z/OS
Version 2 Release 4

z/OS Xvfb User's Guide

IBM

Note

Before using this information and the product it supports, read the information in "Notices" on page 29.

Contents

About this document

This document presents the information you need to set up and use z/OS Xvfb.

Who should use this document?

This document is for the system programmers who run a z/OS system with z/OS UNIX System Services (z/OS UNIX), and for their users who use z/OS Xvfb. On other open systems, some system programmer tasks might be done by an administrator.

This document assumes the readers are familiar with z/OS systems and with the information for z/OS systems and the accompanying products.

z/OS information

This information explains how z/OS references information in other documents and on the web.

When possible, this information uses cross document links that go directly to the topic in reference using shortened versions of the document title. For complete titles and order numbers of the documents for all products that are part of z/OS, see *z/OS Information Roadmap*.

To find the complete z/OS® library, go to IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSLTBW/welcome).

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Important: If your comment regards a technical question or problem, see instead "If you have a technical problem" on page xi.

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Summary of changes

This information includes terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations for the current edition are indicated by a vertical line to the left of the change.

Summary of changes for z/OS Version 2 Release 4 (V2R4) and its updates

The following lists indicate the messages that are new, changed, or no longer issued in z/OS V2R4 and its updates. Messages that have been added, updated, or that are no longer issued in an updated edition of V2R4 are identified by the quarter and year that the message was updated, in parentheses. For example, (4Q2019) indicates that a message was updated in the fourth quarter of 2019.

New

The following messages are new.

   None

Changed

The following messages are changed.

   None

Deleted

The following messages were deleted.

   None

Summary of changes for z/OS Version 2 Release 3 (V2R3) and its updates

The following lists indicate the messages that are new, changed, or no longer issued in z/OS V2R4 and its updates. Messages that have been added, updated, or that are no longer issued in an updated edition of V2R4 are identified by the quarter and year that the message was updated, in parentheses. For example, (4Q2019) indicates that a message was updated in the fourth quarter of 2019.

New

The following messages are new.

   None

Changed

The following messages are changed.

   None

Deleted

The following messages were deleted.

   None

Chapter 1. Xvfb — Virtual framebuffer X Server for X Version 11

Synopsis

Xvfb [option] . . .

Description

Xvfb is an X server that can run on machines with no display hardware and no physical input devices. It emulates a dumb framebuffer using virtual memory. APAR OA54559 provides support for Xvfb.

The primary use of this server was intended to be server testing. The mfb or cfb code for any depth can be exercised with this server without the need for real hardware that supports the desired depths. The X community has found many other novel uses for Xvfb, including testing clients against unusual depths and screen configurations, doing batch processing with Xvfb as a background rendering engine, load testing, as an aid to porting the X server to a new platform, and providing an unobtrusive way to run applications that don't really need an X server but insist on having one anyway.

Options

In addition to the normal server options described in the Xserver Options section Xvfb accepts the following command line switches:

-screen screennum WxHxD
This option creates screen *screennum* and sets its width, height, and depth to W, H, and D respectively. By default, only screen 0 exists and has the dimensions 1280x1024x8.

-pixdepths list-of-depths
This option specifies a list of pixmap depths that the server should support in addition to the depths implied by the supported screens. list-of-depths is a space-separated list of integers that can have values from 1 to 32.

-linebias n
This option specifies how to adjust the pixelization of thin lines. The value n is a bitmask of octants in which to prefer an axial step when the Bresenham error term is exactly zero. This option is probably only useful to server developers to experiment with the range of line pixelization possible with the cfb and mfb code.

-blackpixel pixel-value, -whitepixel pixel-value
These options specify the black and white pixel values the server should use.

Xserver options

:*displaynumber*
The X server runs as the given *displaynumber*, which by default is 0. If multiple X servers are to run simultaneously on a host, each must have a unique display number.

-a *number*
Sets pointer acceleration (that is, the ratio of how much is reported to how much the user actually moved the pointer).

-ac

    Disables host-based access control mechanisms. Enables access by any host, and permits any host to modify the access control list. Use with extreme caution. This option exists primarily for running test suites remotely.

-audit *level*

    Sets the audit trail level. The default level is 1, meaning only connection rejections are reported. Level 2 additionally reports all successful connections and disconnects. Level 0 turns off the audit trail. Audit lines are sent as standard error output.

-auth *authorization-file*

    Specifies a file which contains a collection of authorization records used to authenticate access. See also the xdm and Xsecurity manual pages.

bc

    Disables certain kinds of error checking, for bug compatibility with previous releases (such as working work around bugs in R2 and R3 xterms and toolkits). Deprecated.

-bs

    Disables backing store support on all screens.

-br

    Sets the default root window to solid black instead of the standard root weave pattern.

-c

    Turns off key-click.

c *volume*

    Sets key-click volume (allowable range: 0-100).

-cc *class*

    Sets the visual class for the root window of color screens. The class numbers are as specified in the X protocol.

-co *filename*

    Sets name of RGB color database.

-core

    Causes the server to generate a core dump on fatal errors.

-dpi *resolution*

    Sets the resolution of the screen, in dots per inch. To be used when the server cannot determine the screen size from the hardware.

-deferglyphs *whichfonts*

    Specifies the types of fonts for which the server should attempt to use deferred glyph loading. *whichfonts* can be one of the following:

- All (all fonts)
- None (no fonts)
- 16 (16 bit fonts only)

-f *volume*

    Sets feep (bell) volume (allowable range: 0-100).

-fc *cursorFont*

    Sets the default cursor font.

-fn *font*

    Sets the default font.

-fp *fontPath*

    Sets the search path for fonts. This path is a comma separated list of directories which the X server searches for font databases.

-help

    Prints a usage message.

-I
Causes all remaining command line arguments to be ignored.

-nolisten *trans-type*
Disables a transport type. For example, TCP/IP connections can be disabled with `-nolisten tcp`.

-noreset
Prevents a server reset when the last client connection is closed. This overrides a previous `-terminate` command line option.

-p minutes
Sets screen-saver pattern cycle time in minutes.

