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Virtuoso Visualization and Analysis XL Frequently Asked Questions

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Contents

Virtuoso Visualization and Analysis XL Frequently Asked Questions 5
Tool Setup 6
When I run Virtuoso Visualization and Analysis XL, the default results directory is not the directory from which I started the tool. Why does this happen? 6
How do I change the default style, color, and thickness of a waveform or trace in Virtuoso Visualization and Analysis XL? 6
Can I set, overwrite, or delete bindkey settings in Virtuoso Visualization and Analysis XL? 8
Plotting Graph 10
How do I copy a waveform from one Virtuoso Visualization and Analysis XL window to another? 10
How do I resize subwindows in Virtuoso Visualization and Analysis XL window? . . . 10
How do I plot s-parameter data directly from Virtuoso Visualization and Analysis XL? . 11
How does PSF_WRITE_CHUNK_MODE_ON environment variable work with the tranViolations.violations file? 12
Loading and Saving Graph 13
Is there a SKILL or OCEAN command to open or load a results directory in Virtuoso Visualization and Analysis XL along with the results saved in the graph (.grf) file? . . 13
Is there an OCEAN command that I can use to save a single image of the graph window including all the subwindows? 13
How do I save a graph image or PDF with all graphs plotted in all the subwindows? 14
How do I load waveforms (.grf files) using a SKILL function? 14
Transient Measurement 15
How do I use transient markers to measure the edge characteristics of an edge in relation to the other selected edge? 15

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Virtuoso Visualization and Analysis XL Frequently Asked Questions

This document includes the frequently asked questions and answers related to Virtuoso Visualization and Analysis XL categorized into the following sections:

- Tool Setup
- Plotting Graph
- Loading and Saving Graph

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Tool Setup

This section covers the generic and most frequently asked questions in the Virtuoso Visualization and Analysis XL toolset, which includes Results Browser, Graph, Calculator, and Table:

- When I run Virtuoso Visualization and Analysis XL, the default results directory is not the directory from which I started the tool. Why does this happen?
- How do I change the default style, color, and thickness of a waveform or trace in Virtuoso Visualization and Analysis XL?
- Can I set, overwrite, or delete bindkey settings in Virtuoso Visualization and Analysis XL?

When I run Virtuoso Visualization and Analysis XL, the default results directory is not the directory from which I started the tool. Why does this happen?

When you open Virtuoso Visualization and Analysis XL, it loads the results directory that you used to run the tool in the previous session, regardless of the method you select to run the tool.

This results directory information is saved at the following location in a binary file:

```
~/.config/'Cadence Design Systems, Inc.conf'
```

Note: This file cannot be edited because it is in the binary format.

How do I change the default style, color, and thickness of a waveform or trace in Virtuoso Visualization and Analysis XL?

You can change the style, color, and thickness of a trace by setting the following environment variables in the `.cdsenv` and `.cdsinit` file:

- `envSetVal("viva.trace" "lineStyle" 'string "solid")`

  Valid values are: `solid`, `dot`, `dash`, `dashdot`, `dashdotdot`

  See the Setting the Style of the Traces section for more information.

- `envSetVal("viva.trace" "hiliteColor" 'string "lime")`

  See the Setting the Color of the Traces section for more information.

- `envSetVal("viva.trace" "lineThickness" 'string "fine")`

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Valid values are: `fine`, `medium`, `thick`, `extrathick`

See the Setting the Thickness of the Traces section for more information.

To view the default or current values of these variables, run the following commands in CIW:

- `envGetVal("viva.trace" "lineStyle" 'string)`
- `envGetVal("viva.trace" "hiliteColor" 'string)`
- `envGetVal("viva.trace" "lineThickness" 'string)`

Note: When you change these properties by using environment variables, Virtuoso Visualization and Analysis XL retrieves the color information from its default color bank and does not honor the settings stored in the `display.drf` file.

