

CTI Products

# **RadioPro™ IP Gateway**

## **Installation Guide**



**Document # S2-61901-902**

**For Version 9 Software**

**Contact Us**

Support, replacement part ordering, and service may be arranged by contacting our Cincinnati office. Parts for service can be returned following a request of a Return Material Authorization.

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**Fonts used in this document:**

*Technical terms*

*Cross-references within this document*

*Hyperlinks to other documents or web pages*

**Warnings**

**Software menus, menu options, folders, pages, and parameters**

**Software parameter values**

## Contents

<b>1 SYSTEM OVERVIEW .....</b>	<b>4</b>
1.1 System Components .....	4
RadioPro™ IP Gateway .....	4
Personal Computer or Workstation .....	4
Control Station Radio .....	5
RadioPro™ Dispatch Client .....	5
RadioPro Solo™ Client .....	6
RadioPro Talk™ for mobile devices .....	6
1.2 Environmental Considerations .....	6
RF Interference .....	6
Lightning and Fire Protection .....	7
Power Requirements .....	7
1.3 Architecture .....	8
System Component Limits .....	9
System Planner Document and Template .....	9
1.4 RadioPro Version Compatibility .....	10
1.5 IP Address Configuration .....	10
1.6 Time Synchronization and Accuracy .....	11
1.8 Licensing .....	11
RadioPro Dispatch Clients .....	11
Clients for RadioPro Solo and RadioPro Talk for mobile devices .....	11
<b>2. WHAT IS INCLUDED .....</b>	<b>12</b>
<b>3. CONFIGURATION AND INSTALLATION .....</b>	<b>13</b>
3.1 Program the Control Station Radio .....	13
3.2 Connect the IP Gateway to the Radio .....	13
3.3 Configure the RadioPro IP Gateway .....	13
3.4 Connect the RadioPro IP Gateway to an IP Network .....	18
3.5 Configure Port Forwarding .....	19
3.6 Install and Configure RadioPro Clients .....	19
<b>4. RADIOPRO IP GATEWAY OPERATION .....</b>	<b>20</b>
4.1 Power-up .....	20
4.2 Power-off .....	20
4.3 Indicators .....	20
<b>5. APPENDIX .....</b>	<b>21</b>
5.1 Appendix - RadioPro IP Gateway Specifications .....	21
Mechanical and Environmental .....	21
Electrical .....	21
Service Ports .....	21
Cabling .....	21
Miscellaneous .....	21
5.2 Appendix - Rack Mounting .....	22
5.3 Appendix - System Compatibility Considerations .....	22
5.4 Appendix - Converting a Timed-license to a Non-expiring License .....	23
5.5 Appendix - RTP Streaming .....	24
RTP Header Extension .....	24
<b>6. INDEX .....</b>	<b>25</b>

# 1 SYSTEM OVERVIEW

**RadioPro™** is a licensed managed communication product, which allows remote access to RF 2-way radios systems over IP Networks. This “Dispatch over IP” (DoIP) solution consists of Windows® PC-based software, which allows voice and data communications between Client PC users and 2-way radio subscribers. Communications with radio subscribers is also possible for remote mobile device users on Android or iOS platforms. A functional RadioPro system must have at least one, of ALL the following components:

- One Server (**RadioPro IP Gateway device**),
- One Client (**Dispatch™, Solo™, or RadioPro Talk™ mobile application**)
- Ethernet access to connect the RadioPro IP Gateway to a LAN or WAN.
- One connection license for each required Dispatch or Solo client.

**Note:** This Manual will focus on the general steps and details for all 2-way radio types with the RadioPro System.

## 1.1 System Components

CTI's Dispatch over IP system is based on a Server-Client architecture. System components, such as Dispatch clients and IP Gateways, may be located together or separated geographically but connected via a Wide Area Network (WAN) or Virtual Private Network (VPN).

System components are described below:

### **RadioPro™ IP Gateway**

(CTI Part # S2-61815) is the hardware interface that connects between the mobile radio (Control Station) and an IP network. The RadioPro Gateway is:

- the IP Translator for the ‘Control Station Radio’
- the Server for the ‘Remote Clients’ that seek to connect.

One IP Gateway is required for each control station radio used for Voice. System components, such as IP Gateways and clients, may be located together or separated geographically but connected via a Wide Area Network (WAN) or Virtual Private Network (VPN). Optional license must be purchased, to allow client connections using Solo or RadioPro Talk for mobile devices, to connect to the Gateway and use the two-way radio system. Each IP Gateway requires a static IP address.



**For more information about the Gateway Kit see the following links or documents:**

[RadioPro IP Gateway](#)

[RadioPro IP Gateway FAQ](#)

[RadioPro IP Gateway - Installation Guide for Motorola MOTOTRBO](#)

[RadioPro IP Gateway - Installation Guide for Motorola APX 4500](#)

[RadioPro IP Gateway - Installation Guide for Kenwood NEXEDGE NX-7xx/8xx, 37xx/38xx](#)

[RadioPro IP Gateway - Installation Guide for Kenwood NEXEDGE NX-57xx/58xx](#)

[RadioPro IP Gateway Data Sheet](#)

### **Personal Computer or Workstation**

A windows-based PC is required to host the RadioPro Dispatch or Solo clients. Console accessories may include microphone and speakers (or headset), Push-to-Talk footswitch, and touch screen monitor.

See the [RadioPro System Brochure](#) and the [RadioPro System Accessories Catalog](#) for additional information and components.

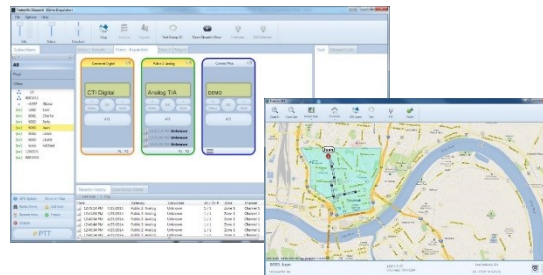
### Control Station Radio

A control station radio (CSR) **must** be used for the interface to the radio system, which then connects to a RadioPro IP Gateway using the rear accessory/communications port. Each radio used for voice requires one IP Gateway. Simultaneous channel monitoring will require one radio per channel. Compatible radio models that support full radio functionality from a RadioPro client include:

- **Motorola MOTOTRBO:** XPR 2500  
XPR 5550 (5000 Series)  
XPR 5550e (5000e Series)
- **Motorola P25:** APX 4500 (Intercom Only)
- **Kenwood NEXEDGE:** NX-700 / NX-800  
NX-720 / NX-820  
NX-3720 / NX-3820  
NX-5700 / NX-5800

### RadioPro™ Dispatch Client

RadioPro Dispatch is a dispatch console for PCs that provides voice dispatching of multiple simultaneous radio channels or talk groups, as well as GPS/AVL, Telemetry, Text Messaging, and Voice Logging. The software requires Windows 7, 8 or 10 Professional operating systems. This solution is compatible for use with either Motorola MOTOTRBO or Kenwood NEXEDGE radio systems.



