

Ekahau Site Survey Pro – Overview for Site Surveys

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1. Overview

This document provides an overview on how to perform a wireless site survey, using the Ekahau Site Survey application, on a post-wireless installation survey, within a new building. Performing a post installation wireless survey is the only way to prove that your wireless deployment will fulfill your wireless network requirements.

By performing a wireless site survey you will successfully be able to obtain the following information:

- Measure and detect RF presence
- Locate Access Point locations
- View expected Wi-Fi data rates
- Discover any hidden access points
- Locate any dead spots
- Indicate noise levels
- Signal strength coverage
- Co-channel interference
- Ability to analyse per access point, SSID or channel.

In this document we focus on using Ekahau Site Survey (ESS) to conduct a wireless survey; ESS has some stand out key features that are of benefit in the design and deployment of Wi-Fi networks. The key features of using ESS are:

- Hybrid Site Surveys – Allows simultaneously carrying out 2.4GHz and 5GHz surveys and conducting passive and active site surveys simultaneously also
- Locate all access points (APs) on a floor diagram.
- Allow for multiple USB Wi-Fi adapters for faster surveying
- Enabled for touch screen tablet devices
- View Wi-Fi status during surveys

2. Hardware

System requirements to run Ekahau Site Survey are as follows:

- 1.5GHz processor or above
- Windows 7 – 32bit and 64bit
- 4GB RAM or above is recommended
- 1GB Hard drive space

As ESS comes with multiple adapters it is recommended that you use the extra adapters for faster surveying. This allows you to simultaneously survey 2.4 and 5GHz networks. At least two USB ports are required in order to survey hardware this way. To use any of the touch enabled enhancements, ESS must be installed on a touch screen device that is capable of running

Windows 7 or 8.1. Windows RT is not recommended, as the ESS application will not operate. It is advised to run ESS on a laptop or tablet computer to conduct surveys, for ease of portability. Desktops can be used for planning and survey analysis.

We successfully installed ESS onto a Microsoft Windows Surface Pro 3 tablet. However, to take advantage of the extra Ekahau NIC Wi-Fi adapters for faster surveying, a suitable USB Hub will be required as the Microsoft Surface Pro 3 tablet computer only has a single USB 3.0 port. The adapters will only work well with a VIA VL812 chipset. A couple of brands that have been tested to work successfully with the Ekahau NIC modules without any problems are:

- Hootoo Bus-Powered USB 3.0 4-Port Compact Hub



- Inateck USB 3.0 4-Port Bus-Powered Hub



The USB hubs can be attached to the NIC modules with some sticky velcro as seen below.

