



The science behind the report:

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

This document describes what we tested, how we tested, and what we found. To learn how these facts translate into real-world benefits, read the report [A workstation that runs demanding design and engineering apps and can hide on your desk](#).

We concluded our hands-on testing on November 20, 2019. During testing, we determined the appropriate hardware and software configurations and applied updates as they became available. The results in this report reflect configurations that we finalized on November 13, 2019 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Our results

The table below presents our findings in detail. “Pass” means the system did not crash or experience a performance issue during the scenario phase.

Application name	Version	Application installs	Application completes simple task	Application closes
Adobe® InDesign® 2020	v15.0.1	Pass	Pass	Pass
Adobe Lightroom® Classic	v9.0	Pass	Pass	Pass
Adobe Photoshop® 2020	v21.0.1	Pass	Pass	Pass
Adobe Premiere® Pro 2020	v14.0.0	Pass	Pass	Pass
Adobe After Effects® 2020	v17.0.0	Pass	Pass	Pass
ANSYS® Discovery™ Live	Release 2019 R3	Pass	Pass	Pass
Autodesk® 3ds Max® 2020	v22.0.0.757	Pass	Pass	Pass
Autodesk AutoCAD® 2020	vQ.47.0.0	Pass	Pass	Pass

Application name	Version	Application installs	Application completes simple task	Application closes
Autodesk Inventor® Pro 2020	Build 168 Release 2020.0.1	Pass	Pass	Pass
Autodesk Maya® 2019	v2019.0.0.F	Pass	Pass	Pass
Autodesk Revit® 2020	v20.0.0.377	Pass	Pass	Pass
Avid® Media Composer® Ultimate	v2018.5	Pass	Pass	Pass
Bentley Microstation Connect 2019	v10.00.13.17	Pass	Pass	Pass
Blackmagic Design DaVinci Resolve 16	v16.1.1	Pass	Pass	Pass
Dassault Systèmes SOLIDWORKS® 2020	SP0.1	Pass	Pass	Pass
Siemens NX™	v0c820918-76e1	Pass	Pass	Pass
Siemens Solid Edge® 2020	v220.00.00.104 x64	Pass	Pass	Pass
Siemens Tecnomatix® Plant Simulaton	v15	Pass	Pass	Pass
VMware® ESXi™ 6.7	U3	Pass	N/A	N/A
VMware Horizon® View	v4.10.0-11021086	Pass	N/A	N/A

System configuration information

The table below presents detailed information on the systems we tested.

System configuration information	Intel® NUC 9 Pro
BIOS name and version	Intel QNCF70.0031.2019.1030.2236
Processor	
Number of processors	1
Vendor and model	Intel Xeon® E-2286M
Core count (per processor)	8
Core frequency (GHz)	2.40–5.00
Cache	16 MB SmartCache
Memory	
Amount (GB)	32
Type	DDR4-2666
Speed (MHz)	2,666
Graphics	
Vendor	NVIDIA®
Model number	Quadro® P2200
Video	4 x DisplayPort™
Storage	
Model	Intel SSD 760p
Amount	512 GB
Connectivity/expansion	
Wired internet	Intel I210 Intel I219-LM
Wireless internet	Intel Wi-Fi 6 AX200
Bluetooth	5.0
USB	6 x USB 3.0 2 x USB Type-C™ 3.1 (can also support Thunderbolt and DisplayPort)
On-board video	1 x HDMI®
Operating system	
Vendor	Microsoft
Name	Windows 10 Pro
Build number or version	10.0.18363

How we tested

Adobe InDesign

Creating, editing, saving, and exporting a new document

1. Download Adobe InDesign, and using the default options, install the application.
2. Launch Adobe InDesign.
3. Click Create New.
4. Choose the Print layout option, and select Tabloid.
5. Under Preset Details, name the project.
6. For units, choose inches.
7. Change the orientation to landscape, and uncheck Facing Pages.
8. Click Create.
9. Click File→Place.
10. Select the Stock Sample image file, and click Open.
11. Adjust the image file to the desired position for the layout.
12. Using the Text tool, add text to the design.
13. Click File→Save, and save the project file.
14. Click File→Export, and click Save to export the InDesign project to an Adobe PDF.
15. Accept the default export options, and click Export.
16. Close Adobe InDesign.

Adobe Lightroom Classic

Importing RAW .NEF files, creating a Panorama image, and exporting the file

1. Download Adobe Lightroom Classic, and using the default options, install the application.
2. Launch Adobe Lightroom Classic.
3. Click File [Symbol] Import Photos and Video.
4. Select the test file directory, and click Import.
5. To select all the imported photos, press Ctrl + A.
6. Click Photo→Photo Merge→Panorama.
7. When the Panorama picture appears, click Merge.
8. Select File→Export.
9. Select JPEG with 100% Quality.
10. Click Export.
11. Close Adobe Lightroom Classic.

