XetaNET Quick Start Guide – Installation, Discovery, Statistics & Support

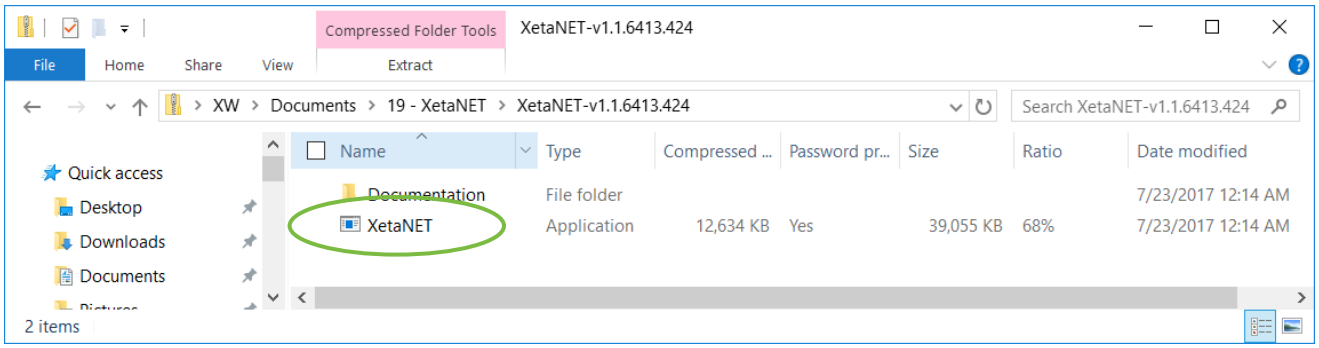
This Quick Start Guide assists with software installation, discovering Radio's, poling statistics and engaging with XetaWave Customer Support.

Installation

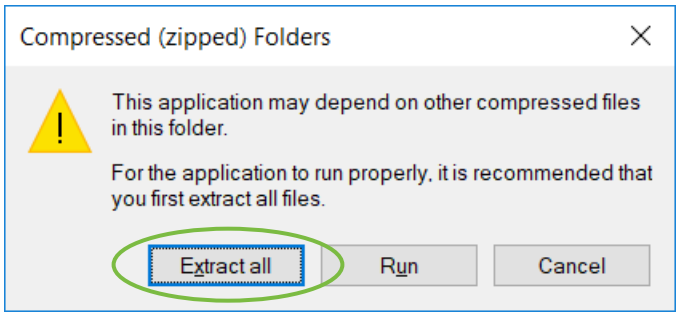
XetaNET runs **without the need to install the software into the OS**; *it starts directly from the application file*.

Copy the **XetaNET<ver>.zip** file to a folder on your Laptop/PC.

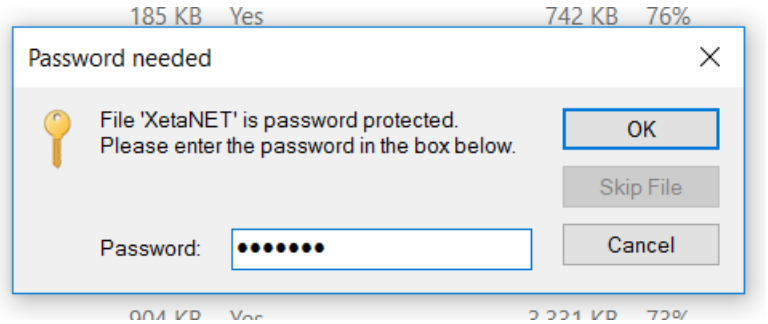
Open the Zip file and double-click the **XetaNET** application.



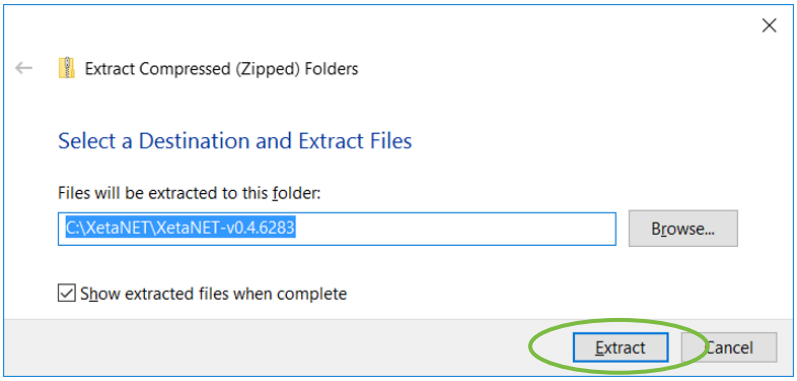
Click **Extract all** to begin the unzipping process.



Password is **XetaNET**.



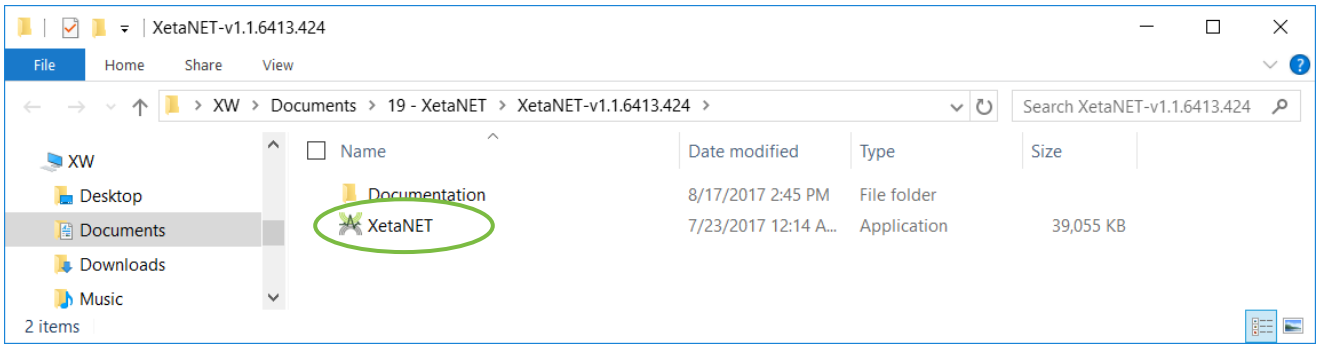
Select a destination folder and click **Extract**.



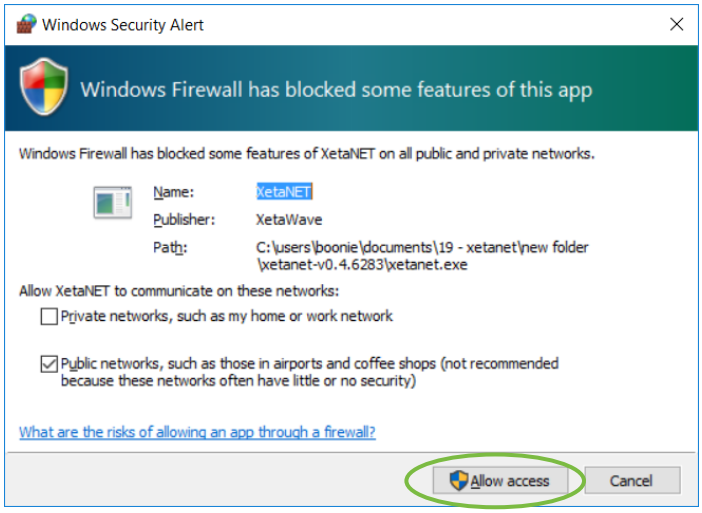
Note: the software runs directly from the application file and does not get installed in "Program Files".

Destination folder should open up and show the **XetaNET** application file and Documentation Folder.

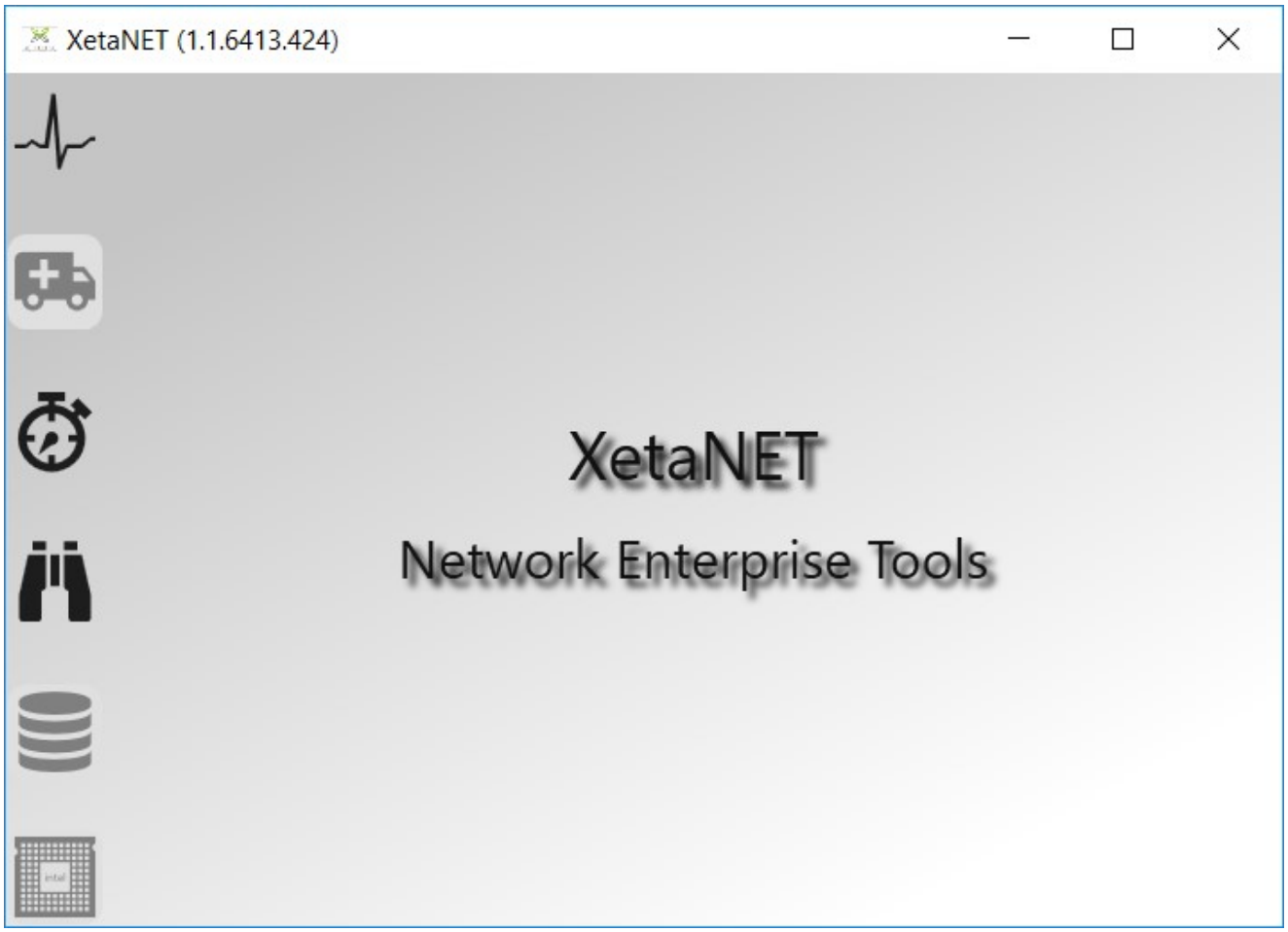
Double click the XetaNET application file.