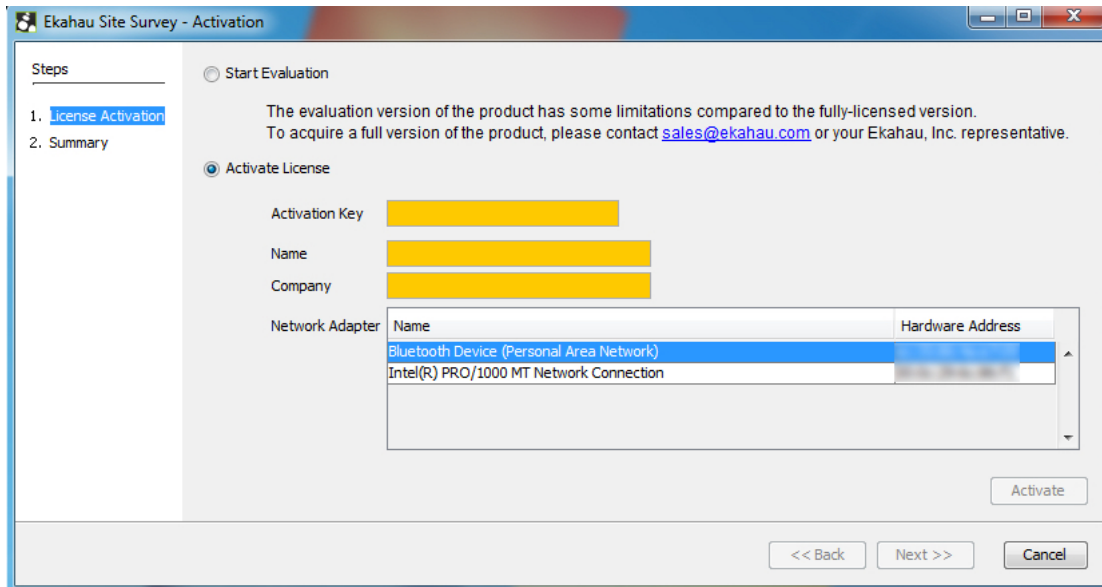


Alternatively for passive surveys you can use other supported adapters. A small selection of them are:

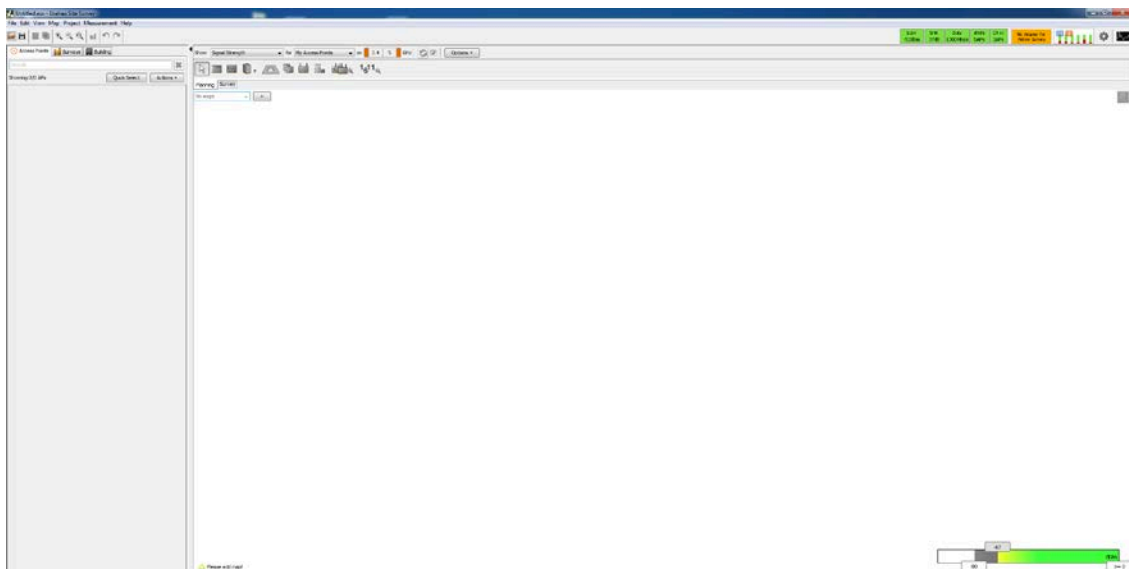
- Belkin (F6D3010)
- D-Link (DWA-642, DWA-643, DWA-645)
- NetGear (WNDA-3100 with Atheros Chipset V1)
- Proxim (Orinoco 8480)
- Linksys (WPC55AG)
- NetGear (WAG511, WAG511v2)
- TP-Link (TL-WN610G)

