ZyGATE

iAIR 1000

AP1

User’s Guide VER 1.0

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Revision History

2004/4/20	Initial version

1 INTRODUCTION

ZyGATE is a manufacturer of outdoor access points designed under FCC 15.203 regulations in Taiwan. This equipment is designed specifically and exclusively for the ZyGATE licensed service providers and operators. The antenna on the equipment is a Type N connector to make it compatible with the professional installation environment our unit is intended for as it is the standard within that environment. The iAIR1000 is strictly intended for sale to the professional market as it requires sophisticated installation methods and is an integral part of a larger infrastructure that will be sold to ZyGATE licensed operators as a package. The ZyGATE licensed operator network consists of authentication servers and interfaces to telecommunication infrastructure and network infrastructure. The ZyGATE network is to be managed from a central network manager and the equipment to be carefully aligned and tuned in order to provide services. The equipment is not suitable for installation by a non professional as it needs to be configured as a part of the larger ZyGATE infrastructure and will not work in isolation of the ZyGATE authentication server and the rest of the ZyGATE infrastructure. The iAIR1000 uses a standard type connector however it requires installation done only by a licensed professional due to the complexity of the technology and product. The standard connector will be accompanied by a user manual with full and complete specifications of use, installation and maintenance requirements. Installation requires special training by ZyGATE as well as access to keypad, field strength measurements, etc. This is sophisticated, complex and specialized equipment.

PRODUCT INSTALLATION REQUIREMENTS

1. The iAIR1000 can only be installed by a licensed installer; training and access to technical requirements will be provided through the ZyGATE. user guide and through training done by the business partnership agreements with respective customers.

2. The installation will be done in a controlled and licensed environment; and filing of the appropriate documentation as required by local law.

3. Installation requires special training (special programming, access to keypad, field strength measurements made) by ZyGATE of the installation and maintenance teams of the ZyGATE licensed service providers and operators.

4. ZyGATE licensed service providers will be required to have their installation teams trained to do installation of the iAIR1000 and antennas on high sited areas in order to meet the performance and regulatory requirements. This will require professional installation; the installation of the

iAIR1000 must be controlled and installed by licensed professionals. Specially designed antennas and mounting procedures will be required and professional installation needed to ensure the equipment works reliably and compatibly with the complete ZyGATE infrastructure.

5. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the ZyGATE. or its customer shall be used with the iAIR1000. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply. If the unit becomes broken, the antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

6. This standard antenna may be used in a point-to-point application, and possibly may require a tower mount and/or directional antenna. Such use would be applicable in the following uses: data and control signal transmitter located in oil fields; transmitters mounted on trains and train stations; pole-mounted police and/or emergency vehicles.

7. Permanent attachment of the iAIR1000 can be achieved by various means such as factory application of a permanent cement or epoxy to a standard antenna connector. The iAIR1000 will specify the certification application type of adhesive to be used and must confirm that the adhesive will be applied at the factory – prior to shipment.

8. The installer must ensure that the iAIR1000 and antenna is properly installed so as not to exceed the limits for which it has been designed.

9. Compliance is required for special waterproofing procedures, insulation against lightening and other weather conditions.

10. Also requires special mounting brackets for instillation in professional environments.

PRODUCT APPLICATION & USE

1. The intended use and design of the iAIR1000 is for use by utility companies, large telecom corporations to build out or compliment their current infrastructure for radio frequency and telecommunications signaling.

2. The technology offers high speed data access but is truly mobile and devices work well in fast moving vehicles as well as when stationary.

3. The iAIR1000 provides the gateway linking company’s backbones. Leveraging intelligent routing with the ZyGATE. technology through the standard antennas. The seeds contain SIM’s built within providing security and authentication parameters, and billing processes back to the service provider. Providing internet data, gaming, GPS reporting, streaming video and video conferencing.

4. The iAIR1000 ct as relays for other client devices in the network and support multi-hop routing to extend communication range.

5. Distributing intelligence to network nodes. The iAIR1000 is a self-load balancing effectively solves the traffic congestion.

PRODUCT MARKETING & SALES

1. Certain market segments will be targeted containing existing user groups that have the buying power to

convert to and purchase enhanced wireless mobile technology. Such user groups are provided by existing fixed and mobile voice telephone users, and by existing dial-up, broadband, and wireless data users.

2. The marketing strategic is also focused by country to find prospective customers with high potential for wireless usage and buying power, and for countries with a demand for wireless services that is not currently served. The countries targeted and used in data analysis were selected for accessibility to unlicensed bands and suitable potential service providers and hardware manufacturers.

3. Licensees will be recruited primarily from existing service providers and manufacturers that are already successful in Internet, paging, or mobile phone service industries.

4. ZyGATE will provide products and services through service providers, its main sales strategies will be to empower service providers and to provide on-going service and support to service providers. Service providers will focus on local markets and offer flexible services to niche markets.

5. Multiple service providers can be started with a relatively low cost of entry. ZyGATE will provide licensing companies already in the service industry (such as Internet, paging, or mobile telephone service companies), it will be possible to qualify and license service provides in a short space of time.

6. ZyGATE will provide all starter ingredients (such as prototypes) on a discounted basis to Widenet service providers for smooth transition and integration into existing client bases, authorization, and billing.

7. All equipment will be sold only to ZyGATE qualified network operators that will be purchasing the equipment as a part of an infrastructure to provide services.This document is to describe the system architecture and operation of iAIR1000 demonstration kit AP1. This kit includes one gateway (iGW1800), three access seeds (iAS1600) and 5 Ethernet routers (WER120).The target users of this demo kit are distributors. The purpose of this kit is to demonstrate the operation and management of iAIR1000 network system. This document contains detail installation procedures, operation guide and application scenarios.

