

OptiView™

*Series II Wireless
Network Analyzer*



Wireless Evaluation Guide



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Front page

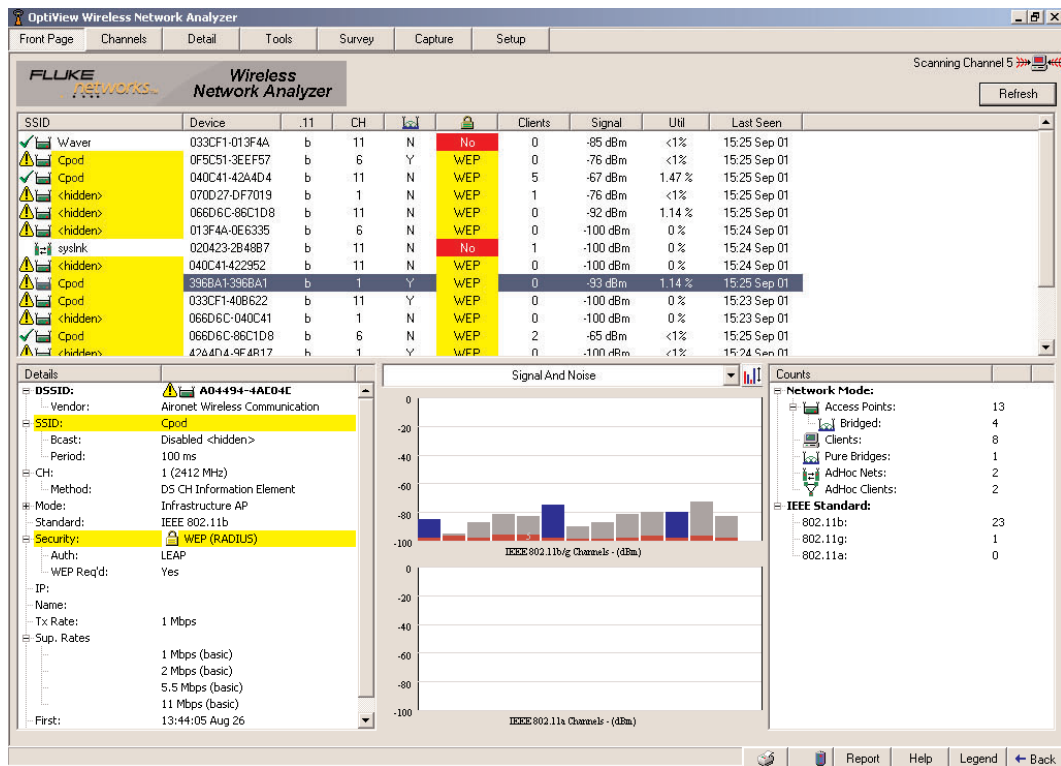
With the Fluke Networks Wireless LAN card installed in your OptiView, launch the wireless Network Analyzer application from the Optiview desktop.

The analyzer will immediately begin passive and active discovery of devices in your WLAN network and populate the front page with valuable information about your wireless LAN environment. This is your wireless environment at a glance!

The front page quickly lists the WLAN network devices sorted by SSID in the top window. This window provides channel configuration, signal strength, utilization, and security encryption information.

The lower left cell provides detailed information about the selected access point, ad hoc network, or bridge while the lower right cell provides network device counts.