Adobe Photoshop

Importing RAW .NEF files, creating an HDR image, and exporting the file

1. Download Adobe Photoshop, and using the default options, install the application.
2. Launch Adobe Photoshop.
3. Select File→Automate→Merge to HDR Pro.
4. Select the five high dynamic range (HDR) test files, and click OK.
5. To begin the HDR merge process, click OK.
6. When the HDR picture appears, select File→Export→Export As.
7. Select JPG from the Format dropdown menu, and select 100% Quality.
8. Click Export.
9. Close Adobe Photoshop CC.

Adobe Premiere Pro

Importing a RED 4K file and exporting the file to H.264

1. Download Adobe Premiere Pro, and using the default options, install the application.
2. Launch Adobe Premiere Pro.
3. Select New Project, and enter a name for the project.
4. To Import the RED 4K video file, press Ctrl + I, and select the timeline box.
5. To bring up the Export Media dialog, press Ctrl + M.
6. From the Format dropdown menu, choose H.264.
7. Click Export.
8. Close Adobe Premiere Pro.

Adobe After Effects

Importing a RED 4K file, adding a special effect, and exporting the file

1. Download Adobe After Effects, and using the default options, install the application.
2. Launch Adobe After Effects.
3. Select New Project, and enter a name for the project.
4. Click Composition→New Composition, and enter a name.
5. To import the RED 4K video file, press Ctrl + I, and select the timeline box.
6. To add a position keyframe, click the stopwatch in the bottom left corner.
7. Move down the timeline two seconds, and change the X-value coordinates to -500.
8. To play the video, press the spacebar.
9. Click Effect→Generate→CC Threads.
10. Click File→Export→Add to Render Queue.
11. Specify the Export destination, and click Save.
12. Click Render.
13. Close Adobe After Effects.

ANSYS Discovery Live Release 2019 R3

Performing fluid flow simulation

1. Download ANSYS Discovery Live, and using the default options, install the application.
2. Launch ANSYS Discovery Live.
3. Click Sample Dump truck.
4. Verify that the simulation begins.
5. Close ANSYS Discovery Live.

Autodesk 3ds Max 2020

Creating an object and saving the project

1. Download Autodesk 3ds Max, and using the default options, install the application.
2. Launch Autodesk 3ds Max.
3. From the top menu, click Customize→Unit Setup, and select Generic Units.
4. Select Standard Primitives, and click the Cylinder object.
5. Click and drag the mouse on the grid workspace, and create a cylinder.
6. Click File→Save, and save the project.
7. Close Autodesk 3ds Max.

Autodesk AutoCAD 2020

Creating a basic 2D drawing, rotating the drawing, and saving the project file

1. Download AutoCAD, and using the default options, install the application.
2. Launch AutoCAD.
3. At the bottom of the screen, select Create.
4. Click Start Drawing.
5. Select the Polyline tool, and draw four connecting lines.
6. Select the Circle tool, and draw a circle.
7. Select the Arc tool, and draw an arc.
8. Select the Rectangle tool, and draw a rectangle.
9. Using the arrows in the top right-hand corner, rotate the project.
10. Click AutoCAD, and select Save As Drawing.
11. Enter a project name, and click Save.
12. Close AutoCAD.

Autodesk Inventor Pro 2020

Creating a basic 3d rectangle, rotating the rectangle, and saving the project file

1. Download Inventor Pro, and using the default options, install the application.
2. Launch Inventor Pro.
3. Click New→Templates→en-US→Metric choose Standard (mm).ipt, and click Create.
4. Click Start 2D Sketch.
5. Select the XY plane.
6. Click the Rectangle tool, and select the Rectangle Two Point Center option.
7. For the y-axis, use 96, and for the x-axis, use 64.
8. Right-click the workspace area, and select OK.
9. Click Finish Sketch.
10. Click Extrude. For Distance, type 20, and click OK.
11. In the upper right-hand corner, click the cube, and rotate the shape so the front face is facing up.
12. Click File→Save as.
13. Enter a project name, and click Save.
14. Close Inventor Pro.

