

Workstation vs. Desktop PC

Make the Right Professional Choice

Whitepaper



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IT organizations are faced with a choice between desktop PCs and workstations for running professional applications. This whitepaper explains some of the key reasons and why a professional application should be run on a workstation.

In practice many users have observed the following:

- Powerful business applications may run slowly and inadequately on desktop PCs or uncertified workstations, since the hardware is not optimized for the task at hand.
- Minutes instead of seconds may be spent waiting for files to open on a PC, or for 3D models or video edits to compile, due to insufficient processing power in an uncertified workstation.
- Professional software, such as SOLIDWORKS 2014 may automatically disable several features during installation on desktop PCs and uncertified workstations.
- Sluggish processing, slow response to mouse inputs, and even blue screens may be experienced due to maxed-out memory and hardware components that are designed for standard office use.

To mitigate these risks many have chosen ISV-certified Lenovo ThinkStations. Organizations using desktop PCs or generic, uncertified workstations to run professional applications such as AutoCAD®, 3ds Max®, SOLIDWORKS and Adobe Premiere should seriously consider replacing them with certified professional workstations, thus ensuring superior performance, reliability and ROI.

ISV-certified workstations deliver higher performance and reliability

Many factors go into the selection of a professional workstation, but the key to ensure it delivers maximum usability and reliability is **Independent Software Vendor (ISV) certification**. Not all workstation suppliers care about certification.

ISV certification provides assurance that a workstation and its various components work seamlessly with leading industry applications, enabling users to be as productive as possible.

To obtain ISV certification, workstation manufacturers submit their products to a battery of tests on the operating system, hardware, and graphics drivers. Separately, dozens of graphics cards from different manufacturers are also tested

with different applications for both reliability and performance.

ISV testing focuses on three key functional aspects of a professional workstation:

User experience

Testing is designed to ensure a workstation performs as users expect. For example, menus must appear correctly with no blacked-out areas or overlapping menus; graphics and numbers must render properly; and mouse and touchscreen actions must be accurate.

Environment Support

Workstation performance is measured using the software applications it will likely be running. For a workstation

to achieve ISV certification, dozens of possible user configurations are simulated, and the software must perform to pre-defined minimum standards.

Graphics

New graphics cards, updated driver versions and new software releases are tested to ensure compatibility between the drivers and the applications.

Every member of the Lenovo ThinkStation family and ThinkPad Mobile Workstation family is ISV tested and certified, and is recognized by third-party studies as the most reliable in the industry. Professionals rely on them to ensure maximum efficiency, productivity and ROI.

Professional SOLIDWORKS users benefit from certified workstations



SOLIDWORKS is a popular suite of software tools used by engineers, designers, and other professionals at over 190,000 companies around the world¹. It is an ideal software application to illustrate the ISV testing process since it is used for intense computing applications such as 3D modelling and engineering design – mission critical applications that require a high level of usability, reliability and overall performance of a workstation.

Lenovo ThinkStation workstations are tested for ISV certification using SOLIDWORKS 2014, among other applications, running both 32-bit and 64-bit Windows, as well as previous Windows versions.

Following are some of the factors and considerations that go into awarding ISV certification to a workstation.

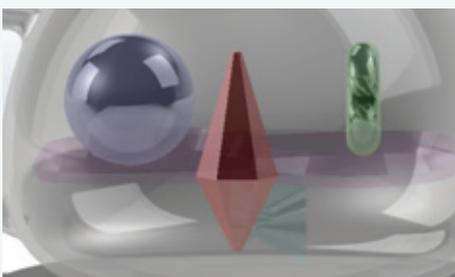
Feature Availability: With SOLIDWORKS, as with many professional software applications, several features are automatically disabled during installation on workstations that lack ISV certification. These features allow clearer review of design, significantly improved user productivity, and help to avoid design errors. For example:

Order Independent Transparency

It is a SOLIDWORKS feature that applies transparency to models so that overlapping areas blend properly. Without this feature, SOLIDWORKS users are forced to create models with less accurate transparent areas.



