

revision B

Table of Contents

Local alea network options (Single Main Repeater Systems)	
Wired/Wi-Fi connection through Wi-Fi router	
Wired connection through router	4
Direct connection	5
Local area network options (Two Main Repeater Systems)	6
Wired/Wi-Fi connection through Wi-Fi router	6
Wired connection through router	7
Repeater to Repeater Connection	8
How to change network settings	9
Change your PC network settings	9
Change network settings on router	
Change network settings on Main Repeater	
Basic networking – Local area networks	11
What is a network?	
What is an IP address?	11
What is an IP address? How does a device on my network get an IP address?	11 11
What is an IP address? How does a device on my network get an IP address? What is DHCP?	11 11 11
What is an IP address? How does a device on my network get an IP address? What is DHCP? What is a static IP address?	11 11 11 11
What is an IP address? How does a device on my network get an IP address? What is DHCP? What is a static IP address? Can I mix a DHCP network with a static IP addresses?	11 11 11 11
What is an IP address? How does a device on my network get an IP address? What is DHCP? What is a static IP address? Can I mix a DHCP network with a static IP addresses? What is a subnet mask?	11 11 11 11
What is an IP address? How does a device on my network get an IP address? What is DHCP? What is a static IP address? Can I mix a DHCP network with a static IP addresses? What is a subnet mask? Basic networking – Wide area networks	11 11 11 11 11 12 12
What is an IP address? How does a device on my network get an IP address? What is DHCP? What is a static IP address? Can I mix a DHCP network with a static IP addresses? What is a subnet mask? Basic networking – Wide area networks What is a Wide Area Network?	11 11 11 11
What is an IP address? How does a device on my network get an IP address? What is DHCP? What is a static IP address? Can I mix a DHCP network with a static IP addresses? What is a subnet mask? Basic networking – Wide area networks What is a Wide Area Network? How does your home network connect to the Internet?	11 11 11 11

Local area network options (Single Main Repeater Systems) Option #1: Wired/Wi-Fi connection through Wi-Fi router



Example A					
Wi-Fi enable	d PC	Wi-Fi Router		RadioRA 2 M	ain Repeater
IP address subnet mask	DHCP DHCP	IP address subnet mask DHCP range DHCP enabled	192.168.1.1 255.255.255.0 192.168.1.100-150	IP address subnet mask	DHCP DHCP
When to use		•		•	

This is fastest way to setup your system. Every device will use DHCP and the router allocates IP addresses. Use this on jobs where you do not want to walk back and forth between devices and PC while activating devices. The Wi-Fi access of the laptop will allow you to carry your laptop around during activation.

Example B					
Wi-Fi enabled	d PC	Wi-Fi Router		RadioRA 2 M	ain Repeater
IP address	DHCP	IP address	192.168.1.1	IP address	192.168.1.3
subnet mask	DHCP	subnet mask	255.255.255.0	subnet mask	255.255.255.0
		DHCP range	192.168.1.100-150		
		DHCP enabled			
When to use					
In this example	e, the PC uses DH	CP and the main	repeater uses a static IP	address. The I	P address on the

main repeater should be configured as static when the main repeater is accessed via integration using telnet. Why? Because the static IP address won't change and the integration device, like a touch screen, will always use that IP address.

Option #2: Wired connection through router



Example C					
PC		Router		RadioRA 2 M	lain Repeater
IP address	192.168.1.2	IP address	192.168.1.1	IP address	192.168.1.3
subnet mask	255.255.255.0	subnet mask	255.255.255.0	subnet mask	255.255.255.0

Example D		Pouter		PadioPA 2 M	lain Panaatar
IP address	DHCP	IP address	192.168.1.1	IP address	192.168.1.3
subnet mask	DHCP	subnet mask	255.255.255.0	subnet mask	255.255.255.0
		DHCP range	192.168.1.100-150		
		DHCP enabled			
When to use					
These are goo	d, reliable opt	ions when your Wi-F	i network is either unav	ailable or unrelial	ble due to Wi-Fi
range issues a	nd/or heavy n	etwork traffic like do	ownloading music. This	network is very p	practical when
integrating; us	e static IP add	dresses on the main	repeater because the IF	P addresses will n	ot change.

