MediaFlex™ 2800 Series

802.11g Multimedia Smart Wi-Fi Router and Adapter

Ruckus MediaFlex 2825 Multimedia Wireless Router

Ruckus MediaFlex 2111 Multimedia Wireless Adapter

The First Managed Smart Wi-Fi 802.11g System for Picture-Perfect Distribution of IPTV

The Ruckus Wireless MediaFlex 2800 series is the first-of-its-kind wireless multimedia routing system that reliably distributes multimedia content over standard 802.11 Wi-Fi. Unlike any other in-home Wi-Fi system, MediaFlex 2800 products integrate a long-range, directional smart antenna array to deliver unmatched reliability and performance at long distances. The Ruckus MediaFlex 2800 series includes both a 5-port (2825) as well as a single-port (2811) 802.11g version that work seamlessly with the MediaFlex 2111 adapter.

Installed in minutes, the Ruckus MediaFlex 2800 series helps carriers eliminate costly and cumbersome cabling within subscriber homes, speed installation times, and enable robust remote management. The Ruckus MediaFlex gives broadband operators a single system that reliably extends multimedia services throughout the home over standard 802.11b/g Wi-Fi while giving them the unprecedented visibility into and control over subscriber Wi-Fi environments - down to end devices.

One of the most sensitive Wi-Fi adapters on the market, the Ruckus MediaFlex adapter is ideal for providing reliable Wi-Fi connectivity to Ethernet-equipped media devices such as set-top boxes, personal video recorders, media centers and media center extenders. Simple to provision, the Ruckus MediaFlex adapter provides unprecedented range and reliability, effectively eliminating Wi-Fi dead spots and hard-to-reach locations, and allowing IP-capable set-top boxes to be located anywhere in the home without wiring concerns.

The Ruckus MediaFlex router combines innovative, patent-pending smart antenna and traffic management technologies to break down the barriers that have prevented a single Wi-Fi network from simultaneously supporting voice, video and data in the home.

Unlike any Wi-Fi system on the market, the Ruckus MediaFlex router constantly monitors the wireless environment, steering RF signals around interference and prioritizing different traffic types for transmission over the air to enable the most stable and reliable Wi-Fi connectivity possible. This maximizes range and assures uninterrupted bandwidth for whole-home multimedia transmissions.

Service providers can deploy the Ruckus MediaFlex adapter in subscribers' homes to deliver broadcast quality, IP-based video applications, such as IPTV and IPVoD (Video on Demand), without truck rolls for wiring installations thereby accelerating deployment, minimizing installations costs and maximizing service potential.

BENEFITS

- **Unparalleled remote control**
  Remote visibility into and control over services associated with each subscriber, real-time monitoring of the in-home Wi-Fi environment.

- **Dramatic range and performance increases**
  Smart antenna system with six antennas and 63 unique antenna patterns ensure optimum signal paths and high data rates to support up to 3 simultaneous video streams.

- **No more dead spots**
  Antenna control software monitors the RF and switches antenna patterns dynamically to route signals farther and bypass interference for the best coverage and capacity.

- **Highest quality user experience**
  Precision and heuristic Quality of Service (QoS) management, combined with a smart antenna system, delivers consistent, reliable bandwidth essential for IPTV.

- **Reliable Wi-Fi transmission of multicast IPTV**
  Unique traffic classification and smart multicast handling deliver multicast IPTV reliably to one or more set-top boxes.

- **Virtual router supports multiple SSIDs**
  Separate wireless domains and security modes segment service providers traffic, such as IPTV, from home user traffic, such as Internet browsing.

- **Self-installing, automatic configuration**
  Comprehensive DHCP client and server support for both the service provider and home users. Port-based classification ensures separation of the data and video traffic.

- **Remote management and automatic upgrades**
  SNMP for troubleshooting and diagnostics. Auto firmware upgrades ease deployment and remote management.

