A whitepaper on the rapid rise in a modern mobile workforce and the growing demands for remote workstation graphics to mobile devices.

AMD | WHITEPAPER

REMOTE WORKING

Work.
Explore.
Create.
Anywhere.
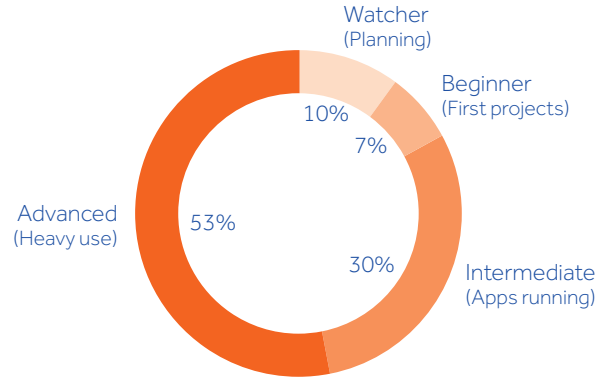
Where are you most productive?
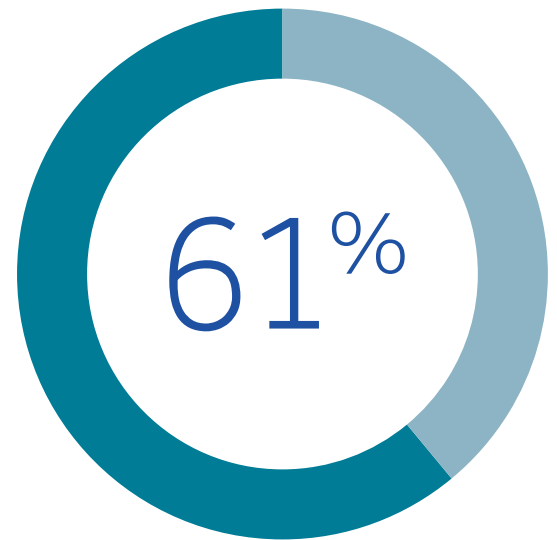
At a coffee shop?

On the sofa?

Or perhaps on a long hike, isolated from the bustling office?

Wherever it may be, creative spaces continue to empower the human imagination.

Creative spaces spark solutions, and remote graphics allow us to work virtually anywhere.

Watcher
(Planning)

Beginner
(First projects)

10%

7%

Advanced
(Heavy use)

53%

30%

Intermediate
(Apps running)

Cloud Maturity Levels for Organizations[1]

61%

of the organizations plan to migrate more workloads to cloud[1]

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Remote Desktop?

Many of todays professional software applications support remote workstation graphics. This allows the user to stream powerful workstation graphics to the user's desired mobile device, with users' mouse clicks and keyboard data securely streamed back to the workstation.

By delivering the professional software via AMD Remote Workstation Graphics, it is possible to need fewer software licenses for mobile devices, and maximize the usage of office software when not in the office environment.

In computing, the term **remote desktop** refers to a software or operating system feature that allows a personal computer's desktop environment to be *run remotely on one system* (usually a PC, but the concept applies equally to a server), while being displayed on a separate client device.[2]
**Wikipedia**

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The Challenge

Todays' professionals are more mobile than ever before, ushering in several IT admin challenges, including security and the rising costs of a modern digital office. With the boom in workforce mobility and out-of-office computing power access being a requirement of the new era, AMD Remote Workstation was developed to help ensure you have the power of your workstation virtually anywhere. AMD Remote Workstation is designed to bridge creative spaces with productive platforms: a way to harness powerful desk-side workstations from almost anywhere without compromising performance and without additional end-user license fees.

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The Solution

AMD Remote Workstation allows you to re-create your digital working environment by streaming professional applications from your AMD professional graphics powered workstation to your mobile device[3].

