OWL800 Rugged Multi-Radio Multi-Mode 802.11a/b/g Outdoor Access Point

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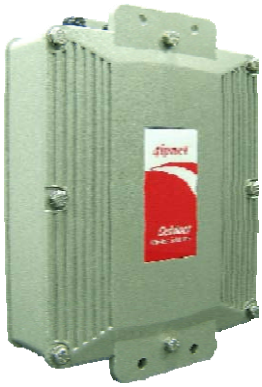


Heavy Duty Design

Rugged Housing, Industrial-grade Components
Redundant Power over Ethernet Inputs

The 4ipnet **OWL800** is a rugged access point specifically designed for building wireless networks in **harsh outdoor or critical industrial environments**. Its IP68 rated metal housing is weather-proof, water-tight and rust-resistant. Inside it contains industrial-grade components to allow for operation under extreme temperatures (-30~+70°C) and provide surge immunity up to 15KV. Tolerant to vibration and wind, OWL800 is also ideal for installation at locations such as railways, bridges and windy harbors. Its dual Power over Ethernet (PoE) ports provides redundant power feeds to increase power supply availability.

Hardware Flexibility for Networking

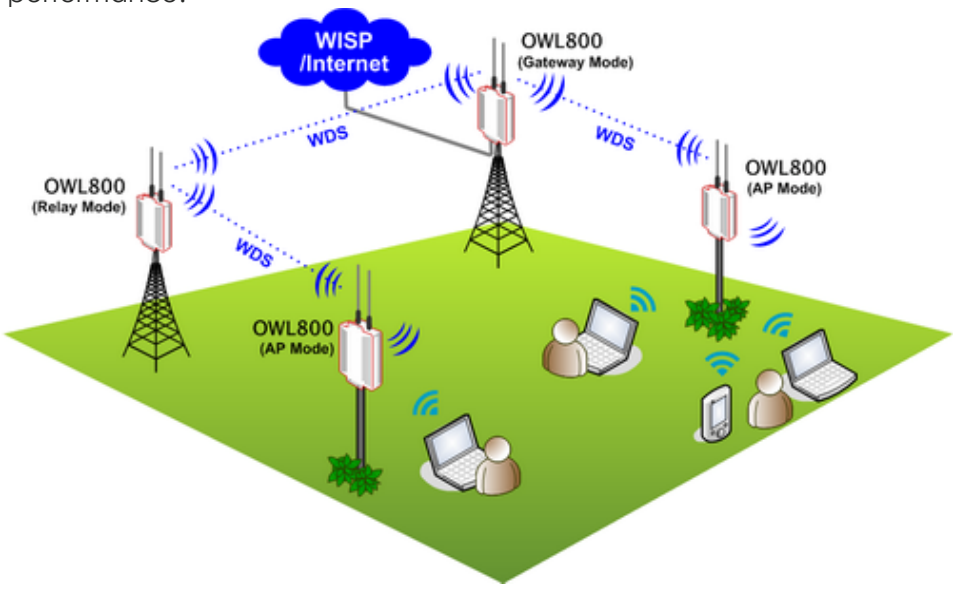
Multi-Radio, External Antenna Connectors

Hardware wise, a single OWL800 is capable of hosting 2-4 **multiple radio modules** simultaneously. Each module can be used for serving wireless clients, building wireless bridges, or establishing wireless backhauls. For some countries that permit high-power transmission, higher power modules are optionally available. There are **4 N-type antenna connectors** extended from the modules on the OWL800 board, which not only gives the flexibility in choosing antennas but greatly simplifies the antenna installation.

Software Flexibility for Networking

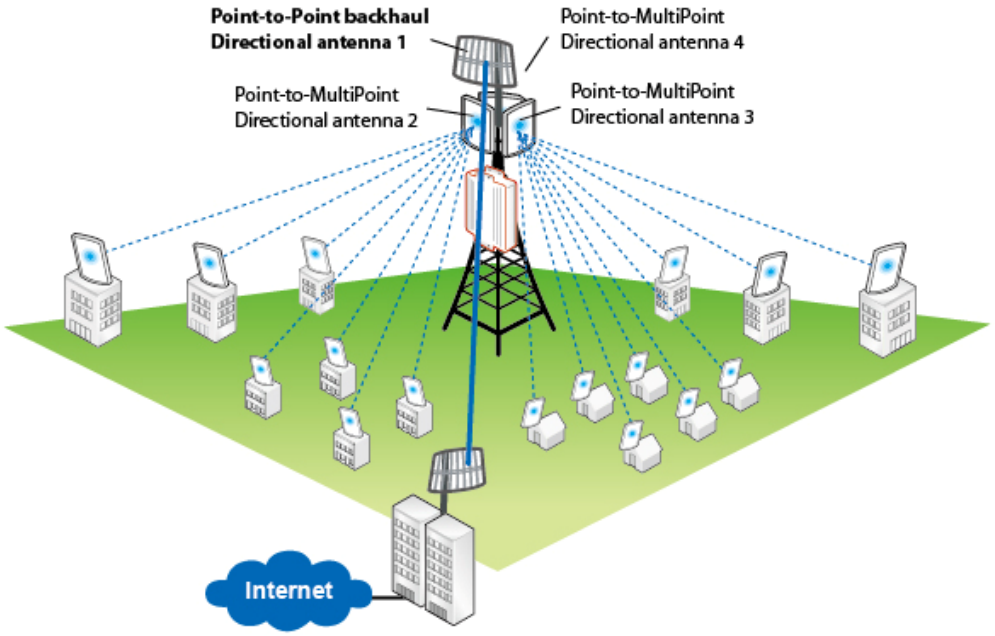
Multi-Mode, Multi-Link
AP, Bridge/Mesh Node, Gateway