RUCKUS WIRELESS™

Introducing the Ruckus MediaFlex Router

A complete solution for video-grade, high-performance wireless networking, the Ruckus system includes the Ruckus MediaFlex 802.11b/g multimedia router and Ruckus MediaFlex multimedia Wi-Fi adapter. The system incorporates Ruckus patent-pending BeamFlex and SmartCast technologies to guarantee optimal range and performance for concurrent video and data traffic.

Attached to the broadband gateway, the Ruckus MediaFlex router optimizes all 802.11b/g devices in the home, while enabling wireless video applications.

The Ruckus MediaFlex adapter provides video-grade, 802.11b/g connectivity to an Ethernet-equipped video server and video receiver, including set-top boxes, personal video recorders, media centers and media center extenders anywhere in the home.

BeamFlex Extends Signal Coverage, Increases Reliability

Most off-the-shelf Wi-Fi products are equipped with one or two antennas, offering little resilience or diversity in the event of a debilitated signal path. In contrast, the Ruckus MediaFlex 2800 series is equipped with BeamFlex, a patent-pending MIMO smart antenna system.

The Ruckus MediaFlex 2800 series integrates a compact, internal antenna array with six high-gain, directional antenna elements capable of forming 63 unique antenna patterns for massive diversity. Expert system control software continuously ranks the antenna patterns for each receiving device, using the inherent feedback mechanism built into the 802.11 MAC layer protocol.

BeamFlex enables client devices to communicate over longer distances at higher speeds than consumer-grade 802.11 products — delivering unprecedented reliability and diversity.

With BeamFlex, the Ruckus MediaFlex 2800 series reconfigures itself in real-time, detecting and adjusting for both spectral and multi-path interference as well as neighboring network noise.

By selecting the optimum antenna pattern for each receiving device, BeamFlex enables extended Wi-Fi range and higher communications speeds.
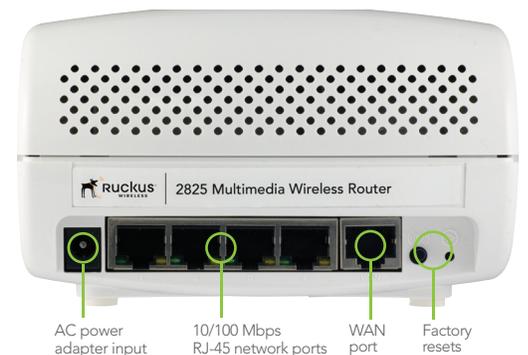
Unmatched antenna diversity allows the Ruckus MediaFlex 2800 series to find and instantly select from many quality signal paths in a changing environment. This provides the stability and sustained baseline performance essential for delay-sensitive voice and video applications.
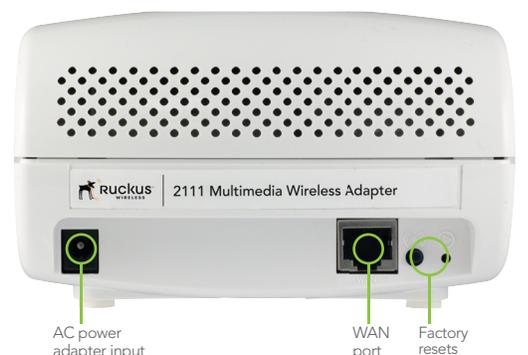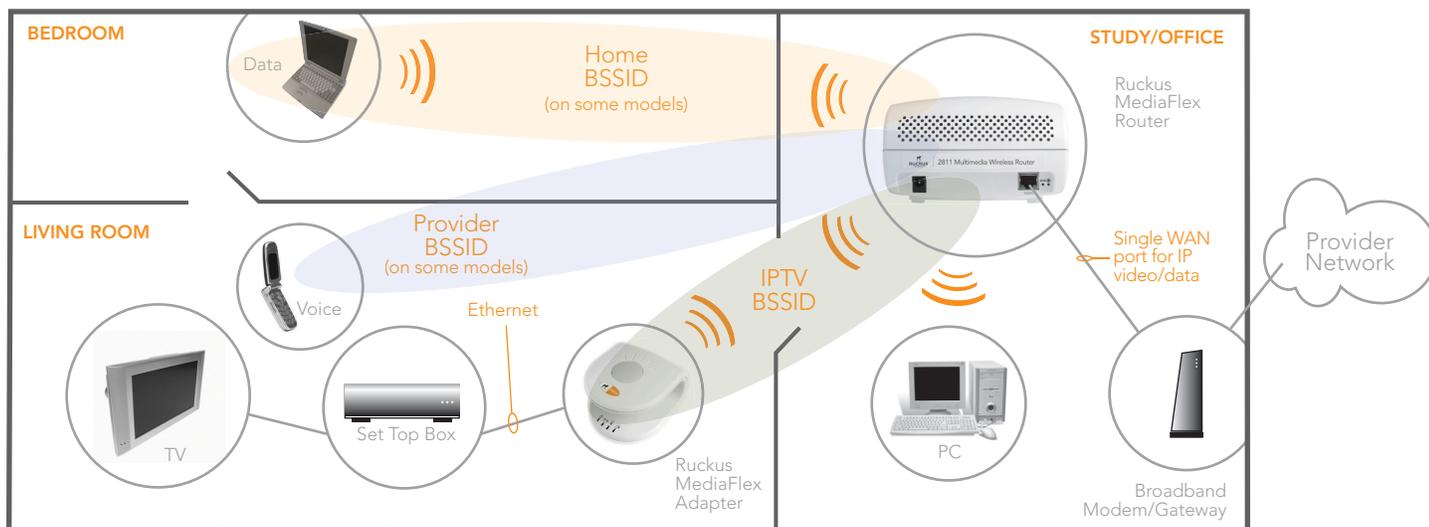
Router or Adapter

