



## Navizon Indoor Triangulation System (I.T.S.)

Navizon Indoor Triangulation System (I.T.S.) is a Real-Time Locating System (RTLS) for tracking Wi-Fi-enabled devices inside a building or throughout a campus, with an average floor and room-level accuracy of 10 feet/3 meters.

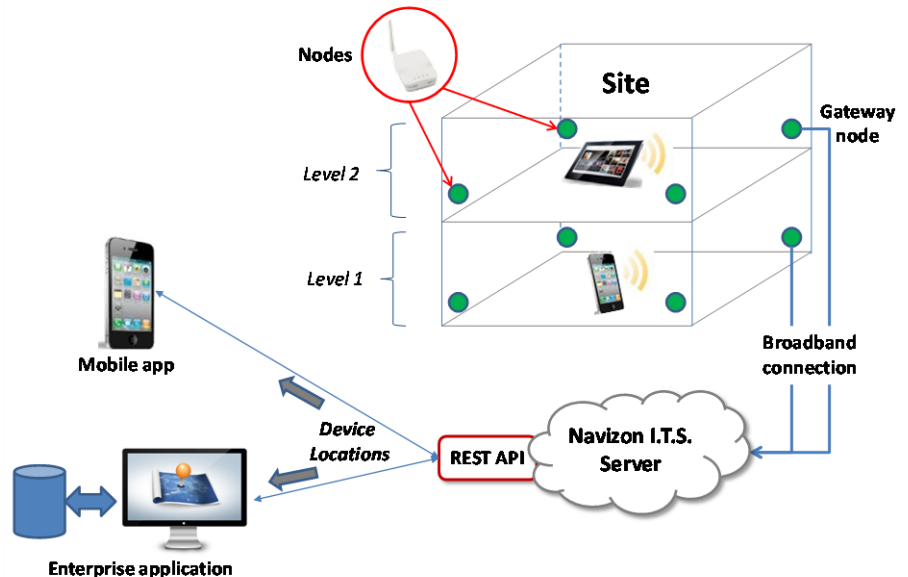
### What it does

Navizon I.T.S. determines in real time the location of any Wi-Fi enabled smart phone, tablet, laptop or Wi-Fi tag, enabling historic tracking over time. It works with iPhone, iPad, Android, BlackBerry, Windows Mobile, Symbian, and all Wi-Fi tags.

### How it works

Navizon I.T.S. has two components: hardware nodes deployed through the area to monitor, and a cloud-based server that computes locations. Nodes detect Wi-Fi devices operating in scanning mode and periodically upload a list of MAC addresses and signal strength. The server estimates device locations relative to the nodes.

### How Navizon I.T.S. works



### How to integrate with your application

Navizon I.T.S. is SaaS; the server runs on a public or private cloud. Integrating your application with a site is done through Navizon's RESTful API, which provides the functions you need to identify and locate every device present throughout the site. No platform-specific library or SDK is required. Any application capable of using Web services is supported.

### How to deploy it

1. Order the number of nodes needed to provide coverage on a given site (see below).
2. Plug each node into a regular power outlet.
3. Connect one of the nodes to the Internet through a network router. The nodes automatically create a mesh network and delineate a "site".
4. Log into your Navizon online account, and on the satellite view of your facility indicate the placement of each node. Optionally, you may upload one or more floor plans to simplify node placement.

At least one of the nodes, a "gateway", must be connected to the Internet through a wired connection. For best performance connect as many gateways as possible.

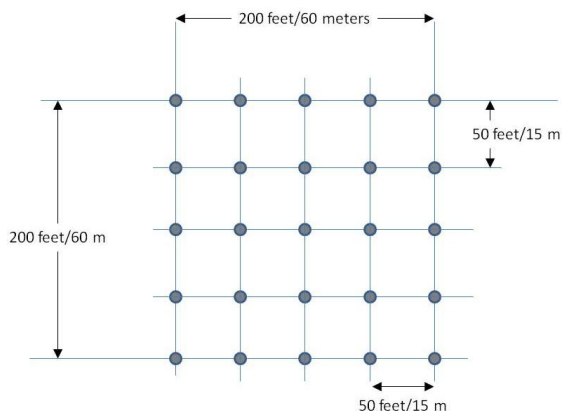


Figure: Gateway node with wired connection

And you are done. No wiring. No software to install.

## Node placement and location accuracy

Nodes should be placed in a grid pattern:



Spacing between nodes affects accuracy. For example:

Node spacing	Average accuracy
50-65 feet / 15-20 m	12-16 feet / 4-5 m
40-50 feet / 12-15 m	6-10 feet / 2-3 m

## How many nodes will you need

The smallest site should have 5 nodes: one on each corner and one in the center.

To estimate the approximate number of nodes required to cover a given surface we use these formulas:

**Nodes-per-side** = (SQUARE-ROOT(surface) / node-spacing) +1

**Number-of-nodes** = nodes-per-side \* nodes-per-side

For example, if the surface is 200,000 square meters, possible options are:

- With 20 m node spacing --> number of nodes = 546
- With 15 m node spacing --> number of nodes = 950

If you do not need the same accuracy everywhere, you can use different spacing in various sections of the site.

## Pricing

Is based on the number of nodes used. There are two pricing options: annual contract or month-to-month (no commitment). Please, see our current Price List for details, or contact us.

Nodes can be ordered directly from the manufacturer or its distributors worldwide:

<http://www.open-mesh.com/index.php/professional/om2p.html>

<http://www.open-mesh.com/index.php/contacts/distributors.html>



Figure: Node with weatherproof enclosure

## References

**Installation instructions and API documentation**

<http://support.navizon.com/>

Follow the menu under "Navizon I.T.S." > "Support"

**Navizon I.T.S. API overview and reference**

<http://support.navizon.com/navizon-its-api-overview>

<http://support.navizon.com/navizon-its-api-reference/>

**Working with a custom floor plan**

<http://www.youtube.com/watch?v=Ocftx3aXwTw>