Chapter 8

Configuring video adapters

Configuring video adapters and monitors is the process of connecting graphics hardware to your system and modifying the system software to recognize that hardware. Two separate activities are required:

1. Physically install the adapter and monitor, following the instructions in the hardware documentation.
2. Run the **Video Configuration Manager** (page 80) to configure the SCO video subsystem software. The video configuration window displays the configured adapters, monitors, and resolutions, together with the function (⟨F⟩) keys that are associated with each configured video adapter.

When you install a new system or add new graphics hardware to an existing one, the X server starts your graphical environment in a default mode (page 82) for resolutions and colors. You can change this default by running the **Video Configuration Manager** and selecting a mode supported by your hardware. You can also use the **Video Configuration Manager** to view existing configurations and test new ones.

New and modified video adapter drivers are available periodically. Additional and updated drivers compatible with UnixWare 7 are available through the SCO Compatible Hardware Web Pages, located at this web site: (*http://wdb1.sco.com/chwp/owa/hch_search_form*). For the new graphics features and drivers included with UnixWare 7, see *New features* in SCOhelp.

This topic describes how to use the **Video Configuration Manager** to configure video adapters and monitors. It includes:

- "The Video Configuration Manager interface" (page 80)
- "Understanding video configuration" (page 80)

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- "Modifying monitors, resolutions, and function keys" (page 85)
- "Testing a video adapter configuration" (page 87)
- "Adding a new video adapter" (page 88)
- "Removing a video configuration" (page 89)
- "Configuring unsupported adapters" (page 90)

The Video Configuration Manager interface

Use the **Video Configuration Manager** to add adapters to the system (page 88), add or modify monitors and resolutions already on the system (page 85), and remove adapters from the system (page 89).

You can start the **Video Configuration Manager** in either of these ways:

- From the CDE desktop, start the SCOadmin launcher by clicking on the menu above the SCO logo, then choosing **SCOadmin**. From the launcher, open the **Hardware** folder, then select the **Video Configuration Manager**.
- From the command line, enter **scoadmin video**.

NOTE While any user can view the system's video configuration, only those with *root* or *system owner* privileges can modify video configuration.

If this task is performed in multiuser mode, users currently logged in and running the X server will not see any changes until their next session.

For more information on using SCOadmin managers, see Administering your system with SCOadmin in the *UnixWare 7 System Handbook*.

Understanding video configuration

The **Video Configuration Manager** derives the configuration choices it provides from three sources:

grafinfo(4) files
: graphics adapter information

moninfo(4) files
: monitor information

device files
: function key information

When you run the **Video Configuration Manager** (page 80), it stores your configuration settings in the */usr/lib/grafinfo/grafdev* and */usr/lib/grafinfo/grafmon* files. On startup, the X server uses the information in these files and the appropriate *grafinfo* and *moninfo* files to interact correctly with your system's video hardware.

The *grafinfo* and *moninfo* files are ASCII text files that are located in subdirectories of the */usr/lib/grafinfo* directory. These files describe the attributes of the graphics adapters and monitors that are supported by the Graphical Environment. The *grafinfo* files use the name of the particular adapter they describe and an *.xgi* extension (for example, *f1280+va.xgi*); the *moninfo* files use the name of the particular monitor they describe and a *.mon* extension (for example, *8514.mon*).

The **Video Configuration Manager** reads the function key (or *devices*) files at system startup to associate "virtual terminals" with function keys (this page). These text files are located in the */usr/X/lib/vidconf/devices* directory and contain the device driver names for all the programmed function keys on the console (⟨F1⟩ through ⟨F12⟩), as well as the device driver name for the console itself. The console driver is used when the system is running in single-user mode.

See also:

- "About function keys and video configuration" (this page)
- "Understanding resolutions" (page 82)
- "Searching for adapters" (page 83)
- "Understanding multi-monitor configuration" (page 83)

About function keys and video configuration

In multiuser mode, each function key on the SCO system console corresponds to a different graphical environment. To achieve this "virtual terminal" capacity, each function key is associated with a different device driver. For example, ⟨F1⟩ is associated with */dev/vt01*, ⟨F2⟩ is associated with */dev/vt02*, ⟨F3⟩ is associated with */dev/vt03*, and so on up to ⟨F12⟩. Each function key controls a different UNIX login session, so you can configure each session as if it were a different graphical system. In single-user mode, because access is restricted to a single user, all of the function keys are controlled by the *console* device driver and only one login session using *console* is available.

