



Engineered for Challenging Outdoor Deployments

KEYWEST
NETWORKS

PTP • PTMP • 5G NR-U

Overview

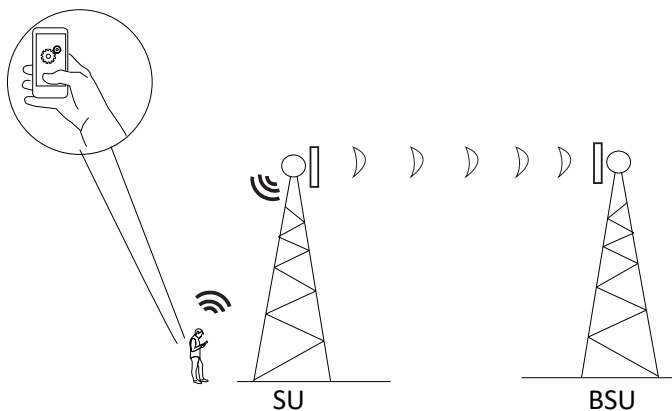
The KeyWest Networks OR100 Series is the world class Point to Point and Point to Multipoint products. It has advanced 802.11ac and 802.11n technologies including MU-MIMO, beam forming and channel bonding to deliver the throughput and reliable coverage required by demanding business

Enterprise Features

- 802.11ac and 802.11n MIMO with up to two spatial streams, built for voice and video
- Dedicated radio for ease of installation and debugging the PTP/PTMP wireless links using mobile app.
- Centralized cloud management system
- Automatic Provisioning with template-based configuration
- Built in GPS module to provide realtime Geo-coordinates, helps in base station and subscriber synchronization
- Role-based administration and automatic, scheduled firmware upgrades delivered over the web
- E-mail and text message alerts upon power loss, downtime, configuration changes, asset theft or loss

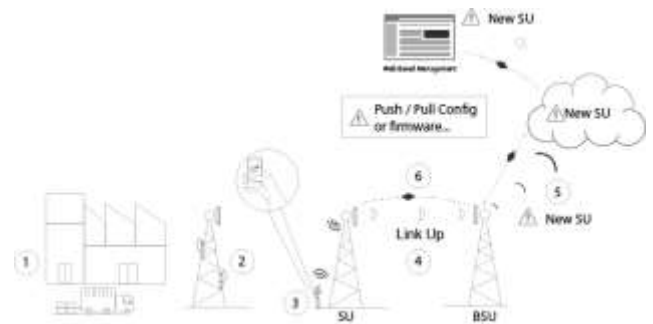
Mobile App Radio Tuning

Installation and radio tuning of a new manufactured device requires wired connectivity, which is not easy in all sites. To ease this problem, KeyWest radios supports dedicated 2.4 GHz radio with Smart Phone App. The App discovers, configures, tests, debugs and commissions the PtP/PtMP links.



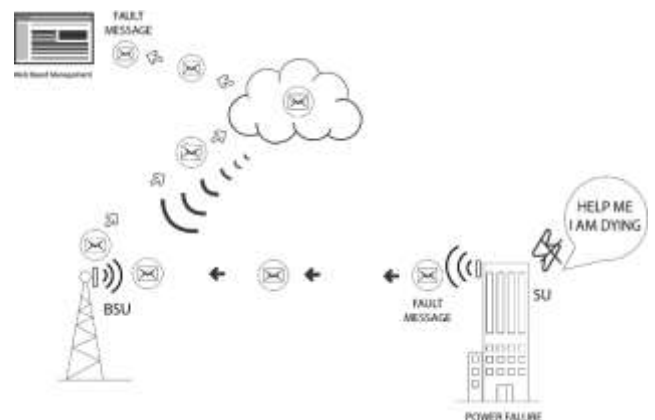
Auto Provisioning

It would be too time-consuming and impractical if each BSU/SU had to be configured individually in a large-scale wireless network deployments. Furthermore, most BSU/SU's in a deployment end up with essentially the same configuration, differing only in a few basic parameters such as operating frequency channel VLAN ID, device name. To increase efficiency and decrease total cost of ownership, centralized cloud management system enables Automatic Provisioning with template-based BSU/SU configuration.



