



IGCC Combined Desktop Mode:

User Guide

Supporting Sky Lake, Kaby Lake, Apollo Lake, Kaby Lake Refresh, Coffee Lake, Gemini Lake, Whiskey Lake, Amber Lake and Comet Lake Processor Graphics

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1 Introduction

This chapter provides an introduction to the new Microsoft Universal Windows Driver (UWD) Intel® Graphics Command Center (IGCC) Microsoft Store Application’s “Combined Desktop” display mode. The Combined Desktop display mode allows users to combine multiple monitors to create a single unified desktop user interface with a bigger viewing area and resolution for a single image. Users of this mode can view higher quality images with multiple low resolution supported panels when seen from a distance. This is a cost-effective method for viewing images and combining work spaces when compared to purchasing a single high resolution panel.

The IGCC multi-monitor Combined Desktop display mode has commercial applications in the fields of digital signage, financial, stock market, medical, transportation, call center & surveillance among others. Beginning with the 3rd and 4th Generation Intel® Core™ Processor Family supporting 3 display pipes, support exists via Combined Desktop Display mode (both horizontal & vertical) for up to 3 displays. The bezel pattern correction feature is used in conjunction with Combined Desktop display mode to view images without distortion across all monitors.

If a minimum of two displays are placed horizontally adjacent, it is known as Horizontal Combined Desktop display mode. This involves positioning displays one next to another where one image stretches across all panels, as shown in Figure 1. If two or more displays are placed vertically, it is known as Vertical Combined Desktop display mode. Here, the image is shared across the vertical direction, as shown in Figure 2. Bezel correction Patterns are used in both cases to make the image continuous across all displays in use.



Figure 1: Horiz. Combined Desktop Display Mode - 3 displays

Introduction

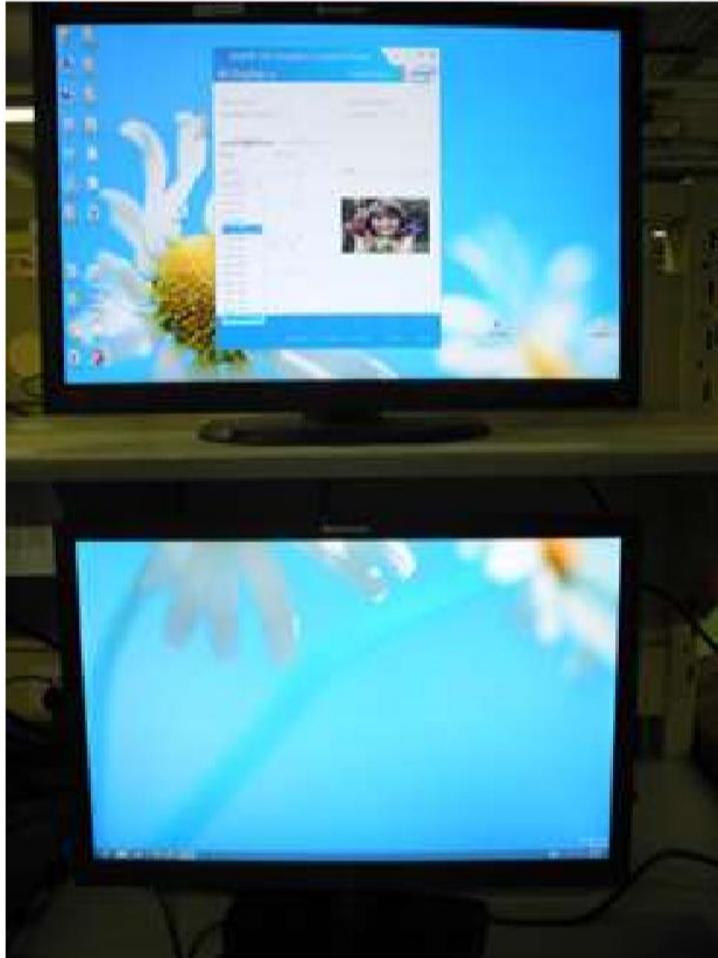


Figure 2: Vertical Combined Desktop Display Mode – 2 displays

2 Use Cases

Intel® Graphics Command Center (IGCC) Microsoft* Store Application can be launched via Start Menu, from Microsoft Store and via Hot-Keys.