3. Basics of using Ekahau Site Survey (Survey Mode).

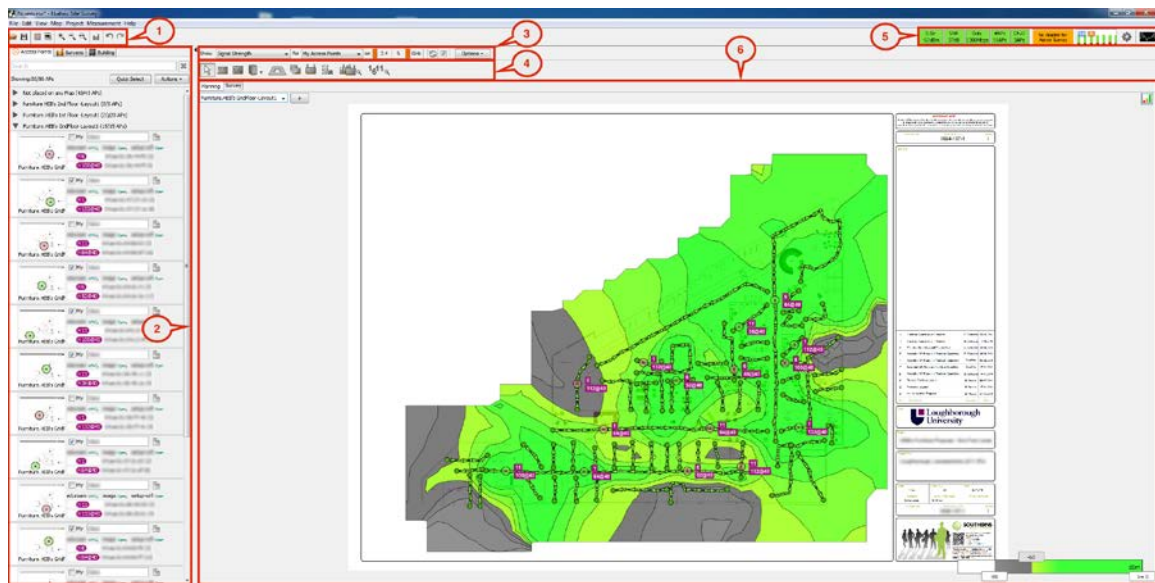
To start the ESS application, the licensed NIC network adapter module must be connected to the computer you wish to use the application on. Failing to do so will prompt the Ekahau activation screen. The network adapter will be checked for each time the application is started – without the network adapter the application will fail to launch.



As soon as the network adapter is inserted the application will launch without any activation prompts.

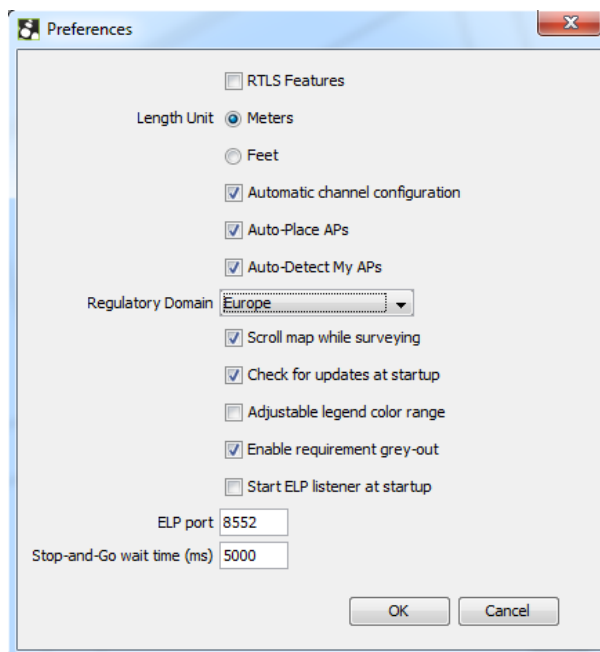


User Interface Overview



1. Shortcut toolbars
2. Access Point – Recorded APs captured from the survey are listed here
Survey list – Each time a survey is stopped the tracked walkthrough is saved here
Building view – Available only in Pro version of ESS to show 3-D plans
3. Various visualisation selections for APs
4. Planning and Survey selection tools – switch between planning mode or Survey to conduct walkthrough
5. View of floor diagram
6. Live network status

Preferences



Before starting a project it is useful to go through the set of preferences that are enabled in ESS for your requirements. To view preferences, go to **File > Preferences**.

