fiber backbone	Moderate and relatively fixed	Ability to optimize for particular scenario
Quality	Variable, depending on quality of plant	High (99.99%)	High (99.999% per hop)	High (>99.99%)
TDM + Ethernet Support	Yes (using separate pairs or pseudo wire)	Yes	Yes	Yes

▶ Unlike fiber, microwave deployment costs are not distance dependant



Data Offload

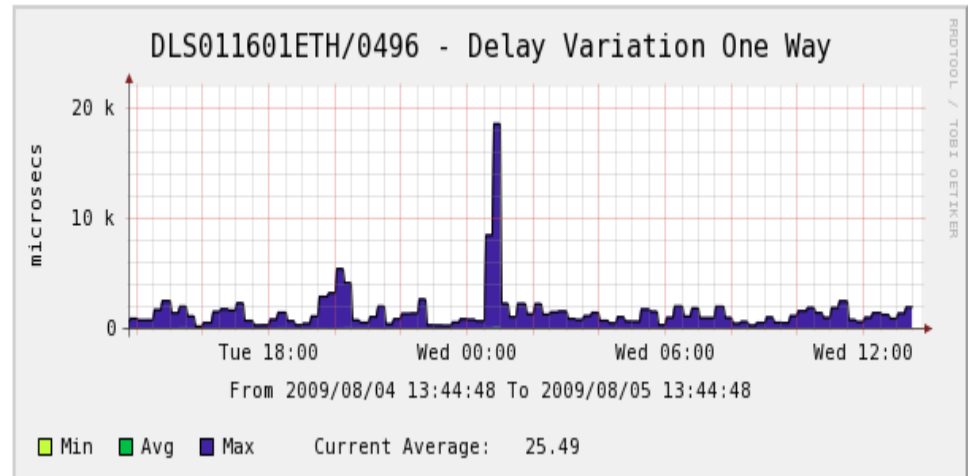
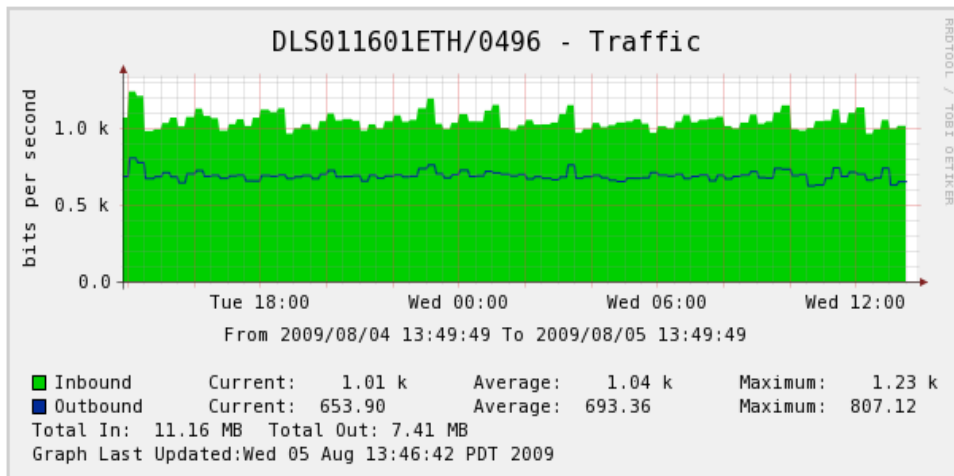
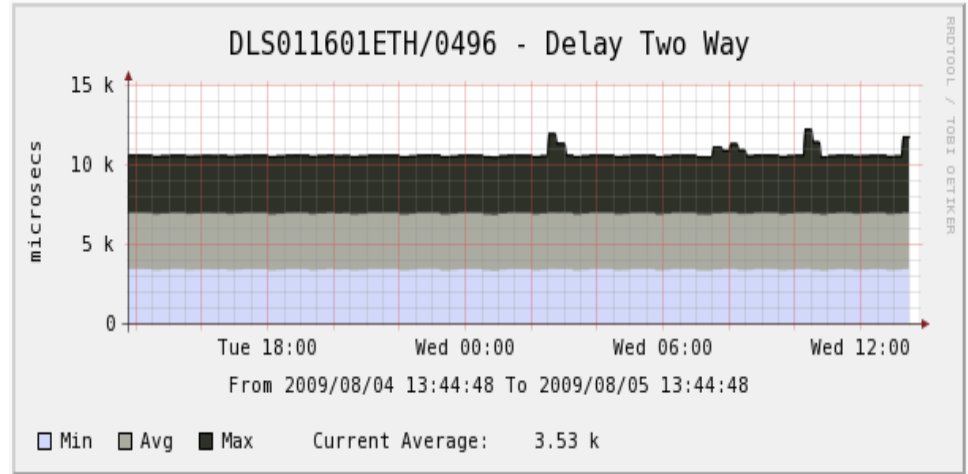
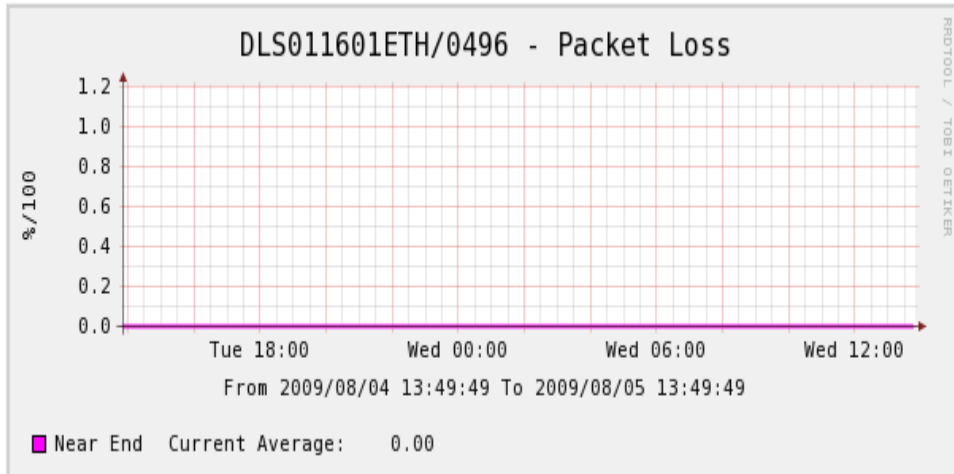
- Simple “Data Offload” solution via Ethernet Virtual Private Line (EVPL) Service
- Service Management, End-to-End Service Views, Performance Monitoring and SLA Reports



▶ Ethernet migration is not straightforward



SLA Reporting



▶ SLA Reporting can help carriers optimize their ethernet transport



Summary

- Carriers continue to offer new wireless devices
- Data ARPU is close to 30% of total ARPU and growing
- Three C's paramount for wireless operators
 - Cost: Carriers seeking to contain OPEX and CAPEX costs
 - Coverage: Carriers looking for 80% coverage, with a minimum number of service providers per market
 - Capacity: Carriers seeking high capacity, long-term solutions
- Transport medium is **not** a proxy for network quality
- Carriers migrating from TDM to Ethernet, but TDM will still be needed
- Fiber and microwave solutions are both viable, and have to co-exist for an ubiquitous solution