For more information, see the following links or documents:

[RadioPro Dispatch Software](#)

[RadioPro Dispatch Software FAQ](#)

[RadioPro Dispatch Client Installation and Configuration Guide](#)

[RadioPro Dispatch Client User Guide](#)

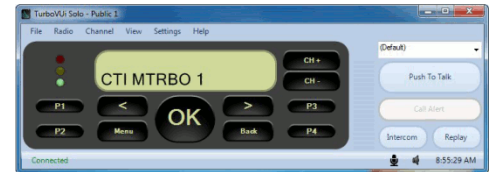
[RadioPro Dispatch Client Data Sheet](#)

### RadioPro Solo™ Client

RadioPro Solo is a software application that provides remote radio operation of a single radio channel or talk group using PCs and notebooks. It features a virtual radio head, which duplicates the full functionality (including channel steering) of compatible radios that are connected. In addition to channel steering, other features include:

- 24-hour Voice logging,
- Subscriber contact listing and
- Text Messaging.

The Client application requires Windows XP, 7, 8, or 10. This application can be used with either Motorola MOTOTRBO or Kenwood NEXEDGE radio systems. The use of this application requires an optional license to be installed on the IP Gateway. The license determines the number of simultaneous persistent Solo and RadioPro Talk app users that can connect to the radio system.



For more information, see the following links or documents:

[RadioPro Solo Installation Guide](#)

[RadioPro Solo User Guide](#)

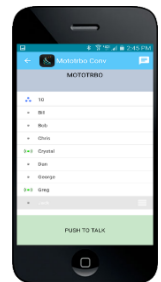
[RadioPro Solo Data Sheet](#)

### RadioPro Talk™ for mobile devices

RadioPro Talk is a mobile app for Android and iOS devices that provides remote operation of a 2-way radio system:

- for voice communications,
- text messaging, and
- locating another user.

This application can be used with either Motorola MOTOTRBO or Kenwood NEXEDGE radio systems. The Mobile app can connect using cellular or Wi-Fi. This application requires a license to be installed on the IP Gateway for the clients to operate. The license serves to control the number of simultaneous Solo and RadioPro Talk users that stay connect to the radio system.



For more information about the Talk App for Mobile, see the following documents:

[RadioPro Talk App](#)

[RadioPro Talk App FAQ](#)

[RadioPro Talk for Mobile Devices How-to-Guide](#)

[RadioPro Talk for Mobile Devices Data Sheet](#)

## 1.2 Environmental Considerations

The operating environment for the IP Gateway must be within limits noted in the specifications, as well as other conditions. Do not install equipment in an area where any of the following exist:

- Extreme temperature and humidity beyond limits listed in the specifications
- High EMI (Electro-Magnetic Interference) or RFI (Radio Frequency Interference)
- High dust concentration
- High ESD (Electrostatic Discharge)
- Extreme Vibration

### RF Interference

To prevent RF interference, **Mobile radio antennas** should be kept a **minimum of 24 feet** from the RadioPro IP Gateway when in high-power mode, or a **minimum of 12 feet** when in low-power mode. **Portable radios** should be kept a **minimum of 6 feet** from the RadioPro IP Gateway.

***Lightning and Fire Protection***

Lightning protection should be implemented at both the equipment and at the point of entry of the building. Lightning protection and power transient protection should be implemented to reduce the risk of fire caused by these phenomena. Circuit breakers and fuses offer the best methods for preventing extended over-current and over-voltage conditions.

***Power Requirements***

When using the supplied AC power adapter, each IP Gateway requires 100-240VAC, 200mA maximum.

***Battery Backup Compatibility***

Since the input for the standard gateway power supply has a very narrow voltage range (11.5 to 12.5 volts), it will not operate with the typically +13.8Vdc battery backup charging voltage.

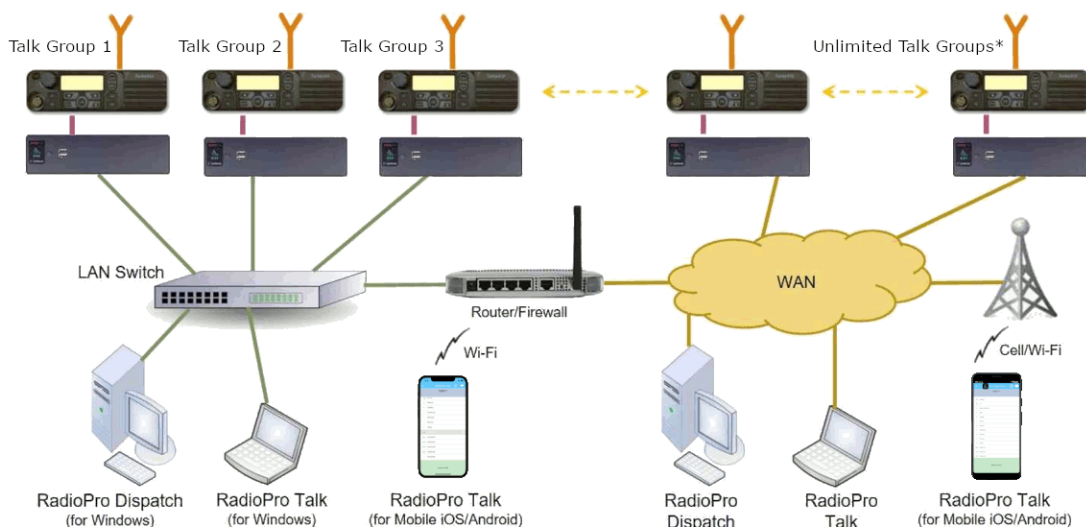
## 1.3 Architecture

The IP Gateways interface a radio system to an IP network. The IP Gateways and control station radios can be centrally located or scattered among different locations using a Virtual Private Network (VPN) or Wide Area Network (WAN) such as the Internet.

