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Bullet High Speed Wireless Platform Point to Point Bridging Instructions



PLEASE READ THESE INSTRUCTIONS BEFORE CONFIGURING OR DEPLOYING YOUR BULLET HIGH SPEED WIRELESS PLATFORM (S)

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Thank you for purchasing a RadioLabs Bullet High Speed Wireless Platform. Using this device, you will be able to bridge LAN connections with wireless speeds up to/over 100 megabits/second (condition and distance dependent). The Bullet Point to Point Bridge can act as a non-routing LAN extension or as a NAT-enabled gateway to link two locations via the IEEE 802.11N wireless protocol.



Connection Diagram

Parts necessary to create Bullet Wireless Bridge

- 2 Bullet High Speed Wireless Platforms (Power Over Ethernet Injectors included)
- 2 2.4Ghz Wireless Antennas
- 4 Category 5 Ethernet Cables

Connect a Category 5 Ethernet cable between your PC/MAC's ethernet port and the LAN port of the POE Injector.

Connect a second Category 5 Ethernet cable between the **POE** port of the POE injector and the Ethernet port of the Bullet.

Connect the POE Injector to AC power with the included power cable.

You will <u>not</u> need to connect an antenna to the Bullet at this time, you will be prompted to do so further along these instructions.

<u>Before configuring your Bullet High Speed Wireless Platform(s), you will need to disable your internal</u> wireless card or Airport (if applicably) and set a static or "unchanging" IP address.

Windows

XP: Open Start Menu and select Control Panel

| Control Panel | | | | | | | | | |
|-------------------------------|-----------------------------|---------------------|---------------------------|---------------------------|----------------------------------|----------------------------|----------------------------------|----------------|----------------|
| File Edit View Pavorites Tool | s Help | | | | | | | | |
| (tat · 6 · 5 / | Search 😢 Folders | Folder | Sync | | | | | | |
| Address 🕞 Control Panel | | | | | | | | | |
| Control Panel * | Ġ, | No. | S | - | 2 | P | R | I | d |
| Gr switch to Category view | Accessibility Options | Add Hardware | Add or Remove Programs | Administrative Tools | Automatic Updates | Date and Time | Display | Folder Options | Fonts |
| See Alco R | 695 | - | - | | _ | L | Too. | (2) | 2 |
| S Windows Update | | | | | <u>م</u> | | | | |
| . Mehansattor | Mouse | Network Connections | Network Setup Wizard | NVIDIA Control Panel | NVEDEA riview Desktop Manager | Phone and Modem Options | Portable Media Devices | Power Options | Printers and F |
| | Ø, | R | VI | | <u>88</u> | | | | |
| | Sounds and Audio Devices | Speech | System | Taskbar and Start Menu | User Accounts | Windows Firewall | Wireless Network Setup Wizard | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Select Network Connections (if unavailable, select show "Classic view")



Vista: Select Start Menu/Windows Logo > Network > Network and Sharing Center > Manage Network Connections

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Windows 7: Select Start Menu/Windows Logo > Network > Network and Sharing Center > Change Adapter Settings

Once you can view your system's network connections, right click on "Wireless Network Connection" and select "Disable".

Macintosh OS X

Select the Airport Status Icon (upper right hand corner of screen) and select "Turn Airport Off"

When logging into the Bullet to configure the unit, you will need to have a Static IP address on your <u>PC/MAC's Ethernet Adapter.</u>

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Windows

XP: Open Start Menu and select Control Panel



Select Network Connections and right click "Local Area Connection"





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|--|--|---|--|--|--|---|
| dress 🔇 Network Connections | | | | | | |
| 1 | Name | | Туре | Status | Device Name | F |
| Create a new connection Set up a home or small office network change Windows Firewall change Windows Firewall Deable this network device Repart this connection We status of this connection Change settings Cha | Land or night Speed 1394 Connection Lical Areas (Action of the Connection of the C | Isable Status Lepair Iridge Connections Dreate Shortout Voper lies | LAN or High-Speed Inter LAN or High-Speed Inter LAN or High-Speed Inter LAN or High-Speed Inter | Connected, Firewalled Connected, Firewalled Not connected, Firewalled Connected, Firewalled | 1394 Net Adapter Broadcom 570x Gigabit I Inte(R) PRO/Wireless 22 (ZD12118)JEEE 802.11 b | |

