White Paper | AMD FirePro™ Professional Graphics Workstation Buyers Guide

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INTRODUCTION

AMD's Complete Guide to Helping Your Customer Get Exactly the Right Workstation for the Right Price

Today's workstations offer a wealth of options for configuring exactly the system a customer needs, based on the applications the customer is running and how much he or she can spend.

That's great news for customers who have the ability to expertly assess their own needs and choose the best components to meet them. But it can be quite a challenge for customers who don't.

That's where you come in – and where this guide can help.

Everything You Need to Make Quick, Smart Choices

This guide is divided into two parts. First, we've included an overview of all the things you and your customer will want to consider in choosing the components to configure a workstation. Next, we've created a detailed selection chart to assist with one of the key components: graphics cards. The chart includes recommendations based on application requirements and available budget.

Application

Knowing what applications your customer will be running is probably the most important aspect of knowing what workstation configuration to recommend. Someone who uses applications that involve extremely large datasets, for example, will need more power and performance in certain aspects of the system than someone who doesn't. The selection chart that follows was designed with this in mind.

Budget

The other factor to consider is how much money your customer has available to spend. A smaller budget doesn't have to mean a less acceptable solution; it just means you need to know how to make smart choices about where to focus, based on customer priorities. Someone who needs exceptional design visualization capabilities, for example, would do well to invest in high-end components in certain relevant areas and economize in others.

Components Overview: Key Points to Remember

CPU

Customers have two main choices to make when deciding on a CPU: speed, and number of cores. As with all workstation choices, this one depends on how they're going to be using the workstation. For example, for a customer who is running 3D software, CPU speed (GHz) is probably going to be more important for performance than the number of CPU cores. On the other hand, a customer who uses specialized rendering or simulation software is more likely to benefitfrom a relatively large number of cores – as many as 8 or 12 – because more cores generally help make that type of software run more efficiently.

Graphics

It's important to choose a professional graphics card that's been tested, optimized and certified to work with the application or applications that will be running on the workstation. Beyond that, the graphics card should have enough memory to match the application demands: A minimum of 1GB should suffice for most CAD/CAM/CAE software, but applications in compute-intensive areas such as design visualization will need more memory. For customers who routinely use multiple displays, it should also offer multi-display support. The graphics-card selection chart and other material that follow are based on these criteria. In addition, if your customer does require a higher-end graphics card, it's important to choose a high-GHz CPU to go with it. A more powerful CPU will help realize the graphics card's full performance potential.

Storage

Customers have three types of hard drives from which to choose for a workstation: Serial ATA (SATA), a low-cost, large-capacity choice; Solid State Drive (SSD), a higher-cost solution that enables faster access to data; and Serial Attached SCSI (SAS), which works like a SATA drive but offers faster rotation speed for faster data access. The main characteristic to consider is how quickly the customer will be able to access data in the drive. Someone using an application that involves working very large datasets may find it worthwhile to invest in SSD technology. Or you might recommend a combination of storage types, with SSD for current active projects and a SATA drive for storage.

Memory

CAD/CAM/CAE applications run best on workstations with plenty of memory – at least 8GB, and preferably 16GB or more – to quickly load large datasets. Applications that are used specifically for rendering, simulation and other compute-intensive operations will benefit from having even more than that. Customers who are going to use a workstation for these types of applications will also want to strongly consider Error Checking Code (ECC) memory to reduce the possibility of data corruption.