Click **Allow access** if prompted by the Firewall.

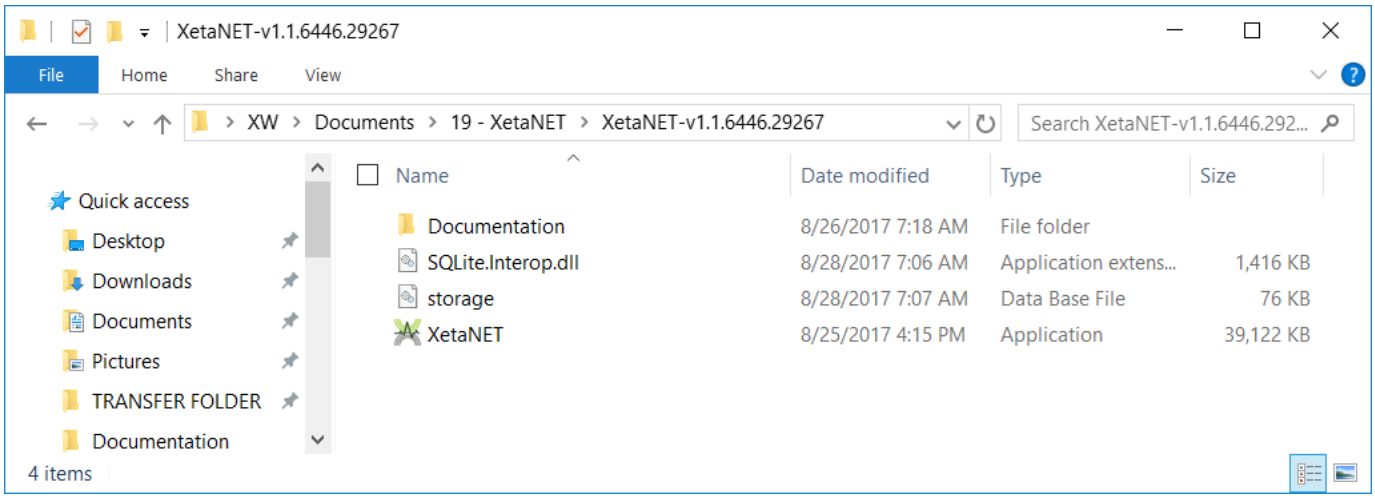


XetaNET will start up and welcome you with the following screen…



The XetaNET folder will now contain two extra files;

- **SQLite.Interop.dll**
- **storage.db** – *this is the database file that will be requested if technical support is required.*



Firmware Version Compatibility

XetaNET has been developed in conjunction with the 2.13 / 1.43 uTasker / RF release. General compatibility with older versions exists, however, features must be present in the OS / RF code for complete feature compatibility with XetaNET.

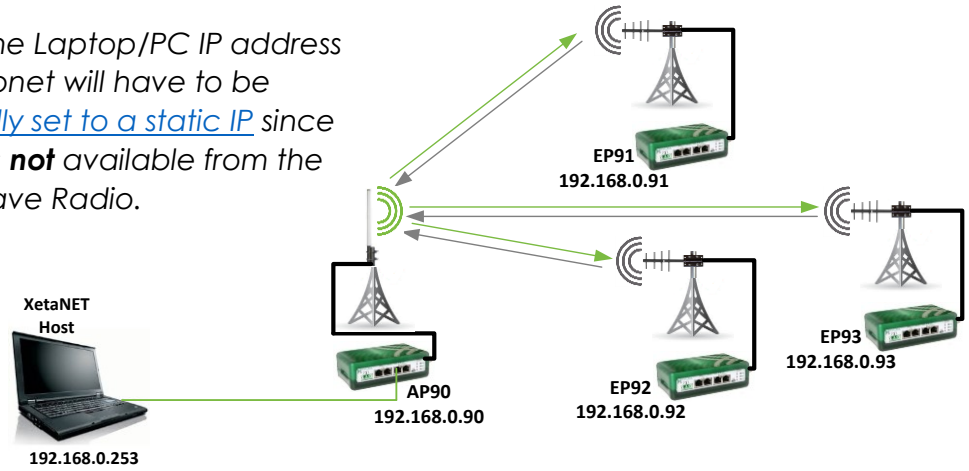
Note: ALL versions preceding 2.12.14411are known to have a bug where the RF module may get powered down for 60-120secs upon initial device Discovery. Therefore, it is advised to upgrade the network with the included 2.13 / 1.43 code in order to get the most out of XetaNET.

Connecting XetaNET to your Network

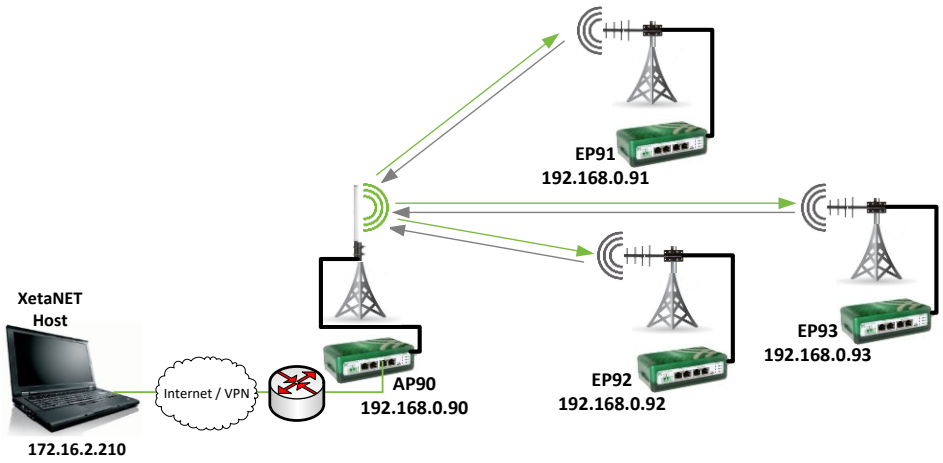
There are two main methods for connecting XetaNET to a Radio Network.

- **LAN**; the laptop/PC hosting XetaNET is directly connected to the main Access Point or any other Radio on the Network. The host has an IP address in the same range/subnet as the Radios to ensure connectivity – IP address example below…

*Note: the Laptop/PC IP address and subnet will have to be manually set to a static IP since DHCP is **not** available from the XetaWave Radio.*



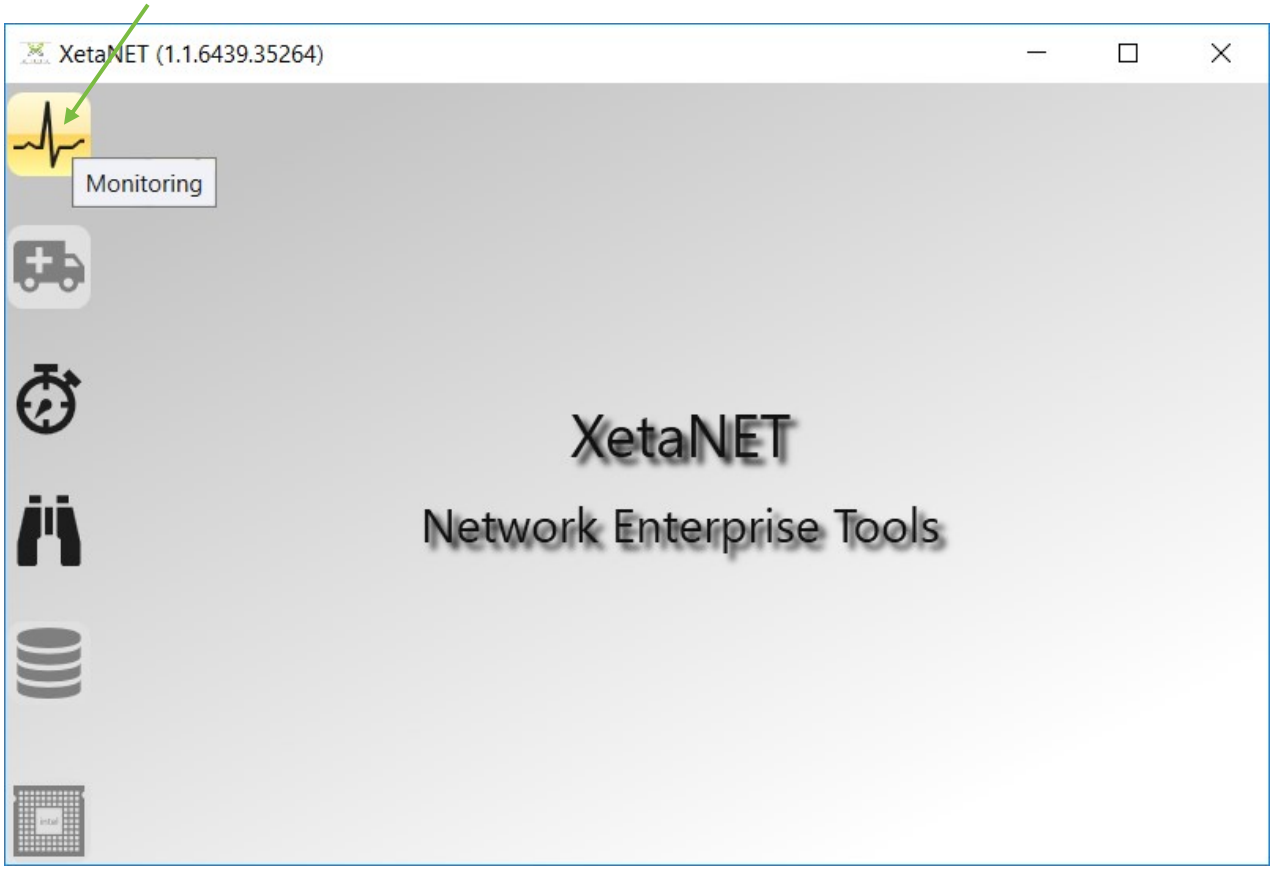
- **WAN**; Laptop/PC hosting XetaNET is located away from the Radio Network and relies on access via the Internet, usually via VPN. Whenever using XetaWave Radios on a network that's sat behind a Router…

