Wireless Genie Mini and WVB
DIRECTV Genie
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DIRECTV changed the way that customers viewed television content with the Genie system.

To push this technology even further, we now welcome the Wireless Video Bridge (WVB) and the DIRECTV Wireless Genie Mini, or C41W.

The WVB allows the customer to have wireless clients in their home, eliminating the need to run wiring to each room with a television.

This training will cover what these new products are, how to install them, and how to troubleshoot any issues related to them.
In order to provide wireless service in a customer’s home, DIRECTV has developed two new products: the WVB and C41W.

This section will cover what the WVB and C41W are. In later sections, you will learn how to install and troubleshoot these pieces of hardware.
DIRECTV Wireless Video System, in conjunction with RVU technology, allows customers to view DIRECTV programs at any TV location in the house without having a receiver at every TV location.

The Genie Server (either HR34 or HR44) can connect to the Genie Mini Client (C31 or C41) or, through the Wireless Video Bridge (WVB), stream wirelessly to the Wireless Genie Mini (C41W).

The Wireless Video Bridge (WVB) provides the ability to stream DIRECTV programming from a Genie Server to the C41W client wirelessly.

The Wireless Video Bridge creates a private network throughout the home without the use of coaxial or CAT5 cables at every TV; this network is only accessible to DIRECTV products. The network created by the WVB and Genie Server is different than the customer's wireless internet network.

The C41W is the first of a new generation of Genie Mini Clients in DIRECTV's RVU product line with wireless capability. It provides video in every room without requiring any wired connection, or the need for additional receivers. The C41W must be used in conjunction with the DIRECTV Wireless Video Bridge and Genie Server (either HR34 or HR44).
### Wireless Genie Mini and WVB Overview

#### Front Panel
- Power button with blue status indicator
- Network status indicator LED
- IR interface for Remote control. Also has a built-in RF remote antenna

#### Rear Panel
- 10-pin Mini-DIN output connector
- USB 2.0 port; for diagnostics only
- DC power inlet
- HDMI with HDCP
- Digital coax output

#### Side Panel
- Red Reset Button

### C41W Specifications

**Size and Weight**
- Height: 1"
- Width: 7"
- Depth: 4.5"
- Weight: 9.3 oz.

**Power**
- EPS10 External PSU
- AC external PSU
- -120v~60HZ, 18W
- Input: 12V DC 1.5A
- Complies with Energy Star requirements
The C41W has many similar features to our other clients, with the addition of the ability to connect to the WVB.

<table>
<thead>
<tr>
<th>Features/Connections</th>
<th>C41W</th>
<th>C41</th>
<th>C31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built in support for card-less/box-less DIRECTV service (RVU)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Supports 3D</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Access Card</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Front Panel Touch Sensor/Resolution LEDs</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Multi-Switch compatible</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ethernet Jack</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>RF Remote Support</td>
<td>Yes [RC71 + up]</td>
<td>Yes [RC71 + up]</td>
<td>RC6X [RC71 IR Only]</td>
</tr>
<tr>
<td>Built-In Wireless Video Bridge Support</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>MoCA Compatible</td>
<td>Yes [Wirelessly]</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
The C41W has a similar user experience to the C41 and C31. The C41W boot sequence is similar to any other wired client set top box (C31/C41), and takes approximately one to two minutes to fully boot up and connect to the Genie Server. The boot process will go through several screens. The following setup features work the same as on the C31 or C41:

- **Copying a Location**
  - Copying a client location for the C41W is performed in the same manner as the C31/C41.

- **Replace a Location**
  - Replacing a C41W location is performed in the same manner as the C31/C41.

- **Deleting a RVU Client**
  - Deleting a C41W location is performed in the same manner as the C31/C41.
Wireless Video Bridge (WVB)

The WVB is only to be installed vertically (It is not to be placed in horizontal position, which is similar to the Wireless Cinema Connection Kit). The WVB can be wall-mounted in vertical position using the mounting bracket provided.

Front Panel

The front panel contains a multi-color status indicator LED. The different LED states help you understand the status of the WVB, and will be explained in more detail later in the module.

Rear Panel

- Reset Button
- Coax Towards LNB
- Ethernet Port (disabled; do not use)
- Coax Towards Receiver
- DC Power (EPS10)

WVB Specifications

<table>
<thead>
<tr>
<th>Size and Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height: 7.25&quot;</td>
</tr>
<tr>
<td>Width: 1&quot;</td>
</tr>
<tr>
<td>Depth: 7.5&quot;</td>
</tr>
<tr>
<td>Weight: 12.05 oz.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ports and Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11n Wi-Fi</td>
</tr>
<tr>
<td>Coax Network SWiM input</td>
</tr>
<tr>
<td>Coax Network SWiM output</td>
</tr>
<tr>
<td>DC Power Input</td>
</tr>
<tr>
<td>Inactive Ethernet Port</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS10 External PSU</td>
</tr>
<tr>
<td>AC external PSU -120v~60HZ, 18W</td>
</tr>
<tr>
<td>Input: 12V DC 1.5A</td>
</tr>
<tr>
<td>Active Current Consumption (DC):1.0A – 1.2A</td>
</tr>
</tbody>
</table>
The C41W is designed to use the RC71 or higher remote control. This remote is designed to work with the HR44, C41, and C41W, as well as future products. Additionally, the RC6X remotes will work with the C41W, but only in IR mode.

*Note: while in RF mode, the Genie Remote will not work on older receivers or clients, such as the HR34 or C31 client. If you need to use a Genie Remote on those models, it must be placed in IR mode.*
1. True or False: The Wireless Genie Mini, or C41W, only works with an HR44 receiver.

2. What are some of the benefits of using the RC71/Genie Remote with the C41W?

3. Can a customer have both wired (C31/C41) and wireless (C41W) clients in their home? Why would a customer have something like this?

Summary
- Identify and understand the basic features of the WVB and C41W.
Objectives
• Install the C41W and Wireless WVB Bridge.

How the Wireless Video Bridge Works
■ The wireless bridge will be connected to the Genie Server via the SWiM/MoCA network.
■ The WVB acts as an access point for the C41W, and creates the Wireless Video Network that lets wireless clients connect to the Genie Server.
■ The WVB will deliver audio, video, data and the user interface wirelessly to the wireless clients as if it were a traditional wired Coax network in the home, and this connection is different and separate from the Wi-Fi connection to the customers Router.
■ The Genie Server can support a mix of both wired and wireless clients, with a maximum of eight clients (with a total of three clients active at one time).
■ The customer’s work order will designate if they have wireless equipment on their installation.
The DIRECTV Genie Wireless Network

The DIRECTV Genie system works as just that: a system with several components that work together. In order for a Genie system to work, you need several components, including a SWiM installation, the Genie Server, client device (wired or wireless), and when using the wireless clients, a Wireless Video Bridge. If you remove one of the components in the Genie system, the system won’t function properly.

Think of the Wireless Video Bridge as the access point that allows the wireless clients to connect to the Genie Server. Without that access point, the Wireless Clients won’t be able to communicate with the Genie Server. Unlike a traditional installation, where receivers work independently, the Genie System, especially the clients, rely on the server and WVB to provide video. If there is a problem with the WVB or Genie Server, the clients won’t work.

This is similar to a media center in a customer’s home; in a media center, there are several components which work together to bring video or audio to the different locations in the customer’s home.

When installing the Genie system as wireless, the Genie system creates the DIRECTV Wireless Video Network. It’s important to know that this is an independent network from the customer’s home wireless internet network.

If the customer has broadband internet in their home, and you would like it to work over the Genie network, you can either use the internal CCK-W in the HR44, HR44 with a broadband DECA, or when using an HR34, a Wireless CCK or broadband DECA.
DIRECTV System Setup

Installation of a wireless Genie system starts off the same as any standard Genie install. Perform the outside site survey, and locate the best location for the ODU and system grounding, as well as the entry point for your coax.

