A workstation that runs demanding design and engineering apps and can hide on your desk

The Intel Xeon E-2286M processor-powered Intel NUC 9 Pro handled common tasks in 20 professional apps without crashes or significant issue

Digital workflows for media and engineering professions typically involve apps that demand significant computing resources. Some systems might be able to handle some of your apps but not others, and ensuring your system meets your app requirements can be time-consuming.

At Principled Technologies, we got our hands on one of the latest next units of computing (NUCs) from Intel® to see if it could handle 20 demanding apps. The Intel NUC 9 Pro we tested featured an Intel Xeon® E-2286M processor, and the apps feature prominently in workflows for media and entertainment as well as in architecture, engineering, and construction (AEC) workflows. They came from independent software vendors (ISVs) such as Adobe®, Autodesk®, and Siemens®. The Intel NUC ran each of the 20 apps without issue, and allowed us to perform basic functions that users might routinely do. If your organization uses one or more of the apps we tested, our validation could reduce the time and effort you would spend checking the system requirements for each app.

This report explains our testing and shows how the Intel Xeon E-2286M processor-powered Intel NUC 9 Pro could benefit your studio or firm.

Run and use demanding apps without failure

Setup

Common actions

Closure

About the Intel NUC 9 Pro powered by the Intel Xeon E-2286M processor

The Intel NUC 9 Pro keeps its compute resources confined to a small design while running computer-aided design (CAD) apps. The Intel NUC could occupy minimal space either on a desk or mounted under one. Its small physical presence and app-running capabilities could also make it an excellent choice to run an interactive kiosk or digital display.

The Intel NUC we tested featured an NVIDIA® Quadro® P2200 discrete graphics card. You could connect four 5K displays to the Intel NUC. The graphics card has a Pascal GPU with 1,280 Compute Unified Device Architecture (CUDA) cores and 5GB GDDR5X on-board memory. The combo of the Intel Xeon processor and the NVIDIA graphics card allowed the Intel NUC to run the graphics-intensive apps we tested and render images and objects without crashing.

The Intel NUC we tested also featured 512GB Intel SSD 760p Series drives as well as two Thunderbolt and Ethernet ports each. For connectivity, the system had six USB 3.0 ports, two USB Type-C™ 3.1 ports, one HDMI® port, and four DisplayPort™ receptacle.

How we tested

Other than two apps from VMware, the test scenario for each app had three stages. We first downloaded and installed the app (setup). After successfully executing the scenarios involving at least one task or action that a user might normally do (common actions), we saved our work and closed the app (closure). We considered a scenario a success when we could complete each stage without issue – the system did not crash or experience a performance issue.

In the VMware app scenarios, we did not perform common actions or close the apps. End users in these professional workflows typically would not use or close the VMware apps because they function to create a virtual desktop environment.

