

DOT11 Monitor Configuration Guide

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Description

The DOT11 Monitor is truly an autonomous system. Since the DOT11 Monitor contains a built in Apache web server and a Firebird database server, it does not require the use of either. These included web and database servers should be able to run in parallel with existing or future web or database server installs. Included documentation discusses caveats for doing so. If you require DOT11 Monitor to run using existing web or database servers, please contact tech support for assistance.

Supported Access Points and Requirements

- 1) IOS revs. Supported: 12.3(11)JA1 to 12.4(3g)JA1
- 2) Supported Access Points: Cisco 1100, 1230, 1242, and 1252 series.
- 3) Supported Controllers: Cisco 2106 series with Software Version 4.2.61.0 or above.
- 4) SNMP v1, v2c, or v3 enabled on every Access Point. Go to Cisco's website to learn how to enable SNMP on your Access Points.
- 5) Access Point must have a STATIC IP address.
- 6) A computer on the SAME subnet as the Access Points.
- 7) Supported web browsers: Internet Explorer 6/7, Firefox, Opera, and Safari.

Note: Internet Explorer 7 users must add the IP address or DNS name of the DOT11 Monitor server to their Trusted Sites.

LINUX Installation from a CD

DOT 11 Monitor will run optimally with the following Minimum Server Specifications:

Processor: 500 MHz
Memory: 128 MB
Hard Drive Space: 100 MB
Operating System: Linux

1. Open a command prompt.
2. Extract the compressed file from CD-ROM.
 - 2.1. Command: `tar -xvzf dot11monitor-beta-xxx.tar.gz`
3. Install DOT11 Monitor using the installer script.
 - 3.1. Command: `./install.sh`
 - 3.1.1. Note: the "dot" before the / is important.
 - 3.2. You will see a software license agreement. Please review software license agreement. Hit the "Enter" key to continue or press "Ctrl + c" to abort the setup.

LINUX Installation from Website

1. Download the DOT11 Monitor Beta tar.gz file from Oberon Website.
2. Open a command prompt.
3. Change to the directory in which DOT11 installer is downloaded.
4. Extract the compressed file.
 - 4.1. Command: tar -xvzf dot11monitor-beta-xxx.tar.gz
5. Install DOT11 Monitor using the installer script.
 - 5.1. Command: ./install.sh
 - 5.1.1. Note: the “dot” before the / is important.
 - 5.2. You will see a software license agreement. Please review software license agreement. Hit the “Enter” key to continue or press “Ctrl + c” to abort the setup.

WINDOWS Installation from a CD

DOT 11 Monitor will run optimally with the following Minimum Server Specifications:

Processor: 500 MHz

Memory: 256 MB

Hard Drive Space: 100 MB

Operating System: Window 2000, 2000 Server, XP Professional, and 2003 Server

1. Install the CD into your PC's ROM drive.
2. Permit the installer to “Autorun”.
 - 2.1. If “Autorun” does not start, double-click the “My Computer” icon on your desktop. Right-click the cd-rom drive and click “Explore” from the sub-menu. Double-click on the “setup.exe” file to start installation.
3. Select “Install Software” when prompted.
4. You will see a software license agreement. Please review software license agreement. If you concur, select “I agree to terms of license agreement” then select “Next”.
5. The next display indicates a default install directory. To choose a different directory, select “Browse” and use the dialog box to select a different folder. When you are satisfied with the install directory, select “Next”.
6. In this window you can change the default http port number (80) to another. This is done if another web server is already installed on the computer you are installing DOT11 Monitor on.
7. In the Ready to Install Dialog box, select “Install”.
8. In the final dialog box, select “Finish” to quit the installation.

WINDOWS Installation from Website

- 1) Download installer from Oberon website and save it to your Desktop.
- 2) Double click “setup.exe” to start the installation process.
- 3) Select “Install Software” when prompted.

- 4) You will see a software license agreement. Please review software license agreement. If you concur, select "I agree to terms of license agreement" then select "Next"
- 5) The next display indicates a default install directory. To choose a different directory, select "Browse" and use the dialog box to select a different folder. When you are satisfied with the install directory, select "Next".
- 6) In this window you can change the default http port number (80) to another. This is done if another web server is already installed on the computer you are installing DOT11 Monitor on.
- 7) In the Ready to Install Dialog box, select "Install".
- 8) In the final dialog box, select "Finish" to quit the installation.

DOT11 MONITOR CONFIGURATION GUIDE

1. OPEN BROWSER:

- 1.1. Open up an Internet browser of your choice. Go to the DOT11 Monitor Page by typing the following in the Browser address box:

http://localhost or http://127.0.0.1 (if opening from the DOT11 server) or
http://dot11mon_server_name or http://ip_address_of_server
(ex. http://192.168.5.23)

- 1.2. If you changed the port number in the steps above, you must login the following way:

http://localhost:portnumber
(ex. http://127.0.0.1:3000)

2. LOG-IN

- 2.1 The default and only username is "sysdba". DO NOT change this or you will not be able to log into DOT11 Monitor.

- 2.2 Type "oberon" (without quotes) into the Password field and press the "Log In" button to access DOT11 Monitor.

- 2.3 Note that there will be no information on the "WiFi Network" page. DOT11 must be configured first. Click on the "Access Point" page to begin the DOT11 Monitor configuration by adding access points to monitor.



LOG-IN PAGE

3 ADD ACCESS POINT/CONTROLLER PAGE

3.1 ADD ACCESS POINTS /CONTROLLER

3.1.1 After logging in to DOT11 Monitor you will be on the WiFi Network Page (no information will be displayed). You have to add access points or controller for DOT11 Monitor to start collecting data. To add access points or controllers click the “Add AP/CTRL” tab and enter the access point or controller information.

3.1.2 Enter Hostname or STATIC IP Address.

3.1.3.1 Note: If entering a hostname, the access point must have a DNS entry from the DNS server.

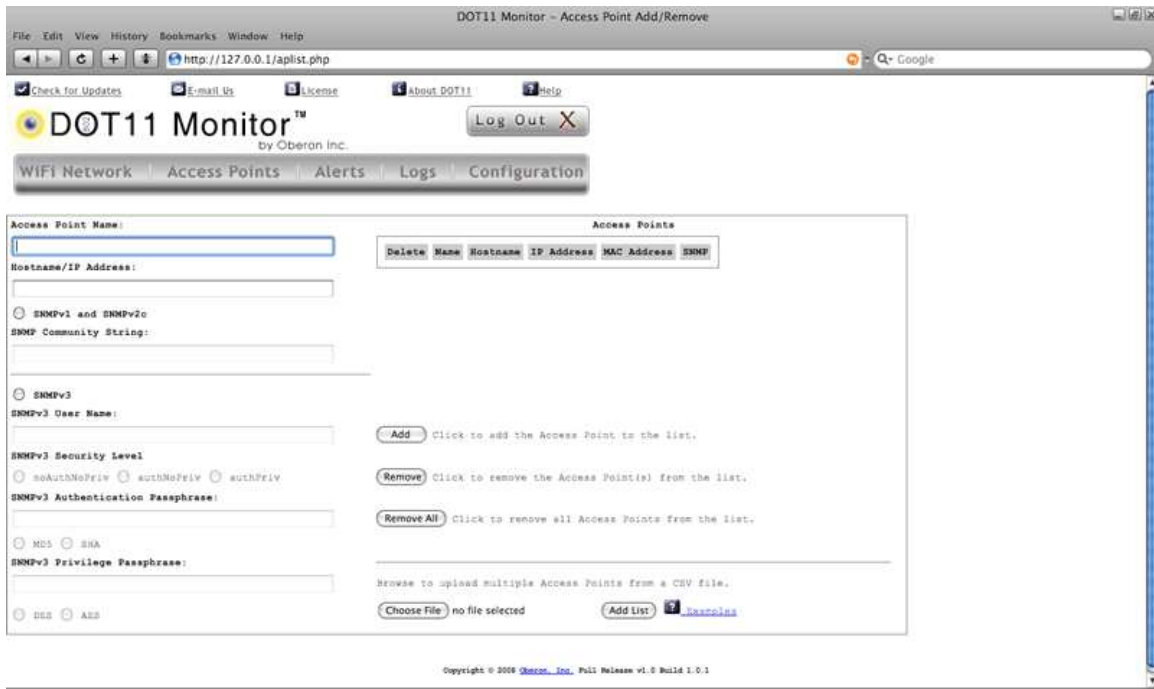
3.1.3 Pick a SNMP version (v1, v2c, or v3) by clicking one of the radio buttons.

