Cybex™ SCM Secure Desktop Matrix

Installer/User Guide

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures. Visit https://www.VertivCo.com/en-us/support/ for additional assistance.

TABLE OF CONTENTS

1 Product Overview **1**
1.1 Products Supported 1
1.2 Features and Benefits 1
1.3 System Requirements 2
2 Basic Operation **3**
2.1 Control Options 3
2.2 Channel Selection 4
2.3 DPP functionality 5
2.4 Mouse, Cursor and Monitor Settings 5
2.4.1 Mouse settings 5
2.4.2 Cursor Navigation Switching 6
2.4.3 Factory Reset 6
2.5 Presets 6
2.5.1 Important Notes 6
2.5.2 4-port presets 7
2.5.3 8-port presets 18
2.5.4 Advanced Presets 24
3 Appendices **27**
Appendix A: Keyboard Shortcuts 27
Appendix B: Product Specifications 29
Appendix C: Troubleshooting 31

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1 PRODUCT OVERVIEW

The Vertiv™ Cybex™ SCM Secure Desktop Matrix switch allows you to securely connect to and switch between multiple computers at varying classification levels and allows user to simultaneously view two active computers and seamlessly switch between computers by moving the mouse across displays called Cursor Navigation Switching (CNS). The switch utilizes several security features to prevent the transfer of data between connected computers while allowing you to control connected computers via a single set of peripherals. The switch supports up to eight connected computers as well as a Dedicated Peripheral Port (DPP) for secure connection to USB peripherals including two-factor authentication devices such as CAC smart card readers, fingerprint readers and facial recognition.

WARNING! This product is equipped with active intrusion protection and tamper-evident seals. Tampering with the switch or breaking/removing the seals will permanently disable it and void the warranty. If the enclosure appears to be tampered with or if all the computer selection LEDs flash sequentially, contact Technical Support.

1.1 Products Supported

- Cybex™ SCM 145 Secure Desktop Matrix switch
- Cybex™ SCM 145H Secure Desktop Matrix switch
- Cybex™ SCM 145DP Secure Desktop Matrix switch
- Cybex™ SCM 185 Secure Desktop Matrix switch
- Cybex™ SCM 185DP Secure Desktop Matrix switch

1.2 Features and Benefits

The switch provides the following features and benefits:

- NIAP Common Criteria Protection Profile (PP) for Peripheral Sharing Switch (PSS) v.3.0 accredited.
- Flexible, secure options for connected display technologies.
- Display classified and unclassified information without compromising security.
- Prevents information leaks, transfer or crosstalk between adjacent ports and filters ultrasonic audio frequencies via unidirectional optical data diodes (UODD).
- Maintain situational awareness across multiple security domains.
- Filters unwanted USB devices.
- Zero Delay Switching.
- Ability to view two active computers simultaneously.
- Cursor Navigation Switching (CNS) giving the user control to switch from one isolated computer to another via the mouse.
- Dedicated Peripheral Port (DPP) for secure connection to USB peripherals including two-factor authentication devices such as CAC smart card readers, fingerprint readers, facial recognition, etc.
- Isolated ports on the switch provide discrete processing paths to each computer.
- USB peripheral isolation via unidirectional optical data diodes controlling data flow from devices to host only.

- Unidirectional audio data diode that allows sound to travel in one direction from the PC to the speaker and prevents eavesdropping.
- Resolutions up to 4k UHD @ 30 Hz for DVI-I, DisplayPort or HDMI models.

1.3 System Requirements

Ensure a minimum of one of the following operating systems is installed on the computers to be connected:

- Microsoft Windows
- Red Hat, Ubuntu or any other Linux platform
- Mac OS X version 10.3 or higher

2 BASIC OPERATION

The desktop matrix switch is configured and operated via LED buttons and controls on the front panel and various keyboard shortcuts on a connected keyboard.

Figure 2.1 Cybex SCM 145 Secure Desktop Matrix Switch

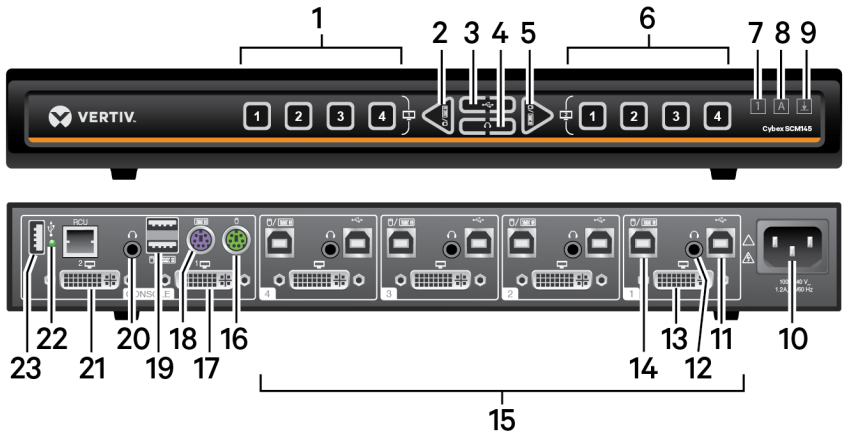


Table 2.1 Cybex SCM 145 Secure Desktop Matrix Switch Descriptions

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Displays channels one through four on the primary display.	9	Scroll lock; illuminates when activated.	17	Secondary DVI-I output.
2	Switches the keyboard and mouse focus to the primary display.	10	Power input.	18	PS/2 keyboard input (4-port switch only).
3	Toggles the DPP lock function.	11	DPP USB Type-B input jack for computer four.	19	USB console keyboard and mouse input.
4	Toggles the audio lock function.	12	Audio input for computer four.	20	Audio output.
5	Switches the keyboard and mouse focus to the secondary display.	13	DVI-I video input for computer four.	21	Primary DVI-I output.
6	Displays channels one through four on the secondary display.	14	Keyboard and mouse USB Type-B input for computer four.	22	DPP LED indicator.
7	Num lock; illuminates when activated.	15	Computer input; the switch shown supports up to four computers.	23	DPP console input.
8	Caps lock; illuminates when activated.	16	PS/2 mouse input (4-port switch only).		

2.1 Control Options

LED indicators on the front and back panels of the switch allow you to view the status of the switch and its connected computers, monitors and peripherals. After all computers and peripherals are connected to the switch, the keyboard, mouse and audio are mapped to computer one.

NOTE: When power is turned on to the switch, the selected channel is computer one and it appears on both the primary and secondary monitors.

To reorder connected computers:

1. Turn off power to the switch and then to the connected computers.
2. Reconnect the computers in the desired configuration.
3. The switch should be powered off for more than one minute, then turn on power to the switch and computers.

From the front panel, you can select a channel and the monitor to display the channel. The left panel controls the display source on the primary display and the right panel controls the display source on the secondary display.

The front panel also has keyboard LED indicators that show the status of the device. The Caps Lock, Num Lock and Scroll Lock indicators on the keyboard are disabled for security reasons. The symbol LEDs are illuminated to indicate that Caps Lock, Scroll Lock and Num Lock are activated.

NOTE: When the switch is restored to factory default settings, all user-defined configurations are erased and the keyboard and mouse are mapped to computer one. The front panel LEDs blink in unison to indicate a successful factory reset.

2.2 Channel Selection

The numbered LED buttons are each mapped to a corresponding channel port on the back panel. For example, the LED one button is mapped to channel port one and the computer that is connected to channel port one. Pressing LED buttons 1 through 8 on the left side of the front panel shows channels 1 through 8 on primary monitor. The LED buttons 1 through 8 on the right side of the front panel shows channels 1 through 8 on the secondary monitor.

When a channel is selected, its LED button illuminates and the mouse cursor of the selected computer appears in the center of the display. If the computer is connected to multiple displays, the mouse cursor appears in the center of the primary display.

To select a channel to be displayed:

On the front panel, press the channel LED button that corresponds to the computer to be displayed and the desired monitor.

To duplicate a channel on both monitors:

Press the corresponding LED button of the computer to be displayed on both the primary and secondary monitors.

To lock audio functionality on a specific channel:

1. On the front panel, select the primary and secondary channels by pressing the corresponding LED buttons.
2. Select the left side of the audio lock button to lock the primary display and the right side to lock the secondary display.

You can lock audio on a specific channel. After you lock audio functionality, you can switch channels and the audio on the locked channel remains active.

2.3 DPP functionality

The DPP port allows secure connection to USB peripherals including two-factor authentication devices such as CAC smart card readers, fingerprint readers and facial recognition. When a qualified USB device is connected to the switch, the DPP LED is illuminated and the device is ready for use. If the USB device is compatible but not authorized for use with the switch, the DPP status LED flashes and the device is inoperable until the device is authorized with the DPP configuration utility. If the USB device is not compatible with the switch, the status DPP LED does not illuminate and the device is inoperable. If no device is detected, the DPP status LED does not illuminate and the device is inoperable.

NOTE: When using an authentication device such as a smart card reader, do not connect any device to the switch that requires an external power source.

When you switch channels, the USB device connected to the DPP is connected to the selected channel unless DPP functionality is locked on a specific channel. When you switch to a channel that is not connected to a USB device, the previous active USB connection is terminated and no new connection is established.

You can also lock the DPP on a specific channel. When you lock the DPP, switching channels does not affect the processes performed by the USB device connected to the selected channel.

To lock DPP functionality on a specific channel:

1. On the front panel, select the primary and secondary channels by pressing the corresponding LED buttons.
2. Select the left side of the DPP lock button to lock the DPP device to the computer selected on the primary display.

   -or-

3. Select the right side to lock to the computer selected on the secondary display.

NOTE: If the switch is restored to factory settings with DPP enabled, the DPP feature will be disabled by default after the reboot.

See the Vertiv Cybex™ SC/SCM Switching System Additional Operations and Configuration Technical Bulletin for detailed DPP configuration procedures.

2.4 Mouse, Cursor and Monitor Settings

The mouse, cursor and monitor settings can be customized from the device's original configuration. You can reset customized settings by executing a system reset which clears mouse and monitor characteristics and presets by pressing a keyboard shortcut on the connected keyboard.

2.4.1 Mouse settings

Using keyboard shortcuts, you can freeze or unfreeze the mouse on a selected channel, increase or decrease the speed of the mouse and enable or disable CNS.

To freeze the mouse on a selected channel:

Press L CTRL | L CTRL | F11 | f.

To unfreeze the mouse on a selected channel:

Press L CTRL | L CTRL | F11 | u.

To increase mouse speed:

Press L CTRL | L CTRL | F11, then press + .

To decrease mouse speed:

Press L CTRL | L CTRL | F11, then press -.

2.4.2 Cursor Navigation Switching

By default, the switch is configured to use the relative mouse setting, which confines mouse cursor movement to the monitor of the selected computer. With this setting, you must use the front panel channel selection buttons to switch between computers.

Alternatively, the switch can be configured to use the absolute mouse setting, which allows you to move between isolated computer systems by moving the mouse cursor across monitor borders. When the mouse cursor moves beyond the monitor border from one computer to another, the mapping for the keyboard, mouse, audio and DPP device also changes. The relative and absolute settings are enabled using a shortcut on the connected keyboard.

To enable the relative mouse setting:

Press L CTRL | L CTRL | F11 | b.