To support diversified wireless network architectures, the OWL800 provides **multiple operating modes**, including **Point-to-Point Bridge**, **Point-to-Multipoint Bridge**, **AP station** and **AP Gateway**. Unlike most of common access points that rely on a single radio for different purposes at one time, the OWL800 with multiple radio modules receives and transmits over-the-air signals for each bridge link or AP station with one **dedicated wireless radio** to prevent degraded performance.



Wireless Mesh Deployment with OWL800

Combined with a variety of directional antennas (chosen by professionals), one OWL800 with multiple radios is easy to serve clients located in different directions as well as to cover longer range. With all modules supporting a/b/g bands, more channels are available for better channel planning. For example, to reduce radio interferences, network planners may select channels in 5 GHz for backhaul or bridges while allocating non-overlapping channels in 2.4 GHz for serving clients.

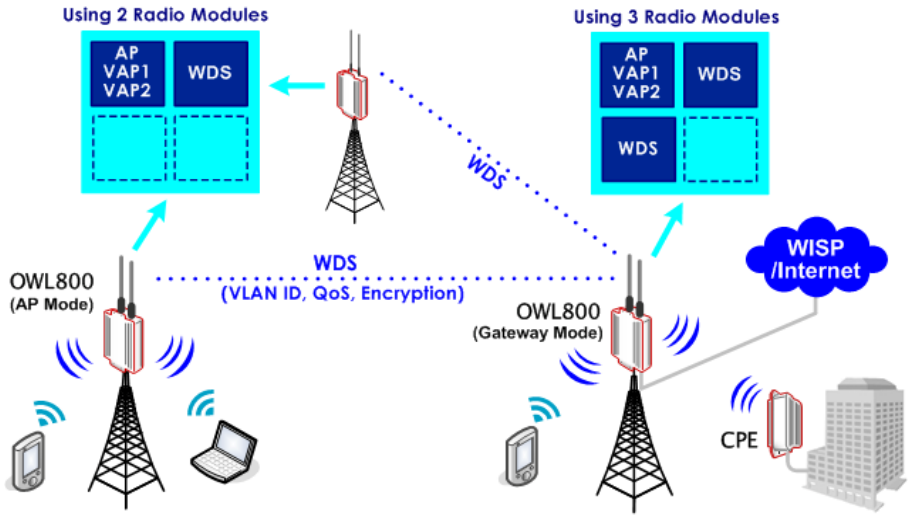


Last-mile (Backhaul) Connecting to WISP and Point-to-Multipoint Deployment

Enterprise-grade Network Properties All the Way

Support QoS Tags, VLAN Tags, and Encryption over WDS Bridges

For the purpose of data security and network efficiency, VLAN and QoS[1] tagging are common practices used by enterprises for segregating user traffics and prioritizing voice/video/data traffics. OWL800 not only supports AES encryption and VLAN/QoS tagging over the air between its wireless clients and itself (client to AP) but also supports same **over wireless WDS**[2] **links in-between OWL800 devices** (AP to AP). Most of access points on the market may support the same scenario for the client-to-AP connections, but not for the AP-to-AP communications. OWL800 allows enterprises to implement VLAN and QoS dependent applications over the wireless network as consistently as they could in the wired network. Take a VoIP implementation for example: an enterprise could reserve a VLAN with higher bandwidth for voice transmission by using a QoS tag to prioritize voice traffic.



High Processing Power

Multi-Radio Processors plus One Intel IXP CPU
Self-contained Hotspot Gateway with SPI Firewall

Besides the Atheros™ processors in the multiple radio modules that handle the wireless traffic dedicatedly, there is a **built-in powerful IXP CPU** for extra applications and traffic processing without sacrificing its radio performance. When working standalone or as the root node of a mesh network, an OWL800 can be configured in **Gateway mode that has hotspot and firewall features built-in.** More than just a RADIUS authenticator; OWL800 running in Gateway mode has a built-in local user database, supports time-based billable accounts, and works with multiple external RADIUS servers.