Minimum Distance Between Wireless Devices

The technology is designed to be resistant to interference and saturation, but the wireless devices should have a minimum distance between other wireless devices to decrease risk of interference and possible saturation. Any device that transmits wirelessly must be a minimum of **four feet apart**. This includes:

- WVB
- HR44 when using the internal wireless CCK
- C41W Wireless Client
- The customer’s wireless router
- A wireless CCK-W in conjunction with an HR34

If using an HR34 as the Genie Server, you do not have to worry about the distance of the Genie Server in relation to the other devices. But, as illustrated above, if using the HR34 with a CCK-W, you must follow the distance guidelines.

**NOTE**: Distance is measured in physical distance, NOT the length of the cable. This is referring to the physical distance between devices, measured with a tape measure…

DIRECTV wireless systems have a maximum range of up to 80 feet, and through up to five walls. Based on the building material and installation locations of the equipment, this range may vary, as different materials and barriers will impact the wireless signal.

*FIGURE 2*. Minimum distances between wireless components.
Equipment Site Survey

The site survey is important to determine placement of the WVB and wireless clients (C41W).

As part of the site survey, technicians should consider certain factors when determining the best location for the Wireless Video Bridge in order to ensure that strong wireless connectivity can be established between the Wireless Video Bridge and wireless clients. Additionally, a customer may want to move a C41W to another television, so it’s important to explain how wireless signals work, and how moving hardware can impact that; the customer should never move the WVB. Please note that the C41W is not rated for outdoor use, and if the customer plans on moving any wireless clients, inform them of this. While this is a wireless product and can work outdoors, it can still be damaged by different weather elements, such as rain, snow, etc.; outdoor use should only be temporary, and the wireless client should not be left outside.

This site survey should take into the following into account:

- Home construction materials
- Barriers
- Distance between Wireless Video Bridge and other DIRECTV hardware (e.g. Genie Server or clients), as well as customer devices

1. Determine where to install the client(s), typically at the customer’s TV(s), or areas that the customer may move the wireless client to.
2. Determine where to place the WVB, consider location of wireless client(s) and ability to connect the WVB to the MoCA network (your SWiM Network). When placing the WVB, find a location which will provide excellent service to the entire home. Also, keep in mind the proximity of the wireless devices, and remember that wireless equipment must be at least four feet apart.

It's important to work with the customer before setting up any equipment to determine the locations of the WVB and other pieces of equipment.

It is important to find the best location for the Wireless Video Bridge instead of only finding a location that is convenient to existing cable runs. In most cases, it will be necessary to run a new cable to the Wireless Video Bridge’s location to connect it using RG-6 cabling.

If after your site survey you determine that wireless is not an option in the customer’s home, you must call TSC to change to a wired installation.
Maximum Distances and Material Loss

The WVB and the Wireless Client (C41W) should be placed no further than 80 feet apart and have no more than 5 internal walls between them. It is important to recognize this guidance, and that home construction may significantly decrease range.

Walls and other barriers can decrease the range and significantly impact the maximum distances. Use signal strength to determine installation quality.

Below are examples of various barriers and how they degrade the signal and lower the maximum distance from the WVB

<table>
<thead>
<tr>
<th>Standard</th>
<th>Medium</th>
<th>Strong</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 dB</td>
<td>5-10 dB</td>
<td>10-20 dB</td>
<td>&gt;20 dB</td>
</tr>
<tr>
<td>Plexiglass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet plywood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal wall (2 layers drywall + 2”x4” studs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fir lumber</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-stucco external wall (wood siding)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood floor/ceiling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stucco wall (with diamond metal mesh)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick/Stone wall/fireplace</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double-pane tinted high efficiency door/window</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal objects (ducting, appliance, enclosure)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

No impact up to 5 barriers; up to 15 ft distance impact for each additional barrier

Up to 30 ft distance impact per barrier

Up to 45 ft distance impact per barrier

Potential link breakage with solid red LED
Material Loss Examples

Use the diagram, along with the chart on the previous page, to calculate what the loss would be in each of these installation scenarios. Since there is a range of dB loss for each type of material, use any amount of loss that applies in the range of that material.

Examples of operating range

- 65 ft with 5 interior walls + 1 standard barrier
- 50 ft with 5 interior walls + 1 medium barrier
- 35 ft with 5 interior walls + 1 strong barrier

Follow each dashed line in the illustration above. Calculate the dB loss for each barrier type and enter that value in the box on the right.
Wireless Video Bridge Setup/Beacon Mode

Beacon Mode is the status of the WVB after its initial boot up, where it is broadcasting a signal to DIRECTV Wireless Clients, allowing them to view the WVB's wireless signal strength. This is how the WVB ensures all clients have an acceptable wireless signal strength from the WVB. Using Beacon Mode is a required step in the installation process, and must not be skipped.

The following is the WVB setup procedure; this procedure covers both new installs and wireless upgrades. The WVB is not to be connected to the SWiM/MoCA network until later in the process, so make sure you follow the steps as outlined.

1. Select the placement for the WVB. Select a location for the WVB based on the following factors:
   - Best location to provide signal to all C41Ws (use up to five walls and 80 feet as the guide), and potential locations the customer may move a C41W client to.
   - Access to the coax SWiM network using a verified coax drop; do not connect the WVB to the coax network yet.
   - You may have to run new cable for the Wireless Video Bridge to get the best placement in the home.
   - Installing the WVB inline to the Genie Server may not always be the best location, so make sure you find the best location, even if it means running a new coax line to that location.
   - The WVB must be installed in a vertical position using the permanently attached foot/pedestal. If the WVB is lying flat on its side, it will have a negative impact on the distance the clients can be from the WVB.
   - Do not install or place the WVB on the floor, as it may be easily knocked over and impact signal strength.

2. Power on the WVB and observe the power up sequence. The WVB will boot up to Beacon Mode, where it transmits a signal for C41W clients. The WVB boot sequence is as follows:
   - WVB LED flashes blue during boot up.
   - The boot up takes approximately one to two minutes.
   - Once boot up has completed, the WVB LED alternates green/yellow.
   - The WVB is now in Beacon Mode.
   - Beacon Mode works only on WVB and clients that have not previously been paired (factory fresh) or client that have been reset to factory defaults.

3. Setup the wireless clients (C41W) in the location they will be used.
   - If the C41W is to be mounted behind the TV, it should be placed as close to its final mounted position as possible to fully verify signal quality to the WVB.
   - Make sure you remove the plastic film from the C41W; this can impact IR signal if using the RC71 in IR mode. (Continued on next page.)
Wireless Video Bridge Setup/Beacon Mode (cont.)

4. Connect the C41W to the TV and power on. The C41W will boot up to the Connecting to Video Bridge screen. Proceed to the next step in the installation, but do not select Connect Now (or Continue, depending on your software version; older software versions will state Continue) at this time. Move to the next client to verify signal.

5. The signal strength on every C41W should be checked by ensuring that the LED is green. If the LED and signal meter are not green, do not select Continue or Connect Now.
   - The LED on the front of the C41W has roughly a ten-second refresh rate, so when moving the C41W, wait about ten seconds and verify the color of the LED.
   - If one or more of the C41Ws’ network LED are not green, the WVB will need to be relocated to an area that maximizes signal range to all clients and minimizes interference. If more than one C41W will be installed and a green LED cannot be achieved on all C41Ws the technician has the following options:
     - Use a wired client (C31/C41). Follow existing guidelines to install the wired client if needed.
     - Use more than one WVB. Choose another location for the first WVB that covers most of the C41W clients and choose a location for a second WVB to cover the C41W client(s) that have poor signal coverage.

6. Do not proceed if the signal strength is fair (yellow network LED’s). A yellow LED on the C41W indicates poor signal strength to the WVB. Consider moving the WVB, adding another WVB, or using a wired client.

   If a technician is finding it very difficult to get green LED signal coverage on all C41Ws in a single household after trying multiple locations in Beacon Mode, they can add a second Wireless Video Bridge to the work order without calling TSC. However, in most pilot households, we found that a single Wireless Video Bridge can support the entire network of C41Ws and a second Wireless Video Bridge was not necessary. In 98.5% of all installations during the pilot, only one WVB was needed.