To enable the absolute mouse setting:

Press L CTRL | L CTRL | F11 | c.

2.4.3 Factory Reset

To clear all settings and return to the factory defaults:

Press L CTRL | L CTRL | F11 | r.

2.5 Presets

The switch includes predefined monitor layouts that you can access via keyboard shortcuts. The presets enable cursor navigation switching (CNS) and define the layouts for two, three or four connected monitors and the location of the screen borders.

2.5.1 Important Notes

- Always use the left control key (CTRL) unless otherwise specified.
- Keyboard shortcut keys are to be pressed sequentially.
- Do not use the numeric keypad for toggling shortcuts unless otherwise specified.
- All keyboard shortcuts refer to QWERTY keyboards. In case a non-qwerty keyboard is in use, keep using the QWERTY layout.
- Before using any preset with a dual-head Windows computer where one video head is directly connected to a monitor, you must download and install the KM Multi-monitor driver from the Software Downloads section of the Vertiv website.
- To enable absolute-mouse prior to working with presets, enter: L CTRL | L CTRL | F11 | c.

NOTE: Any externally connected display should have the same native resolution of the primary display connected directly to the switch.

To switch between the presets:

Press L CTRL | L CTRL | F11 | [F x]

2.5.2 4-port presets

Table 2.2 4-port Preset Descriptions

PRESET	DESCRIPTION	KEY COMBINATION
Preset 1	Two horizontally-aligned monitors.	L CTRL	L CTRL	F11	F1
Preset 2	Two vertically-aligned monitors.	L CTRL	L CTRL	F11	F2
Preset 3	Three horizontally-aligned monitors (direct on the left).	L CTRL	L CTRL	F11	F3
Preset 4	Three horizontally-aligned monitors (direct on the right).	L CTRL	L CTRL	F11	F4
Preset 5	Four horizontally-aligned displays; directs on left and right.	L CTRL	L CTRL	F11	F5
Preset 6	Simple vertically-aligned 2-port dual-head mode.	L CTRL	L CTRL	F11	F6
Preset 7	Simple horizontally-aligned 2-port dual-head mode.	L CTRL	L CTRL	F11	F7
Preset 8	Two single-head computers and 1 dual-head computer (ports 3 and 4) .	L CTRL	L CTRL	F11	F8
Preset 9	One dual-head computer (ports 1 and 2) and two single-head computers.	L CTRL	L CTRL	F11	F9
Preset 10	Legacy KVM mode with direct to computer 1 secondary display.	L CTRL	L CTRL	F11	F10

Preset 1 - L CTRL | L CTRL | F11 | F1

Figure 2.2 Preset 1 Configuration

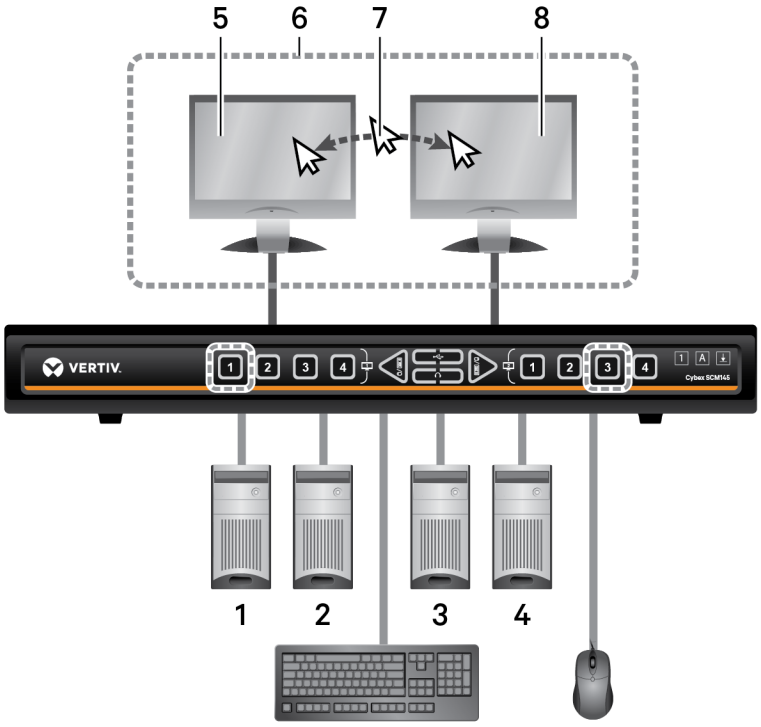


Table 2.3 Preset 1 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 connected to port 3
4	Computer 4 connected to port 4
5	Primary display showing computer 1
6	Monitors controlled by CNS
7	Moving between the monitors horizontally changes the keyboard and mouse focus.
8	Secondary display showing computer 3

Preset 2 - L CTRL | L CTRL | F11 | F2

Figure 2.3 Preset 2 Configuration

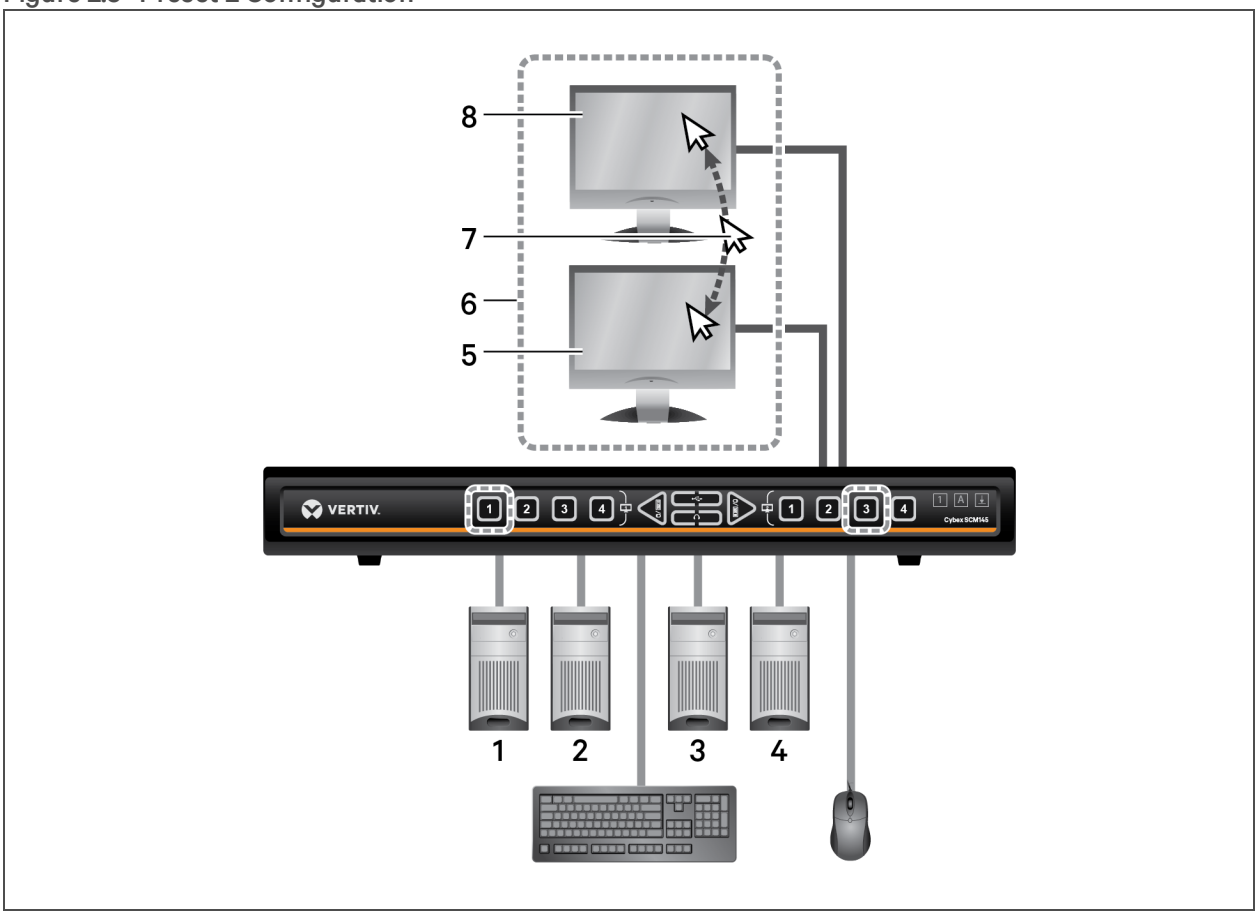


Table 2.4 Preset 2 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 connected to port 3
4	Computer 4 connected to port 4
5	Primary display showing computer 1
6	Monitors controlled by CNS
7	Moving between the monitors vertically changes the keyboard and mouse focus.
8	Secondary display showing computer 3

Preset 3 - L CTRL | L CTRL | F11 | F3

Figure 2.4 Preset 3 Configuration

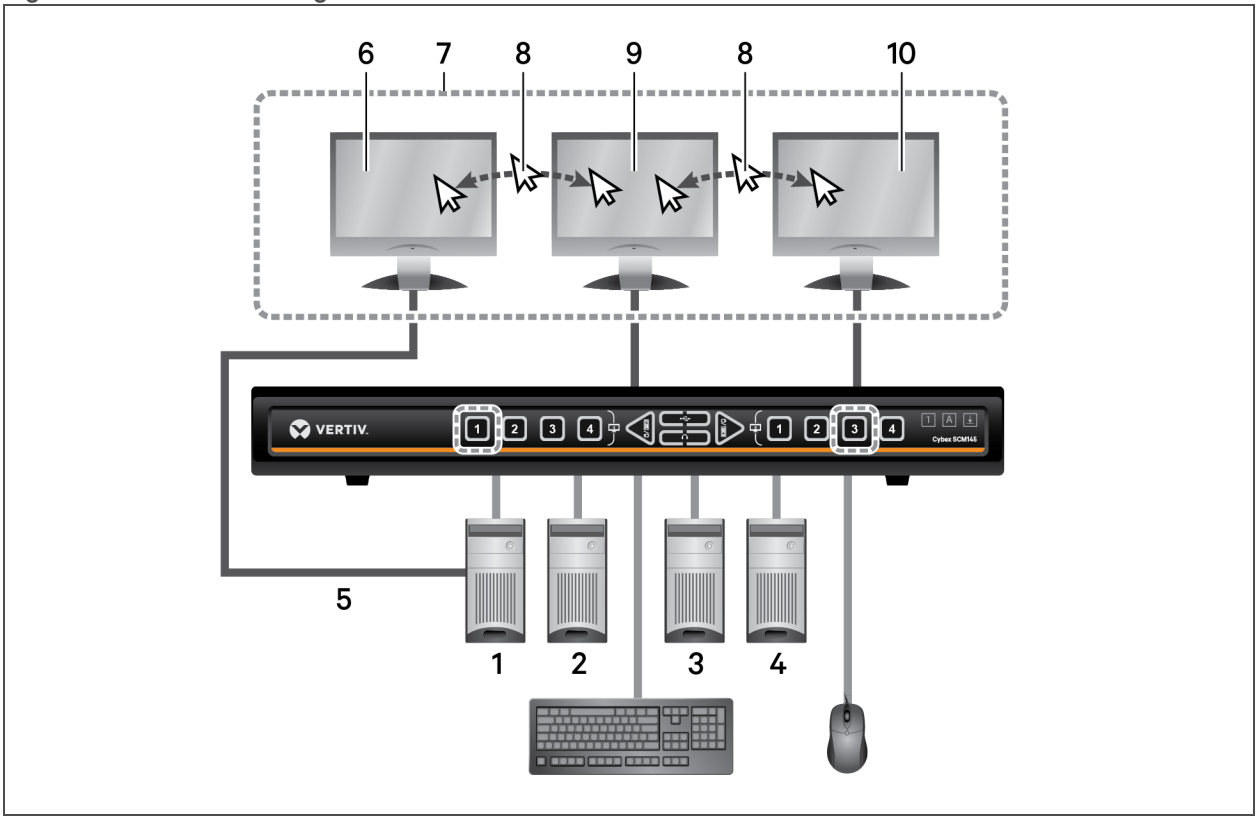


Table 2.5 Preset 3 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 connected to port 3
4	Computer 4 connected to port 4
5	Computer 1 secondary display directly connected to monitor
6	Monitor directly connected to computer 1 displaying computer 1 primary display
7	Monitors controlled by CNS
8	Moving between the monitors horizontally changes the keyboard and mouse focus.
9	Primary display showing computer 1 secondary display
10	Secondary display showing computer 3