Some apps we tested are part of the design or engineering workflow for product lifecycle management (PLM), and some apps play a role in media and content creation. Each of the apps often require significant processing power from a system to effectively handle the work that professionals do. Our goal was to see if the Intel Xeon E-2286M processor-powered Intel NUC could effectively handle the necessary apps for some of these workflows. Our findings could reduce your organization's need to verify that the latest Intel NUC can run your professional apps from ISVs.
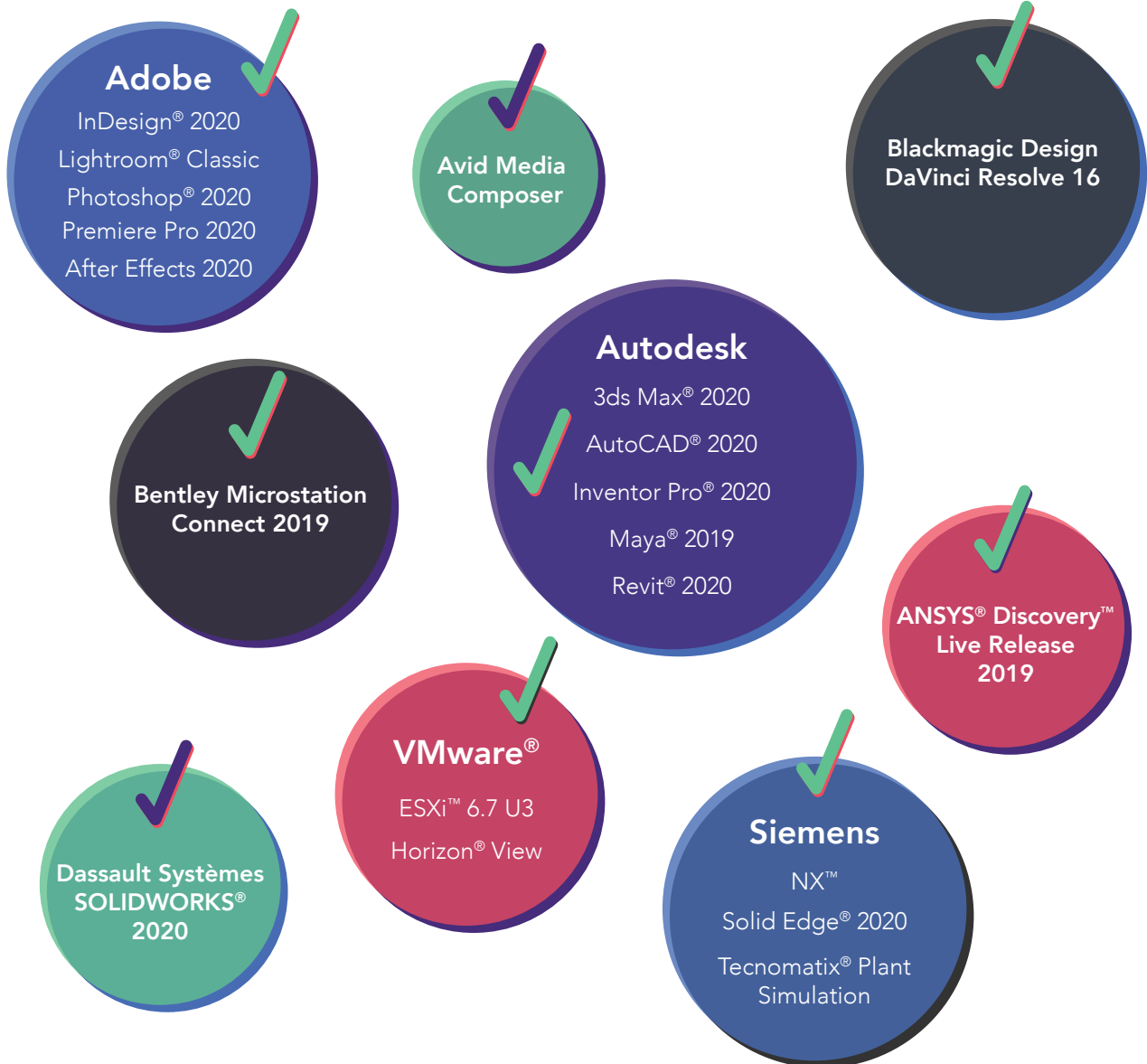
In each scenario, we aimed to use the most recent versions of the compute-intensive apps.

What we found

The Intel NUC successfully ran each of the apps we tested. We proved that whether your studio uses Adobe Premiere® Pro and After Effects®, Avid® Media Composer®, or DaVinci Resolve, the Intel Xeon E-2286M processor-powered Intel NUC can fit right into your workflows. You can set up the system as a shared PC for multiple designers or engineers, or as a dedicated machine assigned to specific users.