-pn
Permits the server to continue running if it fails to establish all of its well-known sockets (connection points for clients), but establishes at least one.

-r
Turns off auto-repeat.

r
Turns on auto-repeat.

-s *minutes*
Sets screen-saver timeout time in minutes.

-su
Disables save under support on all screens.

-t *number*
Sets pointer acceleration threshold in pixels (that is, after how many pixels pointer acceleration should take effect).

-terminate
Causes the server to terminate at server reset, instead of continuing to run. This overrides a previous `-noreset` command line option.

-to *seconds*
Sets default connection timeout in seconds.

-tst
Disables all testing extensions (for example, XTEST, XTrap, XTestExtension1, RECORD).

ttyxx
Ignored, for servers started the ancient way (from init).

v
Sets video-off screen-saver preference.

-v
Sets video-on screen-saver preference.

-wm
Forces the default backing-store of all windows to be WhenMapped. This is a backdoor way of getting backing-store to apply to all windows. Although all mapped windows will have backing store, the backing store attribute value reported by the server for a window will be the last value established by a client. If it has never been set by a client, the server will report the default value, NotUseful. This behavior is required by the X protocol, which allows the server to exceed the client's backing store expectations but does not provide a way to tell the client that it is doing so.

-x *extension*
Loads the specified extension at init. This is a no-op for most implementations.

[+-]xinerama
Enables(+) or disables(-) the XINERAMA extension. The default state is disabled.

Signals

The X server attaches special meaning to the following signals:

SIGHUP
This signal causes the server to close all existing connections, free all resources, and restore all defaults. It is sent by the display manager whenever the main user's main application (usually an xterm or window manager) exits to force the server to clean up and prepare for the next user.

SIGTERM
This signal causes the server to exit cleanly.

SIGUSR1
This signal is used quite differently from either of the above. When the server starts, it checks to see if it has inherited SIGUSR1 as SIG_IGN instead of the usual SIG_DFL. In this case, the server sends a SIGUSR1 to its parent process after it has set up the various connection schemes. Xdm uses this feature to recognize when connecting to the server is possible.

Examples

1. ```
Xvfb :1 -screen 0 1600x1200x32
```

   The server will listen for connections as server number 1, and screen 0 will be depth 32 1600x1200.

2. ```
Xvfb :1 -screen 1 1600x1200x16
```

   The server will listen for connections as server number 1, will have the default screen configuration (one screen, 1280x1024x8), and screen 1 will be depth 16 1600x1200.

3. ```
Xvfb -pixdepths 3 27 -fbdir /usr/tmp
```

   The server will listen for connections as server number 0, will have the default screen configuration (one screen, 1280x1024x8), will also support pixmap depths of 3 and 27, and will use memory mapped files in /usr/tmp for the framebuffer.

4. ```
xwud -in /usr/tmp/Xvfb_screen0
```

   Displays screen 0 of the server started by the preceding example.

Authors

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Chapter 2. Xvfb messages

XVFB0001   *number* **spans**

Explanation

Informational printing of the number spanned.

User response

None.

XVFB0004   **allocation failed**

Explanation

While parsing the xkb configuration file, the program failed to allocate memory.

User response

Verify that the system has enough resources available for use.

XVFB0005   **unterminated string on line** *number*

Explanation

While parsing the xkb configuration file, the program encountered a non-terminated string at the specified line.

User response

Verify that the line in question has a correct termination character.

XVFB0006   **expected identifier on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected identifier on the specified line.

User response

Verify that the line in question contains the correct identifier.

XVFB0007   **expected '=' on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected '=' character on the specified line.

User response

Verify that the line in question contains a '='.

XVFB0008   **expected ';' or newline on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected ';' or newline on the specified line.

User response

Verify that the line in question contains a ';' or newline.

XVFB0009   **expected a boolean value on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find a boolean value at the specified line.

User response

Verify that the line in question contains an appropriate boolean value.

XVFB0010   **expected a numeric value on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected numeric value at the specified line.

User response

Verify that the line in question contains an appropriate numeric value.

XVFB0011   **expected a string on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find a string at the specified line.

User response

Verify that an appropriate string exists at the line in question.

XVFB0012   **expected a modifier name on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find a modifier name at the specified line.

User response

Verify that a modifier name exists at the line in question.

XVFB0013   **expected a control name on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected control name on the specified line.

User response

Verify that an appropriate control name exists at the line in question.

XVFB0014   **expected an AccessX option on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected AccessX option on the specified line.

User response

Verify that an AccessX option exists at the line in question.

XVFB0015   **expected '+' or '-' on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected '+' or '-' at the specified line.

User response

Verify that the line in question contains either a '+' or '-'

XVFB0016   **expected wrap, clamp or group number on line** *number*

Explanation

While parsing the xkb configuration file, the program failed to find an expected wrap, clamp or group number on the specified line.

User response

Verify that the line in question contains an appropriate wrap, clamp or group number.

XVFB0017   **unknown error on line** *number*

Explanation

While parsing the xkb configuration file, the program encountered an unknown error at the specified line.

User response

Examine the xkb configuration file for any anomalies or stray characters. Verify that all options are correct.

XVFB0019   *XTestEXTENSION_NAME***: invalid key/button state** *keystate***.**

Explanation

The current key state is not in either a pressed or released state.

User response

Verify that the keyboard is not faulty, as a key should only be able to reside in one of the two states.

XVFB0021   **Default symbols not implemented yet!**

Explanation

No keycode was specified in the configuration and there are no default symbols available.

User response

Provide the program with a specific keycode map in the configuration.

XVFB0022   **Default types not implemented yet!**

Explanation

No type was specified in the configuration and there are no default types available.

User response

Provide the program with a specific type in the configuration.

XVFB0023   **Default interps not implemented yet!**

Explanation

No interups were specified in the configuration and there are no default interups available

User response

Provide the program with a specific interup in the configuration.

XVFB0024	No file

Explanation

No file name was given to test authorization.

User response

Ensure that the complete list of paramaters has been passed into the program.

XVFB0025	*ProgramName*: **unable to open display** *XDisplayName*

Explanation

The program is unable to open the specified display.