As a rule, one IP Gateway is required for each control station radio used for voice. Similarly, one control station radio is required for each channel or talk group that needs to be accessed and used concurrently on a multi-channel system.

Each RadioPro IP Gateway acts as a Network Interface for the Control Station Radio connected to it, and allows easy wide-area deployment. Additionally, each RadioPro IP Gateway also functions as a server for the remote clients seeking to establish a connection and use the radio system.

Systems may have a mixture of RadioPro Dispatch, Solo, and RadioPro Talk for Mobile apps running on mobile devices. These Clients may be centrally located or scattered among different locations using a Virtual Private Network (VPN) or Wide Area Network (WAN) such as the Internet.



\* Max 80 Clients connected to 1 Gateway. Max 70 Gateways connected to 1 Dispatch Client.



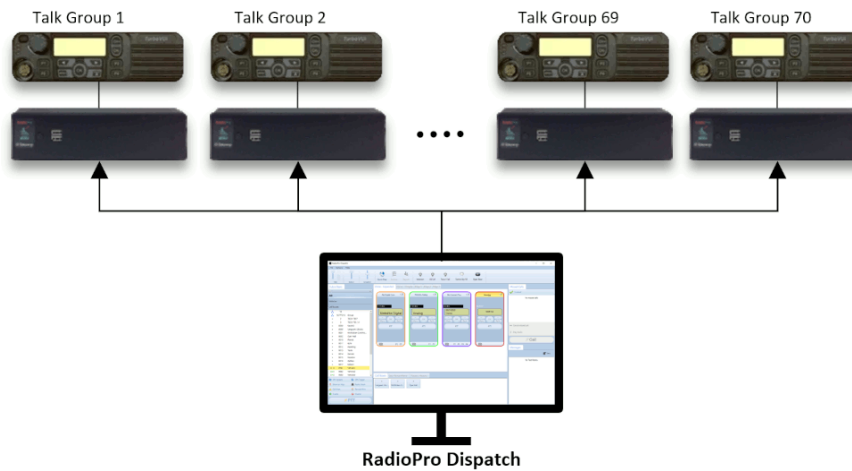
## System Component Limits

The RadioPro solution was tested and verified to operate up to the maximum number of components listed below.

### Maximum of 80 Clients per IP Gateway



### Maximum of 70 IP Gateways per Dispatch Client



## System Planner Document and Template

See the installation guide for your specific radio system. Links to these documents are on page [13](#).

## 1.4 RadioPro Version Compatibility

RadioPro Dispatch clients and IP Gateway versions must be matched to communicate with each other. Compatibility can be assured when the first two (Major) digits of the version number are the same. (The third digit indicates a minor revision and will not present a compatibility issue if not matched.)

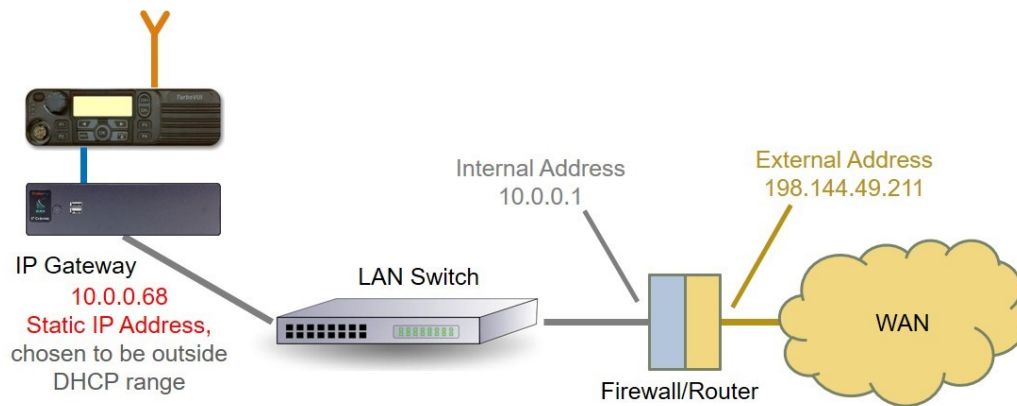
See section 5.3 Appendix – System Compatibility Considerations on page 22 for more details.

## 1.5 IP Address Configuration

### *Static IP Address*

Each RadioPro IP Gateway **requires a static IP address**. The IP Gateway must have IP Network Parameters configured using ICU.exe (IP Configuration Utility) before connecting to an active network. Contact your IT administrator to identify an available static IP Address for each RadioPro IP Gateway, along with its Subnet Mask and Default Gateway.

**Note:** Motorola MOTOTRBO radio systems connect to the IP Gateway using their own independent IP network. See the document [RadioPro IP Gateway Installation Guide for Motorola MOTOTRBO](#) for more information.



### *Port Forwarding*

Accessing the RadioPro IP Gateway remotely

If RadioPro clients (such as Dispatch, Solo, or Talk for Mobile) will access an IP Gateway from a different IP network or broadcast domain, then the IT Administrator must configure port forwarding within the firewall or router(s) that separates the RadioPro IP Gateway from the clients. The same requirement is also true when one or more of the clients listed above will connect to a RadioPro IP Gateway from a WAN like the Internet.

See Section 3.5 Configure Port Forwarding on page 19 for additional information about port forwarding.

## 1.6 Time Synchronization and Accuracy

It is important to ensure that the RadioPro system time is accurate, to prevent logging errors and operational glitches. This is especially true where features such as audio logging and GPS tracking are in use.

The Gateway should be configured to carry the same time as the PC on which the client is operating. When a system employs multiple gateways, they will all need to be synchronized with each other.

The best option to sync the system time is to use a Time Server, which may be chosen from any one of the following:

- **Local**, (Time Server on Local Area Network PC)
- **Domain**, (Time Server managed by the Domain service)
- **Public NTP**, (Public domain Time Server accessed using the Internet)

During installation of the IP Gateways, the address of a Time Server may be configured in the ICU (IP Configuration Utility). You must enter the address information for the accessible Time Server source you elect to use in the “NTP Server” field and save it.

See the subsection **NTP Server IP** under **General** tab on Page [15](#) for additional details about configuring this feature.

