

## Macrocell Backhaul LTE Upgrade

# Intelligent Backhaul Radio Meets LTE High Capacity Transport Requirements in AnyLOS™



Demand for network capacity to support the explosive growth of new mobile devices and applications is driving the upgrade of macrocell transport solutions to meet the new LTE requirements for capacity and performance. Existing 3G macrocell towers require new mobile backhaul solutions capable of up to 10x increase in throughput along with 10x decrease in latency, as well as new capabilities to support packet based timing, IP architecture and multiple traffic types. Going forward, macrocell LTE backhaul must also be capable of supporting SLA and QoS requirements regardless of access to fiber, demanding fiber equivalent performance of any mobile backhaul solution.

### New Service Requirements for Wireless Transport

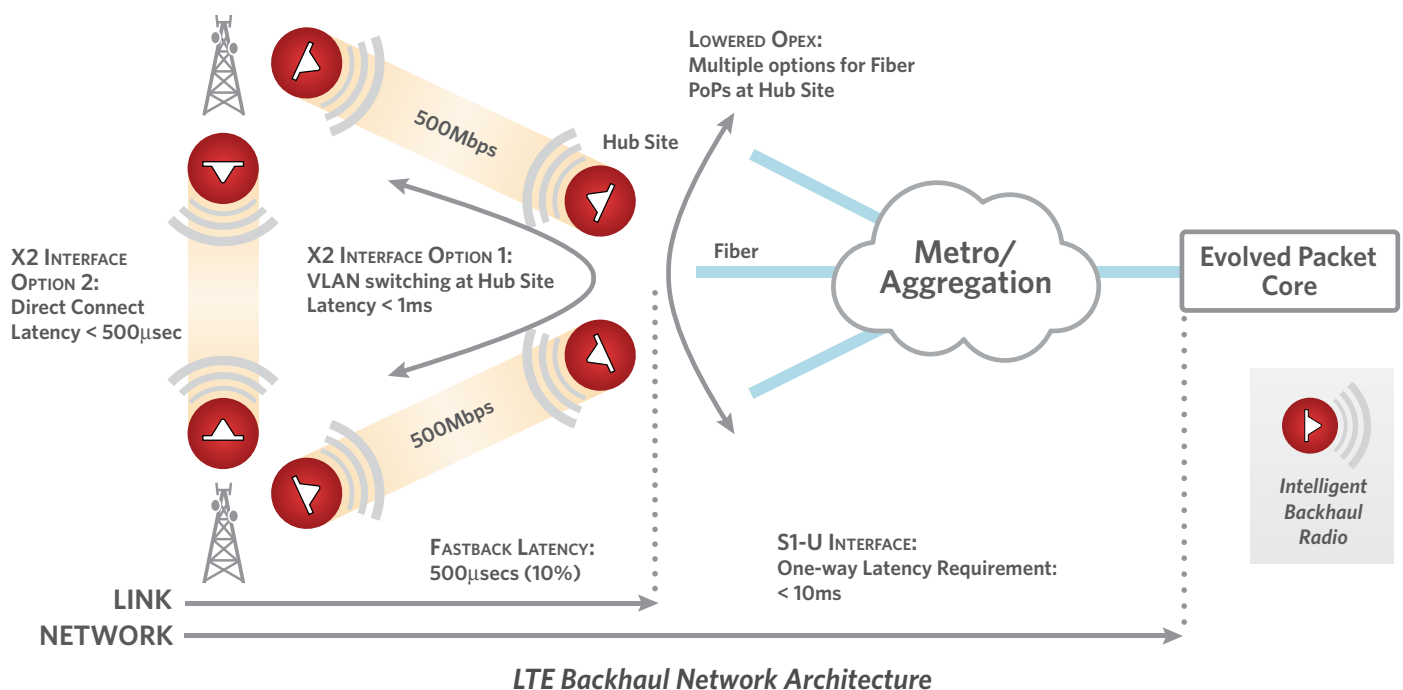
|                 | 3G           |   | 4G                            |
|-----------------|--------------|---|-------------------------------|
| Capacity/Site   | 10-50Mbps    | → | over 100Mbps to 1Gbps         |
| One-way Latency | 100ms        | → | 10ms                          |
| Sync            | No phase     | → | 0.5-1.5micro seconds          |
| Architecture    | Hierarchical | → | Flat All-IP distributed       |
| Traffic         | Unicast      | → | Unicast, Multicast, Broadcast |