NOTE The *console* is a special virtual terminal that will not run the X server. If you invoke the X server on *vt00* by running **startx**(X1M), it will start on the next available virtual terminal.

Essentially, video configuration consists of creating links between a graphics adapter, a monitor and resolution (for example, Orchid Fahrenheit 1280 Plus, and MAG MX17F at 1024x768), and a function key. In most cases, you will use the same configuration for every function key. However, there are situations when you might want to have different graphical environments attached to different function keys. For example, you might want to use fewer colors at a higher resolution, or more colors at a lower resolution. Or, you might have more than one graphics adapter and monitor attached to your system.

For more information about virtual terminals, see the **keyboard**(7), **vtlmgr**(1), and **newvt**(1) manual pages.

See also:

- "Assigning function keys" (page 86)

Understanding resolutions

The first time the display manager runs in a new graphical environment, either a newly installed system or one with new graphics hardware, the X server attempts to create a default resolution of 800x600 with 256 colors using a compatible accelerated graphics driver. If an accelerated driver is not available, the server will attempt the default resolution (800x600 with 256 colors) using the SCO VESA (Video Electronics Standards Association) driver. This driver is compatible with many contemporary graphics adapters. If your adapter cannot be configured with the VESA driver, the X server defaults to standard IBM VGA mode. After the initial login, you can continue to use the default, or run the **Video Configuration Manager** (page 80) to select another resolution supported by your hardware.

Some resolutions only work if you have enough video adapter memory. Make sure you have at least the minimum DRAM or VRAM to support the desired number of colors at the specified resolution:

Memory requirements for color support at specified resolutions

Resolutions	Colors				
	16 (4 bits)	256 (8 bits)	32K/64K (15/16 bits)	16M (24 bits)	16M (32 bits)
1600x1200	N/A	2MB	4MB	6MB	8MB
1280x1024	1MB	2MB	4MB	4MB	6MB
1024x768	.5MB	1MB	2MB	4MB	4MB
800x600	.5MB	.5MB	1MB	2MB	2MB
640x480	.5MB	.5MB	1MB	1MB	2MB

NOTE Some drivers may require memory above these minimum levels for off-screen memory.

Refer to your video adapter documentation for additional information on memory requirements.

If you select resolutions of 1024x768 or higher, you may need to determine if your monitor works in interlaced or non-interlaced mode at these resolutions. Consult your monitor's documentation regarding supported resolutions.

WARNING Although your video adapter supports the resolutions listed, your monitor may not. Do not select a resolution that is higher than the maximum resolution supported by your monitor. Selecting a resolution that is too high can cause double or jumbled images to display on the monitor; it can also severely damage your non-multi-synch monitor. If this occurs, try selecting a lower resolution or a lower scan rate frequency.

Searching for adapters

When you use the **Video Configuration Manager** to modify or add a configuration, it attempts to autodetect installed adapters. The search is usually successful, and you are prompted to confirm the adapter that is found. In some cases, usually involving older adapters or installations on ISA machines, autodetection might fail and you must select your adapter from the list.

NOTE If you do not know the name of your graphics adapter, use the **VideoHelp**(X1M) utility, which displays names from the adapters on-board memory.

Understanding multi-monitor configuration

SCO systems provide limited support for "multi-monitor" configuration, also known as "multi-headed" configuration. Multi-monitor support means you can display one graphical environment on two (or more) monitors, thus increasing your graphical work space.

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To determine if your adapter will support multi-monitor configuration:

- Ensure that your graphics adapters support multi-monitor configuration and have no hardware conflicts. They must not use the same I/O ports or base addresses. Your graphics adapter documentation may indicate if your adapter supports multi-monitor (or "multi-headed") configuration. Install each adapter individually to verify that the graphical environment functions properly.

- Consult your adapter documentation to ensure that VGA can be disabled.

NOTE UnixWare 7 systems support up to 32 monitors on one system, but for the purposes of this procedure we will assume the user is installing only two. You must complete the configuration process for each installed adapter, monitor, and resolution.

To set up a multi-monitor configuration:

1. Once you have verified that both adapters work, and you have ensured that there are no hardware conflicts, install the adapters in the system and proceed with multi-monitor configuration.
2. Install the monitors.
3. Configure the first adapter, using the normal procedure (page 88).
4. While configuring the second adapter, select **Multi-monitor configuration — specify function keys** from the Function Key Setup window.
5. From the Specify Function Keys window, select the function key(s) that you want to control the multi-monitor environment.
6. Finish the normal configuration procedure for the second adapter.
7. After you finish configuring the last installed adapter, you must configure your graphical environment to use the added screens. See your graphical environment documentation in SCOhelp for more information.