User response

Verify that any necessary network connections are available and the display in question is a valid display.

XVFB0026	**access control enabled, only authorized clients can connect**

Explanation

Informational message. User has activated the access control features.

User response

None.

XVFB0027	**access control disabled, clients can connect from any host**

Explanation

Informational message. User has deactivated the access control features.

User response

None.

XVFB0028	**unknown address in family** *list[i].family*

Explanation

When looking up the hostname, an unexpected value was returned.

User response

Verify that you are attempting to use a valid hostname, such as localhost.

XVFB0029	**(no nameserver response within** *NAMESERVER_TIMEOUT* **seconds)**

Explanation

The nameserver failed to respond within the set timeout window.

User response

Verify that the connection is free of bandwidth problems or increase the timeout window.

XVFB0030	*ProgramName*: **bad hostname** *arg*

Explanation

A bad hostname has been provided to the program.

User response

Verify that you are attempting to use a valid hostname.

XVFB0031	*ProgramName*: **malloc bombed in change_host**

Explanation

The given program name has failed when attempting to call malloc.

User response

Verify that the system has enough available resources.

XVFB0032	*ProgramName*: **not compiled for TCP/IP**

Explanation

The given program has not been compiled with TCP/IP support.

User response

You must recompile the binaries, adding in support for TCP/IP.

XVFB0033	*ProgramName*: **not compiled for DECnet**

Explanation

The given program has not been compiled with DECnet support.

User response

You must recompile the binaries, adding in support for DECnet.

XVFB0034	*ProgramName*: **not compiled for Secure RPC**

Explanation

The given program has not been compiled with Secure RPC support.

User response

You must recompile the binaries, adding in support for Secure RPC.

XVFB0035	*ProgramName*: **not compiled for Kerberos 5**

Explanation

The given program has not been compiled with Kerberos 5 support.

User response

You must recompile the binaries, adding in support for Kerberos 5.

XVFB0036	*ProgramName*: **unknown address family** *lname*

Explanation

The given program encountered an unknown address family.

User response

This error occurs when trying to edit the list of hosts that may connect to the server. Verify that the information you are trying to add or edit is in the correct format.

XVFB0037	*ProgramName*: **unable to get node name for** *name***::**

Explanation

The given program is unable to retrieve the node name

User response

When compiled with DNETCONN, if the change_host function cannot parse the given host name to find the

correct node, this error will occur. Verify that the host name is correct and in the correct format.

XVFB0038	*ProgramName*: **cannot parse Kerberos name:** *error_message(retval))*

Explanation

The given program is unable to parse the shown Kerberos name

User response

When compiled with K5AUTH, if the change_host function cannot parse the supplied Kerberos name, this error will occur. Verify that the data passed into the program is correct and formatted properly.

XVFB0039	**non-network local connections** *add_msg/remove_msg*

Explanation

You are adding or removing a non-network local connection.

User response

None.

XVFB0040	**no such user** *name*

Explanation

No such user name exists.

User response

If SECURE_RPC is defined and the given user name cannot be found, this error will occur. Verify that the given user name is valid and exists.

XVFB0041	**failed to get netname for** *name*

Explanation

Failed to get netname for the given name.

User response

If SECURE_RPC is defined and the netname for the given name cannot be found, this error will occur. Verify that the given user name is valid and the netname exists.

XVFB0042	*ProgramName*: **must be on local machine to add or remove hosts.**

Explanation

The given program must be on the local machine to add or remove hosts.

User response

You are trying to add or remove hosts from a remote machine. For security reasons, you must be on the local machine to perform such an action. Ensure you are on the local machine and try again.

XVFB0043   *ProgramName*: **must be on local machine to enable or disable access control.**

Explanation

The given program must be on the local machine to enable or disable access control.

User response

You are trying to enable or disable access control from a remote machine. For security reasons, you muct be on the local machine to perform such an action. Ensure that you are on the local machine and try again.

XVFB0044   **bad display name** *dpy* **in** *cmd* **command**

Explanation

A bad display name was entered in the given command.

User response

Verify that the given display name is valid and properly formatted.

XVFB0045   **bad** *cmd* **command line**

Explanation

You have entered a bad command from the command line.

User response

The most probable cause of this error is an incorrect argument list being input from the command line. Verify that the syntax for the command in question.

XVFB0046   *cmd*: **stdin already in use**

Explanation

When trying to open a file, standard in was found to be in use.

User response

Another process has set the okay_to_use_stdin flag to false. Wait for this process to finish or manually kill the process.

XVFB0047   *cmd*: **unable to open file** *filename*

Explanation

While attempting to open the file name in question, fopen failed.

User response

Verify that the file exists with the correct permissions. If attempting to create the file, ensure that you have permission to do so. Furthermore, verify that no other processes have the file in question open or locked.

XVFB0048   *ProgramName*: **unable to alloc entry reading auth file**

Explanation

The call to malloc failed when trying to read the authorization file.

User response

Ensure that there are sufficient system resources available to read the contents of the authorization file into a linked list.

XVFB0049   **0: unable to parse** *displayname*

Explanation

The program was unable to parse the given display name.

User response

Verify that the display name in question is correct and in the proper format.

XVFB0050   **0: unable to get protocol address for** *displayname*

Explanation

The program was unable to parse out the protocol address for the given display name

User response

Verify that the display name in question is correct and in the proper format.

XVFB0051   *ProgramName*: **unable to allocate** *len* **bytes for hexkey**

Explanation

When attempting to malloc a space the size of len, an error was encountered.

User response

Verify that there is sufficient system resources available for use.

XVFB0052	Attempting to break locks on authority file *authfilename*

Explanation

The program is trying to break the locks on the authority file.

User response

None.

XVFB0053	*ProgramName*: *errormsg* in locking authority file *authority filename*

Explanation

An error occurred when trying to lock the given file name.

User response

There are 3 possible error: unknown, timeout, and error. For timeout errors, the problem is typically related to network latency issues or a lack of available resources on the machine. Verify that the environment is in working order. An "error" error is indicative of permission or file locked issues. Verify that authority file has the correct permission settings. Unknown errors encompass all other problems.