Management LEDs

2825 Router

2825 Multimedia Wireless Router

AC power adapter input   10/100 Mbps RJ-45 network ports   WAN port   Factory resets

2811 Router

2811 Multimedia Wireless Router

AC power adapter input   WAN port   Factory resets

2111 Adapter

2111 Multimedia Wireless Adapter

AC power adapter input   WAN port   Factory resets

Connectivity

BEDROOM

Data

Home
BSSID
(on some models)

STUDY/OFFICE

Ruckus
MediaFlex
Router

Single WAN
port for IP
video/data

Provider
Network

LIVING ROOM

Provider
BSSID
(on some models)

Voice

Ethernet

IPTV
BSSID

TV

Set Top Box

Ruckus
MediaFlex
Adapter

PC

Broadband
Modem/Gateway

SmartCast Ensures Picture-Perfect Multimedia Viewing

Patent-pending SmartCast technology from Ruckus Wireless combines innovative multicast traffic handling techniques, smart QoS and application-aware traffic classification capabilities to ensure the highest reliability for all transmissions over Wi-Fi.

SmartCast differentiates and manages unicast and multicast video frames separately from all other traffic types. This provides a robust wireless transport for IPTV streams from the broadband gateway to the set top box. SmartCast detects a video receiver tuning to an IPTV channel, then directs the associated multicast video packets to each receiver, using the optimum data rate and signal path for that receiver. This ensures the best performance possible while enabling reliable delivery of IPTV packets.

Multimedia optimized traffic management algorithms guarantee performance for multiple broadcast quality video streams while maintaining adequate bandwidth for data applications. SmartCast automatically classifies all traffic based on UDP/TCP port and other application attributes, and manages each traffic type (voice, video, data) according to its classified priority and characteristics.

Automatic Type-of-Service (ToS) tagging eliminates complex QoS configurations, while automatic management of lower speed 802.11b devices assures bandwidth availability for prioritized video applications. Four priority queues per station result in a high granularity of traffic prioritization and precision for multiple concurrent video streams.