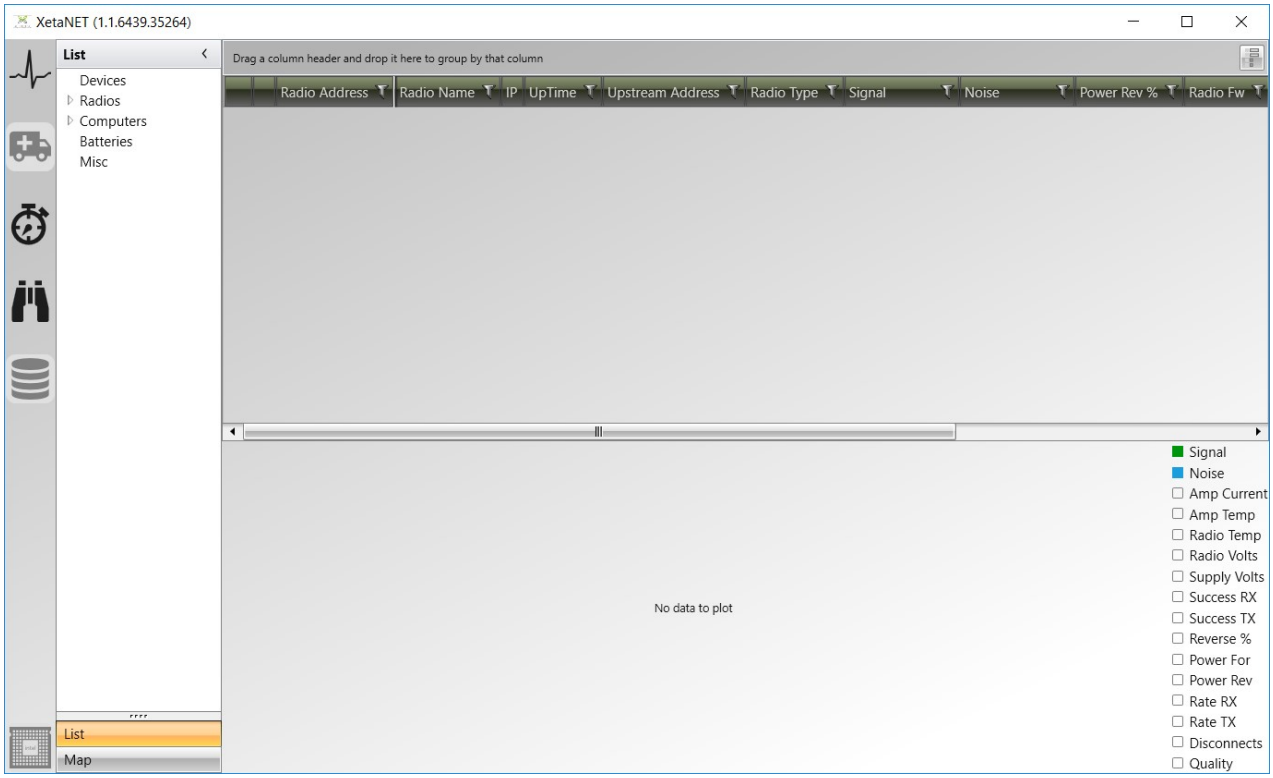


Note: it is vitally important to set the Default Gateway in EVERY Radio to that of the Router port where the main Access Point is connected, otherwise they don't respond beyond the Router.

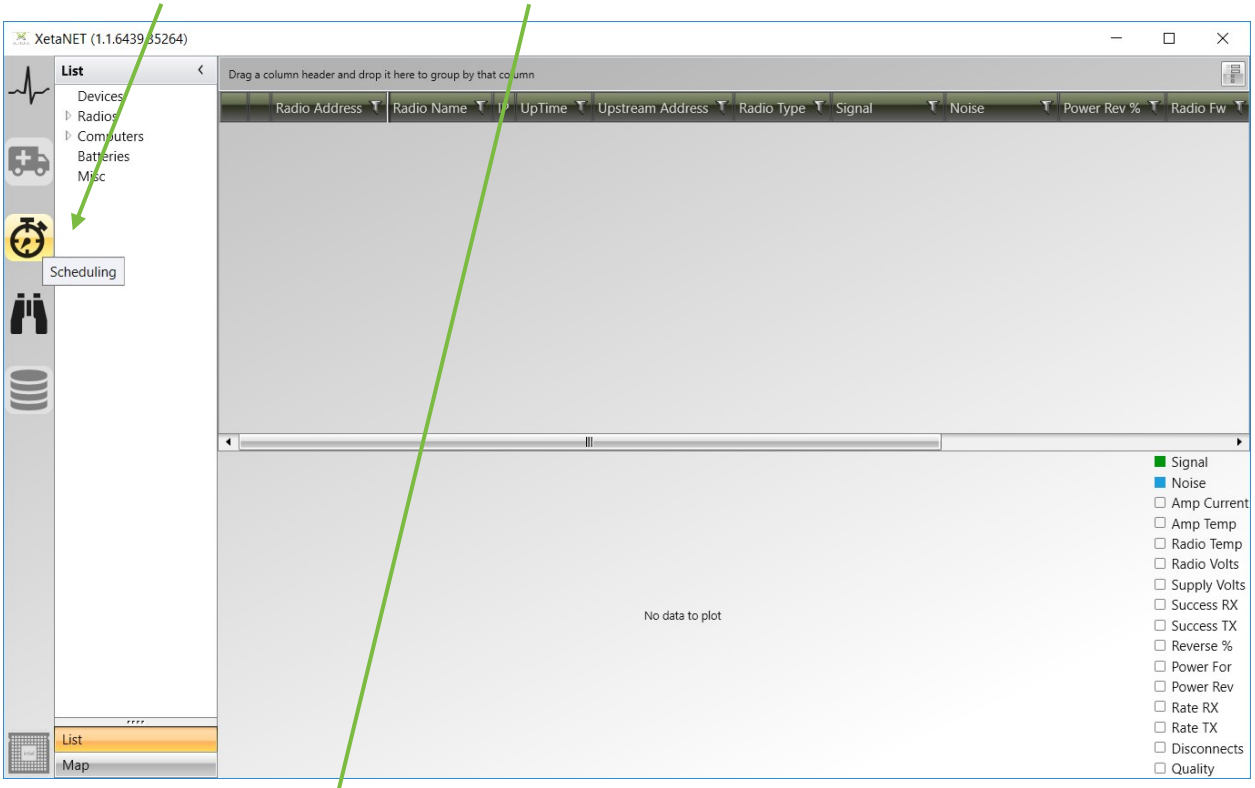
Application & Environment Setup

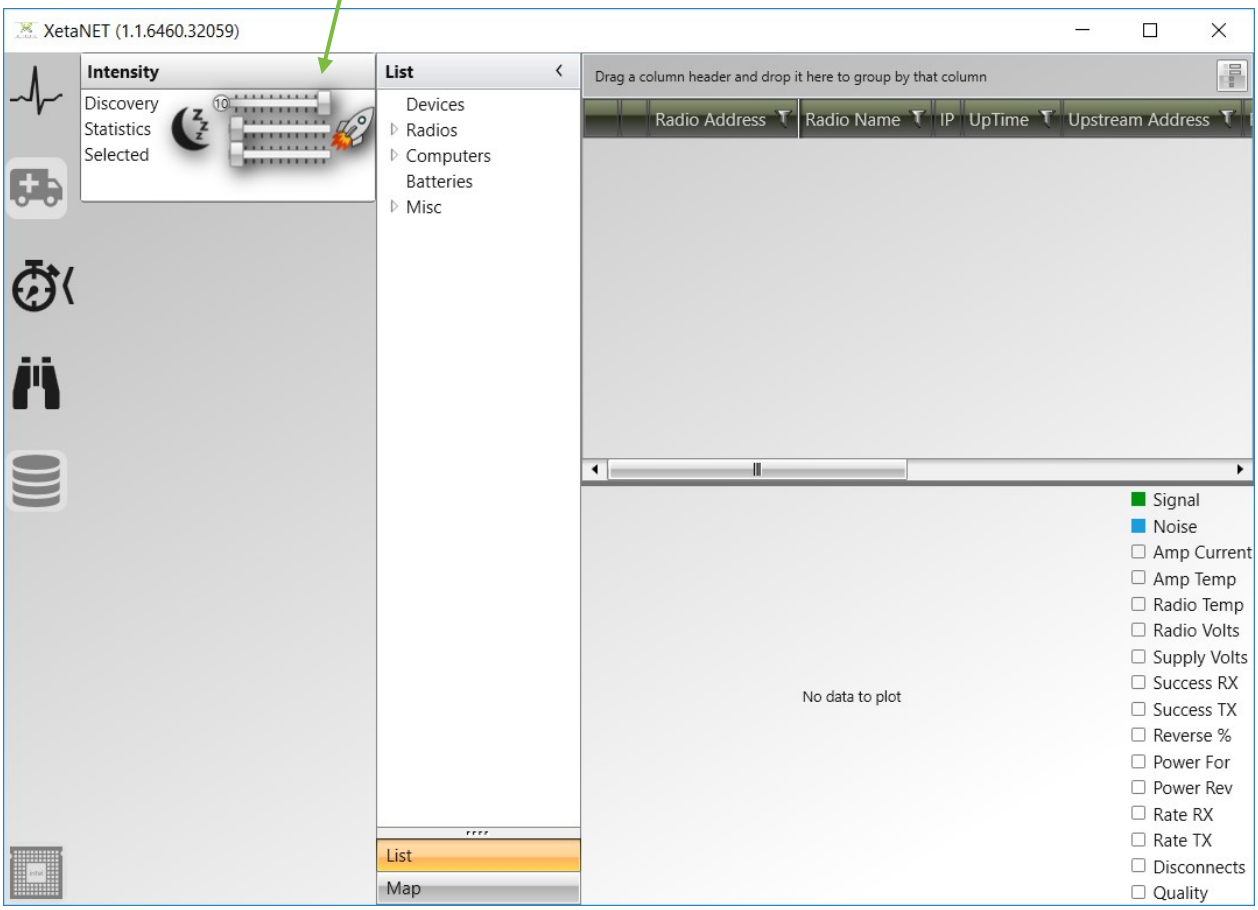
Click the **Monitoring** icon to open the Monitoring application…