XVFB0054	*ProgramName*: *authority filename* not writable, changes will be ignored"

Explanation

After establishing a lock on the authority file, the program could not write to the file.

User response

After the program has successfully established a lock on the authority file, it failed to write the new changes. Verify that the file is in working order and not corrupt.

XVFB0055	*ProgramName*: creating new authority file *authority filename*

Explanation

The program is starting to create the new authority file.

User response

None.

XVFB0056	*ProgramName*: unable to read auth entries from file *authority filename*

Explanation

The program could not open the authority file for reading.

User response

When executing fopen against the authority file, the program failed to establish a file pointer. Verify that the file in question is not corrupt and has the correct permission settings.

XVFB0057	*ProgramName*: unable to open tmp file *filename*

Explanation

The program failed to open a new temporary file.

User response

When executing fopen, the program was unable to establish a file pointer to a new temporary file. Verify the permission settings on the folder in which the file would live as well as verifying there is sufficient disk space.

XVFB0058	*ProgramName*: *filename* not writable, changes ignored

Explanation

The program was unable to write to the file in question.

User response

Verify that the file in question has the correct permission settings.

XVFB0059	*ProgramName*: unable to write authority file *filename*

Explanation

The program was unable to write the authority filem

User response

Verify that the file in question has the correct permission settings and there is sufficient disk space available.

XVFB0060 *ProgramName*: **unable to link authority file** *xauth_filename*, **use** *temp_name*

Explanation

When trying to establish links between the temporary file and the new authority file, the program encountered an error.

User response

None.

XVFB0061 **unknown command** *user entered command*

Explanation

The user has tried to enter an unknown command from the command line.

User response

Verify that the command given was typed correctly as well as a valid command.

XVFB0062 **unable to open extraction file** *filename*

Explanation

Xauth was unable to open the file for reading.

User response

The user has requested an extract option from Xauth. While attempting to open the given filename for reading, the program encountered an error. Verify that the file in question has the correct permissions.

XVFB0063 **internal error with help**

Explanation

Xauth encountered an error while trying to process a help command.

User response

The user has requested help for a given command. If a command was given at the command line, the entered command will be displayed after this message. If no command was given, this message will be the only indication of the error. Verify that files containing Xauth help messages are available and not corrupt.

XVFB0064 **on command** *user entered command*

Explanation

A possible extension to an internal help error message.

User response

If the user entered a command with the request for help, this message will be printed out. Verify that the command in question is a valid command and the Xauth help file containing this command exists and has the correct permissions.

XVFB0065 **no help for noexistent command** *user entered command*

Explanation

The user has requested help on a non existent Xauth command.

User response

Verify that the desired command was typed correctly and is a valid Xauth command.

XVFB0066 **Commands:**

Explanation

Header message for the help ? command.

User response

None.

XVFB0067 **unable to read any entries from file** *filename*

Explanation

No lines were read while trying to read from the authorization file.

User response

The xauthorization file appears to have no data in it. Verify that there is in fact information within the file. If there is indeed data within, verify permissions on the file are correct.

XVFB0068 *digit* **entries read in:** *digit* **new,** *digit* **replacement***(s)*

Explanation

If merging entries with the verbose option turned on, this message will print.

User response

None.

XVFB0069   No matches found, authority file *filename* not written

Explanation

When executing the xauth option 'extract', no matches for the given display could be found.

User response

Verify that the display argument given to the xauth 'extract' command is a valid display.

XVFB0070   *number* entries written to *filename*

Explanation

If the verbose option is turned on, this message will show after a successful xauth extract command.

User response

Information message only. Nothing to be done.

XVFB0071   key contains odd number of or non-hex characters

Explanation

The key entered from the command line is not in the correct format.

User response

Verify that the key was typed correctly and is of the proper format.

XVFB0072   unable to allocate *number* bytes for Xauth structure

Explanation

The program was unable to malloc enough space for the Xauth structure.

User response

Verify that there are sufficient system resources available.

XVFB0073   unable to allocate *number* character protocol name

Explanation

The program was unable to malloc enough space for the character protocol name.

User response

Verify that there are sufficient system resources available.

XVFB0074   unable to allocate *number* bytes for auth list

Explanation

The program was unable to malloc enough space for the authorization list.

User response

Verify that there are sufficient system resources available.

XVFB0075   unable to merge in added record

Explanation

When attempting to merge a new record into the existing records, an error occurred.

User response

None.

XVFB0076   *number* entries removed

Explanation

If the verbose option is enabled, this message will show how many entries were removed

User response

None.

XVFB0077   Authority file: *authfilename OR none*

Explanation

Will print the xauthorization file name if it exists. Will print none if not.

User response

None.

XVFB0078   File new: *Yes OR No*

Explanation

If an xauthorization file existed, the message will show No. If the xauthorization file has just been created, the message will show Yes.

User response

None.

XVFB0079   File locked: *Yes OR No*

Explanation

Displays the lock status of the xauthorization file. If the ignore_locks flag is set, the message will print No, otherwise, Yes.

User response

None.

XVFB0080　　　　**Number of entries:** *number*

Explanation

Will print the number of entries in the xauthorization file.

User response

None.

XVFB0081　　　　**Changes honored:** *Yes OR No*

Explanation

If the changes to the xauthorization file were allowed, the status will show Yes, otherwise, No.

User response

None.

XVFB0082　　　　**Changes made:** *Yes OR No*

Explanation

If changes were made to the xauthorization file, the status will show Yes, otherwise, No.

User response

None.

XVFB0083　　　　**Current input:** *filename*:*linenumber*

Explanation

Displays the current input filename and the line within the file.

User response

None.

XVFB0084　　　　**line too long**

Explanation

The xauth command 'source' has found a line within the specified file to be too long.

User response

A command found within the file passed to the source command is to long for the buffer. Either reduce the length of the command within the file (suggested) or increase the size of the buffer.

XVFB0085　　　　**unable to break line into words**

Explanation

The xauth command 'source' has found a line within the specified file that it is unable to parse.