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## 1.8 Licensing

### *RadioPro Dispatch Clients*

The RadioPro Dispatch is a multilinking client software, capable of making several simultaneous connections to multiple RadioPro gateways at once. Each PC requires Windows OS to install the Dispatch client but also needs a unique factory supplied software license key to be imported to the PC to customize it for use.

The Dispatch (multilink) license key file specifies the number of IP Gateways that a RadioPro Dispatch console can be configured for connection and use. It also determines availability for GPS, Text Messaging, and other purchasable options.

Additional features and Gateway connections (up to the Component Limits) can be purchased and added to an existing license file at any time.

**Note:** License upgrade components may be added, but not removed from existing license files.

### *Clients for RadioPro Solo and RadioPro Talk for mobile devices*

These are Uni-linking client options, which can connect to a single RadioPro Gateway for a single session; but with the advantage of running on different platforms and or devices. Though limited by comparison to the Multilink Dispatch option, they still provide an affordable and compact set of features for radio control operations.

The single-link client applications also require a separate license control file, to be installed on the IP Gateway, to permit connections from Solo and Talk for Mobile apps (for Android™ and iPhone™/iPad™). Licenses for the latter, may be acquired when the IP Gateway is originally purchased, but can also be easily added post installation, to an IP Gateway.

The serial number label located on the bottom of the IP Gateway indicates the number of Solo and Talk for Mobile connection licenses installed on the IP Gateway at the initial factory setup.

The number stated for the Solo, and Talk for Mobile licenses, indicates the maximum number of persisting simultaneous connections that will be maintained by the Gateway, when multiple client applications want to connect and use the Radio system.

However, upgraded license quantities in the gateway may not be reflected accurately if changes were made after purchase. Therefore, the ICU.exe utility should **always** be used to confirm or determine the number of client connection licenses presently installed on the gateway.



**For help with using the ICU application, see 3.3 Configure the RadioPro IP Gateway on page [13](#) for more details.**

## 2. WHAT IS INCLUDED

### 2.1 RadioPro IP Gateway Kit

The RadioPro IP Gateway (Part # S2-61815) includes the following items:

<i>CTI Part #</i>	<i>Description</i>	<i>Notes</i>
S2-61815	RadioPro IP Gateway	Includes power supply
S2-61971	USB Flash Drive, RadioPro IP Gateway	Contains RadioPro Software, Installation Guides, and Licenses.
89-10712	Cable, Cat 5 RJ45, 10 ft	Can be used to connect IP Gateway to LAN

**Note:** The USB flash drive contains an installer program that will install the RadioPro Dispatch Client Software and the ICU onto the PC. Following the installation from the flash drive, the ICU utility can be located by clicking the **Start**  icon, then click the **CTI Products** folder, then click the  **ICU** icon.

## 3. CONFIGURATION AND INSTALLATION

### 3.1 Program the Control Station Radio

Use the following documents for installation and configuration instructions for your specific type of radio system:

#### MOTOTRBO

- [RadioPro IP Gateway Installation Guide for Motorola MOTOTRBO](#)
- [RadioPro IP Gateway Installation Guide for Motorola APX 4500](#)

#### NEXEDGE

- [RadioPro IP Gateway Installation Guide for Kenwood NEXEDGE NX-7xx-8xx 37xx-38xx](#)
- [RadioPro IP Gateway Installation Guide for Kenwood NEXEDGE NX-57xx-58xx](#)

### 3.2 Connect the IP Gateway to the Radio

See the installation guide for your specific radio system [above](#)

**Note:** Since the IP Gateway has not yet been configured with appropriate IP parameters, do NOT connect the IP Gateway to an IP network.

### 3.3 Configure the RadioPro IP Gateway

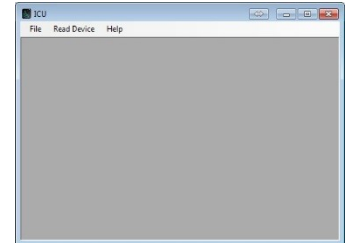
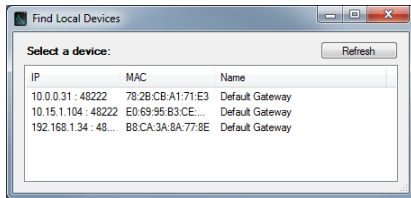


**Note:** Before continuing, ensure that Wi-Fi connection has been disabled in the PC or Laptop being used to configure the IP Gateway.

The RadioPro ICU (IP Configuration Utility) must be used to configure each RadioPro IP Gateway with the necessary parameters. Configuration of each RadioPro IP Gateway must be performed before connecting the IP Gateway to a local area network.

Configure the IP Gateway as follows:

1. Use an Ethernet cable to connect the RJ45 connector on the rear of the RadioPro IP Gateway to a local PC or laptop to be used for configuration.
2. Power up the RadioPro IP Gateway **AND** the Control Station radio.
3. Run the `ICU.exe` application. (See Section 2. What is Included on Page 12. to locate this utility program.) The window shown to the right will be displayed:
4. Click on **Read Device**, and then click **Auto Find** to display the following Configuration window.

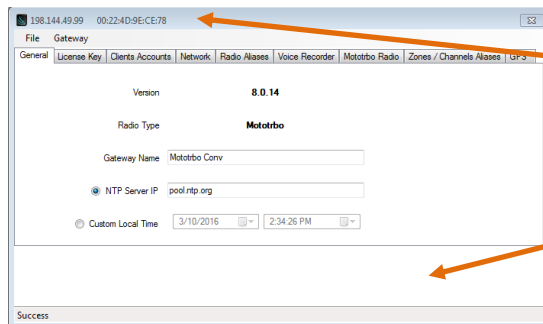


If the IP Address of the Gateway is known, choose **Manual** from the **Read Device** menu. The **Manual** method must be used if the connection between the PC and the IP Gateway involves one or more IP routers or switches.

Note: By default, the Gateway is set to DHCP (Dynamic Host Configuration Protocol) and will be assigned an IP Address by the DHCP Server on the network it is connected to. If the Gateway is connected directly to a Windows PC or there is no DHCP Server, the gateway will assign itself a link-local IP address (169.254.x.x).

**A static IP Address is required** for correct operation in a production environment. See **Network Tab** on page 17 for additional information.