1.1 Network Architecture

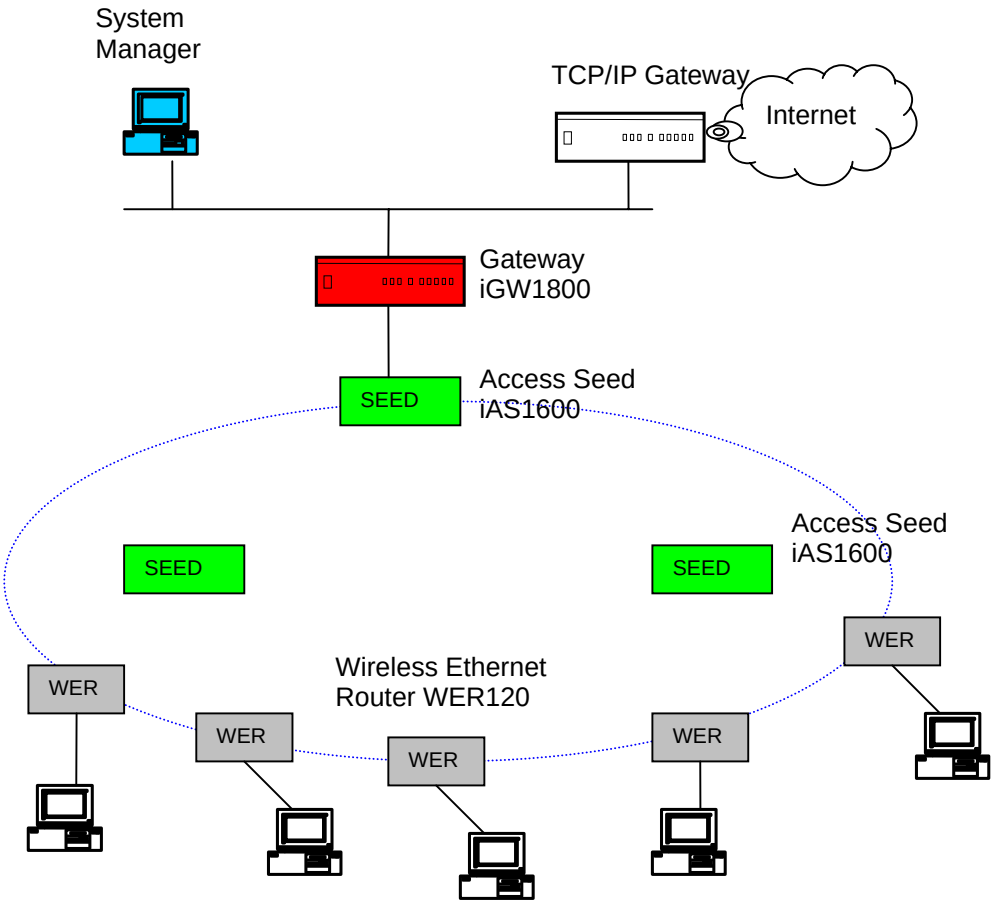


Figure 1 iAIR 1000 System Architecture

1.2 System Components

1.2.1 iGW1800

iAIR Features

- Protocol gateway for iAIR and TCP/IP translation
- Configuration management for iAIR1000 networks
  - Network devices (iAS1600 and WER120) registration and provisioning
  - IP address assignment and management
  - Security management
  - Master controller for iAIR network

TCP/IP Features

- IP management
  - DHCP Client/Relay/Server

- Multi-NAT / SUA (Single User Account)

- IP Routing
  - UDP, TCP, ICMP, ARP, RIP v1 and RIP v2
  - IP Alias

1.2.2 iAS1600

iAS1600 is an iAIR relay device which transport the data traffic between iGW1800 and WER120.
iAS1600 can be wire-connected to iGW1800 through normal Ethernet (RJ45) cable.
In this demo kits, at least one iAS1600 must be connected to iGW1800.
For normal deployment, the iGW1800 can wire-connected to maximum six iAS1600.

1.2.3 WER120

WER120 is an end user device that provides the Internet access for users. Using 2 dbi antenna, the WER120s is capable of indoor internet access for most of home users. If you are car users and you want to access the internet in a car anytime, anywhere, a 5 dbi omni antenna with 2m long RF cable is required. Our DEMO kit uses 2 dbi antenna for default shipping. 5 dbi and 2m long RF cable are optional.

This device complies with Part 15 FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference receieved including interference that may cause undesired operation.

1.3 Software Components

1.3.1 iSysView

iSysView is a network management system running on a PC.
The basic requirements of PC is as below.

Windows 2000/NT
Pentium II 300MHz or above
Minimum memory requirement 256MByts
Minimum disk space requirement 20Mbytes

1.3.2 TFTP Server

For network provisioning, a TFTP server is required. The TFTP server Pro2000 software (version 3.6.0)

developed by Walusoft company, is recommended for our iAIR DEMO kit. It is also possible if you use different TFTP server software.

1.3.3 iSysUtil

iSysUtil is a network calibration and diagnostic tool running on a PC. The PC should be connected to a WER120 for normal operation. The requirement of PC is as below.

Windows 2000/NT

Pentium II 300MHz or above

Minimum memory requirement 256MByts

Minimum disk space requirement 20Mbytes

…

2 INSTALLATION

2.1 iGW1800 Installation

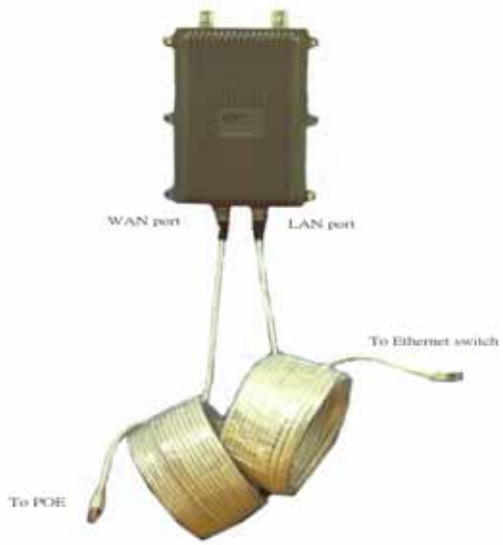
2.1.1 Packing List

Before installation of iGW1800, please make sure you have following check-list items.

- iGW1800
- LAN Ethernet Cable
- WAN Ethernet Cable
- Indoor power injector
- 9V Power supply

2.1.2 Connectors

The iAIR gateway iGW1800 has two Ethernet interfaces: LAN and WAN interface.



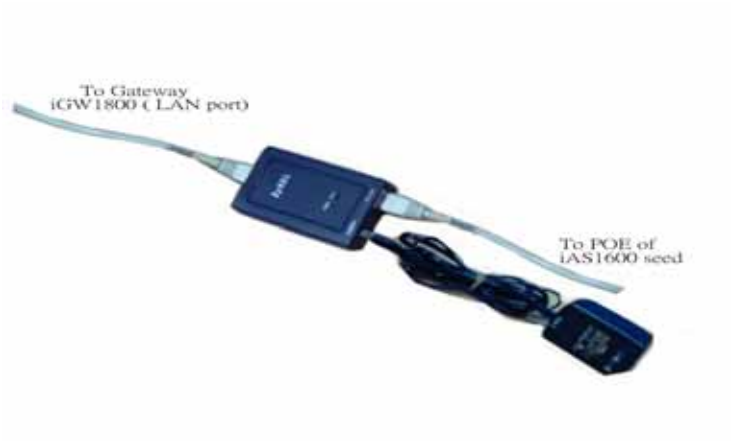
Notes:

Please be reminded that the iGW1800 has no wireless interface.

iGW1800 is originally designed for outdoor installation, however, it can also be installed indoor. The indoor iGW1800 has improved the performance while connecting the seed iAS1600 with the CAT 5 LAN cable.

