



Overview of the HD Protocol

Powered by iBiquity

October 23, 2007

Outline

- **HD Radio Basics**
 - **Waveforms, Logical Channels, & Service Modes**
- ☐ Broadcast System Architecture
- ☐ Types of Content Services
- ☐ Content Delivery Network
- ☐ The HD Protocol

HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.

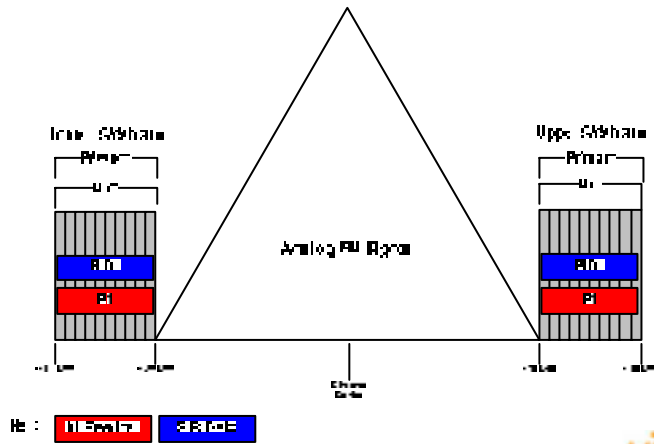


Slide 2

HD Radio Basics (Waveforms, Logical Channel, & Service Modes)

FM Hybrid: Service Mode MP1

Logical Channel	Throughput (kbps)	Latency (Sec)
P1	97	1.488
PIDS	0.9	.093



HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.

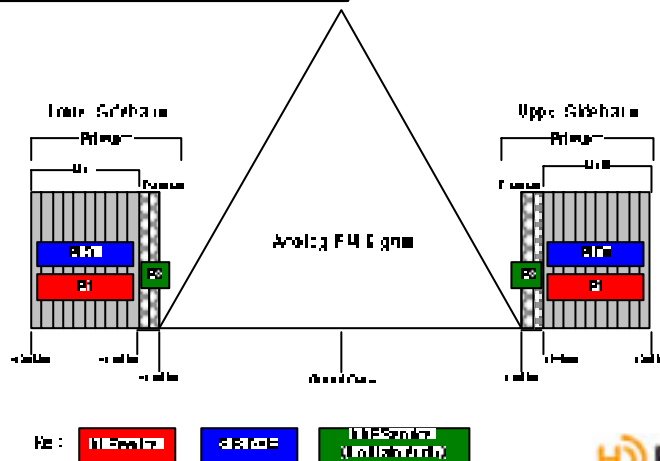


Slide 3

HD Radio Basics (Waveforms, Logical Channel, & Service Modes)

FM Hybrid: Service Mode MP3

Logical Channel	Throughput (kbps)	Latency (Seconds)
P1	96	1.488
P3	24	0.185
PIDS	0.9	0.093

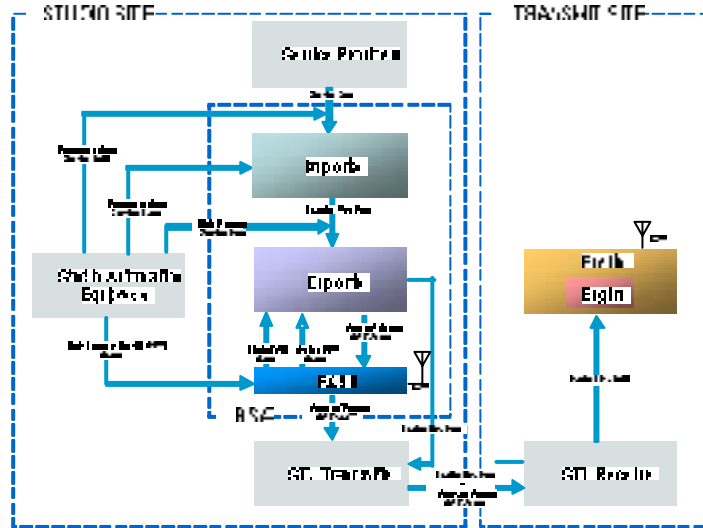


HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 4

Broadcast System Architecture (previous)