2.1 Enable “Combine Desktop” Mode with Connected Displays only

For situations where no inbuilt display exists, for example, desktop platforms and NUCs, the user would perform the following steps to implement the “Horizontal Mode” and “Vertical Mode” Combined Desktop Use Cases:

2.1.1 Horizontal “Combine Desktop” Mode

1. Launch the IGCC application and navigate to the Display page.
 1. In the Top ‘Windowed’ portion of the UI there should be icons representing all displays currently plugged into the platform.
 2. To disallow a display from participating in the “Combined Desktop” display mode it is necessary to disable it.
 - Do this by, in the icon for that particular display, click on the three-dot button in the upper right corner of the icon and selecting ‘Disable’.
 - Once disabled, the display will go black, and its representative icon will go dark and move to the far right of the windowed area.
 3. For the remaining displays, arrange them horizontally and aligned relative to each other in a configuration matching their physical configuration relative to each other (i.e. if the number 2 physical display is adjacent and to the left of the number 3 physical display, move the icon for display 2 adjacent and to the left of the icon for display 3 in the UI window). See figure 3 for an example.

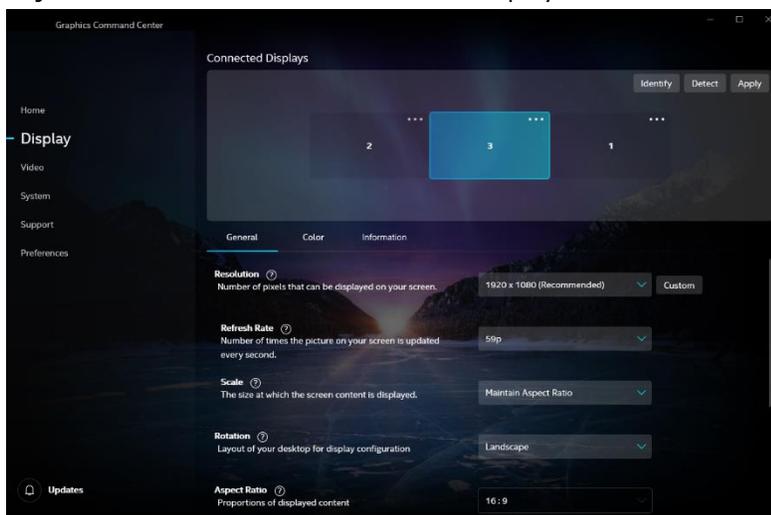


Figure 3: Horiz. arrangement of displays in the IGCC UI

Use Cases

4. Verify the numbered UI window display icons match their physical locations by clicking the “Identify” button in the upper right corner. This will show the identifying number of each display in its upper left-hand corner, allowing the user to match the physical display locations to their UI window locations.
5. Once the UI window icons are correctly arranged click the “Apply” button in the upper right of the UI window.
6. Move the mouse pointer horizontally across the physical displays to verify their UI configuration is the same as their physical configuration.
7. To apply the Combined Desktop mode, toggle on the “Combine Desktop” parameter located at the bottom of the parameter list with any of the displays selected. No matter which display is selected (shown by its representative icon turning blue), all active enabled displays will be combined into one large desktop.
8. The end result should be that the user sees one wide blue display icon representing the multiple displays combined to a single virtual display. If a display is disabled, it will be shown as a dark icon to the right of the blue virtual display icon representing the combined displays, as in figure 4, which shows a configuration from the perspective of the IGCC UI where display 1 has been disabled and displays 2 and 3 have the Combined Desktop mode implemented.