The above environment variable settings are applied only if you open Virtuoso Visualization and Analysis XL in the stand-alone mode. If you open Virtuoso Visualization and Analysis XL from within ADE, the default style, color, and thickness of a waveform or trace cannot be changed by using environment variables that are specific to Virtuoso Visualization and Analysis XL because the plotted signals are also highlighted in the schematic window. Therefore, you need to update the `display.drf` settings and change the `y0` drawing to `y9` drawing layers.

Perform the following steps to edit the `display.drf` file:

1. In CIW, choose *Tools – Display Resources Manager*.
2. Click *Edit* in the *Display Resources* toolbox.
3. In the *Tech Lib Name* field, specify your technology library name.
4. Search for layer `y0 drawing` and modify the *Line Style* properties. Then, click the *Apply* located at the bottom of the *Layers* column. If you cannot find the `y0` - `y9` layers, select *All* in the layer column.
5. Repeat *Step 4* to change the line style properties for `y1`, `y2`...`y9` drawing layers.
6. Choose *File – Save*.

Note: If you do not have write permissions, you can save a local copy of `display.drf` file in your current directory.

Now, run the following command in CIW to load the modified `display.drf` file:

```
drLoadDrf ./display.drf
```

Below is a snapshot of the `display.drf` file:

```
drDefineDisplay(
```


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```
;( DisplayName )
)
drDefinePacket(
;( DisplayName  PacketName           Stipple    LineStyle  Fill       Outline
[FillStyle])
( display     y0               blank     snadashed  yellow    yellow    outline   )
( display     y1               blank     snadashed  red       red       outline   )
( display     y2               blank     snadashed  green     green     outline   )
( display     y3               blank     snadashed  magenta   magenta   outline   )
( display     y4               blank     snadashed  cyan      cyan      outline   )
( display     y5               blank     snadashed  purple    purple    outline   )
( display     y6               blank     snadashed  orange    orange    outline   )
( display     y7               blank     snadashed  gold      gold      outline   )
( display     y8               blank     snadashed  blue      blue      outline   )
( display     y9               blank     snadashed  silver    silver    outline   )
```

While working in ADE, instead of `display.drf`, if you want that the output plots follow the trace settings defined in the Virtuoso Visualization and Analysis XL, you can set the following environment variable to `nil`.

```
envSetVal("asimenv.plotting" "useDisplayDrf" 'boolean nil)
```

When set to `t`, the `display.drf` settings are followed

For more information see asimenv.plotting in Analog Design Environment L User Guide.

Can I set, overwrite, or delete bindkey settings in Virtuoso Visualization and Analysis XL?

You can overwrite existing bindkey by defining your own bindkey. For example, the bindkey defined to reload graphs in Virtuoso Visualization and Analysis XL is `Ctrl+R`. You can set any other key, say `Shift+P`, instead of `Ctrl+R`, as the bindkey to reload a waveform.

All Virtuoso Visualization and Analysis XL bindkeys are defined in a bindkey file stored at the following location:

```
<inst_dir>/tools/dfII/samples/local/vivaBindKeys.il
```

To view bindkey information, choose *Help – Bindkey Editor* in the Virtuoso Visualization and Analysis XL window. The *Bindkey Editor* form appears. In the left panel of the *Bindkey Editor* form, click the required Virtuoso Visualization and Analysis XL application, such as `vivaBrowser`, `vivaCalculator`, and `vivaGraph`, for which you want to view the

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available bindkeys. The bindkey set for the selected application appears in the right panel of the form.

To add a new bindkey, right-click a row in the right panel and choose *Add New BindKey*.

To delete an existing bindkey, right-click the bindkey in the right panel and choose *Remove BindKey*.

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Plotting Graph

This section covers the following topics:

- How do I copy a waveform from one Virtuoso Visualization and Analysis XL window to another?
- How do I resize subwindows in Virtuoso Visualization and Analysis XL window?
- How do I plot s-parameter data directly from Virtuoso Visualization and Analysis XL?
- How does PSF_WRITE_CHUNK_MODE_ON environment variable work with the tranViolations.violations file?

How do I copy a waveform from one Virtuoso Visualization and Analysis XL window to another?

Starting with the IC6.1.5ISR12 release, you can copy a waveform by dragging it from a source to a destination window. These two windows can be associated with different ADE XL or ADE L sessions.

To copy a waveform:

- Click a trace in the first session to select it.
- Continue to hold the left mouse button and drag the trace to the window of a second Virtuoso Visualization and Analysis XL session.

  You can drag a trace plotted for a particular analysis type to a window that contains the results of the same analysis type. For example, you can drag a trace plotted for a transient analysis to the window that contains the results for a transient analysis.

Note: You can also open multiple results databases in the Results Browser to plot signals by choosing *Window – Assistants – Browser* or *File – Open*. The *Select Waveform Database* form appears. You can select the required signals in this form.

For more information, see Dragging Waveforms Across Multiple Virtuoso Visualization and Analysis XL Sessions in *Virtuoso Visualization and Analysis XL User Guide*.

How do I resize subwindows in Virtuoso Visualization and Analysis XL window?

When you resize the Virtuoso Visualization and Analysis XL window to make it smaller, up to a certain point, the subwindows are also resized accordingly. If you further resize the Virtuoso

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Visualization and Analysis XL window, the subwindows are no longer resized and scroll bars appear to enable you to view the contents of the subwindows.

To resize individual subwindows, you can drag the splitter bars available between subwindows.

You can set the following environment variables in the `.cdsenv` file to define the minimum width and height of the graph window after which the scrollbars appear while resizing the window:

```
viva.graphFrame graphMinWidth string "200" nil

viva.graphFrame graphMinHeight string "140" nil
```

Note: The values shown in the examples above are the default values.

How do I plot s-parameter data directly from Virtuoso Visualization and Analysis XL?

You need to plot and analyze the s-parameter datafile contents to check for problems such as poor resolution and data noise in the following cases:

- If the time domain simulations—pss, harmonic, balance, and transient—fail to converge or do not generate accurate simulation results.
- If the s-parameter data is measured from the lab equipment, Vector Network Analyzer, from the simulation data, or from an EM field solver.

You can plot s-parameter data directly without creating a testbench in ADE and without running a spectre SP simulation by performing the following steps:

- Choose *File – Open Results* or click the directory symbol in Results Browser.

  The *Select Waveform Database* form appears. In this form, select the results directory that contains s-parameter data and click *Open*. The selected results directory is opened in the *Signals* tab.

- Right-click the required s-parameter signal and choose *Plot Signal*.

  The selected s-parameter signal is plotted in the graph window.

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How does PSF_WRITE_CHUNK_MODE_ON environment variable work with the tranViolations.violations file?

The PSF reader and writer supports several different types of PSF data formats, such as, `PSF BINARY`, `PSF GROUP TRANSPOSE`, `PSF ASCII`.

The environment variable `PSF_WRITE_CHUNK_MODE_ON` is used to write `PSF_GROUP_TRANSPOSE` format files as a file set (each file in the set limited to 2GB). This enables simulator to write a transient data set greater than 2 GB.

Device checking data is not written in `PSF_GROUP_TRANSPOSE` format, so the `PSF_WRITE_CHUNK_MODE_ON` does not work in this situation.

Note: The `PSF` library has been updated to remove the 2GB limit for all PSF file formats.

When the transient data is written in `SST2` format (`psf.trn` and `psf.dsn` are the transient files), the `CHUNK` mode works only when the `tranViolations` data is the PSL group transpose format (`pslTranQuery`).

You can run the followign command to find the type of `tranViolations.tran` file:

```
psf -d tranViolations.tran
```

If you run this command on the PSF files in `ampsim.raw` results database, you will see that the `logFile` is the PSL format (`pslMemory`) and `finalTimeOp.info` is `pslBinQuery`. These file formats do not support the `CHUNK` mode.

However, `psf -d tran.tran` returns a value of `pslTranQuery`, which is supported by the `CHUNK` mode.

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Loading and Saving Graph

This section covers the following topics:

- Is there a SKILL or OCEAN command to open or load a results directory in Virtuoso Visualization and Analysis XL along with the results saved in the graph (.grf) file?
- Is there an OCEAN command that I can use to save a single image of the graph window including all the subwindows?
- How do I save a graph image or PDF with all graphs plotted in all the subwindows?
- Can I set, overwrite, or delete bindkey settings in Virtuoso Visualization and Analysis XL?

Is there a SKILL or OCEAN command to open or load a results directory in Virtuoso Visualization and Analysis XL along with the results saved in the graph (.grf) file?

Perform the following steps to open a results directory by using SKILL commands:

1. Create a SKILL script file, `load.il`, as shown below:

   ```
   /*-----*/
   openResults("<path-to-psf>")
   awvLoadWindow(awvCreatePlotWindow() "~/eyeState.grf")
   /*-----*/
   ```

   This script opens the specified results directory and loads the specified `.grf` file in a plot window.

2. Open Virtuoso Visualization and Analysis XL in replay mode with the script file, `load.il`.

   ```
   $ viva -replay load.il &
   ```

Note: If you want to open Virtuoso Visualization and Analysis XL with a particular results directory, type the following command in a terminal window:

```
% viva  -datadir  "<path_to_/psf>"
```

Is there an OCEAN command that I can use to save a single image of the graph window including all the subwindows?

You can use the following SKILL command to create a single image containing all subwindows. This image has the same resolution and appearance as graph window.

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```
saveGraphImage(?window window(22) ?exactCopy t ?fileName "/home/
ashuv/new.jpg" ?saveAllSubwindows t ?saveEachWindowSeparately t)
```

For more information, see saveGraphImage in *OCEAN Reference*.

How do I save a graph image or PDF with all graphs plotted in all the subwindows?

When you save the snapshot of the graph window by selecting the *File – Save Image* menu option, only the selected subwindow is saved.

- To save the graphs plotted in all subwindows as an image, perform the following steps:
  1. Choose *File – Save Image.*
  2. In the *Save Image* form, select the *All subwindows, using <Multiple Files/ Single File>* option.

     Note: Ensure that the *Render exactly as screen* check box is also selected.
  3. Specify a location where you want to save the graph image file and click *Save*.
- To save the graphs plotted in all subwindows as a PDF, perform the following steps:
  1. Choose *File – Print*.
  2. In the *Print* form, click the *Options >>* button.
  3. On the *Graph Options* tab, select *Match window* to save graphs plotted in all the subwindows to a PDF.

  For more information, see Saving and Loading Graphs and Printing Graphs in *Virtuoso Visualization and Analysis XL User Guide*.

How do I load waveforms (.grf files) using a SKILL function?

To load a `.grf` file, use the `awvLoadWindow` SKILL function as shown in the following example. The waveform being loaded is named as `graph.grf`.

```
awvLoadWindow(currentWindow()"/path_to/graph.grf")
```

Alternatively, you can choose the *File – Load Window* menu option to load a `.grf` file.

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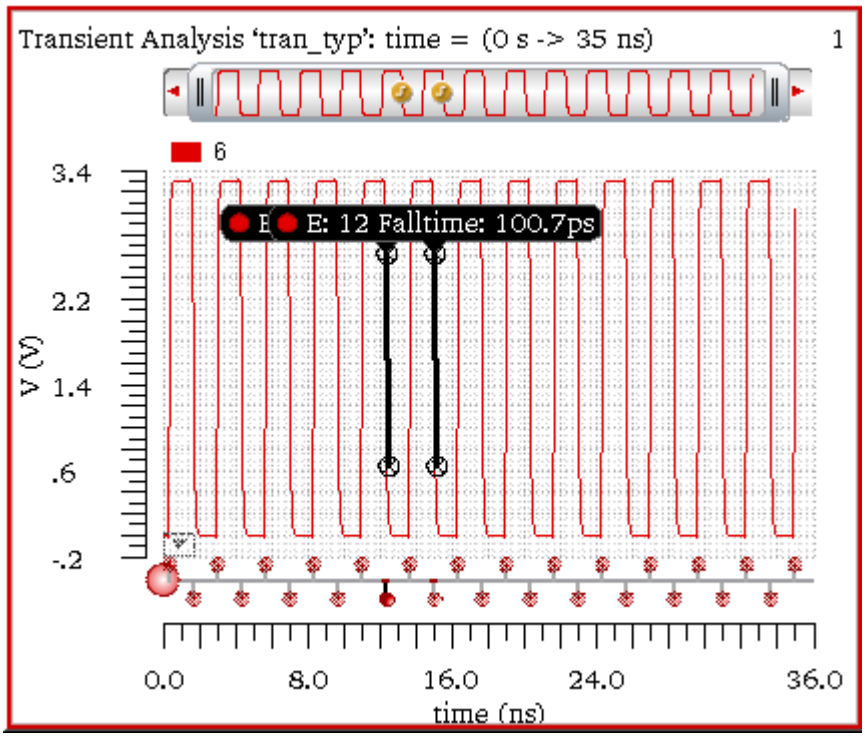
Transient Measurement