5. Double-click on a device in the above list to display the following Device Configuration window:



*MAC Address*

**Tip:**  
Expand the window to view the help information near the bottom.

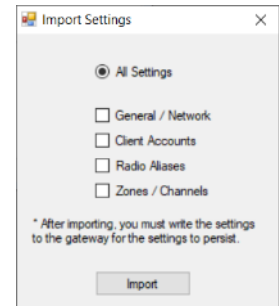
6. The File menu item contains the following functions:

a. **Export**

**Export** can be used to save all of the ICU settings for an IP Gateway to a file with an extension of “.icu”. This can be used to create a backup of settings in case the IP Gateway requires replacement.

b. **Import**

**Import** can be used to import the entire settings or just a subset of the ICU settings for an IP Gateway. After a file is selected for importing, the **Import Settings** window shown at right will be displayed.



7. Enter appropriate parameters for each of the tabs:

**General tab**

**Version** indicates the current software version of this RadioPro IP Gateway. RadioPro Software for the IP Gateway and Clients (Dispatch, Solo, and Talk for mobile devices) must all have compatible versions in order to communicate with each other. Compatibility occurs when the first two digits of the version match. (The third digit indicates a minor revision and does not need to match.)

**Radio Type** will display the factory configuration for this IP Gateway.

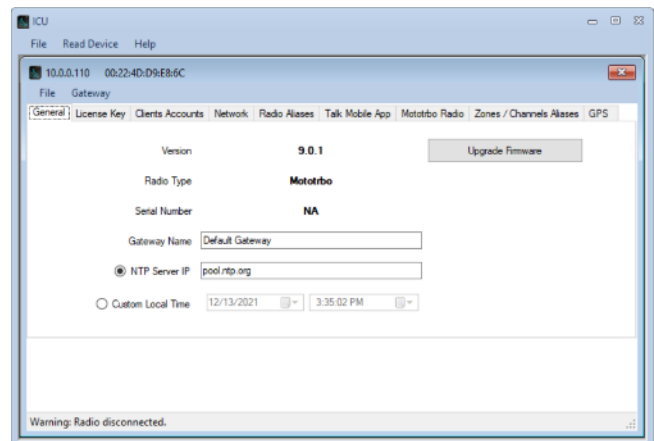
**Serial Number** will display the Serial Number associated with this gateway.

**Gateway Name** factory default is **Default Gateway**. If a RadioPro Dispatch client will be used to connect to this IP Gateway, this name should be changed to a descriptive name that will be recognizable at the RadioPro Dispatch client. The Gateway Name is displayed to identify a radio controller in the RadioPro Dispatch and RadioPro Talk clients.

**NTP Server IP** should be enabled if a RadioPro Dispatch client(s) will connect to this IP Gateway, and should contain the IP Address where the Network Time Server is running. If a Network Time Server is not accessible by this IP Gateway on its network, then a Time Server should be installed on an accessible PC; this PC could be one that is running the RadioPro Dispatch Client. Either an IP address or a name recognized by the Domain Name Server can be entered.

**Custom Local Time** can be used if an NTP Server is not used. Enter the current date and time.

Use the **Upgrade Firmware** button to install the latest RadioPro IP Gateway version. RadioPro IP Gateway Installations can be found here: [https://ctiproducts.com/RadioPro\\_UpgradeDownloads.html#gatewayUpgrade](https://ctiproducts.com/RadioPro_UpgradeDownloads.html#gatewayUpgrade)

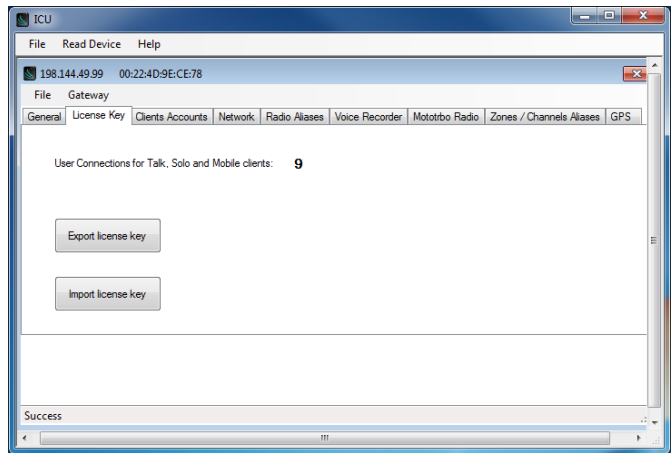


### *License Key tab*

This tab is used to transfer the License File to/from the IP Gateway when an upgrade to the License is purchased. The License File contains a value between 1 and 80 specifies the number of simultaneous users allowed to connect to this IP Gateway from RadioPro Solo and Talk for Mobile applications.

Use the **Export license key** button to create a file with the current License information. This file can be sent to CTI Products when an upgrade to the number of User Connections is needed.

Use the **Import license key** button to push the upgraded license file to the IP Gateway.



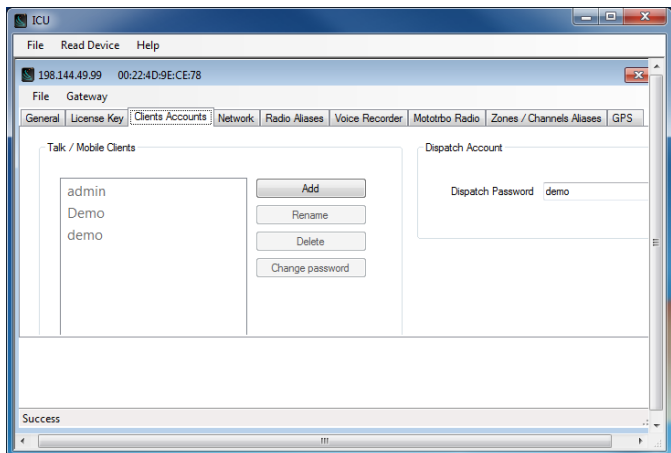
### *Client Accounts tab*

#### **Solo/Talk Mobile Clients**

Usernames and Passwords for Solo and Talk for Mobile clients are managed on this tab.

To add a new client account, click the **Add** button. In the **Add account** window, enter the new **Username**, **Password**, and then click the **OK** button.

The “admin” client account will be listed first and is the default account for logging into the IP Gateway from a RadioPro Solo or Talk for Mobile client. The “admin” account cannot be Renamed or Deleted. It is recommended that the password of the “admin” account be changed from its default value of **admin** to prevent unauthorized changes. This can be accomplished by selecting **admin** from the list of accounts, and then clicking the **Change password** button. In the **Change password** window, type a new password in the **Password** text box, retype it in the **Retype** text box, and then click the **OK** button.



