



The PacketWave 200 Series subscriber units provide “always-on” multi-megabit IP services and Internet access to subscribers. The PacketWave 230 model is an integrated outdoor wireless router—A truly unique product, and one of a kind in it’s class.

PacketWave® 200 Series

Subscriber Units for 2.5, 3.5 and 5.8 GHz

Multiservice broadband wireless access for small to midsize businesses, SOHOs, and homes

Key Benefits

Complete system solution

The fully integrated PacketWave system provides a complete broadband wireless solution, including base station, subscriber units, radios and antennas that accommodate a variety of frequency bands – 2.5, 3.5 and 5.8 GHz.

High-speed Internet access

The PacketWave system delivers data rates from 16 Kbps, up to burst speeds of 20 Mbps upstream and downstream.

Increased coverage

Supports line-of-sight (LOS), obstructed LOS, and non-LOS installations.

High spectrum efficiency

Variable channel width from 1.75-7 Mhz for scalable deployment and interference resiliency.

Easy to install

Simple setup reduces service provisioning time. The single outdoor unit is easy to install. An audio signal and antenna alignment tool reduces setup time.

Support for SLA, multiple services

PacketWave 200 Series units connect to a PC or LAN, and support enhanced applications such as SLA, voice and streaming video.

Aperto® Networks PacketWave® system gives service providers a fully-integrated service intelligent platform for building high-capacity broadband wireless networks for personalized service delivery. PacketWave system architecture supports multiservice applications, scales easily for increased capacity and coverage, and provides dynamic link optimization on a per-subscriber basis. It also features fast deployment and easy-to-use management.

Working with the PacketWave base stations, PacketWave 200 Series subscriber units deliver high-speed, IP access for small to midsize businesses, small office/home offices (SOHO), and residential users. With a PacketWave 200 Series unit installed at the subscriber’s site, users can browse Web pages, support voice calls, view streaming video, and download files—all at multimegabit data rates downstream and upstream.

The PacketWave 200 subscriber equipment consists of a main unit that can be installed outdoors, connecting with a single power over

Ethernet cable, to a small interface unit that also provides an Ethernet port for a PC or LAN. It can be configured as a bridge supporting 2000 hosts, or a router that supports up to 250 hosts. The PacketWave system delivers data rates from 16 Kbps up to burst speeds of 20 Mbps in a 6 MHz channel—enabling the most efficient use of aggregate bandwidth, so greater numbers of users can enjoy simultaneous access.

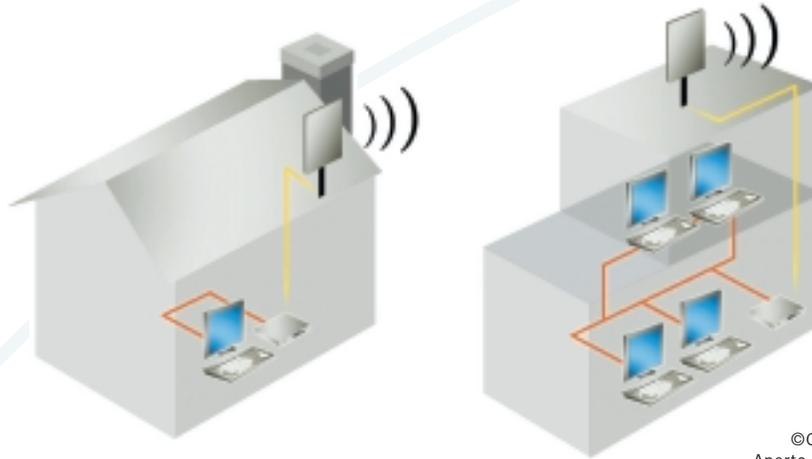
Aperto Networks offers three PacketWave models designed to meet a variety of subscribers and network requirements:

- PacketWave 210 model provides bridging, and VLAN with support for up to five hosts.
- PacketWave 220 model provides bridging, VLAN, point-to-point protocol over Ethernet (PPEoE) and Network Address Translation (NAT), with support for up to 20 hosts with DHCP server.
- PacketWave 230 model provides bridging, VLAN, PPPoE, NAT, and IP routing, with support for up to 250 hosts with DHCP server.