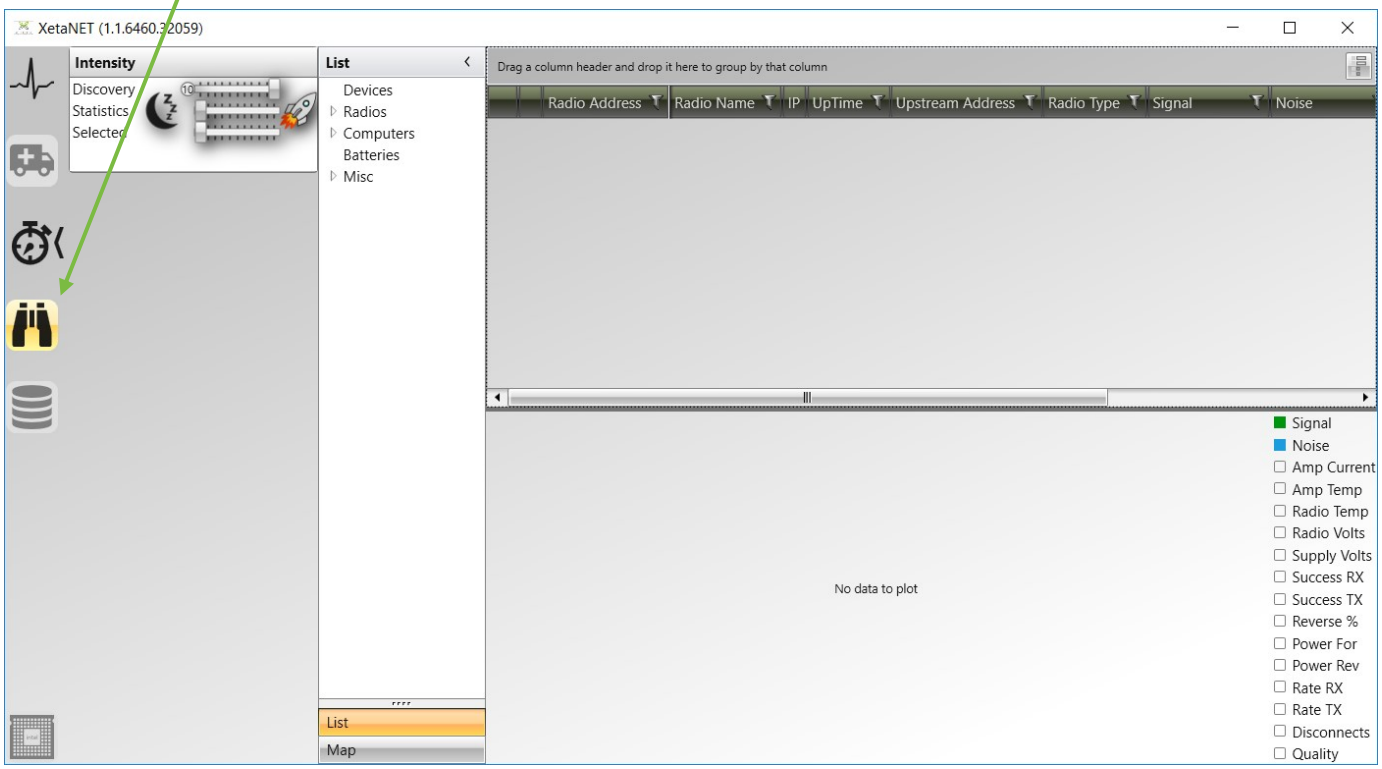
Click the **Scheduling** icon and move the **Discovery** slider to the right…



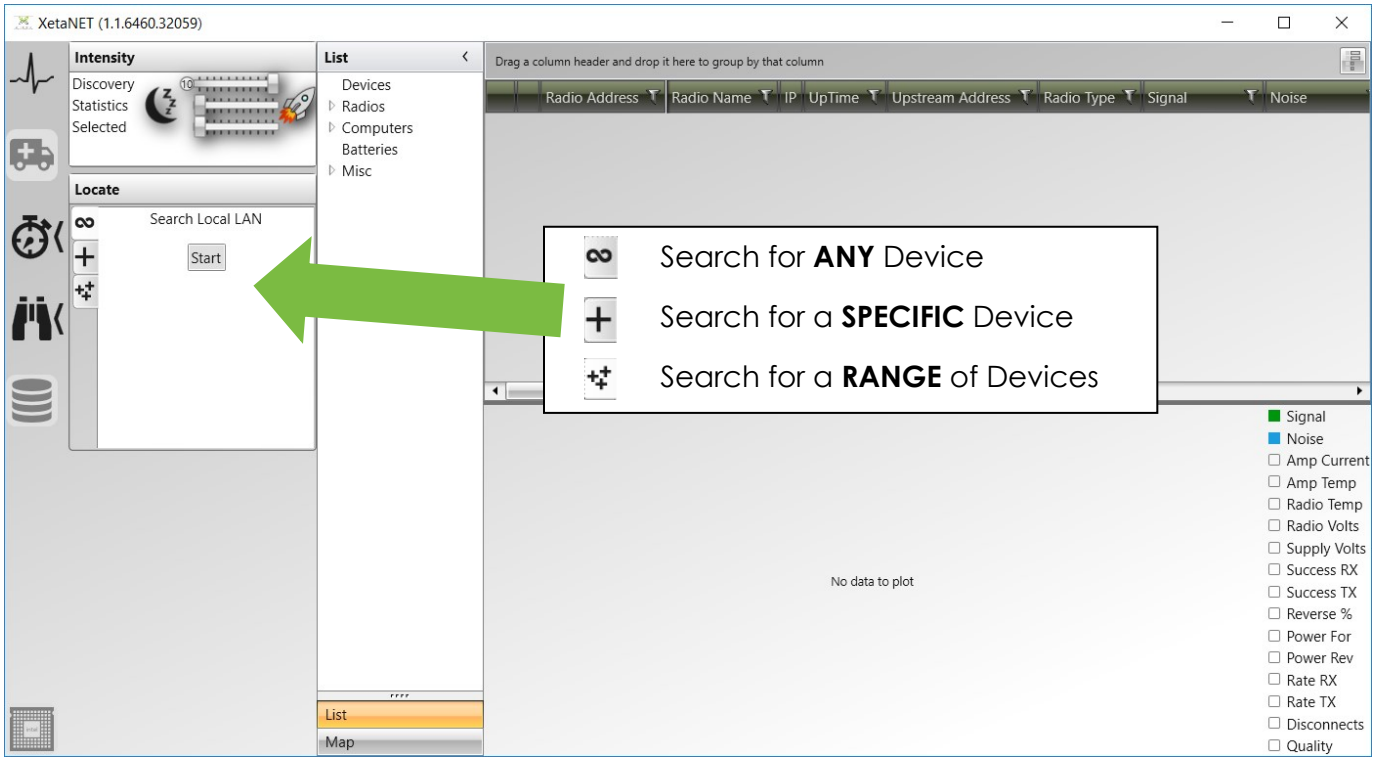


Discovery

Click the **Discover** icon to start discovering Radios on the network…

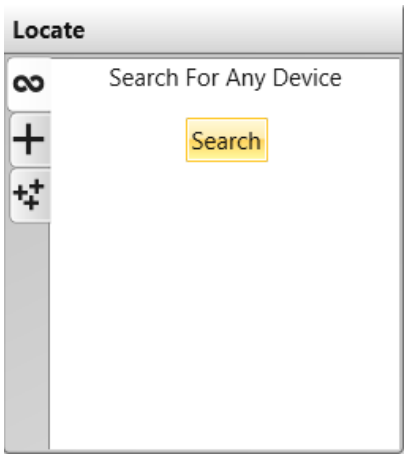


Discover provides three utilities for locating Radios on the network…



Search for ANY Device

Click **Search** to use the XetaWave Multicast protocol to locate Radios.



