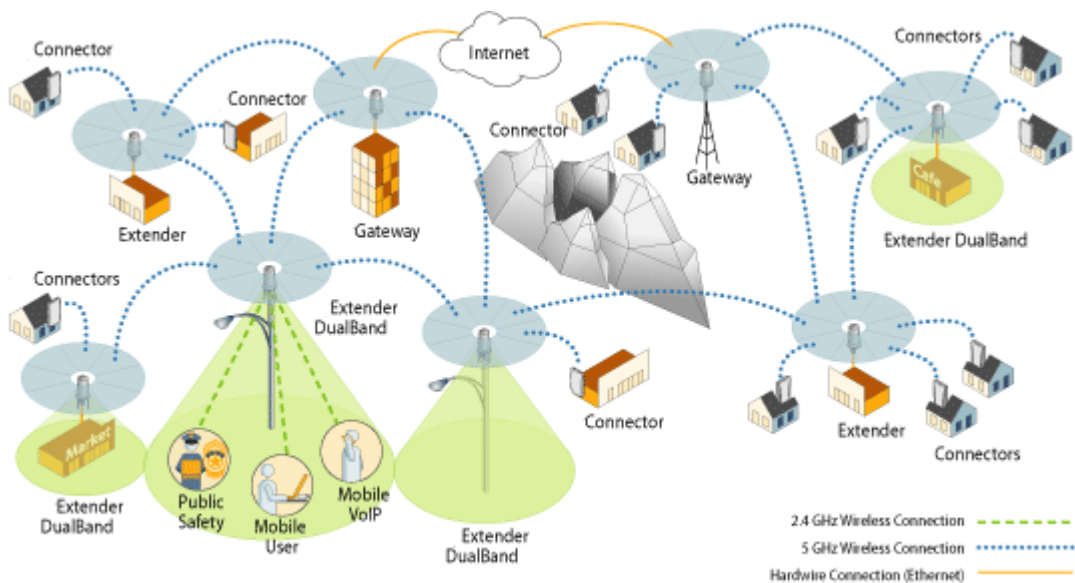


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NON-LINE OF SIGHT WIRELESS SOLUTION

Is a Diacomm fixed wireless access solution that provides non-line-of-sight multimedia access with ease and the minimum investment costs !!! for School, Business and Home user

This is a technology that have the ability to combine VSAT and Wireless technology in order to provide Internet, TV Broadcasting and VoIP to location upto 16Km away from the Central HeadEnd Point without any use of large mast at Subscriber end (all we use is a small Aerial at the subscriber end) at a unlicensed frequency of 5GHz (Non line of sight)



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IPconnect's carrier-class broadband wireless system offers carriers with a cost-effective method to extend last-mile services to areas considered cost-prohibited for DSL and cable. IPconnect's solution provides an effective means of leveraging the unlicensed spectrum to provide high-speed data and voice over IP to subscribers that lie outside the limited reach of the landline infrastructure. With the

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ability to mitigate interference and provide spectral reuse, IPconnect provide flexible service delivery options for a wide range of services, making it an ideal for delivering service to SME (small to medium-sized enterprise) and SOHO (small office, home office) subscribers who demand sophisticated data and high-quality voice services. The system's wireless signals are highly effective in penetrating obstacles and avoiding obstructions through a variety of non-line of sight (NLOS) features, making it as efficient in dense urban environments as it is in suburban or rural locations.

Not only do IPconnect's products keep capital expenditures low, but they also keep operating costs down as well. The IPconnect system provides automatic discovery with built-in self-configuration and self-optimization, making the installation and tuning the wireless mesh network simple. In addition, the system allows service coverage to extend easily and provides carriers with the means to scale capacity to meet the growth in service demands.

IPconnect's solutions also offer the High Availability and quality of service required by carrier networks. The IPconnect solution includes self-healing, redundant networking for full fault tolerance as well as providing the deterministic, low-latency infrastructure required for VoIP. In addition, IPconnect provides a variety of traffic management options to provide network administrators with full control over traffic shaping throughout their network.

IPconnect 's solution can be tailored to fit into existing Operations Support Systems (OSS) as well as provide fault management, configuration, accounting, performance, and security (FCAPS) through IPconnect's EMS, IPconnect Provision and IPconnect Control.

Minimal initial investments and quick deployments are a fundamental part of ' IPconnect's solution, and this leads to immediate customer revenues. Through reduced installation costs, expedited network deployment, and the use of standard IP-based components, IPconnect products deliver carriers a fast return on investment and enable them to build a profitable and sustainable business in every market segment.

