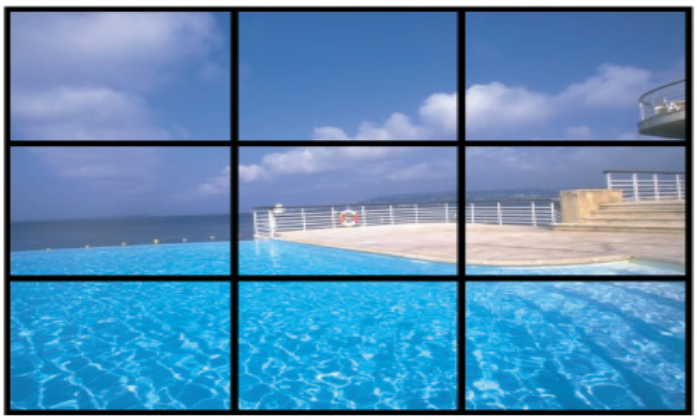
Just Add Power



# VIDEO WALL CONFIGURATION & CONTROL

**Revised 2014-01-02**

HDMI OVER IP

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Table of Contents

Details – Read First! ..... 4
Requirements ..... 4
Wall Sizes ..... 4
Content Scaling ..... 4
Square Walls ..... 4
Non-Square Walls ..... 5

Video Wall Modes ..... 6
Standard Mode ..... 6
Tearless Mode ..... 6

Standard Mode Configuration ..... 7
2x2 Video Wall ..... 7
3x3 Video Wall ..... 13

Video Wall – Tearless Mode Configuration ..... 19
4x4 Video Wall ..... 19
Setup ..... 19
Instructions ..... 21

Picture Adjustment ..... 28
Television Zoom Settings ..... 28
One-Command Adjustment ..... 28
Horizontal and Vertical Shift ..... 29
Horizontal and Vertical Scale Up ..... 30

Video Wall Control – For Programmers ..... 31
Wall Mode ..... 31
Bezel Gap ..... 31
Scale Picture ..... 32

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

Shift Picture ..... 32
Tearing Delay ..... 32

Not Sure How? ..... 33
Access Web Interface ..... 33
Just Add Drivers Installations ..... 33
Non-Just Add Drivers Installations ..... 33
Access Command Line Interface ..... 36
Telnet ..... 36
Serial ..... 36

Change Log ..... 37

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Details – Read First!

An excellent feature of Just Add Power HDMI over IP devices is the built-in video wall functionality. Each Receiver has the ability to do calculation for video walls with only minor configuration.

## Requirements

- One Receiver per display in the video wall
- All devices must be running firmware A3.00C or later
- USB functionality disabled – video wall and USB are not compatible at this time
- A computer with a network connection to the switch

## Wall Sizes

- Wall sizes **up to 8 rows and 16 columns** are possible through the web interface.
- Wall sizes of **up to 16 rows and 16 columns** can be configured via the command line. If a wall larger than 8x16 is needed, contact support@justaddpower.com for more information.

## Content Scaling

Just Add Power Receivers create video walls by scaling the content that it is receiving to a size that matches the size of the wall. This means that it does not take into account the aspect ratio or native resolution of the picture that it is sending.

### Square Walls

**1x1**

**2x2**

**3x3**

When walls are square (2x2, 3x3, etc.) the content will be scaled appropriately because the aspect ratio (vertical-to-horizontal ratio) is maintained. No additional picture scaling is needed to ensure a quality picture.

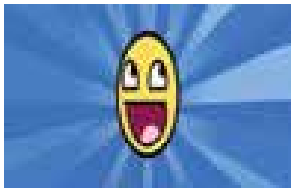
©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

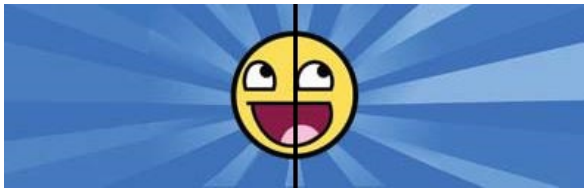
## Non-Square Walls

**1x1**

**1x2**

When walls are non-square the content will be 'stretched' by the scalar in the Receivers. This is an example of what will happen to regular 16:9 content when expanded horizontally.

**1x1** 

**1x2** 

Content must be specially scaled to be displayed on non-square walls so that the aspect ratios are maintained properly on the video wall. This shows an example of a picture that has been compressed horizontally on a single-screen so that it scales properly on a 1x2 wall.

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Video Wall Modes

Screen tearing occurs when the refresh rate of the television does not match the refresh rate of the content being shown. If that is true, you will see something similar to what is shown below.

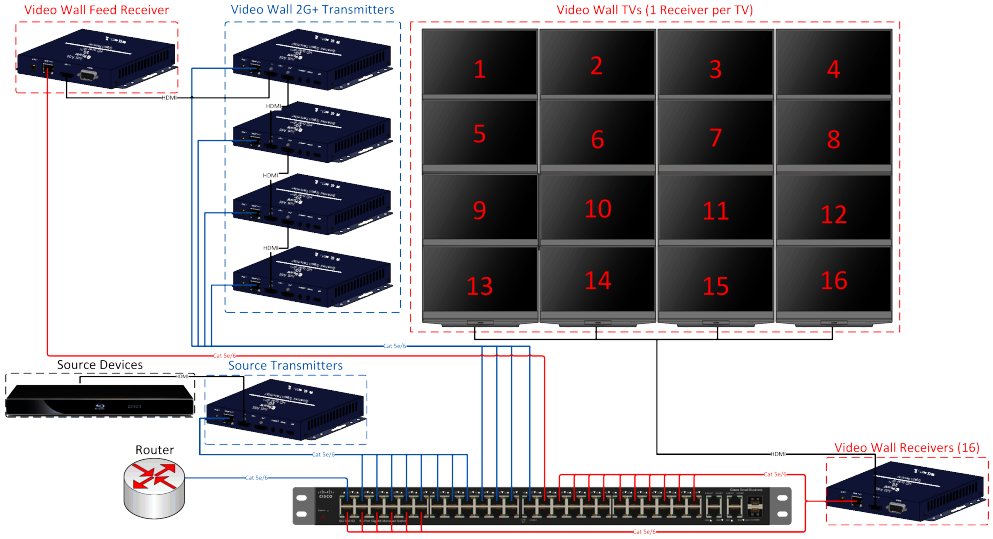
This happens more easily on larger walls because of the amount of pixels that must be rendered. 2x2 walls may have a tear that is easily corrected, but as the wall gets larger it will become more difficult to remove all of the tearing. For this reason, the video wall application can be run in 2 modes:

## Standard Mode

- Requires no additional Transmitter or Receiver pieces
- Transmitters showing video wall content can be used to show content on single screens as well
- Works best for smaller walls – 3 rows or fewer
- Usually needs to have tearing adjustments made

## Tearless Mode

- Requires an **EXTRA** 2G (or 2G+) Transmitter for each row of the Video Wall
- Requires one extra 2G Receiver to feed to the video wall Transmitters
- Transmitters showing video wall content **CANNOT** be used to show single-screen content
- Works best for larger walls – 4 rows or larger
- No tearing adjustment needed




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Standard Mode Configuration

Standard Mode is the most common setup. It requires no additional hardware, but may need tearing adjustments to be made.

## 2x2 Video Wall

In order to prepare for a 2G Video Wall Standard Mode installation with 4 screens (2x2) you will need the following components:

- 1 2G Transmitter
- 4 2G Receiver (1 for each screen)
- 1 Managed gigabit Ethernet switch
  - For walls with only one source, an Unmanaged switch will work as well
- 1 Control system
  - For dedicated walls with only one source, no control system is needed

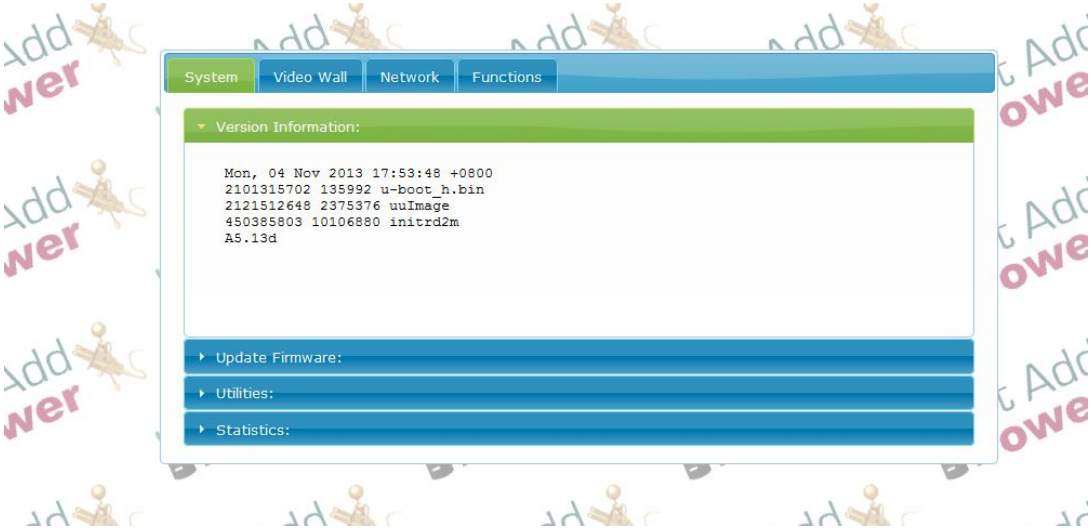
**Not Sure How?**

Access Web Interface

1. Configure the matrix so that the same source is showing on all video wall displays, and non-video wall displays are showing a different source.

2. Set up a computer with access the web interface of the ***Transmitter*** for the source shown on the video wall. Connect to the web interface.

3. Click on the Video Wall Setup tab to get to the Video Wall configuration GUI. The window may look different depending on firmware version.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

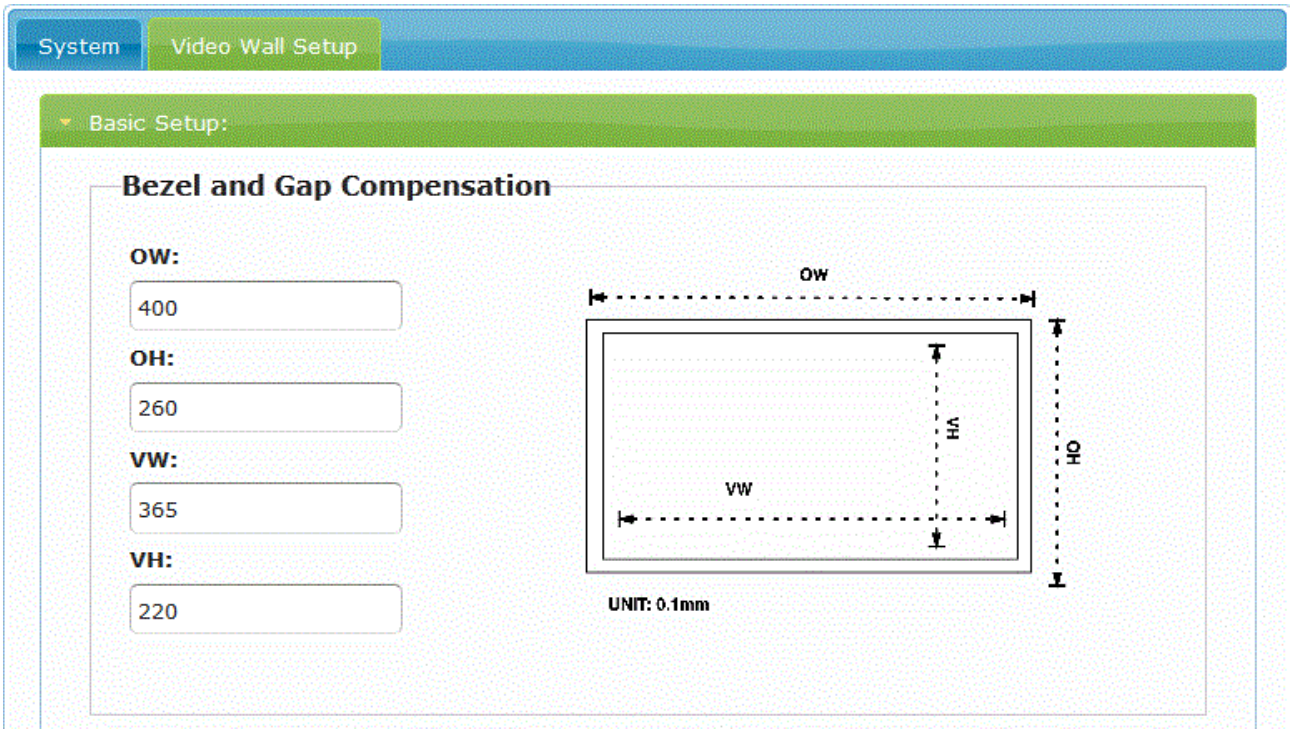
4. Bezel and Gap Compensation: adjust the video wall to compensate for the border around the display. This will cause some of the picture to "hide" behind the border so picture flows smoothly.
    a. The four parameters used for Video Wall calculation are:
        OW – Outside Width. This is the horizontal length of the TV frame.
        OH – Outside Height. This is the vertical height of the TV frame.
        VW – Video Width. This is the horizontal length of the viewing portion of the TV.
        VH – Video Height. This is the vertical height of the viewing portion of the TV.

    b. For this example, the outside width was 40 inches, outside height was 26 inches, video width was 36.5 inches, and video height was 22 inches.

**Warning:** The gap compensation screen only accepts whole numbers, so multiply the numbers by 10 to get the integers shown in the image below (400, 260, 365, 220).

    c. You can use any measuring system you desire (English, Metric, hand spans, etc.) as long as all measurements are made in the same unit.