2.1.3 Power Connector

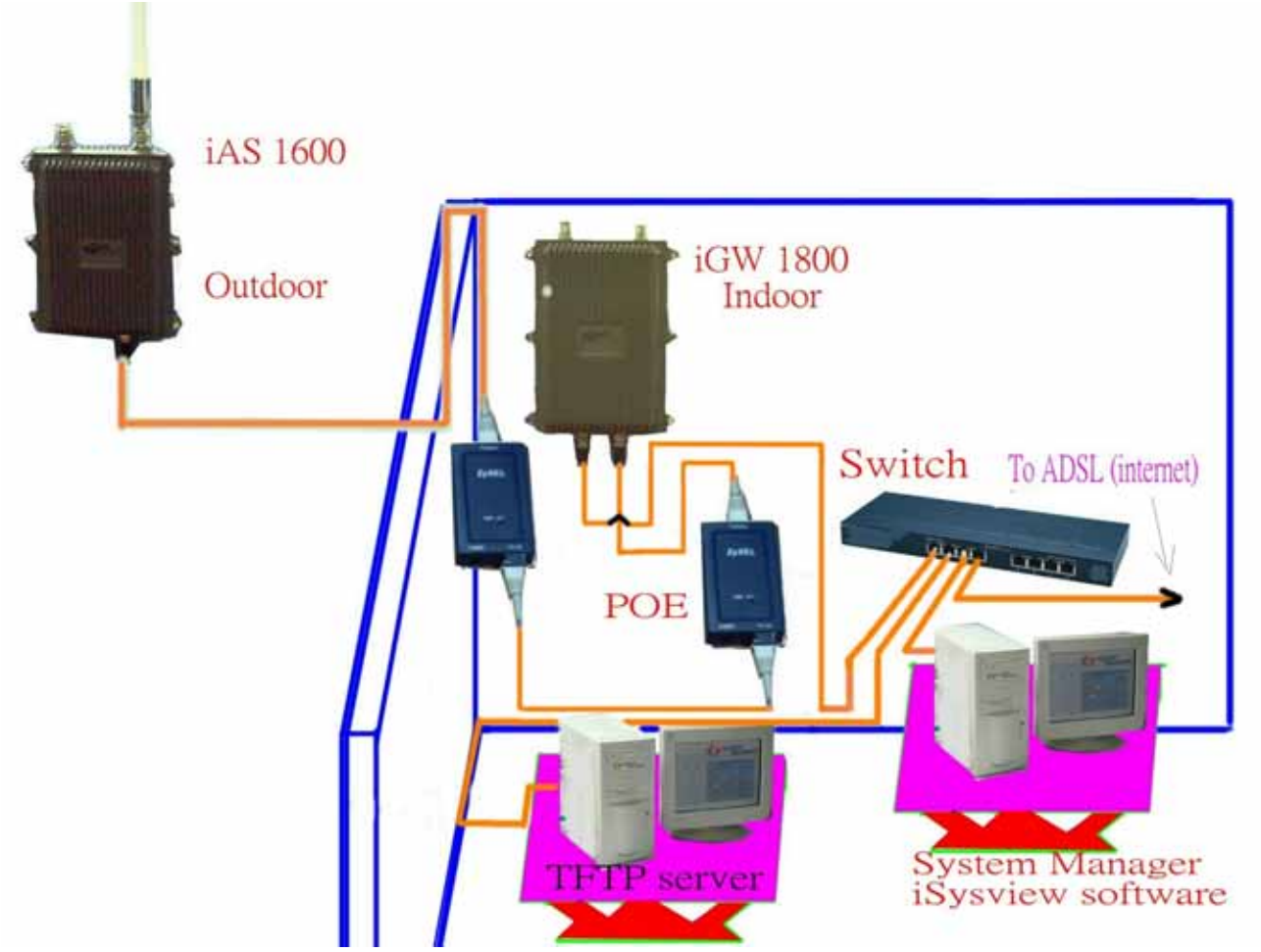
iGW1800 is powered by the power over Ethernet cable on the LAN port. The connection diagram is as below:



Please don't make wrong connection to the WAN port. The wrong connection won't damage it but will not power up.

2.1.4 Wire connection to iAS1600

For this demo kits, iGW1800 must be connected to at least one iAS1600. Following is a wiring diagram for wired seed, POE, Gateway , system manager and TFTP server connected with Ethernet switch.



Wiring diagram of wired seed and gateway through Ethernet Switch

2.2 iAS1600 Installation

2.2.1 Packing List

Before installation of iAS1600, please make sure you have following check-list items.

- iAS1600
- LAN Ethernet Cable
- Indoor power injector
- 9V DC Power supply
- Antenna 8dBi
- Outdoor mounting bracket

2.2.2 Wire connection to iGW1800

At least one iAS1600 must be wire connected to iGW1800. Normally this iAS1600 will be installed at the roof top of your building.

2.2.3 iAS1600 Location Guideline

The other two iAS1600S must be installed on the sites capable of covering the whole area for your demonstration. In order to have better performance or longer communication distance, it is recommended that no obstruction is allowed between seeds iAS1600.

iAS1600 Location Guideline

2.2.4 Hardware Description

The content of the iAS1600 are described below.

1. The outdoor unit

The outdoor unit has one antenna port, one data/power port and one console port. The antenna port is N-Type female connector used to connect to the omni-directional antenna or to the RF cable then to the flat panel antenna. The data/power port is used to link to the cable from the power injector. When the outdoor unit and the network/power injector are connected together, the outdoor unit is turned on and initialized if the network/power injector in the indoor is also installed successfully. The console port is only used at the initial setup and is used to connect to the antenna alignment kit. The outward appearance of the outdoor unit are shown on Fig.2.1, 2.2 and 2.3.

Figure 2-1 Front view of iAS1600

Figure 2-2 Bottom view of iAS1600

The physical interfaces on the bottom of iAS1600 is the POE (Power over Ethernet) and RS-232 port. Both connectors are special designed for water-proof. Table 2-1 describes the function of those connectors

Table 2-1 Connectors of bottom

Function	Label	Interface	Description
Signal & Power		8-pin female connector with special water proof	Connecting to the indoor interface unit supplying the power and signal
Console (TBD)		8-pin male connector with special water proof	Connecting to the PC for diagnostics & troubleshooting

Figure 2-3 Top view of iAS1600

The major interfaces on top of iAS1600 is the RF antenna connector with special design for water proof. Table 2-2 describes the antenna connector.

Table 2-2 Antenna connector of the top

Function	Label	Interface	Description
Antenna		N male RF connector with special water proof	Connecting to the outdoor antenna

2. Antenna (Option)

There are three kinds of optional antenna used for point to point or point to multi points systems.

A. *Omni antenna* : This antenna is used in the point-to-multi-points (PTMP) mode. The antenna is connected directly to the outdoor unit. The RF cable is not needed. The appearance of the antennas is shown below.

Figure 2-4 Omni Antenna

3. RS-232 cable

The RS-232 cable is used to connect the console port of the outdoor unit and the antenna alignment kit or the workstation. The appearance of the RS-232 cable is shown below.

Figure 2-5 RS-232 console cable

4. Cat-5 cable with special connector

The Cat-5 cable with special connector has 20m in length. It is used to provide the path to deliver power for the outdoor unit and the data communication. The optional cable length of 50m, and 90m are also available for specified application. The appearance is shown below.

Figure 2-6 Category 5 cable

5. Grounding wire

The grounding wire is used to provide the grounding path for the outdoor unit to minimize the impact of lightening and surge. The physical appearance of the grounding wire is shown below.

Figure 2-7 Grounding wire

6. Mounting bracket

The mounting kit is used to provide a good support for the outdoor unit and the flat panel antenna. Please follow the installation procedure to mount the outdoor unit and the flat panel antenna. The contents of the mounting kit are shown below.

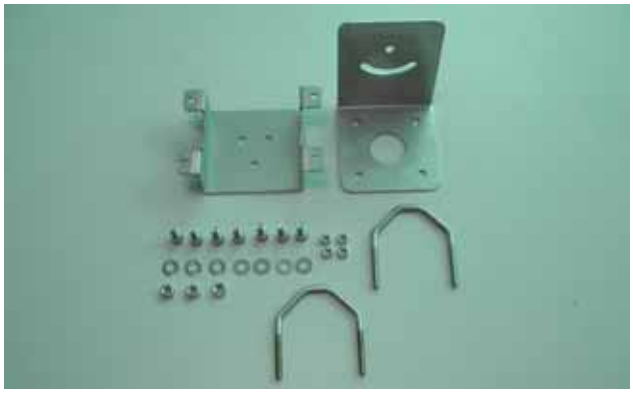


Figure 2-8 The Mounting kit

7. Network/Power Injector

The network /power injector is used to combine the data stream and power into one cable. It has three ports. The port named *POWER* is for 9V power from the switching power adapter. The port named *TO LAN* is connected the customer premises equipment (CPE) by Cat-5 cable. The port named *TO RADIO* is connected to the outdoor unit by the cable described in item 4.

