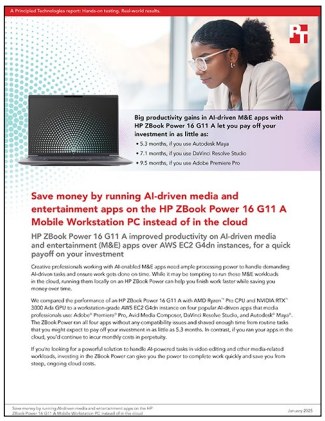

The science behind the report:

Save money by running AI-driven media and entertainment apps on the HP ZBook Power 16 G11 A Mobile Workstation PC instead of in the cloud

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 Save money by running AI-driven media and entertainment apps on the HP ZBook Power 16 G11 A Mobile Workstation PC instead of in the cloud.

We concluded our hands-on testing on December 10, 2024. 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 5, 2024 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Our results

To learn more about how we have calculated the wins in this report, go to http://facts.pt/calculating-and-highlighting-wins. Unless we state otherwise, we have followed the rules and principles we outline in that document.

Table 1: Cost data for the HP ZBook Power 16 G11 A and AWS g4dn.4x large as of July 15, 2024 plus adjusted time to pay off based on productivity gains for the HP ZBook workstation.

Cost data	
HP ZBook Power 16 G11 A cost	$6,226.40
AWS g4dn.4xlarge hourly cost	$1.94
AWS HP Anyware for Microsoft Windows Server 2019 AMI hourly cost	$0.63
Total hourly cost of g4dn.4xlarge instance	$2.57
Hours used per month	160
100GB gp3 3000 IOPS 125 Mbps monthly cost (weekly snapshot)	$13.22
AWS g4dn.4xlarge monthly cost (160 hrs/month)	$424.42
Unadjusted time to pay off (months)	14.67
Adobe® Premiere® Pro	
Premiere less time (total)	35.10%
Premiere adjusted time to pay off (months, total)	9.52

Cost data	
DaVinci Resolve Studio 19	
Resolve less time (total)	51.43%
Resolve adjusted time to pay off (months, total)	7.13
Autodesk® Maya®	
Maya less time (total)	63.64%
Premiere adjusted time to pay off (months, total)	5.33

Table 2: Time, in minutes:seconds, to complete AI-driven tasks in various M&E apps. Less time is better, while greater percentages are better. Source: Principled Technologies.

Application and tasks	HP ZBook Power 16 G11 A	g4dn.4xlarge instance	Percentage less time
Adobe Premiere Pro			
Launch Adobe Premiere Pro	0:10	0:24	58.33%
Transcribe video	4:38	6:57	33.33%
Create captions	0:06	0:12	50.00%
Total processing time	**4:54**	**7:33**	**35.10%**
Avid Media Composer			
Launch Avid Media Composer	0:34	N/A	N/A
Create Transcript	6:10	N/A	N/A
Total processing time	**6:44**	**N/A**	**N/A**
DaVinci Resolve Studio 19			
Launch DaVinci Resolve Studio 19	0:12	0:29	58.62%
Apply Magic Mask	0:23	0:44	47.73%
Export video file in H.264	0:16	0:32	50.00%
Total processing time	**0:51**	**1:45**	**51.43%**
Autodesk Maya			
Launch Autodesk Maya	0:25	1:19	68.35%
Export training data	0:10	0:06	-40.00%
Train the Model	0:09	0:36	75.00%
Total processing time	**0:44**	**2:01**	**63.64%**

System configuration information

Table 3: Detailed information on the HP ZBook Power 16 G11 A we tested.