Selection Chart: AMD FirePro™ Professional Graphics

		Entry	Mid	High
AccelerEyes/Mathworks	MATLAB	4900	5900	7900
Adobe®	After Effects ®	3900	4900, 5900	7900
Adobe®	Photoshop®	4900	5900	7900
Adobe®	Premiere Pro	4900	5900	7900
Altair Engineering	HyperWorks	4900	5900	7900
ANSYS	ANSYS	4900	5900	7900
ANSYS	FLUENT	4900	5900	7900
ANSYS	Workbench	4900	5900	5900, 7900
Autodesk®	Building Design Suite	4900	5900	5900
Autodesk®	Design Suite	4900	5900	7900
Autodesk®	Entertainment Creation Suite	5900	5900	7900, 8800
Autodesk®	Factory Design Suite	4900	5900	7900
Autodesk®	Infrastructure Design Suite	4900	5900	7900
Autodesk®	Plant Design Suite	4900	5900	7900
Autodesk®	Product Design Suite	4900	5900	7900, 8800
Autodesk®	3ds Max®	4900	5900	7900
Autodesk®	Alias	5900	5900	7900
Autodesk®	AutoCAD / AutoCAD LT®	3900	4900, 5900	5900
Autodesk®	Inventor®	3900	4900, 5900	7900
Autodesk®	Maya®	4900	5900	7900, 8800
Autodesk®	Moldflow®	4900	5900	7900, 8800
Autodesk®	MotionBuilder®	3900	4900, 5900	7900
Autodesk®	Mudbox®	4900	5900	7900, 8800
Autodesk®	Navisworks®	4900	5900	7900
Autodesk®	Revit	4900	5900	5900
Autodesk®	Showcase®	4900	5900	7900, 8800
Autodesk®	Softimage	4900	5900	7900, 8800
Bentley	MicroStation	3900	4900, 5900	7900
BETA CAE Systems S.A.	ANSA	4900	5900	7900
Chaos Group	Vray	5900	5900	7900, 8800, 9800
CEI	EnSight	4900	5900	7900
COMSOL	COMSOL Multiphysics	4900	5900	7900
Dassault Systèmes®	3DVIA Composer	3900	4900, 5900	5900
Dassault Systèmes®	CATIA®	4900	5900	7900
Dassault Systèmes®	DELMIA®	4900	5900	7900
Dassault Systèmes®	ICEM surf	4900	5900	7900
Dassault Systèmes®	SIMULIA Abaqus	5900	7900	7900
Dassault Systèmes®	SIMULIA Abaqus - OpenCL			9800
Dassault Systèmes®	SolidWorks®	3900	4900, 5900	7900
DEM Solutions	EDEM			9800
Esri	ArcGIS	4900	5900	7900
eyeon	Fusion	5900	5900	7900, 8800
IMSI/Design	TurboCAD	3900	4900	5900
Luxology	modo	3900	4900, 5900	7900
Missler	TopSolid	3900	4900, 5900	5900
MSC.Software	Patran	4900	5900	7900

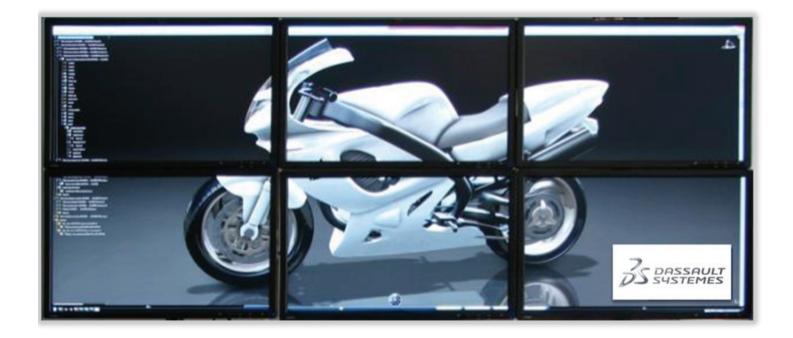|		Entry	Mid	High
MSC.Software	SimXpert	4900	5900	7900
NEMETSCHEK	Allplan	3900	4900, 5900	7900
OPTIS	THEIA-RT	5900	7900	9800
Planit	Edgecam	3900	4900, 5900	5900
Planit	Vero	3900	4900, 5900	5900
PTC	Creo	3900	4900, 5900	7900
PTC	Creo Elements/Direct	3900	4900, 5900	7900
Redway3D	RedSDK	3900	4900, 5900	5900
Robert McNeel & Assoc.	Rhinoceros	3900	4900, 5900	5900
Schlumberger	Petrel	4900	5900	7900
Side Effects Software	Houdini	4900	4900, 5900	7900
SIEMENS PLM Software	FEMAP	3900	4900, 5900	5900
SIEMENS PLM Software	Tecnomatix	4900	5900	7900
SIEMENS PLM Software	NX	4900	5900	7900
SIEMENS PLM Software	Solid Edge	3900	4900, 5900	5900
SIEMENS PLM Software	Teamcenter Visualization	3900	4900, 5900	7900
SpaceClaim	SpaceClaim	3900	4900, 5900	5900
The Foundry	Nuke	5900	7900	9800
Vizrt	Viz Artist	8800	8800	8800