- UDP used to locate Radios on the Network.
- 44 - 154 Byte messages

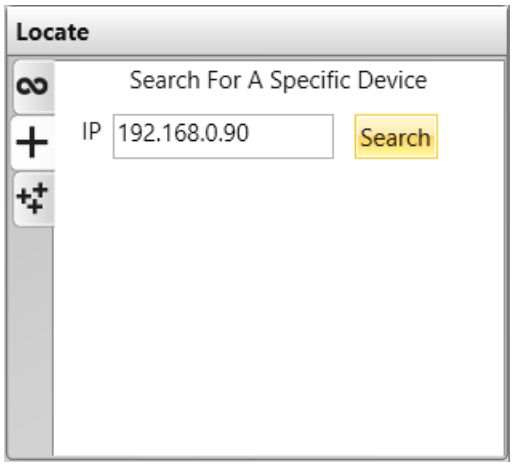
20	192.168.0.253	239.58.57.45	UDP	44
21	192.168.0.90	239.58.57.45	UDP	154
22	192.168.0.253	192.168.0.90	UDP	47
23	192.168.0.253	192.168.0.90	UDP	47
24	192.168.0.90	192.168.0.253	UDP	154
25	192.168.0.90	192.168.0.253	UDP	154

- XetaNET learns of other Radios from discovered Radios ARP tables.

*Note: This is a **LAN only** Discovery Tool unless IGMP proxying is enabled in the Router/VPN configuration.*

Search for a SPECIFIC Device

Enter the **IP Address** of the Radio and click **Search**…

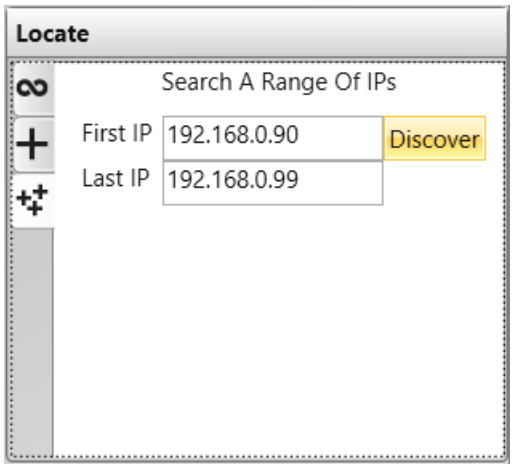


- **ICMP, UDP, TCP, HTTP** used to monitor and poll Radios for information.
- 54 - 1444 Byte messages.
- XetaNET learns of other Radios from discovered Radios ARP tables.
- The **Discovery** intensity slider affects this operation. With the slider to the right, XetaNET will more quickly discover neighbors to the Radio IP address entered in the search.

40	192.168.0.253	192.168.0.90	TCP	66 49605 > http [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
41	192.168.0.90	192.168.0.253	TCP	60 http > 49605 [SYN, ACK] Seq=0 Ack=1 Win=1482 Len=0 MSS=1482
42	192.168.0.253	192.168.0.90	TCP	54 49605 > http [ACK] Seq=1 Ack=1 Win=64240 Len=0
43	192.168.0.253	192.168.0.90	HTTP	133 GET /settings.htm?af=3 HTTP/1.1
44	192.168.0.90	192.168.0.253	HTTP	1428 HTTP/1.0 200 OK
45	192.168.0.90	192.168.0.253	HTTP	921 Continuation or non-HTTP traffic
46	192.168.0.253	192.168.0.90	TCP	54 49605 > http [ACK] Seq=80 Ack=2242 Win=64240 Len=0
47	192.168.0.90	192.168.0.253	HTTP	1444 Continuation or non-HTTP traffic
48	192.168.0.90	192.168.0.253	HTTP	1366 Continuation or non-HTTP traffic
49	192.168.0.253	192.168.0.90	TCP	54 49605 > http [ACK] Seq=80 Ack=4944 Win=64240 Len=0
50	192.168.0.90	192.168.0.253	HTTP	1231 Continuation or non-HTTP traffic
51	192.168.0.90	192.168.0.253	HTTP	1447 Continuation or non-HTTP traffic
52	192.168.0.253	192.168.0.90	TCP	54 49605 > http [ACK] Seq=80 Ack=7514 Win=64240 Len=0
53	192.168.0.90	192.168.0.253	HTTP	1374 Continuation or non-HTTP traffic
54	192.168.0.90	192.168.0.253	HTTP	675 Continuation or non-HTTP traffic
55	192.168.0.253	192.168.0.90	TCP	54 49605 > http [ACK] Seq=80 Ack=9455 Win=64240 Len=0
56	192.168.0.90	192.168.0.253	TCP	60 http > 49605 [FIN, ACK] Seq=9455 Ack=80 Win=1482 Len=0
57	192.168.0.253	192.168.0.90	TCP	54 49605 > http [ACK] Seq=80 Ack=9456 Win=64240 Len=0
58	192.168.0.253	192.168.0.90	TCP	54 49605 > http [FIN, ACK] Seq=80 Ack=9456 Win=64240 Len=0
59	192.168.0.90	192.168.0.253	TCP	60 http > 49605 [ACK] Seq=9456 Ack=81 Win=1482 Len=0
60	192.168.0.253	192.168.0.90	ICMP	72 Echo (ping) request id=0x0001, seq=6875/56090, ttl=127
61	192.168.0.90	192.168.0.253	ICMP	72 Echo (ping) reply id=0x0001, seq=6875/56090, ttl=128
62	192.168.0.253	224.0.1.60	ICMP	72 Echo (ping) request id=0x0001, seq=6876/56346, ttl=127

Search for a RANGE of Devices

Enter the desired range of IP Addresses and click **Discover.**

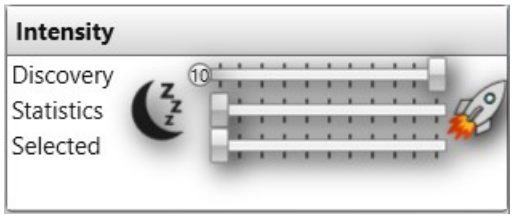


- **ICMP, UDP, TCP, HTTP** used to monitor and poll Radios for information.
- 54 - 1448 Byte messages.
- XetaNET learns of other Radios from discovered Radios ARP tables.
- The **Discovery** intensity slider affects this operation. With the slider to the right, XetaNET will more quickly discover neighbors to the Radio IP address range entered in the search.

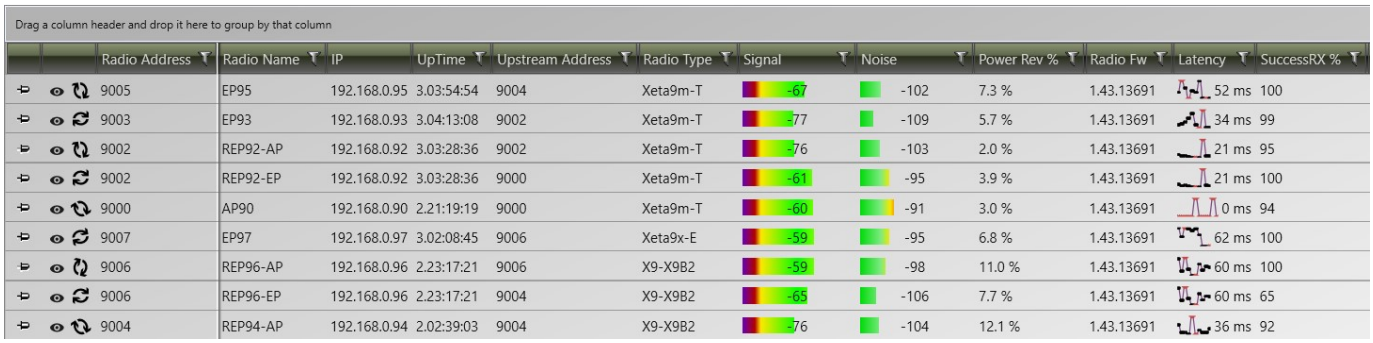
No.	Source	Destination	Protocol	Length	Info
862	192.168.0.92	192.168.0.253	TCP	1140	[TCP segment of a reassembled PDU]
863	192.168.0.253	192.168.0.92	TCP	54	55583 > http [ACK] Seq=72 Ack=14630 Win=63154 Len=0
864	192.168.0.92	192.168.0.253	HTTP	595	Continuation or non-HTTP traffic
865	192.168.0.95	192.168.0.253	ICMP	72	Echo (ping) reply id=0x0002, seq=12955/39730, ttl=128
866	192.168.0.253	192.168.0.92	TCP	54	55583 > http [ACK] Seq=72 Ack=15171 Win=64240 Len=0
867	192.168.0.92	192.168.0.253	HTTP	1251	HTTP/1.0 200 OK
868	192.168.0.92	192.168.0.253	TCP	60	http > 55583 [FIN, ACK] Seq=15171 Ack=72 Win=1482 Len=0
869	192.168.0.253	192.168.0.92	TCP	54	55583 > http [ACK] Seq=72 Ack=15172 Win=64240 Len=0
870	192.168.0.253	192.168.0.92	TCP	54	55583 > http [FIN, ACK] Seq=72 Ack=15172 Win=64240 Len=0
871	192.168.0.92	192.168.0.253	TCP	60	http > 55583 [ACK] Seq=15172 Ack=73 Win=1482 Len=0
872	Xetawave_01:23	Broadcast	ARP	60	Who has 192.168.0.250? Tell 192.168.0.90
873	192.168.0.253	192.168.0.92	TCP	54	55588 > http [ACK] Seq=93 Ack=1198 Win=63043 Len=0
874	192.168.0.92	192.168.0.253	TCP	60	http > 55588 [FIN, ACK] Seq=1198 Ack=93 Win=1482 Len=0
875	192.168.0.253	192.168.0.92	TCP	54	55588 > http [ACK] Seq=93 Ack=1199 Win=63043 Len=0
876	192.168.0.253	192.168.0.92	TCP	54	55588 > http [FIN, ACK] Seq=93 Ack=1199 Win=63043 Len=0
877	192.168.0.92	192.168.0.253	TCP	60	http > 55588 [ACK] Seq=1199 Ack=94 Win=1482 Len=0
878	192.168.0.253	192.168.0.92	TCP	66	55589 > http [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
879	192.168.0.92	192.168.0.253	TCP	60	http > 55589 [SYN, ACK] Seq=0 Ack=1 Win=1482 Len=0 MSS=1482
880	192.168.0.253	192.168.0.92	TCP	54	55589 > http [ACK] Seq=1 Ack=1 Win=64240 Len=0
881	192.168.0.253	192.168.0.92	HTTP	146	GET /settings.htm?ad=9002&ar=1&af=2 HTTP/1.1
882	192.168.0.92	192.168.0.253	HTTP	1250	HTTP/1.0 200 OK
883	192.168.0.253	192.168.0.92	TCP	54	55589 > http [ACK] Seq=93 Ack=1197 Win=63044 Len=0
884	192.168.0.253	192.168.0.96	ICMP	72	Echo (ping) request id=0x0002, seq=12957/40242, ttl=127
885	192.168.0.92	192.168.0.253	TCP	60	http > 55589 [FIN, ACK] Seq=1197 Ack=93 Win=1482 Len=0
886	192.168.0.253	192.168.0.92	TCP	54	55589 > http [ACK] Seq=93 Ack=1198 Win=63044 Len=0
887	192.168.0.253	192.168.0.92	TCP	54	55589 > http [FIN, ACK] Seq=93 Ack=1198 Win=63044 Len=0
888	192.168.0.253	192.168.0.92	TCP	66	55590 > http [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM=1
889	192.168.0.92	192.168.0.253	TCP	60	http > 55589 [ACK] Seq=1198 Ack=94 Win=1482 Len=0
890	192.168.0.92	192.168.0.253	TCP	60	http > 55590 [SYN, ACK] Seq=0 Ack=1 Win=1482 Len=0 MSS=1482
891	192.168.0.253	192.168.0.92	TCP	54	55590 > http [ACK] Seq=1 Ack=1 Win=64240 Len=0
892	192.168.0.253	192.168.0.92	HTTP	146	GET /settings.htm?ad=9002&ar=2&af=2 HTTP/1.1
893	192.168.0.96	192.168.0.253	ICMP	72	Echo (ping) reply id=0x0002, seq=12957/40242, ttl=128
894	192.168.0.92	192.168.0.253	HTTP	1250	HTTP/1.0 200 OK
895	192.168.0.253	192.168.0.92	TCP	54	55590 > http [ACK] Seq=93 Ack=1197 Win=63044 Len=0
896	192.168.0.92	192.168.0.253	TCP	60	http > 55590 [FIN, ACK] Seq=1197 Ack=93 Win=1482 Len=0
897	192.168.0.253	192.168.0.92	TCP	54	55590 > http [ACK] Seq=93 Ack=1198 Win=63044 Len=0

