
ANS
AdvancedNetworkServices
BUILDING RELIABLE CONNECTIONS
“What In The Wireless World Is CBRS?”
November 6, 2019

Agenda

- CBRS Overview & ANS Introduction
  - Paul Fettuccia, ANS Advanced Network Services
- Equipment Architecture, SAS, and EPC
  - Kurt Jacobs, JMA Wireless
- Network Design & Deployment
  - Brendan Delaney, ANS
- Use Cases And Endpoint Devices
  - Ken Hosac, Cradlepoint
- Questions and Answers

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- Thank you for taking your time out of your busy schedules to join this webinar
- Five topics to discuss with you:
  - Intro to CBRS – OnGo
  - CBRS – Private LTE Network
  - Use case – “The American Dream”
  - “The American Dream Team”
  - Who is ANS?
- What in the wireless world is CBRS & OnGo?
  https://youtu.be/6n0OTiIEea8

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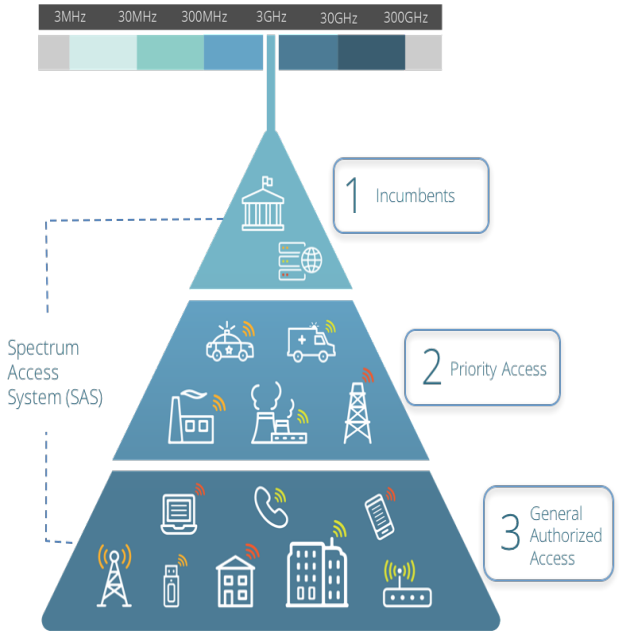
CBRS - Private LTE Network

- CBRS private LTE with a centralized core
- Security of a private LTE network
- Requires a SAS and EPC
- MGT of network and endpoint devices
- Extend connectivity where wires can't
- Secure - wireless camera air-interface
- Outdoor remote campus lighting systems
- Kiosk connectivity
- Remote signage (Video Screen's)
- Standard smart phone use



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- The American Dream Entertainment and Retail Facility, East Rutherford NJ https://youtu.be/22eewT1Z16U
- The "American Dream Team"
  - The JMA Team
  - The Cradlepoint team
  - ANS Team
- Who is ANS? https://youtu.be/zLEp25X4uSA
  - In business since 1991
  - Regional operations centers
  - Services include:
    - ✓In-Building Wireless Services
    - ✓Network Infrastructure
    - ✓Cell Tower Services
    - ✓AC & DC Power Services

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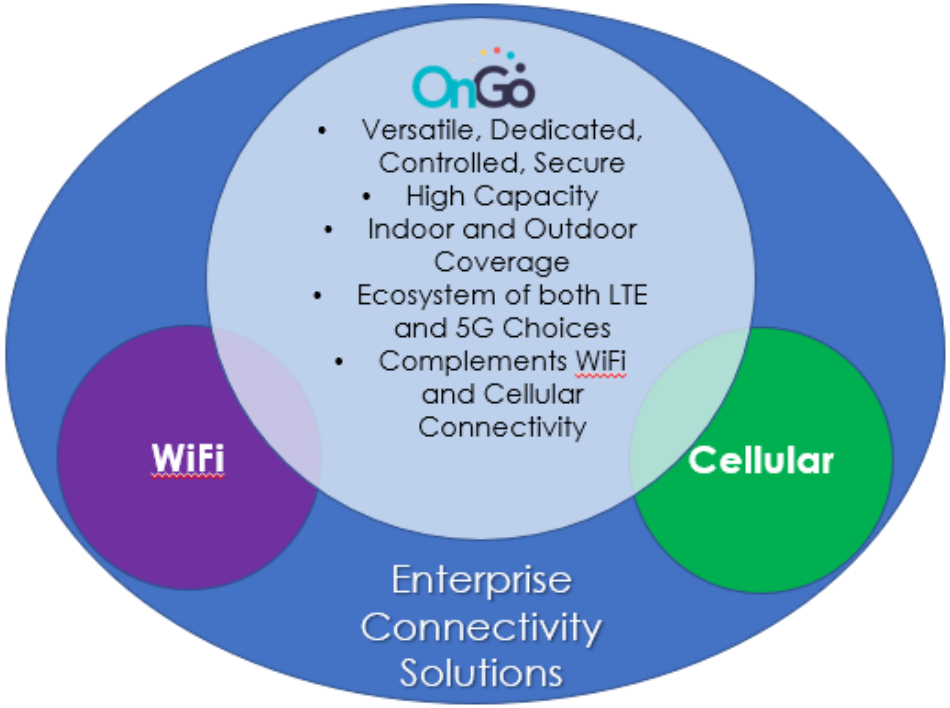
How OnGo Enables IT Mobilization