AMD Eyefinity Multi-Display Technology Setup Guide for AMD FirePro™ Professional Graphics

Superior visual experience for demanding applications

AMD Eyefinity multi-display technology shatters the cost and complexity barriers of immersive visualization giving you more visual real estate to view large scale models and multiple applications at the same time in a single, large workspace.[1]

You can operate up to six high-resolution displays simultaneously and independently, flexibly configured in various combinations of landscape and portrait orientations. Group multiple monitors into a large integrated display surface, enabling windowed and full-screen 3D applications, images, and video to span across multiple displays as one desktop workspace. Multiple display outputs enable multiple displays with independent display resolution, refresh rate, and display rotation settings.

AMD Eyefinity multi-display technology helps you get more things done. It allows you and others on your team to physically and simultaneously display and view multiple documents or applications for efficient discussion and collaboration. Multi-tasking is easy since you no longer need to flip documents and applications back and forth between windows. It helps improve accuracy and speed your workflow.

This guide will help you with the configuration of multiple displays connected to your AMD FirePro™ professional graphics card and the software configuration utilities included with your card.

[1] AMD Eyefinity technology works with applications that support non-standard aspect ratios, which is required for panning across multiple displays. To enable more than two displays, additional panels with native DisplayPort connectors, and/or DisplayPort compliant active adapters to convert your monitor's native input to your cards DisplayPort or Mini-DisplayPort connector(s), are required. AMD Eyefinity technology can support up to 6 displays using a single enabled AMD FirePro™ graphics card with Windows Vista or Windows 7 operating systems – the number of displays may vary by board design and you should confirm exact specifications with the applicable manufacturer before purchase. SLS ("Single Large Surface") functionality requires an identical display resolution on all configured displays.

Hardware Setup and Supported Configurations:

AMD Eyefinity Technology Requirements

- AMD FirePro professional graphics card supporting AMD Eyefinity technology
  - o ATI FirePro 2270/2460
  - o ATI FirePro V3800/V4800/V5800/V7800/V8800/V9800
  - o AMD FirePro V3900/V4900/V5900/V7900
- Up to 6 displays that support either DisplayPortTM, DVI, HDMI or VGA
- Microsoft Windows Vista® or Windows® 7

Connecting Displays

AMD Eyefinity technology is closely aligned with AMD's implementation of DisplayPort technology providing the flexibility and upgradability modern user's demand. A variety of display configurations are possible using DVI, HDMI, or VGA and can be combined with DisplayPort for a total of up to six monitors, depending on the graphics card configuration.

AMD Eyefinity technology leverages DisplayPort and its ability to easily scale to drive multiple displays from a single clock source.You can connect up to two non-DisplayPort monitors at one time to an AMD Eyefinity technology-enabled graphics card using non-DisplayPort connections or passive DisplayPort dongles. To enable and drive three or more non-DisplayPort monitors at one time, the additional non-DisplayPort monitors must be connected with an active DisplayPort dongle.

The most optimal multi-monitor configuration is for all displays to be identical and support DisplayPort. If using DVI, HDMI or VGA then it may be necessary to use a DisplayPort adapter to make the connection. Depending on the card model, native DisplayPort connectors and/or validated DisplayPort active or passive adapters may be required to convert your monitor's native input to your card's DisplayPort or Mini-DisplayPort connector's.

