

# SpeedFlex™

Wi-Fi Performance Utility

## The Unique Performance Monitor for Ruckus Wireless LANs

Ruckus SpeedFlex is a unique wireless performance tool integrated within the ZoneDirector™ family of centralized controllers and FlexMaster remote Wi-Fi management system. SpeedFlex measures the Wi-Fi throughput of associated wireless LAN (WLAN) clients.

With SpeedFlex, administrators can better plan, troubleshoot, monitor and measure WLAN performance, eliminating the need to use Internet-based speed tools that often provide inaccurate results of the local Wi-Fi environment.

From any centralized ZoneDirector™ or FlexMaster WLAN management console, administrators remotely invoke a speed test for a specific Windows® or Mac® (Intel®) client, focusing on wireless layer-2 throughput measuring performance for that client.

An intuitive speedometer delivers instant at-a-glance feedback of the actual connection speed (in Mbps) of each wireless client, each AP, and each mesh link, allowing administrators to quickly isolate client issues. The same test also can be performed by the user from any location (see illustration).

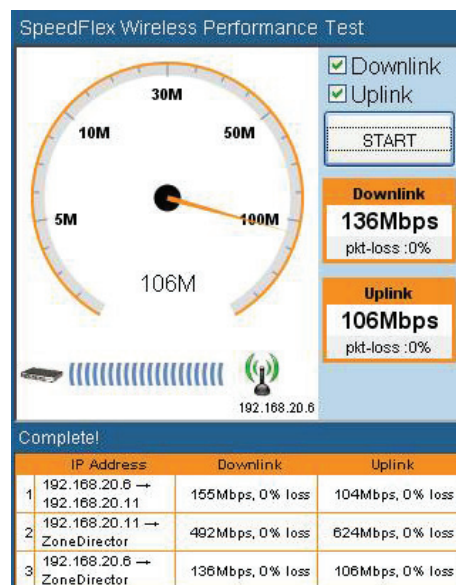
### How SpeedFlex Works

SpeedFlex sends fixed-duration bursts of full-length User Datagram Protocol (UDP) packets. The packet loss and inter-arrival times are closely monitored and reported.

SpeedFlex differs from existing test tools such as iperf, IXIA Chariot, tcp, and others because it focuses on characterizing performance at the wireless link layer.

Wi-Fi performance requires a specialized tool for accurate performance characterization for two reasons: asymmetric links and statistical variation.

With most wireless systems, the uplink and downlink are asymmetric due to different transmit powers, receive sensitivity, localized noise, and Multimedia Wireless (WMM) parameters. In practice this leads to dramatically different uplink and downlink performance, resulting in 'smearing' of test results.



### THE SPEEDFLEX SPEEDOMETER

The SpeedFlex Speedometer downloads a thin agent from the ZoneDirector controller to each client. Real-time Wi-Fi performance tests can then be initiated locally by the client or remotely by the administrator for a given client measuring downlink performance.

### FEATURES

- Remote and local testing of Wi-Fi client downlink performance
- At-a-glance speedometer relays Wi-Fi link performance to any given client
- Remote and local testing of WLAN AP downlink and uplink throughput

### BENEFITS

- Easy troubleshooting and monitoring of network-wide Wi-Fi client performance
- Increased IT productivity from the ability to centrally test remote Wi-Fi client performance
- More accurate characterization of Wi-Fi performance and capacity without expensive tools
- Enhanced user satisfaction
- Better planning capabilities for Wi-Fi coverage and performance



### ZoneDirector™ WLAN Management Console

**Currently Active Clients**

This table lists all currently connected client devices. Only those devices with a status of "authorized" are permitted access to the network. To prevent an "unauthorized" client from attempting to connect to your network, click Block. To troubleshoot a problematic connection, click Delete. (That client can then reconnect to the WLAN.)