3.1.4 SNMP v1 or v2c set up.

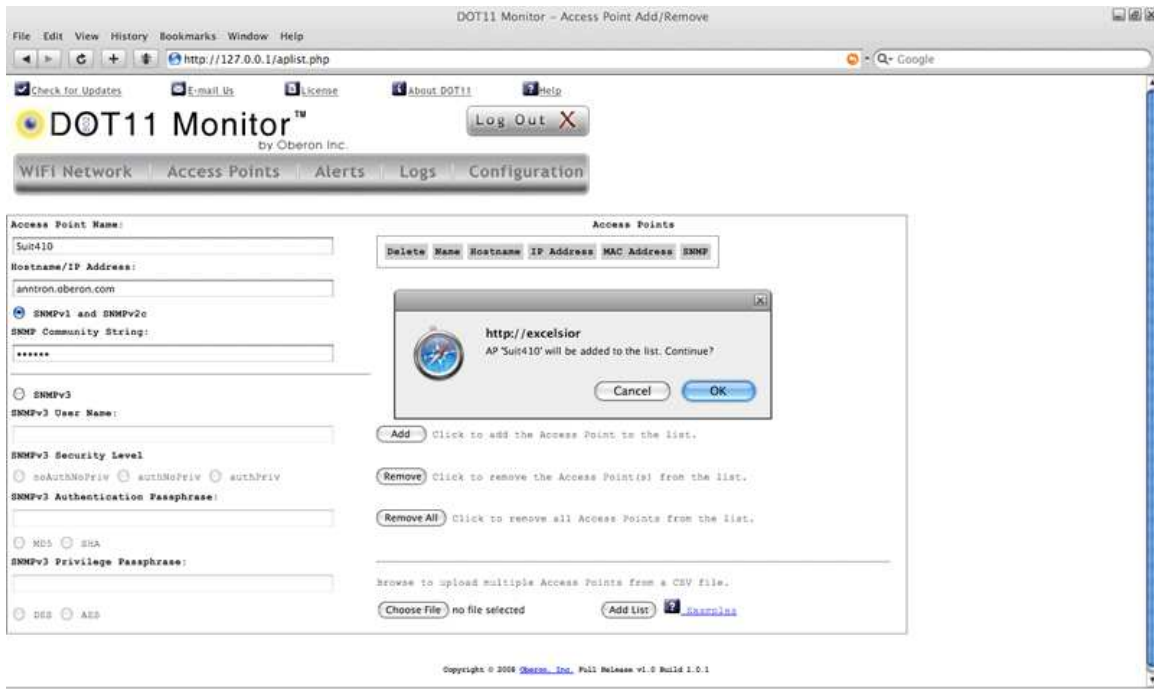
3.1.5.1 Enter SNMP Community String (SNMP must be enabled on the access point and the Community Strings must match).

3.1.5.2 Click the “Add->” button.

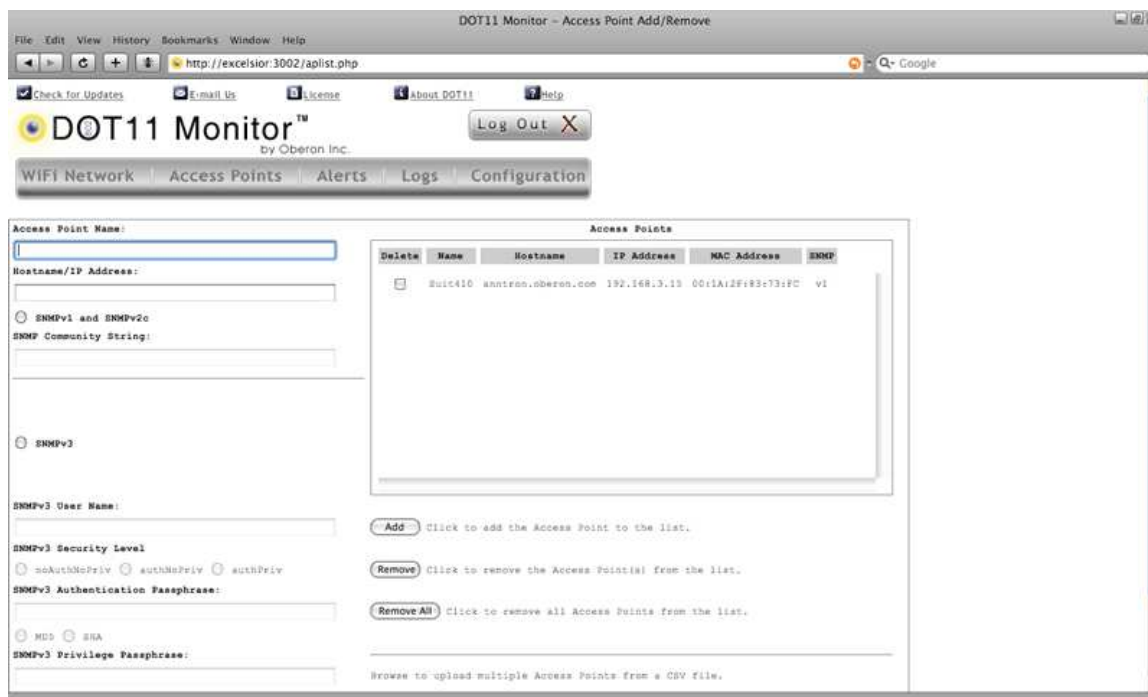
3.1.5.3 Click the “OK” button on the dialog box to add the access point. You will see the access point appear in the Access Point list table.



ACCESS POINTS PAGE



ACCESS POINTS PAGE: Confirm Access Point Add Dialog Box



ACCESS POINTS PAGE: with SNMPv1 Enabled Access Point Added

3.1.6 SNMP v3 set up.

3.1.6.1 Add a SNMPv3 User Name.

3.1.6.2 Pick a SNMPv3 Security Level.

3.1.6.2.1 If noAuthNoPriv was selected, no additional information is needed. Proceed to step 3.1.6.5.

3.1.6.2.2 If authNoPriv is selected, proceed to step 3.1.6.3.

3.1.6.2.3 If authPriv is selected, proceed to step 3.1.6.3.

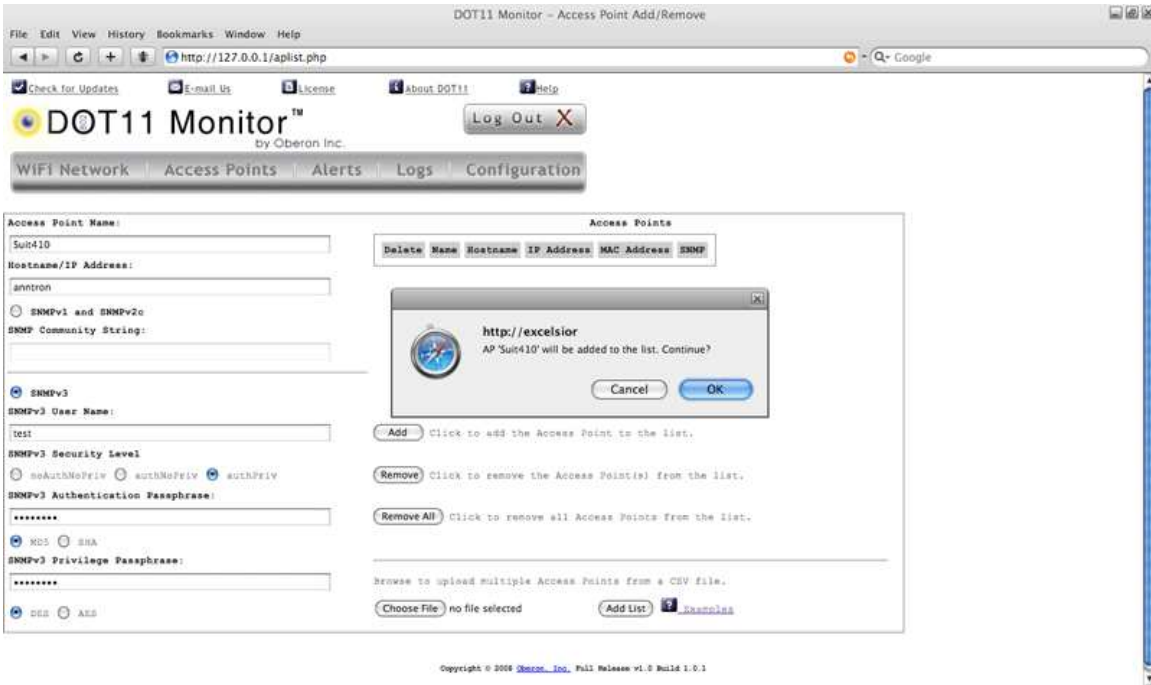
3.1.6.3 Add a SNMPv3 Authentication Passphrase.