   Try to focus on good WVB placement; this will help all the clients get a good signal, and can prevent future service calls.
WVB Installation

Once Beacon Mode is complete, and the optimal locations for the WVB(s) and C41W client(s) have been determined, installation can continue.

1. If not previously performed, install the ODU/SWiM and run the coax cable to the WVB location(s).
2. If not previously performed, install, update the software, and activate the Genie Server.
3. Connect the WVB to the SWiM/MoCA network (if more than one WVB is used, connect all WVBs to the SWiM/MoCA network)
4. If the WVB is not powered on, power on the WVB. After a short delay (one to two minutes) the LED should be solid green. Note: The LED will be solid blue if the Genie Server previously had ANY clients (wired or wireless) paired to it. If the LED is not solid green or solid blue, refer to Troubleshooting section. (Full boot takes one to two minutes, so be patient.)
5. On the Genie Server, verify the OSD “A wireless video bridge has been found and configured successfully” has been displayed. Select OK to clear the OSD. This often takes only 30 seconds, however it can take up to five minutes in some cases.
   - If the OSD does not display on the Genie Server, check the WVB LED and refer to the troubleshooting section.
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    - If the OSD does not display on the Genie Server, check the WVB LED and refer to the troubleshooting section.
8. Verify all WVBs are connected to the Genie Server by checking the WVB status under **Whole Home - Video Bridge - Video Bridge Status** on the Genie Server.
   - Each WVB in the system should show ACTIVE.
7. Installation of the WVB is complete once all WVBs appear ACTIVE on the Genie Server’s Video Bridge Status screen, and all WVBs have a solid green or solid blue LED. (This means that the Genie Server and the WVB are connected, even though you may not have a wired or wireless client connected).
Installing Wireless Genie Mini Clients

Once the WVB is properly configured by the Genie Server, the wireless client(s) (C41W) can be added. The WVB’s network status light should be solid **green** or **blue** (if previous clients were connected).

1. On the Genie Server, go to **Whole-Home - Manage Clients - Add Clients** and note the PIN on the screen; keep the Genie Server on this screen until all C41Ws are installed.
   - **Upon selecting Add Clients, there will be a warning screen. You must use the Dash (-) key on the remote before you can add clients.**
   - **Do not exit the Add Clients screen until all the clients are added.**
   - **Add one client at a time all the way to Live TV video and programming the remote. This is important because the process will abort if attempting to add multiple clients at the same time. It is not necessary to wait for the client to update software before moving onto the next client.**

2. Approximately 30 seconds after entering the Add Clients screen at the Genie Server, the WVB will have a flashing LED that alternates between green and blue. This indicates that the system is in the proper state to add a wireless client (C41W).
   - If the wireless clients are unable to connect to or find the server, go to the WVB and look at the LED color. If it is not flashing **green/blue**, troubleshoot to this symptom.

3. If not already powered on, power on one of the C41Ws.

4. If the C41W is not displaying a **green** signal strength icon or **green** network LED, do not proceed. Consider moving the WVB to improve signal strength.

5. On the wireless client (C41W), select **Connect Now/Continue** while on the **Connecting to Video Bridge** screen to begin client connection and registration.
   - **Once Connect Now is selected, the network LED will flash RED and should be ignored until all wireless clients (C41W) are installed and after the Genie Server exits the Add Clients screen.**
   - Along with other state changes, this can take one to two minutes. (continued on the next page)
Installing Wireless Genie Mini Clients (cont.)

7. **Attempting to connect to video bridge**… will be displayed. During this step, it is common to see a gray screen or a flashing red LED as the client establishes communication with the Genie Server through the WVB.
   - Do not perform any troubleshooting until the process completes.
   - If the “Unable to connect to Video Bridge” OSD appears, see troubleshooting steps.

8. When the wireless connection between the WVB and wireless client (C41W) completes, enter the PIN from the Genie Server.

At any time throughout the installation, the Software Download OSD may appear. If the OSD appears, select **OK, Download** to start the download. Do NOT exit Add Client on the Genie server until the download completes.

- If the Software Download fails, it will reboot itself. Once the client boots, the wireless client (C41W) will be in one of three states:
  - **Live TV**: Do Nothing. If the download OSD appears, select “OK Download”.
  - **Enter PIN screen**: If the download OSD appears, select “OK Download”. If the download OSD does not appear, enter the PIN (even if you may have previously entered the PIN).
  - **Select a Server OSD**: Verify the Genie server is in the Add Client screen, and ensure that the WVB LED is alternating blue/green.

9. Once the PIN is entered, select Add a New Location on the Client.
   - If the user does not have enough Client services on the account, you will get a ‘Call DIRECTV’ screen on the Client. You must call DIRECTV to add the Client to their account.
   - If the user has enough Client services (or once they call DIRECTV to add the client service), you will be taken to the Name the Client screen.

10. Enter a name for the Client, and you will have the option to copy/don’t copy the location settings from the Genie Server or another Client.
    - The wireless client (C41W) may go to gray screen, may have a flashing red network LED, and/or may display the Wireless Connection Lost OSD. The gray screen issue will be corrected in a future software update.
    - The OSD will clear, and the network LED will go back to green after 10 – 20 seconds.
    - If gray screen persists and the network LED is **green**, change the channel to restore video.
Installing Wireless Genie Mini Clients (cont.)

11. After these steps have been completed, the wireless client (C41W) will be registered to the Genie Server and WVB. After the client has been added, the registration is maintained even if the WVB and/or wireless client (C41W) are power cycled. After 1-2 minutes, video should begin on the wireless client (C41W).

12. Complete the wireless client (C41W) setup by programming the remote and selecting “Watch DIRECTV”
   - In order to program other items such as the TV or AV receiver to an RC71 remote, you must setup the RC71 in RF mode.

13. If a 2nd and/or 3rd wireless client (C41W) are needed, start from step 5 of Add a Wireless Client. If more than 3 clients are to be added (4-8 C41Ws), place the other wireless client(s) (C41W) in standby before adding the additional clients. No more than 3 clients can be powered on at the same time.

14. After all C41Ws have been added, go to the Genie Server and select DONE on the Add Clients screen.

15. All wireless clients (C41W) that are ON should have solid green network LED. After 1-2 minutes, the WVB LED should display a solid blue.

As mentioned earlier, make sure to add one client at a time. This is important because the process will abort if attempting to add multiple clients at the same time. When exiting Add Clients, it is likely to see a momentary disruption on the C41Ws as the network is stabilized.

After selecting Done, the wireless client (C41W) may go to gray screen, may have a flashing RED network LED, and/or may have the Wireless Connection Lost OSD. The OSD should disappear and the LED will go back to green.

If gray screen persists, wait two minutes before troubleshooting.
Final Installation Checks
Before finishing, follow these steps to ensure that the whole Genie System is working.

1. Turn on the Genie Server and up to 3 clients.
2. Run a System Test on the Genie Server and make sure there are no error codes.
3. Confirm that the LED on the WVB is solid blue.
4. Ensure the network LED on clients 1, 2 and 3 (wired and wireless) is green, and confirm live TV is working. If the Genie System is internet connected, press the Dash (-) button; the client will display Internet Connected.
5. If the customer has more than 3 clients, put clients 1, 2 and 3 into Standby, and turn on clients 4, 5 and 6.
6. Confirm that the LED on the WVB is still solid blue.
7. Ensure the network LED on the client 4, 5 and 6 is green, and confirm live TV is working.
8. If the customer has a 7th and 8th client, put the other clients into Standby and turn on Clients 7 and 8.
9. Confirm that the LED on the WVB is still solid blue.
10. Ensure the network LED on clients 7 and 8 is green, and confirm live TV is working.

FIGURE 11. Installation Example.
C41W Installation - Mounting the Wireless Genie Mini

Three keyhole mounting slots are included on the cradle bottom to allow mounting on the unused VESA mount points available on many TVs. The design accommodates both 75 mm and 100 mm mounting point spacing. The axis of the mounting holes is centered on the depth of the C41W Client within ±10% of the depth dimension of the unit.