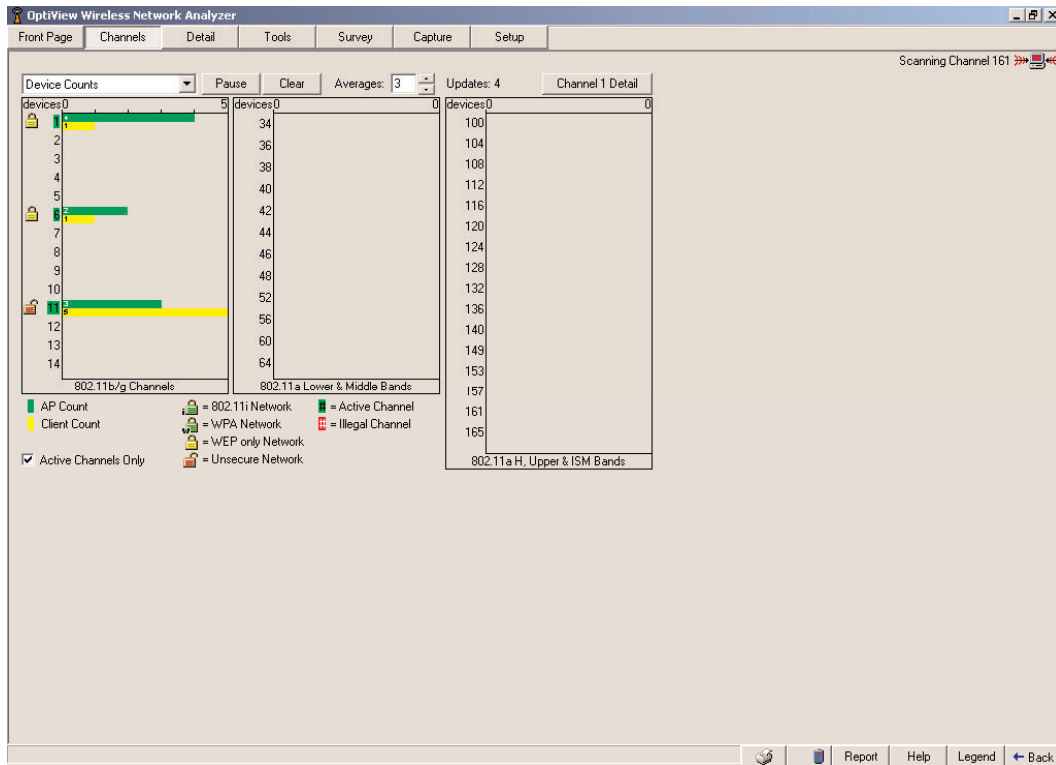
The radio continually sweeps the 802.11a/b/g channels and reports information such as signal strength, signal to noise ratio or other selected data in the lower center cell.



Channels

Selecting the Channels tab switches the view to illustrate signal strength values across all 802.11 channels. Use the drop down box to select from the list of available WLAN characteristics.

This information is useful when performing site surveys or monitoring areas of RF coverage overlap between access points. This page also provides visibility into the presence of RF interference.



Network detail

Clicking any channel in the graph changes the Channel Detail button to the desired channel. A click on the channel detail button brings you information about the access points on the selected channel.

The screenshot shows the OptiView Wireless Network Analyzer interface. The 'Detail' tab is selected, displaying the 'Network' details for 'CH 11: AMBIT-2232AB (8) - [phluke]'. The details include:

- BSSID:** 38028A-2832AB
- Vendor:** Ambit Microsystems Corporation
- SSID:** Cpod
- Bcast:** Disabled <hidden>
- Period:** 100 ms
- CH:** 11 (2462 MHz)
- Method:** DS CH Information Element
- Mode:** Infrastructure AP
- Standard:** IEEE 802.11b
- Security:** WEP
- Auth:** Unknown
- WEP Req'd:** Yes
- IP:**
- Name:**
- Tx Rate:** 11 Mbps
- Sup. Rates:**

On the right, a 'Monitoring Channel 11' graph shows signal levels. Below the graph are buttons for 'Packet Stats...', 'Locate...', and 'Utilization...'. At the bottom, a table lists detected clients:

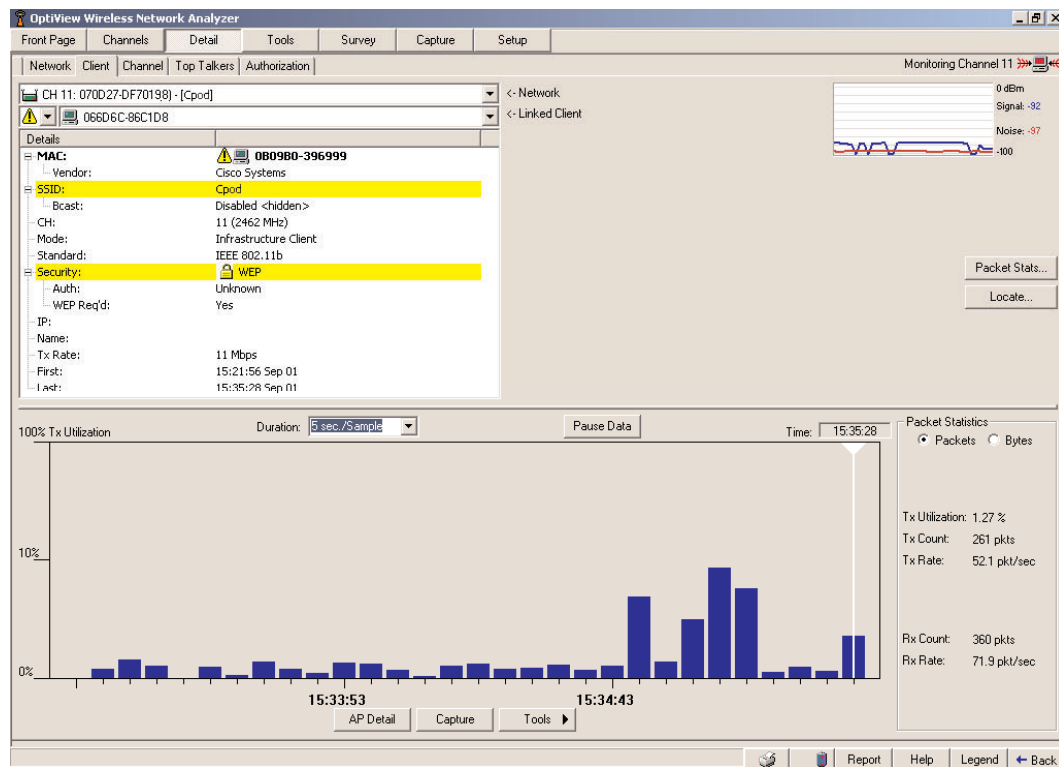
MAC	.11	IP Address	Name	Tx Packets	Signal
033CF1-013F4A	b			2	-100 dBm
0F5C51-3EEF57	b			24	-100 dBm
040C41-42A4D4	b			54	-100 dBm
070D27-DF7019	b			87	-100 dBm
066D6C-86C1D8	b			3742	-90 dBm
013F4A-0E6335	b			414	-100 dBm
386BA1-396BA1	b			943	-89 dBm
86C1D8-DF7019	b			17	-100 dBm

The interface also includes a 'Clients' section at the bottom left showing '8' clients, and a 'Tools' section at the bottom right with buttons for 'Client Detail', 'Capture', and 'Tools'.

Client detail

From the Detail screen, you can select an access point, ad hoc network, bridge, or client and drill down to learn more about that device while viewing signal and noise information in the upper right of the screen. Channel utilization data is continually monitored in the lower half of this screen.

