Proxim wireless

Performance Matters. Proxim Delivers.

(((WORP)))sync

The First Common Timing Synchronization Technology

"When we discovered the ability for the Proxim equipment to synchronize transmissions with our other base stations, we decided to put it to the test. So, we set up a test and were very pleased to find that it worked - it actually synchronized well with both the Cambium PMP450 and ePMP" *- Paul Lambert, Engineering Manager JAB Wireless.*

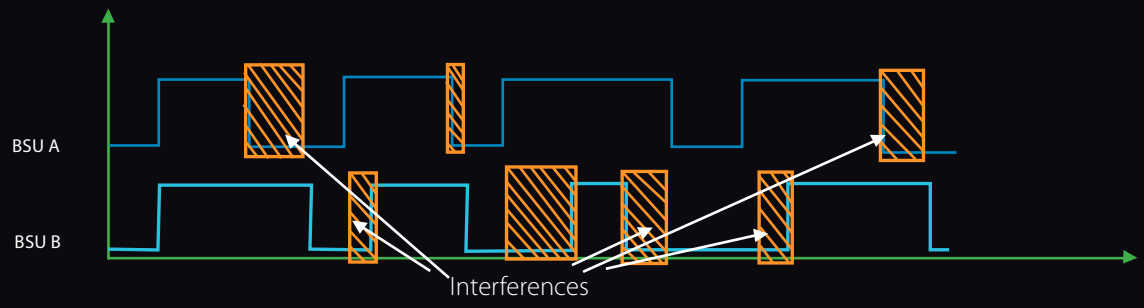
With the growing demand for outdoor wireless applications and limited license-free spectrum, there exists a clear and growing deficit of available interference-free frequencies. Large scale wireless Internet service providers (ISPs) and organizations with dense networks are compelled to reuse the limited available spectrum, often resulting in high self-interference, poor Quality of Service (QoS), and reduced throughput.

Proxim with its new WORP Sync feature helps overcome these challenges by allowing efficient collocation of more and more radios at a cell site. To understand how this is accomplished let us first take a look into synchronous absent aka asynchronous network topology.

Asynchronous Networks and Self Interference

An asynchronous network is typically defined in a multi-BSU (Base station unit) environment, where BSUs operate independent of each other. BSUs transmit and receive based on the network demands from their subscriber units. In other words the transmit and receive cycles of the participating BSUs do not follow a standard pattern(as show in the below diagram). This 'independent timing cycle' characteristic allows BSUs to rapidly adapt to changing conditions and can be very efficient in networks where operators have RF environments with multiple 'low interference' channels.

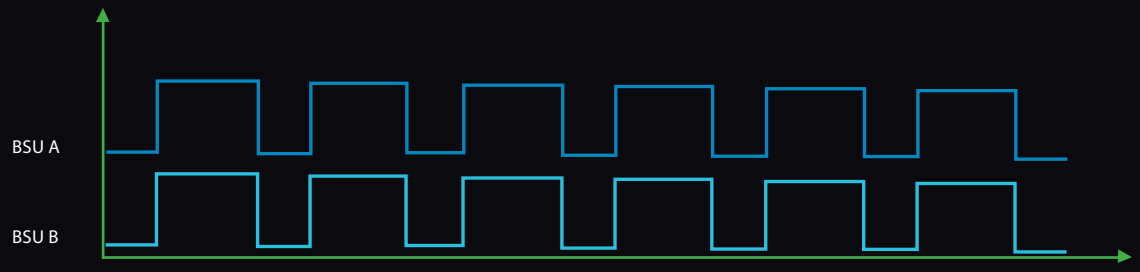
The downside to asynchronous networks is that this kind of architecture, particularly in dense and limited spectrum environments, often suffers from what is called "self interference." In this instance self interference refers to the condition where RF signals of transmitting collocated BSUs "spill" into the coverage area of receiving collocated BSUs that belongs to the same network and operate on the same or an adjacent channel. Self interference can result in packet loss, network errors and reduced network throughput.



When multiple base station are collocated, each follows its own transmit/receive pattern resulting in possible self interference condition

Synchronous Networks with WORP Sync

Conversely, WORP Sync (as shown in the below diagram) coordinates the transmit timing between all the BSUs within a network. The timing mechanism used as a clock for these synchronous networks is either a satellite signal or other clock sources such as ethernet synchronization modules. This ensures all BSUs within a geography where they may interfere with each other transmit and receive at the exact same time. This applies not only to BSUs on the same tower, but all BSUs within a given area that can potentially "hear" each other and hence improper timing can corrupt Tx and Rx data streams.



All BSUs transmit or receive simultaneously with no self interference

The WORP Sync Advantage

Comprehensive anti interference solution

Proxim's WORP® technology virtually eliminates any sort of self interference at both the BSUs and subscriber units with its centrally controlled architecture. Now further augmented with WORP Sync feature, WORP® ensures all unintended communication i.e. interference between multiple closely located BSUs are also mitigated.

Scalability with frequency reuse

WORP Sync, with its self interference mitigation capability, allows wireless ISPs to operate more and more BSUs and subscriber units on the same or adjacent channels with no or minimal performance degradation. This capability provides superior cost-effectiveness by allowing service providers to use the limited number of channels to serve a higher number of subscribers when compared to asynchronous networks.

Reduced costs with better co-location

Leveraging the advantage of frequency reuse and reduced self interference, WORP Sync enabled Tsunami® BSUs can be collocated more efficiently on the same tower with fewer channels and without affecting the performance of the network. This from a business standpoint is of great advantage as it allows network engineers to "pack" many more radios on a single tower thereby avoiding the spiraling tower and rental costs.

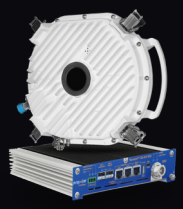
Cambium GPS sync - Coexistence

WORP sync when used in deployment of Proxim networks has numerous advantages as detailed above. However WORP sync also has the ability to mimic the timing of third party wireless BSUs, allowing Proxim BSUs to be co-located with other vendor BSUs. The first products supported with this feature are Cambium's GPS sync enabled solutions – the Cambium 100, 430, 450. This allows an operator more flexibility in deploying new networks, but particularly in expanding existing Cambium networks where Proxim gear can now be deployed.

Product Portfolio

Tsunami® 8200-G Series
4.900-5.925 GHz
246Mbps

Tsunami® 820 Series
5.100 - 5.925 GHz
100Mbps



Tsunami® GX-810
6, 11, 18, 23 GHz
730 Mbps

ORiNOCO® AP-8100
802.11a,b,g,n dual radio
300 Mbps