Statistics

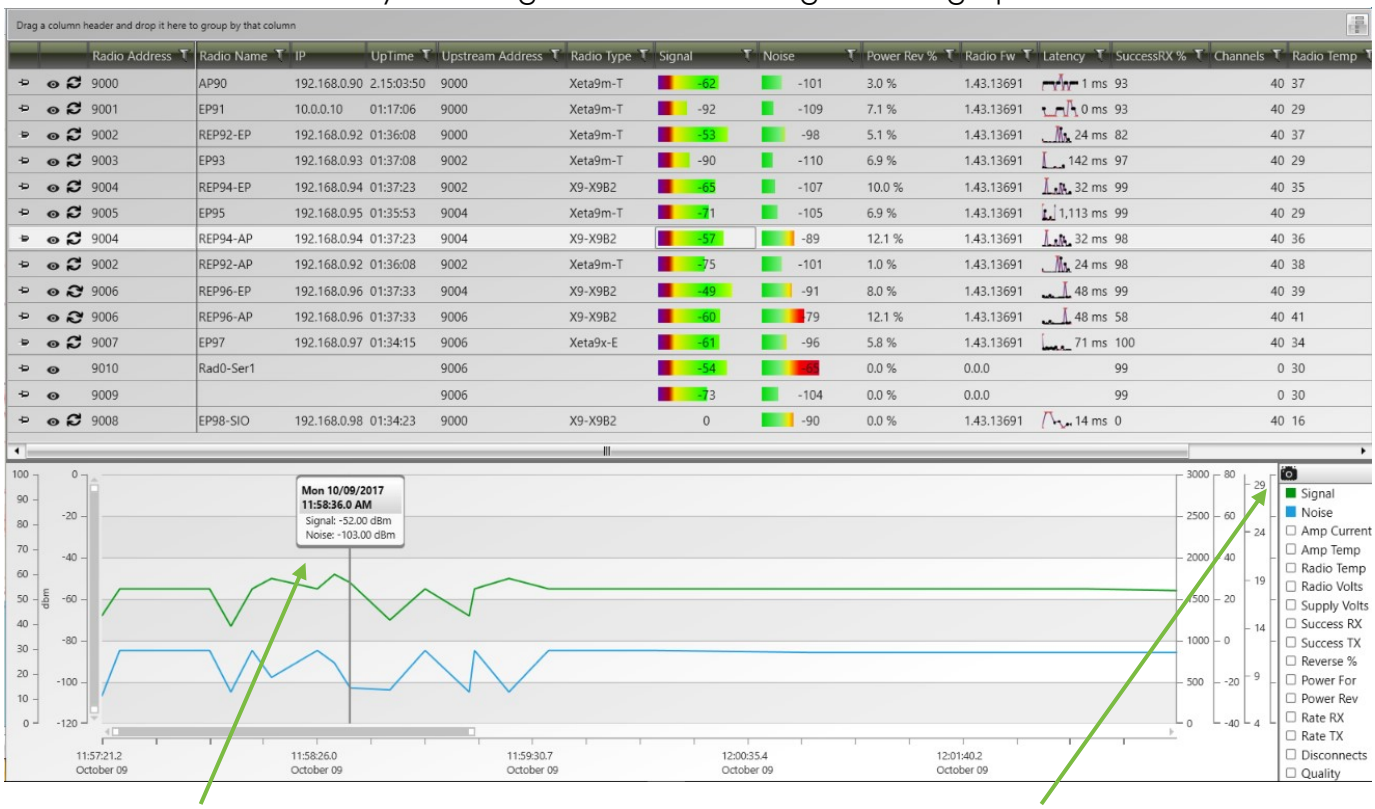
Once XetaNET has discovered Radios on the network, move the **Statistics** intensity slider right to start polling Radios for information.



- All Radios on the network that can establish a link can provide Statistics.
- Statistics will start to populate.
- Some Radios will take longer than others.
- May take longer to populate on marginal links.



Selecting a Radio in the list produces a time-based historical graph. Users can choose the desired statistics to chart by checking the boxes to the right of the graph…



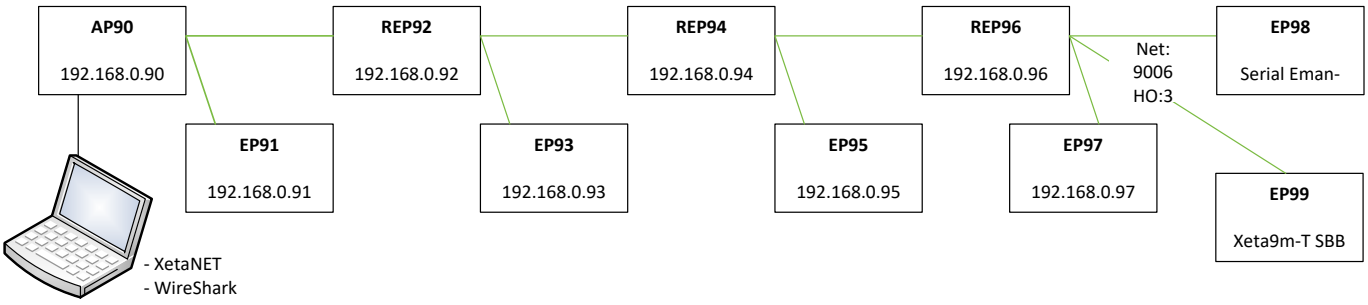
Move the **mouse** over the graph to read the statistics recorded at that particular time.

Click the **camera** icon to save a **.png** of of the graph.

Sliders and Bandwith Usage

The "Intensity" sliders manipulate how XetaNET interacts with the network and therefore how much Ethernet bandwidth these interactions occupy.

The following system was set up using a DTS600 PSK configuration and MMS providing a downstream TCP throughput of 186 kbps and an upstream TCP throughput of 328 kbps as measured with Fbench.



Radio

Name	AP90
Frequency Band	ISM
Serial Number	E50128E4
Firmware Version	1.43.13691
Time Since Last Read (h:m)	0:23

Radio Network - Auto Configuration

Auto-Configuration	On, Fast Mode

Radio Network - Protocol

Network Type	Point to Multipoint
Network Address	9000
Radio Role	Access Point
Radio Address	9000
Link With Radio Address	9000

Radio Advanced

Radio Network - Timing

Network Radius (km)	50
Payload Bytes, AP	512
Payload Bytes, EP	512
Dynamic Payload Bytes	Off
MultiSync	Generate