WVB Installation - Mounting the WVB

Tabletop Installation

The DIRECTV Wireless Video Bridge unit can be placed directly on a flat surface, and must be mounted vertically. Like the CCK-W, the antenna is on the top of the unit, and signal can be impacted if placed on its side.

Wall Mount (Included) Installation

The WVB includes an L-Shaped mounting bracket to allow the WVB to be mounted vertically. The mounting bracket has tabs on the bottom so you can attach a zip-tie to the mount.

The WVB is “clipped-in” to the mounting bracket.
WVB Installation - Mounting the WVB

Two M4 x 20mm pan head screws (Thread type: Tapping) and expansion anchors are included for wall mounting. Suitable masonry plugs may be required if attaching to a stone/brick wall.

To mount the unit on a wall, follow these instructions:

1. Ensure that the mounting location is free from hazards (electric cables/wires/pipes/etc.).
2. Drill two pilot holes 26mm (about 1.0 inch) deep using a 3.6mm (about 0.14 inch) drill bit.
   - The two pilot holes must be level and spaced 55mm (about 2.17 inches) apart horizontally.
   - When mounting on a stud partition wall, at least one of the mounting screws must be attached to a wooden stud.
3. If using the wall mount method:
   - Drive the screws through the mounting plate to be fastened and into the wall. (See step 1).
   - Align the two slots at the bottom of the unit with the two pins on the mounting plate. (See step 2).
   - Slide them until they lock in place. (See step 3).
Educating Your Customer

C41W
Since the C41W is wireless, a customer could move this device to a different room. If the customer understands wireless technology, let them know that by moving the unit, you could lose connection to the WVB (just like a wireless router in their home). Explain to the customer how placement or distance works, and how it may impact their signal.

Proactively teach the customer how to qualify/move the wireless client by showing them how to use the LED to determine signal. Let the customer know about the range of up to 80 feet and five walls, and how different materials in their home can impact the signal strength. Tell the customer to focus on getting a green LED.

Wireless Video Bridge
After the WVB has been installed, show the customer where it is. Let them know that it is a wireless device, and it should not be covered or moved, as this could impact signal strength to the wireless client devices.

Key Points:
1. The WVB has been placed in the best location for optimal communication to the wireless clients
2. It should not be moved, covered or blocked in any way as that can impact signal strength
3. It should remain standing upright, and should not be tipped over as that will also impact signal strength

RC71
Once everything is up and running, demo the remote, and let the customer control the remote.

Also, if the customer has other devices (such as an A/V receiver), program the RC71 remote to control them.

Exceed Expectations
Customers consistently tell us that taking the time to educate them on the features of their system is one of the best ways to exceed expectations. In the case of the WVB, the ability to move their TV location without a truck roll is a unique benefit, but doing this requires some customer education.

Create a WOW! moment for your customer by taking the time to show them how they can evaluate signal strength and acceptable locations using the LED lights on the device.
Customer Questions and Talking Points

There may be some disconnect between marketing statements surrounding the Wireless Video Bridge and Wireless Genie Mini and customers’ perception of the actual field deployment of these products. Should customers express confusion or displeasure over their installation, here are some talking points to help you along!

Claim: Genie now comes wireless, so no more drilling walls or woodwork in every room.
Talking Points: Using the Wireless Video Bridge, the Genie Server communicates wirelessly to the Wireless Genie Minis. This means no need to run coax cable from the Genie Server to each room, but the Wireless Genie Minis still need to be plugged into a regular power outlet and have an HDMI cord run to the TV’s HDMI input. Additionally, coax cable still needs to be run to the Genie Server and the Wireless Video Bridge to feed the system.

Claim: Genie eliminates messy wires and boxes/customers don’t see boxes or wires in every room.
Talking Points: Wireless Genie Minis eliminate the need for coax cable to be run to the room and are small enough to be hidden behind most wall-mounted TVs. Coax cables will still need to be run to the Genie Server and Wireless Video Bridge, and all set-top boxes will need to be connected to the TV with an HDMI or other A/V cord, as well as be plugged into a power supply.

Claim: Genie gives you the freedom to move your TV anywhere.
Talking Points: Wireless Genie Minis allow customers to move their TVs anywhere within or outside their homes that has a clear signal to the installed Wireless Video Bridge.
1. True or False: You should educate the customer on how to move the WVB throughout the home.

2. Why is it important to make sure that all wireless clients have a green LED?

3. True or False: If the client begins downloading software during the installation process, you should let it complete.

Summary
- Install the C41W and Wireless WVB Bridge.
Objectives

• Diagnose and troubleshoot the C41W and Wireless Video Bridge.

This section will cover diagnostics and troubleshooting the C41W and Wireless Video Bridge.
Troubleshooting Basics

Where do you see the issue? : C41W (wireless client), WVB or Genie Server

- WVB initial setup: Is the WVB LED blinking red?
  - Reset. If doesn’t fix, replace.
- C41W: is the network LED solid yellow or solid red (indicating poor signal strength to WVB)?
  - Focus should be on WVB placement.
- C41W: Is the PIN screen not displayed?
  - Verify state of WVB (flashing green/blue as long as the Genie Server is in Add Clients mode).
  - If not, verify the Video Bridge status on the Genie Server (was it added?).
  - If yes (WVB added to Genie Server), is the Add Clients screen displayed on Genie Server?

C41W: Did the Add Clients fail? Common Symptoms that could cause failure:

- Common Causes:
  - Did someone exit the Add Clients screen on the Genie Server? Re-enter the Add Clients screen on the Genie Server.
  - Do you have fair signal strength from the wireless client to the WVB? Focus should be on WVB placement.
- Troubleshooting Tips:
  - Check LED on C41W (should be green) and on WVB (should be Blue or Blue/Green).
  - Searching for Server may be caused by: the C41W is not paired/registered (C41W flashing red), or the WVB is disconnected from the server (WVB flashing yellow)
  - If WVB will not go to Blue/Green flash when server is in Add Clients, reboot WVB and server.

How to troubleshoot for signal strength issues and how to determine possible structural interference and verify WVB placement:

- Range – the WVB wireless technology is designed to work with 80 feet and five walls
- Construction – The construction reference refers to residential internal wall construction.
  - External walls are denser by nature to protect from outside elements, provide sound proofing and strength of the building, they will reduce the range of the WVB signal.
  - There could be additional loss with walls constructed of stucco, concrete, brick, stone or double walls.
  - Barriers and construction materials can impede signal as well.
- Placement – positioning the WVB behind a blocking structure will significantly reduce range. Blocking structures could be TV, cabinet, closet, etc.

Customer Internet Changes/Issues

If a change occurs to the customer’s internet connection, it can impact the Genie system. Even though the Wireless Video Bridge and C41W clients operate on a completely separate wireless network from a customer’s Wi-Fi, the C41Ws are still sharing Internet access over the Wireless Video Bridge, so changes to network settings affect them. If changes are made to the customer’s Internet connection, the first step is to restore defaults under Settings & Help - Settings - Network Setup on the Genie Server, then reset the Genie Server. Once the Genie Server has fully restarted and is operating normally, power-cycle the Wireless Video Bridge (wait for the WVB to show a solid blue LED). On the Genie Server, perform a Repeat Network Setup. Once a code 88 is seen, power-cycle all wired clients.

There is a one to two minute period after reset where the system is stabilizing. Full functionality will not be immediately available after reset, and technicians should give the system this time to recover before beginning troubleshooting.
Wireless Client Troubleshooting

C41W Gray/Black screen no Banner

Troubleshooting

1. If the wireless client (C41W) network LED is Green, follow normal Gray/Black screen troubleshooting.
   - Change channels
   - Turn off the wireless client (C41W) for 15 seconds and then turn it back on.
   - Verify the customer’s TV is on the correct input
   - Verify cables and connection to the TV is good (including trying a different cable and input to the TV)
     - If the LED is not green, or normal Gray/Black troubleshooting does not resolve, continue to step 2.