Preset 4 - L CTRL | L CTRL | F11 | F4

Figure 2.5 Preset 4 Configuration

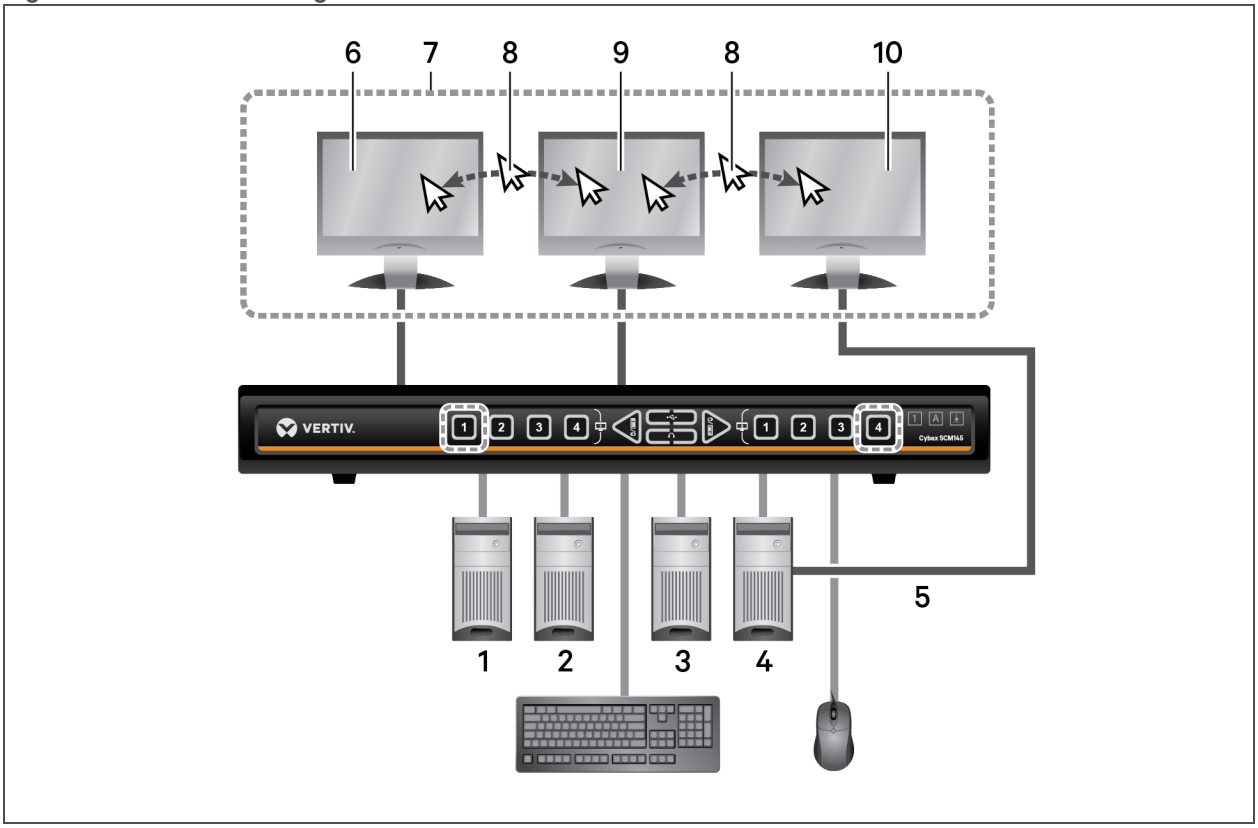


Table 2.6 Preset 4 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 connected to port 3
4	Computer 4 secondary display connected to port 4
5	Computer 4 primary display directly connected to monitor
6	Primary display showing computer 1
7	Monitors controlled by CNS
8	Moving between the monitors horizontally changes the keyboard and mouse focus
9	Secondary display showing computer 4
10	Monitor directly connected to computer 4 primary display

Preset 5 - L CTRL | L CTRL | F11 | F5

Figure 2.6 Preset 5 Configuration

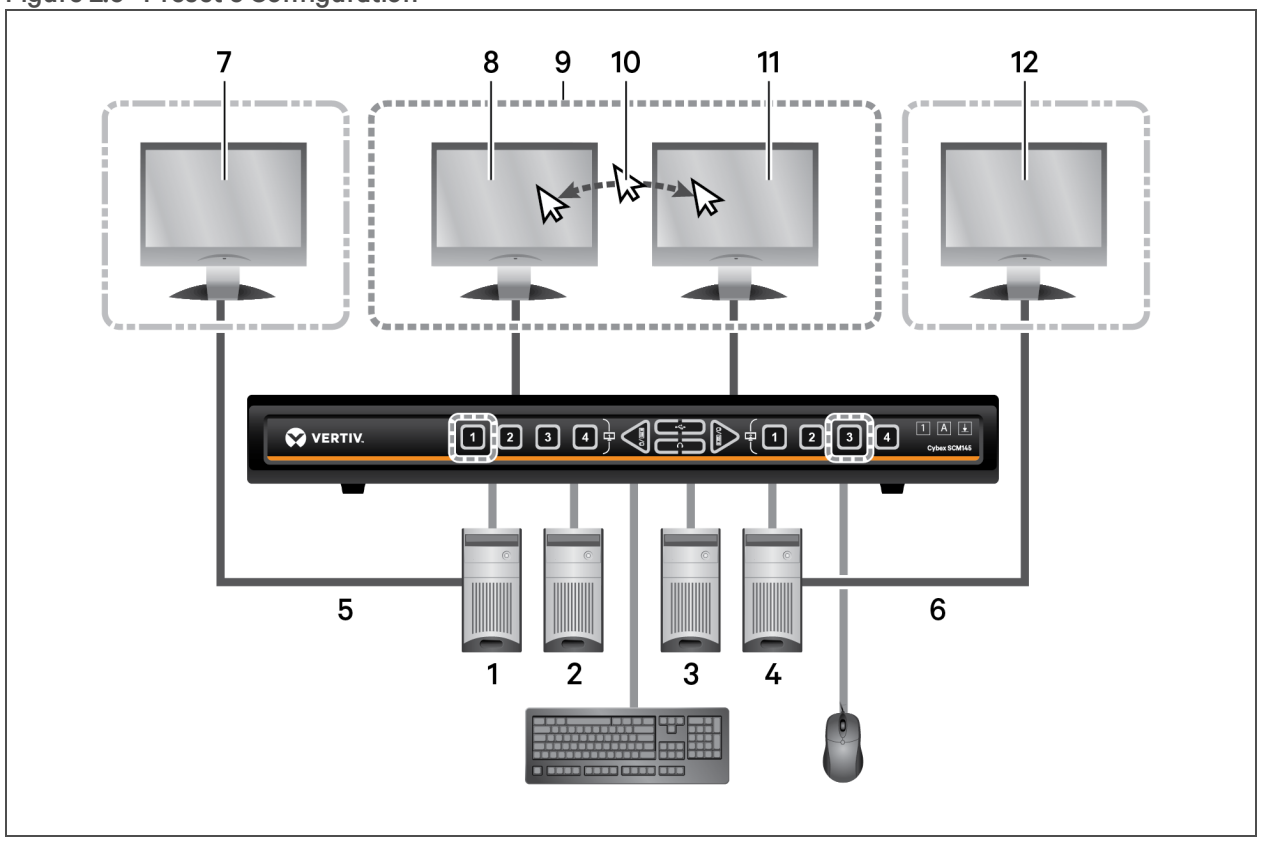


Table 2.7 Preset 5 Configuration Components

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Computer 1 secondary display connected to port 1	7	Monitor directly connected to computer 1 primary display
2	Computer 2 connected to port 2	8	Primary display showing computer 1 secondary display
3	Computer 3 connected to port 3	9	Monitors controlled by CNS
4	Computer 4 secondary display connected to port 2	10	Moving between the monitors horizontally changes the keyboard and mouse focus
5	Computer 1 primary display directly connected to monitor	11	Secondary display showing computer 3 secondary display
6	Computer 4 primary display directly connected to monitor	12	Monitor directly connected to computer 4 primary display