Option #3: Direct connection



Local area network options (Two Main Repeater Systems) Option #1: Wired/Wi-Fi connection through Wi-Fi router



Example A					
Wi-Fi enable	d PC	Wi-Fi Router		RadioRA 2 M	ain Repeater 1
IP address	DHCP	IP address	192.168.1.1	IP address	DHCP
subnet mask	DHCP	subnet mask	255.255.255.0	subnet mask	DHCP
		DHCP range	192.168.1.100-150	RadioRA 2 M	ain Repeater 2
		DHCP enabled		IP address	DHCP
				subnet mask	DHCP
14/1 1					

When to use

This is fastest way to setup your system. Every device will use DHCP and the router allocates IP addresses. Use this on jobs where you don't want to walk back and forth between devices and PC when activating devices. The Wi-Fi access of the laptop will allow you to carry your laptop around during activation.

Example B					
Wi-Fi enabled	d PC	Wi-Fi Router		RadioRA 2 Ma	ain Repeater 1
IP address	DHCP	IP address	192.168.1.1	IP address	192.168.1.3
subnet mask	DHCP	subnet mask	255.255.255.0	subnet mask	255.255.255.0
		DHCP range	192.168.1.100-150	RadioRA 2 Ma	ain Repeater 2
		DHCP enabled		IP address	192.168.1.4
				subnet mask	255.255.255.0

When to use

In this example, the PC uses DHCP and the Main Repeaters utilize static IP addresses. The IP address on each Main Repeater should be configured as static when the Main Repeaters are accessed via integration using telnet. Why? Because a static IP address won't change and the integration device, like a touch screen, will always point to that IP address.

Option #2: Wired connection through router



Example C					
PC		Router		RadioRA 2 M	lain Repeater 1
IP address	192.168.1.2	IP address	192.168.1.1	IP address	192.168.1.3
subnet mask	255.255.255.0	subnet mask	255.255.255.0	subnet mask	255.255.255.0
				RadioRA 2 M	lain Repeater 2
				IP address	192.168.1.4
				subnet mask	255.255.255.0

Example D					
PC		Router		RadioRA 2 M	ain Repeater 1
IP address	DHCP	IP address	192.168.1.1	IP address	192.168.1.3
subnet mask	DHCP	subnet mask	255.255.255.0	subnet mask	255.255.255.0
		DHCP range	192.168.1.100-150	RadioRA 2 M	ain Repeater 2
		DHCP enabled		IP address	192.168.1.4
				subnet mask	255.255.255.0

When to use

These are good, reliable options when your Wi-Fi network is either unavailable or unreliable due to Wi-Fi range issues and/or heavy network traffic like downloading music. The IP address on each Main Repeater should be configured as static when the Main Repeaters are accessed via integration using telnet. Static IP addresses won't change and integration devices, such as a touch screen, will always point to that static IP address.

Option #3: Repeater to Repeater Connection



Example E					
RadioRA 2 M	ain Repeater 1	RadioRA 2 M	ain Repeater 2		
IP address	192.168.1.2	IP address	192.168.1.3		
subnet mask 255.255.255.0 subnet mask 255.255.255.0					
When to use:					
Utilize this setu	ip ONLY AFTER	System Activat i	ion and Transfer have		
been complete	d. This is a great	option when no	router is available for		
normal system	operation and the	ere is no desire t	to have integration with		
3 rd party device	es. The Main Repe	eaters must both	be setup with Static IP		
addresses.					

How to change network settings

Step 1

Change your PC network settings

A. This step may be not be necessary

B. Go to your Control Panel and select Network Settings. Depending on whether you are connecting wirelessly or through a wire, right click and select 'Properties' on either your LAN or Wireless network connection.



- D. Highlight the Internet Protocol (TCP/IP) settings and press the 'Properties' button.
- E. Change the settings accordingly and save.



Step 2 Change network settings on router

A. Connect your computer to your Wi-Fi router

B. Open your web browser and type in your router's IP address:

Linksys default – 192.168.1.1

Dlink and Netgear default - 192.168.0.1

Other routers – consult your router's documentation

C. Enter the user name and password. These vary by manufacturer and model. Some common ones are admin:admin or admin:password. Please consult your router's documentation.