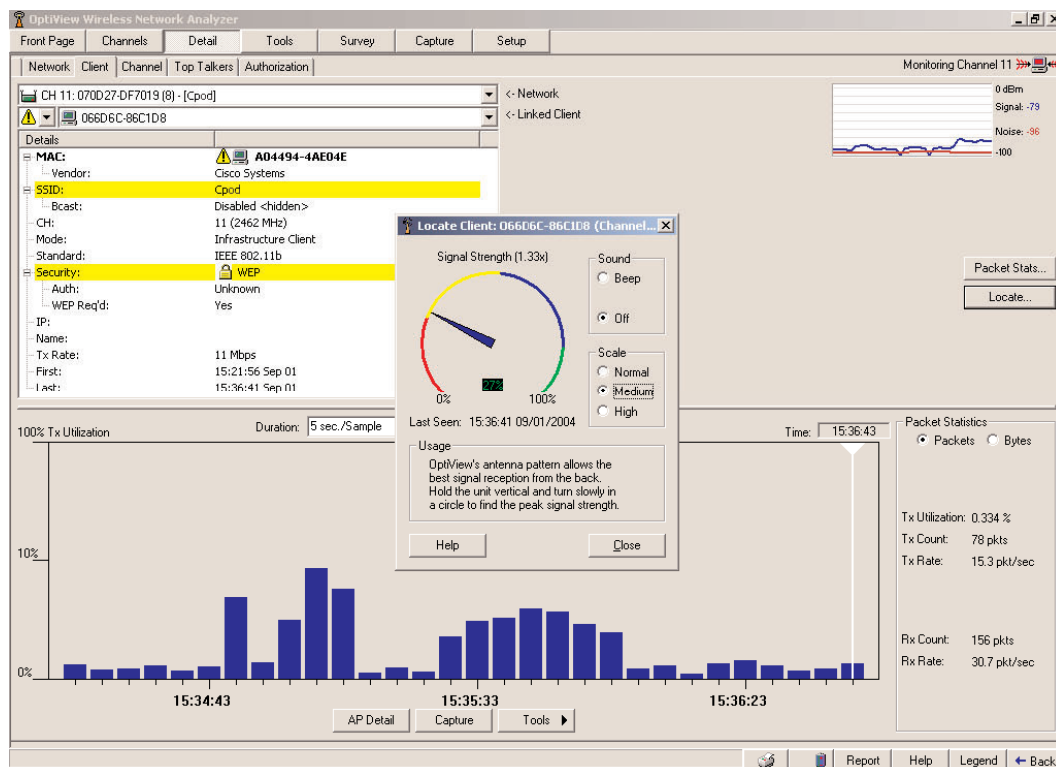
Note that this screen only shows details about clients. Access points, ad hoc networks, and bridges are shown by selecting the Detail / Network tab.



Locate

Use the Wireless Optiview to locate an access point, client, or rogue device by selecting the device from the list and clicking the Locate button.

Walk around the facility following the guidance of tones and the signal strength indicator to quickly locate any wireless device.



Find the “Top Talkers”

Within the Detail menu, select Top Talkers to quickly identify which clients are dominating the airwaves.

This tool enables you to identify areas within your facility where additional access points may be required in order to support mobile application demands.

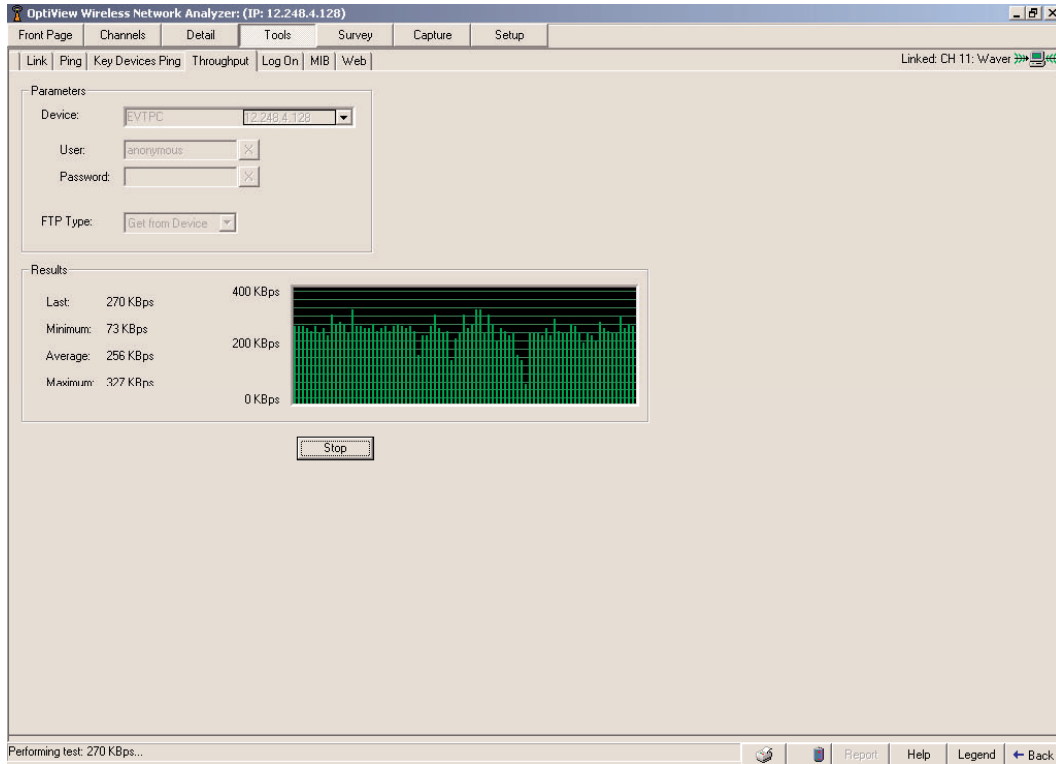
Top Talkers can also be used to locate devices that are causing crosstalk problems on a channel when a specific channel is chosen and the Show Crosstalk Devices option is selected.