Preset 6 - L CTRL | L CTRL | F11 | F6

Figure 2.7 Preset 6 Configuration

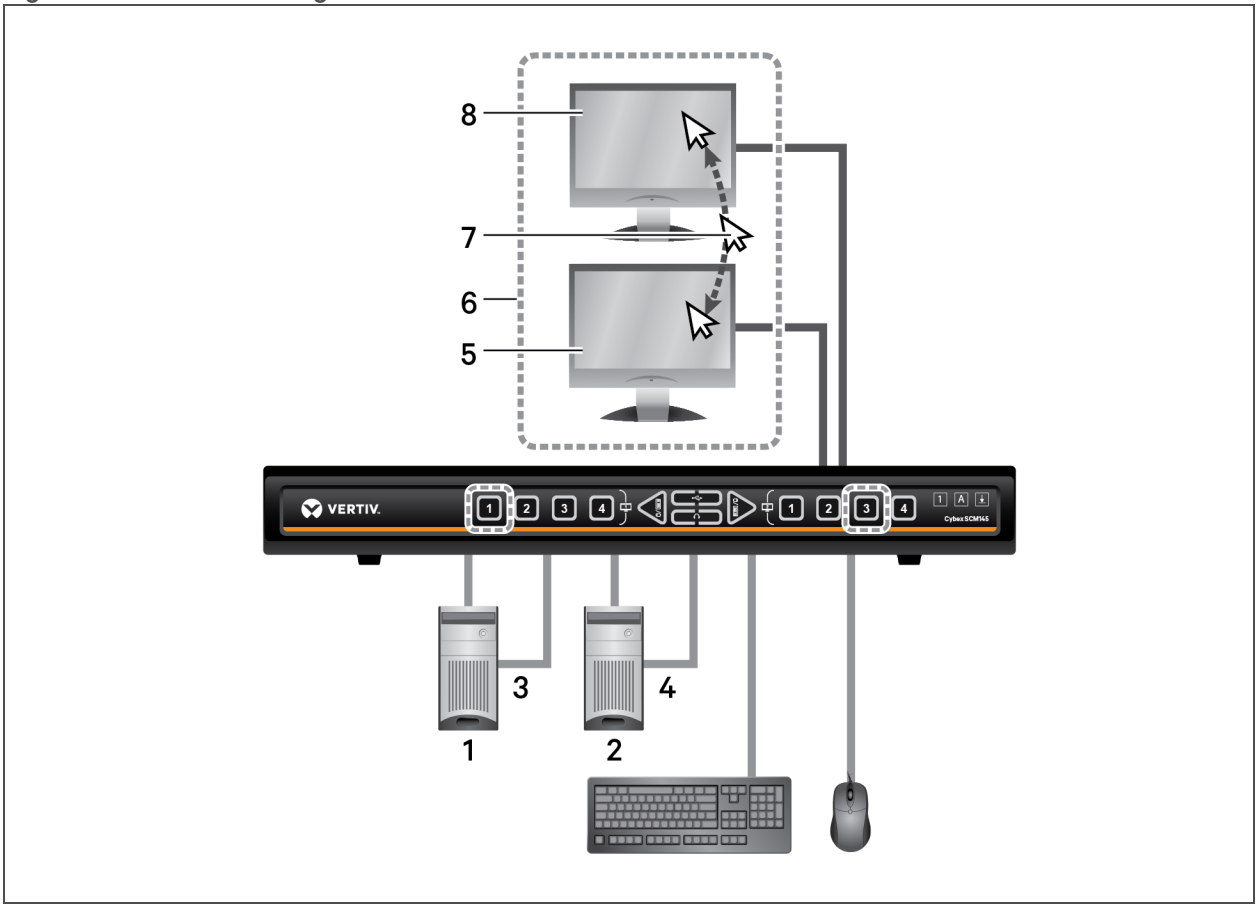


Table 2.8 Preset 6 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 primary display connected to port 1
2	Computer 2 primary display connected to port 3
3	Computer 1 secondary display connected to port 2
4	Computer 2 secondary display connected to port 4
5	Secondary display showing computer 2 primary display
6	Monitors controlled by CNS
7	Moving between the monitors vertically changes the keyboard and mouse focus
8	Primary monitor showing computer 1 primary display

Preset 7 - L CTRL | L CTRL | F11 | F7

NOTE: This is a simple dual-head mode where separate primary and secondary selection is required. For full legacy-mode dual-head switch support, see Dual-head KVM preset - L CTRL | L CTRL | F11 | D on page 25.

Figure 2.8 Preset 7 Configuration

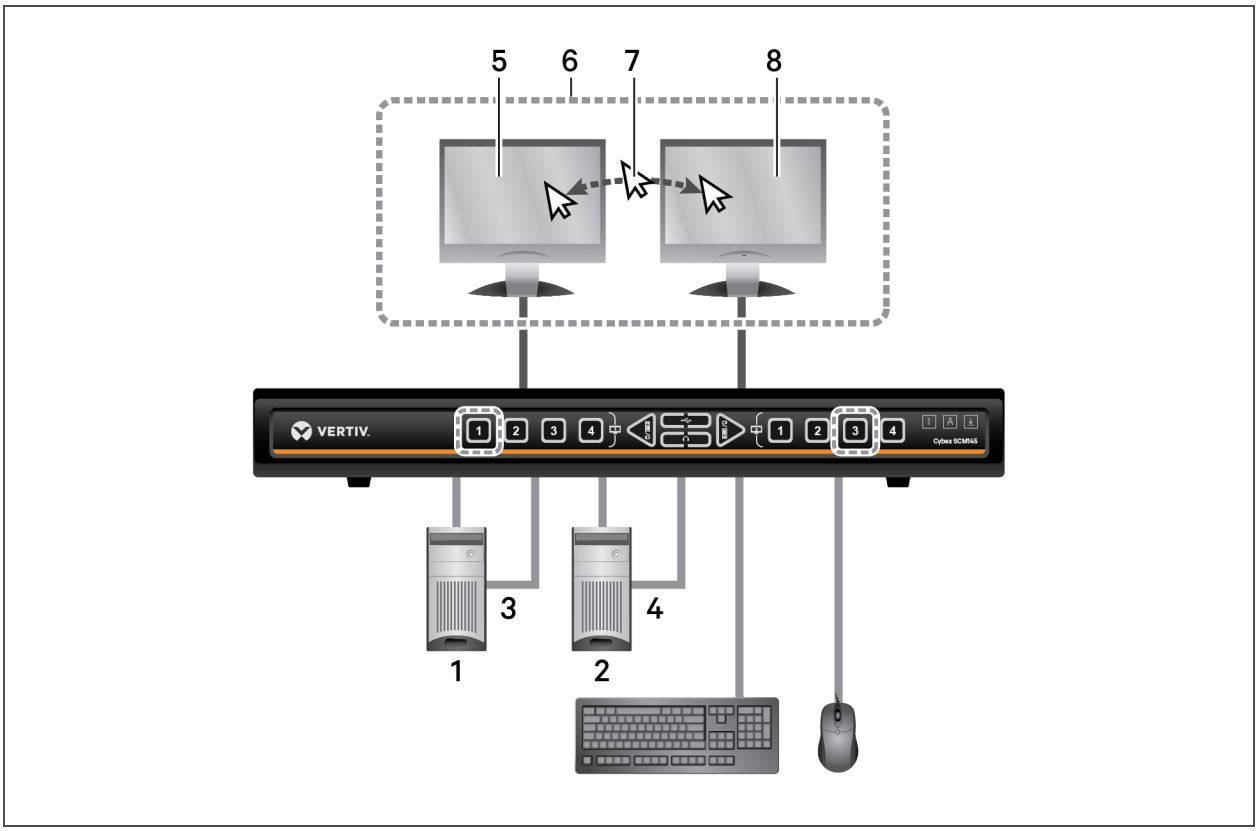


Table 2.9 Preset 7 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 primary display connected to port 1
2	Computer 2 primary display connected to port 3
3	Computer 1 secondary display connected to port 2
4	Computer 2 secondary display connected to port 4
5	Primary display showing computer 1 primary display
6	Monitors controlled by CNS
7	Moving between the monitors horizontally changes the keyboard and mouse focus
8	Secondary display showing computer 2 primary display

Preset 8 - L CTRL | L CTRL | F11 | F8

Figure 2.9 Preset 8 Configuration

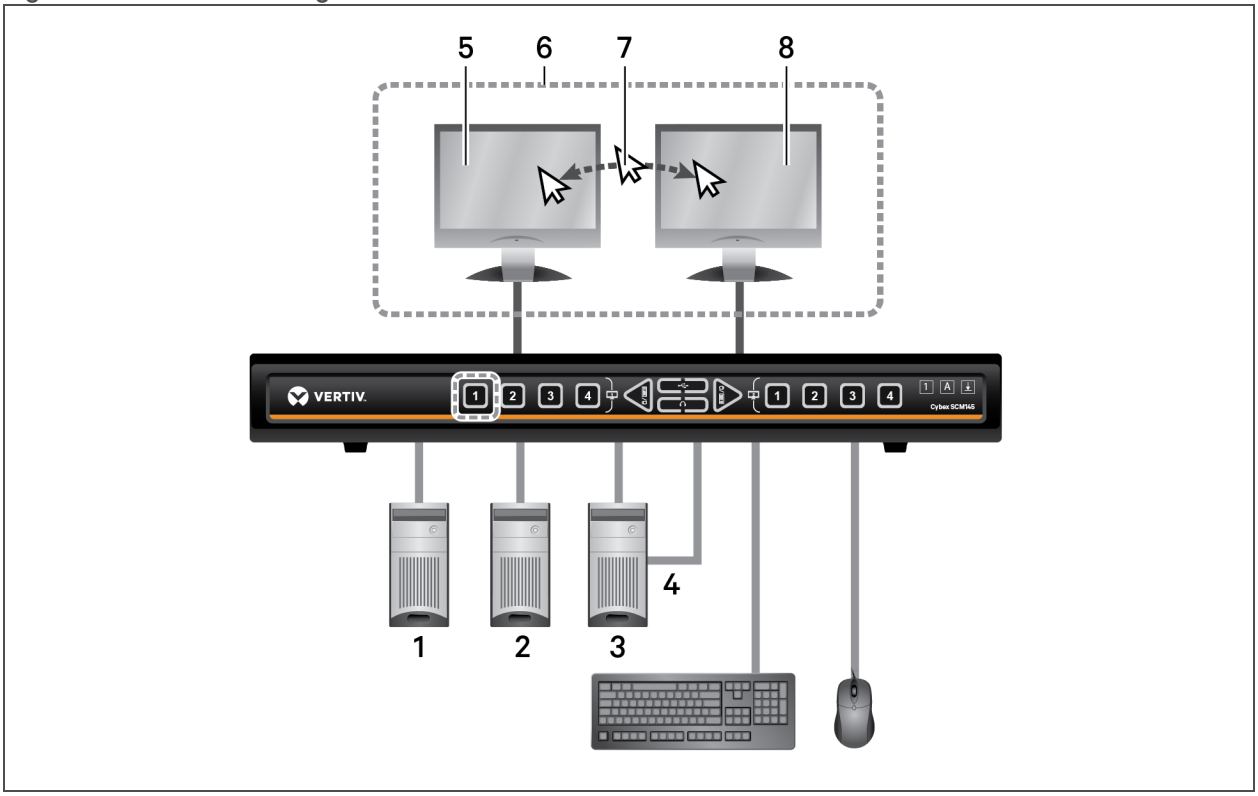


Table 2.10 Preset 8 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 primary display connected to port 3
4	Computer 3 secondary display connected to port 4
5	Primary display showing computer 1
6	Monitors controlled by CNS
7	Moving between the monitors horizontally changes the keyboard and mouse focus
8	Secondary display showing computer 3 primary display