2. Run system test on the Genie Server. Troubleshoot any error codes that appear.

3. If there are no error codes, check the LED status light on WVB.
   - If LED is not blue, see WVB LED status troubleshooting
   - If WVB LED is blue, check LED status light on the wireless client (C41W)
   - If LED is not solid green, see wireless client (C41W) status troubleshooting

4. On the Genie Server go to Setting & Help - Settings > Info & Test - More System Info
   a. Scroll down to the Wireless Client(s) that is having the issue and look at its “RSSI”.
   b. If the RSSI does not show “Excellent” then troubleshoot the same as a “Yellow” Network LED on the C41W

5. If internet connected, power-cycle the router.

6. Reset the WVB.

7. Reset the Genie Server, and wait for it to boot up to video.

8. If the client does not have live TV, reset the client, wait for client network LED to turn green and wait 2 minutes.

9. If the Genie Server is connected to the router wirelessly (HR44 internal Wi-Fi/CCK-W), change to a BB-DECA, and refer to Resetting a Genie with Clients section later in the training. If still unresolved, complete an FPR.

C41W Program Banner displayed, no Video on TV
Follow the troubleshooting steps listed for Gray/Black screen.

Freeze Frame/Pixelization on C41W
Follow the troubleshooting steps listed for Gray/Black screen.

C41W Video/Audio on TV but no Menu, Guide or List displays
Follow the troubleshooting steps listed for Gray/Black screen.

C41W: Add Clients failed (does not display video)
Follow the troubleshooting steps listed for Gray/Black screen.
Wireless Client Troubleshooting

Wireless Client Network LED Failures/Bad Wireless Connection

Symptoms

- WVB has a Solid Red LED
- Wireless Client has Yellow, Red or Blinking Red Network LED

Probable Cause

- Poor placement of the WVB and/or Wireless Client

Troubleshooting

1. For Yellow or Solid Red Network LED on the Wireless Client:
   a. Ensure there are no obstacles around the WVB or the Wireless Client that would degrade signal quality.
   b. Try moving the WVB to a better location to improve the signal to the Wireless Client locations. Remember the minimum distance guidelines to separate the WVB from other wireless devices like the customer’s router, an HR44 with built-in Wi-Fi, or, for example, a Playstation 3 with a Wi-Fi connection.

2. For a blinking Red network LED on the Wireless Client:
   b. The Wireless Client should be on the Select a Server or Wireless Connection Lost screen. Select Reset Wireless from the C41W on-screen display.
   c. Follow the installation steps to check the signal strength and pair the Wireless Client.
Client Troubleshooting

Here are some basic troubleshooting tips and tricks.

C41W does not display the Enter PIN screen

Troubleshooting

1. If the Genie server is not in the Add Clients screen, put the Genie server in the Add Client mode and follow the installation procedures.
2. If that does not resolve the issue, follow the installation steps.

C41W Menus in Spanish

Factory-reset the affected clients by holding down the power button for 15 seconds; this should clear the problem.

C41W Component Cable Problems

Some older model televisions may not be able to recognize the 10-pin component cable used with a C41W. Technicians may need to use the 10-pin to composite cable adapter for setup, then switch back to the 10-pin to component cable adapter for regular viewing after setup is complete. Submit an FPR if you encounter this issue.
OSD Troubleshooting

Genie Server OSD

- “Wireless Connection Lost. The connection to wireless video bridge has been lost. Please make sure all wireless video bridges are connected and have power. If the problem persists call DIRECTV at 1-800-531-5000”

Probable Cause

- The WVB lost connection to the Genie Server
- The WVB lost power or is rebooting
- Troubleshooting should focus on the connection from the WVB to the Genie Server

Troubleshooting

1. Check if the clients are having a problem. If yes, troubleshoot client symptoms.
2. If no, educate customer that the OSD was temporary and choose to ignore OSD.

C41W OSD

- “Wireless Connection Lost. The connection to wireless video bridge has been lost. Please make sure all wireless video bridges and server are properly connected and that this client is within range of the wireless video bridge”

Probable Cause

- The WVB lost connection to the Genie Server
- The WVB lost power or is rebooting
- The C41W is not in range of the WVB

Troubleshooting

1. Check the C41W LED and troubleshoot accordingly.
2. If LED is green, troubleshoot as per C41W Gray/Black screen symptoms.
OSD Troubleshooting

C41W OSD

- “Select a Server. No Servers Were detected. Check your network connections”

Probable Cause and Troubleshooting

1. Verify the wireless client (C41W) network LED is green
   - Verify C41W LED is green AND WVB LED is Blue (or green/blue flashing).
   - If not, troubleshoot for whichever LED state is in error.
   - If both C41W and WVB LEDs are good, and waiting 2 minutes does not resolve, reboot WVB, then reboot server.
2. If the wireless client (C41W) network LED is blinking red, reset the WVB (this is needed in case the WVB has not loaded the new software)
3. Treat the same as Genie Server OSD “Wireless Connection Lost”

C41W OSD

- “Connecting to Video Bridge”

Probable Cause and Troubleshooting

1. Make sure the Genie Server is in the Add Clients screen.
2. Follow the normal installation process starting at Connect Now on the wireless client (C41W).

C41W OSD

- “Unable to connect to Video Bridge. Make sure that the video bridge is in survey mode and this client is within range of your video bridge signal”

Probable Cause and Troubleshooting

1. Make sure you are not selecting “Connect now” or “Continue” on more than one client at a time.
2. Select the OK button will bring the user back to connect to video bridge screen
3. Ensure the Genie server is on the Add Clients screen,
4. Ensure that the WVB LED is alternating blue/green.
Resets

If any of the troubleshooting steps call for a reset on either the WVB or C41W, here are the procedures.

WVB Factory Reset
1. Unplug all the C41W clients
2. Remove the COAX from the WVB rear panel input labeled “Towards LNB”.
3. Press and hold the red reset button on the rear panel of the WVB.
4. Continue to hold the reset button until the WVB status light displays the following colors.
   - Red
   - Yellow
   - Green
5. Then release the reset button.
6. The WVB status will then begin to blink blue as it boots up. The WVB will then blink green/yellow as it will be reset back to beacon mode.
7. Follow the installation process to pair the C41Ws and configure the WVB to the HR44.

Genie Mini Wireless (C41W) Reset

<table>
<thead>
<tr>
<th>Reset Duration</th>
<th>Type of Reset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press Power button and hold &gt; 5 seconds</td>
<td>Factory reset all parameters except Wi-Fi</td>
</tr>
<tr>
<td></td>
<td>Resets remote from RF to IR</td>
</tr>
<tr>
<td>Press Red Button Reset and hold &gt; 20 seconds</td>
<td>Resets Everything</td>
</tr>
<tr>
<td></td>
<td>Factory reset all parameters inclusive of Wi-Fi</td>
</tr>
<tr>
<td></td>
<td>Resets remote from RF to IR</td>
</tr>
</tbody>
</table>

Reseting a Genie With Clients

If something has changed with the customer’s router or internet connection, or anytime a Restore Defaults is performed, you need to reset the system.

