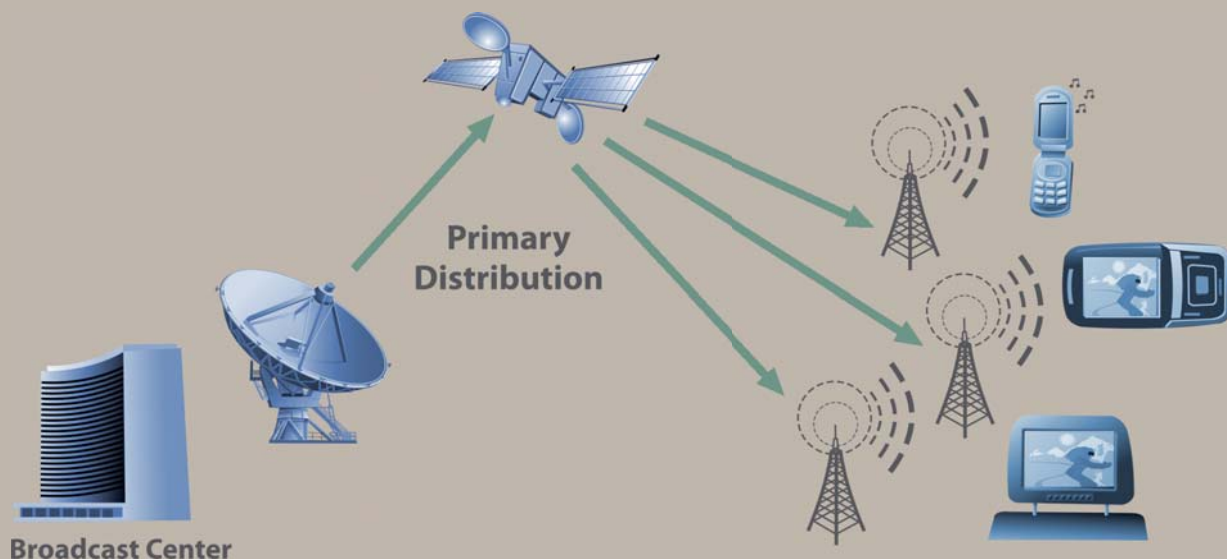


horizon

Applications

Primary Distribution of Mobile TV via Satellite



Broadcast Mobile Television

Broadcast Mobile TV networks distribute TV and radio programs to the handsets and cars of viewers from a large number of transmission towers and repeaters. All standards used, including DVB-H and -SH, MediaFLO, CMMB and T-DMB use multi-carrier digital modulation (COFDM) and the broadcast transmitters work in Single Frequency Network mode. This means they all transmit on the same frequency (channel) in order to use the spectrum efficiently as well as to allow the addition of gap-fillers and transceivers to guarantee good indoor coverage. This mode of operation requires all towers to transmit exactly the same information in a fully synchronized way in order to prevent interference between two adjacent towers.

Primary distribution

The primary distribution application consists in delivering TV content and access control information from one central play-out center to all towers and repeaters in the network so it can be broadcasted to mobile receivers and handsets.

Operator challenges

The challenges of the operators of primary distribution network of a mobile-TV network are:

- The speed of deployment of a new network
- The APEX and OPEX costs of the primary distribution network
- The space and power consumption of the equipment in the towers
- The reliability and remote manageability of the equipment in the unmanned remote sites
- The possibility to broadcast local content and local advertising.
- The synchronization of the terrestrial transmissions in SFN networks

Why Satellite?

Because it does not depend on any telecom infrastructure on the ground, satellite is certainly the fastest way to deploy a mobile-TV service over an entire country. With the right technology and equipment, satellite can also be a very economical way to perform the primary distribution of mobile-TV content. The operational costs do not increase with the number of towers and repeaters in the network, and last but not least, satellite also provides very efficient methods to synchronize and manage towers remotely.

Why Horizon?

With Horizon, Newtec offers an extensive range of products that provide innovative, cost-effective and flexible solutions to all of the challenges of the operators of primary distribution networks for mobile-TV:

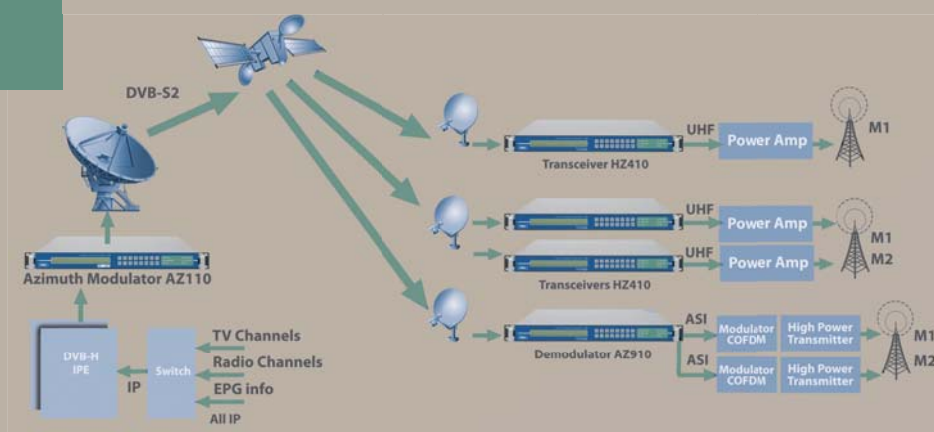
- compact and cost-efficient tower equipment
- highest satellite bandwidth efficiency
- local content management
- synchronization and remote management of the towers