All packets are queued/de-queued by specialized schedulers optimized for the corresponding traffic type. Each scheduler takes into account the delay/jitter tolerance and bandwidth requirements of the traffic and the changing performance characteristics of each station on the WLAN for the best user experience.
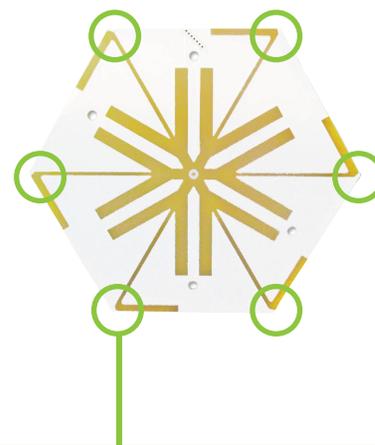
Six high-gain directional antenna elements controlled by an expert software system that determines the best antenna pair for any packet at any given time

RECEIVE SENSITIVITY	
802.11b	
1 Mbps	-99 dBm
2 Mbps	-96 dBm
5.5 Mbps	-94 dBm
11 Mbps	-92 dBm
802.11g	
6 Mbps	-96 dBm
9 Mbps	-94 dBm
12 Mbps	-93 dBm
18 Mbps	-91 dBm
24 Mbps	-88 dBm
36 Mbps	-84 dBm
48 Mbps	-79 dBm
54 Mbps	-78 dBm

Ruckus WIRELESS™

FlexMaster Remote Service Management

FlexMaster is an innovative wireless service management technology that provides access to vital statistics, performance and RF information necessary to manage triple play services. FlexMaster uniquely provides the ability to perform inventory audits for all the devices within the home wireless environment. Multi-tiered user and provider management domains deliver complete customization and the utmost flexibility.

FlexMaster also provides remote execution of diagnostics from within the home. FlexMaster provides two distinctive management views for every device. The service provider view delivers detailed information on logging, statistics, quality of service, status of the device for the IPTV streams delivered to the household. The home user view provides simple to use, web management for configuring basic wireless data networking for home PC's.

Simple Installation, Reduced Support Costs

Self-installable, the Ruckus MediaFlex router and adapter attach to their respective modem or media devices using standard Ethernet. A Web UI allows for easy configuration as well as firmware upgrades. Three LEDs provide status information on power, Ethernet connectivity, and wireless association. A fourth LED provides a wireless video quality indicator that allows "at-a-glance monitoring" of wireless network performance. Remote management is provided through Telnet, SSH, HTTP, SNMP and TR-069 protocols.

Proven Performance

A Ruckus-powered multimedia network ensures transmission of 20 Mbps of guaranteed throughput for streaming video throughout a typical 5,000 square foot (460 square meter) home. The Ruckus MediaFlex 802.11g system supports up to three simultaneous DVD-quality standard definition (SD) MPEG-2 IPTV video streams, six MPEG-4 SD streams or one to two HD-quality WMV streams while supporting concurrent data and voice applications.

FEATURES

- FlexMaster management for firmware upgrade, remote monitoring, and bulk configuration updates

- Internal 6-element antenna array, with 63 dynamic configurations

- Real time learning of RF, station, network and application conditions

- IGMP snooping for station-channel multicast group association detection

- Support for 32 multicast groups and 48 stations

- Wireless multicast optimization with guaranteed packet delivery

- Differentiated handling of multicast IPTV traffic from general multicast and broadcast traffic

- Automatic traffic classification by well-known UDP/TCP port number and IPTV attributes

- Heuristic QoS classification of voice and video streams to the appropriate queues

- Priority queuing for voice, video, best-effort and background traffic

- Per-station, per-traffic type packet queuing and scheduling

- Four queues per station

- Automatic Type-of-Service (ToS) tagging

- 20 Mbps consistent video throughput in typical 5,000 sq. ft. residence (460m^2)

- DHCP or static IP addresses for self install, self configuration or remote configuration

- Web-based user interface

- Automatic monitoring of the Wi-Fi network and application performance, including throughput, error rates, and retransmissions

- Real-time monitoring, providing 30-minutes of 1-second interval statistics

- Historical monitoring, providing 24 hours of 1-minute stats and 30 days of 1-hour stats