DisplayPort-to-VGA   DisplayPort-to-Dual-Link DVI   DisplayPort-to-Single-Link DVI   DisplayPort-to-HDMI

Passive vs Active Dongles

Passive dongles use the DisplayPort connection to receive non-DP signaling from the connector and they 'passively' adjust the signals to be compliant with the connected monitor. Passive dongles are considered legacy connections, not DisplayPort connections, therefore they do not fulfill the DisplayPort connection requirement mentioned previously and cannot be used to enable three or more displays. They do, however, offer an affordable solution to adapt legacy displays to DisplayPort connections.

Active dongles use true DisplayPort signaling to 'actively' translate and re-transmit the signals as the required outputs. Because they use the true DisplayPort signaling, they are considered a DisplayPort connection and meet the requirements to enable three or more displays.

AMD Eyefinity Technology Validated Dongles

Validated products undergo extensive synthetic and real-world testing to help ensure a good customer experience. Validated products include components, and software that are critical for an optimal experience with AMD Eyefinity technology.

See **http://support.amd.com/us/eyefinity/Pages/eyefinity-dongles.aspx** for a complete list of validated products.

Grouping Displays

AMD Eyefinity technology leverages both hardware and software. In terms of hardware, AMD FirePro™ GPUs allow up to 6 displays to be driven from a single GPU. Products that do not support AMD Eyefinity have a maximum of two display pipelines, while AMD Eyefinity technology supports up to 6 display pipelines per GPU depending on the AMD FirePro board display output capabilities.
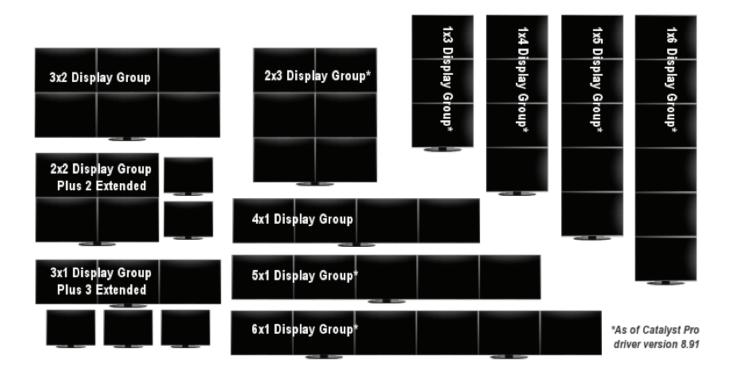
In terms of software, there are several different configuration options. Traditional extended and cloned display modes are all still available, but with AMD Eyefinity technology, if the displays can support the same resolutions then they can also be stitched together into a "single large surface" or "Display Group" (as described by the AMD Catalyst Control Center™ software). When a Display Group is created, it appears to the operating system and application as a single monitor with a very large resolution.

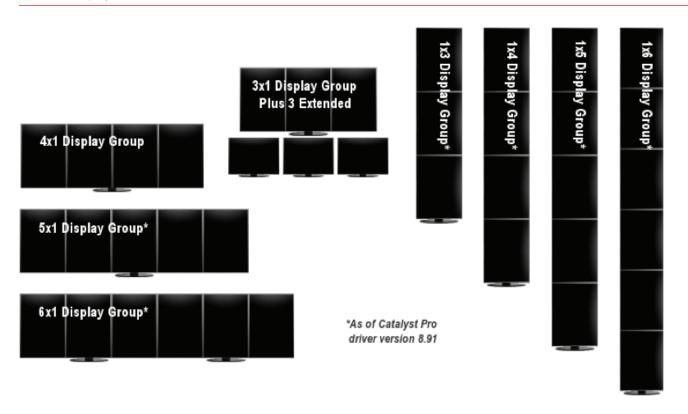*Supported Display Groups from a Single GPU***