D. Navigate to the Network setup, modify, and save your settings.

Network Setup		
Router IP	Local IP Address : Subnet Mask :	192.168.1.1 255.255.255.0
Network Address Server Settings (DHCP)	DHCP Server : Starting IP Address : Maximum Number of DHCP Users :	© Enable © Disable 192.168.1.100 50

Step 3 Change network settings on Main Repeater

A. Connect your main repeater to your network.

B. On the Design tab in the Essentials software, find the main repeater in your project. By default it's in the Equipment room. Use the "Find main repeater button". The window that pops up will allow you to change the network settings.

toom	Serial Number	DHCP Enable	ed IP A	ddress	Status
Equipment Room	006A27E3	▼ False	- 16	9.254.229.124	Online
Room 001	None selected	▼ False	▼ 16	9.254.229.124	None selected
Hide Advanced					Save Settings Can
Subnet Mask	255.255.0.0	-			
Default Gateway	0.0.0.0				
	224.0.27.1				

Basic networking – Local area networks

What is a network?

A network is a set of devices that are connected together to exchange digital information or commands. Devices can include desktop computers, laptops, Wi-Fi routers, or a RadioRA 2 main repeater. A local area network, or LAN, is a network of devices that are connected together by physical wires or over Wi-Fi and are in close physical proximity to each other.

What is an IP address?

An IP address, or Internet Protocol address, is a unique way to identify a device on your network. An IP address is analogous to a house number. On any given street, all the house numbers are unique just as on any given network all the IP addresses are unique.

An IP address consists of 4 "octets" of numbers ranging from 0 to 255.

<u>Example</u> IP address: 192.168.1.1

How does a device on my network get an IP address?

Devices can get an IP address in multiple ways:

 The device has a static IP address that is it is given when it was manufactured. The static IP address can be manually changed using configuration software for that device. See "What is a static IP address?"
A network device can hand out IP addresses when the network is powered up. See "What is DHCP?"

What is DHCP?

DHCP, or Dynamic Host Configuration Protocol, defines a series of events which would allow devices systematically to allocate IP addresses. In networks where DHCP is used, one device, called the DHCP host, is responsible for handing out IP addresses to all the other devices. The IP addresses are temporary and are reallocated anytime the host or devices are powered up.

The DHCP host hands out IP addresses from a range that was setup during the host's configuration. Devices would like to receive IP addresses from the DHCP host are setup to obtain IP addresses automatically using DHCP. The DHCP host is usually your home router.

Example DHCP IP address range: 192.168.1.100 to 192.168.1.149

What is a static IP address?

A static IP address is an IP address that doesn't change. A static IP address is manually configured before the network is used. Static IP configuration requires careful planning so that all devices have unique IP addresses.

Can I mix a DHCP network with a static IP addresses?

Yes and careful planning must be given to the static IP addresses. The static IP addresses cannot be the same as the DHCP host's IP address and must fall outside of the range of the IP addresses the DHCP host hands out.

<u>Example</u> Router (DHCP host) IP address: 192.168.1.1 Router DHCP range: 192.168.1.100 to 192.168.1.150 Main repeater static: IP address: 192.168.1.2

Wi-Fi laptop using DHCP: given out from router. Changes each time lap top is connected to network

What is a subnet mask?

A subnet mask is used to tell what messages are for this network and which are for another network. A subnet mask consists of 4 "octets" of numbers ranging from 0 to 255. The subnet masks should match on all devices that are part of the same network.

<u>Example</u>

Subnet mask: 255.255.255.0

The 255 in the first three octets forces the listening device to listen to any messages where the first three octets of the incoming IP address match. If the receiving device's IP address is 192.168.1.100 and the incoming message is from IP address 192.168.1.2, then the device should listen.

Basic networking – Wide area networks

What is a Wide Area Network?

A wide area network is collection of networks that are not physically connected together. Accessing your home network remotely from an office or other place away from your home is a WAN.

How does your home network connect to the Internet?

Your home network is connected to the Internet via a gateway device. Cable modems and DSL modems are examples of gateway devices. Sometimes gateway devices are also routers.

What is a gateway IP address?

A gateway is a device that connects your network to the Internet such as a cable modem or DSL router. The gateway address only needs to be setup when you want to remotely access a device on your network from another device on the Internet. If your network is not connected to the Internet, then the gateway address is not used. If your device does not need to be accessed from the Internet, then the gateway address is also not used. The gateway address on a device should be set to the address of the gateway device. In most cases this is your network router.

<u>Example</u> Router IP address: 192.168.1.1 Gateway address of devices attached to router: 192.168.1.1