Preset 9 - L CTRL | L CTRL | F11 | F9

Figure 2.10 Preset 9 Configuration

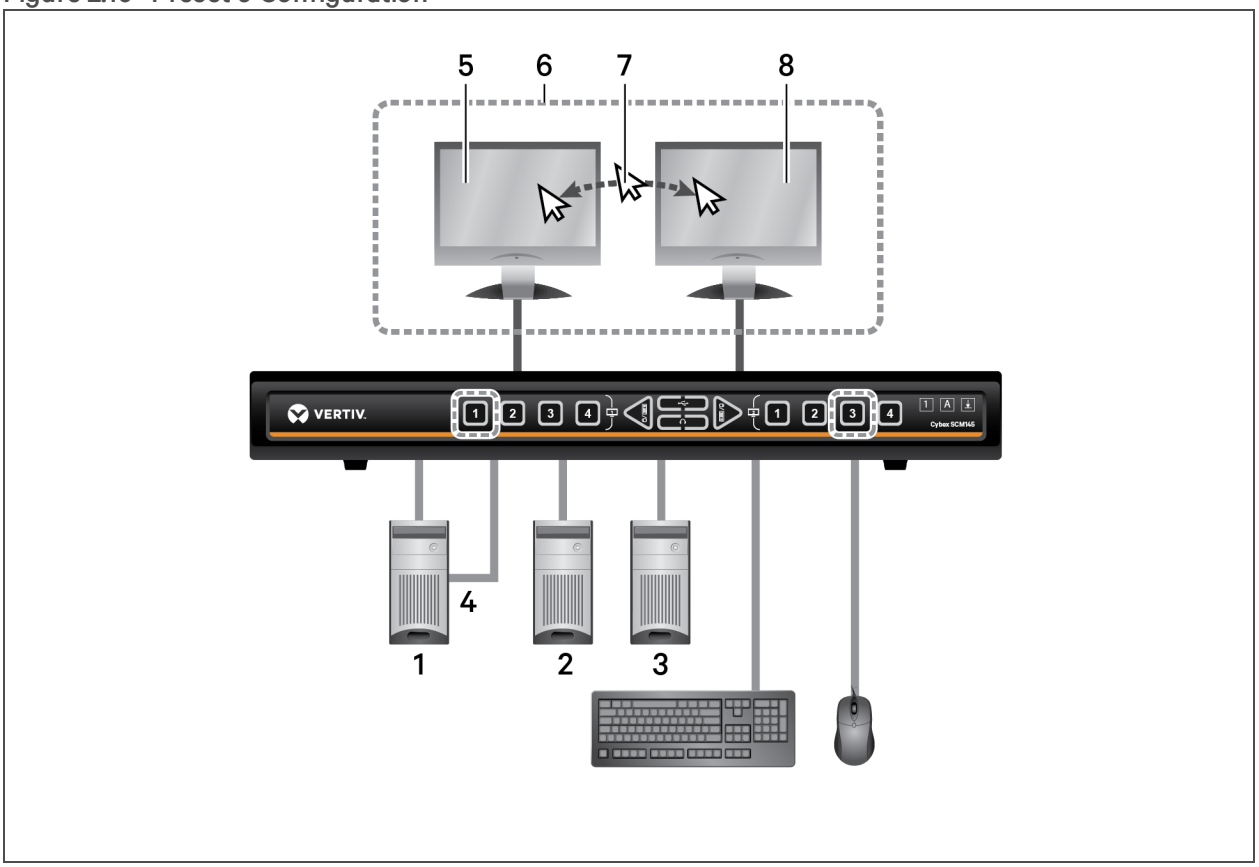


Table 2.11 Preset 9 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 primary display connected to port 1
2	Computer 2 connected to port 3
3	Computer 3 connected to port 4
4	Computer 1 secondary display connected to port 2
5	Primary display showing computer 1 primary display
6	Monitors controlled by CNS
7	Moving between the monitors horizontally changes the keyboard and mouse focus
8	Secondary display showing computer 3

Preset 10 - L CTRL | L CTRL | F11 | F10

Figure 2.11 Preset 10 Configuration

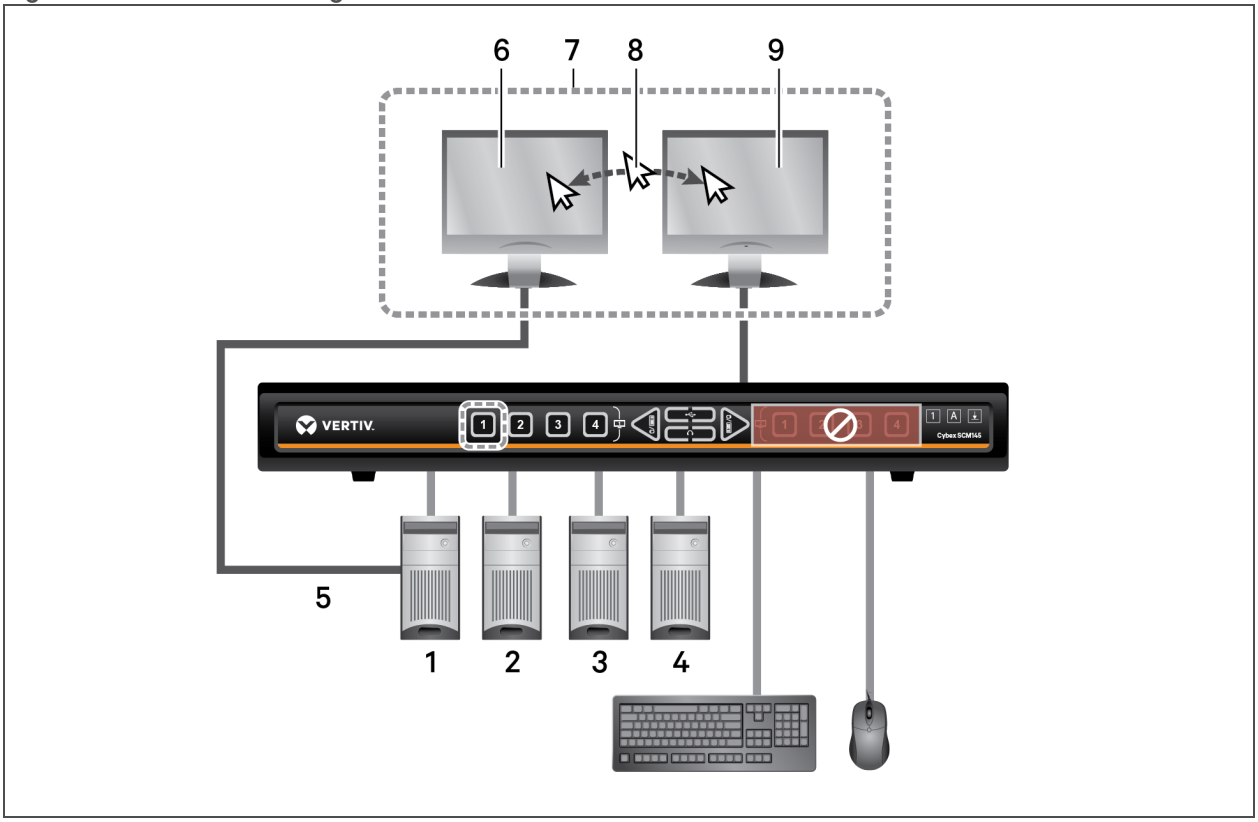


Table 2.12 Preset 10 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 secondary display connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 connected to port 3
4	Computer 4 connected to port 4
5	Cable directly connecting computer 1 primary display to the monitor
6	Monitor directly connected to computer 1 primary display
7	Monitors controlled by CNS
8	Moving between the monitors horizontally changes the keyboard and mouse focus
9	Primary display showing computer 1 secondary display

2.5.3 8-port presets

Table 2.13 8-port Preset Descriptions

PRESET	DESCRIPTION	KEY COMBINATION
Preset 1	Two horizontally-aligned monitors.	L CTRL | L CTRL | F11 | F1
Preset 2	Two vertically-aligned monitors.	L CTRL | L CTRL | F11 | F2
Preset 3	One dual-head computer (ports 1 and 2) and six single-head computers.	L CTRL | L CTRL | F11 | F3
Preset 4	Quad display.	L CTRL | L CTRL | F11 | F4
Preset 5	Three horizontally-aligned displays (direct on right).	L CTRL | L CTRL | F11 | F5
Preset 6	Legacy KVM mode with direct to computer 1 secondary display.	L CTRL | L CTRL | F11 | F6
Preset 7	Legacy KVM mode with direct to computer 1 secondary display.	L CTRL | L CTRL | F11 | F7

Preset 1 and Preset 2

Presets one and two are the same as the presets on the four-port switches. See Preset 1 - L CTRL | L CTRL | F11 | F1 on page 8 and Preset 2 - L CTRL | L CTRL | F11 | F2 on page 9 for the configurations.

Preset 3 - L CTRL | L CTRL | F11 | F3

Figure 2.12 Preset 3 Configuration

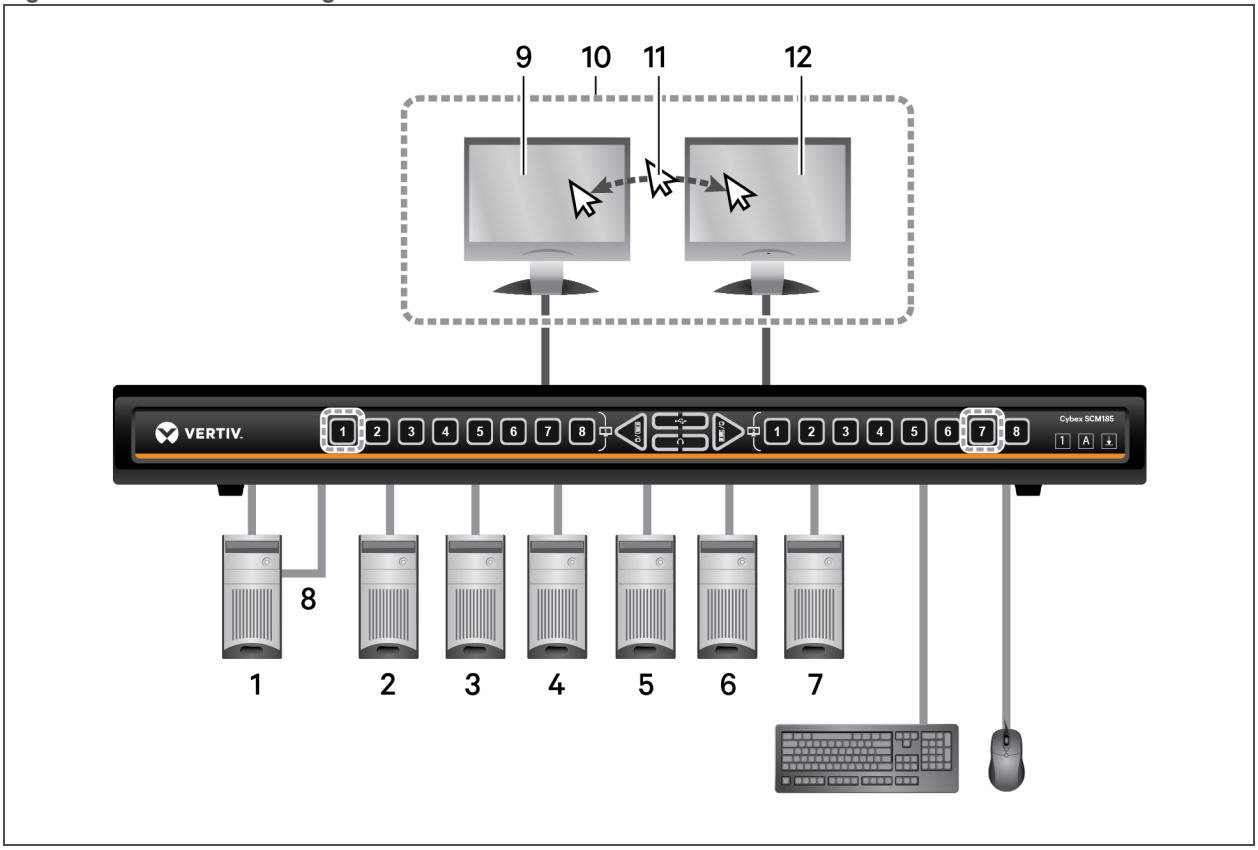


Table 2.14 Preset 3 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 primary display connected to port 1
2	Computer 2 connected to port 3
3	Computer 3 connected to port 4
4	Computer 4 connected to port 5
5	Computer 5 connected to port 6
6	Computer 6 connected to port 7
7	Computer 7 connected to port 8
8	Computer 1 secondary display connected to port 2
9	Primary display showing computer 1 primary display
10	Monitors controlled by CNS
11	Moving between the monitors horizontally changes the keyboard and mouse focus
12	Secondary display showing computer 6