Autodesk Maya 2019

Creating a ring with a hole

1. Download Maya, and using the default options, install the application.
2. Launch Maya.
3. Click New Project.
4. Click New, enter a name for the project, and click Accept.
5. Click Create→Polygon Primitives→Torus.
6. Change Radius to 25, Section Radius to 7, Axis divisions to 130, and Height divisions to 50. Click Apply, and Close.
7. To duplicate in the Outliner box, press Ctrl+D.
8. To hide the Outliner box, press Shift+H.
9. Select the Torus.
10. In the top right-hand corner, open the modeling toolkit.
11. Select the Vertex.
12. To select all the vertices, draw a box around the Torus shape.
13. Click Edit-Mesh, and select Chamfer Vertices.
14. Click Edit, and select Reset the Settings.
15. Change the width to 0.5. Click Apply and Close.
16. To select all the vertices, draw a box around the Torus shape.
17. Click Edit-Mesh, and select Merge.
18. Click Object Mood.
19. Select one face, and on the next face, press Shift + double-click.
20. Repeat the process so there is a crisscross effect occurring around the shape.
21. Click Select→Inverse.
22. Click the shape, and delete the Face.
23. Click Vertex Selection.
24. To select all the vertices, draw a box around the Torus shape.
25. Click Mesh Display, and select Average.
26. Click Object Mood.
27. Click Edit-Mesh, and select Extrude.
28. Change Local Translate Z to 0.7.
29. In the Outliner box, select the hidden pTorus2, and press - - - h
30. Click the workspace area, and to show a solid shape, drag down.
31. Press Alt+B.
32. Close Maya.

Autodesk Revit 2020

Opening a sample project file, changing the 2nd floor single door to a double door, rotating the 3D view image, and saving the project

1. Download Revit, and using the default options, install the application.
2. Launch Revit.
3. Click Sample Architectural Project.
4. Select the rac_basic_sample_project.rvt file.
5. In the left-hand column, expand the Floor Plans option, and select the 2nd floor.
6. Click View, and select Tile Views.
7. In the Level 2 panel, select the door, and change the Properties from a single door to a Curtain Wall Dbl Glass.
8. In the 3D panel, click Full Navigation Wheel, and move the mouse to rotate the 3D image.
9. Close Revit.

Avid Media Composer | Ultimate 2019

Importing RED 4K file, adding Color Correction effect, and exporting to H.264

1. Download Media Composer | Ultimate, and using the default options, install the application.
2. Launch Media Composer | Ultimate.
3. Select Private, and click New Project.
4. Under format, select 4K→4K DCI Full 4096x2160 24P.
5. Enter a name for the project, and click OK.
6. Select the newly created project, and to open the project, click OK.
7. Click File→Import, and select the big_buck_bunny_1080p_h264.mov video file.
8. Drag the file to the timeline.
9. Click Filters, and select the Green bias.
10. Drag that filter onto the video clip.
11. Export the video as an Avid File Exchange File.
12. Close Media Composer | Ultimate.

Bentley MicroStation Connect 2019

Opening a sample project file, adding a rectangular addition to the structure, and saving the project file

1. Download MicroStation Connect, and using the default options, install the application.
2. Launch MicroStation Connect.
3. To start a work session, on the right-hand portion of the screen, click the half circle with an arrow.
4. Click New File.
5. Enter a file name, and click Save.
6. Select the Place SmartLine tool, and draw four connecting lines.
7. Select the Arc tool, and draw an arc.
8. Select the Elipse tool, and draw a circle.
9. To rotate the view, click Rotate View, and click and drag the workspace.
10. Save the project.
11. Close MicroStation Connect.

Blackmagic Design DaVinci Resolve

Importing RED 4K video, speeding up the video, and rendering it to H.264

1. Download Resolve, and with the default options, install the application.
2. Launch Resolve.
3. Click New Project.
4. At the bottom of the page, click the Media icon, and import the RED 4K video.
5. Drag the video onto the project timeline.
6. Right-click the clip, and select Change Clip Speed.
7. Change the Speed to 289.00%, and click Change.
8. On the bottom, click Deliver Workspace .
9. Click Render Settings, select H.264, name the file, and select the save location.
10. Click Add to Render Queue.
11. Select the job, and click Start Render.
12. Close Resolve.