The screenshot displays the OptiView Wireless Network Analyzer software. The 'Top Talkers' view is active, showing a list of devices with their MAC addresses, channels, packets, octets, and utilization percentages. The 'Details' pane on the left shows a tree view of network protocols. The 'Monitoring Channel 11' is selected, and the 'Show Crosstalk Devices' option is checked.

Device	CH	Packets	Octets	Util
033CF1-013F4A	11	62,517	30,015,725	7.29 %
0F5C51-3EEF57	11	14,239	1,804,720	<1 %
040C41-42A4D4	11	11,592	2,140,045	<1 %
070D27-DF7019	11	156	14,796	<1 %
066D6C-86C1D8	11	2,226	276,618	<1 %
013F4A-0E6335	11	66	2,103	0 %
020423-2B4887	11	130	14,665	0 %
040C41-422952	11	4	367	0 %
0E6335-013F4A	11	13	727	0 %

Tools

A click to the tools tab brings a wealth of options for testing your WLAN network. Options include ping tests, MIB access, and a true throughput test using Puts and Gets to and from your FTP server.



Survey

Use the survey tool to determine access placement in new wireless installations, and to take a snapshot of the installed WLAN environment at various locations within the facility. Use this data as a baseline and periodically validate WLAN coverage using the survey tool. The Survey tool enables quick identification of new devices on the network by comparing the the current survey data to historical information. The tool also can help you identify changes in RF coverage that occur over time due to changes in the environment, or the introduction of new wireless devices into the network.

OptiView Wireless Network Analyzer

Front Page Channels Detail Tools **Survey** Capture Setup

Scanning Channel 52

Refresh Enter Location: one

Reading Date: Thursday, August 26, 2004 1:59:31 PM (7 of 7)

Current Reading: 15 Access Points

SSID	BSSID	CH
<hidden>	06D6C-86C1D8	1
<hidden>	013F4A-0E6335	6
<hidden>	020423-2B4887	1
<hidden>	040C41-422952	6
Cpod	396BA1-396BA1	1
Cpod	033CF1-408622	11

phluke, Ch. 1
Signal: -86 dBm
Min (-98 dBm) ▲ Max (-80 dBm)
Error Rate: 9% of packets
Retry Rate: 9% of packets
Utilization: 2.15 %

AP Detail Record

Previous Reading: 11 Access Points

SSID	BSSID	CH
<hidden>	013F4A-066D6C	6
<hidden>	020423-2B4887	1
<hidden>	396BA1-396BA1	1
<hidden>	040C41-86C1D8	11

<hidden>, Ch. 1
Signal: -100 dBm
Min (-98 dBm) ▲ Max (-73 dBm)
Error Rate: 17% of packets
Retry Rate: 0% of packets
Utilization: 0 %