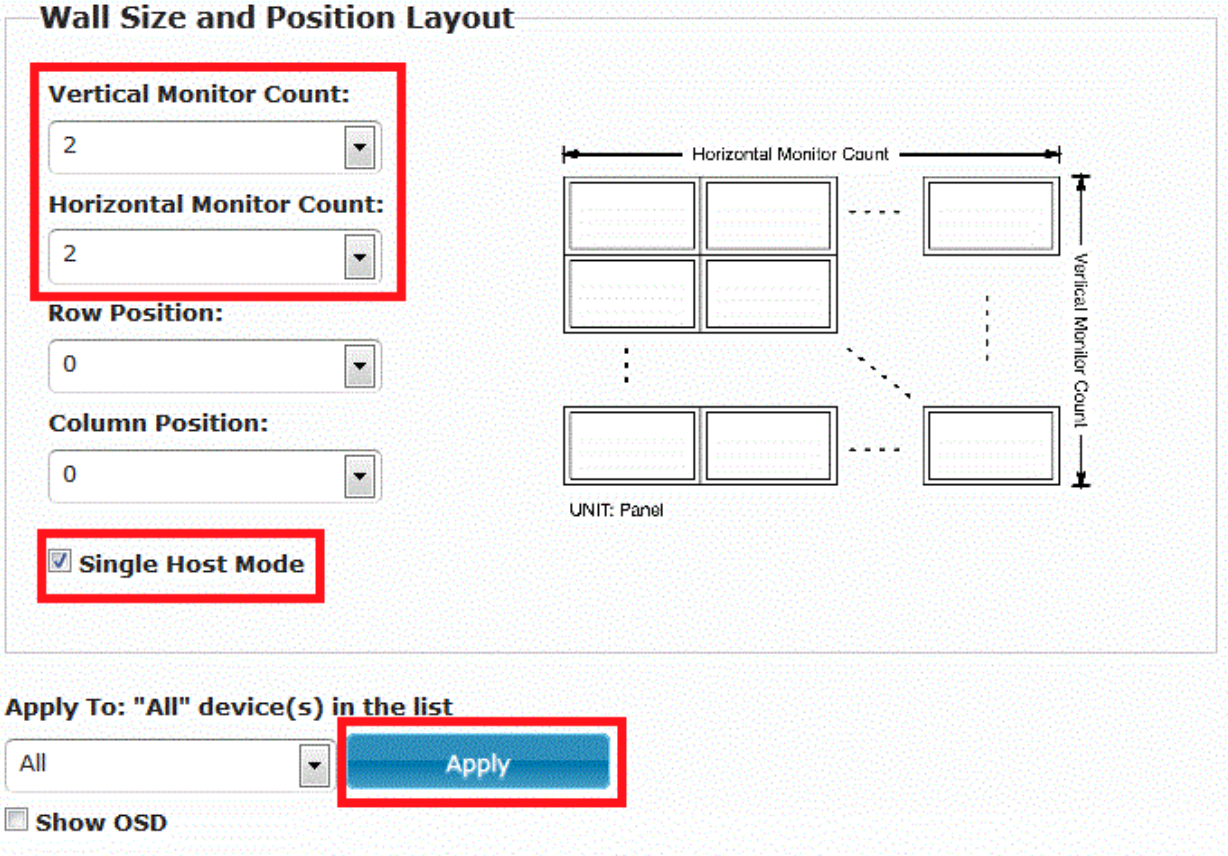
    d. If you have an installation with zero bezel displays, then you would enter the number 1 for all four parameters.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

5. Scroll down the page and change the Vertical and Horizontal Monitor count to 2x2.

6. Click on the "Single Host Mode" checkbox and then press the apply button. The screen will reappear in video wall mode.




7. Check on the "Show OSD" checkbox at the bottom of the page and then press the Apply button. Green numbers will appear on each screen.

8. Each screen will have a number from 0-3 shown. For a 2x2 wall they might look like this:

| | |
|---|---|
| 3 | 1 |
| 2 | 0 |

or like this

| | |
|---|---|
| 2 | 3 |
| 1 | 0 |

or any of the 24 possible combinations of 0, 1, 2, and 3. Make a note of the numeric ID on each screen.

9. For this example, we will use the first diagram. Row and column numbering start at 0.

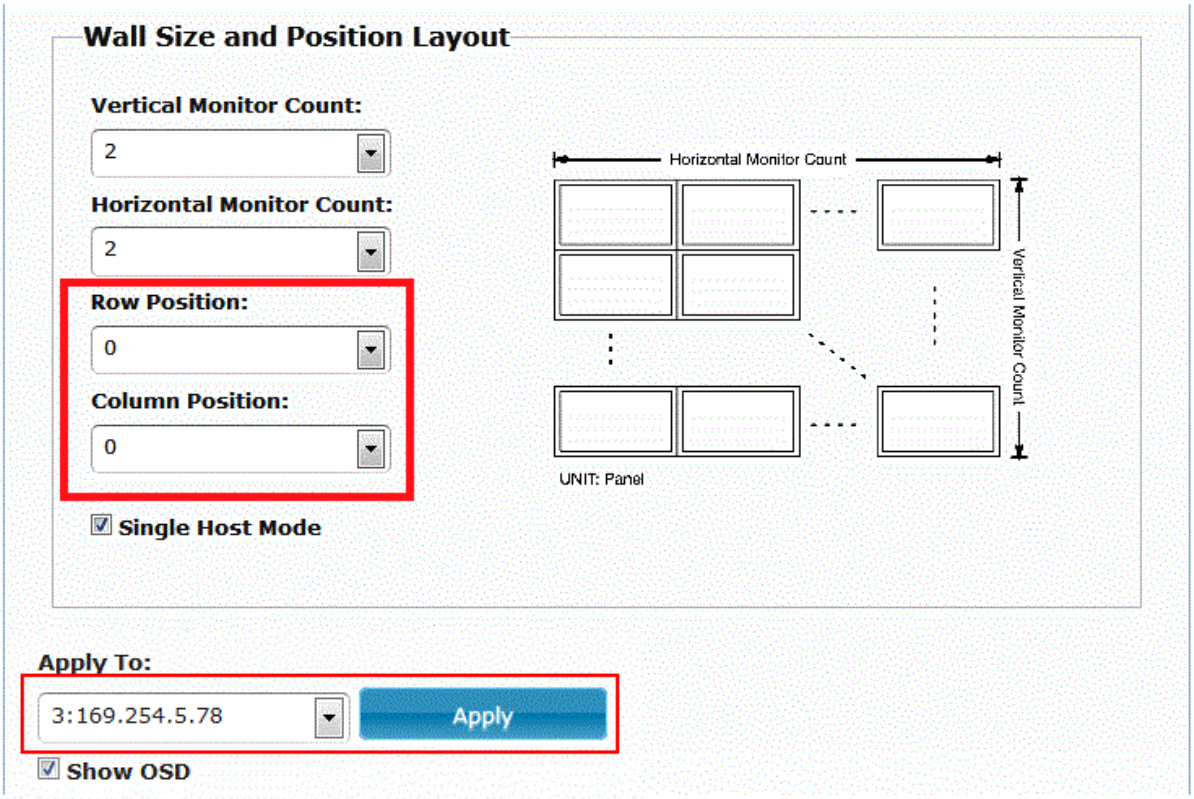
| | |
|---|---|
| 3 | 1 |
| 2 | 0 |

| | |
|---|---|
| Row 0, Col 0 | Row 0, Col 1 |
| Row 1, Col 0 | Row 1, Col 1 |

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

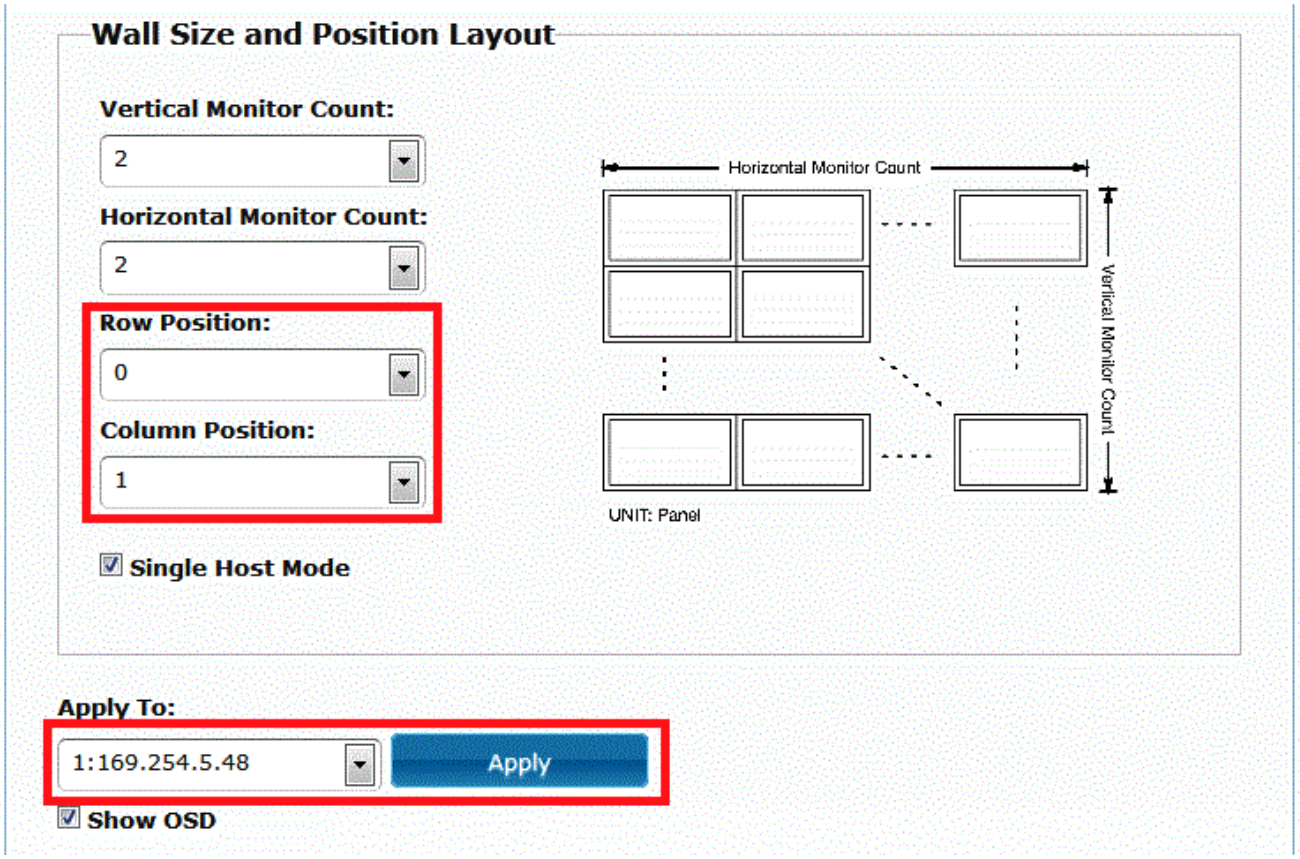
10. Next to the 'Apply' button is a pull up menu (shows All by default). Click on that arrow to see options for All, This, the Hosts (Transmitters), and Clients (Receivers). Up until now everything has been applied to All.

11. Select the display in the top left corner: screen #3. The top left screen is in Row 0, Column 0. Indicate Row Position: 0 and Column Position: 0 in the correct fields and press the Apply button.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

12. Select the screen in the top right corner: screen #1. Indicate Row Position: 0 and Column Position: 1 in the correct fields and press the Apply button.




13. Repeat step 11/12 with each display in your video wall.

14. If the bezel gap does not look correct, change the "Zoom" setting on the displays.

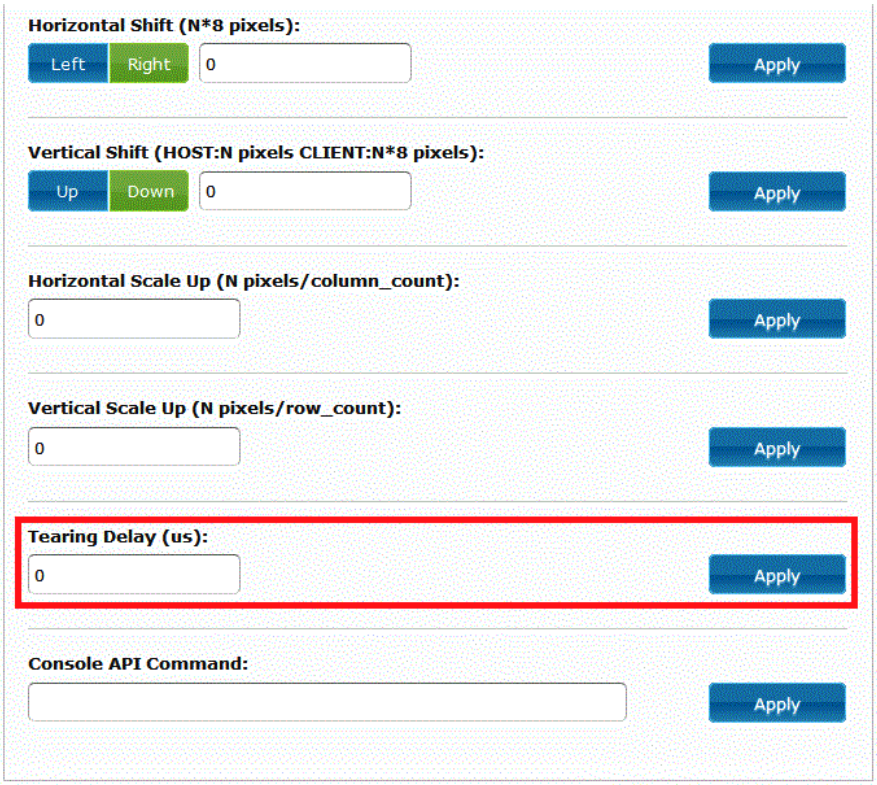
15. When finished, select 'All' from the dropdown box and uncheck the "Show OSD" checkbox to remove the green numbers.

16. If there is a "tear" in the video image, click on the "Advanced Setup" bar at the bottom of the Video Wall tab.

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

17. Select the screen(s) that need the tearing correction (green buttons are selected, blue buttons are unselected). They will most likely share a row. In this example, the bottom 2 screens have a tear that needs correcting.