User response

A command found within the file passed to the source command is preventing the program from correctly parsing the command. Verify that there are no stray hidden characters within the file. A common cause of this can be creating the file in a windows environment and later moving this file to a *nix system. Also, verify that the file is in EBCDIC format.

XVFB0086　　　　**data contains odd number of or non-hex characters**

Explanation

While attempting to validate the key, an data format issue occurred.

User response

Verify that the key was entered correctly.

XVFB0087　　　　**unable to open display** *displayname*.

Explanation

While trying to open the specified display, an error occurred.

User response

Verify that the given display is a valid display and any required connection is available.

XVFB0088　　　　**couldn't query Security extension on display** *displayname*

Explanation

While trying to query the Security extension on the given display, an error occurred.

User response

Verify that the display in question is fully functioning and any required connection is available.

XVFB0089   **couldn't generate authorization**

Explanation

xauth could not generate the required authorization.

User response

None.

XVFB0090   **authorization id is** *number*

Explanation

If the verbose option is set, this message will show what the authorization ID is.

User response

None.

XVFB0091   *ProgramName***: unable to generate an authority file name**

Explanation

While trying to generate an authority file name, an error was encountered.

User response

Specify the name of an authority file name from the command line with the -f 'filename' argument.

XVFB0092   **unlink** *filename* **failed, errno** *number*

Explanation

The program failed to unlink the memory mapped file. An error number is given.

User response

Use the provided error number to learn more about the specific failure.

XVFB0093   **shmdt failed, errno** *number*

Explanation

The program encountered an error while attempting to access shared memory. An error code is given.

User response

use the provided error number to learn more about the specific failure.

XVFB0094   **Invalid screen number** *screen number*

Explanation

An invalid screen number has been entered from the command line.

User response

Verify that the command was entered correctly and the entered screen number is within the acceptable range.

XVFB0095   **Invalid screen configuration** *entered configuration*

Explanation

An invalid screen configuration has been entered from the command line.

User response

Verify that the command was entered correctly and the entered screen configuration is in the correct format.

XVFB0096   **Invalid pixmap depth** *number*

Explanation

An invalid pixmap depth has been entered from the command line.

User response

Verify that the command was entered correctly and the entered pixmap depth is valid.

XVFB0097   **msync failed, errno** *number*

Explanation

While trying to flush any changes made to the screens out to the mapped file, an error occurred.

User response

Use the provided error number to learn more about the specific failure.

XVFB0098   **open** *mapped filename* **failed, errno** *number*

Explanation

The program failed to successfully open the mapped file. An error code is given.

User response

Verify that user permissions on the directory structure are correct. Also use the given error code to learn more about the specific problem.

XVFB0099   **write** *mapped filename* **failed, errno** *number*

Explanation

The program failed to write to the mapped file. An error code is given.

User response

Verify that the user permissions on the directory structure are correct. Also use the given error code to learn more about the specific problem.

XVFB0100   **mmap** *mapped filename* **failed, errno** *number*

Explanation

While trying to map pages of memory, an error was encountered. An error code is given.

User response

Verify that the user permissions on the directory structure are correct. Also use the given error code to learn more about the specific problem.

XVFB0101   **shmget** *number* **bytes failed, errno** *number*

Explanation

While trying to allocate the given amount of space in shared memory, an error occurred. An error code is given.

User response

Verify that user permissions on the directory structure are correct. Verify that there are sufficient resources available for use. Also use the given error code to learn more about the specific problem.

XVFB0102   **shmat failed, errno** *number*

Explanation

While trying to attach the allocated shared memory to the process, an error occurred. An error code is given.

User response

None.

XVFB0103   **screen** *number* **shmid** *number*

Explanation

Informational message of screen number and shmid ID.

User response

None.

XVFB0104   **Internal Error! Attempt to remove a non-existent device**

Explanation

The program has attempted to remove a non-existent device.

User response

None.

XVFB0105   **FreeFontPath: FPE "***length and name***" refcount is** *actual count*, **should be** *expected count***; fixing.**

Explanation

The expected and actual counter values were found to be different. The program will automatically adjust.

User response

None.

XVFB0106   **failed to set default font path '***path to default font***'**

Explanation

The program failed to successfully set the default font path.

User response

Verify that the program is attempting to set the correct path.

XVFB0107   **Internal error in ConfigureWindow, smode ==** *number*

Explanation

While internally organizing the window stack, an error occurred.

User response

None.

XVFB0108   **iop_disable failed (***error condition***)**

Explanation

While trying to disable the IOP Server, an error was encountered. An error code is given.

User response

None.

XVFB0109   **iop_getevents failed (*error condition*)**

Explanation

While polling the IOP server for events, an error occurred, preventing the query to happen.

User response

None.

XVFB0110   **Couldn't open RGB_DB '*path to RGB_DB*'**

Explanation

The program could not open the given path to the RGB DB.

User response

Verify that the program is trying to access the correct file.

XVFB0112   **Value for "*name*" out of range: *path*:*line number***

Explanation

The given value for a color found in the RGB config file is out of the acceptable range.

User response

Acceptable range is: red >= 0 And red <= 0xff green >= 0 And green <= 0xff blue >= 0 And blue <= 0xff

---

XVFB0113   **Fatal server error:**

Explanation

Header that is printed any time a fatal error is encountered.

User response

None.

XVFB0114   **XDM: *reason code*, declaring session dead**

Explanation

The session has been declared dead for the given reason code. This event typically happens because of too many timeouts or a failed keepalive attempt.

User response

Try increasing the length of timeouts. Also check the status of any network communications.

XVFB0115   **XDM: too many retransmissions**

Explanation

The program has reached the upper limit of retransmissions.

User response

Increase the maximum limit of retransmissions.

XVFB0116   **XDMCP fatal error: *type length.data***

Explanation

A fatal error of the given type and length has occurred. The offending data is provided.

User response

Examine data section for clues to the cause of the error.

XVFB0117   **XDMCP warning: *message***

Explanation

An event of warning level severity has occurred.

User response

None.

XVFB0118   **Xserver: missing host name in command line**

Explanation

The program could not find a host name from the command line.

User response

Verify that the previous command line entry was typed correctly.

