

***Partnering with Public and Private
Enterprises, Helping Schools Build LTE
Networks to Bridge the Homework Gap***

Rick Xu, rick.xu@Baicells.com



Baicells At a Glance

- Vision: **Connecting more with less, driving the ultimate LTE experience.**
- A privately held technology company specializing in innovative LTE solutions to serve WISP, education, municipality, utility and other verticals.
- Headquartered in Plano, TX with 400+ employees globally.
- Highlights as of April 2018:
 - 500+ commercial deployments in US
 - 25 products covering LTE Core, RAN and devices end-to-end
 - 350+ patents
 - 75% of employees engaging in direct R&D activities





Potential Solutions to the Homework Gap

Partnership

- Partnering with local businesses on Wi-Fi access for learning, e.g., library, Starbucks
- Seeking mobile hotspot programs and/or affordable LTE on national carriers
- Partnering with local broadband providers to provide low cost internet

Do-it-Yourself

- Build a private standard-based LTE network for students
- Deploy a non-standard based mesh network
- Making the most of existing school district assets, e.g., installing mobile hotspots on school buses



Why Build a Private LTE Network – Key Benefits

- *Total control:*
 - Your own private network (not relying on AT&T, Verizon)
 - Content filtering policy, built-in security
- *Access to full capacity*
 - Your students have access to the full physical capacity of the network, not sharing with other commercial subscribers
 - No data caps, no speed limits
- *Student experience*
 - Designed, planned and optimized for students
 - Best network performance and student experience
- *Low TCO*
 - Once up and running the on-going operational costs to maintain the network is very low
 - Over time, TCO is much lower than mobile hotspot programs
- *Works where there is no coverage from national carriers or even local ISPs*



What it Takes to Build a Private LTE Network – Key Factors

- *Spectrum:*
 - EBS (2.5GHz)
 - CBRS (3.5GHz)
- *Vertical asset: tower, poles, gym, rooftops (the taller the better)*
 - Own
 - Lease
- *Get your team INVOLVED, and a good vendor can help*
 - Spectrum analysis, license filing with FCC
 - RF planning, design and optimization
 - Network rollout/deployment
 - On-going technical support and maintenance
 - Training and knowledge transfer

