

iBwave Reach

Bridging the Gap Between Indoor and Outdoor Wireless

Accelerate the design and deployment of your wireless campus network designs.

With the acceleration towards the inevitable network densification and capacity challenges ahead, a holistic view of your wireless network design is critical in order to maximize connectivity and minimize interference.

iBwave Reach fully integrates with our flagship solution iBwave Design, enabling you to design and deploy campus networks by taking into consideration the macro signal penetrating inside the building and the leakage of the indoor signal around the surrounding area of the venue.

With proven prediction accuracy and streamlined approach to wireless design, iBwave Design with iBwave Reach combine the best in class indoor and outdoor propagation models to speed up your project lifecycle while saving costs and ensuring optimal connectivity.

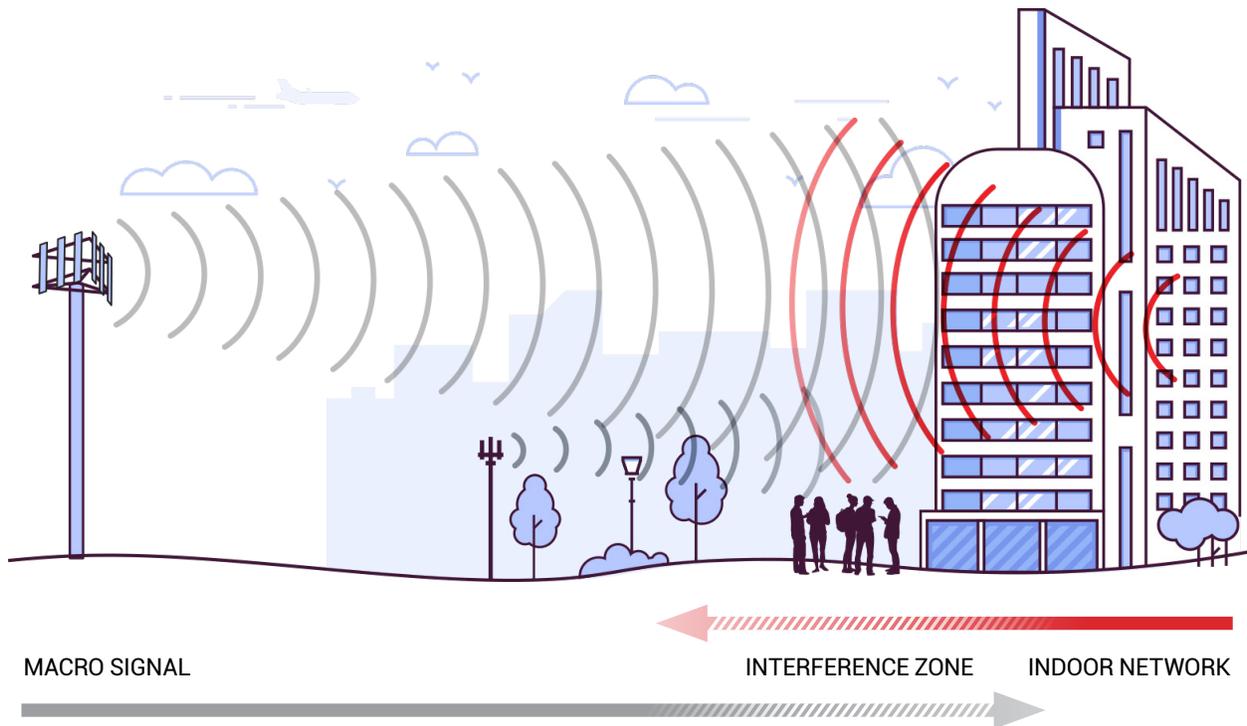




iBwave Reach

Faster and more accurate campus network design and deployment

Accelerate the design of large multi-technology campus wireless networks with an integrated solution that bridges the gap between indoor & outdoor design, minimizes site surveys and has a proven track record of accurate prediction that delivers flawless user connectivity.



Why is this good for you?