Within the preferences option's screen you can select the following:

- Length Unit
- Automatic channel configuration
- Auto-Place APs map
- Auto Detect my APs
- Regulatory Domain
- Scroll map while surveying
- Check for updates at startup
- Adjustable legend color range
- Enable requirement grey-out
- Start ELP listener at startup

From these lists of options it is recommended to leave automatic channel configuration, auto-place APs and auto-detect my APs on, as whilst surveying, ESS will name the vendor of the AP and place the location of the AP on the map.

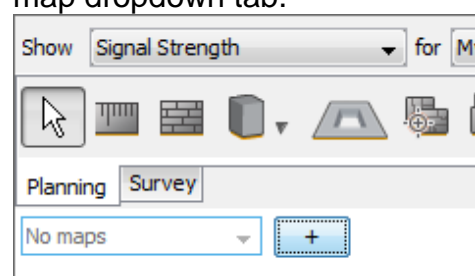
Scroll map while surveying is also another good option to have enabled as whilst surveying you can also move around the floor plan if required. This is useful as surveys are often done on smaller screens.

Importing a floor plan

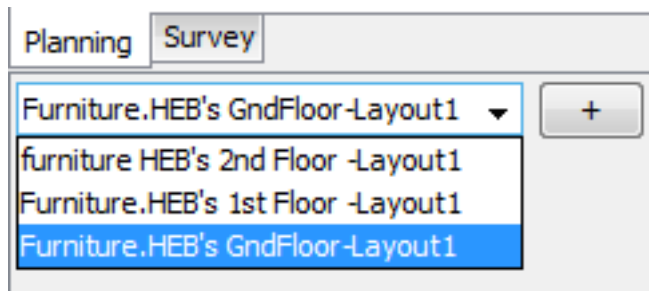
ESS accepts the following image formats to use as maps:

- BMP
- JPG
- JPEG
- WBMP
- PNG
- GIF
- SVG
- DWF
- DXF

To import a floor plan, click **Map > Add Map**, or click the **+** sign next to the map dropdown tab.



You can have several maps imported into a single project. All maps will be listed by clicking in the drop down list.



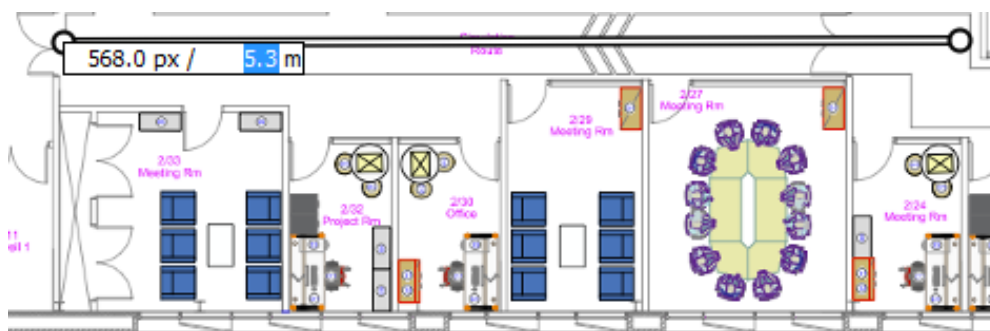
Scaling Floor plans

Once a floor plan has been imported it is vital that the map has been scaled correctly in order to produce correct visualisations and simulations. To set the correct scale you will require knowing the distance between two points in a map. It's recommended that you use a measuring tape or a laser-measuring device to get correct measurements.

Once you have the measurements you can select the scale tool from the selection tools. Scale tool icon is one that looks like a ruler.



On the map click and drag between two end points. A pop up will appear to enter the dimensions. Enter the dimensions and hit enter to set scale.



Performing Site Surveys

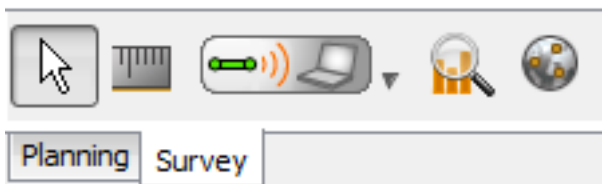
By performing a site survey the ESS application will capture signal readings from all enabled access points from within a building. It will also capture signals for any other APs within the building that may be unknown or from any nearby buildings.