AMD Remote Workstation is a suite of innovative AMD technologies designed to provide rich graphics acceleration and a reliable CAD experience when accessing your workstation using select leading remote visualization tools. From accelerating frame-by-frame capture directly from the base workstation graphics card's onboard memory, to supporting high speed fixed-function frame encode capability[8], to exhaustively verifying compatibility with leading professional applications, AMD Remote Workstation delivers a premium graphics experience anywhere.
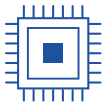
Low-Latency Frame Encode

Accelerated Desktop Capture

Select Server Support

Virtual Display Technology

Leading Professional App Certifications

Security Features

Furthermore, in a remote access environment, AMD Remote Workstation's virtual display technology can be used to natively emulate and render to a display — all taking place transparently to the workstation application. This allows the applications to be used in the same way as in traditional environments, even without output being rendered on a physical display at the desk. Finally, AMD performed extensive professional design application testing with AMD Remote Workstation to help ensure a dependable remote work experience.

Working in conjunction with industry standard tools like VMware Horizon®, Citrix® Virtual Apps and Desktops and Microsoft® Remote Desktop, AMD Remote Workstation provides an accessible path to a responsive, reliable, and high-fidelity remote user experience.

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No Additional Cost

The AMD Remote Workstation tools are built into every one of the unified Radeon™ Pro Software Enterprise drivers[3]. AMD does not charge an end-user license fee for this technology and provides all the software components you need to work remotely once you have acquired, installed and set-up your preferred Remote Virtualization Solution like VMware Horizon®, Citrix® Virtual Apps and Desktops or Microsoft® Remote Desktop (not provided and must be acquired separately).

Deployment Made Easy

The unified Radeon™ Pro Software Enterprise graphics driver already comes with everything required to accelerate remote access. This allows the same desk-side workstation that is used in-person to be accessed remotely without modification. No need to change drivers, hot plug the display, or power-cycle the machine. Simply connect using your Remote Virtualization Solution and make those changes on the go.

The complete at-the-desk workflow is preserved as well. No need to migrate large files, change in-software viewport settings, or reduce project file texture detail when working remotely. The end-users workflow is kept intact and not disrupted.

Additionally you can work with an AMD partner and your IT team to help deploy across your existing hardware.

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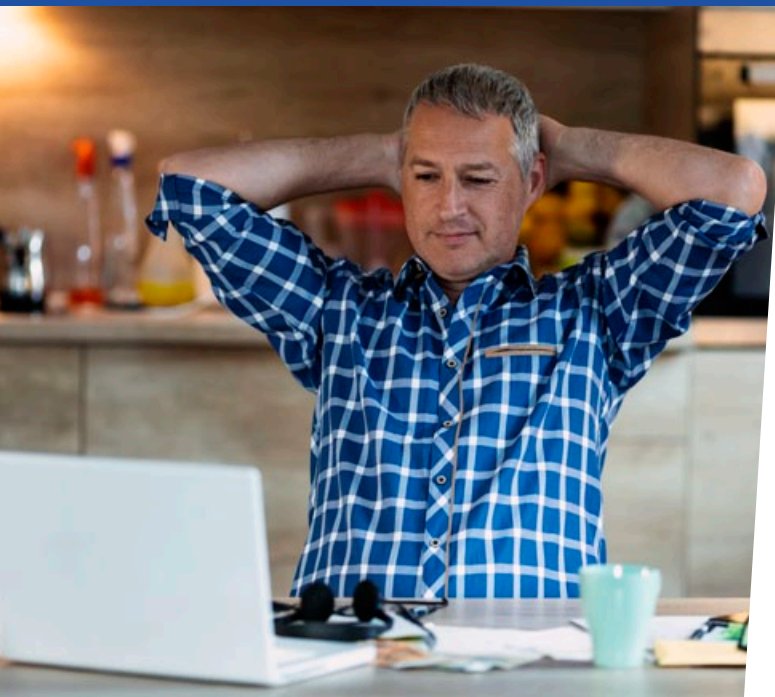
Flexibility, Built on Simplicity

The local host machine should be a AMD Graphics powered system, using Radeon™ Pro WX 2100 graphics or greater.

100%

1. Host Device
Local Pro software graphics delivered by VMware Horizon®, Citrix® XenDesktop® 7.16+ agent or Microsoft® Remote Desktop Connection.

2. Secure Transfer
Only pixels are delivered. Never physical project data.

3. Mobile Access
Seamlessly delivered to your smartphone, tablet, PC or Mac by connecting to remote desktop machine[10] using VMware Horizon® Client, Citrix® Workspace (Formerly Citrix® Receiver[9]) or Microsoft® Remote Desktop app .