Dying-Gasp

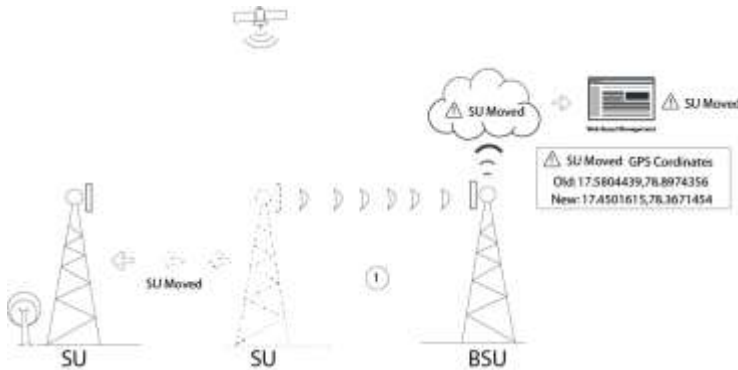
Network connectivity issues due to power failures in enterprise ISP deployments is the major problem leading to many service tickets from customers and time-consuming resolutions. To overcome this problem, KeyWest devices provides temporary back-up power supply with capacitor, that allows for a graceful shutdown and generate the dying-gasp message. These messages gives alerts/emails to the network technician and customer to rectify the issue.



GPS & Asset Tracking

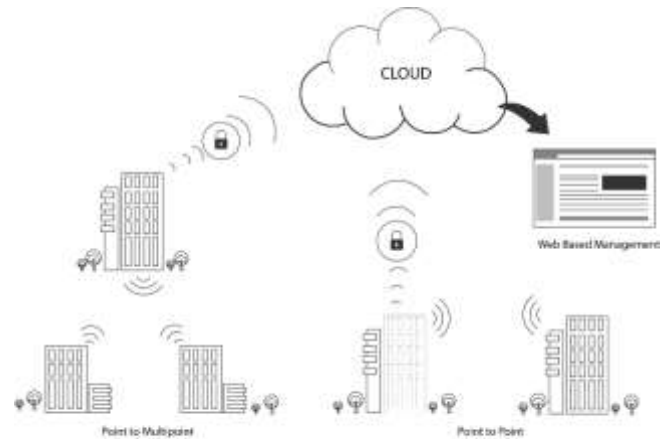
Asset Tracking is a way to keep track of a device's location using GPS coordinates

- Instantly pinpoint any device's real-time location
- View historical heat maps of where devices have been and how long they spent there
- Configure alerts for when devices enter or leave a location to reduce theft and loss



Management Software

Consistent configuration of the devices within your network is essential for maintaining an optimal performance and security posture. KeyWest Networks provides a central web-based management console to control KeyWest devices. Device settings such as IP addresses or SSIDs can be centrally configured for individual devices or pushed to multiple devices. Configuration backups are kept in cloud to assist with replacement or recovery efforts. Device firmware updates can also be centrally managed and controlled, ensuring uniform policy enforcement and allowing you to take advantage of the latest features.



Keywest Network Management Architecture

Network Management System



Overview

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- **Highly Scalable:** Modular design that is scalable to manage upto 2,00,000 radios
- **Highly Available:** It uses raid 10, network attached storage and active-passive cluster configuration
- **Extensible:** Defines a rich set of REST API's for easy integration with north bound NMS, ticket generation and reporting tools
- **Discovery:** SNMP and ICMP based discovery continually adds radios on the network. Discovery also allows importing radios from a CSV file.
- **Automatic Provisioning:** Preconfigured profiles may be applied to reduce to select radios as soon as they are discovered
- **Bulk Operations:** All IP config, scheduled firmware with change in password and reboot can be done in bulk
- **Keep Firmware Up-to-Date:** Apply firmware upgrades in bulk to a set of radios
- **Asset Tracking:** The NMS shows all radios in the network that have been configured or currently unassigned
- **Generate Reports and Tickets:** We integrate with crystal reports and fusion R12 ticketing system to automatically generate tickets

Mobile App



Overview

Service providers and enterprises needs an easy and hassle-free installation and troubleshooting tools during Subscriber or CPE installations. KeyWest Smart-Phone App supported on Android platform provides different installer options to manage the new Subscriber installation. The Key features includes

- Discovers 2.4 GHz wireless networks
- Secure communication with KeyWest proprietary protocol
- Minimal configuration options to establish Subscriber wireless link
- Real Time SNR information during antenna alignment
- RF link performance testing using link test tool
- Diagnostics logs retrieval during troubleshooting

Typical Applications



Public Safety

Public Safety Broadband Applications With 4.9G Hz: The typical Applications in public safety include Voice Applications, Video Surveillance, Real Time Data Access, High data Connectivity. These applications require high bandwidth, low latency and secure broadband connectivity. The cost involved in delivering these demands on leased lines or wired solutions is very high. KeyWest APOR100 Series radios offers cost effective, robust, secure and reliable communications on 4.9 GHz FCC Public Safety band in Point-to-Point and Point-to-MultiPoint deployments. Incorporates state of the art technology including MU-MIMO, beam forming and channel bonding features for higher link performance Uses Proprietary TDMA based wireless access protocol with Low latency (< 2ms), High Performance (Up to 650 Mbps), Reliable and secure (AES 128/256 - Hardware Encryption) data transfer, Supports advanced QoS with real time scheduler to support Voice & Video applications.