With Order Independent Transparency on certified workstations



Without Order Independent Transparency

RealView® Graphics

Enables hardware support from the graphics card for advanced shading in real-time, providing a more realistic model display. Without RealView, users need to run a separate rendering process to get a similar result, taking significantly more time.



Advanced shading in real-time with RealView® Graphics on certified workstations



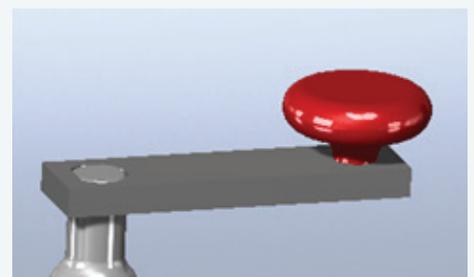
Compromised shading due to disabled RealView® Graphics on uncertified workstations

Full-Screen Anti-Aliasing (FSAA)

Removes the jagged edges of rendered polygons, making them appear smoother, and the overall models much more realistic. Without FSAA, engineers and designers are forced to create lower-quality models.



Anti-aliased edges of rendered objects using FSAA on certified workstations



Aliased edges visible due to disabled FSAA on uncertified workstations

Those were just a few examples of SOLIDWORKS features that will not be fully utilized on uncertified workstations, and there are many others. While SOLIDWORKS will run on uncertified machines, users won't have access to the full feature set, and won't be able to realize the full value of their software or workstation purchase.

Risk of Serious Issues

Workstations that are not ISV certified are likely to experience serious usability issues when running professional software packages like SOLIDWORKS.

For example:

- Blue screens, freezing or crashing
- Distortions or drop-outs from on-screen images
- Mouse pointers that don't move
- Out-of-place menu options
- Transparencies that incorrectly appear solid

The end result, in any case, is a serious loss of productivity and reduced value of the software. ISV-certified workstations like the Lenovo ThinkStation family do not experience these issues.

Support Considerations

Even users who do have ISV-certified workstations can experience issues with SOLIDWORKS or any software. When they do, finding a solution for a certified workstation is much easier because the ISV certification eliminates a wide range of potential issues. ISVs are not required to provide support for all problems and, if they believe an issue is the result of incompatible hardware or software on an uncertified workstation, they are less likely to offer a viable solution.

ThinkStation Workstations Give Users an All-important Edge

Not all workstations live up to the expectations of professional users since they are not subject to the stringent ISV testing process. Workstations such as Lenovo's ThinkStation family and ThinkPad Mobile Workstation are tested thoroughly on major software and platforms for a wide range of demanding tasks such as 3D modeling, financial modeling and analysis, product design, geological surveys, animation, video editing, medical imaging, and much more.

Uncertified configurations will run SOLIDWORKS, but important features will likely be disabled, reducing the value of their software and workstation purchase.

In addition to certification, IT organizations choosing Lenovo P Series ThinkStations will gain other benefits.

These include:

1. Ease of deployment and upgrades with the modular tool-less design with touch points, making drive or card changes quick and simple.
2. Exceptional performance with the latest Intel® processors and Nvidia graphics cards.
3. ECC memory capability which allows for fewer blue screens, and other memory error issues.
4. The most reliable workstation the market. This is critical to effective engineering, allowing engineers to be more confident in their schedule commitments, and not experience the frustration and schedule impact they would find with others.
5. P series run cooler and quieter. Cooler not only provides better reliability but also allows users to better leverage Intel Turbo Boost capability, again helping with performance. They run quieter allowing their office environment to be quiet and conducive to a creative and innovative work environment.
6. Diagnostic system accessed by unique cell phone application to monitor your workstation and much more.

Together, ThinkStation performance, reliability, and usability extract immense value from ISV certification. They also represent the reason organizations should look to workstations instead of desktop PCs to run their mission critical business applications.





For more information on Lenovo ThinkStation workstations, please visit www.lenovo.com/thinkstation