98%

Work, explore, create anywhere. On the move, onsite or simply from the comfort of your home. Virtually anywhere you have a connection.

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Low Latency

The reliance on a low-latency user experience is critical for many professional applications and workflows. Real time model or data manipulations, accurate viewport interactions heavily depend on client-to-server latency – which can make or break application usability.

To optimize for latency-sensitive environments, AMD Remote Workstation allows the remote visualization application to access rendered frames directly from the base workstation's AMD GPU framebuffer. Compared to conventional remoting tools that traverse many software layers to obtain a copy of the desktop image, AMD Remote Workstation can capture that same frame straight from video memory. This frame is then fed into the GPU's dedicated fixed-function multimedia engine capable of encoding a 1080p frame in milliseconds.

1500+
Day Zero Pro App Certifications[4]

Software Built on Stability

AMD Remote Workstation was designed from the ground up with stability in mind. It is delivered via our rigorously tested AMD professional graphics driver that helps ensure a predictable experience virtually anytime or anywhere. This professional driver is also a regular recipient of ISV certifications across a host of industry applications.

Learn more about certifications at
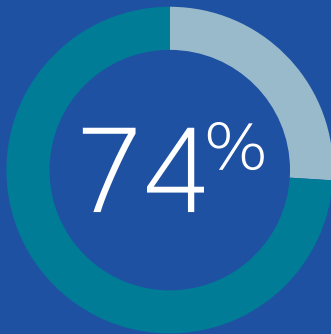**amd.com/CERTIFIED**
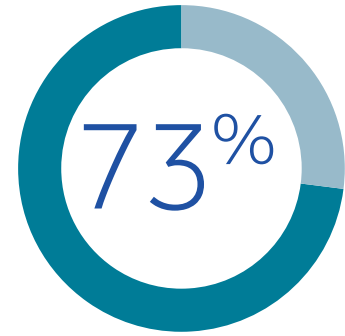
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Workforces are Mobile

Today's modern enterprise or studio understand that a geographical location should not stop a project from being delivered. In a recent study[1] we've seen that organizations are running 53% of their workloads in a public cloud. This is a trend we expect to continue to rise. Typically, this cloud usage consists of file-based transfers, software as a service (SaaS), and related infrastructure. This reliance on cloud solutions shows how many professionals have already embraced remote access technology. The next step in enhancing work-from-anywhere capability is to enable the same professionals to work, explore and create while away from the office.
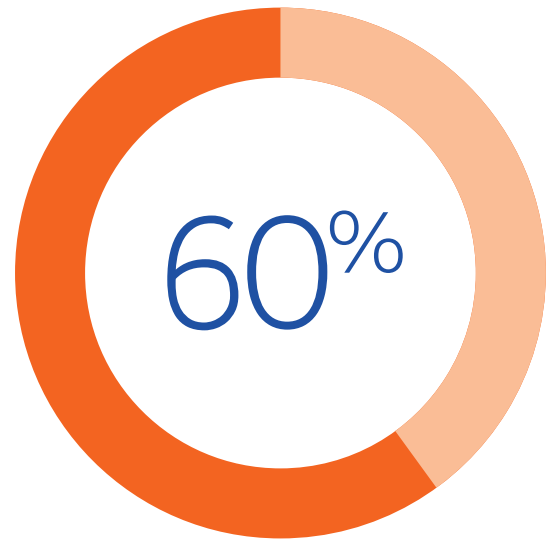
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60%
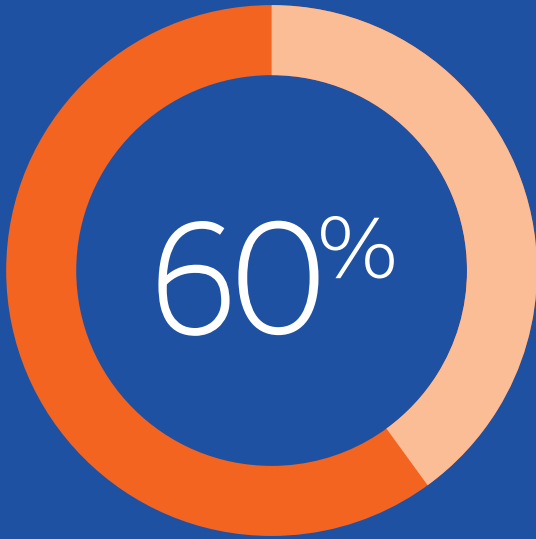
of the employees prefer to work from home[5]