Preset 4 - L CTRL | L CTRL | F11 | F4

Figure 2.13 Preset 4 Configuration

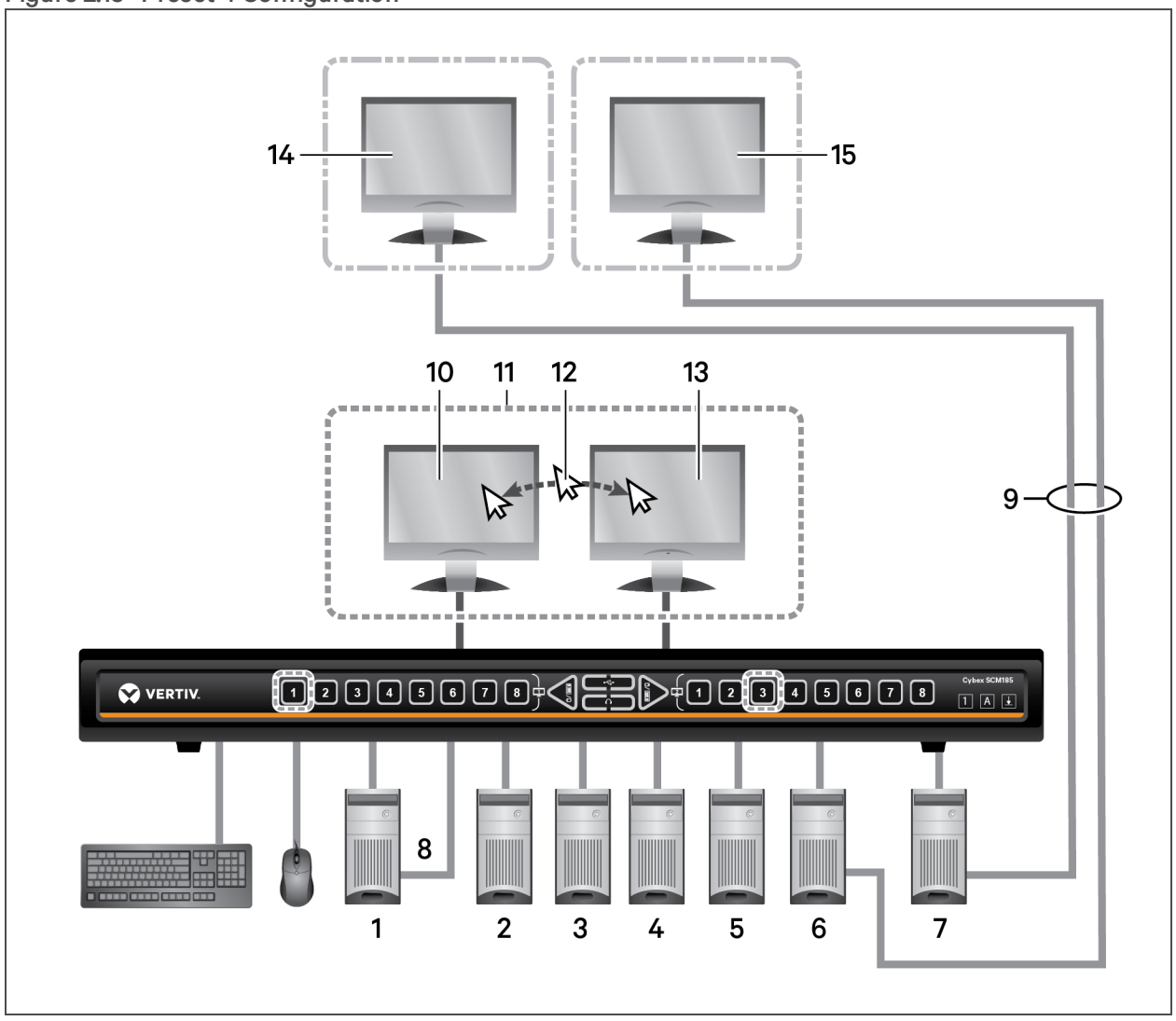


Table 2.15 Preset 4 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 primary display connected to port 1
2	Computer 2 connected to port 3
3	Computer 3 connected to port 4
4	Computer 4 connected to port 5
5	Computer 5 connected to port 6
6	Computer 6 connected to port 7
7	Computer 7 connected to port 8
8	Computer 1 secondary display connected to port 2
9	Cables directly connecting computer 6 secondary display to monitor 15 and computer 7 secondary display to monitor 14
10	Primary display showing computer 1 primary display
11	Monitors controlled by CNS
12	Moving between the monitors horizontally changes the keyboard and mouse focus.
13	Secondary display showing computer 2
14	Monitor directly connected to computer 7 secondary display
15	Monitor directly connected to computer 6 secondary display

Preset 5 - L CTRL | L CTRL | F11 | F5

Figure 2.14 Preset 5 Configuration

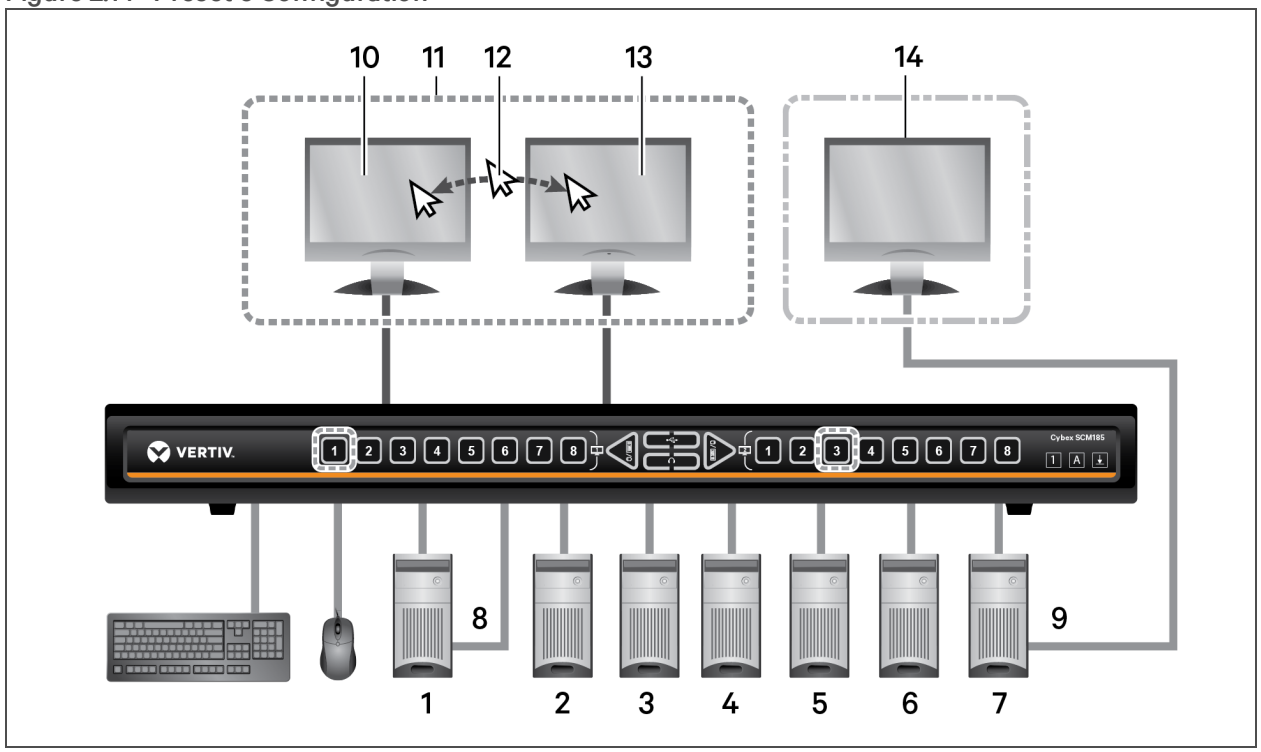


Table 2.16 Preset 5 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 primary display connected to port 1
2	Computer 2 connected to port 3
3	Computer 3 connected to port 4
4	Computer 4 connected to port 5
5	Computer 5 connected to port 6
6	Computer 6 connected to port 7
7	Computer 7 connected to port 8
8	Computer 1 secondary display connected to port 2
9	Cable directly connecting computer 7 secondary display to monitor
10	Primary display showing computer 1 primary display
11	Monitors controlled by CNS
12	Moving between the monitors horizontally changes the keyboard and mouse focus.
13	Secondary display showing computer 2
14	Monitor directly connected to computer 7 secondary display

Preset 6 - L CTRL | L CTRL | F11 | F6

Figure 2.15 Preset 6 Configuration

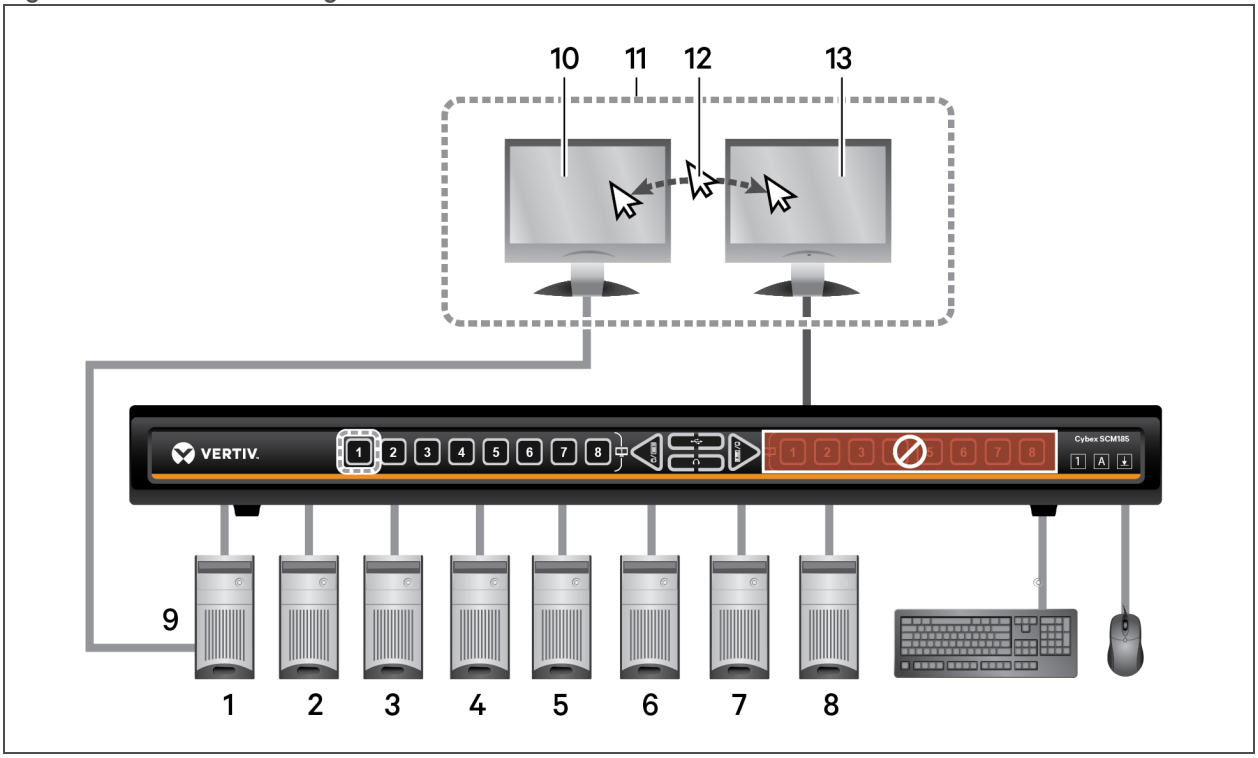


Table 2.17 Preset 6 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 secondary display connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 connected to port 3
4	Computer 4 connected to port 4
5	Computer 5 connected to port 5
6	Computer 6 connected to port 6
7	Computer 7 connected to port 7
8	Computer 8 connected to port 8
9	Computer 1 primary display directly connected to monitor
10	Monitor directly connected to computer 1 primary display
11	Monitors controlled by CNS
12	Moving between the monitors horizontally changes the keyboard and mouse focus
13	Primary display showing computer 1 secondary display