Some of the functionality of the tested apps overlapped. Being able to run different apps with similar functionality speaks to the computing power of the Intel NUC 9 Pro. The system combines the server-grade Intel Xeon E-2286M processor with an NVIDIA GPU to safely run these compute-intensive apps and handle professional-grade workflows.

The Intel NUC ran these 20 programs successfully:

Adobe
InDesign® 2020
Lightroom® Classic
Photoshop® 2020
Premiere Pro 2020
After Effects 2020

Avid Media Composer

Blackmagic Design DaVinci Resolve 16

Bentley Microstation Connect 2019

Autodesk
3ds Max® 2020
AutoCAD® 2020
Inventor Pro® 2020
Maya® 2019
Revit® 2020

ANSYS® Discovery™ Live Release 2019

Dassault Systèmes SOLIDWORKS® 2020

VMware®
ESXi™ 6.7 U3
Horizon® View

Siemens
NX™
Solid Edge® 2020
Tecnomatix® Plant Simulation

Details on our scenarios

For more detail on our testing scenarios, please see the science behind this report.

Adobe products

Professionals use the Adobe desktop apps we tested for work in content creation fields—film, photography, graphic design, and web design, among others.

InDesign

Graphic designers and other artists use InDesign to create, edit, and format graphically intensive documents for publishing. Readers can view the documents as PDFs or in printed form. In this scenario, we created a new document, added a picture and text, and exported the document as a PDF.

Lightroom Classic

Photographers use Lightroom to edit and manage photos. For our scenario, we imported photos from a folder and merged them into a panoramic image. After the app merged the photos, we exported the file as a JPEG at 100% quality. This is something that a photographer who shoots in RAW might do, particularly a travel, nature, or architectural photographer. The photographer could then further edit the JPEG in Adobe Photoshop.

Photoshop

Photoshop allows creative types to manipulate images. It has some of the same features as Lightroom, but allows creatives to edit at the pixel level for more granular manipulation. Creators can use Photoshop to pull multiple images together into a composite or blend high-contrast images into a high dynamic range (HDR) photo.

For this scenario, we selected five HDR files and merged them together. We then exported the picture as a JPEG at 100% quality. The Intel NUC handled the scenario well, allowing us to perform the actions without issue.
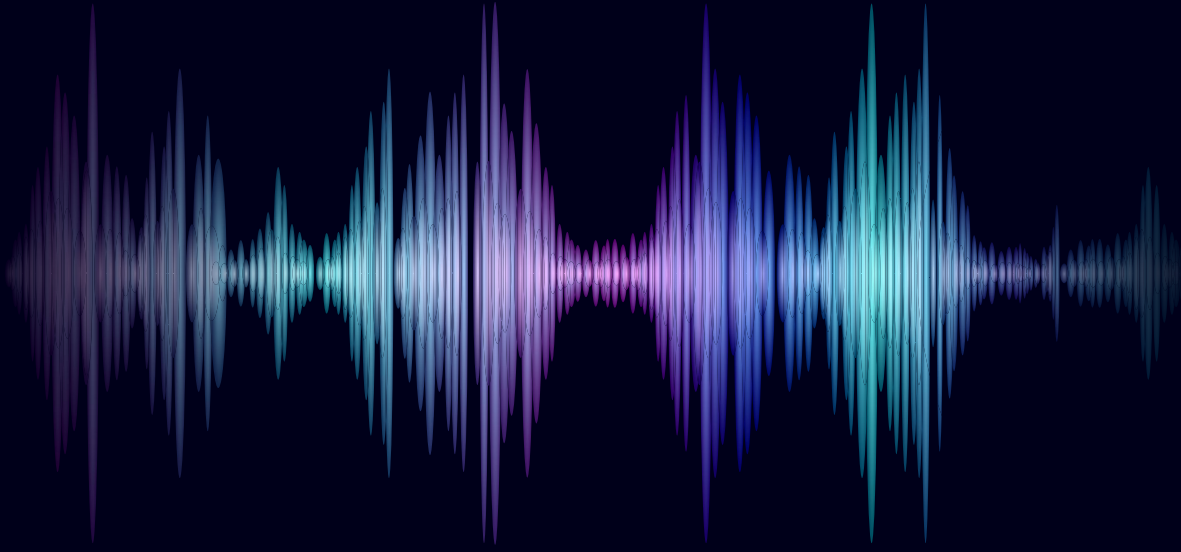
Premiere Pro

