

Technology Primer: Overview of CBRS

Exponentially rising data traffic, scarcity of spectrum, and expectations of enhanced user experience including 1Gbps data rates are driving operators to explore the use of shared spectrums such as CBRS – Citizens Broadband Radio Service. Operators can deploy LTE networks in 3.5 GHz CBRS spectrum using LAA. CBRS can be used in various business models including traditional mobile operators and new operators. CBRS also supports Private LTE networks. The course provides a high-level overview of the CBRS system, motivation for CBRS deployment, network architecture, network operation and deployment use cases.

Intended Audience

A high-level technical overview to personnel involved in product management, marketing, planning, design, engineering, and operations.

Objectives

After completing this course, the student will be able to:

- Define CBRS
- Differentiate Tiered licensing structure: IA, PAL and GAA
- Give examples of business models and use cases for CBRS
- Sketch the architecture of a CBRS-based network
- Describe the roles of a CBSD, SAS, and ESC
- Step through the life of a UE in a CBRS deployment

Prerequisites

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Required Equipment

- None

Course Outline

1. CBRS Essentials

- 1.1 Types of spectrum
- 1.2 Definition of CBRS
- 1.3 CBRS Standards bodies - CBRS Alliance, WInnForum
- 1.4 Three-tier licensing structure (IA, PAL, GAA)
- 1.5 CBRS band plan
- 1.6 Use cases: Mobile Offload, Fixed Wireless, Private LTE, Neutral Host
- 1.7 Key building blocks

2. CBRS System Architecture

- 2.1 End-to-end architecture
- 2.2 CBSD categories A and B
- 2.3 End user devices
- 2.4 Key nodes: SAS, ESC, Proxy

1. LTE Overview (eLearning)

2. Technology Primer: Licensed Assisted Access (LAA)

3. CBRS Operations

- 3.1 Overview of operations
- 3.2 Security mechanisms
- 3.3 Registration
- 3.4 Spectrum enquiry
- 3.5 Grant reception
- 3.6 Grant suspension and termination
- 3.7 Inter-SAS communications

4. Putting It All Together

- 4.1 CBRS deployment examples
- 4.2 CBRS in LAA and eLAA operation
- 4.3 Key Take-aways