If the Genie was connected to the Internet and a Restore Defaults and Repeat Network Setup is performed, the following steps need to be performed:
2. Reset the Genie Server and wait for video to return.
3. Reset the WVB and wait for the LED to be solid blue.
5. Reset all wired and wireless clients, including RVU TVs.
## Genie Server Diagnostic Codes

<table>
<thead>
<tr>
<th>Diagnostic Code</th>
<th>Text</th>
<th>Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>89 (Genie only)</td>
<td>Unable to connect to the Wireless Video Bridge(s) on your network. In order to display any video the receiver needs to be connected to a Wireless Video Bridge. Please verify that all Wireless Video Bridges on your network are powered on and have the coaxial cable connected. Select &quot;Test Again&quot; to see if this has solved the issue. Diagnostic Code: 89</td>
<td>The Genie server does not detect the WVB</td>
<td>1. Determine if the WVB was deliberately removed from the network by the customer. If it was, removing the WVB from the Genie by using the system menus. (Menu - Settings &amp; Help - Settings - Whole Home - Video Bridge) 2. Ensure all WVBs are powered on and connected to coax / MoCA network</td>
</tr>
<tr>
<td>90 (Genie only)</td>
<td>One or more of the Wireless Video Bridges on your network reports an error. You may experience poor quality or intermittent loss of video on your wireless clients. Please reset your Wireless Video Bridge(s) using the red reset button on the back panel. Select &quot;Test Again&quot; to see if this has solved the issue. Diagnostic Code: 90</td>
<td>WVB Internal Error. (Hardware Issue)</td>
<td>1. Perform a reset on the WVB. 2. If WVB continues to blink Red, replace the WVB.</td>
</tr>
<tr>
<td>91 (Genie only)</td>
<td>&quot;One or more of the Wireless Video Bridges on your network reports an error. You may experience poor quality or intermittent loss of video on your wireless clients. Please check the coaxial cable connection to your Wireless Video Bridge(s) then reset them using the red reset button on the back panel. Select &quot;Test Again&quot; to see if this has solved the issue.&quot; Diagnostic Code: 91</td>
<td>WVB MoCA Error</td>
<td>1. Troubleshoot the MoCA / Coax network. Verify cabling and connectors.</td>
</tr>
<tr>
<td>92 (Genie only)</td>
<td>&quot;One or more of the Wireless Video Bridges on your network reports an error. You may experience poor quality or intermittent loss of video on your wireless clients. Please reset your Wireless Video Bridge(s) using the red reset button on the back panel. Select &quot;Test Again&quot; to see if this has solved the issue.&quot; Diagnostic Code: 92</td>
<td>WVB Ethernet Error.</td>
<td>Should not occur. Escalate to NET, NET to escalate to STB Field Support.</td>
</tr>
<tr>
<td>LED State</td>
<td>Description</td>
<td>Action</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Off</td>
<td>Device not powered</td>
<td>Plug in the approved power supply to a reliable power source.</td>
<td></td>
</tr>
<tr>
<td>Blink Blue</td>
<td>Booting up. Start within 10 seconds of power ON.</td>
<td>Normal WVB boot up process, takes approximately 2 minutes.</td>
<td></td>
</tr>
<tr>
<td>Solid Blue</td>
<td>Normal Operation Wireless Clients should have a connection to the Genie Server.</td>
<td>No Action.</td>
<td></td>
</tr>
<tr>
<td>Solid Yellow</td>
<td>MoCA Network Established but MoCA network is degraded</td>
<td>Troubleshoot the MoCA / Coax network. Verify cabling and connectors.</td>
<td></td>
</tr>
<tr>
<td>Blink Yellow</td>
<td>No MoCA Network Detected.</td>
<td>Troubleshoot the MoCA / Coax network. Verify cabling and connectors.</td>
<td></td>
</tr>
<tr>
<td>Solid Red</td>
<td>The WVB has a good connection to the Genie server; however there is a Poor Wireless connection to one or more Wireless Clients (C41W).</td>
<td>Follow “Wireless Client (C41W) Network LED Failures” troubleshooting, focusing on the Wireless Client(s) that has a Yellow or Red Network LED</td>
<td></td>
</tr>
<tr>
<td>Blink Red</td>
<td>Device Error Detected</td>
<td>1. Perform a reset on the WVB. 2. If WVB continues to blink red, replace the WVB.</td>
<td></td>
</tr>
<tr>
<td>Blink Green and Yellow</td>
<td>Wireless Video Bridge in Beacon Mode.</td>
<td>Normal Wireless Video Bridge survey/Beacon mode without MoCA network connected.</td>
<td></td>
</tr>
<tr>
<td>Blinking Green</td>
<td>Transitioning out of Wireless Video Bridge Beacon Mode MoCA network connected, however there is no communication between the Genie server and the WVB</td>
<td>Used to position the WVB and Wireless Clients during the Wireless Video Bridge survey/Beacon Mode.</td>
<td></td>
</tr>
<tr>
<td>Solid Green</td>
<td>Good Connection to the Genie server but no Wireless Clients paired with WVB.</td>
<td>This is normal when initially connecting to the MoCA network. Allow 5 minutes for the LED to change to Solid Green.</td>
<td></td>
</tr>
<tr>
<td>Blink Green and Blue</td>
<td>Wireless Client Add mode</td>
<td>Follow “Adding Wireless Clients” steps to pair and register the Wireless Clients.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Normal state when adding Wireless Clients (C41W). See Adding Wireless Client for next steps.</td>
<td></td>
</tr>
</tbody>
</table>
C41W LED States

Note: C41W needs to have a working and properly configured WVB in order to provide video and audio services. If one or more C41W is in an error state, the WVB should also be checked to ensure that the error is not with the WVB.

<table>
<thead>
<tr>
<th>Power LED State</th>
<th>Network LED State</th>
<th>Description</th>
<th>Troubleshooting Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>Device not powered</td>
<td>Plug in the approved power supply to a reliable power source.</td>
</tr>
<tr>
<td>Flashing Blue</td>
<td>Any</td>
<td>Client is updating Software</td>
<td>Allow the C41W to finish downloading. Update could complete 2-3 minutes</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>Wireless Client (C41W) booting</td>
<td>Allow Wireless Client (C41W) to finish booting. Wireless Client (C41W) should boot in 1-2 minutes</td>
</tr>
<tr>
<td>ON</td>
<td>GREEN</td>
<td>Normal operation</td>
<td>This means the Wireless Client had a good connection to the WVB.</td>
</tr>
<tr>
<td>ON</td>
<td>YELLOW</td>
<td>Wireless Client (C41W) connected to the WVB, but wireless connection is degraded.</td>
<td>Follow “Wireless Client (C41W) Network LED Failures” troubleshooting above.</td>
</tr>
<tr>
<td>ON</td>
<td>RED</td>
<td>Wireless Client (C41W) connected to the WVB, but wireless connection is severely degraded.</td>
<td>Follow “Wireless Client (C41W) Network LED Failures” troubleshooting above.</td>
</tr>
<tr>
<td>ON</td>
<td>Blinking RED</td>
<td>Wireless Client (C41W) not connected to the WVB.</td>
<td>Follow “Wireless Client (C41W) Network LED Failures” troubleshooting above.</td>
</tr>
</tbody>
</table>
C41W LED States

Notes on Blinking Red LED

There are several times during an installation when a blinking red LED is normal behavior for the C41W.

1. When the C41W is first connected to the TV and power supply, it will boot up into Beacon Mode and display a blinking red LED (and show an empty signal bar on the on-screen display on the TV). This is because the internal wireless network has not yet been created to support video and data transfer from the Genie Sever to the wireless client.

2. After the Wireless Video Bridge has been connected to the Genie and technicians begin connecting the C41W clients to the Wireless Video Bridge, the C41W will switch from Beacon Mode to Client Addition Mode, so the connection to the Wireless Video Bridge will be temporarily reset. This causes the C41W’s LED to blink red during the two-minute countdown displayed on the TV. The LED will return to green after the C41W re-establishes its connection to the Wireless Video Bridge, which can take one to two minutes.

3. When the Genie enters or exits out of the Add Clients screen, it changes from Client Addition Mode to Operating Mode (or vice-versa), causing the connection to the C41W clients to be temporarily reset. During this transition, the C41W’s LED light will briefly change to blinking red, but will return to green after the C41W re-establishes its connection to the Wireless Video Bridge, which can take one to two minutes.

4. When selecting Continue or Connect Now, the LED on the C41W will flash red, and is normal behaviour. Be patient during this, and allow one to two minutes. If it is still blinking red and doesn’t finish the connection to the server, troubleshoot according to the symptom or LED state.

Remember, it’s important to be patient and follow the steps! Don’t assume that a blinking red LED means trouble!
**Removing a WVB**

This process is only intended to be used if the WVB is to be permanently removed from the Genie Server. If replacing a WVB, go to the “Replace WVB” section in this document. If more than one WVB has been installed and a WVB is removed permanently, this procedure should be performed to stop an error from occurring on the Genie Server.