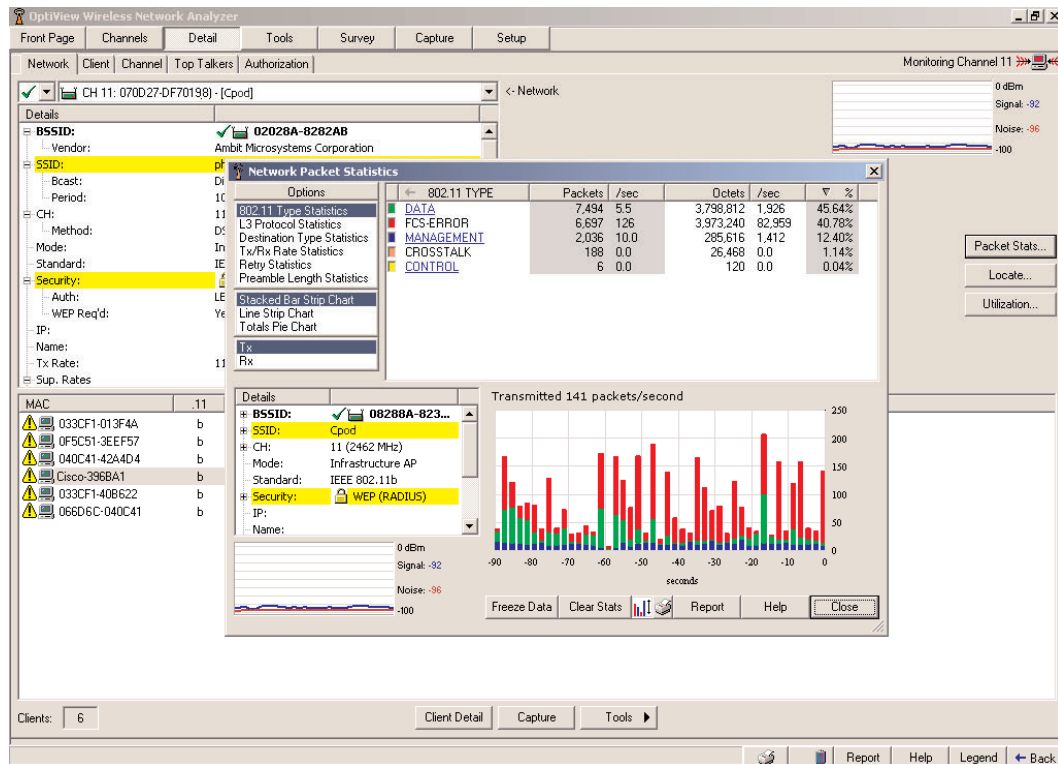
Delete Current Reading Edit Locations...

Report Help Legend Back

Network Packet Statistics

Network Packet Statistics displays a hierarchical view of packet statistics for a selected wireless device or channel. Packet statistics allow you to trend things such as rates, 802.11 packet type, and L3 data protocols together with FCS errors and crosstalk.

It can be used to determine channel utilization problems with Tx/Rx Rate Statistics, Retry Statistics, and observing FCS errors and crosstalk.



Packet Capture

The OptiView Wireless Network Analyzer Capture menu provides a flexible platform for filtering out all but the packets of interest – making the sometimes daunting task of viewing the decodes less intimidating. Select the source and/or destination addresses of interest or capture all packets not from the specified address(s). Select Management, Control and Data frames of interest, and capture the entire packet or only the part of interest.

The screenshot displays the OptiView Wireless Network Analyzer software interface. The 'Capture' menu is active, showing various filtering options. The 'Source and Destination' section includes a dropdown for '009C55-588C98' and radio buttons for 'Not', '<-', '<->', and '<->'. The 'Include Frames' section has checkboxes for 'Management', 'Beacon', and 'Control'. The 'Channel' is set to '11 - (2462 MHz)'. The 'Capture Results' section shows 'Total Frames: 43' and 'Total Captured: 43'. The 'Start Capture' button is visible. The main window displays a list of captured packets with columns for ID, Status, Elapsed [sec], Size, Destination, Source, and Summary. The selected packet (ID 000014) is expanded, showing details for the 'Wireless LAN MAC Protocol (802.11)' frame, including Frame Control Field, Version, Type, Subtype, From DS/To DS, More Fragments, Retry, Power Management, More Data, WEP, and Order. The bottom section shows the raw data in Hex and ASCII format.