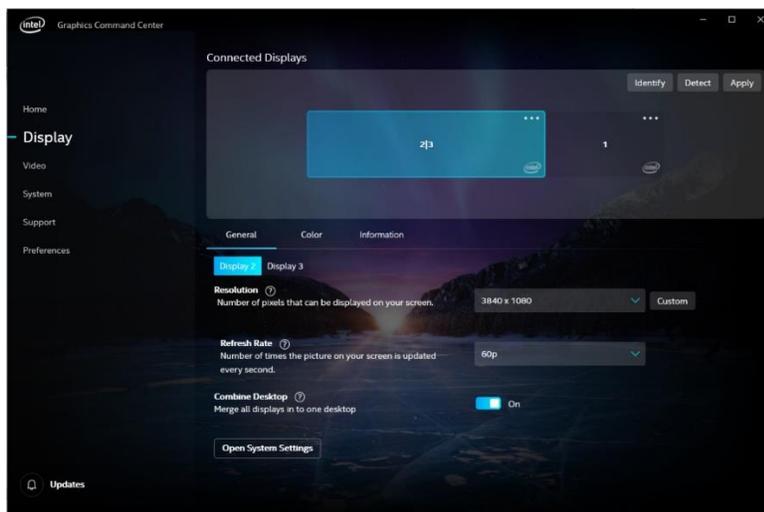


Figure 4: IGCC UI Horiz. Combined Desktop Display Mode – 2 enabled, 1 disabled

9. On the physical displays themselves, the single desktop image should be displayed horizontally across all active “Combined” displays as in figure 5.

Figure 5.

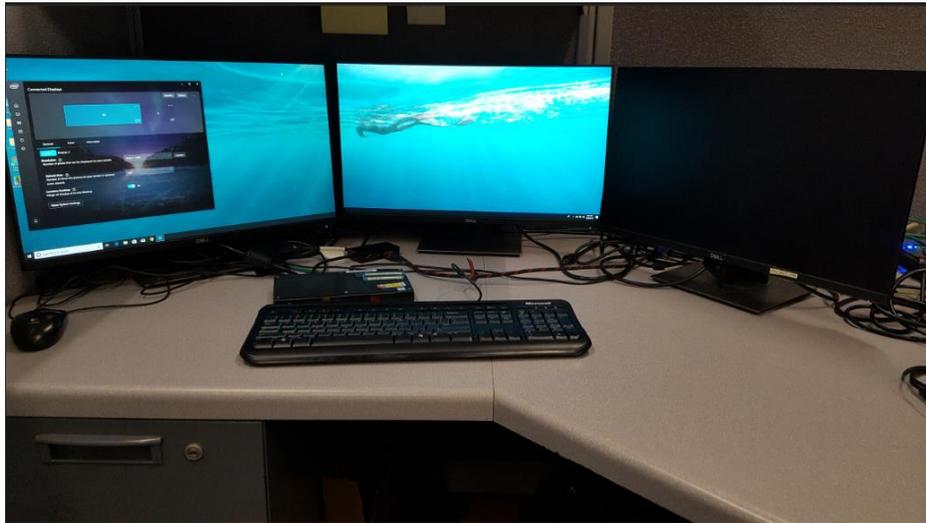


Figure 5: Horiz. Combined Desktop Display Mode – 2 enabled, 1 disabled

Figure 5 shows the same configuration as figure 3, except from the perspective of the physical displays being combined. Display 1 is disabled and displays 2 and 3 show the same “Combined Desktop” image.

2.1.2 Vertical “Combine Desktop” Mode

1 – 5. For Vertical Combined mode, steps 1 through 5 are the same as for horizontal mode, except in step 4, arrange the remaining displays vertically aligned relative to each other in a configuration matching their physical configuration, as in figure 6.

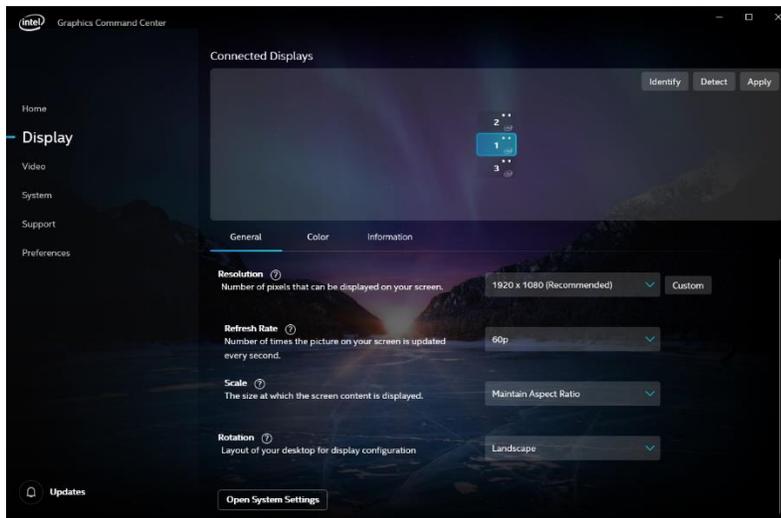


Figure 6: Vertical arrangement of displays in the IGCC UI

Use Cases

- 6 – 8. For Vertical Combined mode, steps 6 through 8 are the same as for horizontal mode.
9. The end result should be that on the UI the user sees one tall blue display icon representing the multiple displays combined to a single virtual display, vertically stacked, as in figure 7. If a display is disabled, it will be shown as a dark icon to the right of the blue virtual display icon representing the combined displays.