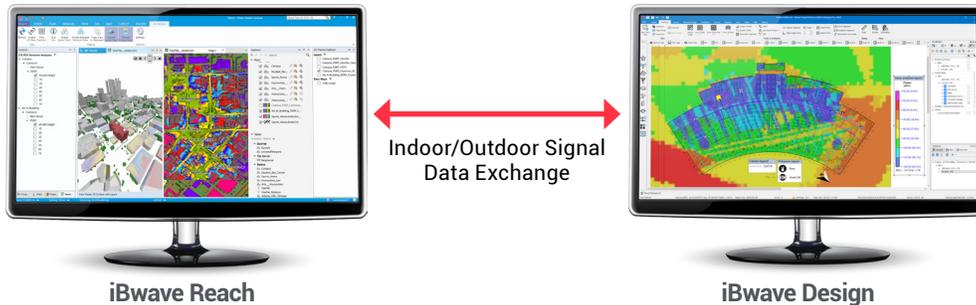
- ✓ Supports multi-technology networks
- ✓ Fully integrates with iBwave Design
- ✓ Seamless outdoor and indoor design with accurate predictions
- ✓ Reduce the number of site walks needed
- ✓ Optimize campus design to meet KPIs



iBwave Reach

Integrated Solution

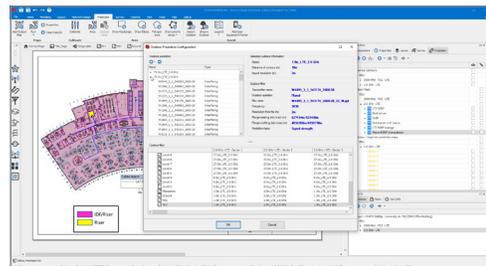
iBwave Reach fully integrates with iBwave Design providing an all-in-one solution for campus network design.



Designing a Campus Network using iBwave Reach and iBwave Design

Import Macro Data

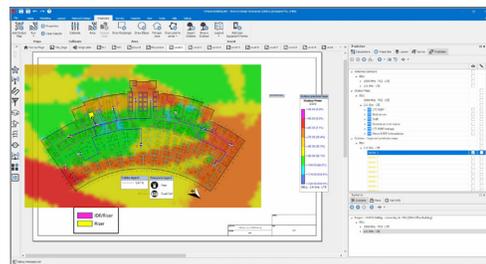
Avoid time-consuming and costly site surveys by simply importing the macro data into iBwave Reach so it can be easily integrated into iBwave Design to have a complete end-to-end view of both the macro and indoor data as you design.



Import macro data from your outdoor planning tool

Accurately Predict Network Performance

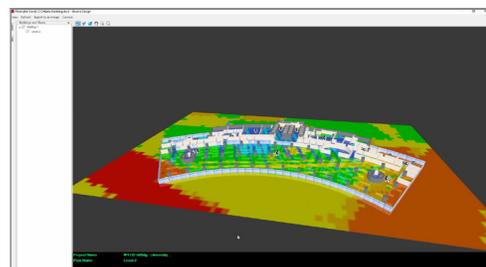
With the macro data imported, and your campus buildings modeled, design your network and simulate the network performance accurately in iBwave Design with GIS Maps. Visualize prediction in impressive 3D format, giving you and your customer a detailed look at how the network will perform across the entire campus environment.



Visualize your network performance

Optimize Network Design

With the ability to consider the macro data for your indoor designs and accurately predict network performance, you can now optimize the equipment within the network to avoid overdesigning and overspending.



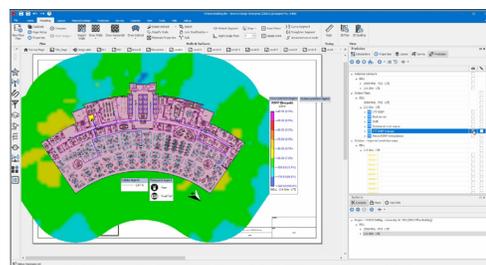
See your network prediction in 3D

Validate Network Design

Once deployed, go on site to validate the design and deployment of your network with one simple site survey walk and have confidence the network will perform as you designed it.

Centralize Project Documentation

Once your indoor/outdoor network has been deployed, easily generate as-built documentation for the project from iBwave Design and track it in iBwave Unity where it can easily be accessed for future maintenance and upgrades.