18. Scroll down and locate the Tearing Delay option. The Tearing Delay is measured in microseconds (µs), where 1000 microseconds equal 1 millisecond (and 1000 milliseconds equal 1 second). Increasing the number moves the tear down the wall; decreasing the number moves the tear up on the wall (only positive tearing delays are valid.) If the tear is only on one row you can apply it to those screens (change your selected Clients). From experience, 8000 µs is a good number to start with. The closer the top and bottom tearing delays are to each other, the less "wiggle" will occur between the screens.




19. Congratulations! Your video wall is up and running.

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

## 3x3 Video Wall

In order to prepare for a 2G Video Wall Standard Mode installation with 9 screens (3x3) you will need the following components:

- 1 2G Transmitter
- 9 2G Receiver (1 for each screen)
- 1 Managed gigabit Ethernet switch
  - For walls with only one source, an Unmanaged switch will work as well
- 1 Control system
  - For dedicated walls with only one source, no control system is needed

**Not Sure How?**

Access Web Interface

1. Configure the matrix so that the same source is showing on all video wall displays, and non-video wall displays are showing a different source.

2. Set up a computer with access the web interface of the ***Transmitter*** for the source shown on the video wall. Connect to the web interface.

3. Click on the Video Wall Setup tab to get to the Video Wall configuration GUI. The window may look different depending on firmware version.

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

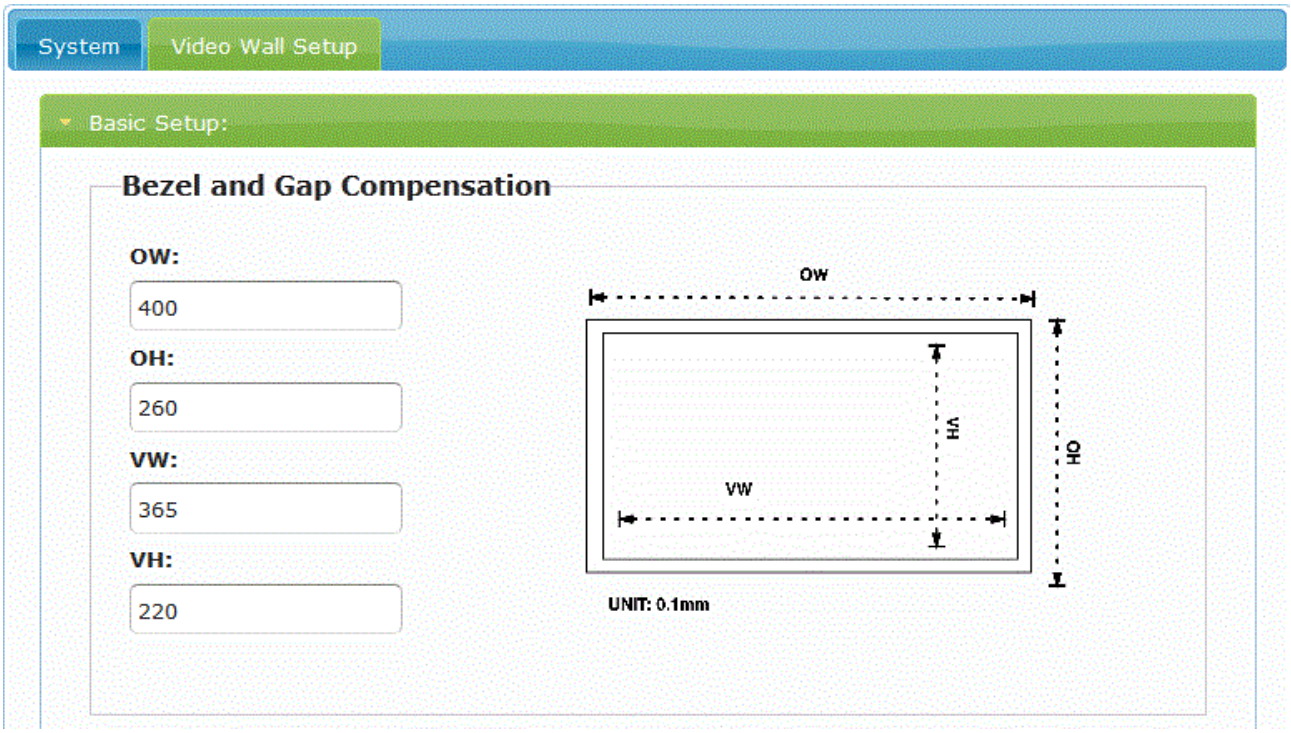
4. Bezel and Gap Compensation: adjust the video wall to compensate for the border around the display. This will cause some of the picture to "hide" behind the border so picture flows smoothly.
    a. The four parameters used for Video Wall calculation are:
        OW – Outside Width. This is the horizontal length of the TV frame.
        OH – Outside Height. This is the vertical height of the TV frame.
        VW – Video Width: This is the horizontal length of the viewing portion of the TV.
        VH – Video Height: This is the vertical height of the viewing portion of the TV.

    b. For this example, the outside width was 40 inches, outside height was 26 inches, video width was 36.5 inches, and video height was 22 inches.

**Warning:** The gap compensation screen only accepts whole numbers, so multiply the numbers by 10 to get the integers shown in the image below (400, 260, 365, 220).

    c. You can use any measuring system you desire (English, Metric, hand spans, etc.) as long as all measurements are made in the same unit.

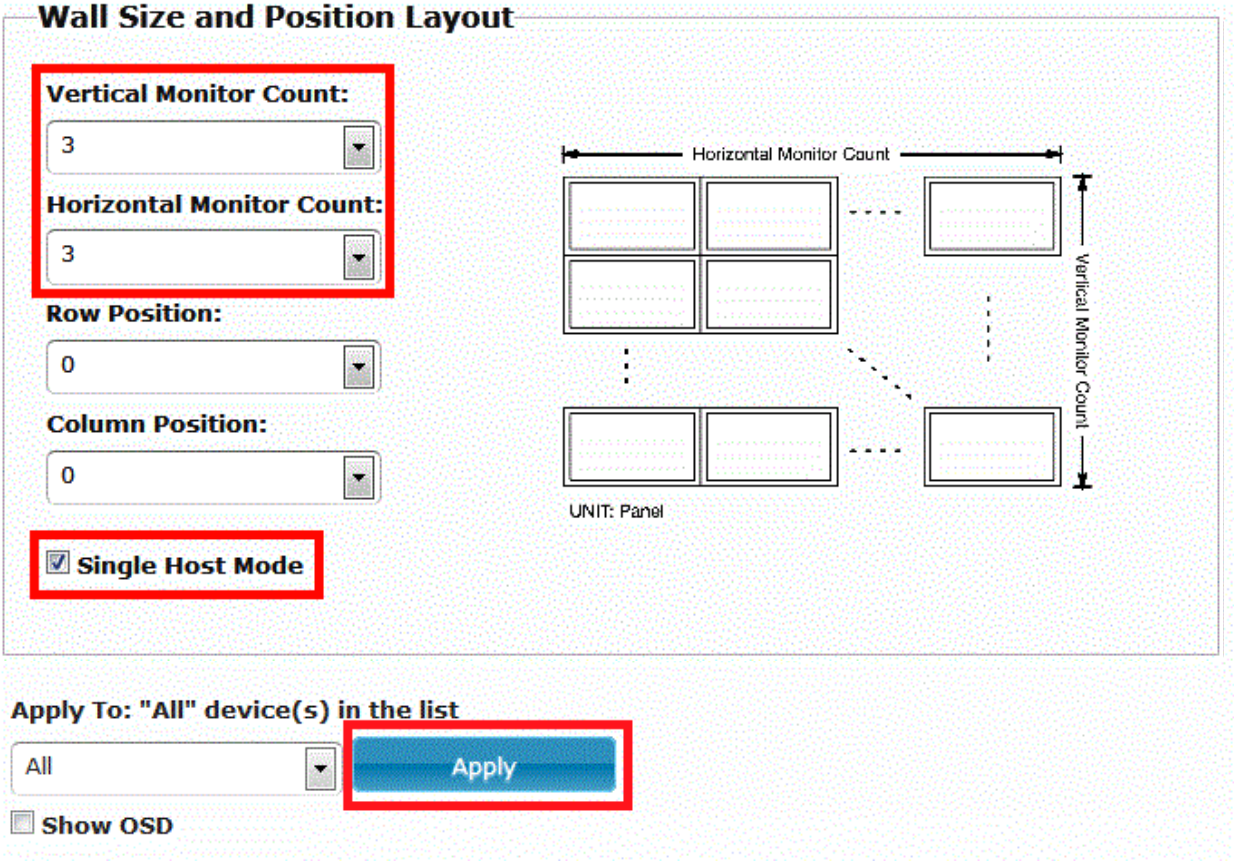
    d. If you have an installation with zero bezel displays, then you would enter the number 1 for all four parameters.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

5. Scroll down the page and change the Vertical and Horizontal Monitor count to 3x3.

6. Click on the "Single Host Mode" checkbox and then press the apply button.




7. Check on the "Show OSD" checkbox at the bottom of the page and then press the Apply button. Green numbers will appear on each screen.

8. Each screen will have a number from 0-8 shown. For a 3x3 wall they might look like this:

| | | |
|---|---|---|
| 3 | 1 | 8 |
| 7 | 4 | 6 |
| 2 | 5 | 0 |

or like this

| | | |
|---|---|---|
| 7 | 5 | 4 |
| 8 | 2 | 3 |
| 6 | 1 | 0 |

or any other potential combination. Make a note of the numeric ID on each screen.

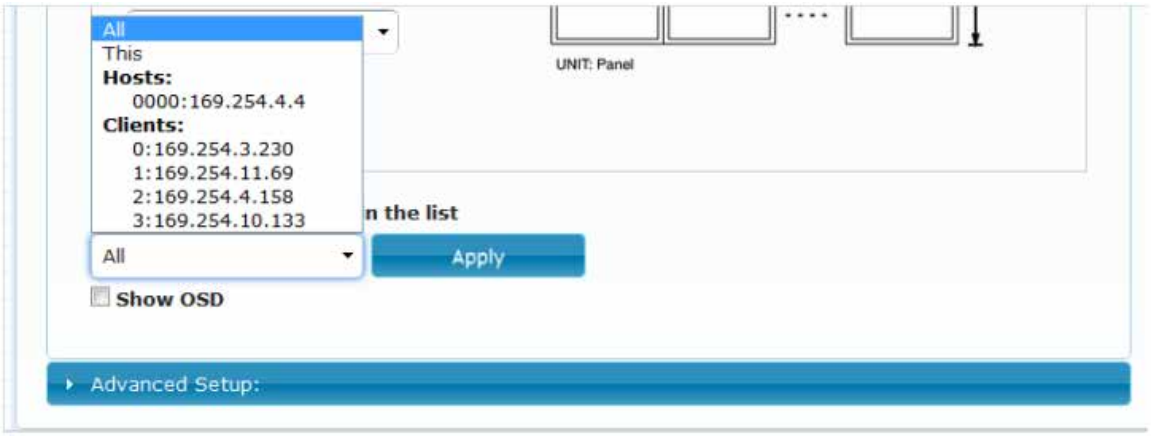
9. For this example, we will use the first diagram. Row and column numbering start at 0.

| | | |
|---|---|---|
| 3 | 1 | 8 |
| 7 | 4 | 6 |
| 2 | 5 | 0 |

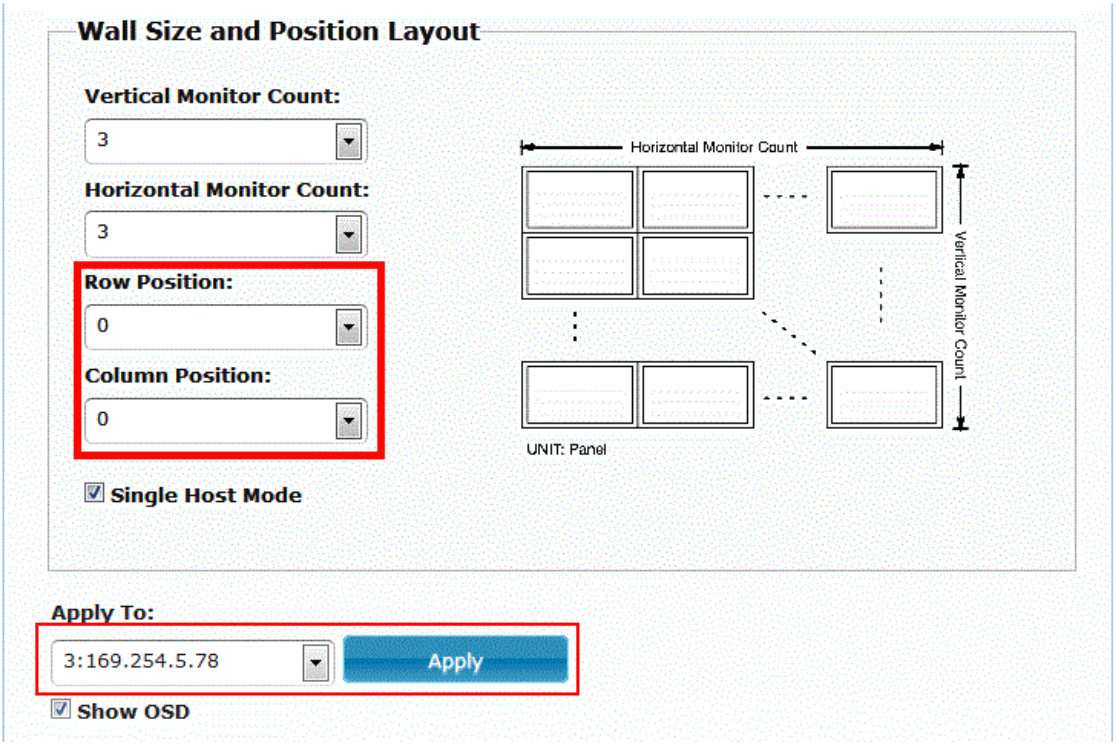
| | | |
|---|---|---|
| Row 0, Col 0 | Row 0, Col 1 | Row 0, Col 2 |
| Row 1, Col 0 | Row 1, Col 1 | Row 1, Col 2 |
| Row 2, Col 0 | Row 2, Col 1 | Row 2, Col 2 |

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

10. Next to the 'Apply' button is a pull up menu (shows All by default). Click on that arrow to see options for All, This, the Hosts (Transmitters), and Clients (Receivers). Up until now everything has been applied to All.