KeyWest OR100 delivers ultra-high capacity in 4.9GHz with up to 650 Mbps per cell when using two 40MHz channels. APOR100 also enables deployment flexibility with multiband support (4.9GHz – 5.9GHz range) and is capable of providing outstanding uplink capacity (up to 90%) and SLA for video-centric applications.

Typical Applications



Broadband Connectivity

There is a growing need to deliver Internet services in rural environments, small towns, or even remote island groups where distance, natural barriers such as water, and population density make traditional wired infrastructure impractical. KeyWest point-to-point and point-to-multipoint products are designed to deliver cost-effective, high-speed Internet services in locations where wired infrastructure is substandard or not available. Whether you are a large telecommunications company or a small rural internet service provider, KW builds wireless solutions that deliver high availability, high throughput, and advanced provisioning options.

With decades of experience working to meet the needs of customers like you, our technology has been finely tuned to enable rapid deployment, flexible service offerings, and long service life to ensure fast time to revenue, and continued profitability. KeyWest point-to-point and point-to-multipoint broadband wireless radios deliver high capacity Ethernet and TDM services in various sub 4.9 – 5.9 GHz frequencies. These state-of-the-art wireless access devices offer a multitude of benefits, including:

- Multi-band operation in a single device
- Robust air interface with unique interference mitigation and N-LOS operation
- Quality of service (QoS) and per-subscriber SLA guarantees
- Optimal performance and high spectral efficiency in dense radio environments
- Continuous service in motion with bi-directional, uninterrupted broadband connectivity on the move

Typical Applications



Transportation

KeyWest Networks radio solution is ideal for creating large city-wide or regional transport networks, in campus-style topologies or for the connectivity of distant company branches or warehouses. These types of broadband equipment are ideal for multi-site companies looking to improve efficiency and save costs by replacing legacy networking technologies or by moving away from traditional leased lines from their local operators.

KeyWest Radio solution for data transfer without interruption and video transmission in motion provides wireless services to passengers including streaming video services, video surveillance and security services between train, cars or vessels and data center at the same time. KW solution offers powerful base stations that guarantee high capacity connectivity to vehicles and vessels in motion through ruggedized mobile units. Few highlights are

- High data capacity
- Flexibility in uplink and downlink i.e. support of asymmetrical and symmetrical services
- Support for voice, video and data services
- Ease of network reconfiguration facilitating network adds, moves and changes
- Rapid provisioning of new services
- Asymmetric Throughput for Different Bandwidth Requirements

Product Models	Part Numbers	Descriptions
OR100 Series	OR100-B18	Base Unit – 5GHz 2x2 MIMO with 18 dBi 60° sector antenna
	OR100-X00	Base Unit – 5GHz 2x2 MIMO with 2 N-Type RF connectors
	OR100-C18	Subscriber Unit – 5GHz 2x2 MIMO with 18 dBi panel antenna
	OR100-C23	Base PTP Unit – 5GHz 2x2 MIMO with 23 dBi panel antenna
Hardware		
Chip set	Quad-Core CPU, 4x ARM Cortex A7	
Memory	DDR 256 MB, Flash 32 MB	
GPS	On board GPS info via I2C, 1PPS pulse, GPS Synchronization	
Dying Gasp	20ms (Max)	
Thermal Sensor	To monitor board temperature	
PoE Injector	Passive 48V, 0.5A, +50C, 6KV Surge Protection	
On Side LEDs	Green colour LEDs – Configurable	
Ethernet Connector	RJ 45 with LEDS	
Enclosure Rating	IP67 Compliant	
Ethernet		
Ethernet	1 x GbE Port, 6KV Surge Protection	
Speed	10/100/1000Mbps, Half/Full Duplex, Auto Negotiation	
Jumbo Frame	9K bytes	
Power source	48V 0.5A	
Cable length	STP Cat5e: Max 130 meters FTP Cat6: Max 180 meters	
Wireless		
MAC Protocol	Proprietary polling-based protocol	
MIMO	2 X 2:2	
Modulation Scheme	BSPK, QPSK, 16Q-AM, 64-QAM, 256-QAM	
Frequency Band	4.9 GHz Public Safety	5.1 GHz - 5.925 GHz Broadband Connectivity
		2.4 GHz Radio Management
Channel Bandwidth	20 / 40 / 80 MHz	
Channel Spacing	5 MHz	
Max Transmit Power	Up to 26 dBm (Combined)	
Transmit Power Control	1 - 26 dB, in 1 dB steps. Automatic TPC with configurable EIRP limit	
Dynamic Data Rate Selection	Automatically detect optimal data rate for given link	
Dynamic Channel Selection	Selects optimal channel to operate to maintain SLAs (CIR & MIR)	
Antenna		
Integrated	18 dBi 60° sector 18 dBi panel antenna 23 dBi panel antenna	
External	2 N-Type connectors	
Security		
Encryption	AES-256	
Authentication	Internal MAC Address Control List, Radius based Authentication	