The “admin” client account is also used when using ICU.exe to write new parameters to the IP Gateway.

#### **Dispatch Account**

The Dispatch Password is the password needed for a Dispatch client to connect to this IP Gateway.



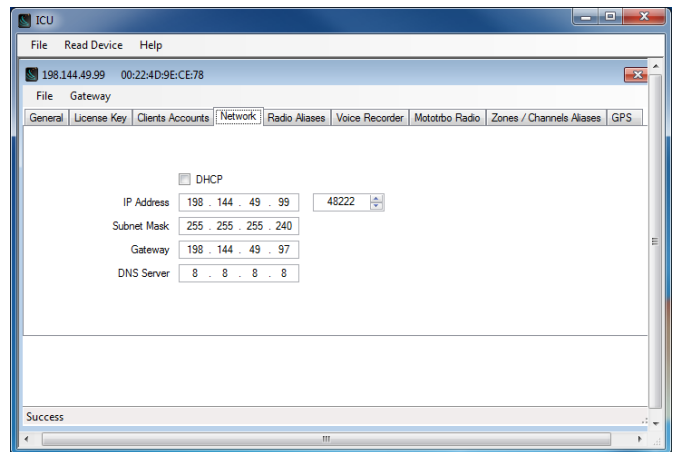
**Network tab**

Do **NOT** use leading zeros for any of the address fields. **DHCP** should **NOT** be selected unless an engineer at CTI Products is consulted.

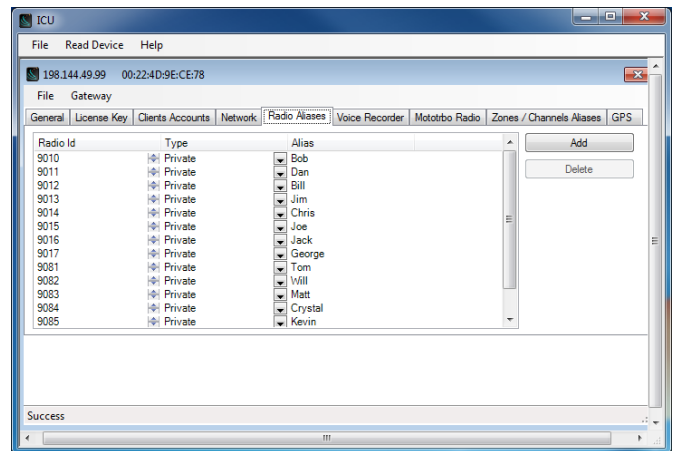
The default **TCP Port #** is 48222. This can normally be left at its default value.

An entry for default **Gateway** is needed only if RadioPro clients (Dispatch, Solo, Talk for Mobile) will be accessing this IP Gateway from another network, or the Internet.

An entry for **DNS Server** is needed only if an NTP server host name was specified in the General tab (instead of an IP Address). If an NTP server host name is not specified, then **DNS Server** should be blank or **0.0.0.0**.

**Radio Aliases tab**

This tab is used to create Alias Names for radio IDs. The Alias Names listed on this tab will be displayed in the contact list for RadioPro Solo, Talk, and Talk for Mobile clients.



### *Radio System Specific tabs*

See the installation guide for your specific radio system. Links to these documents are on page [13](#).

#### 8. Write settings to the IP Gateway

From the **Gateway** menu, click on Write Settings. Enter the Admin **Gateway Password** (factory default password is “admin”), then close the configuration window for this IP Gateway.

Remove the Ethernet cable between the RadioPro IP Gateway and the local PC or laptop used for configuration.

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## 3.4 Connect the RadioPro IP Gateway to an IP Network

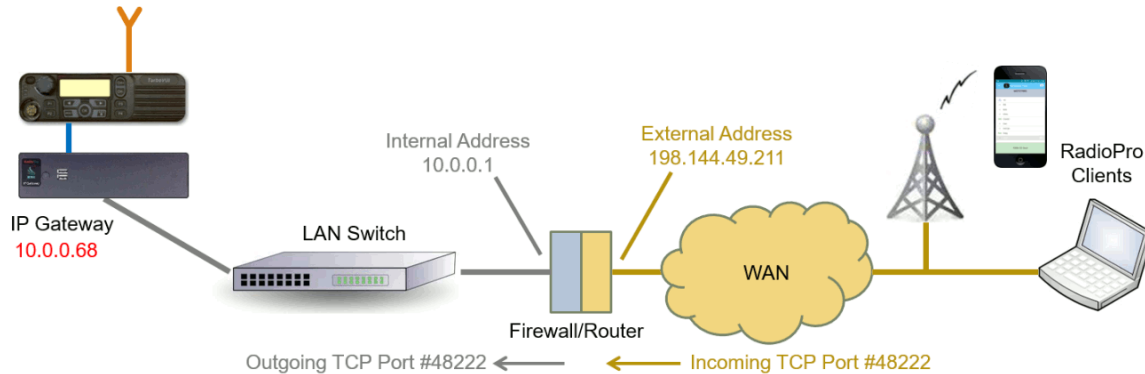


After a RadioPro IP Gateway has been configured using ICU, it is safe to connect to a local area network.

Connect the RadioPro IP Gateway module to the IP network using the following steps:

1. Connect one side of cable 89-10712 (or similar straight-through Cat 5 cable) to the RJ45 connector on the rear of the RadioPro IP Gateway module.
2. Connect the other end of cable 89-10712 to the network switch or router.

### 3.5 Configure Port Forwarding



If RadioPro clients (such as Dispatch, Solo, or Talk for Mobile) will access an IP Gateway from a different IP network subnet, then the IT Administrator must configure port forwarding within the devices (firewalls or routers) which are separating the RadioPro IP Gateway from RadioPro clients. A typical example of this is depicted in the figure above, where an IP Gateway is installed behind a firewall and a RadioPro client is using the Internet to connect to that IP Gateway.

The default IP port used by a RadioPro IP Gateway is **TCP Port 48222**. However, this may be changed if needed, using `ICU.exe` on the **Network** tab.

The default IP port used by RadioPro clients is **TCP Port 48222**. If this default port number is to be used, then the parameter entry for the IP address in a RadioPro client is simply the External Address of the Firewall or Router. If, on the other hand, some other port number is to be used, then the parameter entry for the IP address in a RadioPro client must also include that port number as follows:

198.144.49.211:7777

where:

198.144.49.211 is the external or wide-area address of the firewall or router.