Dassault Systèmes SOLIDWORKS 2019

Creating an Aluminum rectangle extruded base, and saving the project

1. Download SOLIDWORKS, and using the default options, install the application.
2. Launch SOLIDWORKS.
3. Click File→New.
4. Select Part, and click OK.
5. Right-click Material, and select Edit Material.
6. Select Aluminum Alloys→1060 Alloy.
7. For the Units, select SI – N/mm² (MPa), and click Apply and Close.
8. From the left column, select the Front Plane option, and click Sketch.
9. Select the Corner Rectangle tool.
10. Move the mouse cursor to the center point.
11. Left click the mouse, move the cursor to the upper right, and to make a rectangle, left click the mouse.
12. Click the Smart Dimension tool.
13. Click the right side of the rectangle, move the cursor to the right, and left click the mouse.
14. Into the Modify box, type 5.
15. Click the bottom side of the rectangle, move the cursor down, and left click the mouse.
16. Into the Modify box, type 3.
17. Press Escape.
18. Click Features.
19. Select Extruded Boss/Base.
20. In the left column, type 0.5 inches, and click the green check mark.
21. Press the left and right arrow keys, and rotate the image.
22. Save the project.
23. Close SOLIDWORKS.

Siemens NX Core Designer

Creating an extruded rectangular sketch, and saving the project

1. Sign into Siemens.
2. Launch NX.
3. Click New→Model, and click OK.
4. Click the Extrude tool, and select the horizontal plane.
5. Click the Rectangle tool.
6. Drag the mouse cursor, and create a rectangle.
7. Make the width 96 and the height 64, and click the workspace area.
8. Click Finish.
9. For Distance in the Extrude dialog box, type 1.6, and click Apply.
10. Using the mouse cursor, rotate the shape.
11. Save the project.
12. Close NX.

Siemens Solid Edge 2020

Creating an extruded rectangular sketch, and saving the project

1. Download Solid Edge, and with the default options, install the application.
2. Launch Solid Edge.
3. Click New.
4. Click ISO Metric→ISO Metric Part.
5. Right-click Synchronous, and select Transition to Ordered.
6. Click Extrude, and click the horizontal plane.
7. Click the Rectangle tool, and to create a rectangle, drag the mouse cursor.
8. Click the Smart Dimension tool.
9. Click the right side of the rectangle, move the cursor to the right, and left click.
10. Type 100.
11. Click the bottom side of the rectangle, move the cursor down, and left click.
12. In Modify, type 150.
13. To close Sketch, click the Green check mark.
14. Make the distance 20, and click finish.
15. Rotate the image.
16. Save the project.
17. Close Solid Edge.

Siemens Tecnomatix

Creating a production line model

1. Download Tecnomatix, and with the default options, install the application.
2. Launch Tecnomatix.
3. Click Create New Model.
4. Select 3D.
5. Click View, and select Planning View.
6. Maximize the window, and right-click and drag the workspace area so that the stopwatch is in the top left corner.
7. Click the Source icon, place the source in the frame, and click the left mouse button.
8. Select the Station single process, and to place it in the frame two grid boxes away from the Source, left click.
9. Hold the Ctrl key, and add two station single process points.
10. Select the drain, and place it at the end of the production line.
11. Select the Connector, and hold the Ctrl key while connecting the source, 3 process points, and drain together. Once you have selected everything, press Escape.
12. Click Planning View.
13. Click Home. To reset the simulation, click the red back button.
14. To start the simulation, click the green play button.
15. Close Tecnomatix.

VMware ESXi

Installing VMware ESXi

1. Attach the installation media via USB.
2. Boot the system.
3. To enter system BIOS, Press F2.
4. Click the boot menu.
5. Select Boot USB Devices First.
6. To save and close, Press F10.
7. To reboot, click OK.
8. At the VMware Installer screen, press Enter.
9. At the EULA screen, to Accept and Continue, press F11.
10. Under Storage Devices, select the appropriate virtual disk, and press Enter.
11. For keyboard layout, select US, and press Enter.
12. Enter the root password twice, and press Enter.
13. To start installation, press F11.
14. After the server reboots, press F2, and enter root credentials.
15. Select Configure Management Network, and press Enter.
16. Select the appropriate network adapter, and select OK.
17. Select IPv4 settings, and enter the desired IP address, subnet mask, and gateway for the server.
18. Select OK, and restart the management network.

VMware Horizon View

Installing the VMware Horizon client

Note: This scenario requires an existing VMware Horizon 7 Infrastructure, installation media, and that the Intel NUC runs a Microsoft Windows operating system.

1. Log into Windows, browse to the VMware Horizon View 7 media, and run the VMware-Horizon-Client-4.10.0-11021086.exe file.
2. At the Welcome screen, click Agree & Install.
3. Click Finish.
4. Click restart Now.
5. Log into Windows.
6. Click VMware Horizon client.
7. Click add server.
8. Enter the VMware Horizon connection server address, and click connect.
9. To authenticate to the VMware Horizon environment, enter the username and password, and click Login.
10. To launch a virtual desktop in the Horizon client, click the virtual desktop.

Read the report at <http://facts.pt/23tsj8s> ▶

This project was commissioned by Intel.



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