Usually, in a multi-point hotspot deployment, a central access controller is placed indoors in the data center, to authenticate clients and process traffic of clients. It is a typical model as mentioned above when multiple OWL800 devices work under a 4ipnet Controller. However, there are saturations when budget is tight to acquire both good outdoor access points and a decent controller. OWL800 in Gateway mode, acting as a local hotspot gateway with built-in radio modules, would be ideal economic wise. For a small WISP operator, the feature-rich OWL800 brings the best price/performance solution for deploying a serviceable wireless network in a remote venue, such as a distant village with less than 10 households. OWL800 can be employed as the village's WiFi base station and at the same time a hotspot gateway!

4ipnet introduces a quick, easy, flexible and cost-effective way of deploying outdoor wireless network by using the combination of OWL800 and 4ipent's other outdoor equipments such as OWL500/510.

FEATURES & BENEFITS

Rugged for Outdoor & Industrial Deployment

- Weatherproof and watertight cast-metal housing with an IP68 rating
- Surge immunity up to 15KV
- Dual PoE for redundant power input and data link
- Support multiple operation modes – Gateway mode, AP mode, and Relay mode

Multiple Radios and Antenna Connectors, Flexible for PtP, PtMP, or Mesh networks

- Two built-in 802.11 a/b/g radio with two additional mini-PCI slots for expansion
- High power radio modules are available options for countries where higher power transmitting is permitted
- Low-loss N-type connectors allow for more flexible antenna choices for professionals
- Antennas can be attached directly on the OWL800, or connected closely to OWL800, for reducing signal losses
- Dual bands (2.4G and 5G) with more channels allow better channel planning to avoid interference
- Each Radio module can be configured as AP or WDS independently. Up to four modules can be serving in one OWL800

Built-in AAA[3] and User Management for Hotspot Operation

- Support built-in Local accounts and On-demand accounts for user authentication
- Support multiple external RADIUS servers for user authentication
- Support UAM and IEEE802.1x access control functions
- Built-in Hotspot access control and billing features

Robust and Reliable Wireless Link Construction

- Dual PoE power input
- Support 8 WDS links per 802.11a/b/g radio module
- WDS discovery and link table for easy connect
- Support VLAN tags over wireless inter-AP links (WDS) in addition to over the wireless links from clients to AP
- Dynamic wireless link backup for network reliability
- Dedicated WDS radios could form a mesh WLAN without taking away some bandwidth for serving clients

Wireless Security and QoS Support

- Advanced security options: 64/128/152 bits WEP, WPA/WPA2 with IEEE 802.1X or Pre-Shared Key
- Support encryption, including WEP, AES, or TKIP, over wireless inter-AP links (WDS)
- Wireless LAN segmentation, Disable SSID Broadcast
- Support client-isolation so that clients are isolated from each other under one AP
- Support QoS tags over wireless inter-AP links (WDS)
- Support IEEE 802.11e Wireless Multi-Media (WMM) to fulfill bandwidth thirsty multimedia applications such as voice, audio and video

Excellent Solution for Community WLAN

- Each AP module is capable of emulating up to 8 virtual APs (VAPs) simultaneously
- With the capabilities of multiple-SSID and VLAN tag association, OWL800 allows equipment-sharing among different franchises; moreover, its QoS feature enables differentiated service operations
- Multiple OWL800's can be managed under an external WLAN controller to form a managed WLAN solution

[1] **VLAN** is short for Virtual Local Area Network. **QoS** stands for Quality of Service. Both technologies rely on additional tags in the traffic for network devices to process accordingly.
[2] A Wireless Distribution System (**WDS**) is a system that enables the wireless interconnection of access points in an IEEE 802.11 network.
[3] **AAA** is short for Authentication, Authorization, and Accounting

SPECIFICATIONS

4ipnet® OWL800

Ethernet Interfaces

- Two 10/100 Ethernet with PoE input (PoE 1, PoE 2)
- LAN: When in AP mode, both PoE1 and PoE2 are used as LAN ports
- WAN: when in gateway mode, PoE1 is used as WAN port. The supported WAN connection types are Static IP, DHCP, and PPPoE