7777 is the external port of that firewall used for RadioPro IP Gateway.

If multiple RadioPro IP Gateways are located behind a firewall, they will each need a Port Forwarding rule. In this case, the external port numbers specified for each rule must be unique by specifying individual port numbers.

See <https://portforward.com/router.htm> for detailed instructions for the specific router in use at your site.

### 3.6 Install and Configure RadioPro Clients

Each client application will need to be installed on a PC, Android, or iOS device and configured with the IP Address and login credentials of the RadioPro IP Gateway. Please refer to the following installation guides for instructions:

**RadioPro Dispatch:** [RadioPro Dispatch Installation and Configuration Guide](#)

**RadioPro Solo:** [RadioPro Solo Client Installation Guide](#)

**RadioPro Talk Mobile:** [RadioPro Talk for mobile devices How-to Guide](#)

## 4. RADIOPRO IP GATEWAY OPERATION

### 4.1 Power-up

The Power Button is used to power up the unit by pressing it momentarily.

A watchdog circuit built into the IP Gateway monitors program operation. If the watchdog circuit detects that the program is not functioning correctly, it will re-initialize the IP Gateway. This process may take up to two minutes. During this process, RadioPro Dispatch, Solo, or Talk for Mobile clients will not have a connection or communication with the Control Station radio.

### 4.2 Power-off

The Power Button can be used to power down the unit by pressing it momentarily (soft shutdown) or by pressing and holding for up to 5 sec (Hard shutdown).

### 4.3 Indicators

#### *a. External*

A blue LED located on the Power Button at front of the gateway indicates that the gateway is powered up.

#### *b. Internal*

A red LED located internally, but viewable through the vents on the left side of the IP Gateway indicates the functioning of the Hardware Watchdog as follows:

- “**Slow Blinking**” (1 second ON, 1 second OFF per Blink) indicates that the IP Gateway is rebooting. This will normally flash for up to two minutes after power-up.
- “**Steady**” illumination indicates that the IP Gateway software and hardware is operating correctly. This should normally follow the “Slow Blinking” boot-up period.
- “**Fast Blinking**” (½ second OFF, ½ second ON per Blink) indicates that the watch-dog circuitry has detected a problem, and also that re-booting will commence within 5 seconds.

## 5. APPENDIX

### 5.1 Appendix - RadioPro IP Gateway Specifications

#### ***Mechanical and Environmental***

Dimensions:	9.0" w x 2.5" h x 7.7" d
Weight:	3 lbs.
Temperature Range:	0-50 °C
Humidity:	10-95% non-condensing

#### ***Electrical***

AC Input (with included Power Adapter):	100–240Vac, 60W max, 50-60Hz
DC Input:	11.5-12.5Vdc Only

#### ***Service Ports***

Port Forwarding (for firewall configuration)	TCP Port 48222 (default)
Ports used by ICU.exe during configuration	UDP Ports 48501-48502 or TCP Port 48502
Port for Network Time Protocol Service	UDP Port 123
Port used for Secure Shell Service	SSH Port 48444 (used only when remote technical service is needed)

#### ***Cabling***

Motorola MOTOTRBO XPR 5550/5550e	DB-9 Female & USB, Cable S2-61431
Motorola MOTOTRBO XPR 2500	DB-9 Female & USB, Cable S2-61916
Motorola APX 4500	DB-9 Female, Cable S2-61927
Kenwood NEXEDGE NX-5700/5800	DB-9 Female, Cable S2-61769
Kenwood NEXEDGE NX-700/800	DB-9 Female, Cable S2-61769
Kenwood NEXEDGE NX-720/820	DB-9 Female, Cable S2-61890
Kenwood NEXEDGE NX-3720/3820	DB-9 Female, Cable S2-61890

#### ***Miscellaneous***

Transmit/Receive Impedance - MOTOTRBO	600 ohms
Transmit/Receive Impedance – Kenwood	10k ohms
Clients Supported	80 Solo, Talk for Mobile, or Dispatch Clients
Power-On	Auto
Network Bandwidth (for each connected client)	2.2k Bytes per Second with audio compression enabled 22k Bytes per Second without audio compression

## 5.2 Appendix - Rack Mounting

### ***Rack Shelf***

A rack shelf can be used to hold the RadioPro IP Gateway and Control Station radio in a standard 19" wide rack. The two devices can be located next to each other on the same shelf. The following rack shelf is recommended, but others may be used that have a depth of at least 12":

Rack Shelf 2RU x 15", CTI Products # S2-61548, also available as Cable Organizer # QES0319-0215:

## 5.3 Appendix – System Compatibility Considerations

Use the following table to determine compatibility between RadioPro Gateway and software clients:

	<i>IP Gateway</i>	
<i>Dispatch Client for PC</i>	<i>V9.x.x</i>	<i>v8.x.x</i>
Dispatch v9.3.11+ (Windows 10 or 11 Professional)	Yes	
Dispatch v9.3.0 – 9.3.10 (Windows 10 Professional)	Yes	
Dispatch v8.x.x (Windows 7, 8, or 10 Professional)		Yes
<i>Solo Client for PC</i>		
RadioPro Solo v9.3.11+ (Windows 10 or 11)	Yes	Yes
RadioPro Solo v9.3.0 – 9.3.10 (Windows 10)	Yes	Yes
RadioPro Solo v8.x.x (Windows 7, 8, or 10)	Yes	Yes
<i>Talk Mobile App for iOS and Android</i>		
RadioPro Talk Android - Minimum Version 8.0 (API Level 26 – Oreo) with Google Play iOS - Minimum Version 9.0 (iPhone 4S)	Yes	Yes

When upgrading to a new version where RadioPro Clients and IP Gateways are being upgraded, it is usually better to upgrade the IP Gateways before upgrading the Clients.