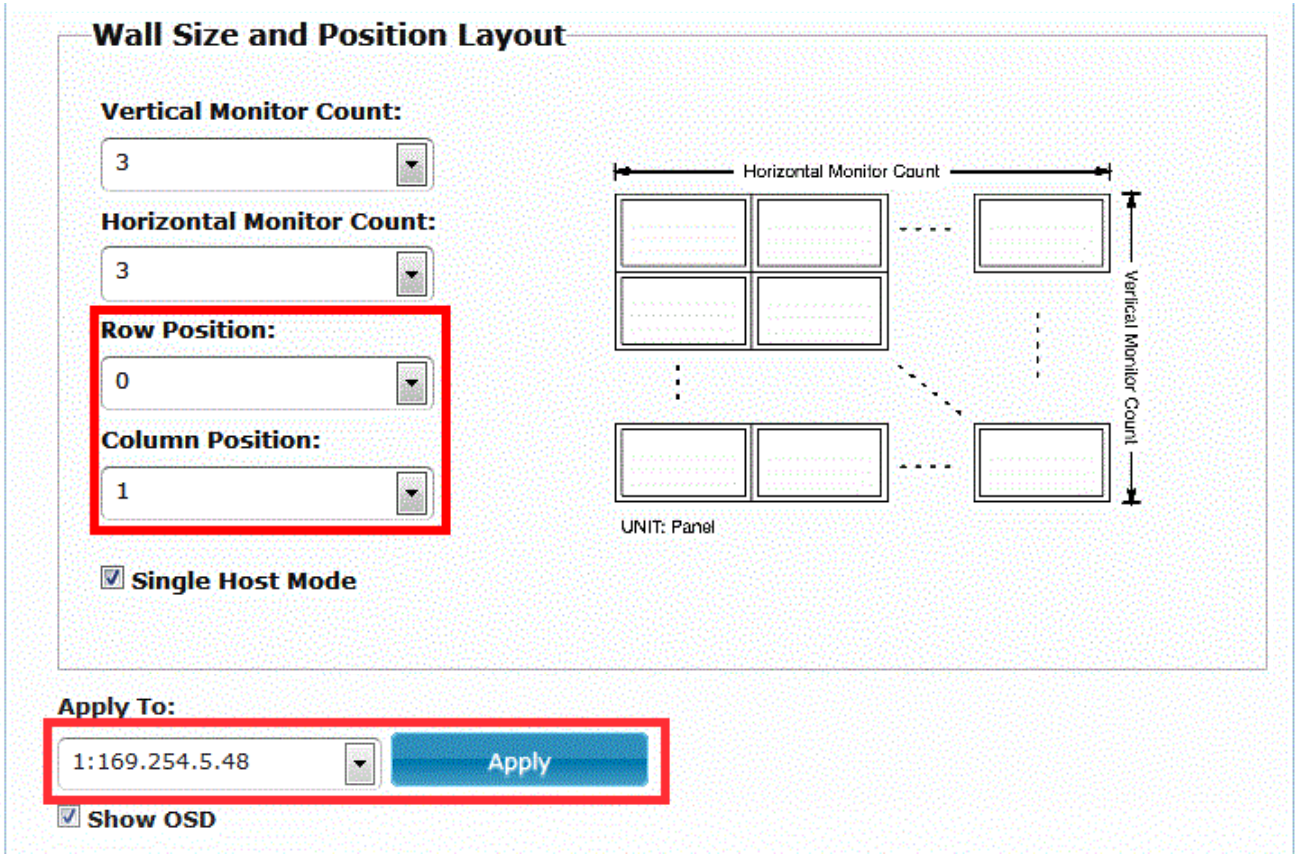



11. Select the display in the top left corner: screen #3. The top left screen is in Row 0, Column 0. Indicate Row Position: 0 and Column Position: 0 in the correct fields and press the Apply button.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

12. Select from the dropdown box the screen in the top middle: screen #1. Indicate Row Position: 0 and Column Position: 1 in the correct fields and press the Apply button.



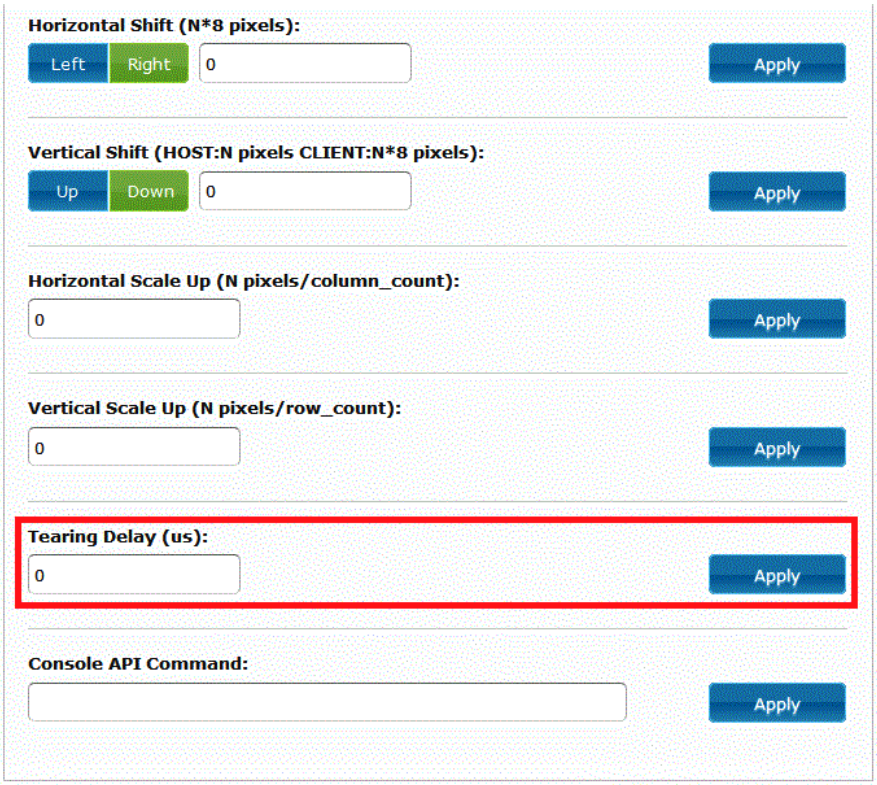

13. Repeat steps 11/12 with each display in your video wall.

14. If there is a "tear" in the video image, click on the "Advanced Setup" bar at the bottom of the Video Wall tab.

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

15. Select the screen(s) that need the tearing correction (green buttons are selected, blue buttons are unselected). They will share a row.

16. Scroll down and locate the Tearing Delay option. The Tearing Delay is measured in microseconds (µs), where 1000 microseconds equal 1 millisecond (and 1000 milliseconds equal 1 second). Increasing the number moves the tear down the wall; decreasing the number moves the tear up on the wall (only positive tearing delays are valid.) If the tear is only on one row you can apply it to those screens (change your selected Clients). From experience, 8000 µs is a good number to start with. The best tearing value is the smallest value that moves the tear off the screen.




17. Congratulations! Your video wall is up and running.

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Video Wall – Tearless Mode Configuration

Tearless Mode requires one additional Transmitter for each row of the video wall, and one additional Receiver to feed to the video wall Transmitters. No tearing adjustments need to be made, but video wall Transmitters can only show video wall content at the maximum wall size.

## 4x4 Video Wall

In order to prepare for a 2G Video Wall Tearless Mode installation with 16 screens (4x4) you will need the following components:

- 4 2G/2G+ Transmitters (1 for each row of the video wall)
  - 2G+ Transmitters give the ability to daisy-chain the Transmitters together to make cabling much easier
- 17 2G/2G+ Receiver (1 for each screen, plus 1 to feed Transmitters)
  - If there is only one source, only 16 2G Receivers are needed. The 17th Receiver provides switching.
- 1 Managed gigabit Ethernet switch
- 1 Control system
  - For dedicated walls with only one source, no control system is needed

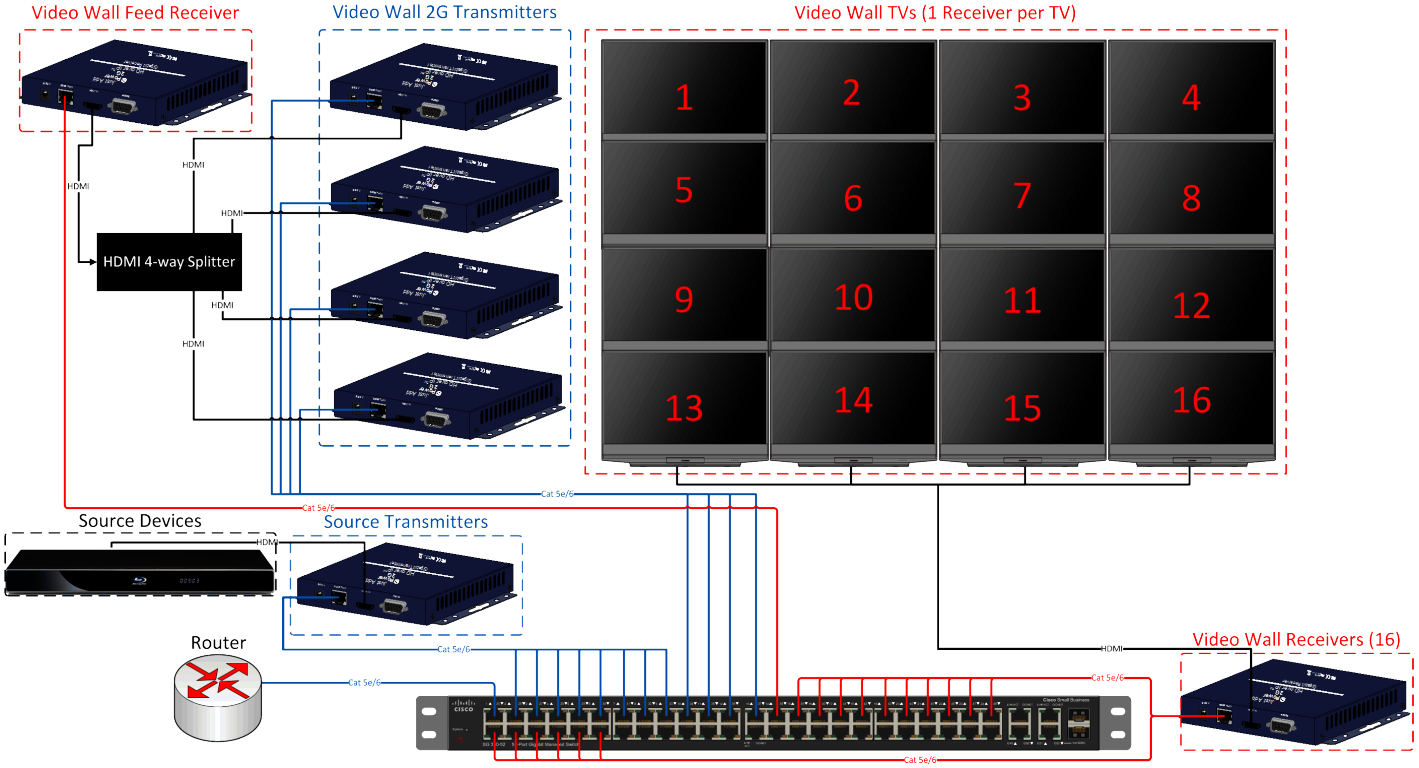
### Setup

- Assign one Transmitter to each **row** of the video wall. Just like all Transmitters, they will each need their own VLAN.
- Turn on all Receivers, Transmitters, and the source device so that content is being played on all displays.
- Diagram the screens and how they are numbered by the JAP system. This guide will refer to this diagram multiple times. **(VLAN numbers can be any unused VLANs. 20-23 are used for clarity.)**