Select Internet Protocol (TCP/IP) or Internet Protocol (IPv4) and click Properties

| Connect using: | Advanced | |
|---|--|-------------------------------|
| Broadcom 570x G | iigabit Integrated Co | Configure |
| AEGIS Protoco | I (IEEE 802.1x) v3.4. tt Protocol ol (TCP/IP) | 5.0 |
| < | | |
| Description Transmission Control wide area network pr across diverse interco | Protocol/Internet Pro ptocol that provides o nnected networks. | tocol. The default |
| Show icon in notifica | tion area when conn connection has limite | ected d or no connectivity |



| he appropriate IP settings. | d to ask your network administrator for |
|--|---|
| Obtain an IP address automa | atically |
| Use the following IP address | |
| IP address: | 192 . 168 . 1 . 10 |
| Subnet mask: | 255 . 255 . 255 . 0 |
| Default gateway: | |
| Obtain DNS server address a | automatically |
| Output the following DNS served | er addresses: |
| Preferred DNS server: | |
| | |

Select "OK" and select "Close" on the Local Area Connection properties window.

- Vista: Start Menu/Windows Logo > Control Panel > Network and Sharing Center > Manage Network Connections > right click "Local Area Connection" and follow instructions from page 5.
- Windows 7 : Start Menu/Windows Logo > Control Panel > Network and Sharing Center > Change Adapter Settings > right click "Local Area Connection and follow instructions from page 5.

Once you have configured your Bullet(s), you will need to follow these steps again and select "Obtain an IP address automatically"



Your PC/MAC is now ready to configure the Bullet High Speed Wireless Platform.

Open a web browser (Internet Explorer, Mozilla Firefox, Safari, etc.) and enter 192.168.1.20 into the address bar and hit "Enter".

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|-------------------|--------------------------|--------------------|--------------|--------|---------------|--------------|--------------|--------|
| Eile | <u>E</u> dit <u>V</u> ie | w Hi <u>s</u> tory | <u>B</u> ook | marks | <u>T</u> ools | <u>H</u> elp | | |
| $\langle \rangle$ | > - | C × | | 1 | 92.168. | 1.20 | | |
| N 💦 | lozilla Fir | efox Start | Page | | | ÷ | | |
| Web | Images | <u>Videos</u> | <u>Maps</u> | News | Shop | oping | <u>Books</u> | more 🔹 |

Enter 'ubnt' (minus quotations) into both the User Name and Password field and select "OK" (This is the default username and password for the Bullet, this can be changed in the **System** tab)

| uthenticat | ion Required 🛛 🕹 |
|------------|---|
| ? | A username and password are being requested by $\ensuremath{http://192.168.1.20}$. The site says: "UBNT" |
| User Name: | ubnt |
| Password: | |

This is the main configuration page of your Bullet High Speed Wireless Platform. This will show the current status of the unit along with LAN/WLAN throughput and signal strength once the unit is configured.

| MAIN WIRELESS | NETWORK ADVANCED | SERVICES | SYSTEM | | Tools: |
|--------------------|-------------------------|----------------|------------------------------|----------------|---------|
| Status | | | | | |
| Device Name: | UBNT | | AP MAC | Not Associated | |
| Wireless Mode: | Station | | Signal Strength: | | 0 dBm |
| SSD. | ubrit | | Noise Floor: | 0 dBm | |
| Security. | none | | Transmit CCQ: | 0% | |
| Version | v5.0.2 | | TX/RX Rate: | - / - | |
| Uptime: | 01:41:18 | | AirMac | Disabled | |
| Dete: | 2009-10-23 12:40:16 | | | | |
| Channel/Frequency: | 3 / 2422 MHz | | | | |
| Channel Width: | Auto 20 / 40 MHz | | | | |
| ACK/Distance: | 25 / 0.4 miles (0.6 km) | | | | |
| TX/RX Chains: | 1X1 | | | | |
| WEAN MAC | 00:15:6D:F0:1C:8A | | | | |
| LAN MAC | 00:15:6D:F1:1C:8A | | | | |
| LAN | Plugged | | | | |
| Monitor | | | | | Refresi |
| | Throughput AP Is | formation AR | P Table Bridge Table Fir | ewall Log | |
| | LAN | | | WLAN | |
| 90 RX: 0bps | | | 90 RX: 0bps | | |
| 70 TX: Obps | | | 80 70 TX: Obps | | |
| 60 | | | 60 | | |
| 60 | | | 50 | | |
| 20 | | | 20 | | |
| 20 | | | 20 | | |
| 10 | | | 10 | | |
| ups u | | | eps u | | |