Please be noticed that before you turn on power of the POE, always ensure the "*TO RADIO"* port is well connected with the CAT-5 STP cable. Before you turn off the POE power, ensure the "*TO RADIO"* port is well connected with the CAT-5 STP cable.

The appearance of the network/power injector is shown below.

Figure 2-9 Network/Power Injector

8. CAT-5 Straight-through Ethernet cable

The CAT-5 STP cable is 2m in length. This cable is used to connect the network/power injector and the CPE. The picture of this cable is shown below.

Figure 2-5 Ethernet Cable

9. Switching Power Adapter

The switching power adapter is to supply the power for the outdoor unit. The input to this adapter is 100~240VAC and the output is 9VDC. The picture is shown below.

Figure 2-6 Switching Power Adaptor

2.3 iAS1600 Wireless Connection

The Wireless connection of the iAS1600 will be shown in the following picture.

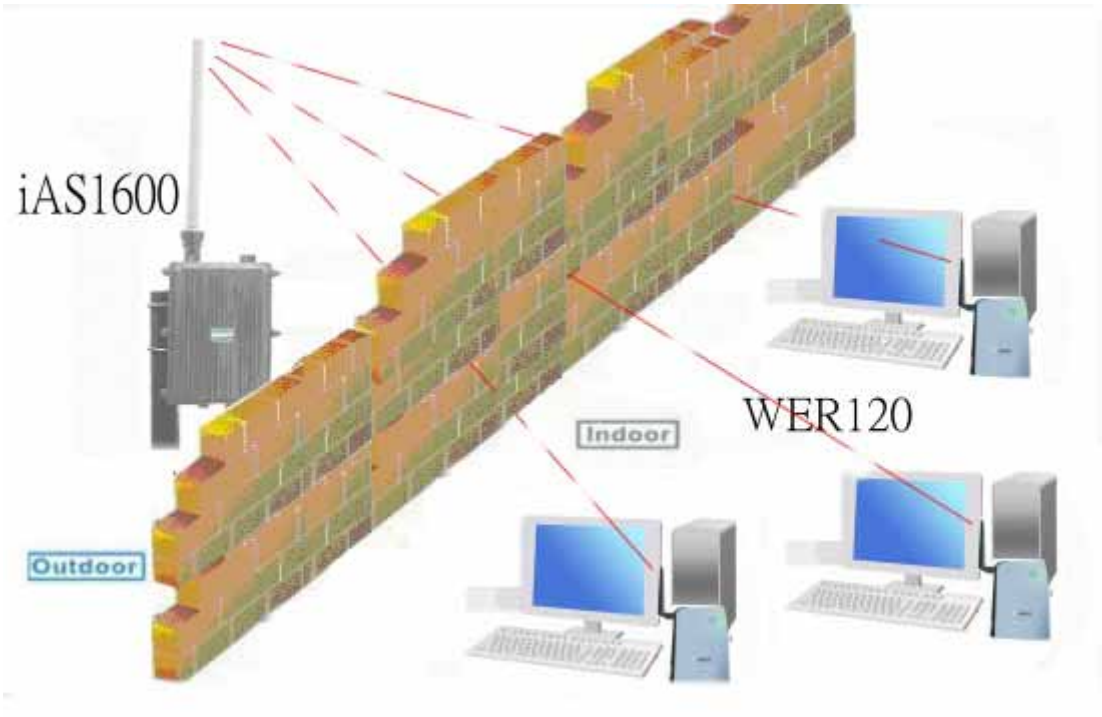


Figure 2-7 Wireless connection of iAS1600 using Omni antenna

2.4 Installation Procedure

The installation procedure of iAS1600 is described as below:

1. The whole installation procedure begins from the indoor to the outdoor installation.
2. Choose an appropriate place for the network/power injector. You might hang it on the wall or just place it on the desk.
3. Connect the *TO LAN* port of network/power injector and your CPE by the Cat-5 cable (2m in length).
4. Plug the switching power adapter into the 110V/220V outlet. Plug the output 9V into the network/power injector *POWER* port.
5. Connect the *TO RADIO* port with Cat-5 cable (20m in length) and pull the special connector end of this cable to the outdoor.
6. When the AC power is turned on, the LED labeled as *PWR* will light up.
7. Assemble the mounting kit like the one shown in the following picture.

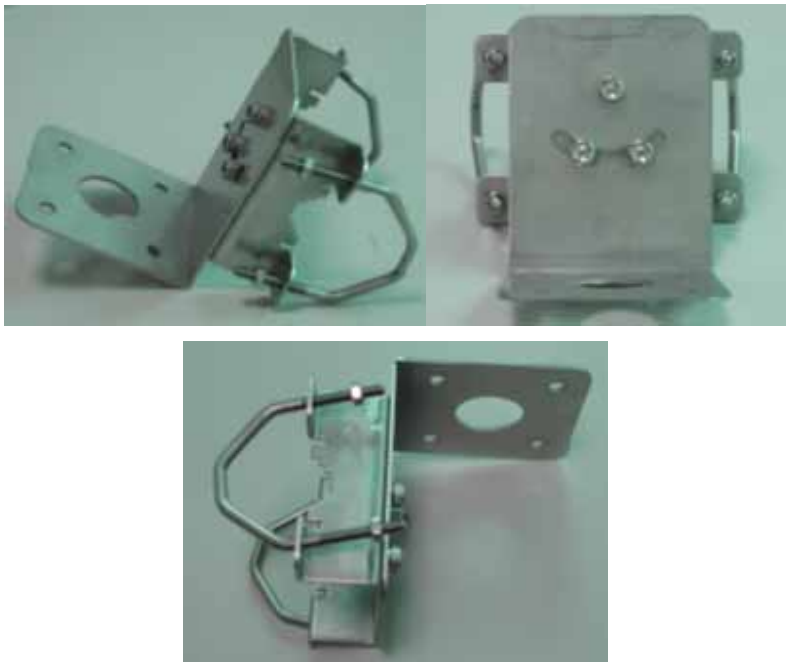


Figure 2-8 The mounting kit assembly

8. When the outdoor unit is accompanied with an omni-directional antenna, only one mounting kit is required. When the outdoor unit is accompanied with a flat panel antenna, two mounting kit is required.
9. It is necessary to choose an appropriate place for the outdoor unit installation. The paths between sites you plan to install for the iAS1600 should be clean for line-of-sight.

- **Install the outdoor unit with the omni-directional antenna**

10. To assemble the mounting kit with the outdoor unit, the grounding wire should be connected with the mounting kit together.
11. Connect the omni-directional antenna to the antenna port of the outdoor unit.
12. Fasten this assembled unit to a stable rod.
13. Connect the other end of the grounding wire to the ground position.