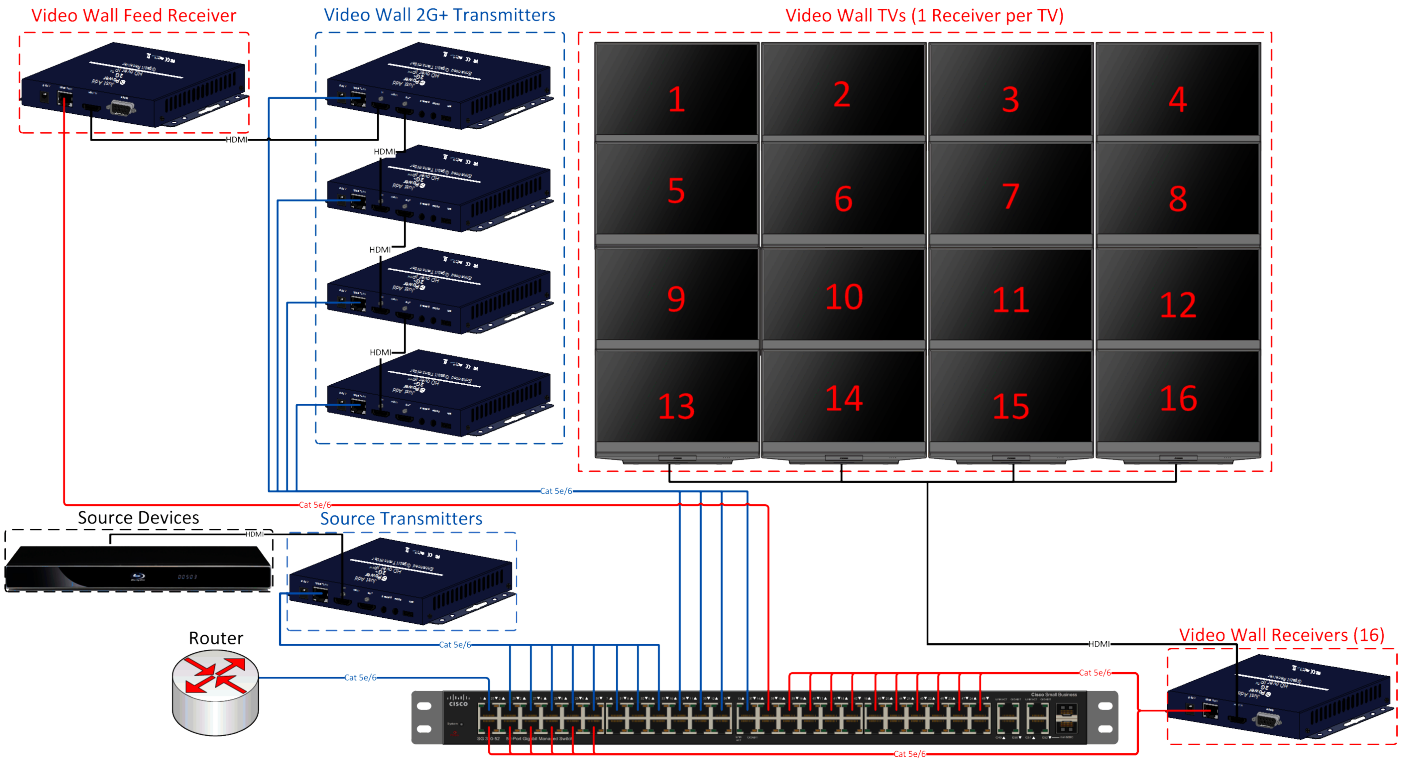
| | | | | | |
|---|---|---|---|---|---|
| VLAN 20 | Tx Row0 à | Rx **Row0, Col0** | Rx **Row0, Col1** | Rx **Row0, Col2** | Rx **Row0, Col3** |
| VLAN 21 | **Tx Row1 à** | **Rx** Row1, Col0 | **Rx** Row1, Col1 | **Rx** Row1, Col2 | **Rx** Row1, Col3 |
| VLAN 22 | **Tx Row2 à** | **Rx** Row2, Col0 | **Rx** Row2, Col1 | **Rx** Row2, Col2 | **Rx** Row2, Col3 |
| VLAN 23 | **Tx Row3 à** | **Rx** Row3, Col0 | **Rx** Row3, Col1 | **Rx** Row3, Col2 | **Rx** Row3, Col3 |

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

- If the installation is using **2G** Transmitters, use a 4x1 HDMI splitter to get the same content going to all 4 Transmitters.




- If the installation is using **2G+** Transmitters, connect the HDMI from Receiver 17 (or the source) into the HDMI for the top row Transmitter and daisy-chain the HDMI-Out and HDMI-In ports between 2G+ Transmitters so that all Transmitters are getting the video signal.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

## Instructions

**Not Sure How?**

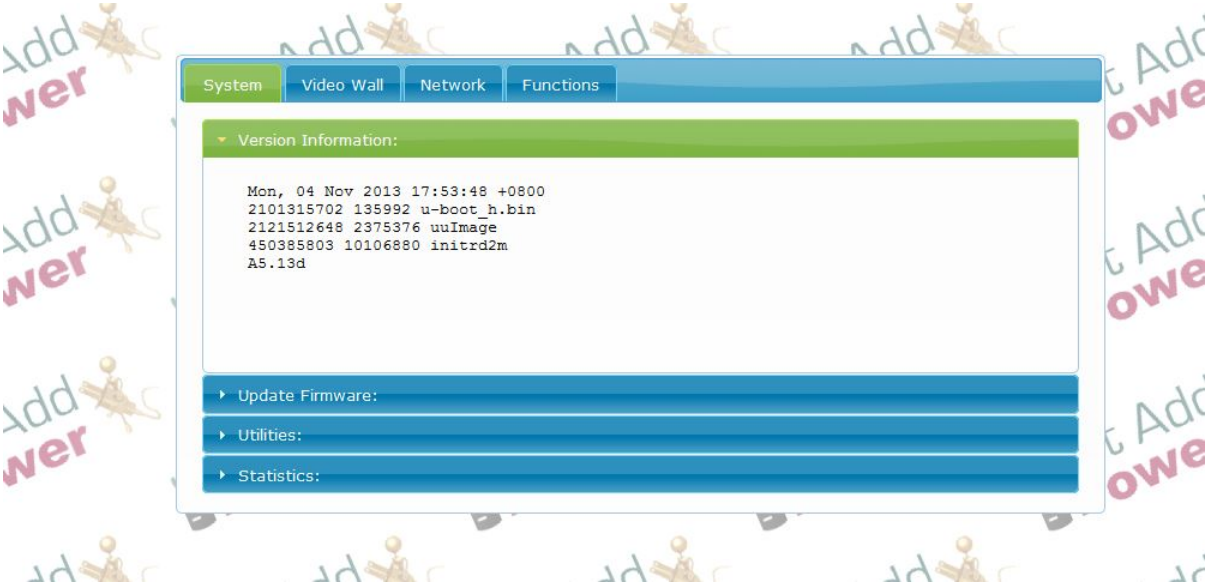
Access Web Interface

1. Configure the matrix so that the top row of Receivers is showing the top-row Transmitter and non-video wall displays are showing a different source.

2. Set up a computer with access the web interface of the top-row ***Transmitter***. Connect to the web interface.

| | | | | | |
|---|---|---|---|---|---|
| VLAN 20 | Tx Row0 à | Rx **Row0, Col0** | Rx **Row0, Col1** | Rx **Row0, Col2** | Rx **Row0, Col3** |
| VLAN 21 | **Tx Row1 à** | **Rx** Row1, Col0 | **Rx** Row1, Col1 | **Rx** Row1, Col2 | **Rx** Row1, Col3 |
| VLAN 22 | **Tx Row2 à** | **Rx** Row2, Col0 | **Rx** Row2, Col1 | **Rx** Row2, Col2 | **Rx** Row2, Col3 |
| VLAN 23 | **Tx Row3 à** | **Rx** Row3, Col0 | **Rx** Row3, Col1 | **Rx** Row3, Col2 | **Rx** Row3, Col3 |

3. Click on the Video Wall Setup tab to get to the Video Wall configuration GUI.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

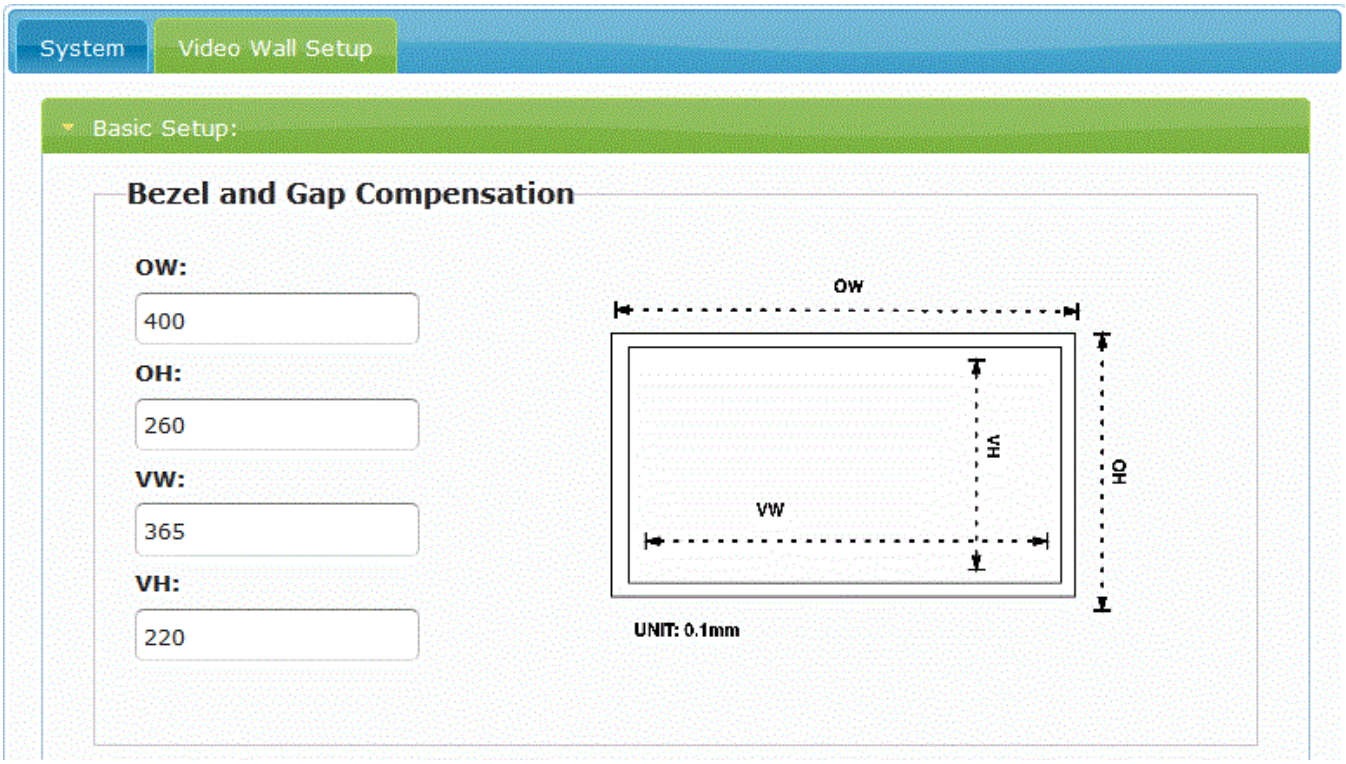
4. Bezel and Gap Compensation: adjust the video wall to compensate for the border around the display. This will cause some of the picture to "hide" behind the border so picture flows smoothly.
    a. The four parameters used for Video Wall calculation are:
        OW – Outside Width. This is the horizontal length of the TV frame.
        OH – Outside Height. This is the vertical height of the TV frame.
        VW – Video Width. This is the horizontal length of the viewing portion of the TV.
        VH – Video Height. This is the vertical height of the viewing portion of the TV.

    b. For this example, the outside width was 40 inches, outside height was 26 inches, video width was 36.5 inches, and video height was 22 inches.

**Warning:** The gap compensation screen only accepts whole numbers, so multiply the numbers by 10 to get the integers shown in the image below (400, 260, 365, 220).

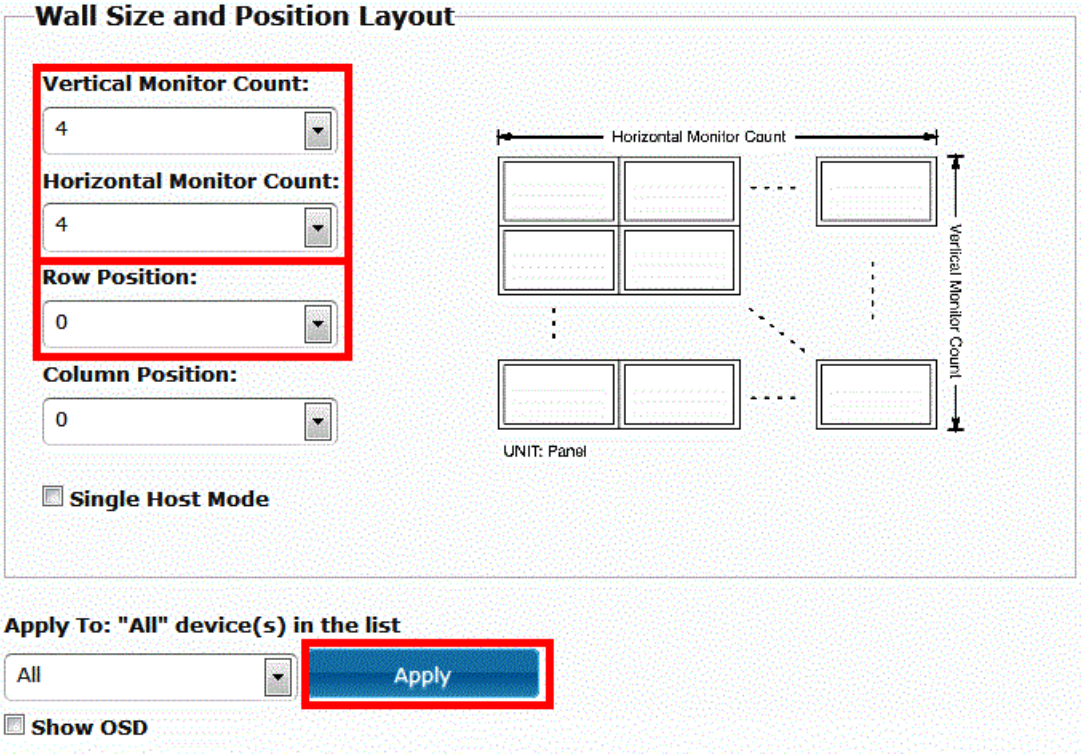
    c. You can use any measuring system you desire (English, Metric, hand spans, etc.) as long as all measurements are made in the same unit.

    d. If you have an installation with zero bezel displays, then you would enter the number 1 for all four parameters.