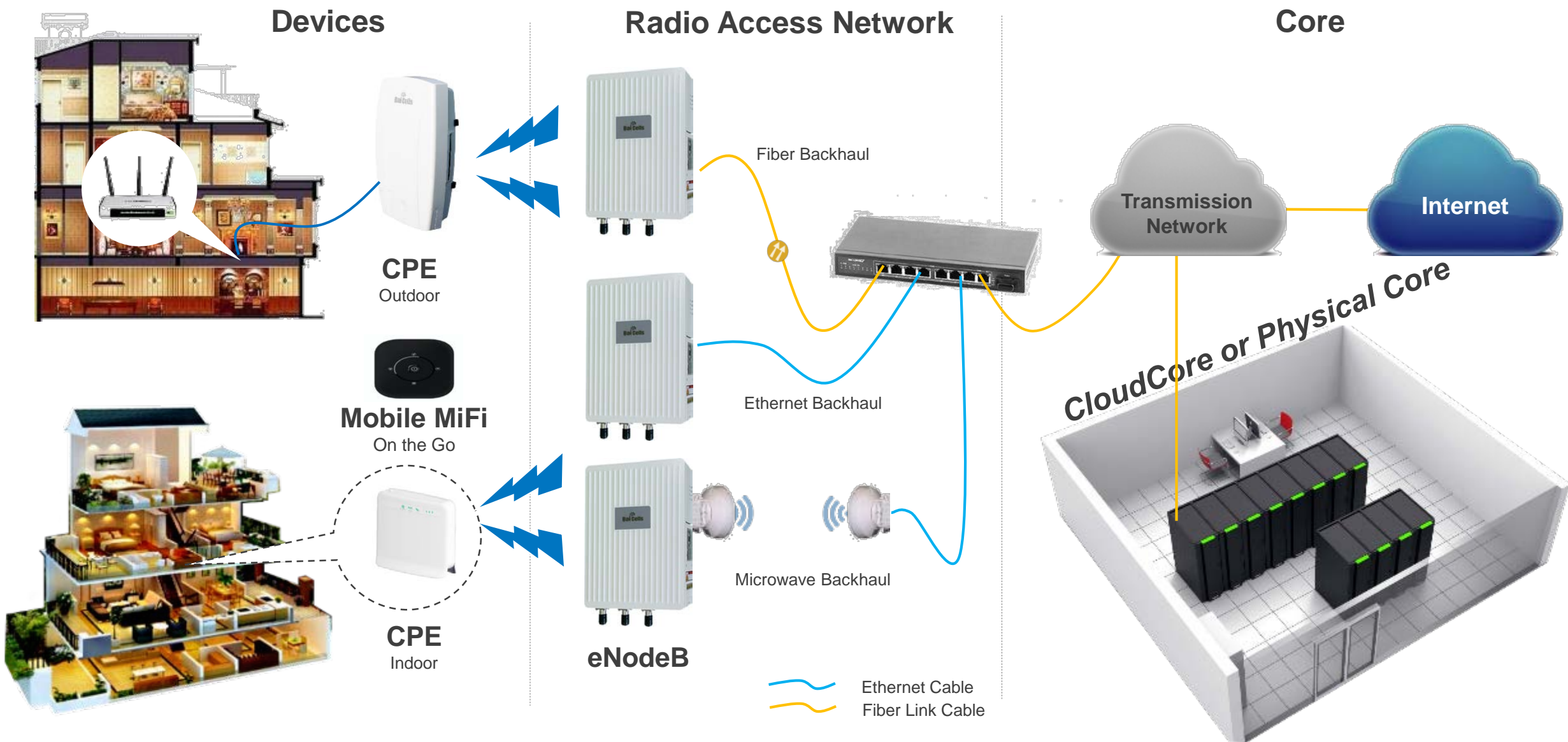


spectrum

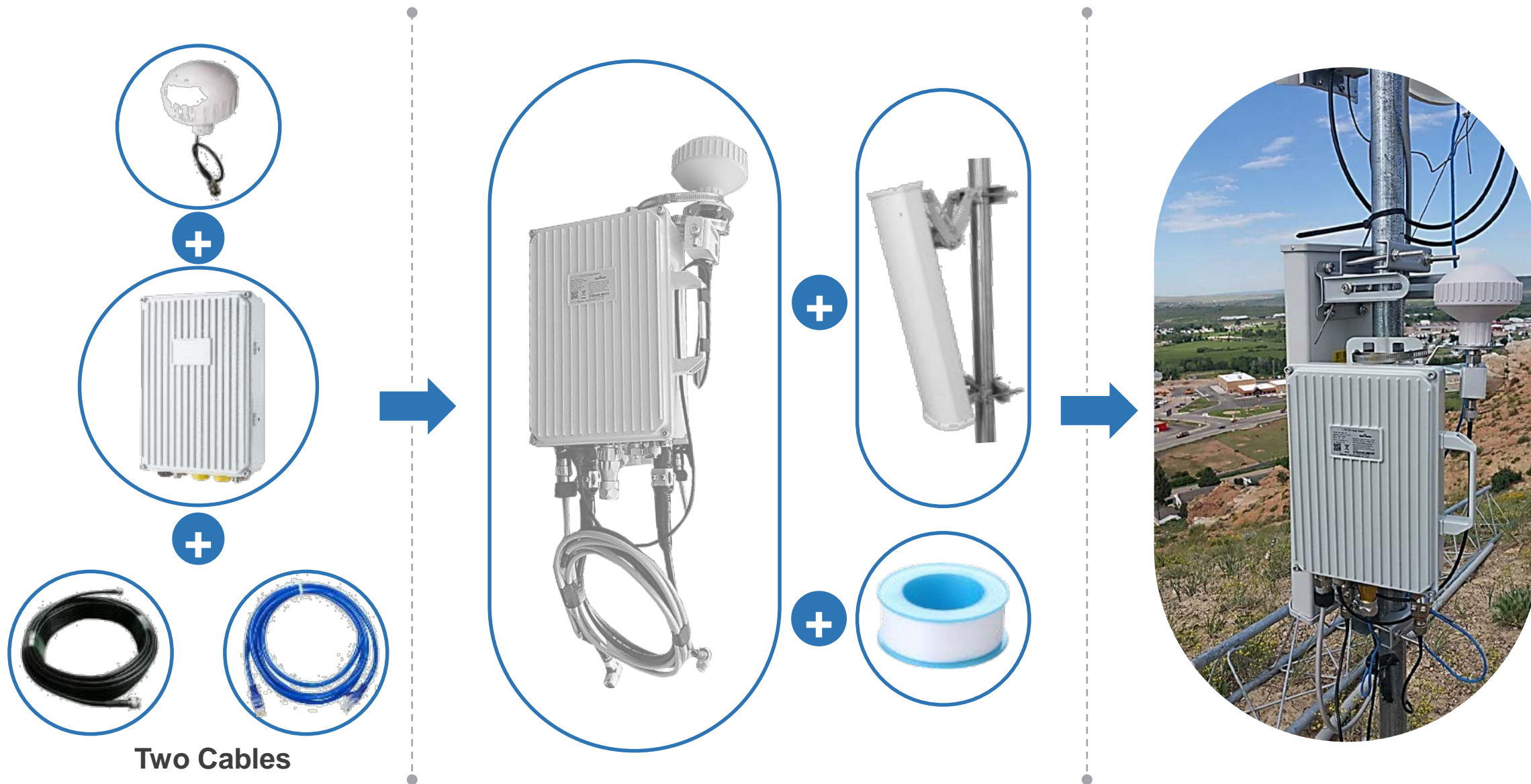




Components of an LTE Network

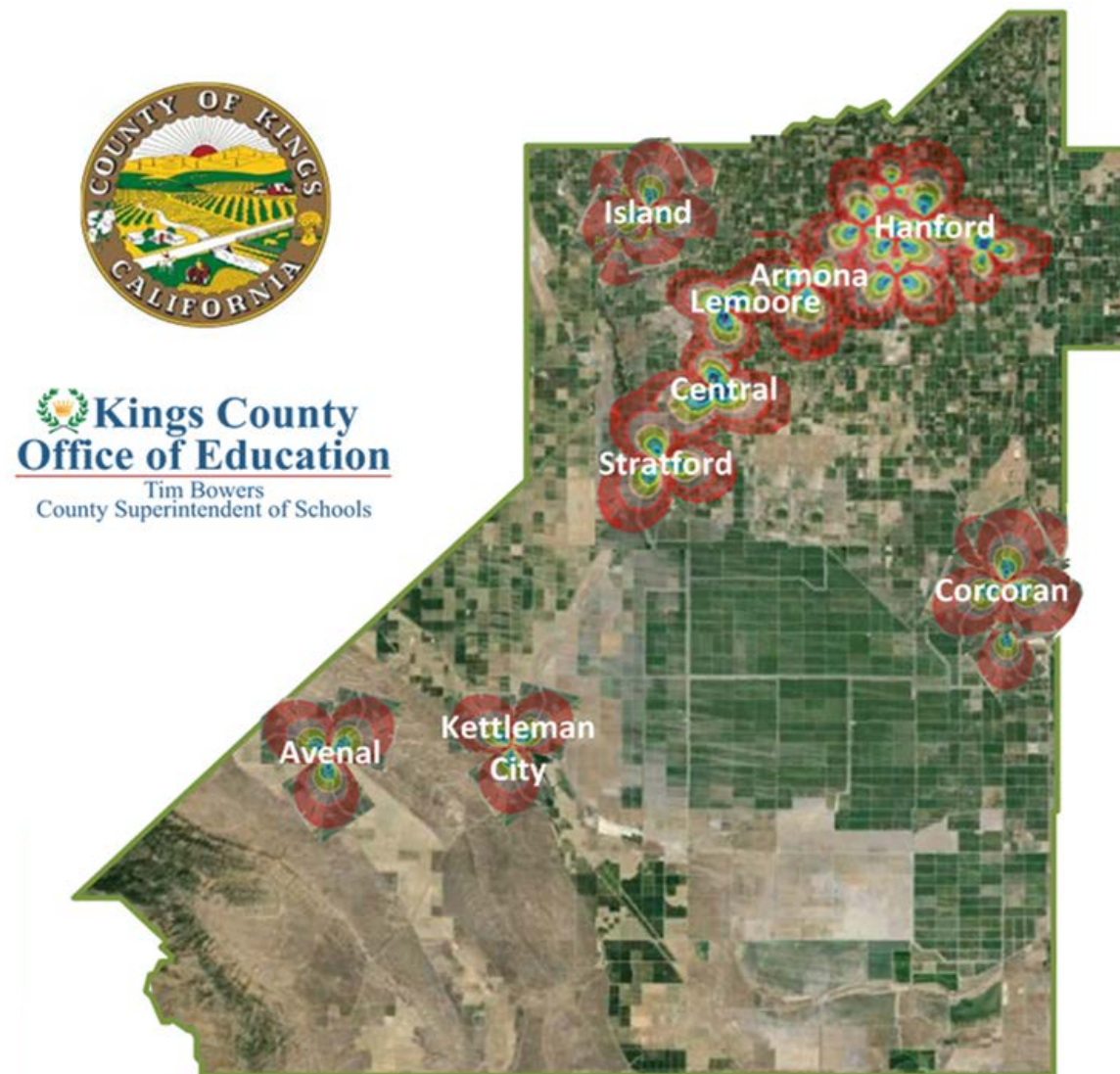


Baicells eNodeBs For Easy Deployment



Case Study: Kings County Office of Education

- Pioneer in bridging the digital divide by building a private network.
- Started with WiMAX deployment in 2010, upgraded to LTE in 2014.
- About 60 sectors/radios serving 6,000+ students.
- EBS (2.5GHz) deployment. Most students use Mifi, some use indoor and outdoor CPEs.



Academic Improvement

Corcoran Academic Results 14-15 to 15-16

Suspensions Grades K-12

60% Decrease

Failure Rates Grades 6-12

10% Decrease

Middle School Honor Roll (Grades 6-12)

30% Increase

Middle School Promotion (Grades 6-12)

50% Increase

Students Ready for 4-Year College

33% Increase

High School Graduation Rate

Over 90%

Parent Use of District App

Doubled

Parent Communications System Use

33% Increase

Students Enrolled in Concurrent College Courses

Doubled

Students Passing Core Courses

Doubled

Key Takeaways

- Improved Student Academic Performance
 - Increased Student Participation
 - Decreased Disciplinary Incidents
 - Increased Parent/Student Collaboration
 - Increased Access to Online Resources
- Low Income Rate Payer Programs

Unexpected Community Benefits

- Community access
- Computer literacy classes for adults
- E-commerce in rural communities
- Ability to access resources online



Thank You