NOTE If you configure a second video adapter in multi-monitor mode on some function keys and as the primary adapter on other function keys, configure the primary function keys first. If you configure the multi-monitor function keys first and then configure the remaining function keys for the primary video adapter, the multi-monitor configuration will be changed to be the primary adapter.

See also:

- "Understanding video configuration" (page 80)
- "About function keys and video configuration" (page 81)

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Modifying monitors, resolutions, and function keys

Use the Modify window to:

- change a configured monitor (this page)
- change a configured resolution (page 86)
- add a new resolution (page 86)
- test a new resolution (page 87)
- configure console function keys (page 86)

Display the Modify window by selecting **Modify** in the main **Video Configuration Manager** (page 80) window, or double-click on the item you want to modify.

NOTE You can also test a new adapter configuration (page 87) before modifying an existing configuration.

See also:

- "Understanding video configuration" (page 80)
- "About function keys and video configuration" (page 81)
- "Understanding resolutions" (page 82)
- "Understanding multi-monitor configuration" (page 83)

Changing the configured video monitor

To change the monitor:

1. Select the monitor to change, then click on **Modify** in the main **Video Configuration Manager** (page 80) window.
2. Select either "Monitor Not Configured" or the monitor you want to change and click on **Change Monitor**.
3. Select your new monitor from the Monitor Configuration window and click on **OK**.

   The monitor list includes all the monitors supported for use on your SCO system. Use the scroll bar to move up and down in the list; in character mode, type the first letter of the monitor's manufacturer.

NOTE If you do not find your monitor in the list, choose the "Other ..." selection that most closely resembles your own.

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Changing a configured resolution

To change a resolution:

1. Select the resolution to change, then click on **Modify** in the main **Video Configuration Manager** (page 80) window.
2. Click on **Change Resolution**, then select the new resolution.
3. Select the new resolution in the Resolution Selection window, then click on **OK**.

   > **WARNING** Ensure that the resolution you select is appropriate for your monitor; see "Understanding resolutions" (page 82) for more information.

4. Assign function keys as described in "Assigning function keys" (this page).

Adding a resolution

To add a new resolution:

1. Select a resolution, then click on **Modify** in the main **Video Configuration Manager** (page 80) window.
2. Click on **Add Resolution**.
3. Specify the new resolution in the Resolution Selection window, then click on **OK**.

   > **WARNING** Ensure that the resolution you select is appropriate for your monitor; see "Understanding resolutions" (page 82) for more information.

4. Assign function keys as described in "Assigning function keys" (this page).

Assigning function keys

After you choose a monitor and resolution, you must assign one or more console function keys (⟨F⟩) to them. This creates a link between the particular graphics adapter, monitor, and resolution, and the assigned function key, as described in "About function keys and video configuration" (page 81)

- To assign all function keys to the selected monitor and resolution, select **Assign all function keys** and click on **OK**. This is the option most users choose.

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- To assign specific function keys (this page) to the current adapter, monitor, and resolution, select **Specify function keys** and click on **OK**.
- If you are configuring a second adapter and monitor and want to display applications on both monitors at the same time (using the same function key), select "Multi-monitor configuration - specify function keys" and click on **OK**.

See also:

- "Understanding multi-monitor configuration" (page 83)
- "Understanding video configuration" (page 80)
- "Running programs simultaneously with multiscreen displays" in the *UnixWare 7 System Handbook*.

Assigning specific function keys

If you elected to specify function keys in the Function Key Setup window, you will see a Specify Function Keys window. When it appears, select the function key or keys you want to associate with the current adapter, monitor, and resolution, then click on **OK**.

If you are unsure about the current adapter and resolution, look in the "Current selection" field at the top of the window.

See also:

- "About function keys and video configuration" (page 81)

Testing a video adapter configuration

When you add or change resolutions, you have the opportunity to test the new resolution. When you select **Test...** and click on **Continue** after the information message, you see a test pattern. If the pattern displays normally, click on **OK** to configure the resolution; if not, select a different resolution.