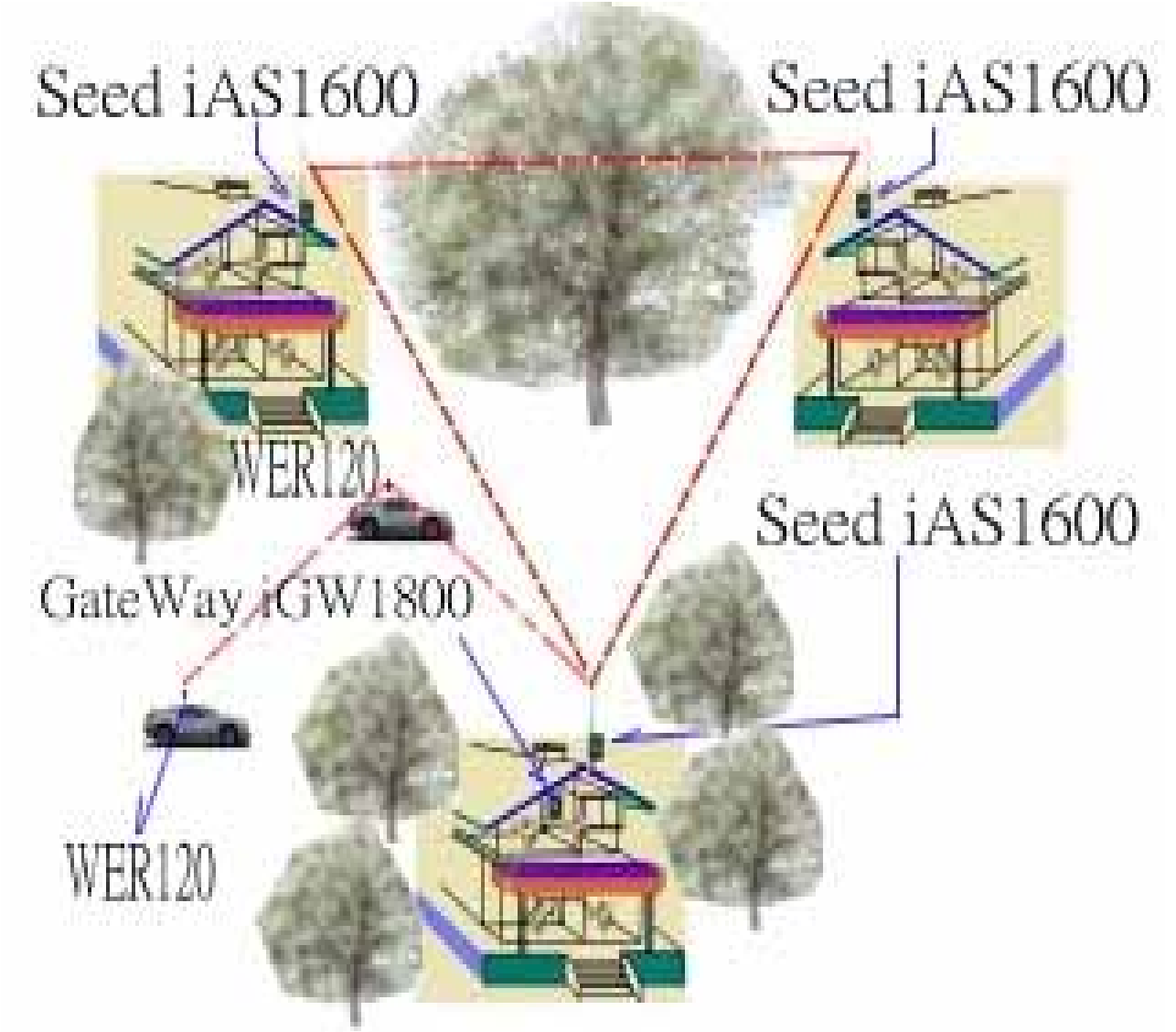
- **Install the outdoor unit with the flat panel antenna**

14. To assemble the mounting kit with the outdoor unit, the grounding wire should be connected with the mounting kit together.
15. Connect the RF cable to the antenna port of the outdoor unit.
16. Assemble the mounting kit with the flat panel antenna.
17. Fasten this assembled unit to a stable rod.

18. Fasten flat panel to the rod also.
19. Connect the other end of the RF cable to the flat panel antenna.
20. Connect the other end of the grounding wire to the ground bar of your site.

2.4.1 iAS1600 Antenna Installation Guide

Please note that the seed must be deployed with LOS (line-of-sight) for better performance of demonstration. The maximum distance between wireless and wired seeds is recommended to be in the range of 250m to 1km. The shorter distance, the better throughput. As the height of building and the deploying environment will influence the signal strength and performance of the whole system, it is recommended that you install the seed on top of a house or building, following is an example for the installation of iAS1600 and iGW1800. Note that the iGW1800 is installed on the wall of a house.



2.5 WER120 Installation

2.5.1 Packing List

Before installation of WER120, please make sure you have following checklist items.

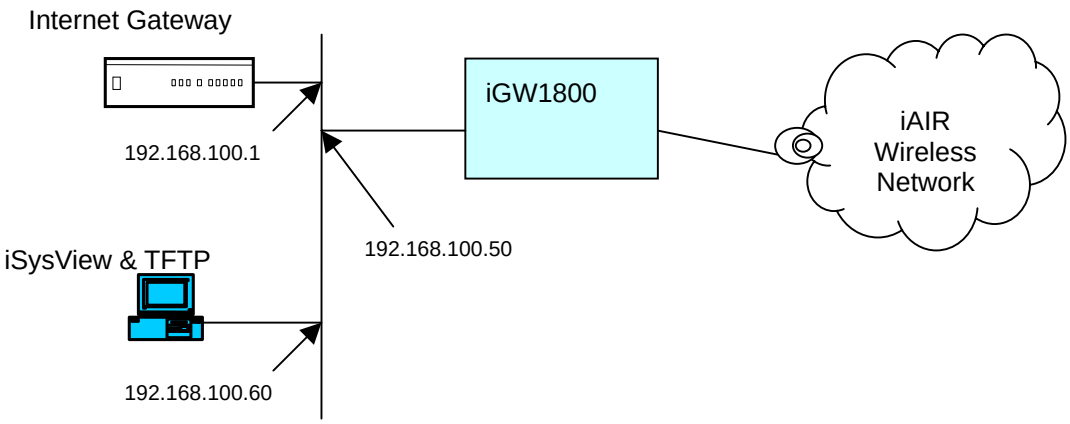
- WER120
- LAN Ethernet Cable
- 5V Power supply
- Antenna 2dBi

For special application, the 7dBi with extended RF cable is also available.(optional)

2.6 Plan your TCP/IP address

This paragraph describes how to provision the whole demo system. When you receive this demo kits, please follow the procedures to provision them. Before provisioning, please install the iSysView on your PC. You must have following information before making the demo kits running. Please find out the information and write it down.

Internet Gateway IP address and network mask For example: 192.168.100.1,mask: 255.255.255.0
iSysView server IP address For example: 192.168.100.60
iAIR iGW1800 WAN port IP address For example: 192.168.100.50



2.7 Register all device MAC addresses

In iSysView, please register all MAC addresses of iAS1600 and WER120 in the configuration menu.

*TBD

3 SOFTWARE USER'S GUIDE

3.1 iSysView User's Guide

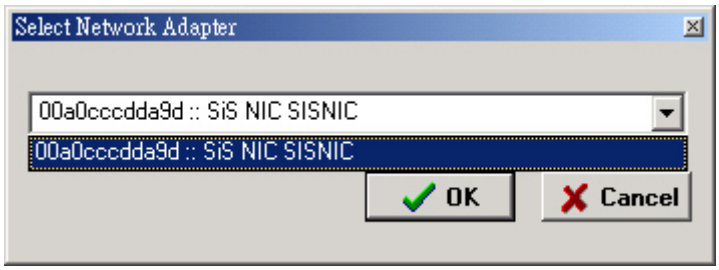
The iSysView contains following functions for system manager to handle the iAIR system.