Radio - Data

Diagnostic Threshold (dBm)	-80
Data Interface	Ethernet

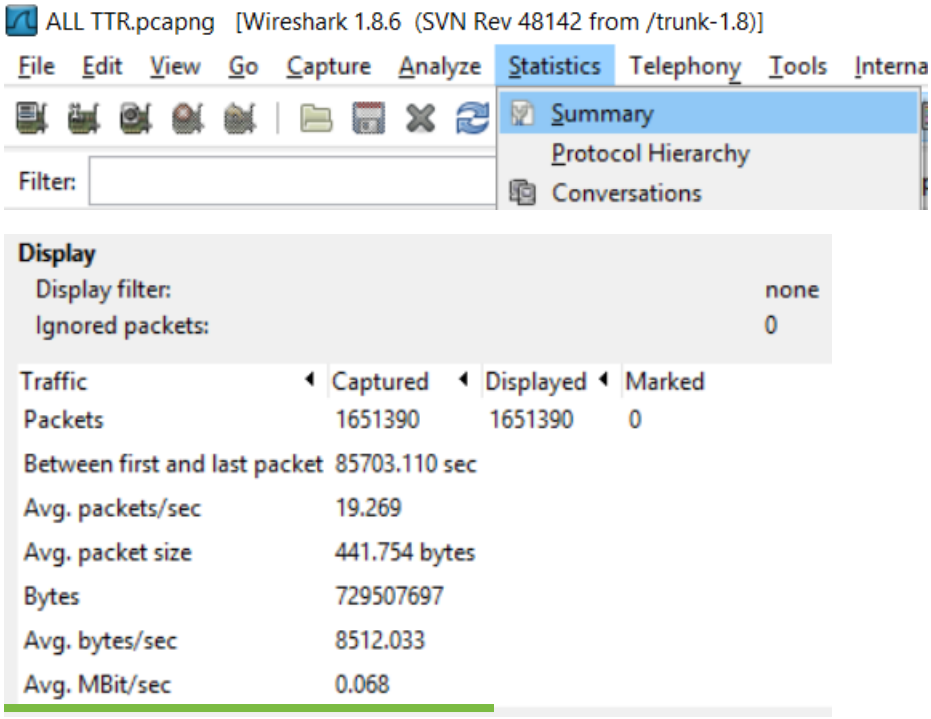
Radio Network - ISM Spectrum

AP Modulation Rate	1061 kbps QPSK
EP Modulation Rates	☐ 57 kbps MSK 77 kHz ☐ 114 kbps MSK 154 kHz ☐ 153 kbps MSK 207 kHz ☐ 229 kbps MSK 310 kHz ☑ 530 kbps BPSK 600 kHz ☐ 663 kbps 2FSK 900 kHz ☐ 884 kbps BPSK 1200 kHz ☑ 1061 kbps QPSK 600 kHz ☑ 1591 kbps 8PSK 600 kHz ☐ 1768 kbps QPSK 1200 kHz ☐ 2121 kbps 16QAM 600 kHz ☐ 2651 kbps 8PSK 1200 kHz ☐ 2651 kbps 32QAM 600 kHz ☐ 3535 kbps 16QAM 1200 kHz ☐ 3535 kbps 16PSK 1200 kHz ☐ 4419 kbps 32QAM 1200 kHz
Transmit Power (mW)	100
Hop Pattern	1
Hop Start Frequency (MHz)	902.0000
Hop Stop Frequency (MHz)	928.0000
Hop Exclude Lower Frequency (MHz)	0
Hop Exclude Upper Frequency (MHz)	0
Hop Offset	0

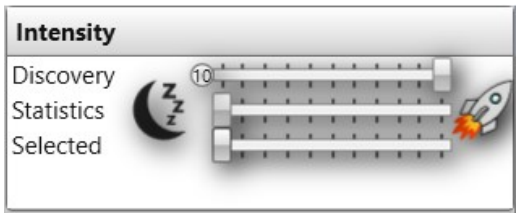
For the purpose of providing an indication of slider position vs bandwidth usage, the following results were measured using Wireshark with the sliders at their most intensive position; →.

Wireshark is free and can be used to check bandwidth by monitoring the traffic on the laptop Ethernet adapter that is connected to the main AP (AP90 in the case of the test system above).

Click **Statistics/Summary** to view the Average kbps…



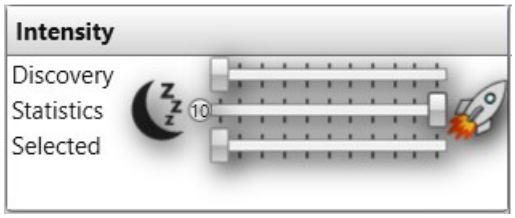
Discovery →



- 1 kbps average usage

Traffic	Captured	Displayed	Marked
Packets	27656	27656	0
Between first and last packet	13821.128 sec		
Avg. packets/sec	2.001		
Avg. packet size	90.039 bytes		
Bytes	2490125		
Avg. bytes/sec	180.168		
Avg. MBit/sec	0.001		

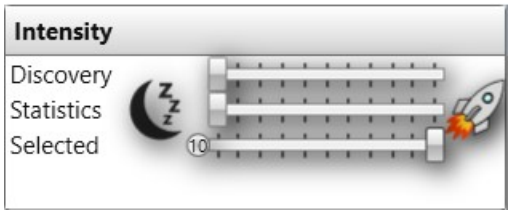
Statistics →



- 48 kbps average usage

Traffic	Captured	Displayed	Marked
Packets	60107	60107	0
Between first and last packet	4327.600 sec		
Avg. packets/sec	13.889		
Avg. packet size	429.826 bytes		
Bytes	25835566		
Avg. bytes/sec	5969.952		
Avg. MBit/sec	0.048		

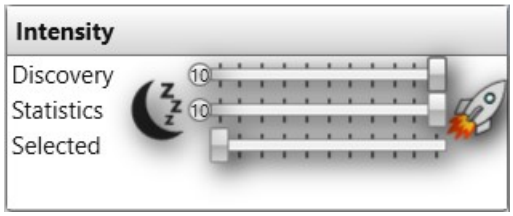
Selected →



- Single Radio selected
- 38 kbps average usage

Traffic	Captured	Displayed	Marked
Packets	45477	45477	0
Between first and last packet	4347.608 sec		
Avg. packets/sec	10.460		
Avg. packet size	458.277 bytes		
Bytes	20841069		
Avg. bytes/sec	4793.687		
Avg. MBit/sec	0.038		

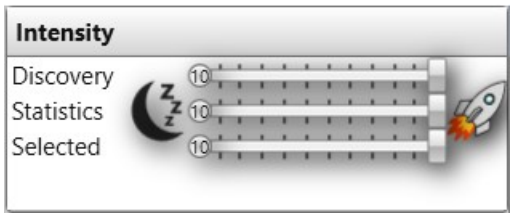
Discovery & Statistics →



- 37 kbps average usage

Traffic	Captured	Displayed	Marked
Packets	117637	117637	0
Between first and last packet	10002.624 sec		
Avg. packets/sec	11.761		
Avg. packet size	397.275 bytes		
Bytes	46734275		
Avg. bytes/sec	4672.202		
Avg. MBit/sec	0.037		

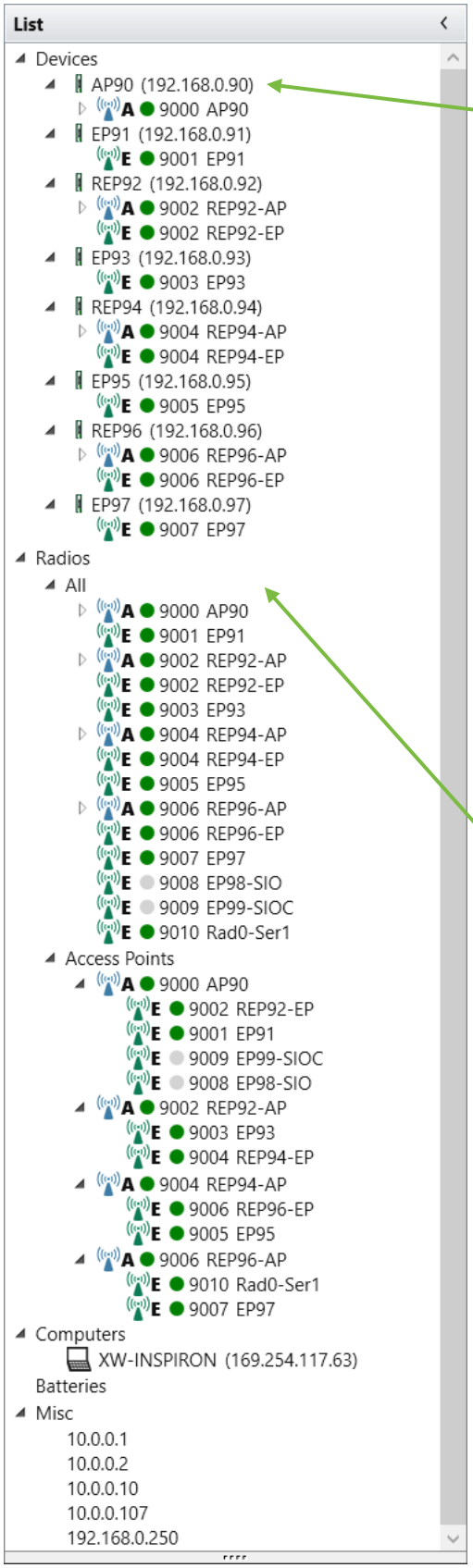
Discovery, Statistics & Selected →



- 68 kbps average usage

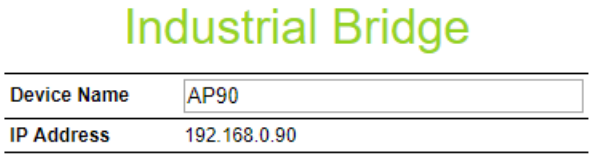
Traffic	Captured	Displayed	Marked
Packets	1651390	1651390	0
Between first and last packet	85703.110 sec		
Avg. packets/sec	19.269		
Avg. packet size	441.754 bytes		
Bytes	729507697		
Avg. bytes/sec	8512.033		
Avg. MBit/sec	0.068		

List View



The **List** view contains several trees that display devices as follows….

Devices presents all found devices in a tree based on IP Address and the "Device Name" on the main page of the device GUI…



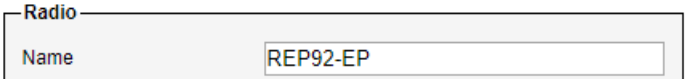
Radio Modules are listed under each device.

Radio colors relate to a signal rating based on a Normalized Difference, where ND = (Signal + 80 * 0.8) – (Noise + 80 * 0.8)

- **Blue** : 5 >40%
- **Green** : 4 <=40%
- **Yellow** : 3 <=15%
- **Orange** : 2 <=12%
- **Red** : 1 <=0%
- **Grey** : 0 Missing or not polled yet

Radios breaks the Radio Modules down into two trees…

All – Lists ALL Radio Modules by Radio Address and "Radio Name" from Wireless Transmission Settings…



Note: Radios are sorted numerically by Radio Address.