73%

of organizations plan to further optimize existing use of cloud with the focus on cost saving[1]

74%

of CFOs Intend to Shift Some Employees to Remote Work Permanently[6]

60%

Mobile Workers Will Be 60% of the Total U.S. Workforce by 2024[7]

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Remote Workstation Supported GPUs

Light GPU Workloads:
AMD Radeon™ Pro WX 2100, WX 3100, and WX 4100.

Medium GPU Workloads:
AMD Radeon™ Pro WX 3200, WX 5100, WX 7100, W5500, and W5700.

Heavy GPU Workloads:
AMD Radeon™ Pro WX 8200, WX 9100 and VII.

Radeon™ Pro WX 3200 Graphics
Super small form, punchy performance.
Ideal for mobile and desktop systems.
amd.com/ RadeonProWX3200

Radeon™ Pro W5500 Graphics
Ready for Design workflows.
Ideal for advanced multi-tasking.
amd.com/ RadeonProW5500

Radeon™ Pro W5700 Graphics
Flexible, Fast and Quiet.
Ideal for real-time rendering.
amd.com/ RadeonProW5700

Radeon™ Pro VII Graphics
Ultimate Performance.
Ideal for heavy simulation workloads.
amd.com/ RadeonProVII

Supported Platforms

Remoting Applications
AMD Remote Workstation requires one of the following remote visualization solutions:
- Citrix Virtual Apps and Desktops™ 1909 or newer
- VMware Horizon® 7 or newer
- Microsoft® Remote Desktop

Learn more about these graphic cards at **amd.com/RadeonPro**

Operating Systems
AMD Remote Workstation is compatible with the following 64-bit OS:
- Microsoft® Windows 10 (April 2018 Update or newer)
- Microsoft® Windows 7 (although Windows 10 is recommended.)

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How to Configure

1. Ensure your local system is running an AMD Radeon™ Pro WX 2100 graphics or above.

2. Install Radeon™ Pro Software for Enterprise on the target Microsoft Windows based workstation. The driver must be installed locally or via Remote Desktop Connection.

3. Install your separately-purchased Remote Virtualization Solution on the system: VMware Horizon®, Citrix® Virtual Apps and Desktops or Microsoft® Remote Desktop.

4. Connect to the remote desktop using the relevant Remote Virtualization Solution client app.

5. You are now ready to use your software as you would normally, except you are now free to create wherever you want, whenever you want. Virtually anywhere.

FIG 01
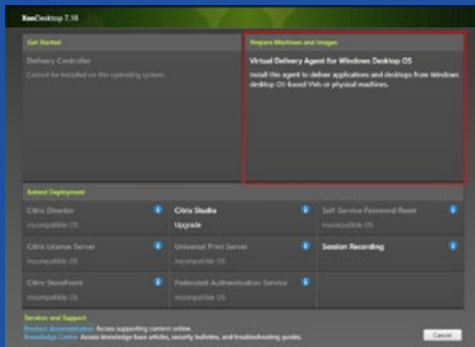
Tip: How to Learn More

Citrix® Receiver[9] app is available for Linux, Android, iOS, Mac, Chrome, and Windows. For more info visit Citrix.com.

VMware Horizon® Client app is available for Linux, Android, iOS, Mac, Chrome, and Windows. For more info visit VMware.com.

The Microsoft® Remote Desktop app is available for free from the Microsoft Store, Google Play and the Mac App store. For more info visit Support.microsoft.com.