View your indoor network's signal leakage



iBwave Reach

Applications

iBwave Reach is ideal for a number of uses cases covering indoor and outdoor environments.



High-Rise Building



Greenfield Building



Shopping Mall



Healthcare & Hospitality



Airport & Terminal



Education Campus



Amusement Park



Enterprise Private 4G/5G Networks



Energy (Mining, Power, Oil, Gas)

FEATURE SET

TECHNOLOGIES

- ▶ 5G NR / LTE / LTE-A
 - > Smart Macro Prediction Mapping to Floors, Frequencies
 - > Outdoor-to-Indoor Prediction
 - > Indoor-to-Outdoor Interference
 - > Outdoor Planning and Analyses
 - > PCI and EARFCN Best-Server Visualization
- ▶ Wi-Fi, GSM/GPRS/EDGE, LoRa Outdoor Planning and Analyses

3D PREDICTIONS

- ▶ Predict coverage with a model optimized for 3D propagation
- ▶ Visualize a city in 3D
- ▶ Visualize indoor and outdoor network coverage
- ▶ Visualize multi-floor coverage in 2D or 3D
- ▶ Select "Surface" mode for visualization on the building facades and rooftops
- ▶ Display of the environment in full 3D mode, including terrain, trees and buildings
- ▶ Navigation inside the 3D environment
- ▶ Presentation of any coverage layer in 3D view
- ▶ Display of multi-floor coverage inside buildings
- ▶ Control of shading, lighting and transparency between layers/buildings/terrain
- ▶ Ability to query coverage layers in 3D
- ▶ 64-bit native platform for higher scalability and ability to handle areas up to 100 sq km

iBWAVE REACH PROPAGATION MODEL

- ▶ Designed for urban environments, but can be used everywhere, including in mountainous areas where the receiver is higher than the transmitter
- ▶ Supports frequencies between 100 MHz and 60 GHz (which includes mmWave frequency bands)
- ▶ Multi-environment model
- ▶ Specific modeling of wave propagation through trees
- ▶ Supports all cellular layers (including macro cells and small cells)
- ▶ Optimized for 3D propagation, in terms of accuracy, performance, and scalability
- ▶ Supports all geodata solutions (i.e., height, clutter, clutter height, polygons)
- ▶ Multi-resolution support (e.g., height/clutter at 30m resolution and building polygon data), with optional dual-resolution calculation
- ▶ User-adaptable in-building penetration algorithm
- ▶ Automated model tuner for optimal accuracy

- ▶ State-of-the-art propagation models for all environments and wide range of frequencies
- ▶ Support for mmWave frequency bands
- ▶ Multi-resolution support for all models
- ▶ Multi-processed 64-bit propagation
- ▶ Open APIs for addition of third-party propagation models
- ▶ Unique iBwave Reach 3D Model and Predict propagation models
- ▶ Multi-processor (and multi-core) capabilities
- ▶ Computation of recommended propagation distance
- ▶ New Japan MIC Compliance Model: ITU 1411, HATA

PREDICTION PREVIEWER

- ▶ Quick computation/visualization of propagation
- ▶ Support for existing and new sites
- ▶ Fast re-computation of predictions when moving sites or adjusting antenna height

POINT-TO-POINT PROFILE

- ▶ Availability of point-to-point predictions (as opposed to point-to-area predictions)
- ▶ Support for height, clutter, clutter heights, and building data
- ▶ Adjustable transmitter/receiver heights

LAYER STATISTICS

- ▶ Area and/or traffic based statistics
- ▶ Ability to break the statistics down by clutter class or by cell name
- ▶ Ability to define "ranges" or to automatically display PDF and CDF curves
- ▶ Ability to apply filters (e.g., area filter)

DRIVE TEST MODULE (Additional Service)

- ▶ Use scanner measurements to validate/analyze propagation model accuracy
- ▶ Use test mobile data to analyze specific call events
- ▶ Identify and diagnose problem areas on which to focus optimization efforts
- ▶ Use measurement data to improve propagation models
- ▶ Manage large-scale measurement campaigns (i.e., bulk scanner measurement imports)