Implementation examples

Country-wide distribution of multiple DVB-H multiplexes in SFN:

Example: two DVB-H multiplexes in SFN on one transponder in DVB-S2

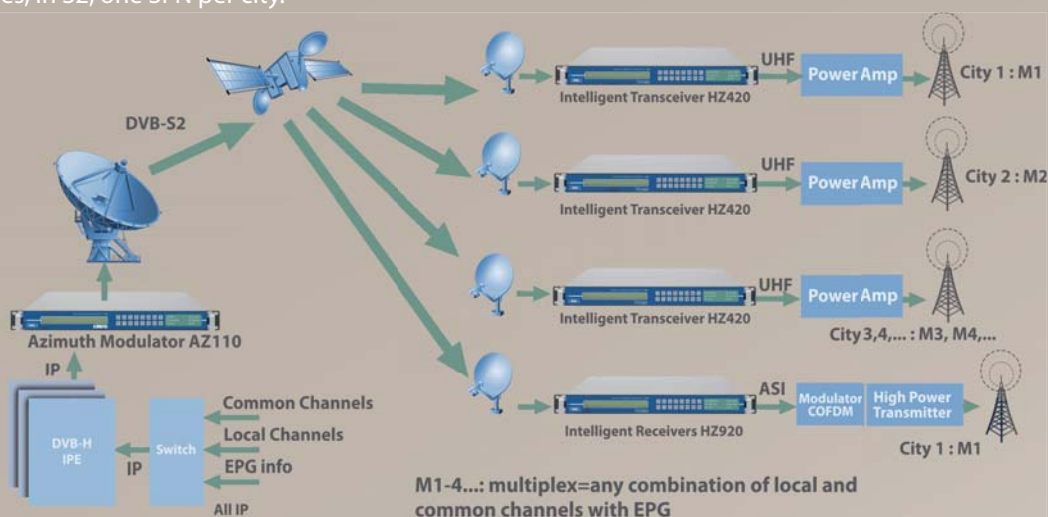


At the uplink, two or more multiplexes can be combined in DVB-S2 Multi-stream mode on the same transponder by the AZ110 modulator. At the transmitter side, one single HZ410 transceiver can receive the multiplexes and re-modulate one of them into one UHF channel in DVB-H. A standard UHF power amplifier provides the necessary power level for the transmitter tower. The other multiplex is available as ASI or IP output stream. Alternatively, the AZ910 demodulator can be used to receive both multiplexes and deliver them as ASI-streams to the (high)power transmitter with built-in COFDM modulator. In SFN networks, the COFDM modulators in the transceivers or in the transmitters are synchronized, by means of the built-in GPS receivers.

Country-wide distribution of DVB-H multiplex, with different regional content per region and national content to all regions:

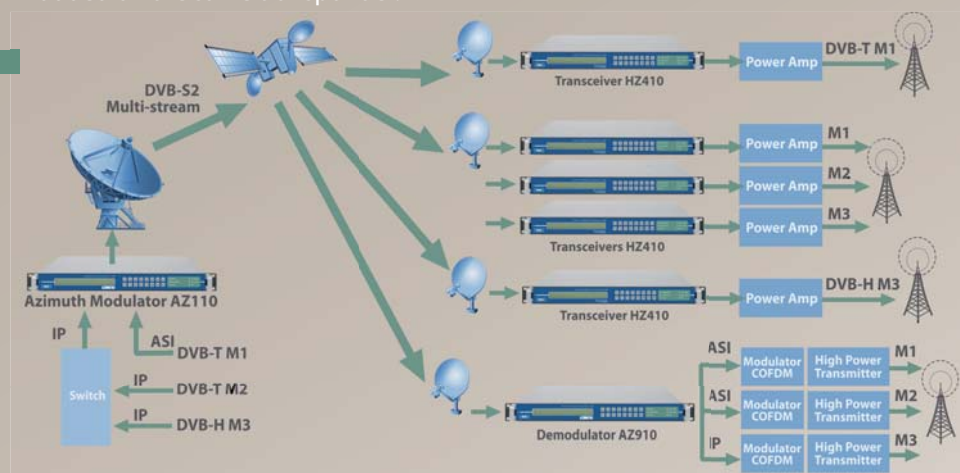
Example: One DVB-H multiplex with common national content, and different local content for 10 cities, in S2, one SFN per city.

At the play-out center, all national and all local content is combined with the DVB-H IP encapsulator. All channels are uplinked to the satellite only once and the Horizon receivers and transceivers at the towers can re-assemble the regional multiplexes with both national and local (city-) channels. The exact same multiplex can be reproduced in all towers in one city to work in SFN mode. The intelligent transceiver HZ420 can drive a power stage with a modulated UHF channel, while the intelligent receiver HZ920 can provide an ASI stream to high power transmitters with built-in COFDM modulator.



Combined DVB-T and DVB-H distribution.

Example: one primary distribution network for DVB-T with DVB-H added on the same transponder.



Although network requirements for DTT and Mobile TV are different, and more transmitter points are needed for a good indoor coverage of Mobile-TV, when compared to DTT, the primary network can be combined and share the same transponder carrier. Multiple DVB-T and DVB-H multiplexes are combined at the uplink side and exact copies of the multiplexes can be recovered at the transmitter towers. Unlike multiple carrier configurations, this method allows piggy back small DVB-H multiplexes on large DVB-T carriers and thus optimizes the bandwidth efficiency.

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