System configuration information	HP ZBook Power 16 G11 A Mobile Workstation PC
Processor	
Vendor	AMD®
Model number	Ryzen™ 9 Pro 8945HS
Core frequency (GHz)	4.0 – 5.2
Number of cores	8
Number of logical processors	16
Cache (MB)	16
AI technology	Integrated Ryzen AI NPU
Memory	
Amount (GB)	64 GB (2 x 32 GB)
Type	DDR-5600
Integrated graphics	
Vendor	AMD
Model number	Radeon™ 780M Graphics
Discrete graphics	
Vendor	NVIDIA®
Model number	RTX™ 3000 Ada
Driver	NVIDIA v31.0.15.5324
Storage	
Model number	Samsung® MZVL21T0HCLR-00BH1
Amount (TB)	1
Type	PCIe® Gen4 x4 NVMe™ M.2 2280
Connectivity/expansion	
Wired internet	Realtek PCIe GbE
Wireless internet	MediaTek Wi-Fi 6E MT7922 (RZ616)
Bluetooth	5.3
# of USB Type A	2
# of USB Type C	2
Video outputs	1 x HDMI
Battery	
Type	6-cell, 83 Wh

System configuration information	HP ZBook Power 16 G11 A Mobile Workstation PC
Display	
Size (in.)	16" WUXGA 400 nits
Resolution	1,920 x 1,200
Touchscreen	No
Operating system	
Vendor	Microsoft
Name	Windows 11 Pro
Build number or version	10.0.22631.4317 (23H2)
BIOS	
BIOS name and version	HP W85 Ver. 01.02.01 (06/19/2024)
Dimensions	
Height (in)	0.9
Width (in)	14.15
Depth (in)	9.21
Weight (lbs.)	4.66

Table 4: Detailed information on AWS EC2 G4dn instance we used in testing.

System configuration information	AWS g4dn.4xlarge
Processor	
Tested by	Principled Technologies
Date testing ended	11/13/2024
Cloud service provider (CSP)	AWS
Region	us-east-1b
Server platform	g4dn.4xlarge
Operating system name and version/build number	Microsoft Windows Server 2019 17763.6293 (1809)
Date of last OS updates/patches applied	11/01/2024
Processor	
Number of vCPU	16
Vendor and model	Intel® Xeon® Platinum 8259CL
Core count (per processor)	24
Core frequency (GHz)	2.50
Stepping	7

System configuration information	AWS g4dn.4xlarge
Hyper-threading	Yes
Turbo	Yes
Memory module(s)	
Total memory in system (GB)	64
Discrete graphics	
Vendor	NVIDIA
Model number	Tesla T4
Driver	31.0.15.5274
Local storage (OS)	
Number of drives	1
Drive size (GB)	100
Drive information (speed, interface, type)	gp3, EBS, 125MBps/3000 IOPS
Temporary storage (Data)	
Number of drives	1
Drive size (GB)	225
Drive information (speed, interface, type)	NVMe SSD

How we tested

Setting up and updating the HP ZBook Power G11

1. Boot the system.
2. To complete installation, follow the on-screen instructions, using the default selections when appropriate.
3. Set the Windows (plugged in) Power Mode to Best Performance.
4. Set Screen and Sleep options to Never:
    a. Right-click the desktop, and select Display settings.
    b. From the left column, select System.
    c. Click Power & Battery.
    d. For all power options listed under Screen and Sleep, select Never.
5. Disable User Account Control notifications:
    a. Select Windows Start, type UAC, and press Enter.
    b. Move the slider control to Never notify, and click OK.
6. Run Windows Update, and install all updates available.
7. Verify the date and time are correct, and synchronize the system clock with the time server.
8. Pause Automatic Windows Updates:
    a. Click the Windows Start button.
    b. Type `Windows Update settings`, and press Enter.
    c. From the Pause updates drop-down menu, select Pause for 5 weeks.

Enabling the AMD Ryzen NPU on the HP ZBook Power G11

We developed this portion of the methodology using AMD documentation from https://ryzenai.docs.amd.com/en/latest/inst.html.