1. An interface which allows the manager to set up the GATEWAY. It includes the LAN and WAN port setup.
2. An interface which allows the manager to set up the devices such as the seeds (iAS1600) and subscriber units(WER120). For example, the LAN port setup.
3. A function which allows the manager to manage the system by monitoring the status of system device. For example, the function to view power transmitted and received by individual device of the system.
4. Diagnostic function which helps system manager to identify the troubled device .

3.2 iSysUtil User's Guide

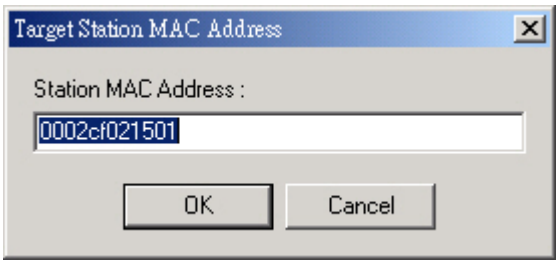
The iSysUtil contains following functions to handle the subscriber units.After executing the iSysUtil software on your PC, click the top-left icon " Option", there are two functions for your setup:

1.Select Network Adapter: your PC will show all the network adapter options (detected by Windows automatically), You need to confirm the actual network adapter. Following pictures show the items to select the network adapter.

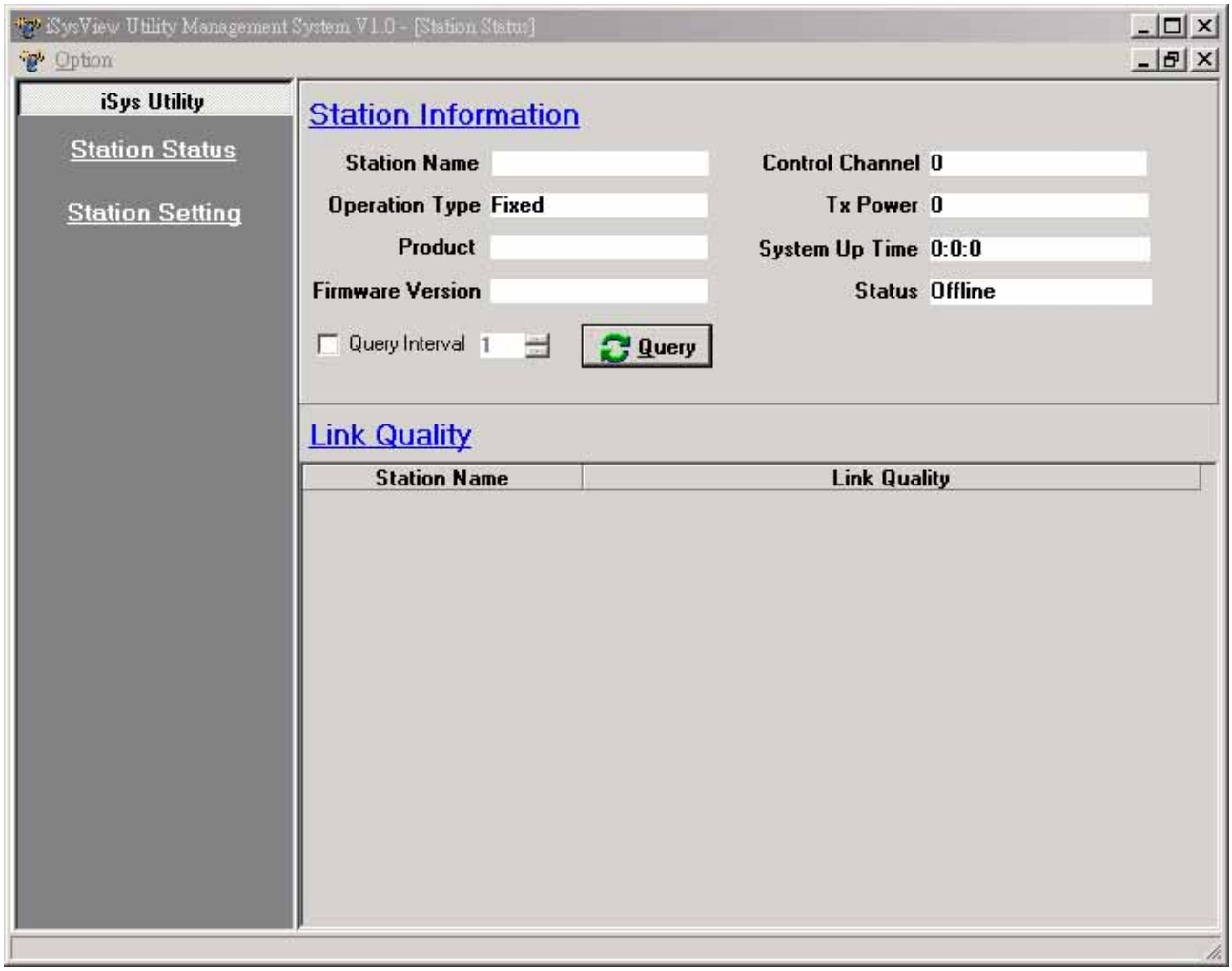


After finished the "network adapter " selection, click the "Target Station MAC" check box

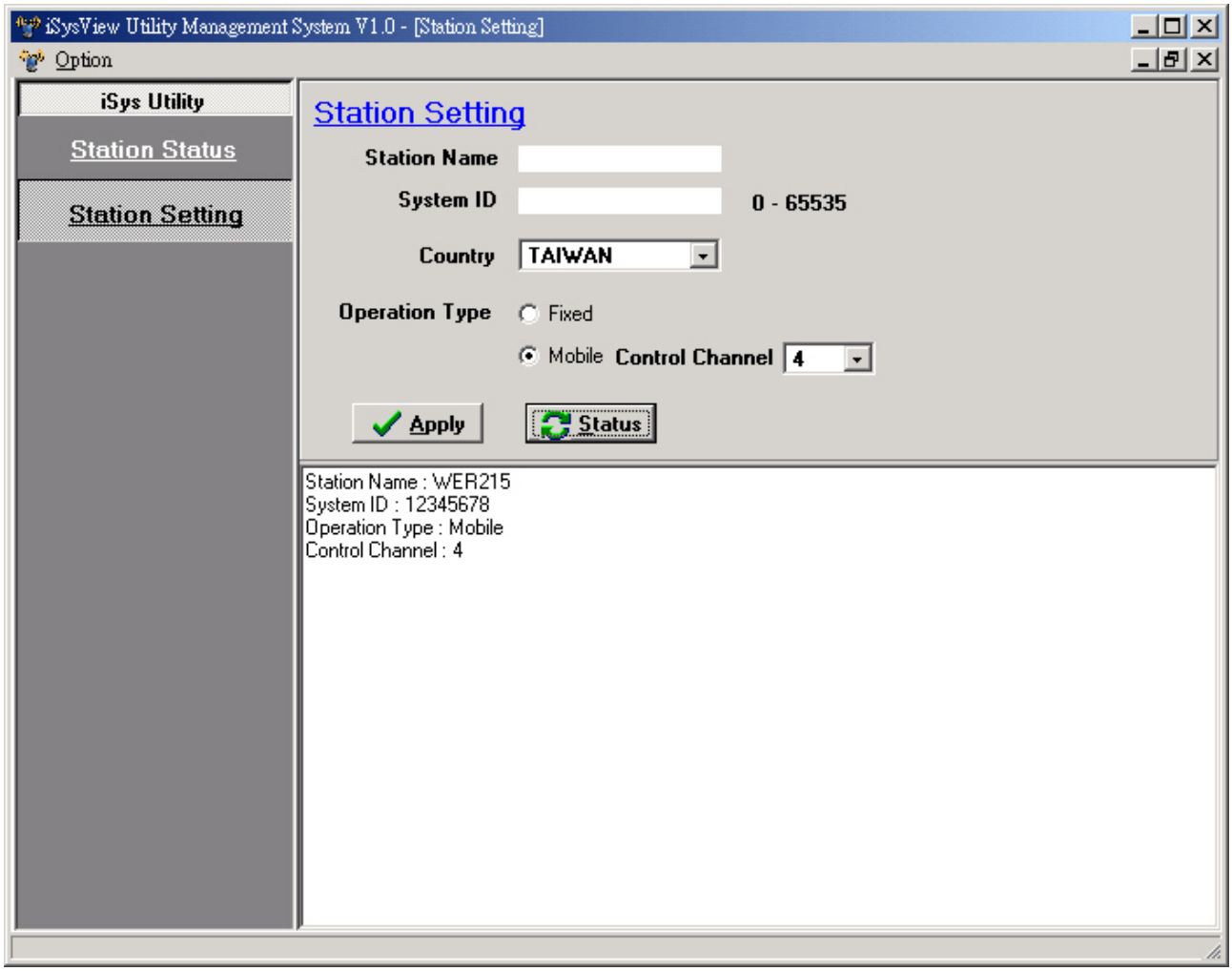
You need to fill in the MAC address for your device.