3.1.6.3.1 If authNoPriv is selected, proceed to step 3.1.6.5.

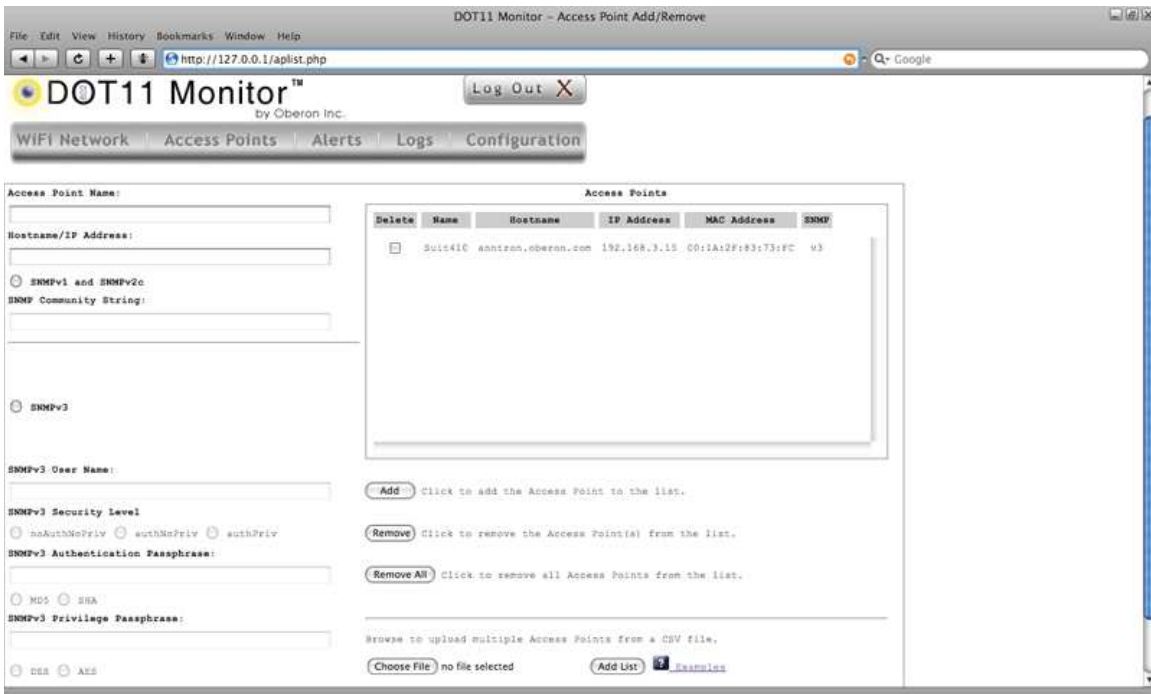
3.1.6.4 Add a SNMPv3 Privilege Passphrase.

3.1.6.5 Click the "Add->" button to add the SNMPv3 enabled access point.

3.1.6.6 Click the "OK" button on the dialog box to add the access point. You will see the access point appear in the Access Point list table.



ACCESS POINT PAGE: Adding SNMPv3 Enabled Access Point



ACCESS POINT PAGE: SNMPv3 Enabled Access Point Added

3.2 IMPORTING BULK ACCESS POINT LIST

3.2.1 The Bulk Add feature allows an administrator to upload a Comma Separated Value file that will add multiple access points to the database at one time. This can save time when adding multiple access points from you

WLAN. Each value field for an access point is separated by a comma. You must return the line to start new values for each additional access point.

3.2.2 SNMPv3 Security Levels:

noAuthNoPriv
authNoPriv
authPriv

3.2.3 SNMPv3 Authentication Protocols:

MD5
SHA

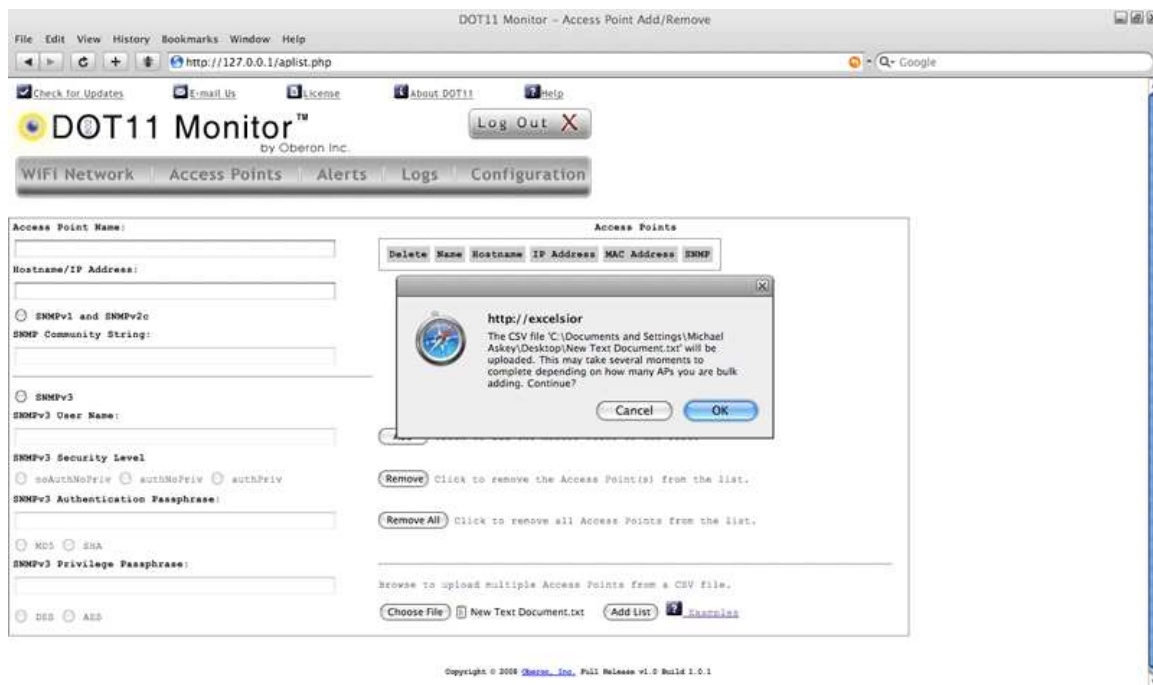
3.2.4 SNMPv3 Privilege Protocols:

DES
AES

3.2.5 Both SNMPv3 Authentication Passphrase and SNMPv3 Privilege Passphrase must be at least 8 characters long. Please click on the Examples link on the Access Point Page for format examples of the various SNMP versions.



ACCESS POINTS PAGE: Browse File System to Upload CSV File for Bulk Add Feature



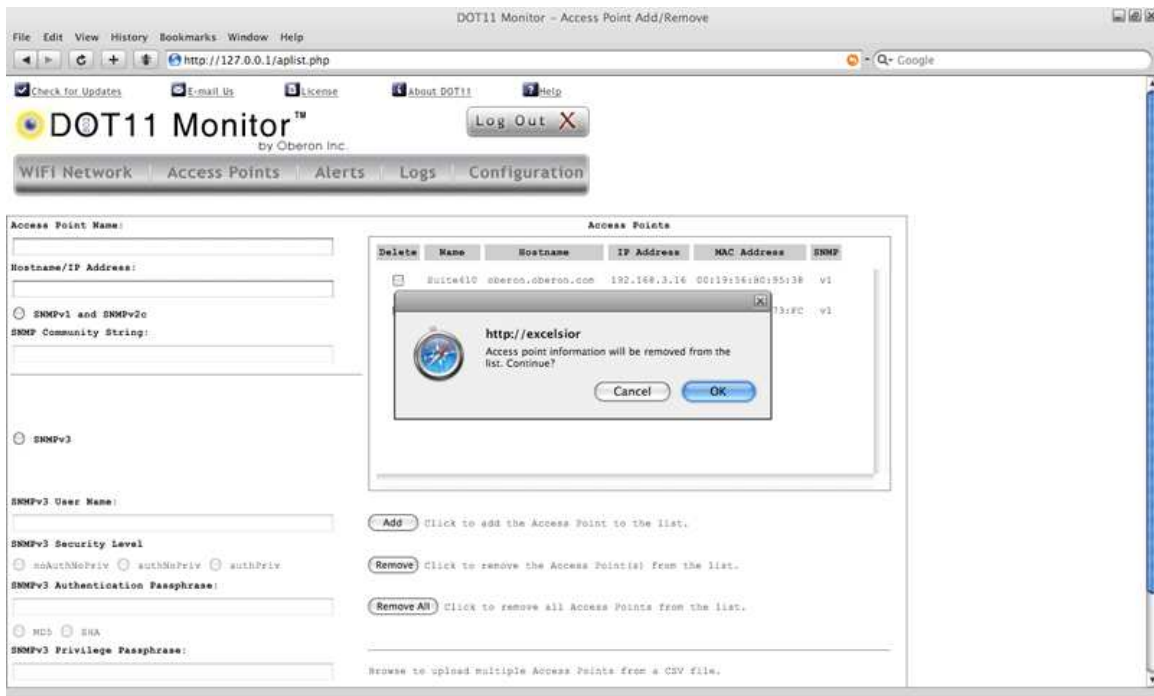
ACCESS POINTS PAGE: Confirm Bulk Upload Dialog Box

3.3 DELETING ACCESS POINTS

3.3.1 The access point can be removed by checking the “Delete” checkbox next to the name of the access point, then selecting “Remove”. Click the “OK” button on the dialog box to delete the access point(s).

3.3.1 All the Access Points can be deleted at once by clicking the “Remove All” button.

Note: Multiple access points can be removed by checking more than one box. All access points can be removed at once by clicking the “Remove All” button.