1. Navigate to **Menu - Settings & Help - Settings**.

2. Select **Whole-Home - Video Bridge**.

3. If a WVB is configured to the network, the “Remove Video Bridges” option is enabled.

4. Select the option Remove Video Bridges. The screen will list all the WVB’s that are configured to the network. Select **Continue** to remove the WVB. If there are multiple WVBs, select the checkbox next to the WVB to remove, and select **Continue**. (continued on the next page)
Removing a WVB (cont.)

5. Follow the on-screen instructions and press - (dash) to complete the removal of the WVB.

6. A successful completion OSD will appear. Press “OK”.

The removal will cause the wireless clients that are paired with this WVB to disconnect from the wireless network.
Replacing a Wireless Video Bridge

To replace a WVB, use the following procedure:

1. Turn on the Genie Server.
2. Put all C41Ws in standby.
3. Remove power and disconnect the coax from the WVB to be replaced.
4. Install, connect and power on the new WVB.
5. Allow WVB to fully boot up (one to two minutes). The Genie Server will display OSD, “A wireless video bridge has been found and configured successfully”.

6. Select OK to dismiss the OSD.
7. Turn on the clients to verify they connect to the Genie Server through the WVB. There may be brief gray screens as the network connections are established but video/audio should stabilize shortly (less than one minute).
8. If the clients do not connect within one to two minutes, reset the clients.
9. Next, remove the previous WVB from the Genie by following the steps to “Remove WVB from the Genie Server”. Select the WVB that needs to be removed. This step is required to stop any errors related to the Genie not able to access the old WVB.
Wireless Video Bridge Software Updates

The WVB is capable of getting software updates, however, the customer's system must be internet connected in order for the WVB to receive firmware updates. The WVB initiates the request to update its firmware. It does this between the hours of 12AM (midnight) and 4AM (time zone as per the Genie Server) after booting up and will continue every 7 days thereafter.

While the WVB is downloading the firmware it will remain online and operational so there should be no interruption on the C41W. Once the download has completed the WVB will reboot and switch to the new firmware image. During the reboot, the WVB will be offline. While rebooting, the Genie Server and clients will display the “Wireless Connection Lost” OSD.

Click “Remind Me Later” or “OK” to clear the OSD.

In the event that the download server does not respond or an error occurs during the firmware file transfer, the WVB will try again on its next update cycle. The WVB will remain online and operational in this event.

Downloading the WVB firmware is transparent to the customer and occurs in the background. Once the download completes the WVB will boot up in approximately one to two minutes. During the reboot process the WVB light will blink blue. Video service will be lost to the wireless clients while this is on progress. Clients may display Searching for Server or WVB Connection Has Been Lost.

C41W Software Update - Special Note

Occasionally, while on the PIN screen, the C41W will start a software download. **Do not exit the Add Clients screen on the Genie Server during a software download on the C41W.** Doing so will interrupt the software download and require it to start again after the client reboots; there is no need to troubleshoot or factory reset clients for this.
Objectives

- Identify the WVB and C41W on the work order, and be able to explain any work order changes with the WVB and C41W.
Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Product Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIRELESS VIDEO BRIDGE</td>
<td>WIRELESS VIDEO BRIDGE</td>
</tr>
<tr>
<td>IRD – WIRELESS CLIENT</td>
<td>DIRECTV C41W-100</td>
</tr>
<tr>
<td>IRD – WIRELESS CLIENT</td>
<td>DIRECTV C41W-500</td>
</tr>
</tbody>
</table>

Work Order Logic

- The Wireless Video Bridge and the Wireless Clients will be available for the following Sales orders: New Installs, Former Installs and Upgrades.
- The Wireless Video Bridge and the Wireless Clients will be displayed as existing line items on the following Order Sub Types: Upgrades, Former Installs, Service Calls, NC Rollbacks and Rollbacks.
- The technician will have the ability to add additional Wireless Video Bridges, but is limited to only adding a second WVB.
  - A technician will NOT be able to add the Wireless Video Bridge if one following scenarios exists:
    - There are already two active Wireless Video Bridges on the account.
    - There are two open Wireless Video Bridges on the work order.
    - There is one open Wireless Video Bridge on the work order and one active on the account.
  - If a third Wireless Video Bridge is needed the technician must contact TSC to have it added to the work order.
- The technician will have the ability to deactivate and remove the Wireless Video Bridge from the account through OLI submission.
- Any action the technician takes which results in the deactivation of the last Wireless Client on the account will lead to the deactivation of any active Wireless Video Bridges.
- Work order closure will not be permitted if there is an active Wireless Video Bridge present on the order and no active Wireless Clients.
- The Wireless Video Bridge will require a Failure Reason when a swap action is performed.
- Closure of the Wireless Video Bridge is required before a Wireless Client can be submitted on a work order.
- The location field is available to change for the WVB and client, so make sure to enter the location of these devices.
### Work Order Screens

#### C41W/Wireless Client

<table>
<thead>
<tr>
<th>Status</th>
<th>Line #</th>
<th>Product Line</th>
<th>Product</th>
<th>Equipment</th>
<th>Category</th>
<th>Delivery Method</th>
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<td>Existing</td>
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<td>IRD - WA40</td>
<td>DIRECTV UA-700</td>
<td>OWN</td>
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<td>DIRECTV Video-500</td>
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<tr>
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<td></td>
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<tr>
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<td></td>
<td></td>
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<td>DIRECTV HD-110</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>Existing</td>
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<td></td>
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### Handheld

![Handheld Device](image)
Hands-on/Role Play Activity

Objectives

• Install and setup a WVB and C41W.

Now you will setup the WVB and C41W, and complete a role play activity.
Hands-On Activity

Now, your facilitator will break you in to groups and you will set up the Wireless Video Bridge, Wireless Genie Mini, and use the RC71 remote.
**Role-Play Activities**

Your facilitator will break you into groups and perform the following role-playing exercises:

**Role-Play 1: Customer saw commercials and wants DIRECTV with NO cables.**

**Technician Talking Points**
- Power cable for TV
- Power cable for Wireless Genie Mini
- Connection cable from Wireless Genie Mini to TV
- Cabling on WVB

**CODE Moments**
- Care about the Customer and Exceed Expectations: make every attempt to hide as many cables as possible.

**Role-Play 2: Customer wants to move Genie Mini outside for TV on the deck, but only sometimes**

**Technician Talking Points**
- WVB Placement
- Wireless Genie Mini Placement
- How to determine signal strength from WVB to Wireless Genie Mini

**CODE Moments**
- Care about the customer and Exceed Expectations: Move Wireless Genie Mini to locations and show customer if it works and how to determine.
- If it won’t work, Deliver with Confidence = bad news early. Let customer know and help them determine another way to get DIRECTV the way they want to.

**Role-Play 3: Customer knows RC65 Remote, wants to know why it won’t work in RF on Wireless Genie Mini**

**Technician Talking Points**
- RF4CE Technology
  - More robust ability to control Wireless Genie Mini
  - Hidden Wireless Genie Mini

**CODE Moments**
- Care about the customer and Exceed Expectations: Show customer how much faster and more powerful the RC71 remote is. Show things like: page down through the guide, volume controls on audio systems, channel change time, etc.
Key Tips and Takeaways

DIRECTV's Genie system is changing the way our customers watch television, and the WVB and C41W is no exception.

- The Genie (HR34/HR44) can connect to the wired client (C31 or C41) or stream wirelessly to the wireless clients (C41W) using the new wireless video bridge (WVB). The Genie Server and C41W (client) expand DIRECTV's use of RVU.
- The Wireless Video Bridge (WVB) provides the ability to stream DIRECTV programming from a Genie Server to the C41W client wirelessly.
- The Wireless Video Bridge provides video distribution throughout the home without the use of coaxial or CAT5 cables at every TV. The WVB creates a private network only accessible to DIRECTV products.
- The C41W is the first of a new generation of Genie Mini Clients in DIRECTV's RVU product line with wireless capability. It provides video in every room without requiring any wired connection, or the need for additional receivers. The C41W must be used in conjunction with the DIRECTV Wireless Video Bridge.