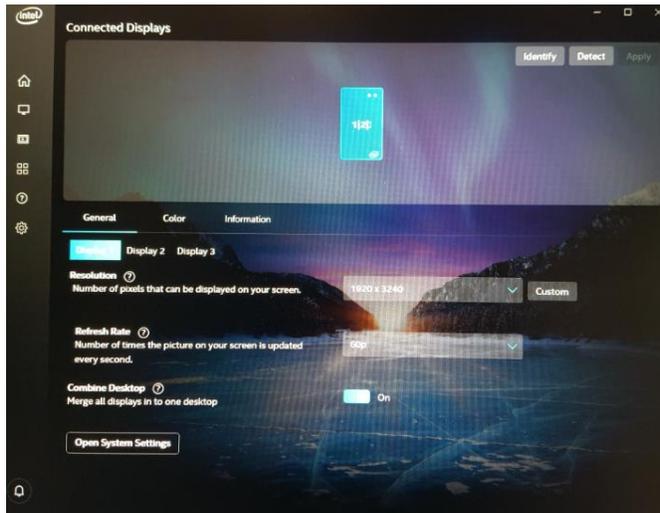


Figure 7: IGCC UI Vertical Combined Desktop Display Mode – 3 enabled

10. On the physical displays themselves, the single desktop image should be displayed across all active “Combined” displays as in figure 8.



Figure 8: Vertical Combined Desktop Display Mode – 3 enabled

2.2 Enable “Combine Desktop” Mode with in-built and Connected Displays

2.2.1 Horizontal “Combine Desktop” Mode

1. Launch the IGCC application and navigate to the Display page.
2. In the Top ‘Windowed’ portion of the UI there should be icons representing all displays currently plugged into the platform, one of which will be an in-built display, for example, a laptop display.
3. On combining the displays, the in-built display will be disabled, since in-built displays are not able to participate in Combined Desktop functionality. Due to this, it doesn’t matter where the inbuilt display icon resides on the UI. For the other connected displays, arrange them horizontally and aligned relative to each other in a configuration matching their physical configuration relative to each other (i.e. if the number 2 physical display is adjacent and to the left of the number 3 physical display, move the icon for display 2 adjacent and to the left of the icon for display 3 in the UI window). See figure 9 for an example.