Select the "Wireless" tab and change the "Wireless Mode" to "Access Point WDS".

| MAIN | WIRELESS | NETWORK | ADVANCED | SERVICES | SYSTEM | | Tools: | |
|---------|-------------------|-----------------|----------------|-----------|--------|---------------------|--------|--------|
| Basic W | fireless Settings | | | | | | | |
| | Wreless | Mode:[?] Sta | tion | ~ | | | | |
| | | ESSID: ubr | t | Se | ect | | | |
| | Lock to | AP MAC: | | | | | | |
| | Cour | try Code: Un | ted States | ~ | | | | |
| | IEEE 802 | 11 Mode: Ng | | ~ | | | | |
| | Channel | Width:[?] Au | to 20/40 MHz | ~ | | | | |
| | Channel S | hifting:[?] Dis | abled | ~ | | | | |
| | Channel Scan I | List, MHz: 📃 | Enabled | | | Edit | | |
| | Outp | ut Power: = | | 28 | dBm 🗌 | Obey Regulatory Pow | er | |
| | Transmission Re | te, Mbps: Be | st (automatic) | ~ | | | | |
| Wireles | s Security | | | | | | | |
| | | | | | | | | |
| | | Security: nor | 1e | ~ | | | | |
| | WPA Authe | entication: PS | K M EAP-TTL | S V MSCHA | PV2 V | | | |
| | WPA Presh | ared Key: | | | | | | |
| | V/P/ | A Identity: | | | | | | |
| | WPA Us | ser Name: | | | | | | |
| | WPA User P | assword: | | | | | | |
| | | | | | | | | |
| | | | | | | | | Chapge |

This will open the "WDS Peers" table. Enter the MAC Address of the secondary Bullet (12-digit alphanumeric code located on the top of the Bullet product box) into the first WDS Peers field.

Do not enter the MAC address of the unit you are configuring into the WDS Peers field. If you are not sure of which address is correct, you can verify the address against the WLAN MAC address at the **Main** Tab of the configuration screen

| C - I+ - | ((Classical) | 1 : + | | | | ((A | | | |
|----------|--------------|----------|----------------|-----------|------------|-------|-----------|----------------|-----------|
| Select | Chanae | in the i | 'ower riant na | na cornei | r ana then | ADDIV | at the up | per riant nand | a corner. |
| | | | | | | FF 7 | | | |

| aullet M² | | | AirOS |
|--------------------------|-------------------|--------------------------------|--------------|
| MAIN WIRELESS NETWO | RK ADVANCED SERVI | CES SYSTEM | Fools: |
| Basic Wireless Settings | | | |
| | | | |
| Wireless Mode:[?] | Access Point WDS | Auto | |
| WDS Peers: | | | |
| | | | |
| | | | |
| SSID: | ubnt | Hide SSID | |
| Country Code: | United States | | |
| IEEE 802.11 Mode: | Ng 🗸 | | |
| Channel Width: [?] | 4U MHz | | |
| Channel Shifting: [7] | Disabled V | | |
| Extension Channel | Linner Channel | | |
| Output Power: | | 28 dBm Obey Regulatory Power | |
| Transmission Rate. Mbps: | Best (automatic) | 20 abin to obcynegadabry rower | |
| | | | |
| Wireless Security | | | |
| Security | none | | |
| WPA Preshared Kev | | | |
| MAC ACL: | Enabled | | |
| Policy | Allow | | |
| | | Add | |
| | ~ | | |
| | | | |
| | ~ | Remove | |
| | | | |
| | | | Change |
| | | | |
| | © Copyright : | 2006-2009 Ubiquiti Networks | |

Once the Bullet has rebooted, you are ready to configure the second half of the bridge. Unplug the Ethernet cable from the Bullet you have just configured and connect to the Ethernet port of the second Bullet.