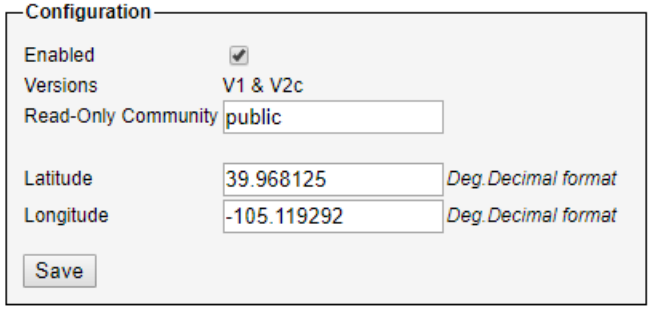
Access Points – Lists all Radio Modules with AP-EP association. EP's are listed under their respective AP. While not a true definition of network topology just yet, it does provide insight into Radio associations.

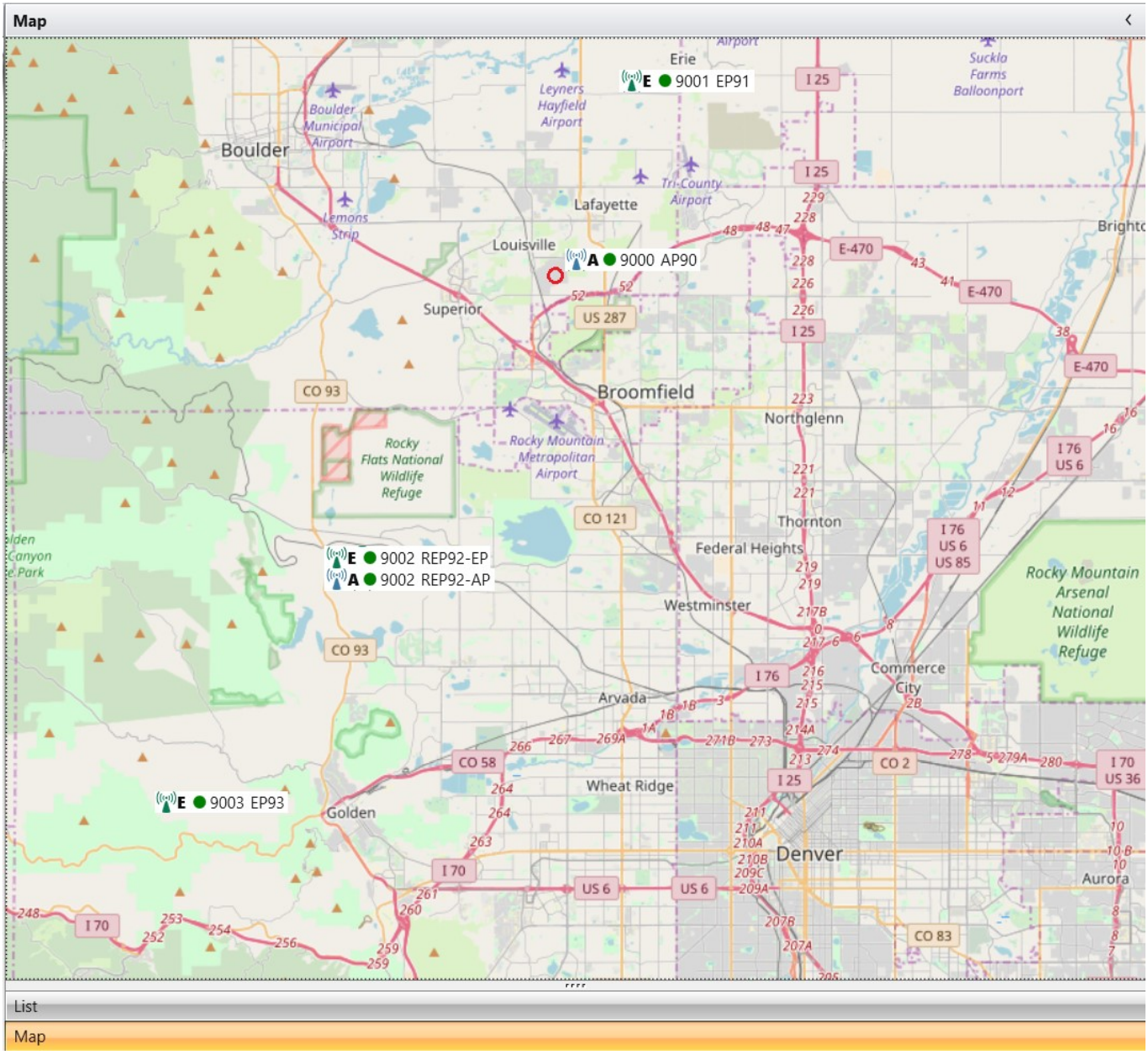
Computers lists any PC's on the network.

Batteries is for future monitoring of XetaPAK batteries.

Map View

Entering the coordinates of the Radio's location into the **SNMP** page of the GUI allows XetaNET to plot the Radios on a map.

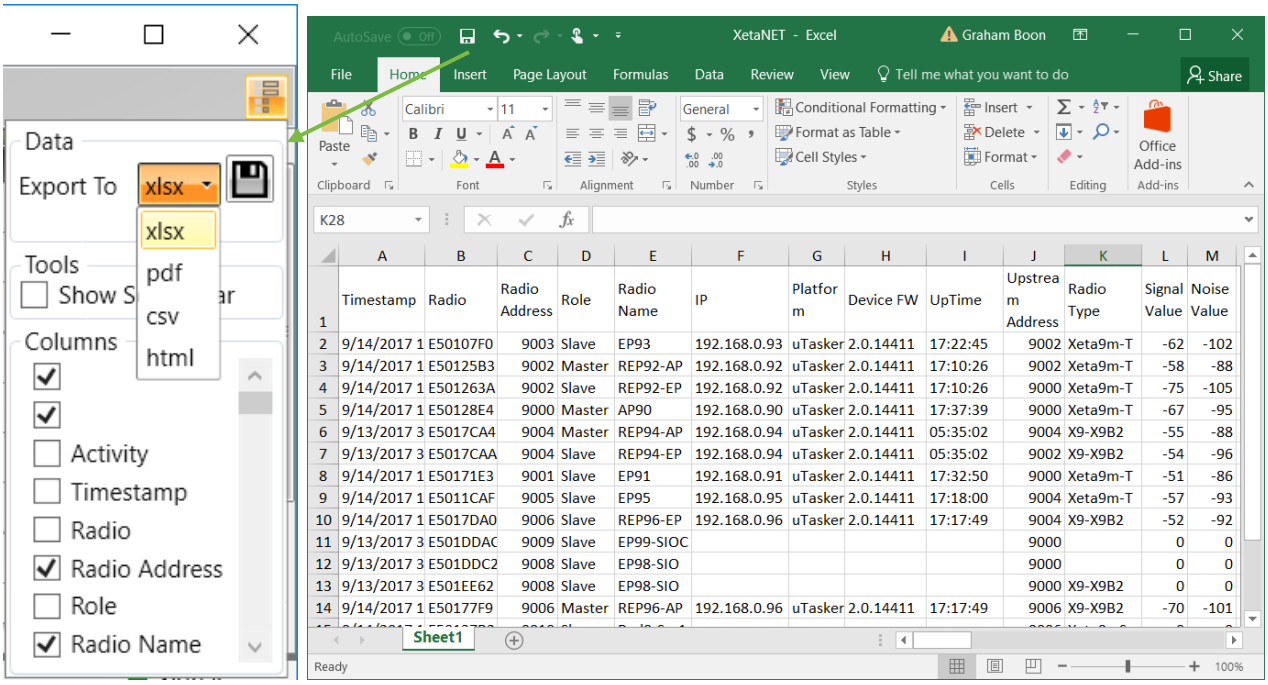




Technical Support

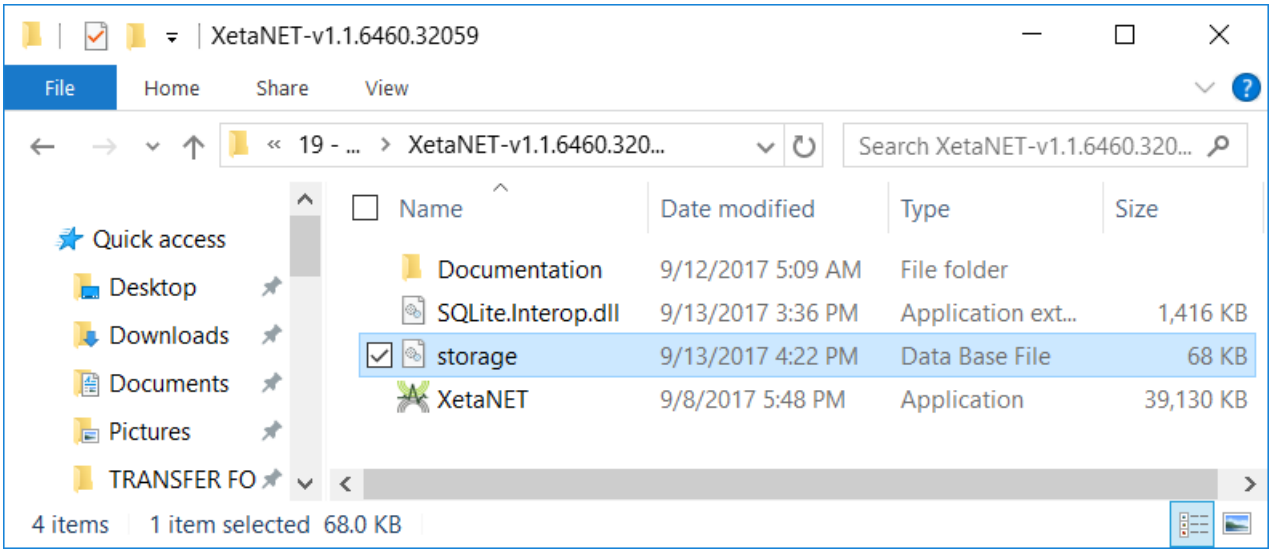
If you require technical support there are a few things that XetaNET can provide to assist…

- Use the **Advanced** button in the top right of the screen to export all data to Excel (.xlxs)



Note: you do not need to select any of the metrics in the Columns list; the check boxes are only there to select which columns are displayed on screen; ALL data will be exported.

- Navigate to the XetaNET folder and locate the **Storage.db** file.



Email these files to support@xetawave.com when requested by XetaWave Customer Support.