With its numerous successful deployments worldwide, IPconnect offers carriers with a way to supplement their wireline networks with a broadband wireless mesh network that is secure, consistently reliable, and affordable.

IPconnect 's innovative broadband wireless solution is the ideal technology for developing, enhancing, and extending advanced broadband networks and services from carriers, service providers, and municipalities. It delivers high-demand services such as broadband Internet access, voice over IP, public access Wi-Fi service, and video surveillance more quickly and less expensively than previously possible.

IPconnect's equipment is field tested and serves as the broadband wireless backbone for over one hundred customers in every corner of the globe. From the dense Chilean forests to the harsh desert conditions of Nigeria, IPconnect products deliver reliable performance even in the most demanding environments.

IPconnect's wireless broadband technology combines carrier-class reliability with exceptional performance, security, ease-of-use, and cost effectiveness. Thanks to a scalable mesh networking architecture, it significantly reduces the time to design and deploy new broadband networks. It also seamlessly integrates

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with existing network systems and management tools to make extending and scaling existing service simpler and less cost-intensive.

IPconnect offers one of lowest total costs of ownership in the industry and delivers a proven business case with a quick return on investment. The IPconnect solution has proved its value and robustness in more than 30 countries around the world in a wide range of applications.



IPconnect offers a wide range of products for carriers, service providers, and municipalities looking to deploy broadband wireless. The mesh infrastructure products provide a flexible backhaul network that is used to service Wi-Fi and/or fixed-wireless subscribers.

Mesh Infrastructure Products

All IPconnect mesh infrastructure products share the same Advanced Antenna Array to provide long-range coverage for the unlicensed 5 GHz band and use IPconnect's Synchronous Mesh Protocol to provide Superior RF Management and sophisticated mesh networking capabilities.

Gateway

A carrier-class mesh base station that provides the gateway between the wired Internet and the wireless backhaul mesh network.

Extender

A high-capacity mesh backhaul device that includes subscriber Ethernet access.

Wi-Fi Subscriber Access

For service providers and municipalities deploying outdoor Wi-Fi access, IPconnect uses an advanced dual-radio solution that separates backhaul and access to provide a scalable, high-performance solution. The backhaul traffic uses the high-capacity 5 GHz mesh network and thus avoids interference with IEEE 802.11b/g Wi-Fi subscribers, who access the network through the standard 2.4 GHz spectrum.

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Extender DualBand

High-capacity mesh backhaul with Wi-Fi subscriber access

Customer Premise Equipment

IPconnect offers low-cost, fixed-wireless CPE that extends broadband wireless to residential and business subscribers through high-gain, directional antennas.

Connector

Low-cost indoor and outdoor CPE

GATEWAY

Carrier-Class Mesh Base Station

The Gateway is a carrier-class base station that connects the wireless mesh infrastructure to the Internet. Unlike traditional base stations, however, the Gateway provides scalable capacity, load balancing, self-healing failover, and expandable coverage with multiple hops to subscribers.

When coupled with the long range features of the Advanced Antenna Array and IPconnect's Reliable Non-Line of Sight (NLOS) capabilities, the network can be extended to reach a broad base of subscribers.

Carrier-Class Functionality

- **Scalable Capacity** - each base station provides 20 Mbps of network capacity, and scaling capacity is as simple as adding base stations.
- **Load Balancing** - multiple base stations provide multiple Internet connections, and IPconnect's Synchronous Mesh Protocol provides traffic segmentation and load balancing across these routes to provide optimal usage of available bandwidth.
- **Self-Healing Failover** - with multiple base stations, any failure to one causes the network to self-heal by dynamically reroute traffic and load balance traffic to the other base stations.
- **Expandable Coverage** - the mesh network allows the coverage area to expand by enabling several hops between the subscribers and the base station.

Product Summary

- **Advanced Antenna Array**
 - 360° coverage through an array of 8 separate 18 dBi, 45° antenna sectors

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- **Frequency bands**
 - 4.940-5.150 GHz
 - 5.150-5.450 GHz
 - 5.450-5.725 GHz
 - 5.725-5.850 GHz
- **Modulation technique**
 - OFDM
- **EIRP**
 - Maximum 44.5 dBm / 28.2 W
 - Controllable to meet country-specific regulations: 4 W average, 2 W average, 1 W average, 4 W peak, and other configurations
- **Range**
 - Up to 10 miles / 16 km
- **Capacity**
 - Up to 20 Mbps
- **NEMA outdoor enclosure**

EXTENDER

High-Capacity Mesh Backhaul

The Extender provides an elegant way to increase coverage and performance for the broadband wireless network. When installing the Extender, it automatically discovers the network and self-configures to provide optimal links and modulation rates, making network deployment and expansion a painless process.