- Empowerment & Ownership
- HOV Lane Connectivity
- Capacity & Coverage
- Interoperability & Choice
- Today & Tomorrow



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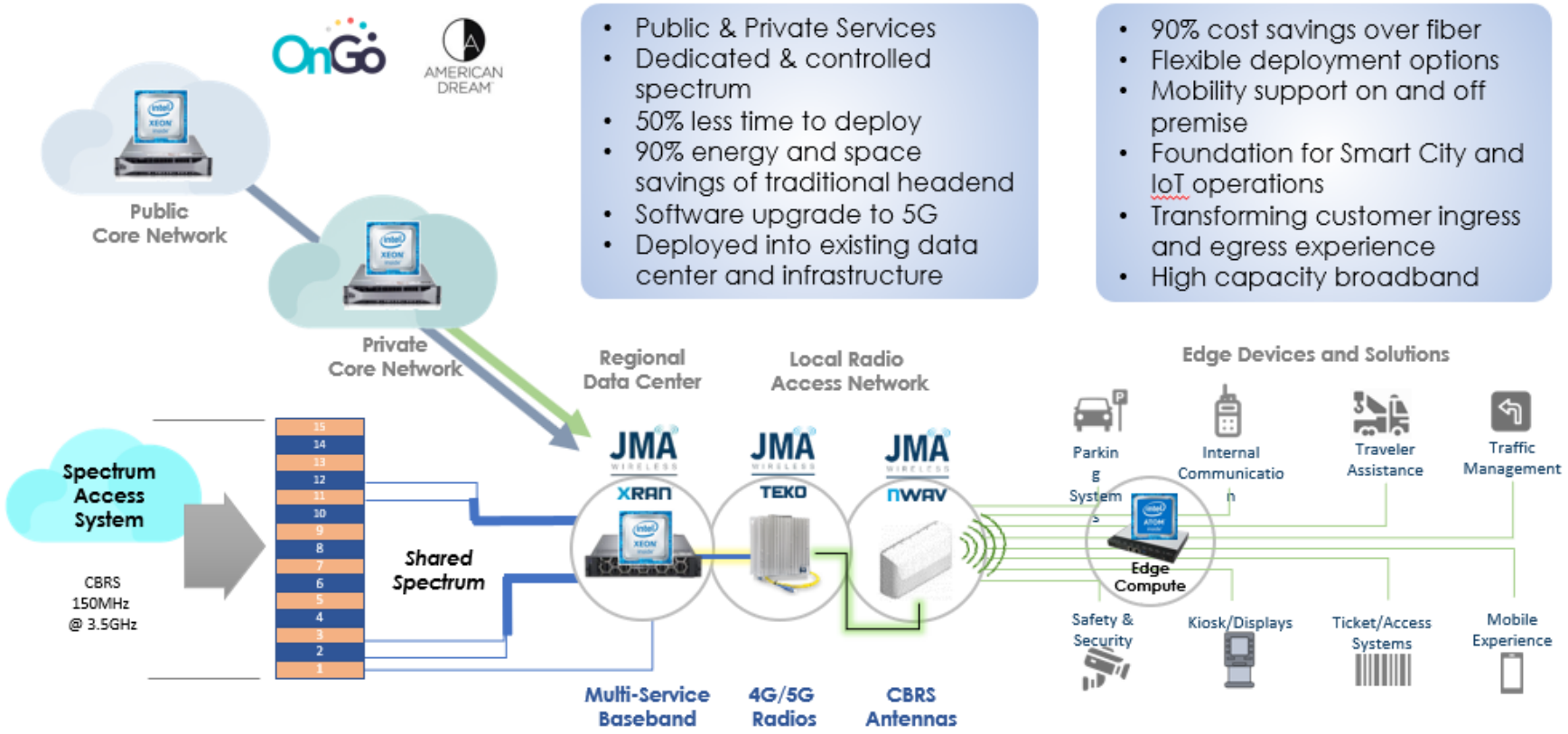
American Dream: Retail Private Networks