- First as ESS allows you to simultaneously do active and passive surveys make sure you are associated and authenticated to an AP to capture all active survey data.
- Ensure all NIC USB modules are connected to the hub of your survey device. You can see each NIC connected by looking at the mini status view icons on the top right of the screen.

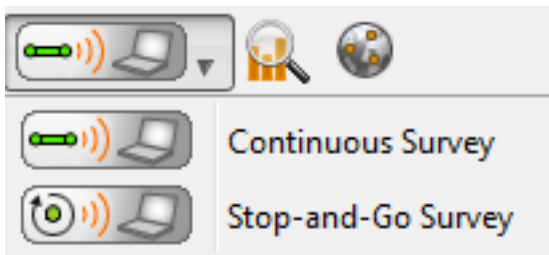


You can see that there is are two NICs connected (3rd and 4th boxes from the right). One is monitoring 2.4GHz signals and the other is monitoring 5GHz signals.

- Check that the **survey tab** has been selected to view the survey buttons.



- Press the survey button (3rd icon from left) and choose what type of survey you wish to perform.



A **continuous survey** will record all data during a survey automatically.

A **stop and go survey** will only record data when you click and hold on a location on the floor diagram. By default you must click and hold for five seconds. This can be changed in the preferences by adjusting the stop and go wait time.

- Click on the map of your current location and start walking at a steady pace.
- To stop the survey right click on the map to stop and click next location on the map where you wish to continue on from.
















AP and Survey List

All captured access points from the survey will be added to the AP list within ESS. The APs in this list will be displayed onto the map at its approximate location.

The screenshot displays the ESS interface with the following components:

- Tabs:** Access Points (selected), Surveys, Building.
- Search:** Search bar with a close button (X).
- Summary:** Showing: 86/86 APs. Buttons for Quick Select and Actions.
- AP List:**
 - Category 1:** Not placed on any Map (43/43 APs)
 - Category 2:** furniture.HEB's 2nd Floor -Layout1 (8/8 APs)
 - Category 3:** Furniture.HEB's 1st Floor -Layout1 (20/20 APs)
 - Category 4:** Furniture.HEB's GndFloor-Layout1 (15/15 APs)
- AP Entry Details:**
 - Thumbnail:** Map showing the location of the AP.
 - My:** Checkbox to mark the AP as 'My'.
 - Name:** Input field for the AP name.
 - AP List:**
 - Protocol: WPA2, Status: Open, Action: Open
 - AP ID: n 6, SSID: [redacted]
 - AP ID: n 100@40, SSID: [redacted]

All survey walk paths will be grouped together in the survey list. These are the physical surveys that have been undertaken and each can be deselected if required to produce different visualisations on the floor map.

 Access Points  Surveys  Building				
▶ Furniture.HEB's 1st Floor -Layout1				
▼ Furniture.HEB's GndFloor-Layout1				
Survey	Device	Pri...	Sec...	Notes
2015-01-12-10:19	NIC-300 #2 b0:42	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:19	NIC-300 b0:3d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:37	NIC-300 #2 b0:42	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:37	NIC-300 b0:3d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:37	NIC-300 #2 b0:42	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:37	NIC-300 b0:3d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:38	NIC-300 #2 b0:42	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:38	NIC-300 b0:3d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:41	NIC-300 #2 b0:42	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:41	NIC-300 b0:3d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:41	NIC-300 #2 b0:42	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2015-01-12-10:41	NIC-300 b0:3d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Live Network Status

ESS consists of some useful on screen live network status information, much similar to other standalone wireless analyzer applications available. ESS has one built into the application which shows live AP signals before prompting to start a survey or this can be viewed whilst undertaking surveys. To view live network status, click on **Measurement > Live Signals**.