Premiere Pro allows videographers and video editors to edit footage. For this scenario, we created a new project, imported a RED 4K RAW video file, formatted the video to H.264 for HD video and audio, and exported the file. This is something a videographer who shoots in 4K might do if they need to edit video and audio for HDTV.

After Effects

For this scenario, we added a keyframe to set the parameters for an effect, moved it to a new location in the video timeline, generated motion graphics, and rendered the file. A videographer, video editor, or graphic designer creating or collaborating on a commercial or video for a kiosk might perform the actions in this scenario.
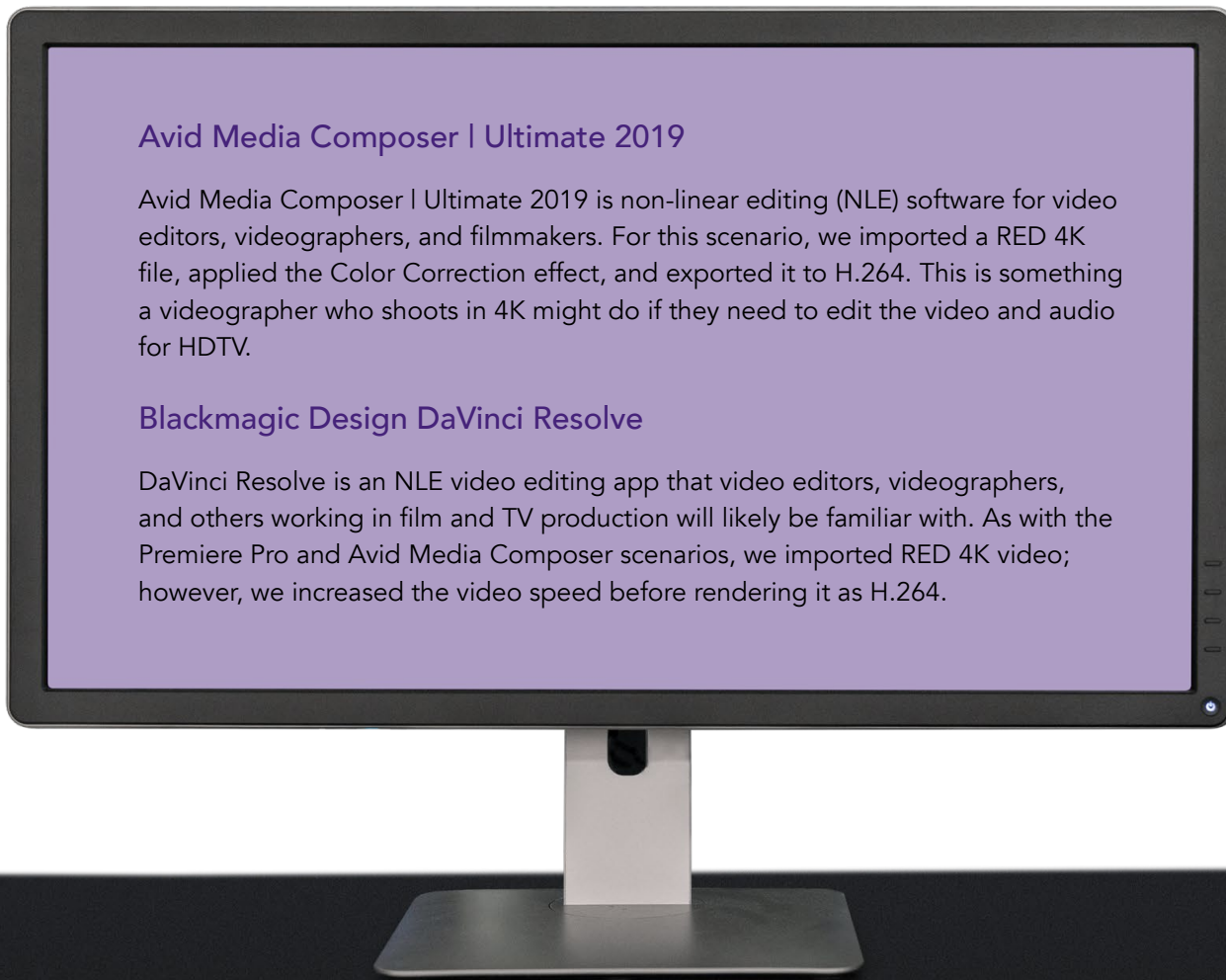
Avid Media Composer | Ultimate 2019