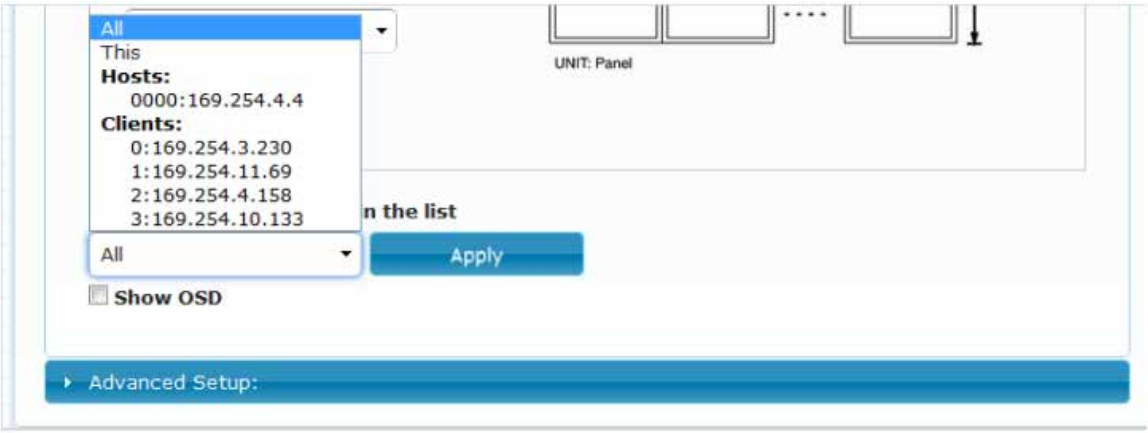

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

5. Scroll down the page and change the Vertical and Horizontal Monitor count to 4x4. Set Row Position to match the row of the Transmitter you are performing configuration for. Click 'Apply.' **Single Host Mode** should be **unchecked.** **Note:** Do not change the Row Position value through steps 7-16.



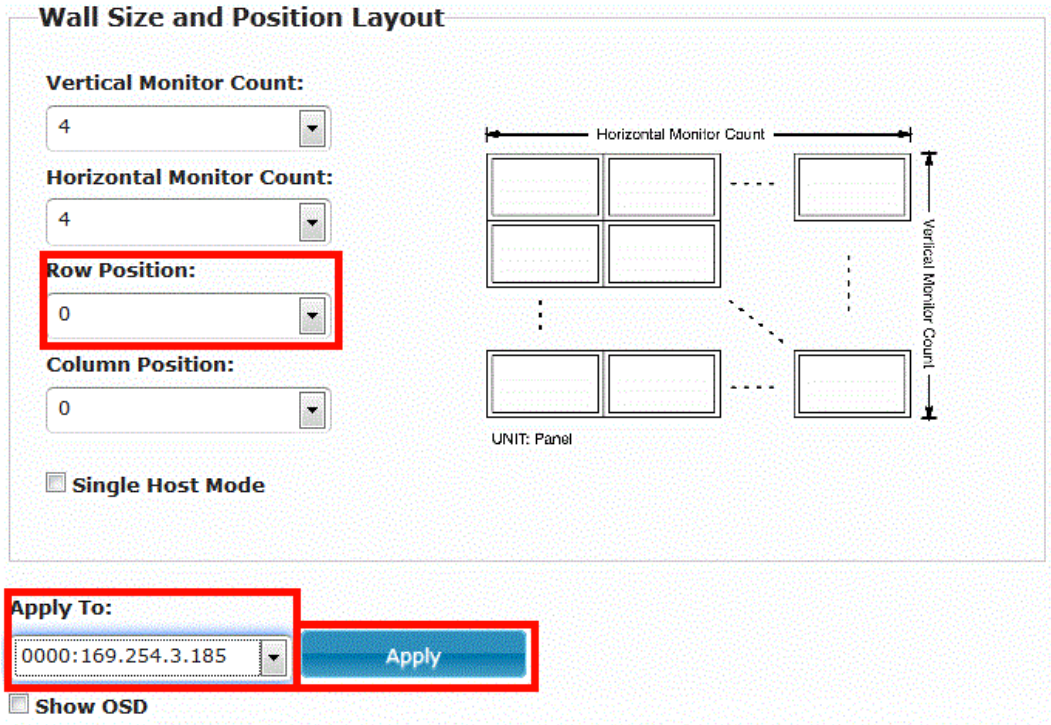

6. A confirmation message will be shown at the top of the browser and the 4 TV screens will go dark and reappear.

7. Next to the 'Apply' button is a pull up menu (shows All by default). Click on that arrow and you will see options for All, This, the Hosts (Transmitters), and Clients (Receivers).




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

8. Set the "Apply To" box to show the 0000: address. Click 'Apply.'




9. Check on the "Show OSD" checkbox at the bottom of the page and then press the Apply button. Green numbers will appear on each screen.

10. Each screen will have a number from 0-3 shown. For example, they might look like this:

| | | | |
|---|---|---|---|
| 2 | 3 | 1 | 0 |

or like this

| | | | |
|---|---|---|---|
| 0 | 3 | 1 | 2 |

or any of the 24 possible combinations of 0, 1, 2, and 3. Make a note of the numeric ID on each screen.

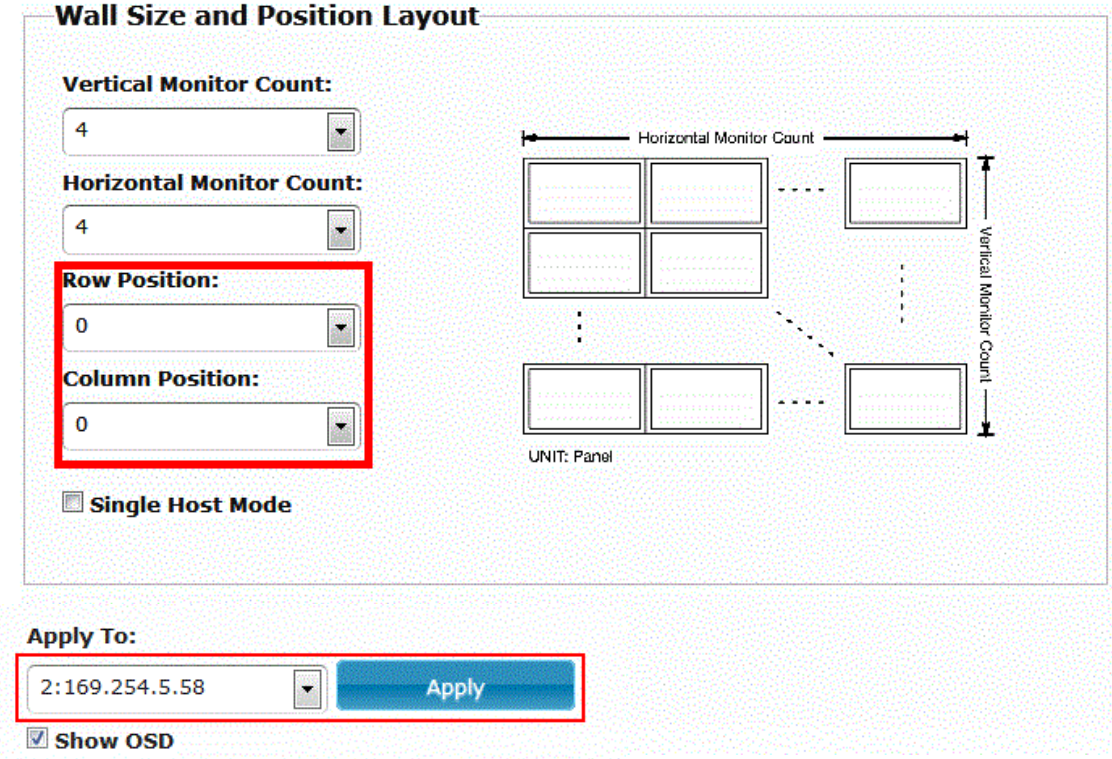
11. For this example, we will use the first diagram. Row and column numbering start at 0.

| | | | |
|---|---|---|---|
| 2 | 3 | 1 | 0 |

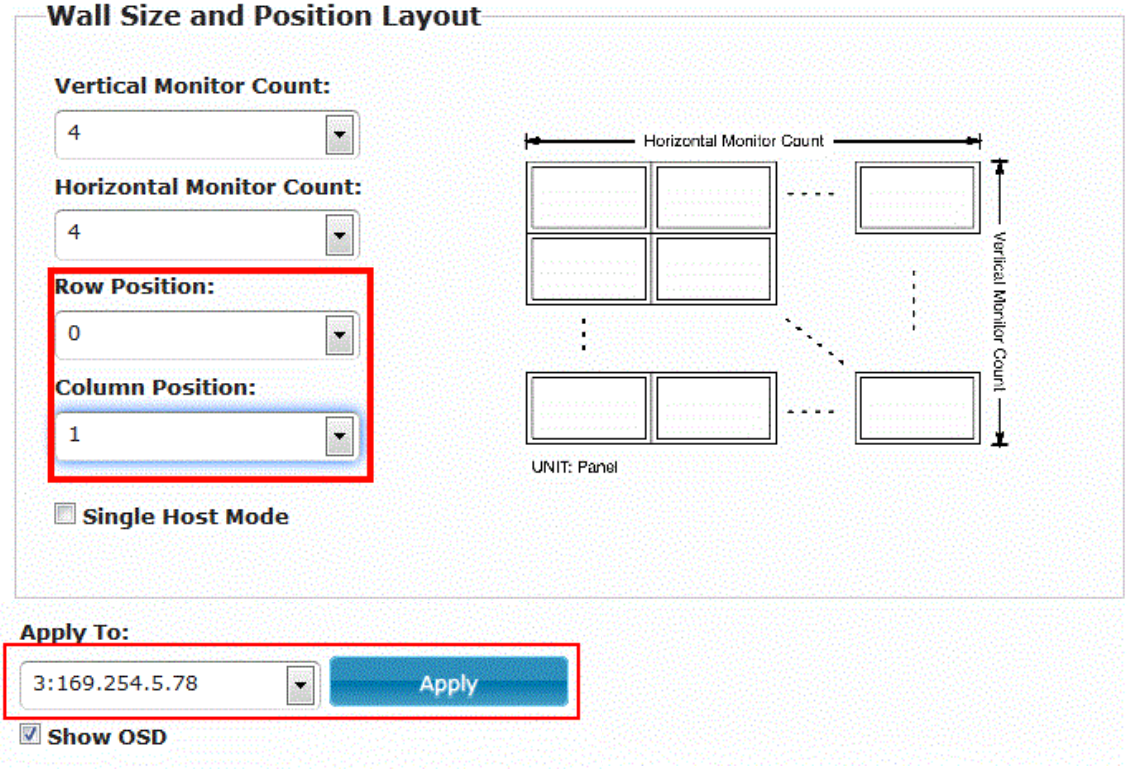
| | | | |
|---|---|---|---|
| Col 0 | Col 1 | Col 2 | Col 3 |

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

12. Select the display on the far left: screen #2. Indicate Column Position: 0 in the correct field and press the Apply button. (The row value was set in Step #6 and should not be changed.)

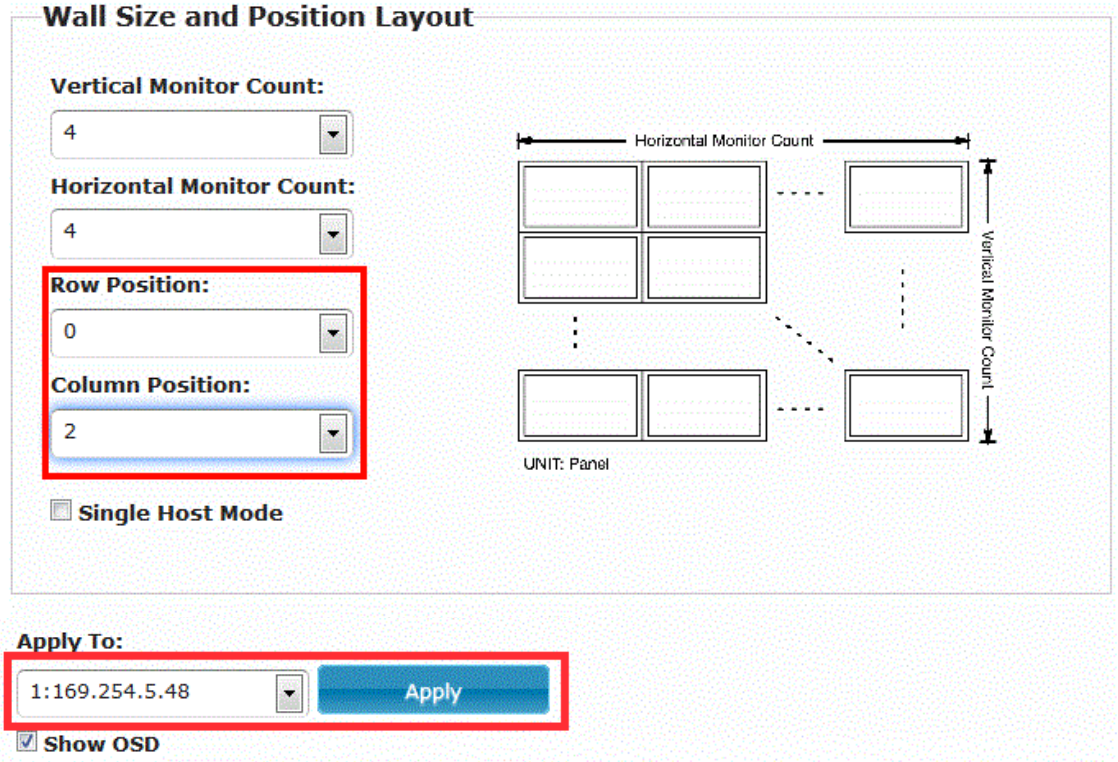



13. Select the center-left screen: screen #3. Indicate Column Position: 1 in the correct field and press the Apply button. (The row value was set in Step #9 and should not be changed.)