XVFB0119   **Xserver: unknown host: *unknown host***

Explanation

An unknown host name has been entered from the command line.

User response

Verify that that command was typed correctly.

XVFB0120   **Xserver: host on strange network** *name*

Explanation

The program is alerting you to the possibility of the host being misconfigured.

User response

Verify that all settings are correct for the host/server relation.

XVFB0121   **Unknown beep type** *number*

Explanation

The given number is of an unknown beep type.

User response

None.

XVFB0122   **Error parsing config file:**

Explanation

While parsing the XKB config file, an error occurred.

User response

Verify that the contents of the config file, looking for any erroneous characters or new lines.

XVFB0123   **Couldn't open compiled keymap file** *filename*

Explanation

While trying to open the keymap file listed, an error occurred.

User response

Verify that the given file name is correct and the file has the correct permission settings.

XVFB0124   **Error loading keymap** *filename*

Explanation

While attempting to load the keymap file, an error occurred.

User response

None.

XVFB0125   **Extra data (**number** bytes) after SelectEvents**

Explanation

Additional data was found after the SelectEvent action.

User response

None.

XVFB0126   **BOGUS LENGTH in write keyboard desc, expected** *number*, **got** *number*

Explanation

The expected and actual values of the data length in the write keyboard description do not match.

User response

None.

XVFB0127   **Internal error! Bad length in XkbSetMap (after check)**

Explanation

The length found in XkbSetMap was determined to be incorrect.

User response

None.

XVFB0128   **Internal error! Bad length in XkbSetMap (after set)**

Explanation

The length found in XkbSetMap was determined to be incorrect.

User response

None.

XVFB0129   **Internal length error on read in ProcXkbSetCompatMap**

Explanation

The length of a read in ProcXkbSetCompatmap was incorrect.

User response

None.

XVFB0130   **BOGUS LENGTH in write names, expected** *number*, **got** *number*

Explanation

The expected and actual values of the data length in the write names do not match.

User response

None.

| XVFB0131 | Unknown doodad type *number* in XkbWriteGeomDoodads |

Explanation

The given doodad is unknown.

User response

None.

| XVFB0132 | Ignored |

Explanation

The unknown doodad has been ignored.

User response

None.

| XVFB0133 | BOGUS LENGTH in XkbSendGeometry, expected *number*, got *number* |

Explanation

The expected and actual values of the data length in XkbSendGeometry do not match.

User response

None.

| XVFB0134 | Internal Error! bad RemoveResourceClient in XkbClientGone |

Explanation

An error occurred while trying to remove a resource client.

User response

None.

| XVFB0135 | Attempt to change unknown pointer default (*number*) ignored |

Explanation

The program has ignored the request to change the default pointer type to an unknown type.

| XVFB0136 | Atom error: *atom* not created |

Explanation

The specified atom was not created.

User response

None.

| XVFB0137 | Allocation error: *atom* property not created |

Explanation

When trying to allocate the given atom, an error occurred.

User response

None.

| XVFB0138 | Internal Error! bad size (*number*!=*number*) for _XKB_RULES_NAMES |

Explanation

The expected and actual values for the size of _XKB_RULES_NAMES were different

User response

None.

| XVFB0139 | Error loading keymap file *filename* (*error code* in *location*) |

Explanation

The program failed to successfully load the keymap file.

User response

None.

| XVFB0140 | reverting to defaults |

Explanation

After a failed keymap file load, the program will revert to the default values.

User response

None.

XVFB0141   **Error opening keymap file**
filename, reverting to defaults

Explanation

The program failed to successfully load the keymap file. The default values will be reinstated.

User response

None.

XVFB0142   **Internal Error!! XKB and core keymap have different range**

Explanation

XKB and the core keymap have been found with different ranges.

User response

None.

XVFB0143   **Couldn't load XKB keymap, falling back to pre-XKB keymap**

Explanation

Tried to load an XKB keymap file. This action failed and the previous settings will be used.

User response

None.

XVFB0144   **InternalError! Illegal radio group _number_**

Explanation

XKB tried to process an illegal radio group.

User response

None.

XVFB0145   **unknown key behavior 0x_behavior type_**

Explanation

An unknown key behavior type has occurred. This typically indicates an error with the keyboard. Typical key behavior includes pressed or not.

User response

Verify that no keys are stuck and the keyboard is functioning properly.

XVFB0146   **Extra data (_number_ bytes) after SelectEvents**

Explanation

Extra data was found after the SelectEvents action.

User response

None.

XVFB0147   **Internal Error! Bad XKB info in SetPhysicalLockingKey**

Explanation

While reading the SetPhysicalLockingKey, bad information was found contained within.

User response

None.

XVFB0148   **MAXFORMATS is too small for this server**

Explanation

The current setting of MAXFORMATS is too small.

User response

Increase the level of MAXFORMATS

XVFB0149   **Couldn't add screen _number_**

Explanation

XVFB could not add the given screen.

User response

None.

XVFB0150   **initializing atoms**

Explanation

Informational message. The program is initializing atoms.

User response

None.

XVFB0151   **SetMaskForEvent: bogus event number**

Explanation

The found event number falls outside the acceptable range.

User response

None.

XVFB0152　　　**SetCriticalEvent: bogus event number**

Explanation

The found event number falls outside the acceptable range.

User response

None.

XVFB0153　　　**Impossible keyboard event**

Explanation

The program encountered an unexpected keyboard event.

User response

Restart the server and try again.

XVFB0154　　　**bogus pointer event from ddx**

Explanation

The pointer received is invalid.

User response

None.

XVFB0155　　　**client not on event list**

Explanation

The program could not find a given client within the previously configured client list.

User response

Verify that all clients are listed and you are trying to connect to a client on the list.

XVFB0156　　　**failed to allocate spriteTrace**

Explanation

While attempting to xalloc space, an error occurred.

User response

Verify that there are sufficient system resources available.

XVFB0157　　　**Not implemented**

Explanation

Informational message which accompanies additional messages when an as yet unimplemented function or feature is called.

User response

None.

XVFB0158　　　**server restarted. Jumped through uninitialized pointer?**

Explanation

The server has been restarted. The most typical cause of this is from jumping through an uninitialized pointer.