To show a list of blocked clients, [click here](#)

MAC Address	User/IP	Access Point	WLAN	VLAN	Channel	Radio	Signal (%)	Status	Action
00:FB:E0:05:00:06	user0030	00:13:92:EA:43:0D	corporate	None	6	802.11b/g	17%	Authorized	[Icons]
00:F5:62:03:03:04	user0021	00:13:92:EA:43:07	corporate	None	56	802.11a/n	12%	Authorized	[Icons]
00:F4:80:03:01:01	10.1.0.54	00:13:92:EA:43:07	lobby	None	6	802.11g/n	17%	Authorized	[Icons]
00:EF:06:02:01:06	user0017	00:13:92:EA:43:04	corporate	None	1	802.11g/n	47%	Authorized	[Icons]
00:E8:54:01:01:03	user0002	00:13:92:EA:43:01	corporate	None	11	802.11g/n	62%	Authorized	[Icons]
00:E5:53:05:00:04	user0028	00:13:92:EA:43:0D	corporate	None	11	802.11b/g	97%	Authorized	[Icons]
00:E4:D1:02:03:01	user0008	00:13:92:EA:43:04	corporate	None	52	802.11a/n	15%	Authorized	[Icons]
00:DE:47:01:01:05	10.1.0.30	00:13:92:EA:43:01	kitchen	None	11	802.11g/n	59%	Authorized	[Icons]
00:D4:76:05:00:01	10.1.0.64	00:13:92:EA:43:0D	lobby	None	1	802.11b/g	27%	Authorized	[Icons]
00:D3:00:01:03:04	10.1.0.12	00:13:92:EA:43:01	kitchen	None	64	802.11a/n	84%	Authorized	[Icons]
00:CC:52:05:00:02	10.1.0.66	00:13:92:EA:43:0D	kitchen	None	11	802.11b/g	7.4%	Authorized	[Icons]
00:C5:26:05:00:05	user0029	00:13:92:EA:43:0D	corporate	None	1	802.11b/g	17%	Authorized	[Icons]
00:C1:15:02:01:04	user0015	00:13:92:EA:43:04	corporate	None	11	802.11g/n	59%	Authorized	[Icons]
00:C0:78:02:03:04	user0011	00:13:92:EA:43:04	corporate	None	40	802.11a/n	74%	Authorized	[Icons]
00:84:39:02:03:03	10.1.0.38	00:13:92:EA:43:04	kitchen	None	60	802.11a/n	45%	Authorized	[Icons]

Search terms:   Include all terms  Include any of these terms  1-15 (67)

**Events/Activities**

Date/Time	Severity	User	Activities
2005/12/19 09:44:08	Medium	jyang	User[jyang] of WLAN[corporate] encountered low signal
2005/12/19 09:44:07	Medium	jyang	AP[Warehouse NW] radio [11g/n] detects User[jyang] in WLAN[corporate] roams from AP[Warehouse NE]

This effect is particularly evident with TCP-based tests, due to the importance of the TCP acknowledgment flowing in the opposite direction as the primary data flow.

The most important reason for a dedicated wireless performance test tool is the statistical nature of Wi-Fi performance.

Unlike Ethernet and fiber-optic technologies, which typically offer the same constant throughput, wireless link performance continuously varies as a function of link distance, propagation environment (including motion in the environment), and interference.

As such, 'average throughput' does not accurately characterize Wi-Fi performance, especially for demanding applications. Tools that don't take statistics into account often report misleading results, which typically over-estimate the true available wireless capacity.

By logging into any ZoneDirector or FlexMaster management console, network administrators can invoke SpeedFlex to test the actual performance of a Wi-Fi link for any given client.

The Ruckus Wireless SpeedFlex utility was specifically developed to overcome these limitations, providing a more accurate assessment of actual client performance of the Wi-Fi link.

For network administrators, this translates into easier and faster resolution of Wi-Fi performance problems, increased productivity from eliminating the need to physically visit client locations to ascertain link layer performance, enhanced end user satisfaction, and the ability to better plan for Wi-Fi coverage and performance.