ID	Status	Elapsed [sec]	Size	Destination	Source	Summary
000010		1.826.743.000	84	FFFFFFFFFFFF	0050DAB7853D	ARP Q PA=10.248.1.124
000011		2.131.607.000	84	FFFFFFFFFFFF	00C017A2000C	ARP Q PA=10.248.1.97
000012		2.132.372.000	84	FFFFFFFFFFFF	00B0D0B56F91	ARP Q PA=10.248.1.124
000013		2.132.967.000	72	FFFFFFFFFFFF	000103828751	SAP General Service Query
000014		2.438.705.000	84	FFFFFFFFFFFF	00B0D04C0F7	ARP Q PA=10.248.1.112
000015		2.439.170.000	84	FFFFFFFFFFFF	00B0D04C0F7	ARP Q PA=10.248.1.7

Field	Value	Description
Preamble	Long preamble	
Modulation	CCK	
Signal strength	44 %	
Signal quality	165 %	
Channel	11	

Field	Value	Description
Frame Control Field	0x822	
Version	00.....	Version 0
Type	10.....	Data
Subtype	0000.....	Data
From DS/To DS	10.....	From Distribution System
More Fragments	0.....	No fragmentation or last fragment
Retry	0.....	First try.
Power Management	0.....	Staying active
More Data	1.....	More data frames at AP
WEP	0.....	No WEP encryption
Order	0.....	Ordered service off

Hex	ASCII
0000: FF FF FF FF FF FF 00 06 25 58 0C 95 08 22 00 00	%.....*BL
0010: C0 F7 F0 FC AA AA 03 00 00 00 08 06 00 B0 D0 4C	A=0B.....
0020: 06 04 00 01 00 B0 D0 4C C0 F7 0A F8 01 78 00 00	DLA=0X.....
0030: 00 00 00 00 0A F8 01 70 00 00 00 00 00 00 00 00	0.p.....
0040: 00 00 00 00 00 00 00 00 00 00 00 00 57 1E 94 62	W.b

Documentation and Reporting

Provide comprehensive reports for management, or create diagnostic reference material using the context sensitive reporting functions of your wireless OptiView. Reports are generated in standard HTML so they can be easily edited, shared and accessed. Nine categories of reports can be generated:

- 1) Access Points Summary
- 2) Access Point Detail
- 3) Authorization List
- 4) Channel Detail
- 5) Client Detail
- 6) Key Device Ping
- 7) Packet Statistics
- 8) Site Survey
- 9) Spectrum Channel Quality

Wireless Packet Statistics - Client Sep 01, 2004
Time: 15:49:39
Client Station: 0969A9-396BA3
SSID: Cpod

802.11 TYPE Sent	Packets	%	Octets	%
DATA	886	86.19	141,836	85.58
-- DATA	886		886	
FCS-ERROR	142	13.81	23,902	14.42
Totals	1,028		165,738	

L3 PROTOCOL Sent	Packets	%	Octets	%
UNDECRYPTABLE	886	100.00	141,836	100.00
Totals	886		141,836	

802.11 TYPE Received	Packets	%	Octets	%
CONTROL	2,030	39.41	28,462	1.12
-- RTS	7		7	
-- ACK	2,023		2,023	
DATA	1,365	26.50	997,127	39.20
-- DATA	1,365		1,365	
FCS-ERROR	1,755	34.07	1,518,134	59.68
CROSSTALK	1	0.02	14	0.00
Totals	5,151		2,543,737	

L3 PROTOCOL Received	Packets	%	Octets	%
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