Preset 7 - L CTRL | L CTRL | F11 | F7

Figure 2.16 Preset 7 Configuration

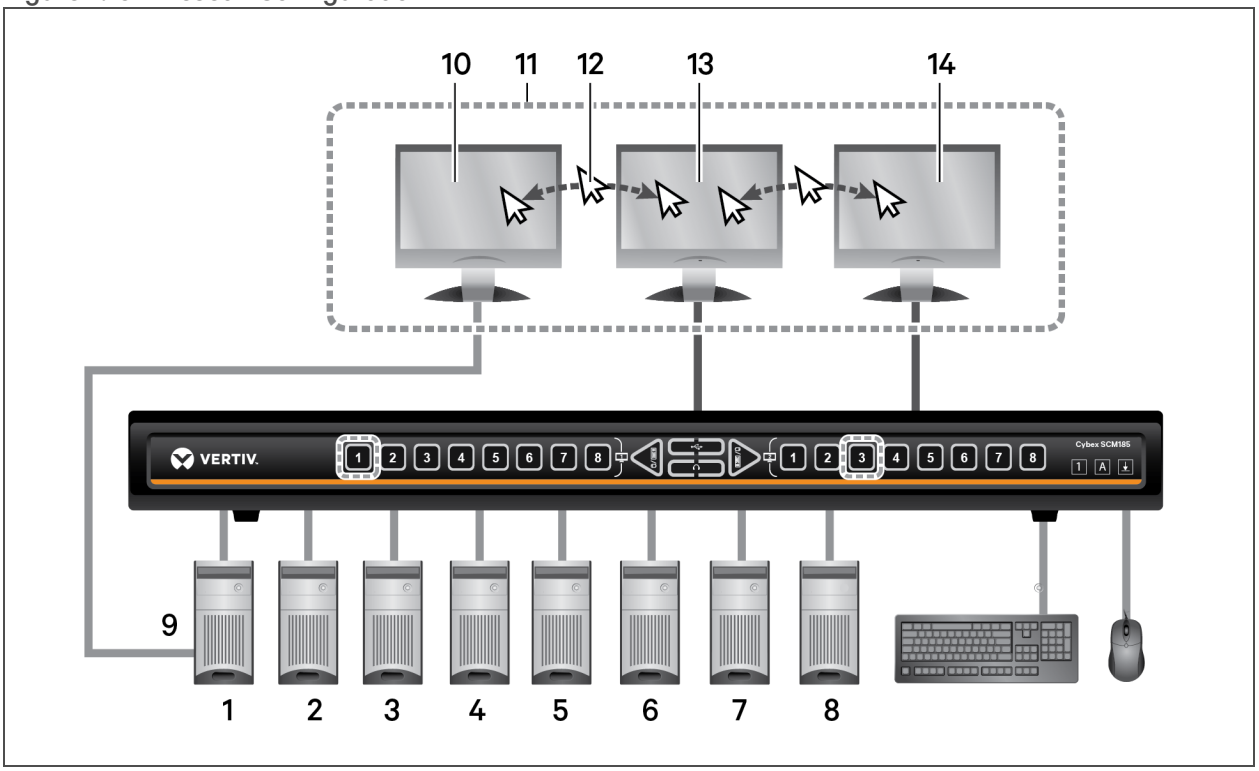


Table 2.18 Preset 7 Configuration Components

ITEM	DESCRIPTION
1	Computer 1 secondary display connected to port 1
2	Computer 2 connected to port 2
3	Computer 3 connected to port 3
4	Computer 4 connected to port 4
5	Computer 5 connected to port 5
6	Computer 6 connected to port 6
7	Computer 7 connected to port 7
8	Computer 8 connected to port 8
9	Computer 1 primary display directly connected to monitor
10	Monitor directly connected to computer 1 primary display
11	Monitors controlled by CNS
12	Moving between the monitors horizontally changes the keyboard and mouse focus
13	Primary display showing computer 1 secondary display
14	Secondary display showing computer 3

2.5.4 Advanced Presets

Legacy mode - L CTRL | L CTRL | M

Legacy mode allows the desktop matrix switch to function as a KVM switch for both 4-port and 8-port desktop matrix switches.

- One display monitor connected to the primary console port.
- The right side of the switch is disabled.

Figure 2.17 Legacy Mode Configuration

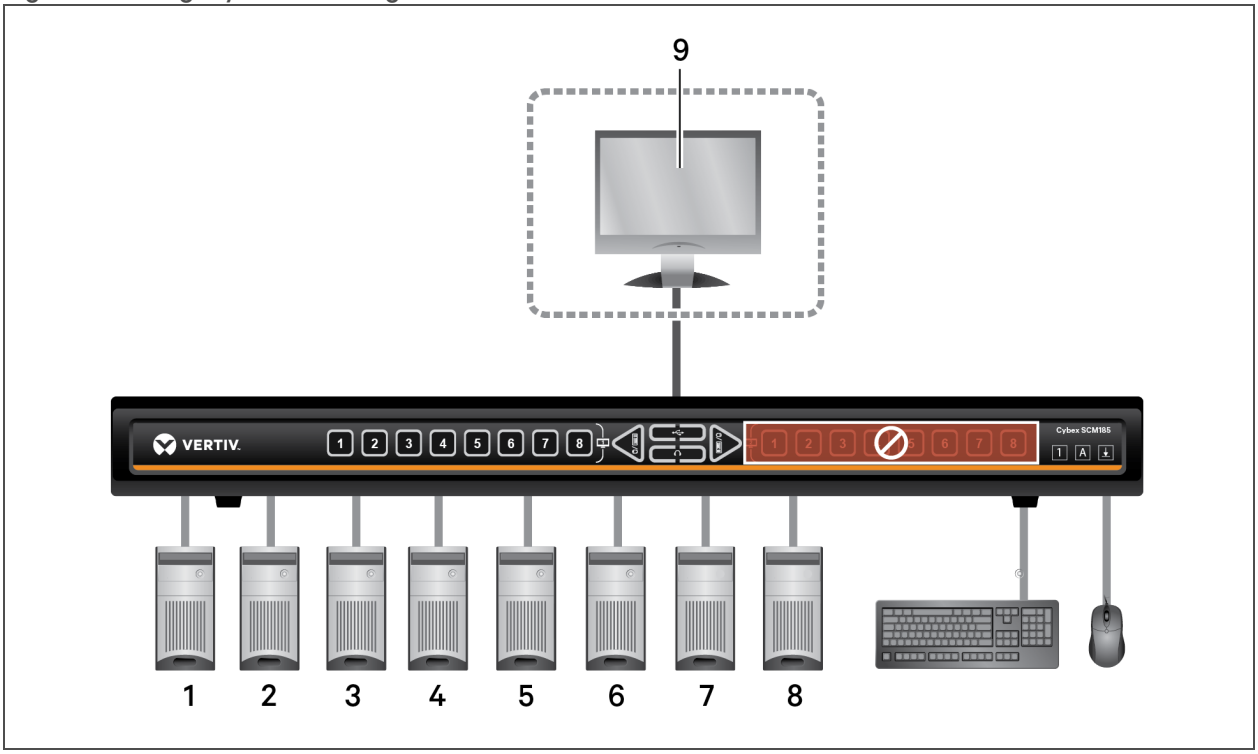


Table 2.19 Legacy Mode Configuration Components

ITEM	DESCRIPTION
1	Computer 1
2	Computer 2
3	Computer 3
4	Computer 4
5	Computer 5
6	Computer 6
7	Computer 7
8	Computer 8
9	Monitor connected to the primary display console port

Dual-head KVM preset - L CTRL | L CTRL | F11 | D

The KVM functions like a 2-port or 4-port dual-head KVM switch.

For example, computer one connected to ports one and two and computer two connected to ports three and four.

- Pressing the #1 button switches the left side to source one and the right side to source two.
- Pressing the #3 button switches the left side to source three and the right side to source four.

Figure 2.18 Dual-head KVM Preset

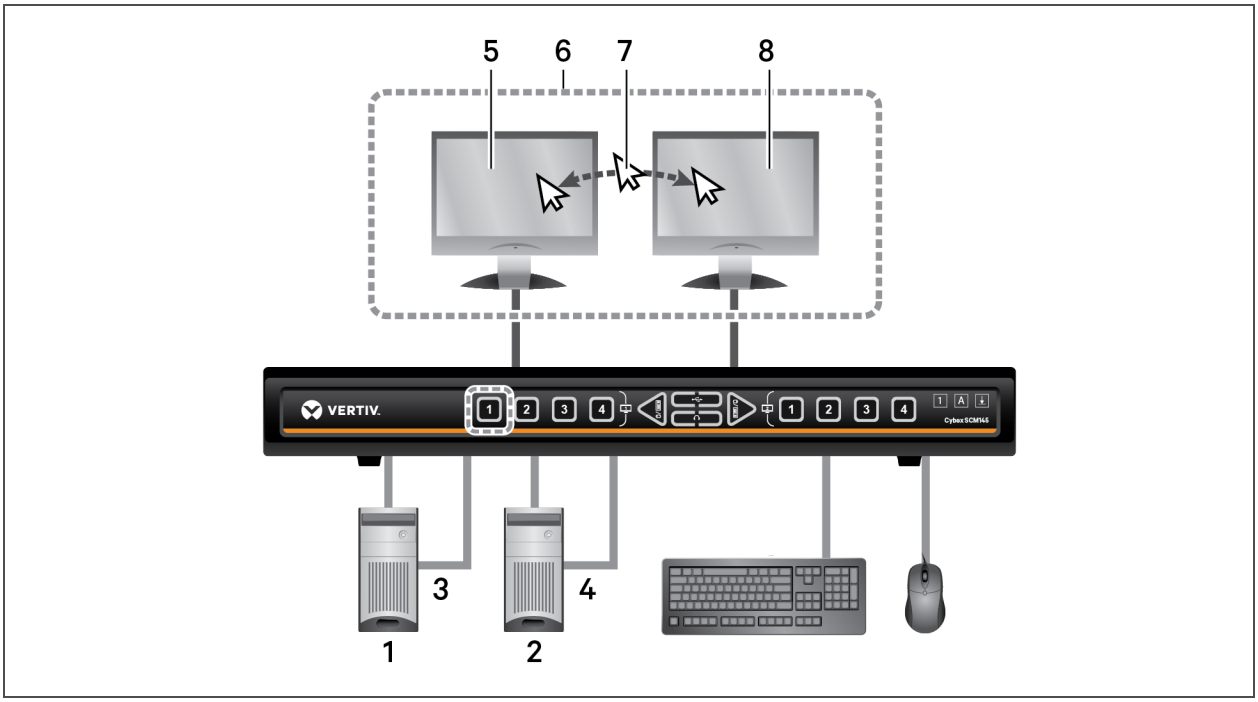


Table 2.20 Dual-head KVM Configuration Components

ITEM	DESCRIPTION
1	Computer 1 primary display connected to port 1
2	Computer 2 primary display connected to port 3
3	Computer 1 secondary display connected to port 2
4	Computer 2 secondary display connected to port 4
5	Primary display showing computer 1 primary display
6	Monitors controlled by CNS
7	Moving between the monitors horizontally changes the keyboard and mouse focus
8	Secondary display showing computer 1 secondary display