Deleting ACCESS POINTS

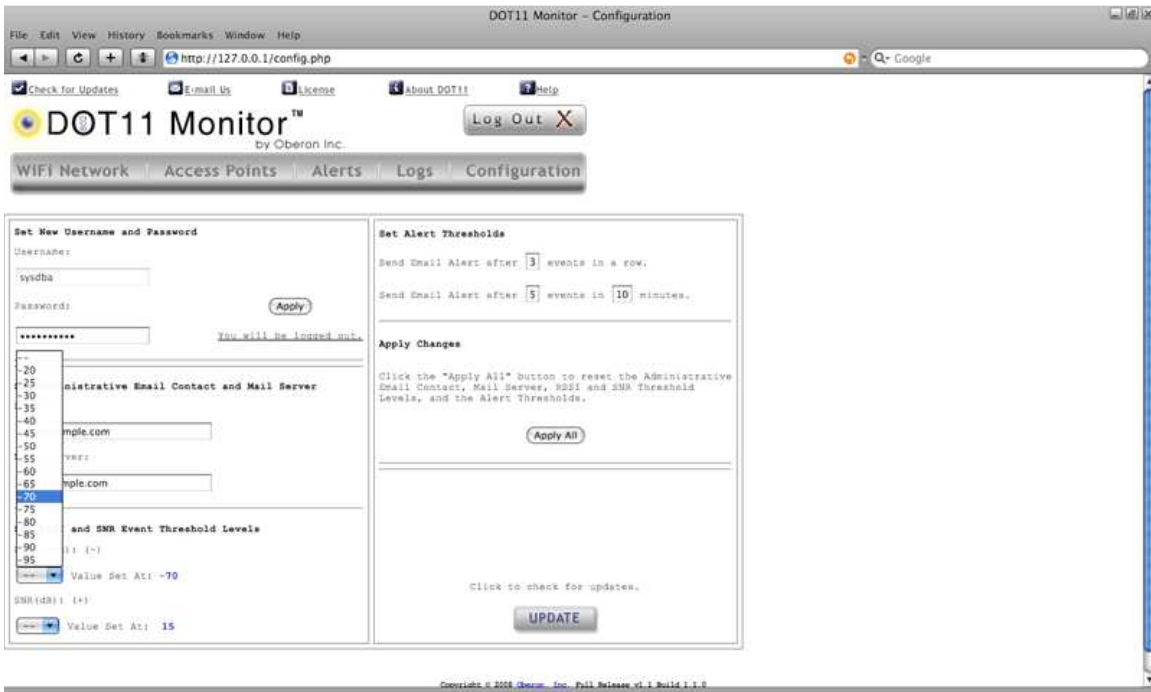
4 CONFIGURATION PAGE

4.1 Password, Username, and Administrative Contact

- 4.1.1 Click the “Configuration” tab
- 4.1.2 Enter a new password for the DOT11 Monitor and click the
- 4.1.3 “Apply” button. Click the “OK” button to update the new password. The username can not be changed.
- 4.1.4 A log out will occur in order for the password to be reset. You will be logged out automatically. Re-login with the new password. Return to the Configuration page.
- 4.1.5 Enter the “Administrative E-mail Contact” and “Mail Server”. This is the e-mail address to which DOT11 Monitor will deliver alerts. The Mail Server setting must be entered for e-mails to be sent to the administrator.



CONFIGURATION PAGE: Setting Username, Password and Administrative Contact Information



CONFIGURATION PAGE: Setting RSSI and SNR Event Thresholds

4.2 RSSI and SNR Event Thresholds

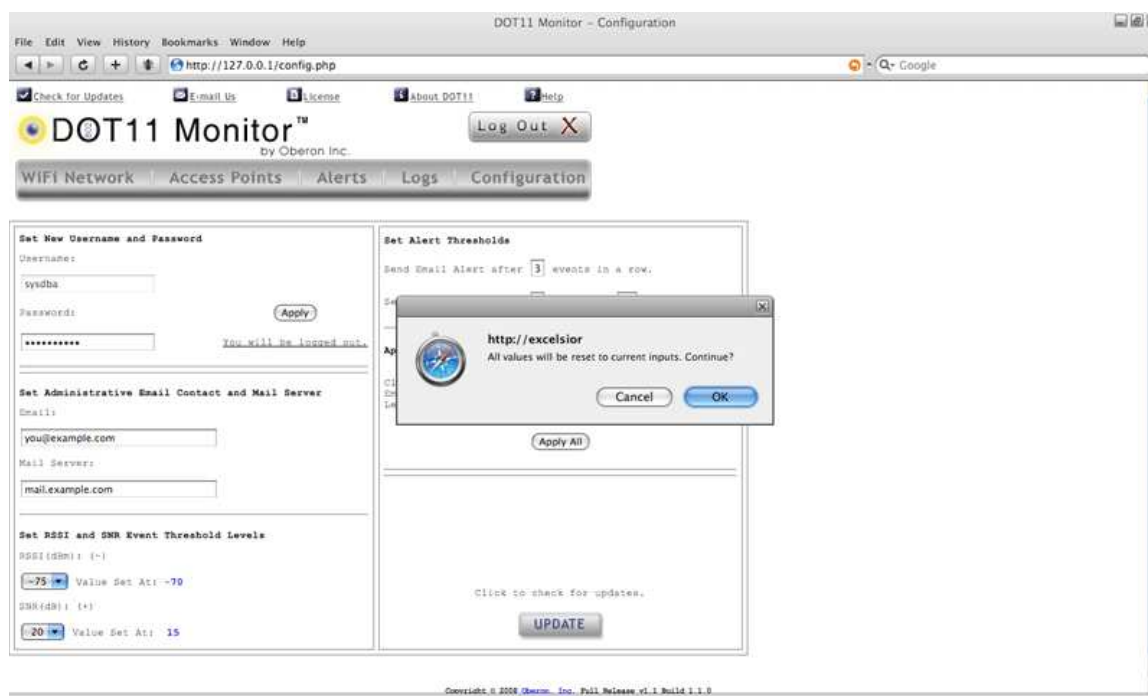
4.2.1 Set the “RSSI” and “SNR” *event threshold values*. When an RSSI or SNR report drops below this event threshold value, DOT11 Monitor considers this an *Event*. An *Event* is a single data point.

4.2.2 The RSSI is the “Received Signal Strength Indicator” and is an indication of the signal strength received at the Access Point from the client device. The RSSI threshold must be entered as a negative value using a (-) sign, (typically in the -80 to -65 dBm range).

4.2.3 Default value is already provided.

4.2.4 The SNR is the “Signal to Noise Ratio” and is a ratio of signal power to noise and interference power measured at the access point from the selected client device. The SNR threshold is a positive value (typically in the range of 10 to 25 dB), and no sign is required.

Note: Default values are already provided.



CONFIGURATION PAGE: Committing new RSSI and SNR event thresholds

4.3 RSSI and SNR Alert Thresholds


4.3.1 “Set Alerts Threshold”. A user set number of events exceeds the *Alerts Threshold* values and creates an Alert. The Alert is then e-mailed to the designated administrative e-mail contact. You can have alerts generated after a certain number of events in a row, or from a certain number of events in a selected time-frame. To reduce the number of alerts, enter a larger number of events required to trigger an alert.

4.3.2 Click the “Apply” button to update values you have changed. Click the “OK” button on the dialog box to commit new values.