PacketWave Broadband Wireless System

Complete Package

The Aperto Networks' PacketWave 200 Series provides a complete subscriber package for fast Internet access. The easy-to-install unit with integrated antenna is mounted on the outside of the subscriber's office building or home. The interface unit connects to either a PC or an Ethernet/Fast Ethernet LAN.



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Scalable Architecture

The PacketWave system can handle hundreds of wireless subscribers per cell, whether they're spread out or live in densely populated neighborhoods.

Combining high frequency reuse with advanced interference management and mitigation techniques, the PacketWave system conserves valuable spectrum by allowing the service provider to cover an extensive geographical area with a minimum number of channels.

As bandwidth and subscriber needs increase, network operators can easily add channels or new sectors within the cell. Multiple PacketWave base station units can be stacked to provide additional bandwidth using multiple channels per sector. Operators can also economically deploy additional cells to extend the service capacity and coverage footprint.

Rapid Service Provisioning

The PacketWave 200 Series is easy to install and configure. The main unit can be installed on the roof or roofline. A small indoor interface unit is used to inject power and connects the outdoor unit to a personal computer or Ethernet network.

Once all components have been cabled together, the PacketWave 200 automatically obtains an IP address from the network and downloads the configuration parameters.

Service Flexibility

The PacketWave system is easy to customize to fit the customers' requirements. The PacketWave 200 Series subscriber unit supports remote provisioning for a variety of speeds, eliminating the need for costly truck rolls. It also gives service providers the flexibility to offer multiple flows with different service classes for residential and business applications.

Simple LAN Configuration

For business users, the PacketWave 200 Series provides additional features that streamline LAN configuration. Integrated in the PacketWave 220 and 230, a Dynamic Host Configuration Protocol (DHCP) server allocates IP addresses for each workstation. And, Network Address Translation (NAT) enables users to share a single public IP address while providing enhanced security. The PacketWave 210 model provides simple plug-and-play bridging for residential applications.

Breakthrough Technologies

Aperto Networks' PacketWave products feature three market-leading technologies: RapidBurst® advanced Time Division Multiple Access (TDMA) protocol, OptimaLink® dynamic per-subscriber link optimization, and ServiceQ® per-flow Quality of Service (QoS) and bandwidth management.

RapidBurst technology enables the PacketWave system to achieve exceptionally low latency and unprecedented spectral efficiency. With RapidBurst, the PacketWave system delivers burst rates up to 20 Mbps over a 6 MHz channel.

In addition, RapidBurst dynamic bandwidth allocation enhances efficiency by assigning time slots and packet sizes according to actual demand and service levels. An advanced TDMA burst mode ensures maximum flexibility and bandwidth efficiency in both upstream and downstream transmissions. Time Division Duplexing (TDD) technology maximizes flexibility and enables adjustable allocation of upstream and downstream bandwidth depending on traffic requirements.

OptimaLink technology performs dynamic control of link parameters to optimize each subscriber's connection in a multiuser, cellular network. The OptimaLink adaptive algorithm dynamically selects and adjusts PHY and MAC-layer parameters independently for each subscriber unit, including antenna diversity, modulation, transmit power, retransmission policy, and wireless packet size. The benefit to network operators is increased capacity and broader coverage that includes obstructed-line-of-sight and non-line-of-sight subscribers in a multi-path environment.

ServiceQ technology can provide different service classes to each subscriber on an application-by-application basis. This means personalized services can be delivered intelligently, allowing the service provider to maximize revenue opportunities with differentiated service offerings and effective management of Service Level Agreements (SLAs).

With ServiceQ, service providers can set up multiple QoS profiles for each PacketWave 200 Series subscriber unit. Each profile contains various QoS metrics (such as maximum and minimum bandwidth, latency, and jitter) based on Class of Service requirement like Constant Bit Rate (CBR), Committed Information Rate (CIR), or Best Effort (BE). Using a highly advanced scheduling mechanism, the PacketWave system enforces the metrics in each profile. The result – service providers can offer tiered services that help differentiate their offerings in the marketplace.