Grid Configuration	AMD FirePro™	AMD Radeon™	
W		Notebook	Desktop
6x1 Landscape*	Yes	No	No
6x1 Portrait*	Yes	No	No
1x6 Landscape*	Yes	No	No
1x6 Portrait*	Yes	No	No
5x1 Landscape*	Yes	No	Yes
5x1 Portrait*	Yes	No	Yes
1x5 Landscape*	Yes	No	Yes
1x5 Portrait*	Yes	No	Yes
4x1 Landscape	Yes	Yes	Yes
4x1 Portrait*	Yes	Yes	No
1x4 Landscape*	Yes	Yes	No
1x4 Portrait	Yes	Yes	Yes
3x1 Landscape	Yes	Yes	Yes
3x1 Portrait	Yes	Yes	Yes
1x3 Landscape	Yes	Yes	Yes
1x3 Portrait	Yes	Yes	Yes
2x1 Landscape	Yes	Yes	Yes
2x1 Portrait	Yes	Yes	Yes
1x2 Landscape	Yes	Yes	Yes
1x2 Portrait	Yes	Yes	Yes
3x2 Landscape	Yes	No	Yes
2x3 Landscape*	Yes	No	No
2x2 Landscape	Yes	Yes	Yes

* As of AMD Catalyst™ Pro driver version 8.91
** The number of displays outputs available will vary from product to product impacting the display grid support (ex. a 6x1 display grid requires a AMD graphics card with six DisplayPort outputs)

Landscape: Six Displays

3x2 Display Group

2x3 Display Group*

1x3 Display Group*

1x4 Display Group*

1x5 Display Group*

1x6 Display Group*

2x2 Display Group
Plus 2 Extended

4x1 Display Group

3x1 Display Group
Plus 3 Extended

5x1 Display Group*

6x1 Display Group*

*As of Catalyst Pro
driver version 8.91

Portrait: Six Displays

4x1 Display Group

3x1 Display Group
Plus 3 Extended

1x3 Display Group*

1x4 Display Group*

1x5 Display Group*

1x6 Display Group*

5x1 Display Group*

6x1 Display Group*

*As of Catalyst Pro
driver version 8.91

AMD Catalyst™ Pro Control Center:

The instructions below will guide you through the process of using the AMD Catalyst™ Pro Control Center (CCC) to configure and manage your displays

Creating and Arranging Desktops (Standard View)

1. Launch CCC software by right clicking on the desktop background to access the desktop context menu or by double clicking the icon in the system tray.

2. Select Desktops and Displays → AMD Eyefinity Multi-Display → Create Eyefinity Display Group.

3. Select one of the available desktops to start creating a display group.

Select a layout for the display group.

4 Displays (2 x 2)

4. Choose a layout from the drop down list.

Click Arrange to correct the relative position of the displays in your display group, if required.

Arrange

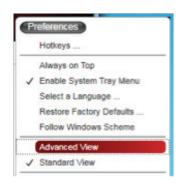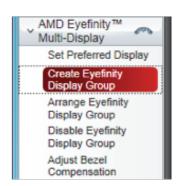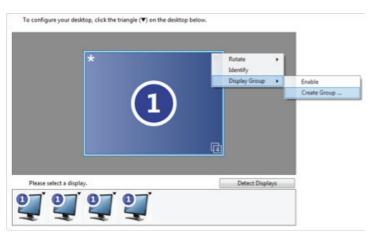5. If the display configuration is out of order then click Arrange to correct the relative position.

In the group below, click the position corresponding to the display lit in blue.

Cancel   Done

6. Select the grid position that corresponds with the physical position of the display with the blue background.

Creating and Arranging Desktops (Advanced View)

1. Launch CCC software by right clicking on the desktop background to access the desktop context menu or by double clicking the icon in the system tray.
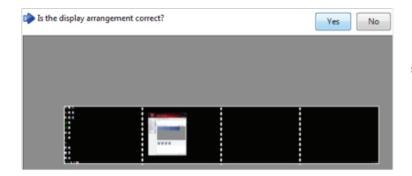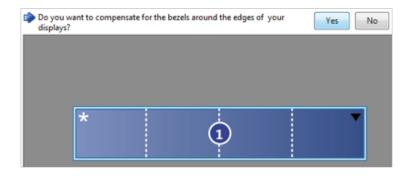

2. In CCC, click Preferences and select Advanced View

3. Select AMD Eyefinity Multi-Display → Create Eyefinity Display Group

4. Right-click on the display or select the black triangle ▼ to open the context menu → select Display Group → select Create Group...