Avid Media Composer | Ultimate 2019 is non-linear editing (NLE) software for video editors, videographers, and filmmakers. For this scenario, we imported a RED 4K file, applied the Color Correction effect, and exported it to H.264. This is something a videographer who shoots in 4K might do if they need to edit the video and audio for HDTV.
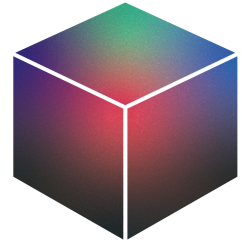
Blackmagic Design DaVinci Resolve

DaVinci Resolve is an NLE video editing app that video editors, videographers, and others working in film and TV production will likely be familiar with. As with the Premiere Pro and Avid Media Composer scenarios, we imported RED 4K video; however, we increased the video speed before rendering it as H.264.

ANSYS Discovery Live Release 2019

ANSYS software helps engineers and others develop physical and digital products. The app we tested, ANSYS Discovery Live, "provides instantaneous 3D simulation, tightly coupled with direct geometry modeling, to enable interactive design exploration and rapid product innovation."[1] For our scenario, we started a fluid flow simulation that showed wind flow over a dump truck. We verified that it ran without issue.

Autodesk

According to Autodesk, the company "makes software for people who make things."[2] Creators use Autodesk software to engineer cars, build skyscrapers, create films, and more. They offer many products that focus on the design and rendering of products, systems, infrastructure, and buildings. Autodesk users work in AEC fields, product design, manufacturing, and media and entertainment creation—all areas that rely on compute-intensive apps.

3ds Max 2020

Animators and video game designers use 3ds Max for modeling, rendering, and animating 3D models and objects. We created a cylinder for this scenario, and then saved the project. Creating simple shapes and objects with the app is a key first step to developing fully functional and visually compelling models for movies, video games, and commercials.

AutoCAD 2020

Professionals in AEC fields will likely be familiar with Autodesk AutoCAD® software. It is a CAD app that allows users to create 2D and 3D drawings for floor plans, electrical wiring diagrams, topography maps, and other common visual planning projects.

For this scenario, we created a 2D drawing, rotated it, and saved the project. AutoCAD users will likely find themselves performing these tasks often.

Inventor Pro 2020

Inventor Pro is a CAD app that allows designers, engineers, and others to design and test 3D models in an environment with stress, motion, and other factors. For example, a mountain bike manufacturer might use Inventor Pro to adjust the interaction between components in a prototype's suspension system. We created a basic 3D rectangle, rotated it, and then saved the project file.

Maya 2019

Animators and other artists can use Maya to animate, render, and model their 3D characters and worlds. For this scenario, we created a torus shape (a 3D ring).

Revit 2020

Many professionals in AEC fields can use Revit, a building information modeling (BIM) app, when designing and constructing buildings. We opened a sample project file with the app, changed a single door to a double door, rotated the 3D image, and saved the project without issue.