Specifications

PHYSICAL CHARACTERISTICS

POWER	• External power adapter • Input: 110–240V AC (country specific), 220-240V AC (country specific) • Output: 12V DC, 1A
PHYSICAL SIZE	• 14.2cm(L), 12.2cm(W), 7.5cm(H)
WEIGHT	• 200 grams
ANTENNA	• Internal software-configurable antenna array with six directional, high-gain elements and 63 unique omni antenna patterns
ETHERNET PORTS	• 5 ports or 1 port, auto MDX, auto-sensing 10/100 Mbps, RJ-45
LED DISPLAY	• Power/status, Ethernet status, wireless status, wireless network quality indicator
ENVIRONMENTAL CONDITIONS	• Operating Temperature: 32°F (0°C)–104°F (40°C) • Operating humidity: 15%–95% non-condensing

PERFORMANCE AND SUPPORTED CONFIGURATIONS

CONCURRENT STATIONS	• Up to 48 (for Open, WEP or WPA-AES) • Up to 22 (for WPA-TKIP)
TARGET UDP THROUGHPUT	• 15 Mbps sustainable throughout a 5,000 square foot (460m²) home
SIMULTANEOUS VIDEO	• 2-3 simultaneous MPEG-2 or 4-6 MPEG-4 standard definition streams or single 10 Mbps+ HD streat at 50 feet (18m) with concurrent background traffic

TRAFFIC MANAGEMENT AND QUALITY OF SERVICE

CLASSES OF SERVICE	• Voice, video, best effort and background
HARDWARE QUEUES	• 4
SOFTWARE QUEUES	• 4
AUTOMATIC TRAFFIC CLASSIFICATION	• Automatic type of service tagging for classification multicast video packets
HEURISTIC CLASSIFICATION	• Available

MULTICAST VIDEO (IPTV)

IGMP SNOOPING	• Up to 32 multicast groups • Up to 48 receiving stations
MULTICAST OPTIMIZATION	• Directs multicast IPTV packets to each receiving station within the designated multicast group using the optimum data rate and antenna selection • Automatic classification into video queues • Ensures reliable transmission of multicast video packets

MANAGEMENT

CONFIGURATION	• Web user interface, Telnet, SNMP statistics interface (2825 only), TR-069 (2825 only)
LOGIN	• User • Admin
AUTO CONFIGURATION	• Supported
STATISTICS	• LAN, wireless and associated stations • Accessible via Web UI
SOFTWARE UPDATE	• FTP or TFTP, remote auto available • Accessible via Web UI • Single or bulk software upgrade via TR-069 (2825 only)
OTHER UTILITIES	• Configuration dump (admin only) • Simple support info transfer to provider • Pre-installed X.509 v3 certificates

Wi-Fi

STANDARDS	• 802.11b/g, WEP, WPA (PSK)
SUPPORTED DATA RATES	• 54,48,36,24,18,12,11,9.6, 5.5,2,1 Mbps • Atheros SuperG Turbo (108 Mbps) not supported for video
CHANNELS	• US/Canada: 1-11 • Europe (ETSI X30): 1-13 • Japan X41: 1-13
CHANNELIZATION	• 40 MHz channel bonding supported
RF POWER OUTPUT	• 23 dBm for wireless-B and G • Country-specific power settings are configurable
TRANSMIT POWER CONTROL	• Supported
CERTIFICATIONS	• U.S., Argentina, Brazil, Canada, Chile, Colombia, European Countries, Hong Kong, India, Israel, Korea, Mexico, Singapore , Taiwan, Thailand, China

Product Ordering Information

Model	Description
901-2825-XX01	5-port Multimedia Smart Wi-Fi Router
901-2811-XX01	1-port Multimedia Smart Wi-Fi Router
901-2111-XX25	1-port Multimedia Smart Wi-Fi Adapter

PLEASE NOTE:
When ordering you must specify the destination region by indicating -US -EU, -UK, -UN, -CN, -BR, -IN, -KR or -AU following the model number.

ruckus ™ WIRELESS

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