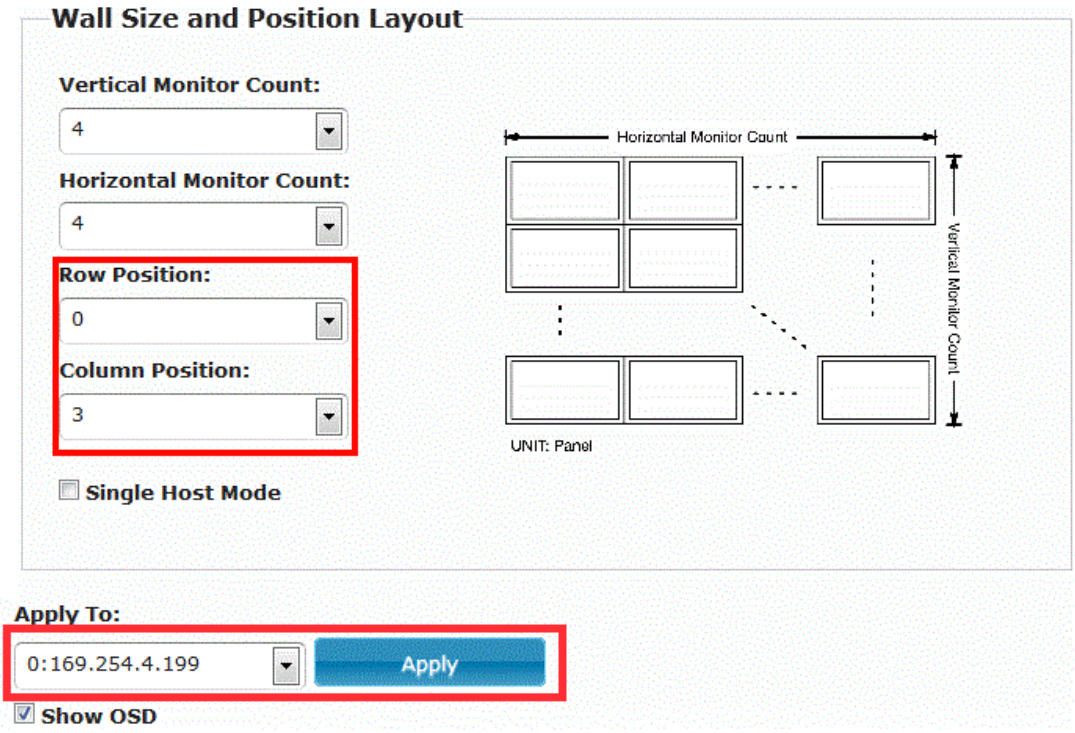



©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

14. Select the center-right screen: screen #1. Indicate Column Position: 2 in the correct field and press the Apply button. (The row value was set in Step #9 and should not be changed.)




15. Select from the dropdown box the far right screen: screen #0. Indicate Column Position: 3 in the correct field and press the Apply button. (The row value was set in Step #9 and should not be changed.)




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

16. Now that this row is fully configured, move on to the next row. Repeat step 3 to configure the switch so that the computer's port shares a VLAN (VLAN 21) with the second row of Tx/Rx.

| | | | | | |
|---|---|---|---|---|---|
| VLAN 20 | Tx Row0 à | Rx **Row0, Col0** | Rx **Row0, Col1** | Rx **Row0, Col2** | Rx **Row0, Col3** |
| VLAN 21 | **Tx Row1 à** | **Rx** Row1, Col0 | **Rx** Row1, Col1 | **Rx** Row1, Col2 | **Rx** Row1, Col3 |
| VLAN 22 | **Tx Row2 à** | **Rx** Row2, Col0 | **Rx** Row2, Col1 | **Rx** Row2, Col2 | **Rx** Row2, Col3 |
| VLAN 23 | **Tx Row3 à** | **Rx** Row3, Col0 | **Rx** Row3, Col1 | **Rx** Row3, Col2 | **Rx** Row3, Col3 |

17. Repeat steps 5-18.

18. Configure the switch so that the computer's port shares a VLAN (VLAN 22) with the third row of Tx/Rx.

| | | | | | |
|---|---|---|---|---|---|
| VLAN 20 | Tx Row0 à | Rx **Row0, Col0** | Rx **Row0, Col1** | Rx **Row0, Col2** | Rx **Row0, Col3** |
| VLAN 21 | **Tx Row1 à** | **Rx** Row1, Col0 | **Rx** Row1, Col1 | **Rx** Row1, Col2 | **Rx** Row1, Col3 |
| VLAN 22 | **Tx Row2 à** | **Rx** Row2, Col0 | **Rx** Row2, Col1 | **Rx** Row2, Col2 | **Rx** Row2, Col3 |
| VLAN 23 | **Tx Row3 à** | **Rx** Row3, Col0 | **Rx** Row3, Col1 | **Rx** Row3, Col2 | **Rx** Row3, Col3 |

19. Repeat steps 5-18.

20. Configure the switch so that the computer's port shares a VLAN (VLAN 23) with the bottom row of Tx/Rx.

| | | | | | |
|---|---|---|---|---|---|
| VLAN 20 | Tx Row0 à | Rx **Row0, Col0** | Rx **Row0, Col1** | Rx **Row0, Col2** | Rx **Row0, Col3** |
| VLAN 21 | **Tx Row1 à** | **Rx** Row1, Col0 | **Rx** Row1, Col1 | **Rx** Row1, Col2 | **Rx** Row1, Col3 |
| VLAN 22 | **Tx Row2 à** | **Rx** Row2, Col0 | **Rx** Row2, Col1 | **Rx** Row2, Col2 | **Rx** Row2, Col3 |
| VLAN 23 | **Tx Row3 à** | **Rx** Row3, Col0 | **Rx** Row3, Col1 | **Rx** Row3, Col2 | **Rx** Row3, Col3 |

21. Repeat steps 5-18.

22. Congratulations! Your video wall is up and running.

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Picture Adjustment

If the video wall picture is not being shown correctly after configuration is completed, additional adjustments may be needed.

## Television Zoom Settings

Check the "Zoom" settings on the display and cycle through the options to get the best fit. This is the #1 reason that video wall picture does not look correct after initial configuration. Common options are: Screen Fit, 4:3, 16:9, Wide Fit.

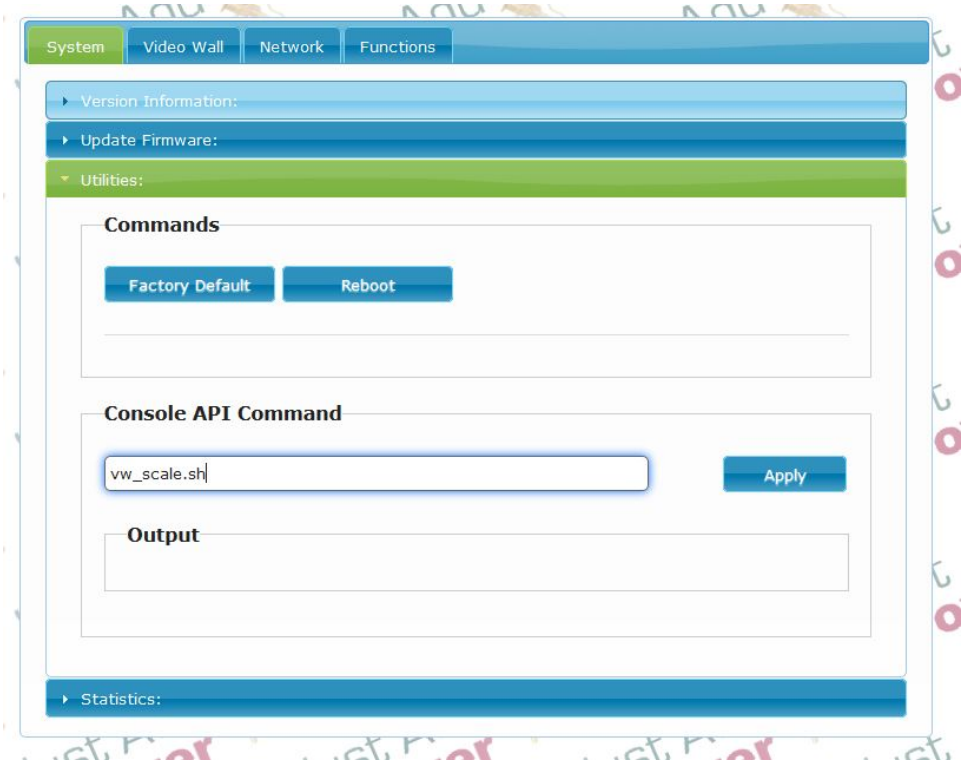
## One-Command Adjustment

Firmware **A5.13d** introduces a single command to apply all shift and scale values according to the size of the wall and TV. The Zoom Settings on the television still need to be adjusted and Bezel Gap must be applied, but this command will automatically do advanced shifting and scaling.

1. On the web page for **each Receiver** in the video wall, navigate to the System tab, Utilities bar.

2. In the Console API box, enter the following command:

vw_scale.sh




3. Click the 'Apply' button and the display will automatically shift the picture to the appropriate position

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

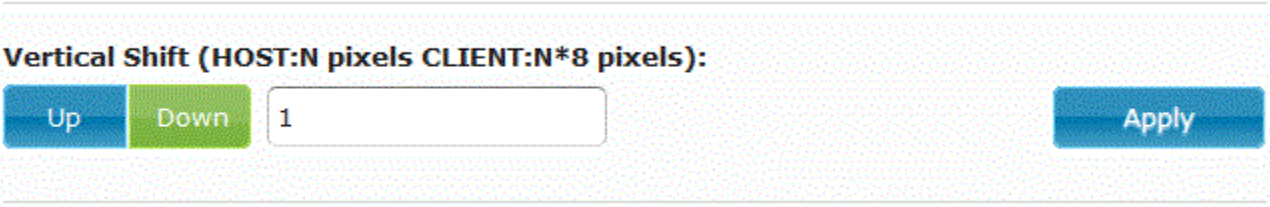
## Horizontal and Vertical Shift

Each Receiver can shift the picture up, down, left, or right for small adjustments. Before applying, confirm that bezel gap values are correct.

1. Select the screen to apply the shift to. Green buttons are selected, blue buttons are unselected.

2. To apply a Horizontal Shift (left-right), enter a number into the Horizontal Shift box. Only whole numbers can be entered, and all values are multiplied by 8 pixels.
3. Select whether the shift will be left or right and click 'Apply'. Picture shows a shift right of 16 pixels.

4. To apply a Vertical Shift (up-down), enter a number into the Vertical Shift box. Only whole numbers can be entered, and all values are multiplied by 8 pixels.
5. Select whether the shift will be up or down and click 'Apply'. Picture shows a shift down of 8 pixels.




6. Repeat until picture is in the correct location.

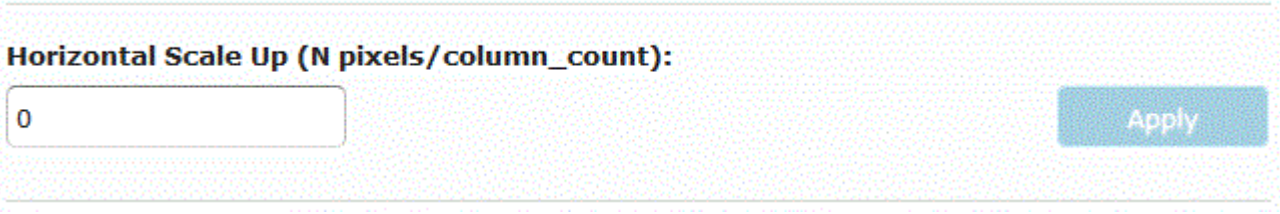
©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

## Horizontal and Vertical Scale Up

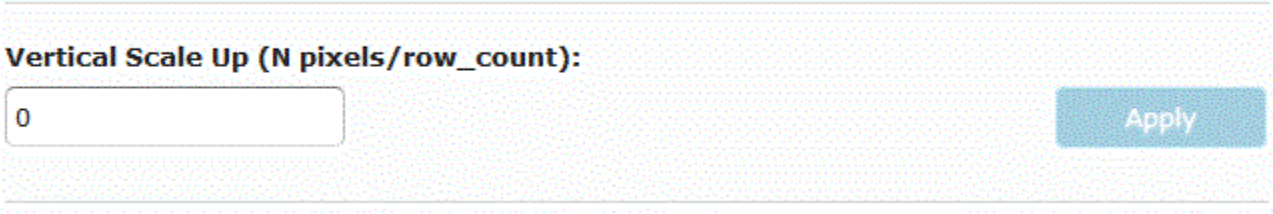
Each Receiver can further scale the picture for small adjustments. Before applying, confirm that bezel gap values are correct.

1. Select the screen to apply the scale to. Green buttons are selected, blue buttons are unselected.

2. To apply a Horizontal Scale Up (left-right), enter a number into the Horizontal Scale Up box. Decimals can be entered.
3. Click 'Apply'.




4. To apply a Vertical Scale Up (up-down) enter a number into the Vertical Scale Up box. Decimals can be entered.
5. Click 'Apply'.




6. Repeat until picture is in the correct location.

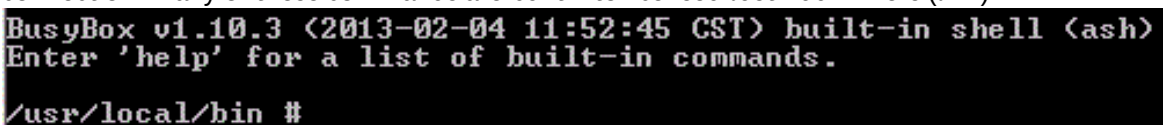
©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Video Wall Control – For Programmers

All commands to alter Video Wall parameters are sent to the Command Line Interface (CLI) of the target Just Add Power Receiver. The CLI can be accessed through telnet connection or a serial connection. Many of these commands are built into licensed Just Add Drivers (JAD).

**Not Sure How?**

Access Command Line Interface




## Wall Mode

Built into JAD drivers.