Tip: Machine Type

When using Citrix remote applications ensure as part of the configuration that the machine type is setup as a "Remote PC Desktop"

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💡 Tip: Mouse Cursor

After the Remote desktop connection has been established, if the user observes mouse cursor misalignment or undesired scaling, the steps below should be followed:

1. When remotely connected, Right-Click on the desktop and open AMD Radeon™ Pro Settings.
2. Click on the Display tab.
3. Change the Scaling Mode to Full Panel (FIG 02)

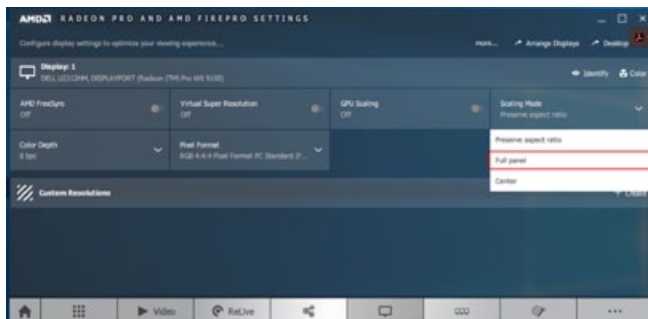**Should you need assistance, contact your local IT administrator, or an AMD representative.**

FIG 02

Remote Environment GPU Value

When configuring a remote environment it is easy to overlook the value of a professional graphics card. AMD's professional graphics help you to work, explore and create with the best remote experience possible, allowing you to concentrate on your task rather than tools. The full range is built to match the increasing graphical demands placed on them, whether used in physical workstations or virtual desktop solutions, allowing you to work virtually anywhere.

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Support for Common Professional Software

PRIMARY SOFTWARE USED	CPU OR GPU INTENSIVE	PROCESSOR FREQUENCY	GRAPHICS DEMAND	SYSTEM RAM	VIEWPORT TECHNOLOGY	ISV CERTIFIED FOR RADEON™ PRO	TYPICALLY REMOTE READY
Adobe Creative Cloud (PhotoShop +)	Balance	3+ GHz.	High. 8+ GB VRAM	16+ GB	OpenGL® 2.0	✓	✓
Autodesk® 3ds Max®	Balance	3+ GHz.	High. 8+ GB VRAM	32+ GB	DirectX® 11, Shader Model 5	✓	✕
Autodesk® AutoCAD®	CPU	3+ GHz.	Low. 2+ GB VRAM.	16+ GB	DirectX® 11	✓	✓
Autodesk® Revit®	CPU	3+ GHz.	Medium. 4+ GB VRAM	16+ GB	Shader Model 3.0	✓	✓
Bentley® MicroStation®	CPU	3+ GHz.	Medium. 2+ GB VRAM.	16GB	Direct3D® 11 (Part of DirectX®)	✓	✓
Dassault Systèmes® CATIA®	CPU	3+ GHz.	Medium, 4+ GB VRAM	16+ GB	OpenGL® 4.5	✓	✓
Dassault Systèmes® SOLIDWORKS®	CPU	3+ GHz.	Medium, 4+ GB VRAM	16+ GB	OpenGL® 4.5	✓	✓
Epic Twinmotion	GPU	3+ GHz.	High, 8+ GB VRAM	32+ GB	DirectX® 11	AMD tested	✕
Foundry® Nuke®	CPU	3+ GHz.	High, 8+ GB VRAM	8+ GB	OpenGL® 4.2	AMD tested	✓
Microsoft® Apps (Office, Excel +)	CPU	3+ GHz.	Low. 2+ GB VRAM.	8+ GB	DirectX® 9.0	AMD tested	✓
Nemetschek Bluebeam®	CPU	3+ GHz.	High, 8+ GB VRAM	16+ GB	OpenGL® 4.2	✓	✓
Nemetschek Vectorworks®	Balance	3+ GHz.	High, 4+ GB VRAM	16+ GB	OpenGL® 4.2	✓	✓
Siemens® NX®	CPU	3+ GHz.	High, 8+ GB VRAM	16+ GB	OpenGL® 2+	✓	✓

LATEST INFO: The above table is based on internal testing, customer reports and recommendations, providing a guide only. Whilst every care has been taken, please refer to the individual software documentation for the most up to date information on Remote Workstation Graphics support and hardware considerations. Individual models will vary in hardware resource usage and performance demands.

VIEWPORT TECHNOLOGY: The entire range of AMD Radeon™ Pro GPUs support all of the various display technologies listed in the table, helping ensure advanced features can be used within the software viewports combined with High DPI support for larger screen resolutions.

