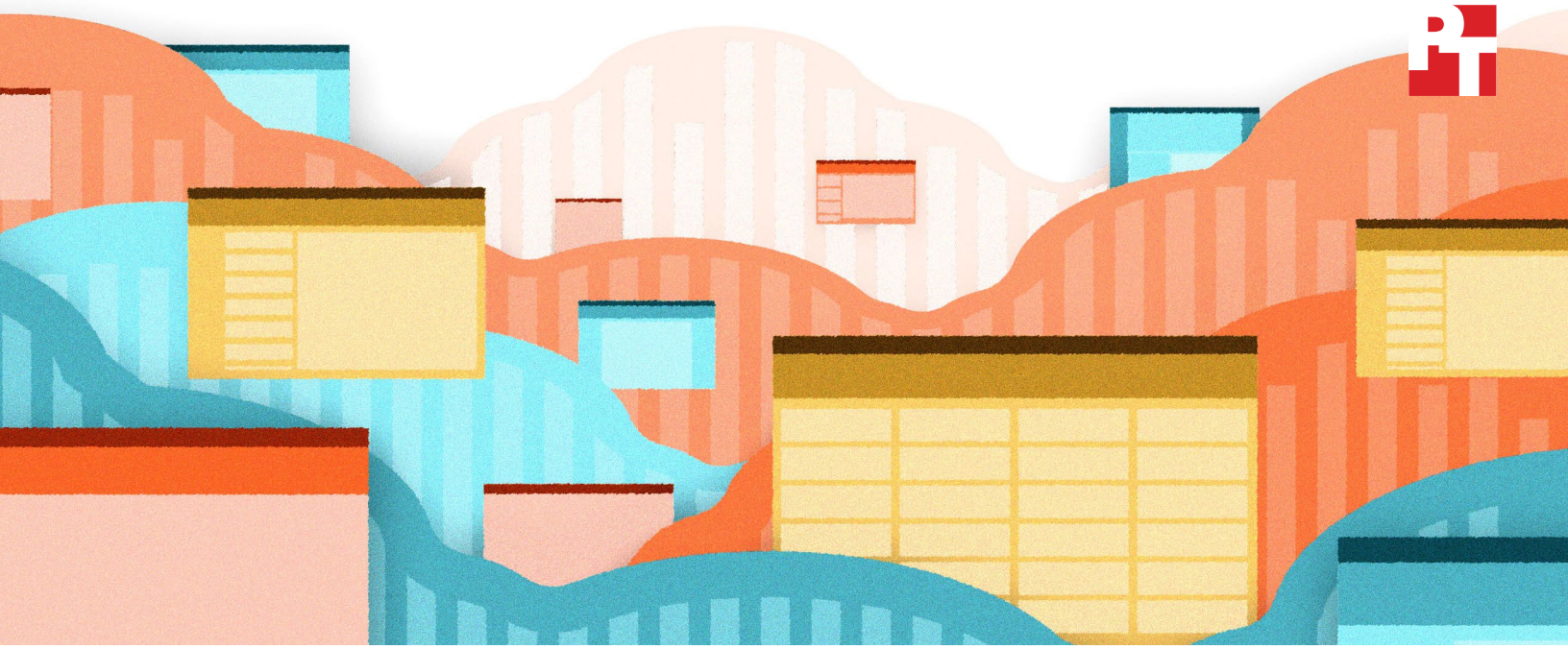

Boost end user productivity with Citrix Virtual Apps and Desktops on Google Cloud

The Google Cloud n2-standard-16 instance completed common tasks faster in six productivity apps than comparable Amazon Web Services and Azure instances

Running virtual desktop services in the cloud via Citrix Virtual Apps and Desktops cloud integrations could deliver many benefits, including easily deployable environments and increased user mobility and collaboration. However, desktop application response times can vary between cloud service providers (CSPs), even when they offer similar third-party integrations and use similarly configured instances.

