

White Paper – GPS Splitters
Utilizing one GPS Antenna for a
Base Station Transceiver Hotel



Michael Street

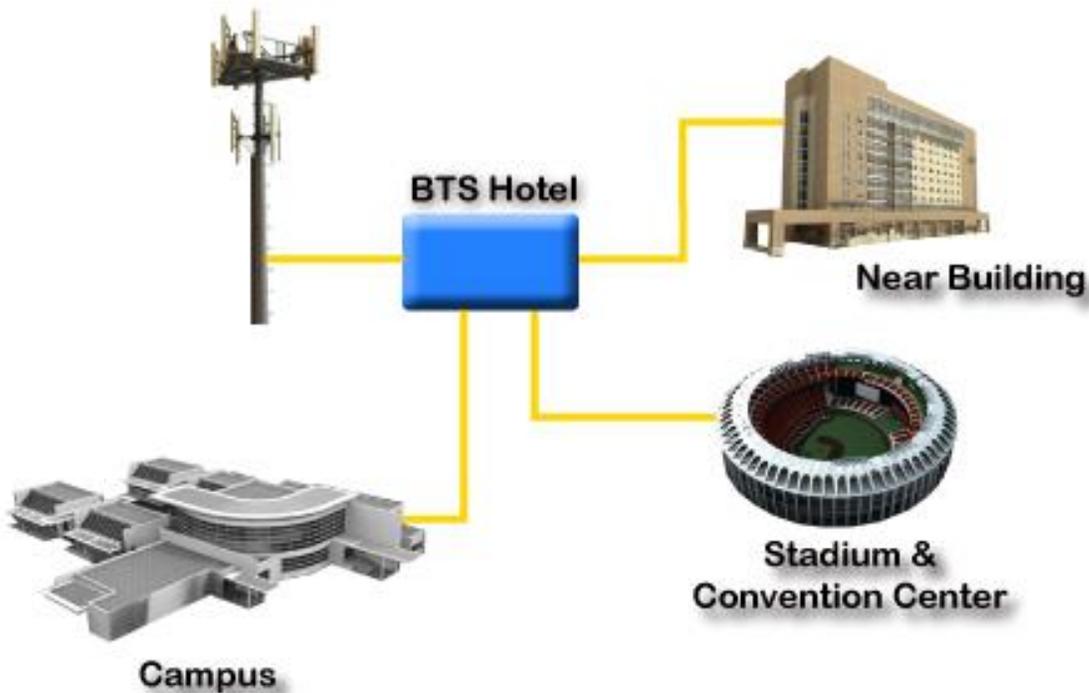
May 2014

THE CHALLENGE

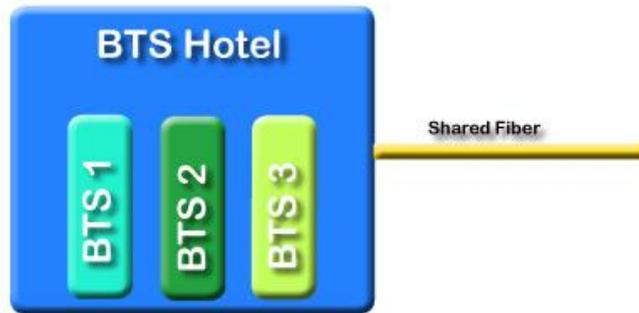
Provide Timing Link to Multiple BTS units

The need to do more with less is driving innovation in DAS networks. DAS technologies include the promise of added data capacity and coverage without additional spectrum and are very appealing. These networks require fiber, but most service providers are not interested in building out a whole new fiber network. So service providers are starting to partner with wireline carriers to piggyback DAS traffic on existing fiber networks. DAS requires only one backhaul connection for the entire DAS network and conveniently provides a built-in aggregation point in the network.

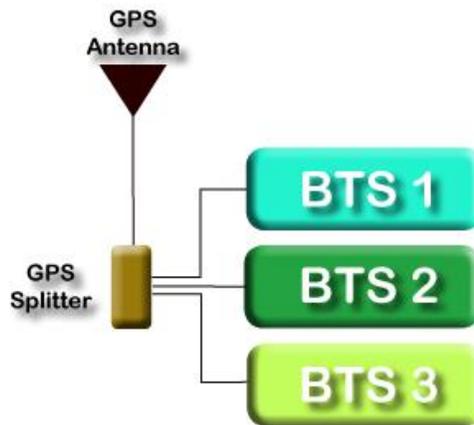
Built-in aggregation points where existing fiber networks are shared between providers can be remote or onsite. Operators may have their own base transceiver station (BTS) or may share a BTS based on application (CDMA, GSM, LTE, etc.). In any case, multiple BTS units can be housed together and are called a “hotel”.



The hotel provides electrical, backhaul, HVAC and fiber for everyone on the DAS network. Base station “hoteling” is becoming more popular with advancements in signal transport technology, including the separation of the baseband from the amplifiers, the evolution of CPRI (Common Public Radio Interface), increase in fiber usage and the commoditization of remote radio heads.



An important service a hotel provides is access to TDD or FDD type services, all of which have timing requirements. To meet timing requirements for Time (or Phase), either GPS or PTP is required. In many case both are used, with GPS as the primary and PTP (IEEE-1588v2) as the secondary reference. A GPS receiver card is conveniently located within a BTS.



THE SOLUTION

Install a GPS Splitter in Hotel

Access to GPS requires a GPS antenna as the signal does not easily pass through walls. Multiple antennas are costly and are often not feasible or cost effective. GPS splitters can help support a cost effective deployment of the timing requirement by providing GPS access to all devices within a BTS hotel with one antenna. Therefore, a GPS splitter(s) is the best option to support multiple GPS input requirements, utilizing a single GPS antenna.

GPS Source manufactures splitters with built in amplification to overcome splitter losses. Power can be obtained from one of the BTS units and passed on from the splitter for use by the active antenna, further simplifying the configuration. GPS Source splitters also have port-to-port isolation required to mitigate interaction between multiple GPS receivers. Without this isolation, local oscillator leakage from a GPS receiver would prevent other receivers from acquiring timing signals. Custom gain, external power and multiple connector options are always available.