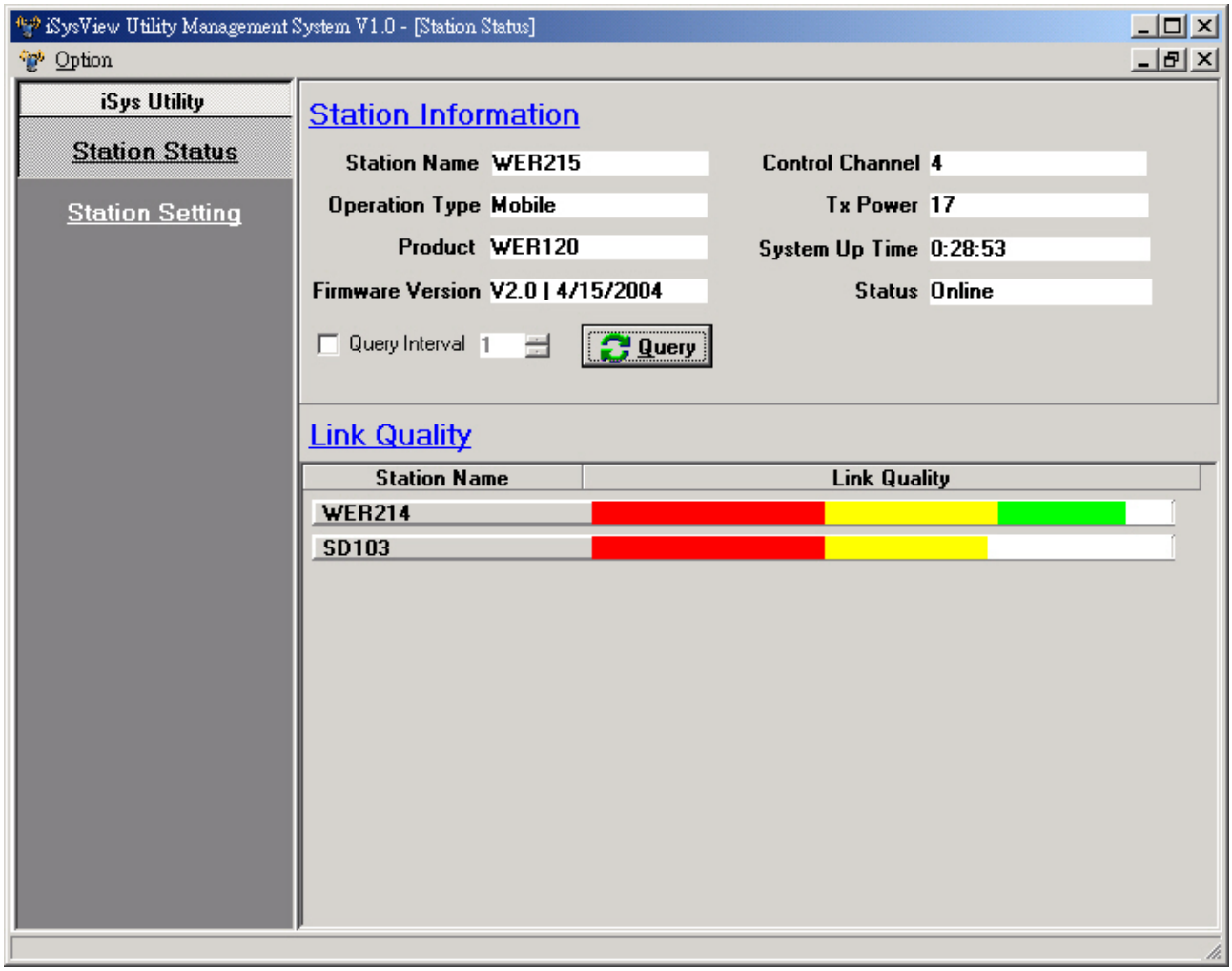
When the MAC address is completed, blank station information is shown as the following figure.


iSysView Utility Management System V1.0 - [Station Status]
Option
iSys Utility
Station Status
Station Setting
Station Information
Station Name
Operation Type
Fixed
Product
Firmware Version
Control Channel
0
Tx Power
0
System Up Time
0:0:0
Status
Offline
Query Interval
1
Query
Link Quality
Station Name
Link Quality

Click the "Station Setting" check box to set up the station name, System ID, country and operation type.The System ID is limited in the range of 0 to 65535. Fill this item with any number between 0 and 65535.The "Country" option is designed to automatically define the frequencies for channels allowed by local law. If the "operation type" is selected as "fixed", the subscriber unit is configured to be used in a fixed position. For example, A home user may need to select this item as "fixed" .The subscriber unit will re-scan the frequency channel each time it lost link with wireless iAS1600.If the operation type is selected as "mobile", the subscriber unit is configured to be used in a mobile environment. For example, A car user may need to select this item as "mobile". After all the items are completed, click "Apply" to save the settings to memory. The Mobile Control Channel allows you to select a channel for your wireless mobile internet application.



Click the "Station Status" check box to double check the setting.



FCC Notices

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

CAUTION: Change or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

iAIR Network 1000

iAS 1600
Intelligent Access Seed

The iAS1600 intelligent Access Seed of iAIR Network 1000 is a rich-featured wireless router that is primarily deployed to guarantee wireless coverage in geographical area, campus, or in-building application in iAIR Network 1000 mobile broadband system. Empowered with multi-hopping & multi-routing technology, iAS1600 enables Non-Line of Sight (NLOS) communication between intelligent Gateway and Wireless Ethernet Router(WER). Providing alternate routes selection between intelligent Gateway and WERs flexibly and effectively extends coverage range. Network robustness is realized as traffic can be instantly recovered away from any failure of Access Seed or subscriber devices. Acting as a hopping point for subscriber devices, iAS1600 enables subscriber devices to extend connectivity range. iAS can be configured as two types, with Ethernet and without Ethernet connection. iAS without Ethernet is a wireless router for relaying subscriber's traffic and iAS with Ethernet is used for concentrating the subscribers traffic into intelligent Gateway or wire-relaying the subscribers traffic into another Access Seed of iAIR Network 1000. iAS is typically installed to seed new network deployment to ensure sufficient capacity and coverage while the subscriber base is growing up. It also used to provide coverage in hotspot/in-building applications. If greater network capacity is required, additional iAS1600 can be easily deployed—without the need for extensive RF or site planning. The location of iAS is no-critical due to the Self Configuration, Self Forming, Self Healing and Self Load Balancing nature of iAIR Network 1000.