Change the size of the wall or remove wall mode to reset displays to single-screen. '$' indicates a variable. CLI command:

e e_vw_enable_$A_$B_$X_$Y

The size of the video wall.
$A = number of rows
$B = number of columns

The screen's position in the wall.
$X = row position
$Y = column position

| Video Wall Size Variable | |
|---|---|
| **Value** | **Meaning** |
| _0_0 | Individual Screen |
| _0_1 | 1 Row, 2 Columns |
| _1_0 | 2 Rows, 1 Column |
| _1_1 | 2 Rows, 2 Columns |
| _1_2 | 2 Rows, 3 Columns |
| _2_1 | 3 Rows, 2 Columns |
| _2_2 | 3 Rows, 3 Columns |

| New Location Variable | |
|---|---|
| **Value** | **Meaning** |
| _x_x | Show the same area |
| _0_0 | Show Row 1, Column 1 content |
| _0_1 | Show Row 1, Column 2 content |
| _1_0 | Show Row 2, Column 1 content |
| _1_1 | Show Row 2, Column 2 content |
| _1_2 | Show Row 2, Column 3 content |
| _2_1 | Show Row 3, Column 2 content |
| _2_2 | Show Row 3, Column 3 content |

## Bezel Gap

Bezel gap is set as part of initial setup of Video Wall, but can be changed dynamically if needed. '$' indicates a variable. CLI command:

e e_vw_moninfo_$VW_$OW_$VH_$OH

$VW = Video Width  $OW = Outside Width  $VH = Video Height  $OH = Outside Height

All numbers must be whole numbers (no decimals).

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

## Scale Picture

| Scaling | Command | Variable | Example | Description |
|---|---|---|---|---|
| **Wall-size Scale** | vw_scale.sh | None | No variables | Scales the entire screen according to the size of the wall |
| **Horizontal Scale** | e e_vw_h_scale | $X | e e_vw_h_scale_200 | Scales horizontally by 200 pixels |
| **Vertical Scale** | e e_vw_v_scale | $X | e e_vw_v_scale_300 | Scales vertically by 300 pixels |

Just Add Power highly recommends using the Wall-size Scale function, as it will automatically scale to the appropriate size. Fine tuning may be done with Horizontal Scale or Vertical Scale, but in most cases is not necessary.

## Shift Picture

Each Receiver can shift the picture up, down, left, or right for small adjustments. Before applying, confirm that bezel gap values are correct.

| Shifting | Command | Variable | Example | Description |
|---|---|---|---|---|
| **Shift Left** | e e_vw_h_shift_l_$X | $X | e e_vw_h_shift_l_2 | Shifts the screen '$X' times 8 pixels to the left<br>Example shifts 16 pixels left |
| **Shift Right** | e e_vw_h_shift_r_$X | $X | e e_vw_h_shift_r_1<br><br>Shifts 8 pixels right | Shifts the screen '$X' times 8 pixels to the right<br>Example shifts 8 pixels right |
| **Shift Up** | e e_vw_v_shift_u_$X | $X | e e_vw_v_shift_u_1<br><br>Shifts 8 pixels up | Shifts the screen '$X' times 8 pixels to the right<br>Example shifts 8 pixels up |
| **Shift Down** | e e_vw_v_shift_d_$X | $X | e e_vw_v_shift_d_2<br><br>Shifts 16 pixels down | Shifts the screen '$X' times 8 pixels to the right<br>Example shifts 16 pixels down |

## Tearing Delay

Adjust delay added before next frame is shown

e e_vw_delay_kick_$X

Add tearing delay of '$X' microseconds. 1000 microseconds = 1 millisecond. 1000 milliseconds = 1 second.
Example: e e_vw_delay_kick_8000 à adds 8000 microseconds of tearing delay

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Not Sure How?

## Access Web Interface

To configure a Just Add Power video wall, access to a Transmitter showing video content is needed. These steps will give a computer access to the desired Transmitter.

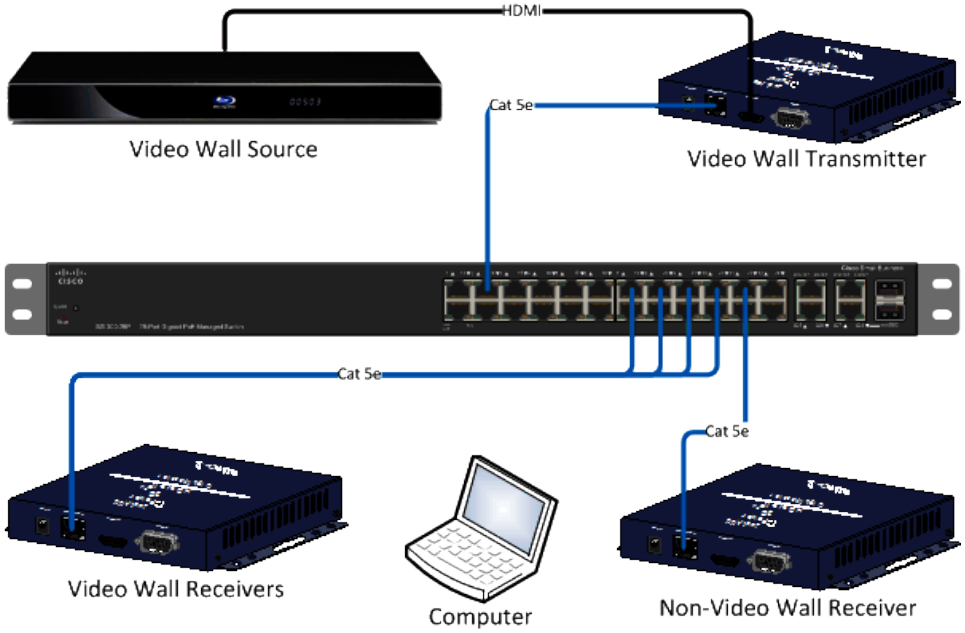
### Just Add Drivers Installations

1. Using the document exported at the end of JADConfig, open a web browser with the IP of the video wall source's ***Transmitter***.

Back To Top

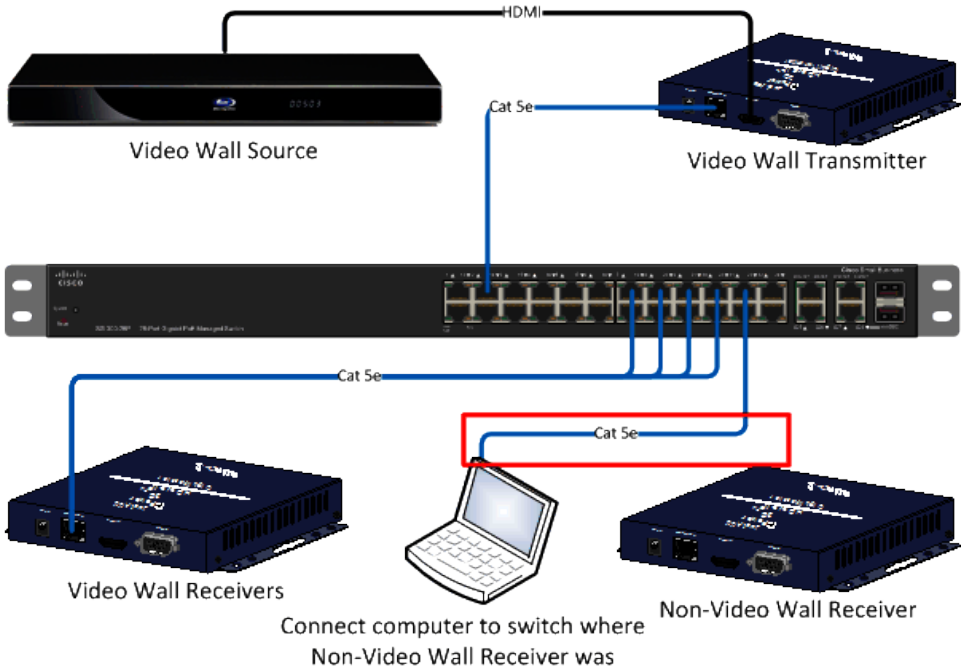
### Non-Just Add Drivers Installations

1. Use the control system to set a non-video wall Receiver to watch the video wall source.

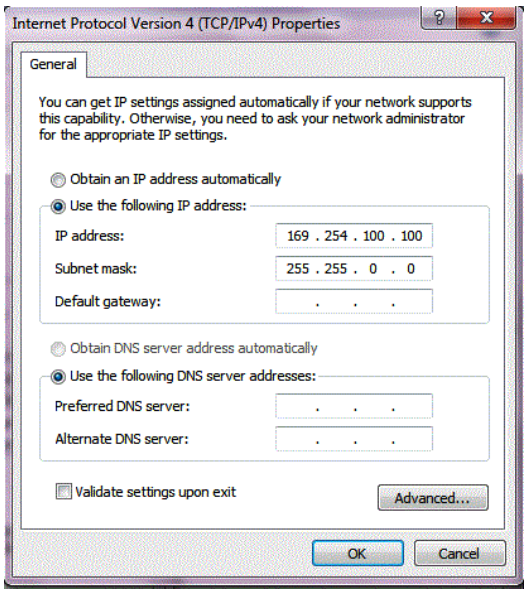


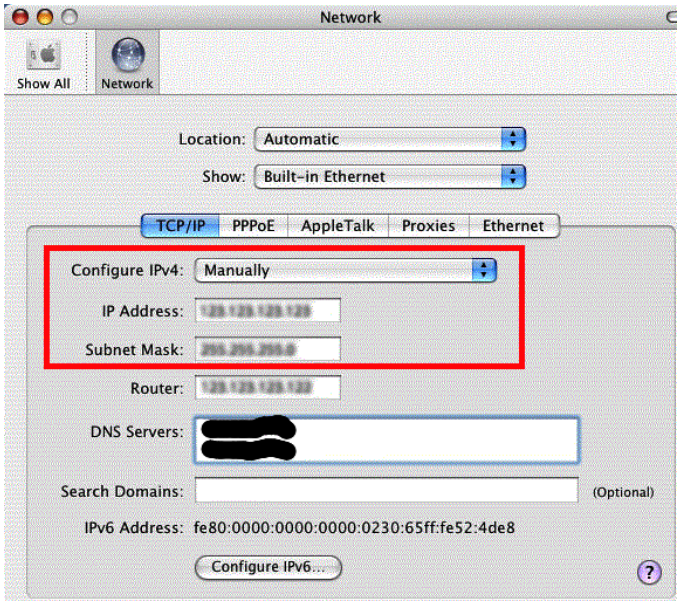

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

2. Unplug the non-video wall Receiver from the switch and connect a computer to that port.



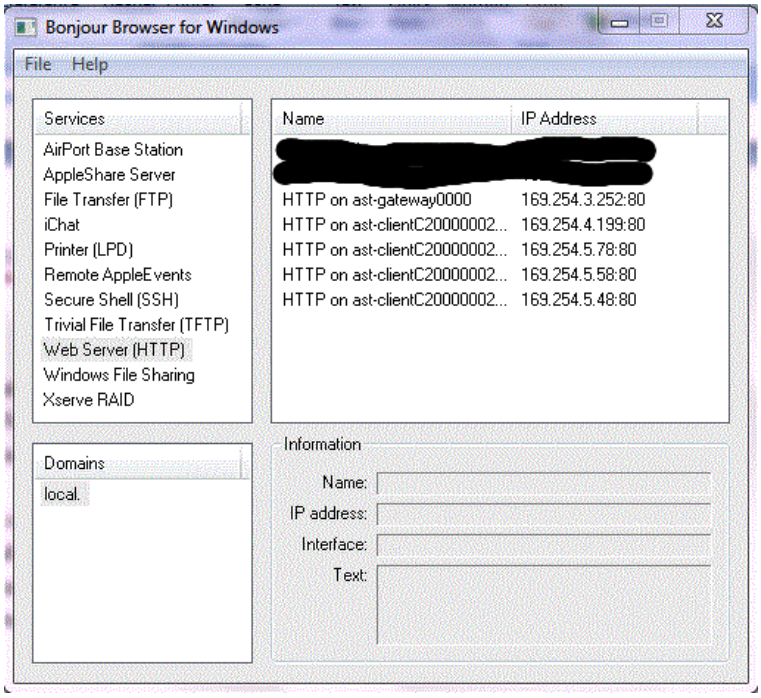

3. Set the IP address of the computer to be in the same range as the 2G devices. If Just Add Power devices are in default settings, set the IP address to 169.254.100.100 with a subnet mask of 255.255.0.0.
    a. On a Windows PC, this is accessible through the Network and Sharing Center. Click on Local Area Network, Properties, Internet Protocol Version 4 (TCP/IPv4).
    b. On a Mac, go to System Preferences. Select "Network" and "Built-in Ethernet." Select the TCP/IP tab and choose Configure: Manually.




©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

4. Run Bonjour Browser (distributed with the 2G firmware) and click on the Web Server HTTP option. You should see the IP addresses of the single Transmitter (also called the *ast-gateway*) and the Video Wall Receivers (also called *ast-clients*). In our example here the IP Address of the Transmitter is 169.254.3.252.




5. Double click on the Transmitter name 'HTTP on ast-gateway0000' and a web browser will open for the Transmitter.

Back To Top

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

## Access Command Line Interface

For a control system to modify video wall parameters, commands must be sent to the Command Line Interface (CLI) of the target Just Add Power device.

### Telnet

1. Connect a computer to the 1000BT port of the target Just Add Power device, or connect a computer to a port on the managed network switch that shares a VLAN with the target Just Add Power device.
2. Open a telnet client (PuTTY, Windows client, etc.)
3. Enter the IP of the target Just Add Power device into the client (port 23) and open.

**Note:** If JADConfig and a Just Add Drivers profile are being used, telnet access to the CLI is given through the driver commands and these steps are not necessary.

### Serial

1. Connect a serial cable to the white, 3-pin Molex connector on the bottom (or inside the case) of the target Just Add Power device.
2. Open a serial client (PuTTY, TeraTerm, etc.)
3. Set the baud rate to 115200-8n1 and open.

Back To Top

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14

# Change Log

2013-01-31

- Added configuration for 3x3 standard mode video wall
- Added configuration for 4x4 high-quality mode

2013-04-10

- Removed unnecessary “r0c0” function from Video Wall commands
- Changed “high-quality mode” to “tearless mode” to alleviate confusion
- Added information on wall scaling and other Video Wall information at beginning

2013-06-26

- Added links for accessibility and navigation
- Added how to fine-tune picture positioning
- Added CLI commands for picture positioning

2014-01-02

- Added vw_scale.sh for simple scaling

©2014 Just Add Power Cardware Co, Inc. All rights reserved. Unauthorized use or disclosure prohibited. Last updated Jan-14