The combination of simple installation and intelligent Synchronous Mesh Protocol makes building a high-performance, scalable broadband wireless network a snap. Instead of worrying about RF engineering and developing sophisticated cell coverage maps, network planners can simply use a map to decide where to place the infrastructure and the Extender will figure out the optimal configuration.

Mesh Expansion Functionality

- **Auto-Discovery** - makes installing the Extender a simple process.
- **Expandable Coverage** - with multi-hop and Reliable NLOS Coverage capabilities, expanding the coverage of the mesh is as simple as installing the Extender.
- **Increased Performance** - deploying Extenders has the advantage of increasing modulation rates and providing routes around obstacles.

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- **Best-Path Routing** - the Extender will develop multiple links and determine the optimal routes for active links and keep standby links for backup.
- **Self-Healing Failover** - IPconnect's High Availability handles any failure in the network by self-healing through dynamic traffic rerouting.

Product Summary

- **Advanced Antenna Array**
 - 360° coverage through an array of 8 separate 18 dBi, 45° antenna sectors
- **Frequency bands**
 - 4.940-5.150 GHz
 - 5.150-5.450 GHz
 - 5.450-5.725 GHz
 - 5.725-5.850 GHz
- **Modulation technique**
 - OFDM
- **EIRP**
 - Maximum 44.5 dBm / 28.2 W
 - Controllable to meet country-specific regulations: 4 W average, 2 W average, 1 W average, 4 W peak, and other configurations
- **Range**
 - Up to 10 miles / 16 km
- **Capacity**
 - Up to 20 Mbps

EXTENDER DUALBAND

High Performance, Scalable Metropolitan Wi-Fi Access

The Extender DualBand's unique integration of a long-range mesh backhaul and industry-standard access point provides great flexibility when deploying Wi-Fi access networks. This allows dense metropolitan Wi-Fi coverage with a high-capacity, redundant mesh backhaul that provides an economical and efficient means of deploying Wi-Fi access in outdoor environments.

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The Extender DualBand's dual radio architecture eliminates the interference between subscriber access and the network backhaul. The 2.4 GHz radio provides an 802.11b/g access point with high-speed connectivity to Wi-Fi clients (laptops, PDAs, wireless VoIP phones) and the 4.9 - 5.8 GHz radio leverages IPconnect's Advanced Antenna Array to connect to the high-capacity, redundant wireless mesh backhaul. The separation of access from backhaul enables the use of multiple non-overlapping channels when deploying a "honeycomb" of Wi-Fi cells, thus providing much greater throughput, subscriber density, network capacity, and scalability throughout the Wi-Fi access network. The result is a cost-effective, elegant network architecture for deploying Wi-Fi access services to metropolitan, municipal, and campus networks.

Metropolitan Wi-Fi Functionality

- **Auto-Discovery** - makes installing the Extender a simple process.
- **Expandable Coverage** - with multi-hop and Reliable NLOS Coverage capabilities, expanding the coverage of the mesh is as simple as installing the Extender.
- **Increased Performance** - separating Wi-Fi subscriber access from mesh backhaul mitigates interference and enhances performance.
- **Best-Path Routing** - the Extender will develop multiple links and determine the optimal routes for active links and keep standby links for backup.
- **Self-Healing Failover** - IPconnect's High Availability handles any failure in the network by self-healing through dynamic traffic rerouting.

Product Summary

- **Advanced Antenna Array**
 - Backhaul: 360° coverage through an array of 8 separate 18 dBi, 45° antenna sectors
 - Wi-Fi Access: omnidirectional 9 dBi antenna with diversity
- **Frequency bands**
 - Backhaul: 4.940-5.150, 5.150-5.450, 5.450-5.725, or 5.725-5.850 GHz
 - Wi-Fi Access: 2.400-2.491 GHz
- **Modulation technique**
 - Backhaul: OFDM
 - Wi-Fi Access: DSSS and OFDM
- **EIRP**
 - Backhaul: maximum 44.5 dBm / 28.2 W (controllable to meet country-specific regulations: 4 W average, 2 W average, 1 W average, 4 W peak, and other configurations)
 - Wi-Fi Access: 35.0 dBm / 3.2 W

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- **Range**
 - Backhaul: Up to 10 miles / 16 km
 - Wi-Fi Access: Up to 1,200 feet
- **Capacity**
 - Up to 20 Mbps
- **NEMA outdoor enclosure**

END USER CONNECTOR

Low-Cost Indoor and Outdoor CPE

A key economic factor for any service provider is the capital and operating costs associated with deploying each new subscriber. When broadband wireless, deployment costs are especially important since RF poses challenges not found with wired services.