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Conclusion

AMD Remote Workstation allows your workforce to be ready for that next professional challenge wherever they are. Built with stability and performance at the forefront, the AMD Remote Workstation experience, built into your existing AMD Enterprise graphics driver[3], allows for an easy to deploy, reliable, and cost-effective way to work, explore and create from anywhere using workstations you already have.

In short, AMD Remote Workstation helps:

1. Enhance Security
2. Impact Costs and
3. Increase Productivity

To receive more information and whitepapers like this one, signup to receive our regular communications:

amd.com/ProGPUsignup

WHERE WILL YOU WORK

EXPLORE

CREATE

AMD

ENDNOTES

[1] https://info.flexera.com/SLO-CM-REPORT-State-of-the-Cloud-2020 Flexera™ 2020 State of the Cloud Report" (© 2020 Flexera, all rights reserved) is licensed under https://creativecommons.org/licenses/by/4.0/ CC BY 4.0.

[2] "Remote desktop software" (Wikipedia) is licensed under https://creativecommons.org/licenses/by-sa/3.0/ CC BY-SA 3.0

[3] Compatible with AMD Radeon™ Pro WX 2100, 3100, 3200, 4100, 5100, 7100, 8200, 9100, and AMD Radeon™ Pro W5500, W5700, and VII GPUs. Remote Workstation functionality requires purchase and installation of Citrix Virtual Apps & Desktops™, Microsoft® Remote Desktop Services or VMware Horizon®. Citrix and Microsoft require Enterprise driver 18.Q4 or newer, VMware requires Enterprise driver 20.Q3 or newer. RPS-50

[4] AMD Radeon™ Pro Software for Enterprise has over 1592 ISV applications certifications since the start of the Day Zero Certification Program. Based on AMD internal research as of August 6, 2020, the total number of ISV application certifications for AMD Radeon™ Pro Software for Enterprise drivers (18.Q4 + 19.Q1 + 19.Q2 + 19.Q3 + 19.Q4 + 20.Q1+ 20.Q3) since the start of Day Zero Certification Program (18.Q4 or November 14, 2018) is 1443. Please see https://www.amd.com/en/support/certified-drivers for a complete list of Radeon™ Pro Software certifications. RPS-107

[5] https://globalworkplaceanalytics.com/brags/news-releases

[6] https://www.gartner.com/en/newsroom/press-releases/2020-04-03-gartner-cfo-surey-reveals-74-percent-of-organizations-to-shift-some-employees-to-remote-work-permanently2

[7] https://www.idc.com/getdoc.jsp?containerId=prUS46809920

[8] HEVC (H.265), H.264, and VP9 acceleration are subject to and not operable without inclusion/installation of compatible HEVC players. GD-81

[9] As of August 2018 Citrix® Receiver was replaced with Citrix® Workspace app, and is backwards compatible.

[10] Radeon™ Pro Software for Enterprise 19.Q2 with AMD Remote Workstation delivers comparable performance on SPECviewperf® 13 3dsmax-06 when compared local (non-remoted) performance. Testing conducted by AMD labs as of April 22nd, 2019 on a test system comprising of Intel® Core i5 8400 CPU, MSI Z370-A PRO motherboard, ADATA XPG Z1 16 GB DDR4 RAM, Samsung 860 EVO 250GB SSD, Windows® 10 Pro October 2018 Update with a Radeon™ Pro WX 4100 graphics card using Radeon™ Pro Software for Enterprise 19.Q2. The test was conducted using running benchmark the application SPECviewperf® 13 benchmark for its "3dsmax-06" viewset subtest. Radeon Pro Software Adrenalin 2019 Edition for Enterprise 19.Q2 with Radeon™ Pro Remote Workstation: 50.22. 19.Q2 run locally: 51.36 resulting in only up to a 2% drop. The results are the average of 3 iterations. The AMD Remote Workstation solution was implemented using the Citrix® XenDesktop® 7.18 application on an HP ZBook 17 G5 Client. Performance Differential: 51.36-50.22 = ~2.0% performance drop with the AMD Remote Workstation solution on Radeon™ Pro Software for Enterprise 19.Q2 versus running locally. Additional information about the SPEC benchmarks can be found at spec.org/gwpg. RPS-53

amd.com/RadeonPro

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