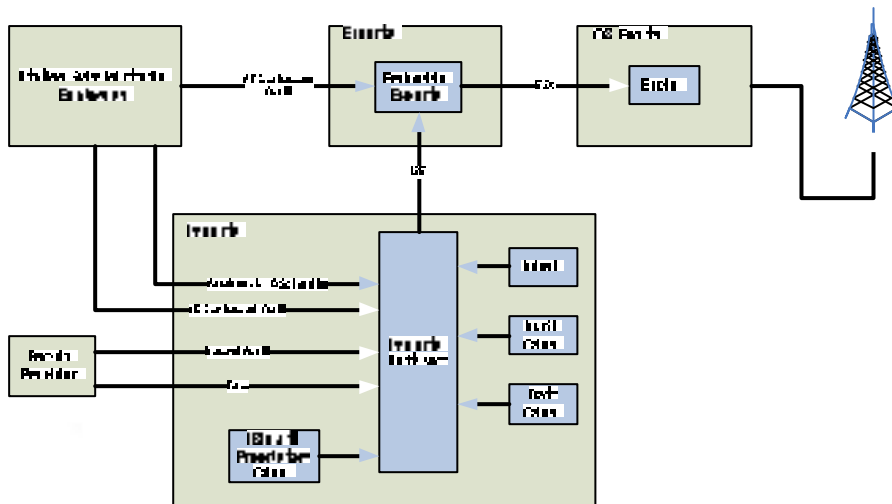


HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 5

Current Broadcast System Architecture



HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 6

Types of Content Services

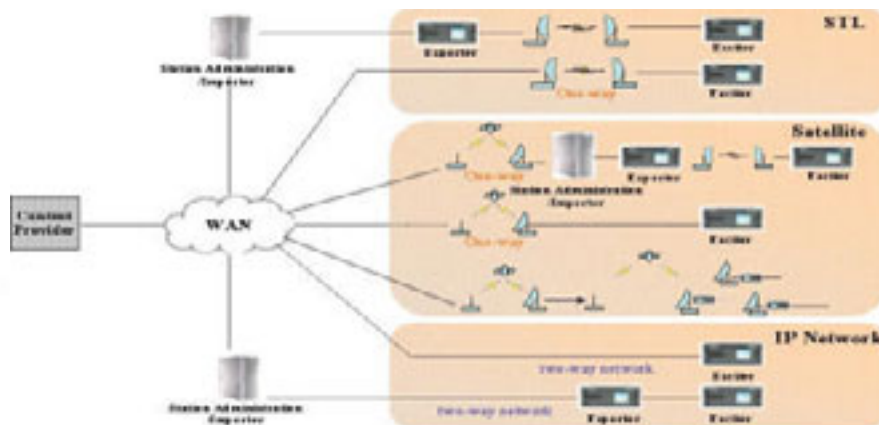
- ❑ Secondary audio services with program associated data
- ❑ Broadcast updates to in-vehicle systems (e.g., maps for navigation systems)
- ❑ Reading services for the visually impaired
- ❑ Traffic information (e.g. provided to navigation systems)
- ❑ Electronic Program Guides
- ❑ Album art

HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 7

Content Delivery Network



HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 8

Content Delivery to the Station

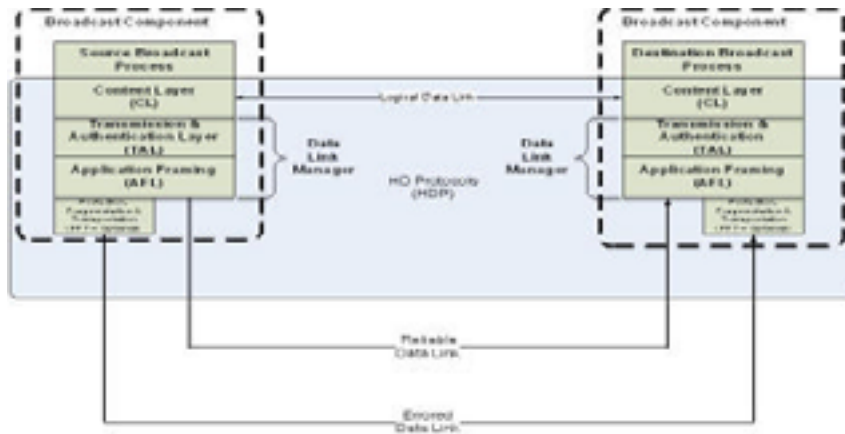


HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 9

The HD Protocol Stack

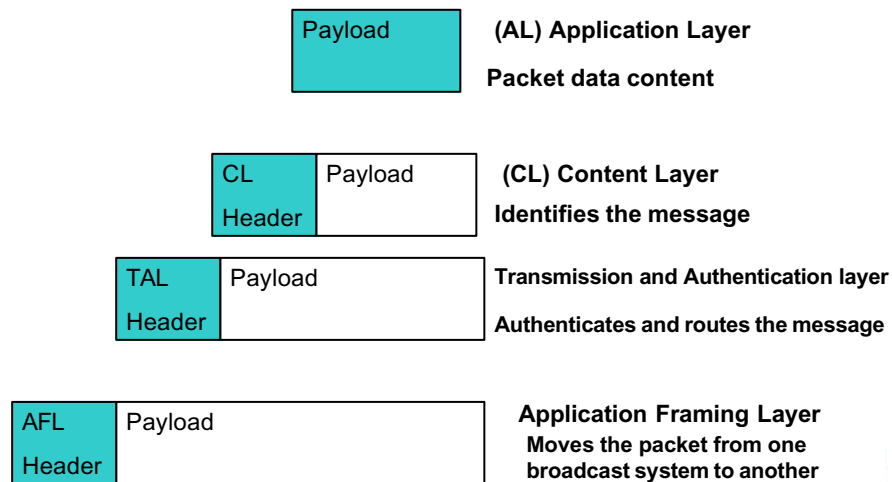


HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 10

The HDP Encapsulation



HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 11

HDP

The HD Protocol (HDP) is a series of protocols designed to assist service providers with the delivery of content destined for broadcast using the HD Radio System. These protocols provide service providers with the following features:

- Authoring/packaging of content with supporting metadata information such that the service information is delivered to the consumer in a consistent and predictable fashion (e.g., synchronization of audio content with PSD data).
- A real-time protocol to assist with the delivery of media streams in real-time. The RTP enables the identification of the type of data being transmitted, determination of what order the packets of data should be presented and error detection of received packets.
- Different levels of security ranging from simple authentication to full encryption of content.
- Content identification. For example, when accepting audio programming this allows local Station Administration equipment to identify the content received and map it to their desired SPS channel.

HD Radio™ and the HD Radio logo are proprietary trademarks of iBiquity Digital Corp.



Slide 12