Module Summary

- Explain how the WVB and C41W work in a Genie installation.
- Install and setup the WVB and C41W.
- Troubleshoot the WVB and C41W.
- Identify the WVB and C41W on the work order, and be able to explain any work order changes with the WVB and C41W.
What is the Wireless Genie Mini (WGM)?

- The Wireless Genie Mini (WGM) is a new option for customers that want the freedom to place their TVs anywhere they want, and to limit the growing number of wires in their homes. Now customers can re-organize and change the layout of their rooms, or even move their TVs from one room to another, without being concerned as to the location of a coax outlet.
- It all starts with the Genie—the entertainment hub of the home—which shares content over a private, separate wireless network with WGMs. The Genie also works over the wired Whole Home DVR network with other connected devices, also known as clients, such as the C31/C41 Genie Mini, RVU-enabled TVs, gaming consoles and Blu-ray players.
- Once the Wireless Video Bridge (WVB) is installed by the Genie, customers will have additional flexibility to easily add additional rooms. Gone are the days of having to wait for a technician to add another room, now customers can just call in and have an additional WGM sent to them at any time and easily install it wherever they wish.

What is RVU and how does it work?

- RVU is a software technology that is built into the Genie, enabling it to act as a server for clients such as the Genie Mini and WGM. RVU allows the clients to access all live and recorded content from the Genie, as well as User Interface (UI) features and broadband-based services.

Can I use a WGM by itself?

- Because the WGMs do not have tuners, they cannot receive DIRECTV programming or respond to DVR commands without being connected to the Genie.

Is the WGM completely wireless?

- The WGM does communicate wireless with the Genie Server through the WVB, but does require a power cord and video connection to the TV.

Is the Wireless Video Bridge completely wireless?

- The WVB does require connection into coax network and a power cord.

Does the Genie need to be connected to the Internet for the WGM to work?

- No. The WGM and WVB work independently from the Genie Internet connection. However, for the customer to access connectivity benefits such as VOD, iPad streaming, Pandora and YouTube, the customer must still connect the Genie to the customers home broadband Internet.

How does the WVB work?

- The WVB creates a private, separate, local network that WGMs can connect to directly.
- The WVB will deliver video and the user interface seamlessly to the WGMs as if there was a more traditional coax network in the home.
Does the WVB work on non-DIRECTV clients?

- No. Non-DIRECTV clients will need a wired connection to the DVR through the Whole Home DVR system. Only WGMs are compatible with the WVB.

Will the WVB work with other DIRECTV HD DVRs and HD Receivers?

- No. C31 Genie Minis, receivers and DVRs require a wired connection to the Whole Home Network in order to access recorded content on the Genie.

Can I combine the Genie with other DIRECTV HD DVRs and Receivers?

- Yes, the Genie will work with any other DIRECTV HD DVRs and HD Receivers that are compatible with Whole-Home DVR service, so you can play, pause, rewind and delete recorded content on the Genie from any room of the house.
- You will not be able to record content to the Genie from a connected HD DVR.
- Any HD receivers, HD DVRs, C31 Genie Minis or non-DIRECTV clients will need a wired connection to the Whole Home system to access content from the Genie.

How many TVs does Genie provide with DIRECTV service?

- Genie can be connected to up to 9 separate rooms (including the server), providing full DVR functionality and DIRECTV programming for each connected TV. However, only 4 TVs—including the TV connected directly to Genie—can be viewing live or recorded content at the same time.
- If a customer has 4 rooms in use simultaneously, rooms 5-8 will see a message telling them they have reached their active room limit, and to turn off one of the other receivers to enable service in the new room they would like to use.
- If a customer expects to have more than 5 TVs in use at the same time, we recommend using HD DVRs for those extra TVs to ensure the best entertainment experience.

How many shows can I record and watch at once?

- Each Genie has five tuners so you can record up to 5 programs of your choice at a time. If you are recording a show on the Genie, you can watch it at the same time in up to three other rooms. You can also play the show later in multiple rooms simultaneously.

Can I pause, play and rewind live TV with the WGMs?

- Yes, you can pause, play and rewind live TV in any room with a WGM.

Can all of the TVs connected to the Genie record shows?

- You can schedule a show to record on the Genie from any WGM that is connected to it. WGMs have full and independent DVR capabilities. You will not be able to record content from a connected HD DVR.

Can I get On Demand programming with the Wireless Genie Mini (WGM)?

- Yes, you can access On Demand programming with the WGM if the Genie is connected to the Internet.

Are WGMs able to skip commercials automatically during pre-recorded content?

- Like any HD DVR, WGMs can fast-forward through commercials on recorded shows but they do not skip them automatically.

How far ahead does the Hi-Def Guide go?

- You can view up to 14 days of programming on the Genie and WGMs.
How many hours of programming can the Genie hold?
- The Genie has a 1 Terabyte (1TB) hard drive and can hold up to 800 hours of SD programming or 200 hours of HD programming. (Actual recording capacity varies based on type of programming being recorded.)

Can I access DIRECTV TV Apps on the Genie and WGMs?
- Yes, you can access DIRECTV TV Apps on the Genie including Pandora, ScoreGuide, Facebook, Twitter and other general apps such as news, sports and weather. These apps are integrated into the Hi-Def Guide and can be easily accessed via the menu. It is important to remember that some apps require an Internet connection.

Can I set parental controls on the Genie and WGMs?
- Yes, you can set up the parental controls directly on the Genie and WGMs for access restrictions on the entire system.

Do I need to be connected to the Internet for the Genie and WGMs to work?
- You do not need an Internet connection, but it is recommended since a connected HD DVR offers the best entertainment experience and is required for many of the Genie and WGM features to function.

Are WGMs still assessed a monthly charge as an additional receiver?
- Yes. There is a $6 monthly fee for the first two rooms, plus a $6 monthly “Additional TV” fee for the third and each additional room.

Can I hide the WGM out of sight?
- Yes, the WGM can easily be hidden behind the TV or in a cabinet when used with a Radio Frequency (RF)-capable remote control as they do not require a direct line of sight with the box.

Is Picture in Picture (PiP) available on the Genie and WGMs?
- PiP is available on the Genie, however it is not available on the WGMs.
There are some situations in which a technician will have to call TSC. Here are situations in which the technician will have to call TSC.

- **Remove wireless entirely per customer request.** Tech will call TSC. TSC will reverse charges, delete WVB and wireless clients as the tech cannot delete these on their handheld.

- **Remove wireless entirely if not suitable for the environment.** Tech will call TSC. TSC will reverse charges, delete WVB and wireless clients as the tech cannot delete these on their handheld.

- **Changing some wireless clients to wired clients.** Tech will call TSC. TSC will reverse charges if applicable, delete the requested wireless clients and add the requested wired clients as the tech cannot add/delete these on their handheld.

- **Changing some wired clients to wireless clients** (assuming wireless is already present on account). Tech will call TSC. TSC will reverse charges if applicable, delete the requested wired clients and add the requested wireless clients, as the tech cannot add/delete these on their handheld.

- **If the customer asks to be upgraded to wireless while tech is on-site.** Tech will call TSC to request modification and explain charges. If tech does not have equipment will require a reschedule. TSC will add the WVB and the requested wireless clients.

- Technicians will be able to add an additional WVB to an order via their handheld, but cannot have more than 2 per account. This is configurable if we find we need to change it in the future. Tech would call TSC to add additional WVB’s above the 2 count limit.
Installation Flow

1. Connect WVB to Power - Do Not Connect to Coax Network
2. Install C41W and power on client.
3. RC71: Hold Mute + Enter to Setup RF Mode
4. Place the C41W in its Final Location. Ensure the client has a green LED.
5. Connect the WVB to the coax network

Additional Steps:
- On the C41W, select Continue and enter the PIN from the server.
- On the Genie Server, go to the Add Client Screen.