- Public & Private Services
- Dedicated & controlled spectrum
- 50% less time to deploy
- 90% energy and space savings of traditional headend
- Software upgrade to 5G
- Deployed into existing data center and infrastructure

- 90% cost savings over fiber
- Flexible deployment options
- Mobility support on and off premise
- Foundation for Smart City and IoT operations
- Transforming customer ingress and egress experience
- High capacity broadband

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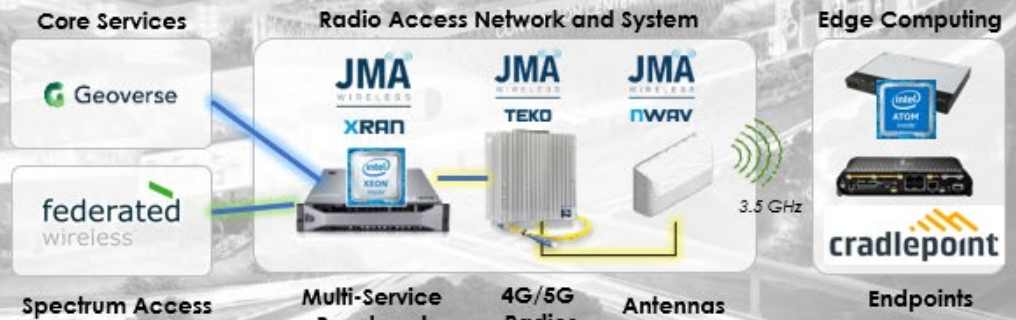
American Dream Private Network Deployment

- 40 Million Visitors / Year
- 500 Events / Year
- 100 Facility IT Systems
- 600 Acres
- 450 Tenants & Attractions
- 33,000 Parking Spaces
- Private & Public Transport
- 3 Million ft² Indoors
- Busy Traffic Corridors
- Adjacent NFL Stadium

- Traffic Management System
- In Vehicle Routers
- Internal Communications
- Digital Advertising
- Special Events
- Smart City IoT
- Security Cameras
- Portable Message Boards
- Hotspot Backhaul
- Mass Transit Access
- Portable Checkpoints
- Wayfinding



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Network Design & Deployment

- Evolved Packet Core
  - Cloud based
    - Public cloud / collocation
    - Delivered to site via customer ISP
    - Diminished control over latency, bandwidth and QOS
  - Metro based
    - Local collocation
    - Delivered via dark fiber or dedicated fiber circuit
    - Improved latency, bandwidth, security, and QOS
    - Bring compute power closer to the edge
  - Premise based
    - Onsite or on-campus
    - Local network
    - Best option for QOS, latency, and bandwidth
    - Edge computing for high performance and security

Network Design & Deployment

- Similar to traditional in-building DAS and RAN design
- No need to worry about dominance over outdoor networks, SAS handles channel allocation
- Design tools are improving, but CW testing is still required
- Convergence of RF design/management and IP integration of multiple platforms
- Cybersecurity planning needs to be accounted for

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Network Design & Deployment

- Design models reflecting
  - Traditional DAS infrastructure of remotes, coax and antennas
  - Small cell approach resembling a WiFi deployment
- Coordination of deployment activities requires a strong project management approach and integration acumen
- Need to integrate the various use cases from a system management perspective, API integration, network coordination and management