4.3.3 Only one e-mail alert can be sent per SNMP query cycle.

5 WI-FI NETWORK PAGE

5.1 Wi-Fi NETWORK: APs and Associated Clients

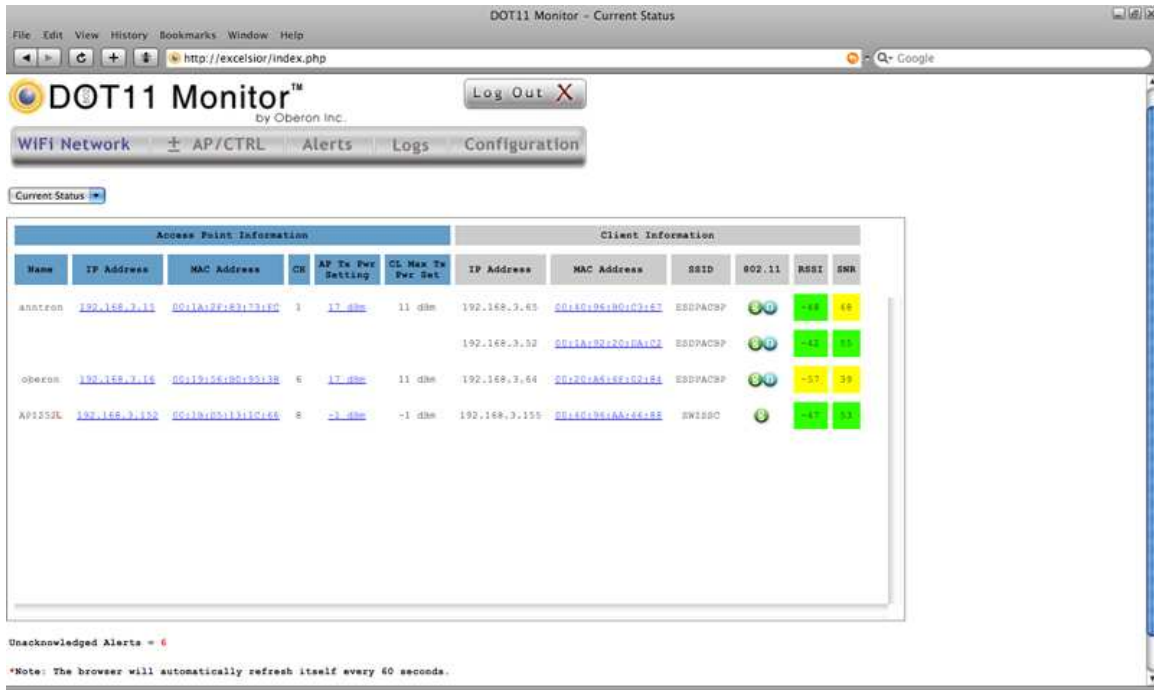
5.1.1 Click the “WiFi Network” tab to view APs you have added. The application shows the access point IP and MAC address (wired side), SSID, protocol, channel, and transmit power setting. An AP name appearing with  indicates that the AP is in LWAPP mode and is governed by a controller.

5.1.2 The application also shows the client IP and MAC address and the client RSSI and SNR, as measured at the access point.

5.1.3 Only client devices which are *associated* with the access point are shown. Sometimes a roaming client will appear associated with two (or more) network access points. Client devices will persist in the association table of access points for up to five minutes, and therefore may appear to be associated with more than one access point for up to five minutes.

3.1.4 The RSSI and SNR are displayed in color coded boxes. The color codes are as follows:

COLOR	RSSI Range	SNR Range
Green	>= -65 dBm	>= 25 dB
Yellow	-66 to -75 dBm	16 to 24 dB
Red	<= -76 dBm	< 15 dB



WI-FI NETWORK PAGE

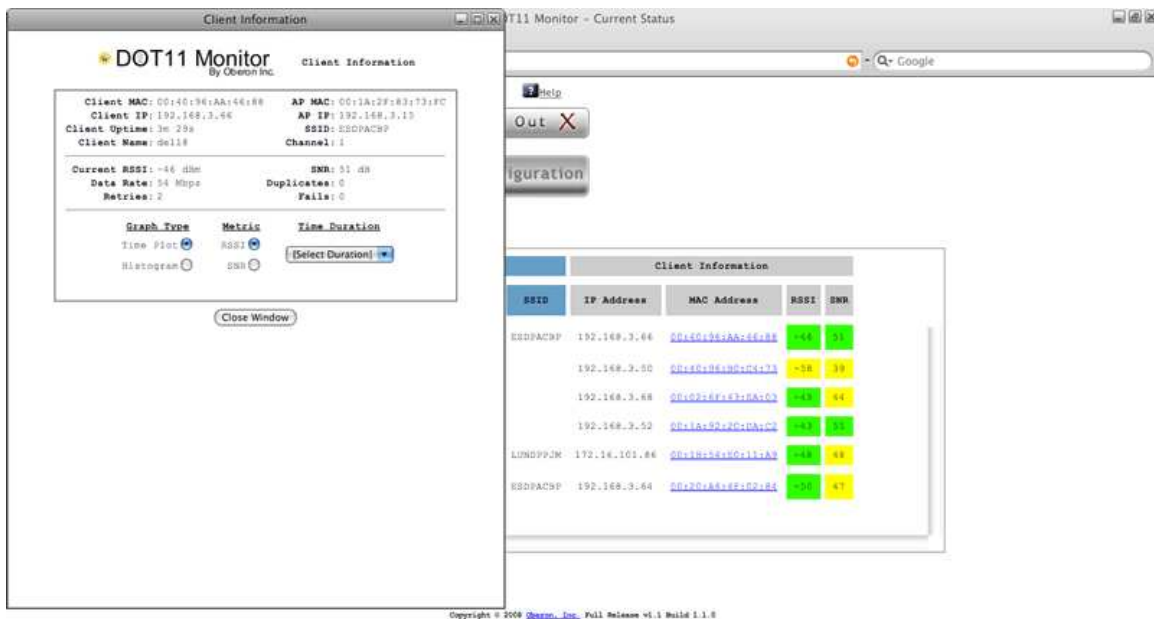
5.2 PLOTTING CLIENT CONNECTIVITY

5.2.1 To display a time plot of client connectivity, click the client devices MAC address hyperlink.

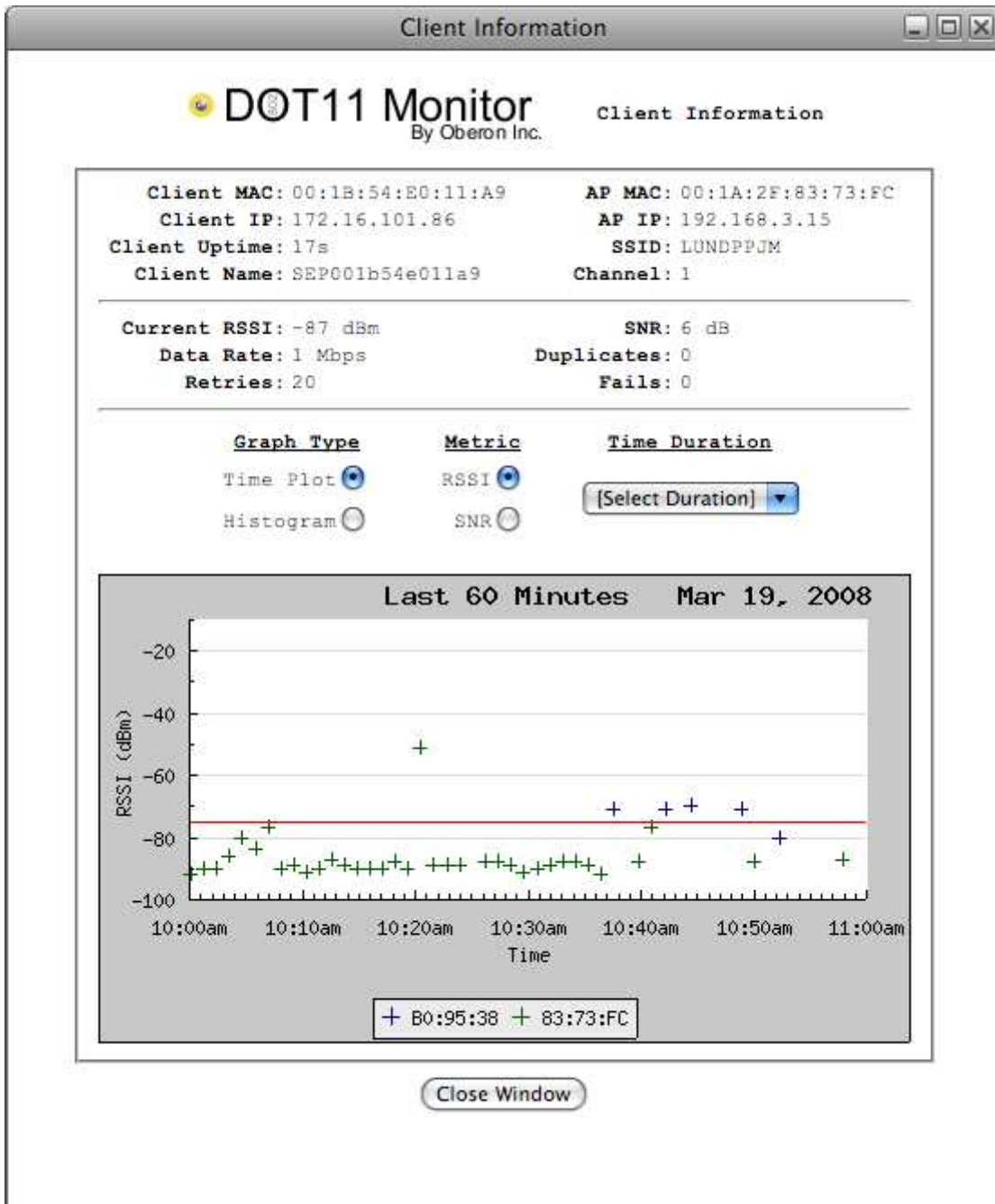
5.2.1.1 A dialog box is brought up, which permits you to select between a Time Plot or Histogram and metrics of RSSI or SNR. Select a time interval by clicking on the “Select Duration” pull down menu. Once time duration is selected, the graph will be drawn.

5.2.1.2 The time plot or histogram shows the RSSI or SNR values reported by the access point to the DOT11 monitor. These individual reports are shown as “+”s bars on the time plot or bars on the histogram. The display also shows the user established event threshold as a solid red line.