How do I use transient markers to measure the edge characteristics of an edge in relation to the other selected edge?

To measure and modify the edge properties of an edge in a trace with respect to the other selected edge, you can create delta marker between the edges. Consider the following scenario where you create two edge markers on the graph on the rising edge numbers 10 and 12 respectively.



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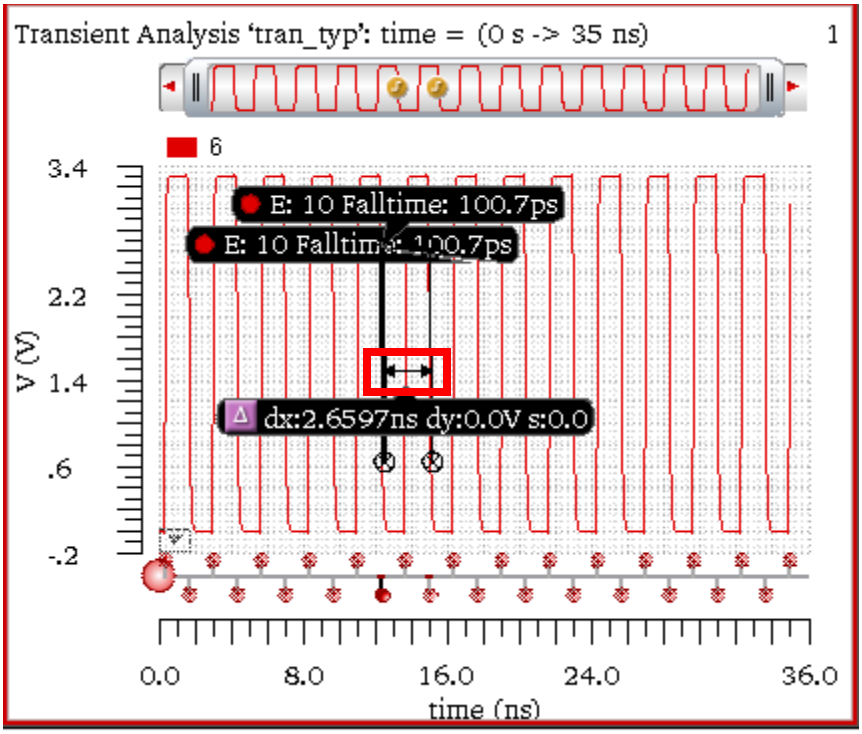
Select both these edge markers using the `Ctrl` key and create a delta marker between them by pressing the bindkey `t`. A delta marker as shown in the figure below is created between the edges.



This delta marker measures the distance between the edge numbers, `10` and `12`. To change the properties of delta marker, right-click the marker line and choose *Delta Marker Properties*.

To view the delta values on different edges on the same trace, you can move one or both the edge markers on the required edges. The delta marker label displays the updated delta values as the edge marker moves. When you select and move both the edge markers using `Ctrl` key, the entire group of marker moves together between the pair of edges.

You can create delta marker between multiple edge markers by selecting required edge markers and pressing the bindkey D.

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