Bentley MicroStation Connect 2019

Like AutoCAD, MicroStation is a CAD app for 2D and 3D design and drafting. It generates 2D and 3D vector graphics objects and has BIM features. Professionals working on infrastructure projects can view, model, and document their work. For this scenario, we opened a sample project file, added a rectangular addition to the structure in the file, and saved the file without issue.

Dassault Systèmes

SOLIDWORKS 2019

SOLIDWORKS is a computer-aided engineering (CAE) and CAD app that focuses on solid-modeling and runs primarily on Microsoft Windows. Companies in the machine and computer hardware industries have reported using SOLIDWORKS,[3] likely to help engineers and designers with product design. We created a rectangular aluminum extruded base with the app and then saved the project.
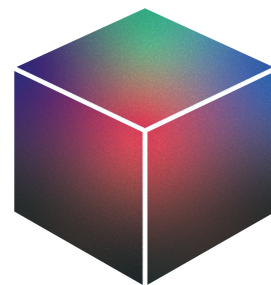
Siemens

NX Core Designer

Engineers can use the CAD app NX Core Designer to design products using solid part modeling and assembly modeling. Automotive engineers working at large manufacturers are good examples of Siemens NX software package users.[4] We created an extruded rectangle with the app.
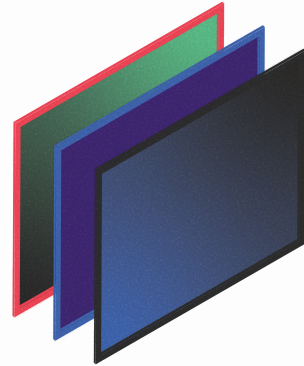
Solid Edge 2020

Solid Edge is a 3D CAD app for mechanical designers. It runs on Microsoft Windows and provides solid modeling, assembly modeling, and 2D orthographic-view functionality. As with the NX Core Designer scenario, we created an extruded rectangle without issue.

Tecnomatix

Tecnomatix delivers software to help manufacturing organizations make assembly, logistics, and other critical workflows digital. We created a production line model with the app, which would be a basic function that manufacturing engineers could use in a production plant design.

VMware

ESXi

ESXi is a bare-metal hypervisor that allows virtual machines (VMs) to run on a system. The VMs can run different operating systems and apps independent of apps on the host. This could be useful if your organization is using an Intel NUC as a client for an application hosted on a server. For this scenario, we simply installed ESXi.

Horizon View

If you're looking to run your Intel NUC strictly as a virtual desktop, Horizon View could help. Horizon View could allow you to configure the Intel NUC to function as a kiosk or shared workstation, or restrict app access to the Intel NUC and applications for security.

Conclusion

If your organization needs powerful new workstations to run essential design and engineering apps, consider the new Intel Xeon E-2286M processor-powered Intel NUC 9 Pro. Thanks to the Intel Xeon processor and NVIDIA GPU, we found that the Intel NUC ran 20 demanding apps for media and AEC workflows without issue. We took the system through scenarios of installing apps, performing routine tasks, and then closing out the apps. What's more, the system packs a powerful computing punch in a small design, so it can hide on a desk and leave room for floor plans, blueprints, and sketch books.

1   ANSYS, "ANSYS 3D DESIGN: Discovery Live," accessed November 19, 2019, https://www.esss.co/en/ansys-simulation-software/3d-design/discovery-live/

2   Autodesk, "MAKE ANYTHING," accessed November 19, 2019, https://www.autodesk.com/company

3   enlyft, "Companies using Dassault SolidWorks," accessed November 19, 2019, https://enlyft.com/tech/products/dassault-solidworks

4   enlyft, "Companies using Siemens NX," accessed November 19, 2019, https://enlyft.com/tech/products/siemens-nx

Read the science behind this report at http://facts.pt/gq6wg9e ▶

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