Features and Benefits

Non-Line-of-Sight (NLOS) Coverage
With integrated multi-hopping technology, the iAIR Access Seed extends coverage by acting as an intelligent wireless router/repeater for network traffic. The subscribers no longer require being within the immediate access range of central gateway/hub as the intelligent Access Seed connects distant users alternatively and relay traffic to Gateway automatically. True non-line of sight connection capability is hence realized through appropriate placing of intelligent Access Seed of iAIR Network 1000 even in hard-to-cover area.

Increased Network Capacity
Network capacity provisioned for subscribers at the edge of the iAIR Network 1000 can be increased via multi-hop routing technology. Throughput to the subscriber devices is greatly improved with the Self Load Balancing feature of iAIR network. Burst transmit rate up to 11Mbps for data and video streaming is also applied to the intelligent Access Seed.

Full Network Connectivity with Seamless Hand-over Capability
The iAS1600 intelligent Access Seeds can be deployed to ensure connectivity for those locations of subscriber devices where iAIR Network 1000 doesn't reach in direct line of sight. Placing plug-&-play iAS in any crowded locations creates uninterrupted service and ubiquitous coverage. The seamless hand-over capability furthermore ensures continuous application while users are in moving.

Easy Deployment, Operation and Maintenance
Self Configuration feature makes iAS1600 easy to deploy, operate and maintain. Omni-directional antennas are usually utilized for iAS without Ethernet connection and therefore simplify and reduce the cost for the deployment. Panel or sector antenna is also applicable for iAS with Ethernet connection to enhance communication distance and for co-sited intelligent Access Seeds to increase capacity and to eliminate installation site seeking efforts. No special trainings or skills are necessary for installation with Self Configuration feature.

Self Load Balancing
The routing intelligence enables each iAS automatically perform load balancing for served subscribers among various routes in the iAIR Network 1000. Such feature also increases network performance and throughput via effective bandwidth management.

Enhanced Network Robustness
Self Healing feature enables iAS to automatically route around network nodes and recover from single node failure. iAIR Network 1000 is naturally robust than conventional WLAN architecture due to the ability of dynamically creating alternate routes.

Self Forming
Deploying the iAS1600 is simple as installer only needs to connect power through power over Ethernet. No complicated setting is required other than powering it on and then automatically associates with other iAIR Access Seeds, intelligent Gateways and Wireless Ethernet Routers in iAIR Network 1000 to form full meshed connectivity.

Over-the-Air Software Upgrade
Advanced software with new functions and services can be upgraded to intelligent Access Seed in iAIR Network 1000 via over-the-air software upgrade capability.

Network Management
Network management of intelligent Access Seed is easily achieved via iAIR Network Management System, iSysView v1.0. The sophisticated but ease-to-use network management package software simplifies network deployment, monitor, operation, and maintenance. Flexible network management capability allows for quickly isolating and resolving network troubles and diagnostics.

ZyGATE
Wireless·Mobile·Broadband

iAIR Network 1000

Product Specifications

Network Specifications

System architecture	iAIR multi-hopping & multi-routing
Mobile wireless support	Seamless hand-over
Wireless Ethernet Router supported per Access Seed	20
Bandwidth management	Self load balancing
Fault recovery	Self configuration, Self healing
Network interface	10/100Mbps Ethernet

Radio Specifications

Frequency band	2.4~2.4835 Ghz
Channels	14 (depending on locality)
Radio type	Direct sequence spread spectrum (DSSS)
Data rate	Up to 11Mbps
Transmit power	-20dBm ~ +17dBm (Automatic Power Control)
Receive sensitivity	-83dBM@11Mbps
Security	Path diversity, Channel diversity, User authentication, Attacks rejection, Burst transmission mode, Unique air interface User data 3DES security(option)
Antenna	8 dBi omni-directional, (optional antenna by request)

Network Management

Authentication & registration	MAC address access control
Management System	iSysView v1.0
Software upgrade	Local and over-the-air upgrade
Diagnostic interface	Telnet and iSysView NMS

General Specifications

Power over Ethernet (POE)	DC -48V
Power Injector	Network/Power Injection
POE connection cable	Category 5 UTP
Weight	2 Kg
Dimension	198(W) X 250(D) X 75(H) mm

Physical & Electrical Specifications

LAN & power connection	8-pin female connector with special waterproof
Antenna connection	N type male
Power consumption	Typical 7W

Power Injector

Connectors	PWR (jack), TO LAN (RJ45), TO RADIO (RJ45)
LED	PWR (Green), ACT (Orange)
Dimension	59.6(W) X 95.5(D) X 26(H) mm
Power adapter	100~240VAC, 50~60 Hz

Environmental Specifications

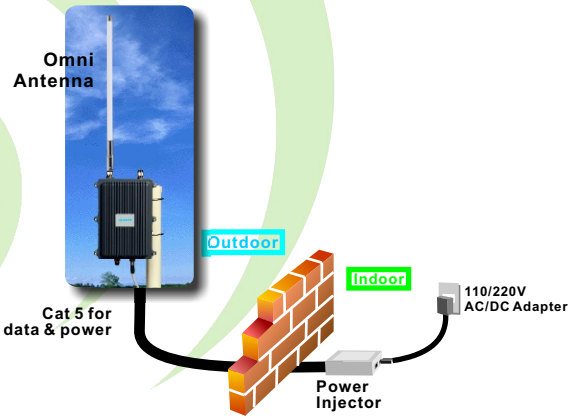
Weather proof	IP v66
Humidity	0-95% Non-Condensing
	0-90% Non-condensing (Power Injector)
Operating temperature	-30°C ~ +60°C
	0°C ~ +40°C (Power Injector)

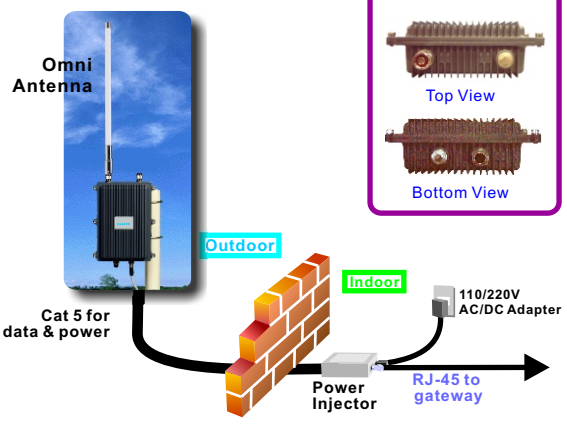
Regulatory Compliance

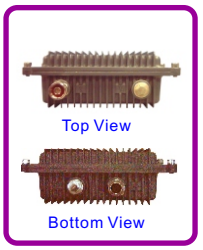
Safety	EN60950; UL1950; CSA950
EMI/EMC	EN50081, 50082, 55022, 61000, 301 489; FCC Part 15 Class B
RF standard	EN300 328; FCC Part 15 Class C

Package Contents

intelligent Access Seed, Network/Power Injector, 8 dBi omni-directional antenna, HDF coaxial cable, Ethernet cable with 8-pin male connector, Power adapter, Supporting CD, 1-year warranty







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