QoS				
Asymmetric Bandwidth Control	Asymmetric UL/DL committed and maximum information rate per Service Flow			
Packet Classification Capabilities	802.1p priority, IPTOS, VLAN ID, IP addresses, ports, Ethernet addresses, IP protocol, and Ether Type. Support maximum 4 SFC's with maximum 32 PIR's			
Scheduling	Real Time priority-based services			
Management				
Remote	Telnet, SSH, Web, TFTP, HTTP, HTTPS, Syslog			
SNMP	SNMP v1 / v2c / v3, RFC-1213, Private MIB			
Smart Phone	Android & IOS based Application for Radio Management			
Antenna Alignment	Alignment aid provided via variable audible tone generation algorithm			
Network				
Operating Mode	Bridging, Routing (RIPv2, IP Tunnelling)			
IP Stack	IPv4, IPv6			
Gateway Features	DHCP Server, NAT, IPsec			
VLAN	STP, 802.1Q: Management VLAN, Transparent, Access, Trunk, QinQ (Double tag)			
MAC-in-MAC	To improve the multicast traffic performance, IGMP Snooping			
Ethernet-OAM	Fault Link Management			
Packet Filtering	MAC, IP, Protocol, Port			
NTP Server	Stratum 1 NTP Server using GPS – less than 1msec accuracy			
Physical Specs				
Models	OR100-B18	OR100-X00	OR100-C18	OR100-C23
Dimensions	371.3 x 371.3 x 101.5mm	229.2 x 250 x 80 mm	229.2 x 250 x 80 mm	305.5x305.5x79.5mm
Weight	2.4 kgs/ 5.48 lbs	1.2Kgs / 2.7 lbs	1.2Kgs / 2.7 lbs	1.68 kgs / 3.7lbs
Environmental				
	Operating Temperature	Storage Temperature	Humidity & IP Rating	Wind loading
	-20 to +65 °C	-50° to +70 °C	95% maximum	180 kmph
	(-58° to 158° F)		Non-Condensing, IP67	
Max Transmit Power				
	5 GHz			
		20 MHz	40 MHz	80 MHz
	BPSK	26 dBm	26 dBm	26 dBm
	256-QAM	23 dBm	21 dBm	20 dBm
RX Sensitivity				
	5 GHz			
		20 MHz	40 MHz	80 MHz
	BPSK	-85 dBm	-84 dBm	-82 dBm
	256-QAM	-61 dBm	-60 dBm	-58 dBm
Package Contents				
	1 Radio			
	1 PoE Injector with AC Power Cable			
	1 Ethernet Cable Cat5e 1.5 mts			
	1 Grounding Cable 1.8 mts AWG10			
	1 Pole Mounting Kit or Axis Mounting Kit (Based on the radio model)			
	1 Quick Installation Guide			

Certification	
	FCC: 47 CFR Part 90, Sections 90.1201 through 90.1217
	FCC: 47 CFR Part 15, Subpart C (Section 15.247)
	FCC: 47 CFR Part 15, Subpart E (Section 15.407)
	FCC: Part 2(Section 2.1091)
	IEC 61000-4-2: 2008, IEC 61000-4-4: 2012, IEC 61000-4-6: 2013
	CISPR 22: 2008 Class A: Radiated Disturbance
	IEC 61000-4-3 Class A: Radiated Susceptibility
	IEC 61000-4-11 Class A: Voltage Dips & Interruption
	IEC 61000-4-5 +/-6kV Class A: Surge Test on AC-Input and PoE data lines
MTBF & Warranty	
	MTBF over 100,000 hours & 1-year warranty

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