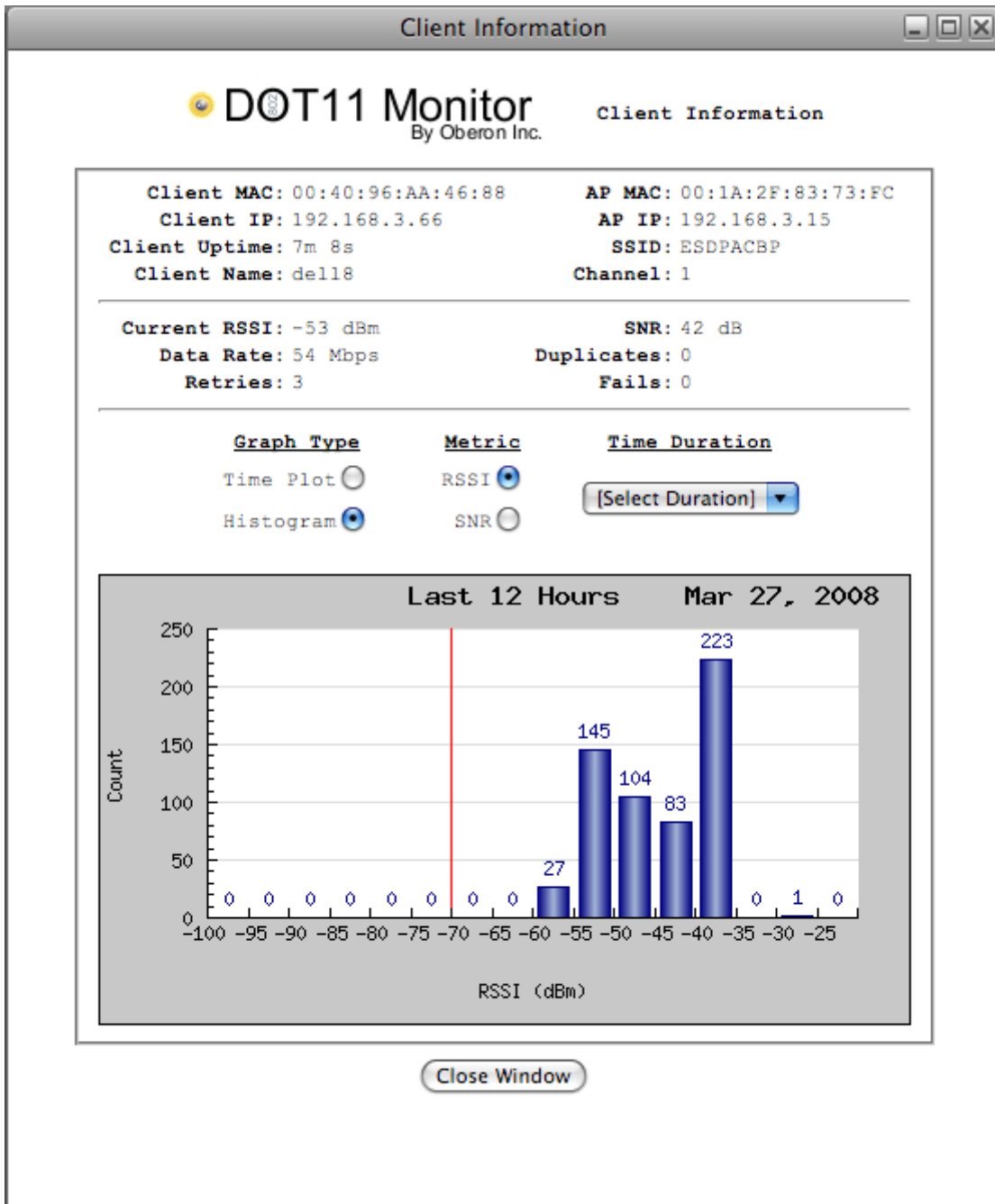
5.2.1.3 Note that the time plot only shows a + mark when the client device is associated with the access point.



CLIENT DEVICE PAGE



CLIENT DEVICE PAGE: Time Plot



CLIENT DEVICE PAGE: Histogram

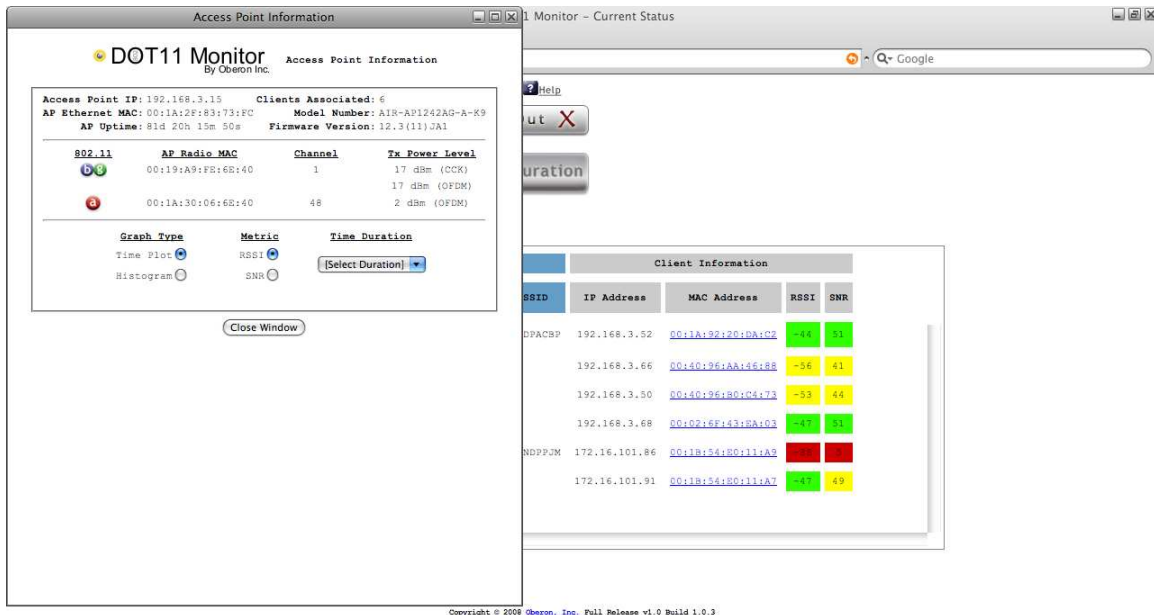
5.3 ACCESS POINT INFORMATION

5.3.1 To display individual access point information, click the access point's devices MAC address hyperlink.

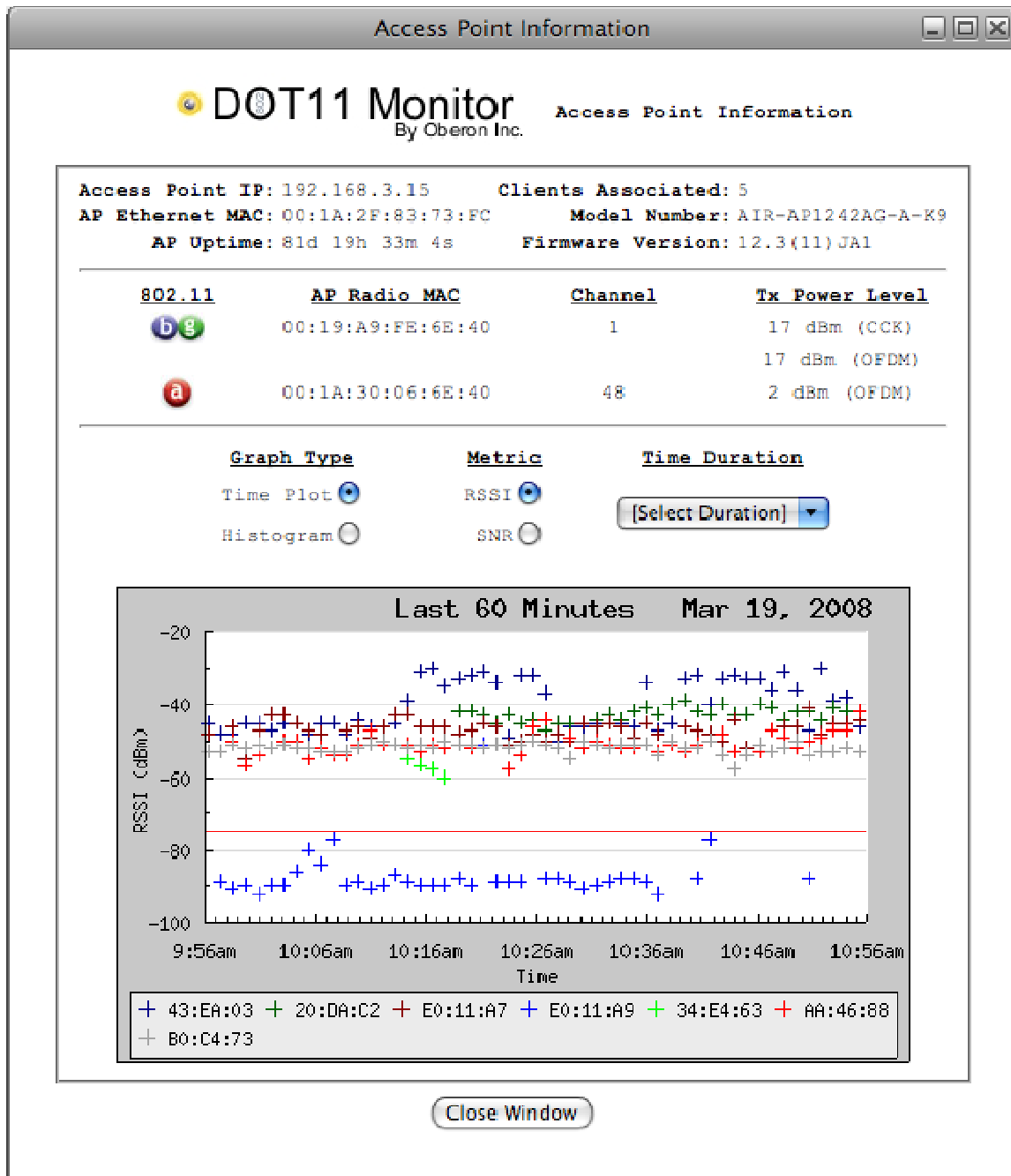
5.3.1.1 A dialog box is brought up, which permits you to select between a Time Plot or Histogram and metrics of RSSI or SNR. Select a time interval by clicking on the "Select Duration" pull down menu. Once time duration is selected, the graph will be drawn.