User response

None.

XVFB0159　　　**couldn't create client array**

Explanation

While trying to xalloc space for an array, an error occurred.

User response

Verify that there are sufficient system resources available.

XVFB0160　　　**couldn't create server client**

Explanation

While trying to xalloc space for an array, an error occurred.

User response

Verify that there are sufficient system resources available.

XVFB0161　　　**couldn't init server resources**

Explanation

While trying to initialize resources for the root resources, an error occurred.

User response

None.

XVFB0162　　　**couldn't create root window table**

Explanation

While trying to xalloc space, an error occurred.

User response

Verify that there are sufficient system resources available.

XVFB0163   no screens found

Explanation

The program was unable to find any active screens.

User response

None.

XVFB0164   failed to allocate serverClient devprivates

Explanation

The program failed to allocate serverClient devprivates.

User response

None.

XVFB0165   failed to create scratch pixmaps

Explanation

The program failed to create scratch pixmaps.

User response

None.

XVFB0166   failed to create screen resources

Explanation

The program failed to create screen resources.

User response

None.

XVFB0167   failed to create scratch GCs

Explanation

The program failed to create scratch GCs.

User response

None.

XVFB0168   failed to create default stipple

Explanation

The program failed to create default stipple.

User response

None.

XVFB0169   failed to create root window

Explanation

The program failed to create root window.

User response

None.

XVFB0170   failed to initialize core devices

Explanation

The program failed to start necessary core devices.

User response

None.

XVFB0171   could not open default font '*font name*'

Explanation

The program could not open the default font listed.

User response

Verify that the specified font file exists and has the correct permissions.

XVFB0172   could not open default cursor font '*font name*'

Explanation

The program could not open the default cursor font.

User response

Verify that the specified font file exists and has the correct permissions.

XVFB0173   could not create connection block info

Explanation

The program failed to create connection block info.

User response

None.

XVFB0174   FakeClientID: server internal ids exhausted

Explanation

All possible ID's have been assigned.

User response

Restart the server.

XVFB0175   **client not in use**

Explanation

When attempting to add a resource, the target client was found to not be in use.

User response

Ensure that the correct client is trying to be utilized.

XVFB0176   **Freeing resource id=*ID* which isn't there**

Explanation

The program attempted to free an ID which does not exist.

User response

None.

XVFB0177   **could not create root tile**

Explanation

The program could not initialize the required root tile.

User response

None.

XVFB0178   **Failed to establish all listening sockets**

Explanation

The program failed to establish all the expected listening sockets.

User response

Verify that the network connection is working properly. Use a tool such as netstat to verify which ports are open and currently listening.

XVFB0179   **Cannot establish any listening sockets - Make sure an X server isn't already running**

Explanation

The program failed to create any listening sockets.

User response

Verify that an existing instance of an X server is not running.

XVFB0180   **No hostname, no screen**

Explanation

When trying to get the IOP server capability and start it, an error occurred.

User response

Verify that the correct hostname and screen ID have been used.

XVFB0181   **Cannot find IOP server for *server hostname*: *error code***

Explanation

The program cannot find the IOP server for the listed hostname. An error code is provided.

User response

Ensure that the given hostname is correct. Also use the given error code to find more information on the specific error.

XVFB0182   **iop_enable failed (*error string*)**

Explanation

While trying to enable the IOP server, an error occurred. An error code is provided.

User response

Use the given error code to find more information on the specific problem.

XVFB0183   **Cannot start IOP reader thread**

Explanation

While attempting to start the thread used to read information from the IOP server, an error occurred.

User response

Restart the server.

XVFB0184   **Can't open option file *filename***

Explanation

The program cannot open the given option file.

User response

Verify that the file name is correct and the file exists with the correct permissions.

XVFB0185	Out of Memory

Explanation

The program has run out of memory.

User response

Verify that the system has sufficient memory available.

XVFB0186	Error reading option file *filename*

Explanation

The program cannot open the given option file.

User response

Verify that the file name is correct and the file exists with the correct permissions.

XVFB0187	Out of memory reallocing option buf

Explanation

While attempting to reallocate space for a buffer, an error occurred.

User response

Ensure that there are sufficient system resources available.

XVFB0188	Out of memory

Explanation

The program has run out of memory

User response

Verify that the system has sufficient memory available.

XVFB0189	Couldn't allocate keyboard controls

Explanation

The program failed to allocate the keyboard controls.

User response

Ensure that there are sufficient system resources available.

XVFB0190	Couldn't allocate keyboard description

Explanation

The program failed to allocate the keyboard description.

User response

Ensure that there are sufficient system resources available.

XVFB0191	Couldn't allocate client map in XkbInitDevice

Explanation

The program could not allocate client map in XkbInitDevice.

User response

Ensure that there are sufficient system resources available.

XVFB0192	Couldn't allocate server map in XkbInitDevice

Explanation

The program failed to allocate server map in XkbInitDevice.

User response

Ensure that there are sufficient system resources available.

XVFB0193	Couldn't allocate keysyms

Explanation

The program couldn't allocate keysyms.

User response

Ensure that there are sufficient system resources available.

XVFB0194	Couldn't allocate modifierKeyMap in UpdateCore

Explanation

The program failed to allocate modifierKeyMap in UpdateCore.

User response

Ensure that there are sufficient system resources available.

XVFB0195	Couldn't allocate symbols map in UpdateCore

Explanation

The program failed to allocate symbols map in UpdateCore.

User response

Ensure that there are sufficient system resources available.

XVFB0196   could not add Xie as an extension

Explanation

While attempting to add Xie as an extension, an error occurred.

User response

None.

Accessibility

Accessible publications for this product are offered through IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSLTBW/welcome).

If you experience difficulty with the accessibility of any z/OS information, send a detailed message to the Contact z/OS web page (www.ibm.com/systems/z/os/zos/webqs.html) or use the following mailing address.

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Accessibility features

Accessibility features help users who have physical disabilities such as restricted mobility or limited vision use software products successfully. The accessibility features in z/OS can help users do the following tasks:

- Run assistive technology such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using the keyboard.
- Customize display attributes such as color, contrast, and font size.