In addition, the intelligent ServiceQ packet classifier can associate end-user applications to QoS profiles by mapping existing indicators such as IP ToS and DiffServ fields, as well as data packet header information such as IP or MAC addresses and port numbers. Consequently, the PacketWave system can identify applications such as web browsing, telephony, and video streaming – providing the appropriate QoS, resulting in a more personalized and valuable service to subscribers.

PacketWave 200 Series Subscriber Unit Specifications

Models

	PW 210	PW 220	PW 230
Number of hosts	5	20	250
Networking	Bridge/ VLAN	NAT/Bridge PPPoE/VLAN	Router/NAT/ Bridge/VLAN/ PPPoE
Number of service flows	8	8	16
DHCP clients supported with built-in server	N/A	20	100

Main Unit

Interfaces

10/100 Base-T Ethernet: RJ-45 connector
Cable Length: 328 feet (100 meters) with specified cable; CAT 5 shielded and outdoor-rated.

Modem

Modulation: QPSK, 16 QAM

Power Requirement

Ethernet Inline Power

Networking

(Support Depends on Model)

Bridging, 802.1Q VLAN

DHCP Server and Client

NAT

IP Routing

Management

Service Provider

Subscriber Provisioning using Java-based WaveCenter Configuration Manager on Windows 2000 or XP

Embedded WaveCenter agent supporting SNMP and Web browser interfaces

SNMP, MIB II (RFC 1213), Aperto Enterprise MIBs

Software upgrade tool

Subscriber

Web-based interface for subscriber side DHCP server and NAT configuration

Installation Manager

Align antenna and perform throughput test; runs on Windows 2000 and XP

LED and Audio Signal Indicators

Wireless Transmit

Wireless Receive

Ethernet Link

Audio signal pitch corresponds to signal power

Dimensions and Weight

Width: 13.4 in (34 cm)

Height: 13.4 in (34 cm)

Depth: 2.2 in (5.6 cm)

Weight: 7 lbs (3.2 kg)

Environmental

Operating Temperature: -22° to 140° F (-30° to 60° C)

Humidity: 5% to 100%

Regulatory Approvals

FCC Part 15 Class B, CE, EN

Radio/Antenna

2.5-2.7 GHz

Standard Range: up to 10.6 miles/17 kilometers

3 dB Beamwidth: azimuth 20°; elevation 20°

3.4-3.7 GHz

Standard Range: up to 10.5 miles/16.9 kilometers

3 dB Beamwidth: azimuth 20°; elevation 20°

Horizontal and vertical polarization

5.725-5.875 GHz

Standard Range: up to 8.2 miles/13.2 kilometers

3 dB Beamwidth: azimuth 17°; elevation 17°

* The maximum EIRP varies depending on country regulations. Contact your Aperto Network sales representative for details.

Interface Box

Width: 2.1 in (5.4 cm)

Height: 2.4 in (6 cm)

Depth: 1 in (2.54 cm)

Power Input: 100-240 VAC; 47-63 Hz; 30 watts

Power Output: 36 VDC; 1.1 AMP

Interfaces: 2 RJ-45

LED: power, radio

Ordering Information

PacketWave 210 - CPE Bridge

PW210-58-10X Integrated subscriber unit with 5.8 GHz radio

PW210-35-10X Integrated subscriber unit with 3.5 GHz radio

PW210-25-10X Integrated subscriber unit with 2.5 GHz radio

PacketWave 220 - CPE Bridge/NAT

PW220-58-10X Integrated subscriber unit with 5.8 GHz radio

PW220-35-10X Integrated subscriber unit with 3.5 GHz radio

PW220-25-10X Integrated subscriber unit with 2.5 GHz radio

PacketWave 230 - CPE Bridge/NAT/Router

PW230-58-10X Integrated subscriber unit with 5.8 GHz radio

PW230-35-10X Integrated subscriber unit with 3.5 GHz radio

PW230-25-10X Integrated subscriber unit with 2.5 GHz radio

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