5.3.1.2 The time plot or histogram shows the RSSI or SNR values reported by the access point to the DOT11 monitor. These individual reports are shown as "+"s bars on the time plot or bars on the histogram. The display also shows the user established event threshold as a solid red line.

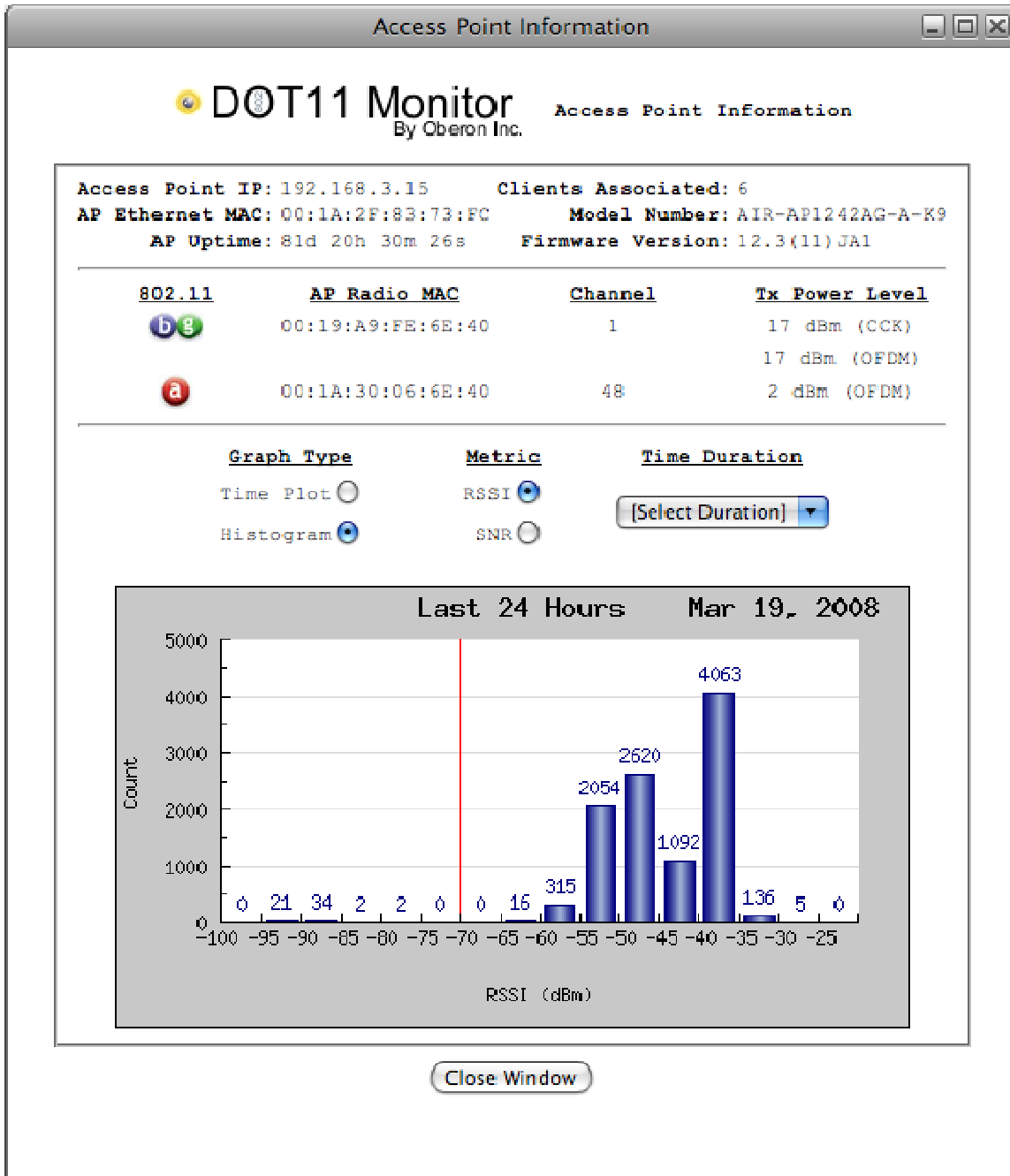
5.3.1.3 Note that the time plot only shows a + mark when the client device is associated with the access point.



Run script "ap_info@2200:1A:2F:83:73:FC@22" **ACCESS POINT INFORMATION PAGE**



ACCESS POINT INFORMATION PAGE: Time Plot for Client Devices



ACCESS POINT INFORMATION PAGE: Histogram for Client Devices

5.4 TRANSMIT POWER

5.4.1 Click the link under AP Tx Power Setting to view or change the access points transmit power settings for individual radios.

5.4.2 Change the transmit power by selecting a different transmit power from the pull down box. The current transmit power is indicated by the blue text under the selection box. Selecting the “Local” radio button will

only affect changes only on the access point that was selected. The “Global” radio button will affect changes on all the access points you have added to your copy of DOT11 Monitor.

5.4.3 Click the submit button to change the access points transmit power for the selected radios. Confirm or cancel changes from the alert box.

Note: If the access point is controller based the Tx Power Level Assignment Method must be set to “Custom” in order for the transmit power to be set. This must be done for each of the radios individually. Please see appropriate Cisco documentation on how to do this.

DOT11 Monitor Transmit Power Information
By Oberon Inc.