IPconnect's Connector CPEs are designed to keep both capital and operating expenditures in check when deploying broadband wireless access. The Connectors are cost-effective indoor and outdoor CPE that can be used for either business or residential access. They connect wirelessly to the mesh infrastructure and provide the subscriber with an Ethernet connection. To combat deployment costs, the Connectors are discovered automatically by the network and use visual feedback of signal strength to ensure proper installation.

CPE Functionality

- **Auto-Discovery** - makes installing the Extender a simple process.
- **Per-Subscriber Rate Limiting** - centrally-managed per-user rate control enables different subscriber service tiers (i.e. 1 Mbps, 2 Mbps, etc.)
- **Long-Range Connectivity** - with a high-power, high-gain antenna, the Connector can be up to 7.5 miles / 12 km away from the mesh network.
- **Residential and Business Subscribers** - the Connector can be used for fixed-wireless service to residential and business subscribers alike.

Product Summary

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- **Antenna**
 - 17 dBi, 28° horizontal x 9° vertical antenna
- **Frequency bands**
 - 4.940-5.150 GHz
 - 5.150-5.450 GHz
 - 5.450-5.725 GHz
 - 5.725-5.850 GHz
- **Modulation technique**
 - OFDM
- **EIRP**
 - Maximum 42.5 dBm / 17.8 W
 - Controllable to meet country-specific regulations: 4 W average, 2 W average, 1 W average, 4 W peak, and other configurations
- **Range**
 - Up to 7.5 miles / 12 km
- **Capacity**
 - Up to 20 Mbps

Managing the IPconnect Network

IPconnect gives network administrators a variety of methods to manage their IPconnect broadband wireless network. Network administrators with existing network management and monitoring applications can integrate IPconnect equipment through industry-standard SNMP. For carriers with custom OSS applications, IPconnect provides industry-standard XML integration options. And for those who still prefer the tried-and-true method of hands-on, manual configuration and management, IPconnect provides a standard command-line interpreter (CLI) with scripting capabilities.

In addition to these options, IPconnect provides a sophisticated Element Management System (EMS) that gives network administrators an advanced, graphical application to manage all IPconnect devices within the network. The EMS provides FCAPS (Fault, Configuration, Accounting, Performance, and Security) management functionality with two applications: IPProvision, which provides configuration and provisioning for all IPconnect devices, and IPControl, which provides fault management, performance monitoring, and graphical management.

IPProvision – Configuration and Provisioning System

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IPProvision is designed to make installing and provisioning the network as easy and as automated as possible. Once the initial configuration is completed within IPProvision, adding devices and subscribers to the network is a simple and painless process.

IPProvision makes it easy to configure a wide range of advanced capabilities, including a wide breadth of Robust Traffic Management features. This allows network administrators to fine-tune their IPconnect network by giving them a simple way of control network traffic. This functionality includes:

- **Per-Subscriber Traffic Shaping** – network administrators can create several tiers of unique upstream and downstream traffic rates, thus enabling tiered pricing and ensuring per-subscriber rate controls.
- **Traffic Filtering** – enables network administrators to remove certain traffic types from the network at either the ingress or egress points, thus maximizing network performance and limiting attacks on the network.
- **VLANS** – allows traffic segmentation and separation for business subscribers, VoIP prioritization, or other custom needs.
- **Traffic Prioritization** – network administrators can prioritize a variety of traffic across the network to enable value-added services such as QoS for latency-sensitive applications.

When configured for automatic provisioning, IPProvision pushes traffic management configurations to all nodes within the IPconnect network, thus greatly simplifying the provisioning process without detracting from overall robustness.

IPProvision also provides scheduling capabilities that allow network administrators to automatically download new software to IPconnect devices in pre-authorized maintenance windows to minimize downtime and ensure subscriber satisfaction.

IPProvision includes several software components to make managing the IPconnect network as easy as possible. This includes:

- MySQL database to store configuration and provisioning data
- FTP server to facilitate over-the-air downloads of device configurations and software upgrades
- DHCP server to automate IP addressing of all IPconnect devices

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