3 APPENDICES

Appendix A: Keyboard Shortcuts

Table A.1 Keyboard Shortcut Options

DESCRIPTION	SHORCUT
Reset to factory defaults	L-Ctrl | L-Ctrl | F11 | R
Activate relative mode	L-Ctrl | L-Ctrl | F11 | B
Activate absolute mode	L-Ctrl | L-Ctrl | F11 | C
Enable preset Fx	L-Ctrl | L-Ctrl | F11 | Fx
Enable legacy mode	L-Ctrl | R-Ctrl | M
Switch to dual-head preset	L-Ctrl | L-Ctrl | F11 | D
Switch channels on primary	L-Ctrl | L-Ctrl | 1-8
Switch to channel x on the right	R-Ctrl | R-Ctrl | 1-8
Switch keyboard and mouse to the left	L-Ctrl | L-Ctrl | [Arrow] left
Switch keyboard and mouse to the right	L-Ctrl | L-Ctrl | [Arrow] right
Switch sound to the left (press second time to lock and third time to unlock)	R-Ctrl | R-Ctrl | [Arrow] left
Switch sound to the right	R-Ctrl | R-Ctrl | [Arrow] right
Switch DPP to the left	R-Ctrl | R-Ctrl | [Arrow] up
Switch DPP to the right	R-Ctrl | R-Ctrl | [Arrow] down
Lock both directions on all channels	L-Ctrl | L-Ctrl | F11 | L
Unlock both directions on all channels	L-Ctrl | L-Ctrl | F11 | A | N | N1 .. NN
Unlock one direction (in) on specific channels	L-Ctrl | L-Ctrl | F11 | I | N | N1 .. NN
Unlock one direction (out) on specific channels	L-Ctrl | L-Ctrl | F11 | O | N | N1 .. NN
Enter the switch to loading state	L-Ctrl | R-Ctrl | L
Switch to custom preset	L-Ctrl | L-Ctrl | F11 | F12
Temporarily switch to relative mouse mode	L CTRL + Shift [press and hold]
Enable or disable shortcut forwarding	L CTRL | R CTRL | End
Send string #OSDon to RS232	R Shift | R Shift
Send string #BEG0 ..9 END# to RS232	L Alt | L Alt | 0 .. 9 | Enter
Increase ABS mouse speed	L CTRL | L CTRL | F11 | +
Decrease ABS mouse speed	L CTRL | L CTRL | F11 | -
Disable switching by mouse	L CTRL | L CTRL | F11 | F
Enable switching by mouse	L CTRL | L CTRL | F11 | U

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Appendix B: Product Specifications

The following tables list the product specifications for the Vertiv Cybex™ SCM Secure Desktop Matrix switches.

Table B.1 Desktop Matrix Switches

VIDEO TYPE		MAXIMUM RESOLUTION	COMPUTERS	
CONSOLE	COMPUTER		4	8
DisplayPort 1.2	DisplayPort 1.2	4K UHD 3840 x 2160 @ 30 Hz	SCM145DP	SCM185DP
HDMI 1.4	HDMI 1.4	4K UHD 3840 x 2160 @ 30 Hz	SCM145H	n/a
Dual-Link DVI-I	Dual-Link DVI-I	2560 x 1600 @ 60 Hz or 4K UHD 3840 x 2160 @ 30 Hz*	SCM145	SCM185
HDMI-toDVI-D	DVI-D-to-HDMI	4K UHD 3840 x 2160 @ 30 Hz	SCM145	SCM185

Table B.2 Dimensions and Weights

COMPUTERS	WIDTH (IN / MM)	DEPTH (IN / MM)	HEIGHT (IN / MM)	WEIGHT (LB / KG)
4	13.7 / 348	5.0 / 127	1.7 / 43	3.0 / 1.5
8	17.3 / 439	7.3 / 185	1.7 / 43	5.4 / 2.5

Table B.3 Environmental Conditions

SERIES	OPERATING TEMPERATURE	HUMIDITY	STORAGE TEMPERATURE
All	32° to 104°F 0° to 40°C	0-80% RH, non-condensing	-4° to 140°F -20° to 60°C

Table B.4 Electrical Power

COMPUTERS	POWER	AC INPUT VOLTAGE
4	35W Max, Internal	100 to 240V AC 50/60 Hz
8	45W Max, Internal	

Table B.5 Peripherals

COMPUTERS	CONSOLE KEYBOARD AND MOUSE	CONSOLE AUDIO	COMPUTER AUDIO
4	USB Type-A & PS/2	3.5mm Stereo	3.5mm Stereo
8	USB Type-A	3.5mm Stereo	3.5mm Stereo

Table B.6 Desktop Matrix Switch Cables

SERIES	VIDEO TYPE	6 / 1.8	10 / 3.0
SCMxxxDP	DisplayPort	CBL0104	CBL0105
SCMxxxH	HDMI	CBL0112	CBL0113
SCMxxx	DVI-I	CBL0146	CBL0147
SCMxxx	HDMI-to-DVI-D	CBL0164	CBL0165

Table B.7 Mounting Options

COMPUTERS	PART NUMBER	DESCRIPTION
4	DMK-09	Desk Mount Kit, supports single and dual head models
8	RMK-102	Rack Mount Kit, supports single and dual head models

Appendix C: Troubleshooting

When the switch is powered on, it performs a self-test to verify normal operation. If the switch fails the self-test procedure, all channel LED buttons flash on and off once and a combination of LEDs illuminate. The various combinations of illuminated LEDs indicate the fault with the switch. After a failed self-test, the switch becomes inoperable until the fault is resolved. See the following table for device fault information.

Table C.1 Device Faults

FAULT	INDICATOR	RESOLUTION
The switch did not pass the self-test.	All channel LED buttons flash on and off once.	Turn power off and on to the switch.
The switch is not receiving power.	The monitors do not show video output and none of the front panel LEDs illuminate.	Ensure the power cable is intact and connected to the switch and to the power source. If the cable is damaged, replace it.
The switch enclosure is compromised.	The tamper-evident seals indicate intrusion or all channel LED buttons flash continuously.	Immediately remove the switch from service and contact Technical Support.
The connected video monitor is not qualified.	The video diagnostic LED flashes green; the monitor is inoperable.	Turn off and disconnect the non-qualified monitor; connect a qualified monitor.
The monitors or the computers are not connected to the switch properly or the connecting cables or ports are damaged.	The monitors do not show video output on any channel and the monitor diagnostic LED does not appear solid green.	Ensure the monitors are properly connected to the switch and the monitors and connecting cables are not damaged. If the monitors or connecting cables are damaged, replace the damaged parts. If the issue persists, check the monitors' on-screen menu to ensure the correct source is selected and verify the video mode and computer's video mode are the same.
The computer is not connected to the switch properly or the connecting cable or port is damaged.	The monitor does not show video output for a specific channel.	Ensure the connecting cable between the computer and the switch is secured and not damaged. Ensure the monitors are compatible with the computer resolution and refresh rate settings. If the problem persists, power cycle the switch and computers.
The monitors or computers are not connected to the switch properly or the connecting cables are not compatible with the monitors.	Some or all channels are experiencing poor video image quality and the monitor diagnostic LED does not appear solid green.	Ensure the monitors are properly connected to the switch and the monitors and connecting cables are compatible with the monitors and not damaged. Ensure the monitors are compatible with the computer resolution and refresh rate settings or lower the video resolution of the computer. If the problem persists, power cycle the switch, computers and monitors.
The keyboard, mouse and video cables are connected to two different computers.	The keyboard and mouse are not working on two channels.	Ensure the keyboard/mouse and video cables are connected to the correct ports on the switch. For example, the keyboard and mouse cable and the video cable for computer one should be connected to ports specifically designated for computer one.
The connected keyboard is not qualified.	The keyboard is non-functional and you are unable to produce keystrokes on the screen when using the keyboard.	Disconnect the non-qualified keyboard and connect a qualified keyboard.
The connected mouse is not qualified.	The mouse is non-functional and the mouse cursor is frozen on the screen. You are unable to use the mouse to move the mouse cursor.	Disconnect the non-qualified mouse and connect a qualified mouse.

Table C.1 Device Faults (continued)

FAULT	INDICATOR	RESOLUTION
The keyboard or mouse are not connected to the switch properly or the keyboard or mouse cable or port is damaged.	The keyboard or mouse does not work on any channels.	Ensure the keyboard or mouse is properly connected to the switch and the USB cable between the keyboard or mouse and the switch is not damaged. If the issue persists, connect the keyboard or mouse to a different port or use a different standard, non-wireless, qualified keyboard or mouse. Ensure the driver for the keyboard or mouse is installed on the computer. **NOTE: If the computer is returning from standby mode, allow up to one minute for the computer to regain keyboard and mouse functionality.**
The computer does not recognize the connected keyboard or mouse.	The keyboard or mouse does not work on one channel.	Use the computer's Device Manager wizard to troubleshoot and resolve the issue.
The connected USB device is not qualified.	The DPP LED flashes green and the USB device is inoperable.	Disconnect the non-qualified USB device and connect a qualified USB device.
The USB device is not working properly or the connecting cable between the computer and the DPP input port on the switch is damaged or missing.	The DPP USB device is not working on a channel.	Ensure the USB device is working properly when connected directly to the computer and ensure that the USB cable connecting the computer and the DPP input port on the switch is not damaged or missing.
The USB device and video cables are connected to two different computers.	The DPP USB device is not working on two channels.	Ensure the USB device and video cables are connected to the correct ports on the switch. For example, the USB device cable and the video cable for computer one should be connected to ports specifically designated for computer one.
The USB device is not working properly or not connected to the computer.	The DPP USB device is not working on all channels.	Ensure the USB device is working properly and connected directly to the computer. Verify there is a USB connected cable between the computer and the relevant DPP port.

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