Wireless Interfaces

- Frequency band:
  (1) a mode: 5.15~5.35 & 5.725~ 5.825 GHz for US
  4.9~5.35 GHz for Japan
  5.15~5.35 & 5.47~5.725 GHz for ETSI
  (2) b/g mode: 2400~2483.5 MHz (for US, ETSI, Japan)
- Modulation:
  (1) a mode: OFDM with BPSK, QPSK, QAM, and 64QAM
  (2) g mode: OFDM with BPSK, QPSK, QAM, and 64QAM
  (3) b mode: DSSS with DBPSK, DQPSK, and CC
- Transfer data rate (with auto-fallback)
  (1) 802.11a/b/g: up to 54 Mbps
  (2) 802.11g (Super mode): up to 108 Mbps
  (3) 802.11a (Turbo mode): up to 108 Mbps
- Radio transmit power:
  (1) a mode (up to 18dBm),
  (2) b mode (up to 19dBm),
  (3) g mode (up to 19dBm)
- Sensitivity:
  (1) a mode (up to -87dBm),
  (2) b mode (up to -94dBm),
  (3) g mode (up to -87dBm)
- Transmission power and channel selection setting

Handover and Roaming

- IEEE 802.11f IAPP
- IEEE 802.11i preauth (PMKSA cache)

AP/Gateway Software Settings

- Capable of being an AP or AP router: AP or Gateway
- Operation role of each radio module: AP, WDS (or Scan on 4th slot)
- Support up to 8 BSSID (VAP) per WLAN module at AP Mode
- Number of connected clients per VAP: 32
- Specific client kick-out
- Support up to 8 WDS links per WLAN module
- Support long distance WDS link setting (slot time, Ack timeout, CTS timeout)
- Support VLAN tag over WDS link
- WDS peer discovery
- STP (Spanning Tree Protocol) weight setting for WDS link backup
- IEEE 802.11e Wireless Multi-Media (WMM)
- IEEE 802.1Q Tag VLAN priority control over WDS

Hotspot Gateway: User Authentication & Billing

- Gateway mode support NAT, DHCP client & server, Firewall, Walled Garden, Walled Garden AD list, and Policies
- Built-in Local account database
- Built-in On-demand account with 10 billing plans
- UAM Web login and 802.1x transparent login
- External RADIUS authentication (up to 4 servers)
- User black list
- Session idle timer
- Total bandwidth limit
- Session limit per user for preventing P2P session hogging
- Auto displayed entry web portal after login
- Mapping policy to external RADIUS class attributes

Wireless Security

- Layer 2 client isolation
- Suppressible ESSID broadcast capability
- WEP 64/128/152-bit
- EAP-TLS/TTLS + dynamic WEP
- PEAP/MS-PEAP + dynamic WEP
- WPA (PSK + TKIP) & WPA (802.1X certification + TKIP)
- 802.11i WPA2 (PSK + CCMP/AES)
- 802.11i WPA2 (802.1X certification + CCMP/AES)
- TKIP/CCMP/AES key refreshing period setting
- WEP, AES or TKIP encryption over WDS link

System Administration

- Web-based management interface
- Remote configuration and management
- SNMP v2
- Event Log
- SYSLOG (to external SYSLOG server)
- Configuration backup and restore
- Firmware upgrade
- RADIUS accounting and accounting update
- Status monitoring of online users
- Customizable User Portal Pages

Networking

- DHCP server, client (v1) and relay (v2)
- HTTP server with SSL
- NAT mode
- DNS client
- SYSLOG client
- RADIUS client
- SNMP v1/v2 client
- Spanning Tree Protocol (STP) with weight setting
- WAN connection failure alert

Hardware

- Rust-free die-cast aluminum case
- Four N-type connectors for external antennas
- Four mini-PCI slots on-board (Two 100mW Atheros 802.11a/b/g radios installed)
- Console port: 1x RJ45 with water seal cap
- Ethernet PoE ports : 2 x 10/100BASE-TX RJ-45
- Patented RJ45 water protectors x 2
- PoE Power Supplying Equipment (PSE)
  AC Input: 90 ~ 264Vac 47 /63 HZ
  DC Output: 48Vdc, 1A
  Pin Assignments and Polarity: (+) 4/5 (—) 7/8
- Operation temperature: -30 ~ 70 °C (-22 ~158 °F)
- Storage Temperature: -40 ~ 85 °C (-40 ~185 °F)
- Dimension(W x D x H): 8.07" x 10.24" x 2.56"
  (205mmx 260mmx 65mm)
- Weight: 5.5 lb (2.5Kg)

Certification and Environmental Test

- FCC, CE, IP68, RoHS compliant
- Vibration test at Frequency 10 to 55Hz with Amplitude 1.5mm
- Surge immunity test at 1KV/2KV/3KV (40Ω) and 10KV/15KV (25Ω)

Package Contents

- 4ipnet OWL800 x 1
- CD-ROM (with User's Manual and QIG) x 1
- Quick Installation Guide x 1
- RJ45-RS232 Console Cable x 1
- PSE with Power cord x1
- Mounting Kit x 1
- Waterproof Connector Pack x 2

**Specifications subject to change without notice.