> **WARNING** If you selected settings that are incompatible with your hardware (for example, you selected the wrong video adapter), you might not be able to read the display after ending the test or you may lose the ability to reset the display to a normal state.
>
> If you cannot read your display after ending the test, press the ⟨Ctrl⟩, ⟨Alt⟩, and ⟨Bksp⟩ keys at the same time to exit the X server. If you still cannot read your display, you must reboot your computer to reset the display. Be sure to warn any users logged into your system before rebooting.

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Adding a new video adapter

To add a new video adapter:

1. Start the **Video Configuration Manager** (page 80).

   NOTE You can also test a new adapter configuration (page 87) before adding it to your system.

2. Click on **Add Adapter**.
3. The **Video Configuration Manager** automatically detects many adapters and presents any detected adapters on the graphics adapter list instead of the complete list of supported adapters.

   To configure a detected adapter, select it from the list and continue with Step 5.
4. To configure an adapter not on the autodetected list, click on the **Configure adapter not listed above** button and continue with the configuration process.

   When the graphics adapter list displays, select the graphics adapter that you want to configure, then click on **OK**.

   The displayed list includes all of the supported adapters and adapter chip sets. Use the scroll bar to move up and down in the list; in character mode, type the first letter of the adapter's manufacturer.

   NOTE If you do not know the name of your graphics adapter, use the **VideoHelp**(X1M) utility, which displays names from the adapters onboard memory.

5. Add a monitor to the new adapter configuration by selecting "Monitor Not Configured", then clicking on **Monitor**.
6. When the monitor list displays, select the new monitor, then click on **OK**.

   The monitor list includes all the monitors supported for use on your SCO system. Use the scroll bar to move up and down in the list; in character mode, type the first letter of the monitor's manufacturer.

   For more information, see "Changing the configured video monitor" (page 85).
7. Specify a resolution by selecting "Resolution Not Configured", then clicking on **Resolution**.
8. Select the new resolution in the Resolution Selection window, then click on **OK**.

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For more information, see "Changing a configured resolution" (page 86).

> **WARNING** Ensure that the resolution you select is appropriate for your monitor; see "Understanding resolutions" (page 82) for more information.

9. Assign one or more function (⟨F⟩) keys to the adapter/monitor/resolution combination. This creates a link between the particular graphics adapter, monitor, and resolution, and the assigned function key, as described in "About function keys and video configuration" (page 81)
   - To assign all function keys to the selected monitor and resolution, select **Assign all function keys**, then click on **OK**. This is the option most users choose.
   - To assign specific function keys (page 87) to the current adapter, monitor, and resolution, select **Specify function keys**, then click on **OK**.
   - To use multiple monitors simultaneously (page 83), select **Multi-monitor configuration - specify function keys**

See also:

- "Configuring unsupported adapters" (page 90)
- "Understanding video configuration" (page 80)

Removing a video configuration

To remove a complete video adapter configuration:

1. In the main **Video Configuration Manager** (page 80) window, select the adapter, monitor, or resolution of the video system to remove and click on **Remove**.
2. When the Remove window appears, click on **OK** to confirm the removal of the entire configured video system.

> **CAUTION** Unless you have more than one configured resolution, removing the associated monitor or the only configured resolution removes the entire selected graphics configuration.

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Configuring unsupported adapters

If your graphics adapter is not on the list of supported adapters and is not compatible with the VESA (page 82) driver:

- Check your adapter's documentation to see if it is compatible or uses the same chip set as a supported adapter. If your adapter is compatible, select the supported adapter.
- If the system is able to determine that the adapter in the system is compatible with the VBE (Video BIOS Extension) 1.2 or 2.0 standard, you will be able to select VESA VBE mode. This driver will operate the adapter in high resolution modes without acceleration.
- If your adapter is not compatible with one of the supported adapters or chip sets, and does not support VBE mode, try selecting the IBM VGA adapter using 640x480 with 16 colors. This will usually get your graphics system up and running, but it does not provide access to higher resolutions or any enhanced capabilities of your graphics adapter.

NOTE You may also be able to adjust an existing *grafinfo* file to fit your graphics adapter. However, if you copy a compatible *grafinfo* file and try to adapt it, you may have to supply details about your adapter not commonly found in adapter user documentation (for example, the coordinates of off-screen memory). Further information about developing graphics drivers and grafinfo files can be found in *Developing NFB graphics adapter drivers*, which is included with the Hardware Developer Kit.

See also:

- "Understanding video configuration" (page 80)
- "Adding a new video adapter" (page 88)

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