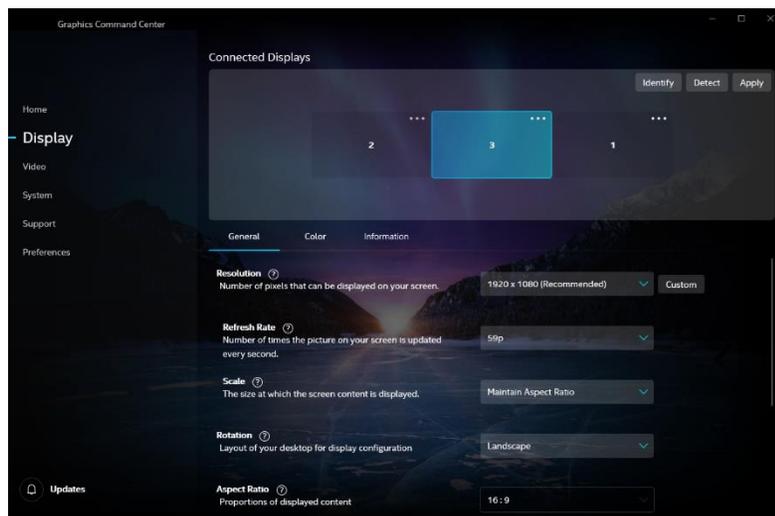


Figure 9: Horiz. arrangement of displays in the IGCC UI

4. Verify the numbered UI window display icons match their physical locations by clicking the “Identify” button in the upper right corner. This will show the identifying number of each display in its upper left-hand corner, allowing the user to match the physical display locations to their UI window locations.
5. Once the UI window icons are correctly arranged click the “Apply” button in the upper right of the UI window.
6. Move the mouse pointer horizontally across the physical displays to verify their UI configuration is the same as their physical configuration.
7. To apply the Combined Desktop mode, toggle on the “Combine Desktop” parameter located at the bottom of the parameter list with any of the displays selected. No matter which display is selected (shown by its representative icon turning blue), all active enabled displays will be combined into one large desktop, except the in-built display which will be disabled.

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8. The end result should be that the user sees one wide blue display icon representing the multiple displays combined to a single virtual display. The in-built display will be shown as a dark icon to the right of the blue virtual display icon representing the combined displays, as in figure 10, which shows a configuration from the perspective of the IGCC UI where in-built display 1 has been disabled and displays 2 and 3 have the Combined Desktop mode implemented.

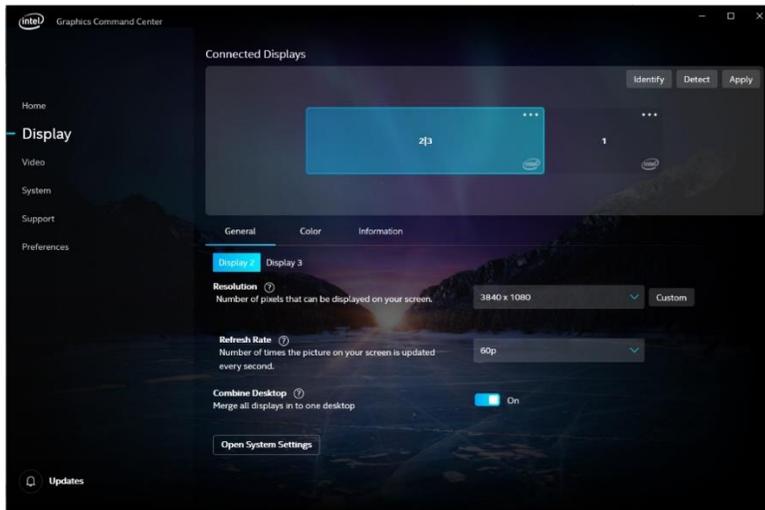


Figure 10: IGCC UI Horiz. Combined Desktop Display Mode – 2 enabled, in-built disabled

9. On the physical displays themselves, the single desktop image should be displayed horizontally across all active "Combined" displays, with the in-built display disabled, as in figure 11.

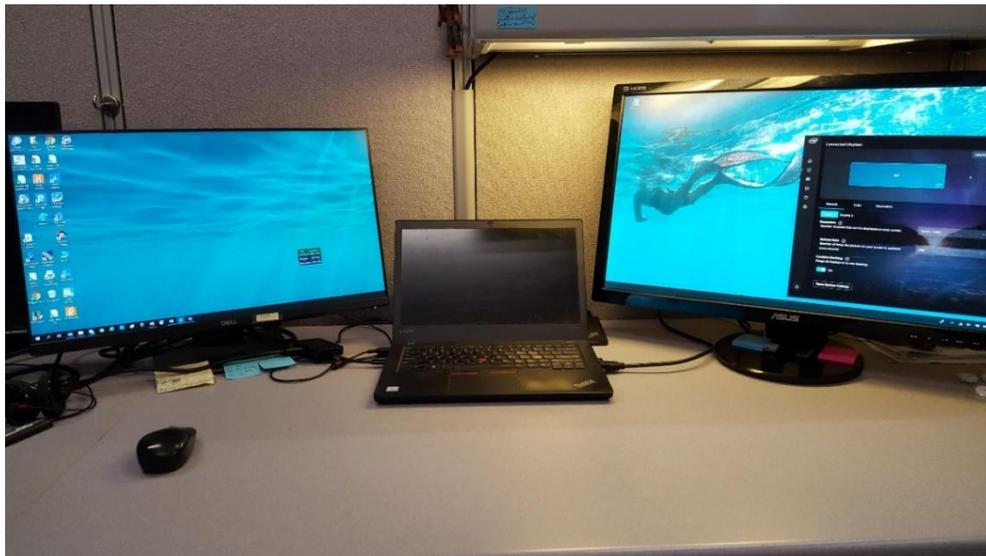


Figure 11: Horiz. Combined Desktop Display Mode – 2 enabled, in-built disabled

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Figure 11 shows the same configuration as figure 10, except from the perspective of the physical displays being combined. The laptop display is disabled and displays 2 and 3 show the same “Combined Desktop” image.

