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# Intelligent Wireless Network Steering

## Executive Summary

In an always-connected world, mobile users often have overlapping coverage of Wi-Fi and LTE (Long-Term Evolution). When experiencing connectivity issues, users struggle to perform manual network troubleshooting. Dropped calls, connectivity glitches and congested public Wi-Fi networks are just some of the pain points that contribute to the users' frustration. CableLabs' research shows that 64% of mobile customers have experienced connectivity issues that resulted in them forgetting Wi-Fi networks or turning Wi-Fi off all together due to bad perceived quality. For end users, it should not matter which network is utilized and users should not have to manually optimize their connectivity; it should simply work.

On the network side, operators are faced with the challenge of providing capacity to satisfy increasing data demand; and would like to do so leveraging cheaper or more available network infrastructure, such as Wi-Fi or CBRS (Citizens Band Radio Service). This is true for both MVNO and MNO operators. Today, operators lack a flexible tool that can give them the power of shaping the user experience while having full control of their cost-to-serve.

**Intelligent Wireless Network Steering** (IWiNS) tackles these challenges by enhancing mobile traffic steering with two components: **Network Awareness** and **Application Awareness**. IWiNS provides a mechanism to seamlessly transition between wireless networks (LTE, Wi-Fi, etc.) using per-dataflow steering policies shaped by multi-user and multi-network feedback. For users, it delivers an optimum user experience and alleviates the frustrations associated with poor Wi-Fi connectivity. For operators, IWiNS provides the most efficient utilization of wireless assets.

IWiNS is differentiated from other solutions because it is a network-based solution and application aware. The architecture is flexible and able to accommodate operator-specific needs through the application of business rules and policies (e.g., maximize Wi-Fi offload, load balancing network backhaul resources). IWiNS is a powerful tool for operators to enable a significant improvement in mobile user experience, while managing costs by optimizing network utilization.

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### IWiNS Key Features

There are two features that set IWiNS apart from other network steering solutions:

| Application Awareness | Network Awareness |
|---|---|
| Different types applications have very different throughput and latency demands. What works well for web browsing does not work as well for video conferencing. IWiNS provides the following: | Most steering solutions are only aware of the conditions on a single mobile device. IWiNS takes a holistic view and makes decisions based on the conditions on the entire network. |
| • Application type detection<br>• The ability to specify different requirements for Uplink and Downlink traffic<br>• Operator-defined per-application or per-application-type steering policies (video stream, video call, etc.)<br>• Operator defines policies that are specific to their product offerings/service tiers (working from home, premium users, etc.) | • Policies are updated in real-time as network conditions change<br>• Network performance is estimated using mobile OS APIs or efficient network probing algorithms<br>• Network stats are used in a crowd-source fashion to optimize steering policies (e.g. Google Maps fashion)<br>• Policies can target specific networks (LTE, Home Wi-Fi, Public Wi-Fi) |

For more information or to obtain a copy of the IWiNS White Paper or IWiNS Use Cases, please contact us at IWiNS-Support@kyrio.com.