1. Download and install Visual Studio Community 2022 with the Desktop Development with C++ module checkbox selected. You can find this package at https://visualstudio.microsoft.com/vs/community/.
2. Download and install cmake with a version >= 3.26 from https://cmake.org/download/.
3. Download and install the latest version of Anaconda from https://www.anaconda.com/download/success.
4. Add the path to anaconda3/Scripts to the System Path variable:
    a. Find and copy the location of the anaconda3/Scripts directory from your Anaconda install.
    b. Click Start, type `Environment Variables`, and click Edit the system environment variables.
    c. Click Environment Variables.
    d. Under System variables, select Path, and click Edit.
    e. Click New, and add the path to the anaconda3/Scripts directory.
    f. Click OK.
5. Download the NPU driver installation package from https://ryzenai.docs.amd.com/en/latest/inst.html.
6. Extract the downloaded zip file.
7. Open a terminal in administrator mode, and execute the .\npu_sw_installer.exe file.
8. Ensure that the NPU MCDM driver is correctly installed by opening Device Manager→Neural processors→ NPU Compute Accelerator Device.
9. Download the RyzenAI Software MSI installer from https://ryzenai.docs.amd.com/en/latest/inst.html.
10. Launch the MSI installer and follow the instructions on the installation wizard:
    a. Accept the terms of the EULA.
    b. Provide the destination folder for the Ryzen AI installation.
    c. Specify a name for the conda environment.
11. To make sure the installation was successful, follow the steps below to run quicktest.py:
    a. Click Start, and type Anaconda Prompt to open a command prompt.
    b. Navigate to the quicktest directory: `cd %RYZEN_AI_INSTALLATION_PATH%/quicktest`
    c. Run the test: `python quicktest.py`
    d. A successful test will show the Test Passed output.

Deploying, connecting to, and configuring the AWS g4dn.4xlarge instance

1. In a browser, navigate to the AWS homepage.
2. Click the EC2 service.
3. Click Instances.
4. Click Launch instances.
5. Give the instance a name and any additional tags required.
6. Under Application and OS Images (Amazon Machine Image), click the search bar, and type `Anyware`.
7. Next to HP Anyware for Windows Server 2019, click Next.
8. Click Subscribe now.
9. Under Instance type, select g4dn.4xlarge.
10. Under Key pair (login), either select an existing key pair or create a new key pair.
11. Under Network settings, click Edit and select your preferred subnet. We chose us-east-1b.
12. Create a security group with the predefined values from the Anyware image.
13. Under Configure storage, select 100GB and gp3 for the Root volume.
14. Click Launch instance.
15. While the instance is launching, download and install the Anyware PCoIP client software from https://anyware.hp.com/find/product/hp-anyware.
16. Once the instance has launched, click into the instance details.
17. Click the Connect tab.
18. Click the RDP client tab, and click Get password.
19. Upload your key file, and click Decrypt password.
20. In the Anyware Client, click Add connection.
21. Copy over your AWS instance's public IP, name the connection, and click Add connection.
22. Click your new connection, and click Connect Insecurely.
23. When prompted, type `Administrator` for the username, and copy over your newly decrypted password.
24. Once connected, run Windows Update, and install all updates available.

Transcribing speech to text from a video and creating captions based on transcribed text with Adobe Premiere Pro

Transcribing speech to text

1. Launch Premiere Pro.
2. Click New Project.
3. Select Import.
4. Select the test video file(s) to be imported.
5. Click Window→ Text to bring up the Transcript tab.
6. Start the timer, and click Transcribe.
7. Stop the timer when the auto-transcribe has completed.
8. Repeat steps 1-7 twice more.

Creating captions based on transcribed text

1. After a video is auto-transcribed, click the Captions tab.
2. Click Create captions from transcript.
3. Click Create captions, and start the timer.
4. Stop the timer once the captions are complete.
5. Repeat steps 1-5 twice more.