Access Point IP: 192.168.3.15 Clients Associated: 0

AP Ethernet MAC: 00:1A:2F:83:73:FC Model Number: AIR-AP1242AG-A-K9

AP Uptime: 142d 23h 3m 11s Firmware Version: 12.3 (11) JAI

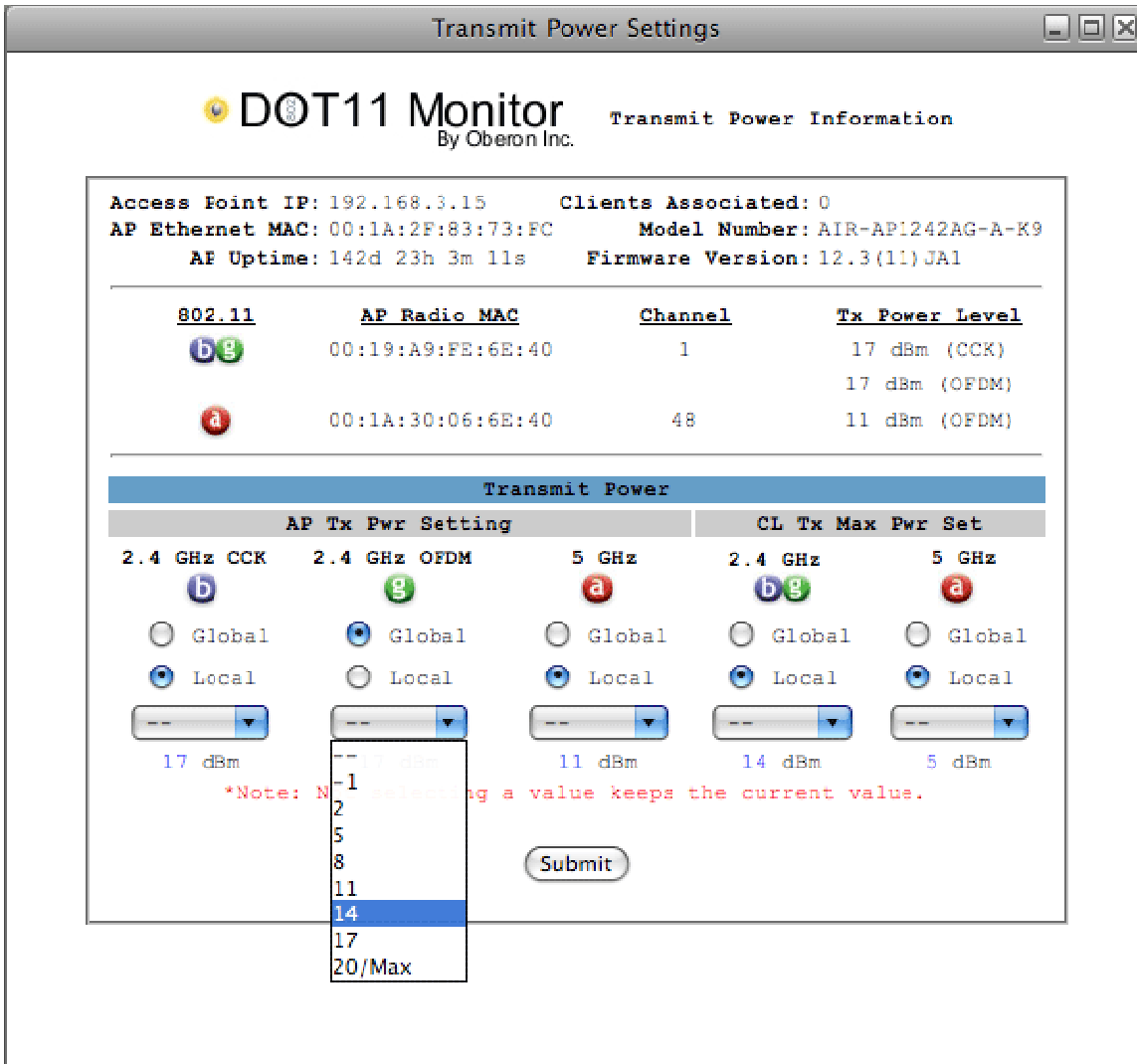
802.11	AP Radio MAC	Channel	Tx Power Level
b g	00:19:A9:FE:6E:40	1	17 dBm (CCK) 17 dBm (OFDM)
a	00:1A:30:06:6E:40	48	11 dBm (OFDM)

Transmit Power

AP Tx Pwr Setting			CL Tx Max Pwr Set	
2.4 GHz CCK	2.4 GHz OFDM	5 GHz	2.4 GHz	5 GHz
b	g	a	b g	a
<input type="radio"/> Global	<input type="radio"/> Global	<input type="radio"/> Global	<input type="radio"/> Global	<input type="radio"/> Global
<input checked="" type="radio"/> Local	<input checked="" type="radio"/> Local	<input checked="" type="radio"/> Local	<input checked="" type="radio"/> Local	<input checked="" type="radio"/> Local
<input type="text" value="17"/> dBm	<input type="text" value="17"/> dBm	<input type="text" value="11"/> dBm	<input type="text" value="14"/> dBm	<input type="text" value="5"/> dBm

*Note: Not selecting a value keeps the current value.

TRANSMIT POWER INFORMATION PAGE



TRANSMIT POWER INFORMATION PAGE: Changing 802.11g Transmit Power

5.5 AP WEB INTERFACE

5.5.1 Click the access point's IP Address to bring up the web interface for the access point.

6 ALERTS PAGE

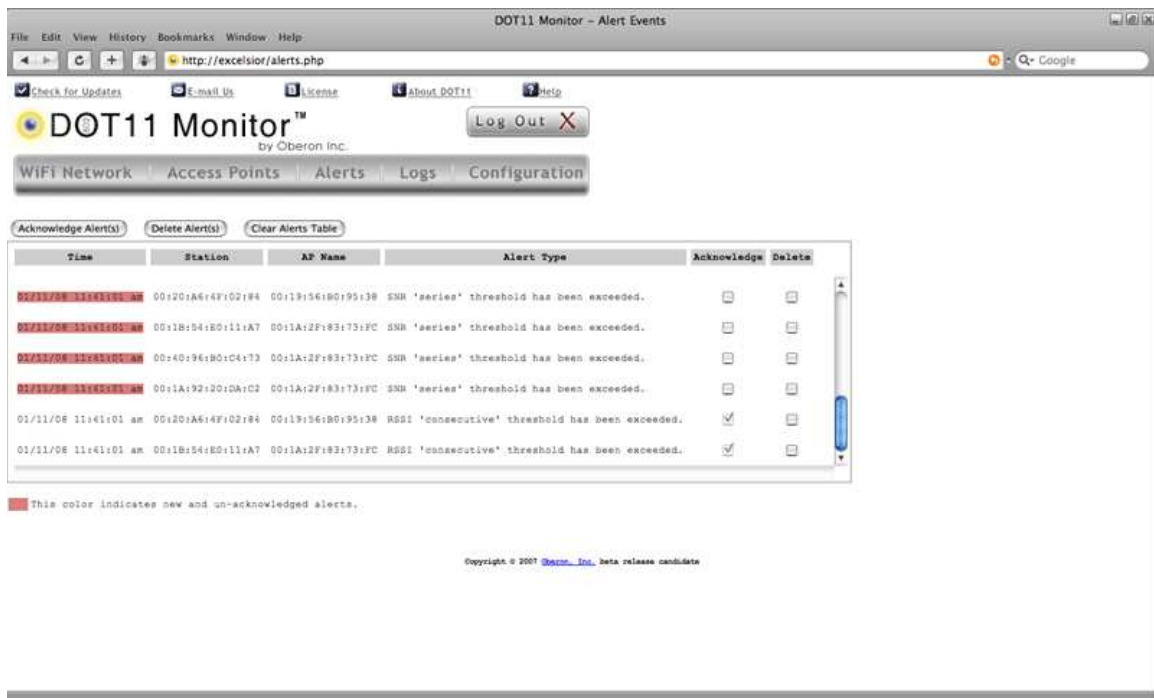
Click on the **“Alerts”** tab. Alerts based on user defined event and alert thresholds are shown.

6.1 SELECT, ACKNOWLEDGE, DELETE ALERTS

Use this page to select, acknowledge or delete alerts. If the alert is not acknowledged or deleted, a second alert e-mails will be sent 2 hours after the first alert e-mail.

When an Alert has been acknowledged, no more e-mails regarding that particular client device will be sent to the administrator until the Alert has been deleted.

If the alert is deleted, no e-mail alerts will be sent to the administrator until the alerts threshold is exceeded again.

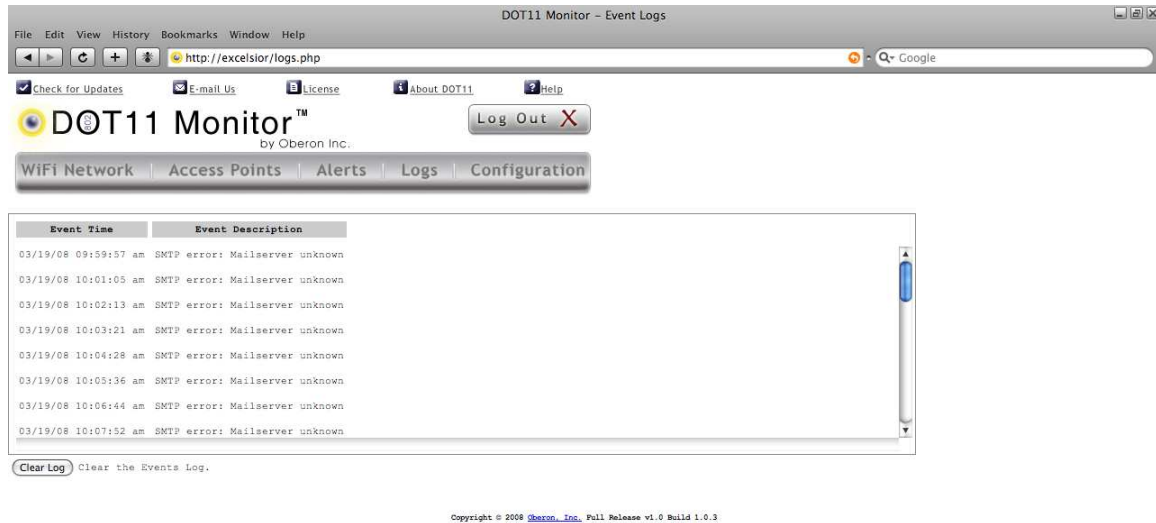


ALERTS PAGE

7 LOGS PAGE

7.1 Click in the “Logs” tab to view SQL and SNMP errors.

7.2 To clear log entries, click on the “Clear Logs” button and confirm or cancel from the alert box that pops up.



LOGS PAGE

9. LOG-OUT

9.1 Click the “Log Out” button to log out of DOT11 Monitor.

Note: DOT11 Monitor will continue to collect information about your WiFi network even if you are not logged into the web interface.