Consult assistive technologies

Assistive technology products such as screen readers function with the user interfaces found in z/OS. Consult the product information for the specific assistive technology product that is used to access z/OS interfaces.

Keyboard navigation of the user interface

You can access z/OS user interfaces with TSO/E or ISPF. The following information describes how to use TSO/E and ISPF, including the use of keyboard shortcuts and function keys (PF keys). Each guide includes the default settings for the PF keys.

- *z/OS TSO/E Primer*
- *z/OS TSO/E User's Guide*
- *z/OS ISPF User's Guide Vol I*

Dotted decimal syntax diagrams

Syntax diagrams are provided in dotted decimal format for users who access IBM Knowledge Center with a screen reader. In dotted decimal format, each syntax element is written on a separate line. If two or more syntax elements are always present together (or always absent together), they can appear on the same line because they are considered a single compound syntax element.

Each line starts with a dotted decimal number; for example, 3 or 3.1 or 3.1.1. To hear these numbers correctly, make sure that the screen reader is set to read out punctuation. All the syntax elements that have the same dotted decimal number (for example, all the syntax elements that have the number 3.1) are mutually exclusive alternatives. If you hear the lines 3.1 USERID and 3.1 SYSTEMID, your syntax can include either USERID or SYSTEMID, but not both.

The dotted decimal numbering level denotes the level of nesting. For example, if a syntax element with dotted decimal number 3 is followed by a series of syntax elements with dotted decimal number 3.1, all the syntax elements numbered 3.1 are subordinate to the syntax element numbered 3.

Certain words and symbols are used next to the dotted decimal numbers to add information about the syntax elements. Occasionally, these words and symbols might occur at the beginning of the element itself. For ease of identification, if the word or symbol is a part of the syntax element, it is preceded by the backslash (\) character. The * symbol is placed next to a dotted decimal number to indicate that the syntax element repeats. For example, syntax element *FILE with dotted decimal number 3 is given the format 3 * FILE. Format 3* FILE indicates that syntax element FILE repeats. Format 3* * FILE indicates that syntax element * FILE repeats.

Characters such as commas, which are used to separate a string of syntax elements, are shown in the syntax just before the items they separate. These characters can appear on the same line as each item, or on a separate line with the same dotted decimal number as the relevant items. The line can also show another symbol to provide information about the syntax elements. For example, the lines 5.1*, 5.1 LASTRUN, and 5.1 DELETE mean that if you use more than one of the LASTRUN and DELETE syntax elements, the elements must be separated by a comma. If no separator is given, assume that you use a blank to separate each syntax element.

If a syntax element is preceded by the % symbol, it indicates a reference that is defined elsewhere. The string that follows the % symbol is the name of a syntax fragment rather than a literal. For example, the line 2.1 %OP1 means that you must refer to separate syntax fragment OP1.

The following symbols are used next to the dotted decimal numbers.

? indicates an optional syntax element
The question mark (?) symbol indicates an optional syntax element. A dotted decimal number followed by the question mark symbol (?) indicates that all the syntax elements with a corresponding dotted decimal number, and any subordinate syntax elements, are optional. If there is only one syntax element with a dotted decimal number, the ? symbol is displayed on the same line as the syntax element, (for example 5? NOTIFY). If there is more than one syntax element with a dotted decimal number, the ? symbol is displayed on a line by itself, followed by the syntax elements that are optional. For example, if you hear the lines 5 ?, 5 NOTIFY, and 5 UPDATE, you know that the syntax elements NOTIFY and UPDATE are optional. That is, you can choose one or none of them. The ? symbol is equivalent to a bypass line in a railroad diagram.

! indicates a default syntax element
The exclamation mark (!) symbol indicates a default syntax element. A dotted decimal number followed by the ! symbol and a syntax element indicate that the syntax element is the default option for all syntax elements that share the same dotted decimal number. Only one of the syntax elements that share the dotted decimal number can specify the ! symbol. For example, if you hear the lines 2? FILE, 2.1! (KEEP), and 2.1 (DELETE), you know that (KEEP) is the default option for the FILE keyword. In the example, if you include the FILE keyword, but do not specify an option, the default option KEEP is applied. A default option also applies to the next higher dotted decimal number. In this example, if the FILE keyword is omitted, the default FILE(KEEP) is used. However, if you hear the lines 2? FILE, 2.1, 2.1.1! (KEEP), and 2.1.1 (DELETE), the default option KEEP applies only to the next higher dotted decimal number, 2.1 (which does not have an associated keyword), and does not apply to 2? FILE. Nothing is used if the keyword FILE is omitted.

* indicates an optional syntax element that is repeatable
The asterisk or glyph (*) symbol indicates a syntax element that can be repeated zero or more times. A dotted decimal number followed by the * symbol indicates that this syntax element can be used zero or more times; that is, it is optional and can be repeated. For example, if you hear the line 5.1* data area, you know that you can include one data area, more than one data area, or no data area. If you

hear the lines 3*, 3 HOST, 3 STATE, you know that you can include HOST, STATE, both together, or nothing.

Notes:

1. If a dotted decimal number has an asterisk (*) next to it and there is only one item with that dotted decimal number, you can repeat that same item more than once.

2. If a dotted decimal number has an asterisk next to it and several items have that dotted decimal number, you can use more than one item from the list, but you cannot use the items more than once each. In the previous example, you can write HOST STATE, but you cannot write HOST HOST.

3. The * symbol is equivalent to a loopback line in a railroad syntax diagram.

+ indicates a syntax element that must be included

The plus (+) symbol indicates a syntax element that must be included at least once. A dotted decimal number followed by the + symbol indicates that the syntax element must be included one or more times. That is, it must be included at least once and can be repeated. For example, if you hear the line 6.1+ data area, you must include at least one data area. If you hear the lines 2+, 2 HOST, and 2 STATE, you know that you must include HOST, STATE, or both. Similar to the * symbol, the + symbol can repeat a particular item if it is the only item with that dotted decimal number. The + symbol, like the * symbol, is equivalent to a loopback line in a railroad syntax diagram.

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