Creating an ML Deformer for a sphere with Autodesk Maya

1. Download Maya, and install the application using default options.
2. Launch Maya.
3. Click New Project.
4. Click New, enter a name for the project, and click Accept.
5. From the Quick Select bar, click the sphere icon to create a sphere.
6. Click the sphere, then select Deform→ Nonlinear→ Sine.
7. Change the amplitude to 1, and click Create.
8. Click the sphere to select it, and click Deform→ ML Deformer.
9. With the sphere still selected, click the Attribute Editor tab. Click the pSphereShape1 tab.
10. Click the Deformation menu to expand it.
11. Select the ML Deformer (mlDeformer1) in the stack, and click the up arrow to advance it above the sine deformer (sine1).
12. In the Attribute Editor, click the ML Deformer tab (mlDeformer1) to select it.
13. In the table under the expanded ML Deformer Attributes menu, right-click in the Target Geometry column, and select Create Target for Deformers Post ML Deformer.
14. In the Attribute Editor, click the Control Collector tab (controlCollector1).
15. Expand the Add Controls menu, right-click the menu, and select Add All.
16. In the Attribute Editor, click the ML Deformer tab (mlDeformer1) to select it.
17. Click the item at Index 0 in the table under ML Deformer Attributes, and click Export Training Data.
18. Input a Training Data Name, and simultaneously start the timer and click Export.
19. When the Export Training Data dialog window disappears, stop the timer.
20. In the ML Deformer Attribute Editor tab, select the item at Index 0 in the table under ML Deformer Attributes, and click Train the Model.
21. Enter a name for the Output ML Model Name, and ensure Preload Data is checked. Simultaneously start the timer and click Train. (Note: You may need to install the python packages when prompted on first attempt.)

Transcribing speech to text from a video with Avid Media Composer 2019

1. Download and Install Avid Media Composer.
2. Launch Avid Media Composer.
3. Click New Project.
4. Under Settings, select Choose for me.
5. Enter a name for the project, and click Create.
6. Right-click the Clips bin, and click Exclude Bin from transcription.
7. Click Tools→ Source Browser.
8. Navigate to the folder containing the desired test video, and select the video.
9. Make sure Link is selected, and click Link.
10. Add the video to the timeline.
11. Click Tools→ Transcript tool.
12. Start the timer, and click Create Transcript.
13. Stop the timer once the transcript is created.
14. Repeat steps 2-13 twice more.

Importing RED 4K video, Magic Mask Tracking, speeding up the video, and rendering it to H.264 using Black Magic Design Davinci Resolve Studio 19

1. Download Resolve, and install the application with default options.
2. Simultaneously start a timer and launch DaVinci Resolve.
3. Stop the timer when DaVinci Resolve has launched, as indicated by the New project dialog appearing.
4. When prompted about Neural Engine optimization, click Optimize.
5. Simultaneously start the timer and click New Project.
6. Stop the timer when the New Project dialog appears.
7. At the bottom of the page, click Media.
8. Click File→Import→Media.
9. Simultaneously start the timer and select the RED 4K video. At the Change Project Frame Rate dialog box, click Don't Change.
10. Stop the timer when the RED 4K video has been imported.
11. Drag the video onto the project timeline.

12. At the bottom of the screen, click Edit.
13. Right-click the clip, and select Change Clip Speed.
14. Change the Speed to 50.00% and check the box next to Ripple Timeline.
15. Click Change.
16. At the bottom of the screen, click Color.
17. Click the Magic Mask icon located in the center of the screen.
18. Select Object Mask and Better Quality.
19. Draw two lines in the two gondolas on the right-hand side of the video.
20. Click the Toggle Mask Overlay button to verify the selected area is highlighted.
21. Simultaneously start the timer and click the Magic Mask Track two-arrow icon to apply the Magic Mask to the entire video.
22. Stop the timer when the Magic Mask has been applied to the entire video as indicated by the Tracking dialog box disappearing.
23. On the bottom, click Deliver Workspace.
24. Click Render Settings, select QuickTime and H.264, name the file, and select the save location.
25. Click Add to Render Queue.
26. Under the job, simultaneously start the timer and click Render All.
27. Stop the timer when the render is complete.
28. Close Resolve.

Read the report at https://facts.pt/EkaQUJf ▶

This project was commissioned by HP.

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