Device: Ekahau USB-NIC-300 #2 MAC address: 30:14:4a:ee:b0:42

AP Name	MAC	SSID	Technology	Channel	Mbps	Security	Streams	Utilization	Stations	Signal	Noise	Signal/Noise
			11n	11	144.4	WPA	2	N/A	N/A	N/A	N/A	
			11n	11	144.4	WPA	2	N/A	N/A	N/A	N/A	
			11n	4	216.7	WPA2	3	N/A	N/A	-76	-71	
			11n	11	144.4	Open	2	N/A	N/A	N/A	N/A	
			11n	11	144.4	Open	2	N/A	N/A	N/A	N/A	
			11g	1	54	Open	1	N/A	N/A	-72	-69	
			11n	1	216.7	WPA2	3	42.7 %	2	-71	-69	
			11n	1	216.7	Open	3	42.7 %	2	-71	-69	
			11n	11	216.7	WPA2	3	37.6 %	5	-38	-81	
			11n	11	216.7	Open	3	N/A	N/A	N/A	N/A	
			11n	11	216.7	WPA2	3	37.6 %	5	-38	-81	
			11n	11	216.7	WPA2	3	N/A	N/A	N/A	N/A	
			11g	1	54	Open	1	N/A	N/A	-76	-69	
			11n	1	216.7	WPA2	3	46.7 %	2	-75	-69	
			11n	1	216.7	Open	3	46.7 %	2	-48	-88	

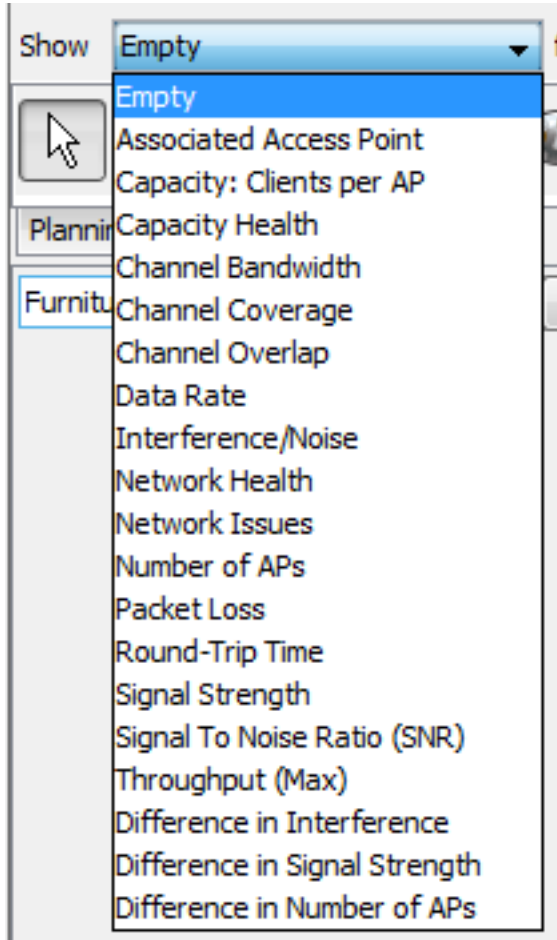
Scanning channels: 1-13
Scanning duration: 1,860 milliseconds
Number of BSSIDs: 9

Reset Close

Analyzing Surveys

Once you have completed a wireless survey or whilst partially through a survey, ESS can produce many heat-maps for different purposes.

With your survey paths shown on the map if you click on the **Show** drop down list it will present you with various options.



Each one of those criteria from the list will display various heat-maps that can be selected for the access points obtained from the survey.

4. Summary

The Ekahau Site Survey application proves a great way of producing wireless site surveys. With its easy to use clean interface with clear visualisations and ability to run fast and efficiently on latest generation of touch enabled laptop computers, it provides wireless administrators with a very powerful tool as it is very accurate for planning and deploying wireless networks.

4. Contact

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