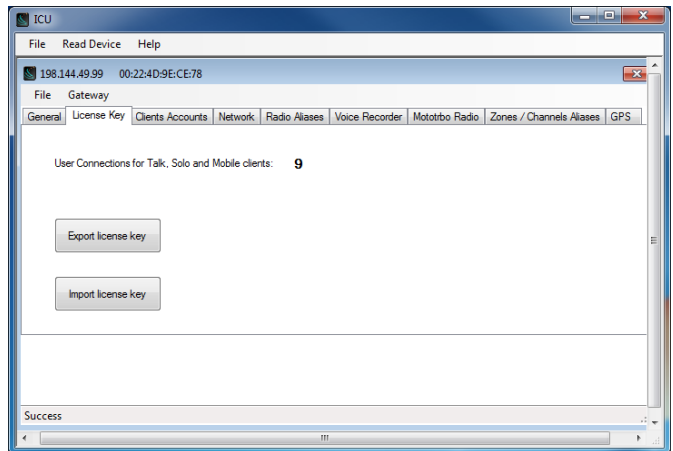
## 5.4 Appendix - Converting a Timed-license to a Non-expiring License

A RadioPro IP Gateway may have a timed-license duration of 120 days. (The Packing List will indicate Part # S2-61612 if the timed-license is active.) If the Timed-License is active, and following the 120-day period, the RadioPro IP Gateways will not connect to a RadioPro Dispatch, Solo, Talk, or Talk for Mobile client for longer than five minutes. See instructions below for converting the 'Timed-license' to a Permanent license.

Following receipt of payment to CTI Products for ordered items, a request may be submitted to convert a timed license to a non-expiring license.

Use the following steps to convert the license:

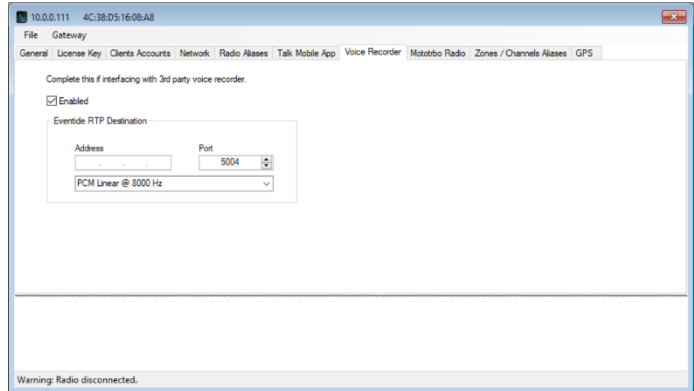
3. Verify there are no outstanding balances on the sales order for the Gateway in question.
4. Follow the steps on Page 13 to initiate a connection to the IP Gateway using `ICU.exe`.
5. Click on the **License Key** tab. This tab is used to transfer the License File between the IP Gateway and CTI Products when an upgrade to the License is purchased.
6. Click the **Export License Key** button, and then choose a location to store the license file.
7. Save the exported file as a name that includes:  
The gateway serial number and  
CTI Products SO# or the customer name
8. Send the license file, along with the IP Gateway serial number in the subject line, to [support@ctiproducts.com](mailto:support@ctiproducts.com). If you are requesting non-expiring licenses for multiple RadioPro IP Gateways, each file name must contain the Gateway serial number.
9. Following receipt of the updated license file from CTI Products, repeat steps 2 and 3 listed above, and click the **Import License Key** button, then choose the location where the updated license file received for CTI is saved.
10. Follow the remaining prompts to complete updating the license on the gateway.



## 5.5 Appendix – RTP Streaming

Follow these steps to stream audio, PTT IDs, GPS data and channel information to an Incident Management or Audio Recording application:

1. Follow the steps on Page 13 to initiate a connection to the IP Gateway using `ICU.exe`.
2. Choose the **Voice Recorder** tab. If the **Voice Recorder** tab is not available, verify that your gateway is version 8.0.13 or higher and that you purchased and correctly installed a gateway license with the Voice Recording (RTP) feature. See the [RadioPro System Upgrade Guide page 9](#) for information on Importing a License.
3. Check the “Enabled” checkbox to turn RTP steaming on.
4. RTP audio packets can be sent to 1 destination IP Address and Port. Type in the **IP Address** and **Port** in those fields.
5. Before sending each RTP audio packet, The IP Gateway will encode the audio into one of the following audio specifications. Choose the required audio encoding from the dropdown box:
  - G722 @ 8000 Hz
  - PCM Linear @ 8000 Hz
  - PCM Linear @ 11025 Hz
  - PCM uLaw @ 8000 Hz
  - PCM uLaw @ 11025 Hz
6. Write settings to the IP Gateway.



From the **Gateway** menu, click on Write Settings. Enter the Admin **Gateway Password**, then close the configuration window for this IP Gateway.

### RTP Header Extension

The RadioPro IP Gateway adds radio specific information to the header extension section of the RTP packet. See [Real-time Transport Protocol – Header Extension](#) for more information.

The following radio specific information is added to the RTP header:

#### TransmittingUser

Name (Radio ID)

Type Of User (0=Radio, 1=Group, 2=PC)

GPS Location (Lat, Lon, Speed)

#### ReceivingUser

Name (Radio ID)

Type Of User (0=Radio, 1=Group, 2=PC)

GPS Location (Lat, Lon, Speed)

#### GatewayInfo

Gateway Name

Channel Info (Zone, Channel)

*A PC user and Group User will not have GPS information.*



## 6. INDEX

	<b>A</b>	blue, 20 red, 20 Licensing, 11, 23	
Architecture, 8			<b>N</b>
	<b>C</b>	Non-expiring License, 23 NTP Server IP, 15	
USB flash drive, 12 Contact us, 2			<b>O</b>
	<b>D</b>	Overview, 4	
Default Gateway, 17 DHCP, 17 DNS Server, 17			<b>P</b>
	<b>E</b>	Port Forwarding, 19, 21 Power Button, 20 Power Requirements, 7	
Export License Key, 15, 16			<b>R</b>
	<b>F</b>	Rack Mounting, 22 Radio Type, 15 RF Interference, 6	
Fire Protection, 7			<b>S</b>
	<b>G</b>	Serial Number, 15 Specifications, 21 Static IP Address, 10 System Compatability, 10, 22 System Components Limits, 9	
Gateway Name, 15 Gateway Password, 18, 24			<b>T</b>
	<b>I</b>	TCP Port, 17, 19, 21 Time Server, 11, 15 Time Synchronization, 11 Timed-License, 23	
ICU, 12, 13, 14, 18 Client Accounts tab, 16 <b>General tab</b> , 15 License Key tab, 16 Network tab, 17 Radio Aliases tab, 17 Import License Key, 16 IP Addressing, 10 IP Configuration Utility, 13			<b>U</b>
	<b>L</b>	UDP Port, 21	
LED			