2.2.2 Vertical “Combine Desktop” Mode

1 – 5. For Vertical Combined mode, steps 1 through 5 are the same as for horizontal mode, except in step 4, arrange the remaining non in-built displays vertically aligned relative to each other in a configuration matching their physical configuration, as in figure 12.

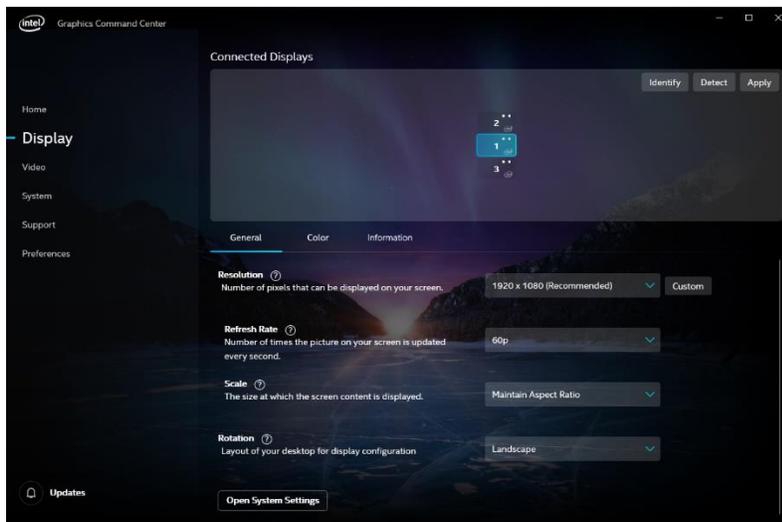


Figure 12: Vertical arrangement of displays in the IGCC UI

6 – 8. For Vertical Combined mode, steps 6 through 8 are the same as for horizontal mode.

9. The end result should be that on the UI the user sees one tall blue display icon representing the multiple displays combined to a single virtual display, vertically stacked, with the in-built display disabled, and shown as a dark icon to the right of the blue virtual display icon representing the combined displays, as in figure 13.

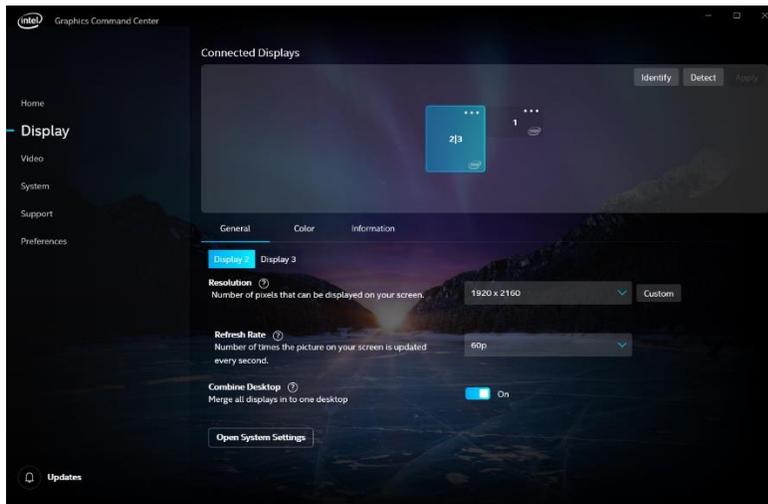


Figure 13: IGCC UI Vertical Combined Desktop Display Mode – 2 enabled, in-built disabled

10. On the physical displays themselves, the single desktop image should be displayed across all active “Combined” displays, with the in-built display disabled, as shown in figure 14.