### IBR New Class of Mobile Transport

The Fastback IBR fuses high performance data networking with advanced radio technology to achieve technical and economic breakthroughs that eliminate previous limitations of mobile backhaul performance. This new class of wireless device is an integrated carrier-grade switch and radio purpose built for the requirements of the new mobile network. The IBR is designed for high performance, low latency, and integrated CE/SLA capabilities to support new architecture and traffic types at scale.

### IBR Breakthrough Features

- Highest capacity in AnyLOS™: over 800 Mbps
- Lowest jitter and latency: < 500µsec
- Carrier-Grade transport SLA's anywhere
- Extreme Interference Protocol (XIP™)



## AnyLOS Lowers Equipment & Operating Cost

### Multiple Options for X2 Connections

The AnyLOS capability enables the IBR to provide a direct X2 connection between towers, eliminating the need for a traditional hub and spoke architecture and related equipment cost. And the IBR capability to sustain high performance in NLOS, reduces equipment costs of “multiple hops” common in traditional LOS microwave backhaul solutions.

### Multiple Options for Ethernet Backhaul Services

The AnyLOS capability means that mobile network operators can reach multiple fiber points of presence from a single macrocell tower vs. today’s restriction to only one fiber connection. This provides operators with multiple competing providers for Ethernet backhaul services, and potentially more competitive pricing to lower ongoing operating costs.

### Carrier Grade NLOS Solution

A key technical breakthrough in the IBR is Extreme Interference Protection (XIP™), Fastback’s patented algorithms for mitigating effects of uncoordinated and self-interference to enable new applications of unlicensed spectrum including macrocell and small cell backhaul. The IBR interference mitigation capability enables sustained, carrier grade/SLA performance in unlicensed spectrum. This functionality unleashes new levels of certainty and reliability, along with the advantages of tapping hundreds of MHz of available 5 GHz spectrum to relieve the capacity constraints of licensed bands.

### Fastback Any Line of Sight™

Sustained performance that automatically aligns and adapts to any radio line of sight conditions.

|                           |  |
|---------------------------|--|
| <b>Line of Sight</b>      | Unobstructed link, similar to traditional point to point microwave at distances of a few kilometers, but without any precision alignment requirement |
| <b>Near Line of Sight</b> | Partial obstruction, working around obstacles such as trees and across rooftops  |
| <b>Non-Line of Sight</b>  | Complete obstruction, requiring radio waves to propagate around street corners and buildings   |

### Extreme Interference Protection (XIP™)

- Adaptation of channel bandwidths (ms level)
- Frequency agility (ms level)
- Spatial agility (ms level)
- Re-transmission (sub ms level)
- Cancellation, dominant interferers
- Independent optimization, up and down links

### About Fastback Networks

Fastback Networks was founded with a vision to deliver innovative technology for the mobile infrastructure of the future, enabling network operators to deliver new services, tap new markets and monetize a new generation of mobile applications. With insights derived from the collective team’s vast experience building leading edge radio and data networking solutions, Fastback Networks looked at the challenges of 4G/LTE deployment with fresh eyes and better ideas, and developed a transformational solution that enables the acceleration of next generation mobile services. Fastback Networks is funded by Foundation Capital, Granite Ventures and Matrix Partners.



*intelligent wireless transport*

**Fastback Networks**

2460 North First Street, Suite 200

San Jose, CA 95131

408-430-5440

[www.fastbacknetworks.com](http://www.fastbacknetworks.com)