5. If the display configuration is out of order then click Arrange to correct the relative position.

6. If bezel compensation is desired, select Yes and use the tool to align the displays (skip to next section)

7. Once completed you can browse back to AMD Eyefinity Multi-Display to create or make changes to display groups
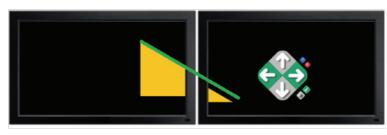
Adjust Bezel Compensation

Once a display group has been created you can enable the bezel compensation feature to properly align the desktops and account for the space between them. This overcomes the "jump" effect allows for a smoother transition when objects move between displays.
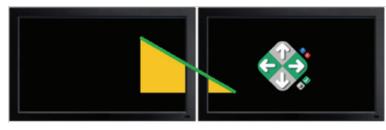
Bezel compensation is only available when the displayed attached to the group have a DPI tolerance within 5%. For example bezel compensation would not be available when a 22" and 24" display which both support 1920x1080 are used to create a 2x1 or 1x2 display group.

1. Select Desktops and Displays → AMD Eyefinity Multi-Display → Adjust Bezel Compensation

2. Click on the arrow buttons to adjust the vertical and horizontal alignment of the test pattern so that it appears to be continuous across the displays

3. Select the green checkmark once the alignment appears correct

AMD HydraVision™ Technology

AMD HydraVisionTM technology is designed for desktop and workspace management in multi-display environments. It consists of the following components:

● Desktop Manager lets you control where application windows and dialog boxes appear and how they are maximized across multiple displays.

● Multi Desktop lets you create virtual desktops to provide multiple layers of workspace.

● HydraGrid lets you control where application windows appear on your display.

Access to these components is provided through the AMD HydraVision group in Standard View and Advanced View. In Standard View, the group can be found under Desktops and Displays and AMD FirePro.

Note: AMD HydraVision is available only if the AMD HydraVision software component is installed with the AMD Catalyst Pro Control Center software.

[For the purpose of this guide the focus is on using HydraGrid.]

HydraGrid

The HydraGrid component of AMD HydraVision is designed for window management across large, multiple, or virtual desktops.

To apply grid layouts to your desktops, you must first enable HydraGrid support. Toremove grid layouts from your desktops and restore application windows to their original position and size, disable HydraGrid support.

Enabling/Disabling HydraGrid

1. Navigate to the HydraVision→HydraGridpage.

   In Standard View, this page appears under the **Desktops and Displays** or **AMD FirePro** group in the main navigation page.

2. In the HydraGrid Control area, select or clear Enable HydraGrid.

3. Click Apply.

Changing and Editing Grid Layouts

1. Navigate to the HydraVision→HydraGridpage.

2. In the HydraGrid Control area, click Edit HydraGridto enable edit grid mode. Alternatively, right-click the HydraGrid system tray icon and select Edit Grid.

3. In the Grid Control Settings dialog, click Preset Grid Layout.

4. From the selection of preset layouts, click the button that best matches the desired layout.

   If your system is configured with an AMD Eyefinity display group, the Same as Eyefinity Displays button becomes available. Click this to create a layout based on the current display group configuration.

5. Click OK.

SUMMARY

See More and Do More with AMD Eyefinity Multi-Display Technology

AMD Eyefinity multi-display technology launches a new era of panoramic computing, helping to boost productivity and multitasking with innovative graphics display capabilities supporting massive desktop workspaces, creating ultra-immersive computing environments with super-high resolution gaming and entertainment, and enabling easy configuration and supporting up to six independent display outputs simultaneously.

To learn more

Contact your country/regional AMD representative or go to
http://www.amd.com/us/products/workstation/Pages/workstation.aspx

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