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Follow the same procedure as the previous unit (page 8)

Select the "Wireless" tab and change the "Wireless Mode" to "Station WDS"

Enter the MAC Address of the primary Bullet (the one previously configured) into the "Lock to AP MAC" field. Select "Change" in the lower right hand corner and then "Apply" at the upper right hand corner.

| MAIN | | K ADVANCED | SERVICES | SYSTEM | | Tools: |
|-----------------|----------------------|------------------|------------|----------|---------------------|--------|
| | | | 0011110100 | 01013.0 | | |
| Basic Wireless | Settings | | | | | |
| | Wireless Mode:[?] | Station | ~ | | | |
| | ESSID: | ubnt | Se | lect | | |
| | Lock to AP MAC: | | | | | |
| | Country Code: | United States | ~ | | | |
| | IEEE 802.11 Mode: | Ng | ~ | | | |
| | Channel Width: [?] | Auto 20/40 MHz | M | | | |
| | Channel Shifting:[?] | Disabled | M | | | |
| Cha | nnel Scan List, MHz: | Enabled | | | Edit | |
| | Output Power: | - | | dBm 🔲 Ok | ey Regulatory Power | |
| Trans | mission Rate, Mbps: | Best (automatic) | - | | | |
| Mirologe Socur | itu | | | | | |
| All Close Secul | ny . | | | | | |
| | Security: | none | ~ | | | |
| 1 | MPA Authentication: | PSK 🗠 EAP-TTL | S 🖂 MSCHAI | ×v2 ~ | | |
| 1 | NPA Preshared Key. | | | | | |
| | WPA Identity: | | | | | |
| | WPA User Name: | | | | | |
| V | PA User Password | | | | | |
| | | | | | | |
| | | | | | | Chu |
| | | | | | | Cris |

Select the "Network" Tab and change the IP Address field to 192.168.1.21

| | Internet in the second s | | |
|-------------------------|---|---|-----------------------|
| Network Mode: | Bridge | Image: A start of the start of | |
| Disable Network: | None | * | |
| Network Settings | | | |
| Bridge IP Address: | ODHCP Static | | |
| IP Address: | 192.168.1.20 | Auto | P Aliasing: 🔽 |
| Netmask | 255.255.255.0 | | IP Aliases: Configure |
| Gateway IP: | 192.168.1.1 | | |
| Primary DNS IP: | 0.0.0.0 | | |
| Secondary DNS IP: | | | |
| DHCP Fallback IP: | 192.168.1.20 | | |
| Spanning Tree Protocol: | | | |
| Firewall Settings | | | |
| Enable Firewalt | Configure | | |
| | | | |

Select "Change" in the lower right hand corner and then "Apply" at the upper right hand corner.

Your Bullet High Speed Wireless Platforms are now configured as a Point to Point Bridge. Antennas can now be connected to the integrated N-Type connector and the system can be deployed. The connection diagram at the beginning of this manual details the correct cabling connections for integration into an existing network or LAN. If you are bridging to a single computer, the LAN connection of the POE Injector of the remote unit or "Station" can be connected directly to the computer's Ethernet port to allow network access.

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Additional Information

Most connection issues can attributed to incorrect MAC address entry. If you are unable to gain network access or if the bridge is not functioning correctly, double check the MAC address entries against the WLAN MAC addresses listed on the Main Tab of each of the Bullet's configuration page.

The Bullet High Speed Wireless Platform is, by default, configured as a non-routing, non-addressing network device. If you wish to use these units to forward DHCP assigned addresses to a remote location, the default "Bridge" network mode will suffice (listed under the "**Network**" tab). If you wish to have the one of the Bullets act as a DHCP server or NAT gateway, select the "**Router**" option and the unit will allow configuration of your LAN/WLAN addressing and DHCP functionaility.

Wireless speeds are affected by many different environmental variables, including line-of-sight, frequency interference and ambient radio noise. The Bullet High Speed Wireless Platform supports speeds up to 100 megabits/second (true throughput), however, due to natural variance in signal and the automatic speed selection, this may vary. If sustained speeds are required, you can lock the Bullet(s) into a throughput rate using the "**Transmission Rate, Mbps**" menu under the "**Wireless**" Tab