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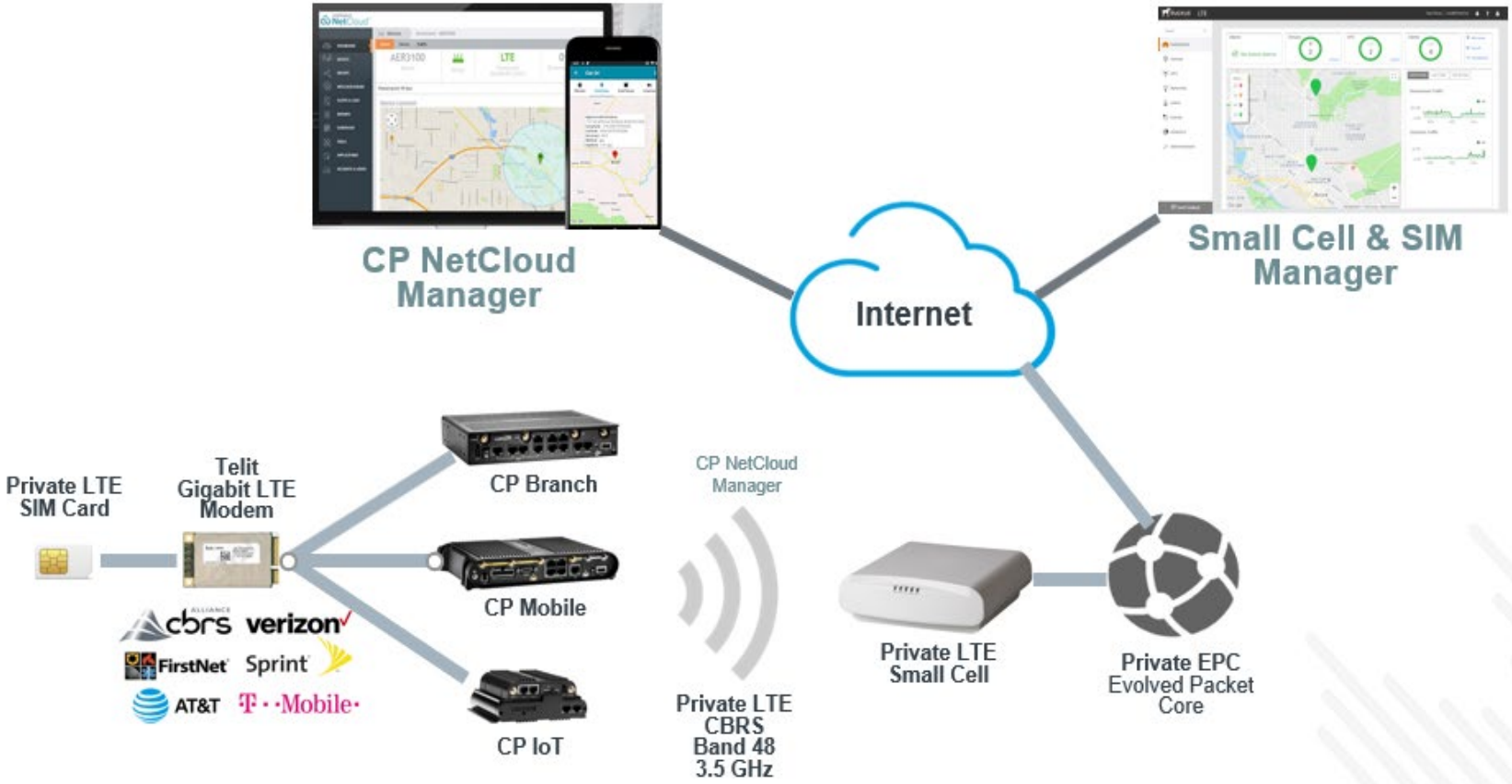
Solution Overview



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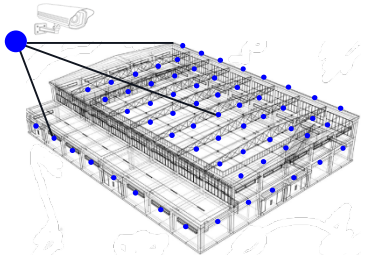
Private LTE- Use Cases

Use Case Characteristics

- Environments requiring a “Wide-area LAN”
- WiFi isn’t an option (reliability, security)
- Multiple applications within a wide-area deployment (vehicles, IoT, etc)
- Public networks aren’t an option (availability, bandwidth, security)



Warehouse

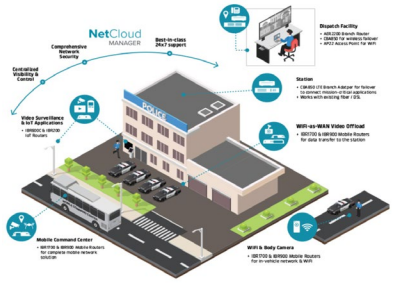
Similar: Factory, Distribution Center

- Video surveillance
- High-def cameras
- Local Storage

Amusement Park

Similar: Stadium, Airport, Shipping Port,

- Retail stores & QSRs
- Vehicles (service, bus)
- Kiosks & digital signage
- Security & surveillance



Smart City

Similar: Enterprise Campus, University, Military Base, Mining, Oil & Gas

- Video surveillance
- Police car video offload
- Smart lighting & meters
- Incident command centers

Hospital

Similar: Hotel, Office Building, Shopping Mall, Library

- Medical Equipment
- Patient Kiosks
- Ambulances
- IP Cameras

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Questions & Answers

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THANK YOU

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