Figure 14: Vertical Combined Desktop Display Mode – 2 enabled, in-built disabled

2.3 Disable “Combine Desktop” Mode with Connected Displays only

1. Launch the IGCC application and navigate to the Display page.
2. With two or three external displays connected to IGCC, and configured either vertically or horizontally, click on the ‘Combine Desktop’ toggle.
3. After horizontal or vertical combining occurs, in the Top ‘Windowed’ portion of the UI there should be a single icon representing all displays currently plugged into the platform with “1|2|...” as

Use Cases

an identifier, representing the combined desktop. The desktop image should be spread across all displays, and a user-controlled mouse should move smoothly across all displays.

4. Click off the “Combine Desktop” toggle button.
5. The displays should go blank, then turn on again briefly, then go blank again. Eventually the displays will become visible again in extended mode in a horizontal configuration, showing a single desktop image on each display. The UI window should show a separate display icon for each display.

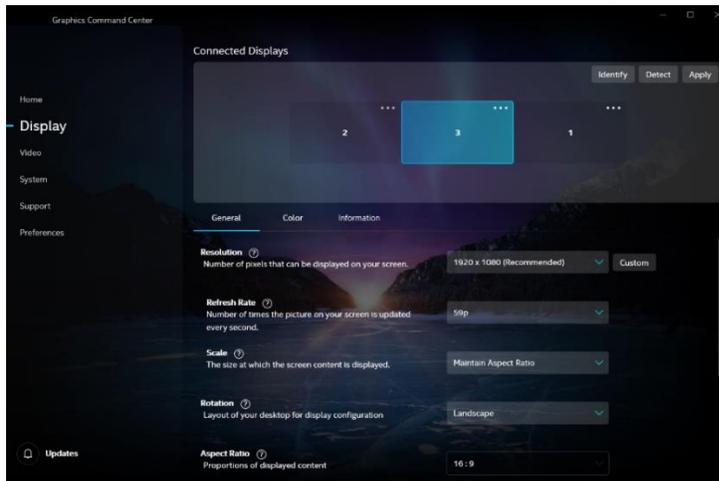


Figure 15: IGCC UI connected displays after disabling “Combine Desktop”

2.4 Disable “Combine Desktop” Mode with in-built and Connected Displays

1. Launch the IGCC application and navigate to the Display page.
2. With one internal and two external displays connected to IGCC, and configured either vertically or horizontally, click on the ‘Combine Desktop’ toggle.
3. After horizontal or vertical combining occurs, the built-in display should go blank. In the Top ‘Windowed’ portion of the UI there should be one icon representing the displays currently plugged into the platform with “1|2” as an identifier, representing the combined desktop, and another icon grayed out on the right-hand side representing the disabled inbuilt display. The desktop image should be spread across all connected displays, and a user-controlled mouse should move smoothly across the connected displays.
4. Click off the “Combine Desktop” toggle button.

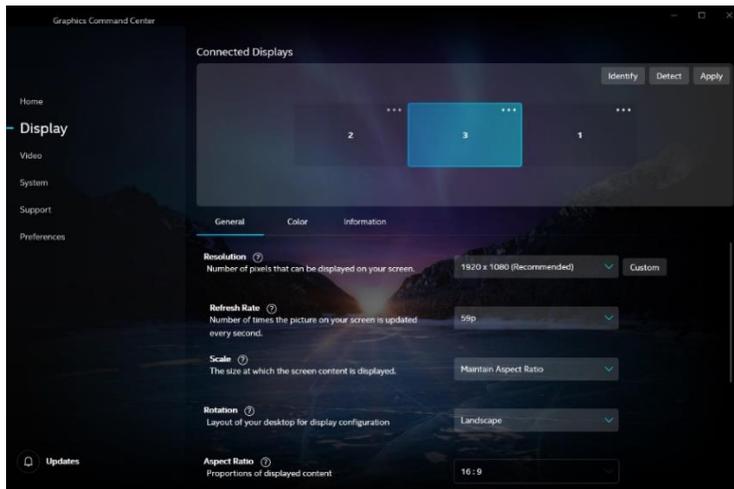


Figure 16: IGCC UI in-built and connected displays after disabling “Combine Desktop”

5. The displays should go blank, then turn on again briefly, then go blank again. Eventually the displays will become visible again in extended mode in a horizontal configuration, showing a single desktop image on each display. The in-built display should be re-enabled, and the UI window should show a separate display icon for each display.