Up to 57.8% shorter application response time
vs. the AVD Standard_D16s_v4 instance

Up to 46.8% shorter application response time
vs. the Amazon EC2 m5n.4xlarge instance

We tested Citrix Virtual Apps and Desktops virtual desktop infrastructure (VDI) cloud solutions running on a Google Cloud n2-standard-16 instance, an Amazon Elastic Cloud Computing (EC2) m5n.4xlarge instance, and an Azure Virtual Desktop (AVD) Standard_D16s_v4 instance. 3rd generation Intel® Xeon® Scalable processors powered all three instances. We compared the desktop application response times of the three Citrix-based VDI cloud solutions using Microsoft Windows or Windows Server instances. With each instance supporting 36 VDI users, the Google Cloud n2-standard-16 instance offered faster application response times in six productivity apps than either the Amazon EC2 m5n.4xlarge instance or the AVD Standard_D16s_v4 instance. Shorter, faster application response times help users do more work and stay productive.

What we tested

Table 1 shows the three cloud instances we tested and their specifications. We matched the processor family, number of vCPUs each instance could support, and the amount of memory they offered, but we could not match the processor speeds because each CSP outfits their instances with different 3rd generation Intel Xeon Scalable processors.

Table 1: The region, number of vCPU, memory, processor speed, and storage specifications of the cloud instances we tested.

Applicable specifications of the 3rd generation Intel Xeon Scalable processor-powered instances we tested				
	Number of vCPUs	**Core frequency (GHz)**	**Memory (GiB)**	**Storage (128 GB)**
Google Cloud - n2-standard-16 (us-east4)	16	2.8	64	SSD persistent disk
AWS - m5n.4xlarge (us-east-1)	16	2.5	64	General Purpose SSD (gp2)
AVD - Standard_D16s_v4 (east us)	16	2.6	64	Premium SSD P10 - LRS

We set up our test beds in our data center in Durham, NC. We conducted testing with on-premises Login Enterprise launchers and Citrix cloud connectors that we configured to deploy and provide Citrix Virtual Apps and Desktops resources on all three CSPs. We chose US East cloud target regions based on proximity to our data center. We configured the Google Cloud n2-standard-16 and Amazon EC2 m5n.4xlarge instances with Windows Server 2019 and enabled the remote desktop session host (RDSH) role. We configured the AVD Standard_D16s_v4 instance with Windows 10 Enterprise multi-session. All instances ran Microsoft Office 2019, and we applied standard Citrix image optimizations. Citrix Cloud Virtual Apps with a cloud-based Active Directory and Domain controller facilitated session management on each CSP.

What we found

Faster overall response times to help productivity with Google Cloud

To compare the VDI application performance of the instances while supporting 36 concurrent VDI users, we measured the time it took to launch the following applications and perform typical productivity tasks in them:

- Notepad
- Microsoft Excel
- Microsoft Outlook
- Microsoft Word
- Microsoft PowerPoint
- Microsoft Edge

We chose for each instance to support 36 VDI users because it was the maximum user count that the Google Cloud n2-standard-16 could support while delivering acceptable end user application response times.

We provide a breakdown of tasks as well as detailed results in the Detailed results section. The Google Cloud n2-standard-16 instance needed less time to complete each of the tasks we tested. Using the average time savings of all the application tasks together, the Google Cloud n2-standard-16 instance offered the following:

23.8% less average time
compared to the Amazon EC2 m5n.4xlarge instance

26.4% less average time
compared to the AVD Standard_D16s_v4 instance

Detailed results

Figures 1 through 6 present our detailed application response findings and break down the average times by task where applicable. The Google Cloud n2-standard-16 instance needed less time to complete all our tasks for each productivity application we tested, including up to 57.8 percent less time to start Notepad compared to the AVD Standard_D16s_v4 instance (see Figure 4).

Microsoft Edge

Page load

Average duration in seconds | Lower is better

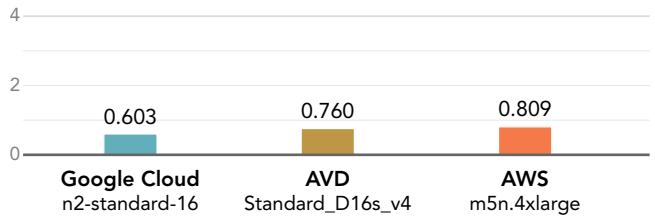

Figure 1: The average time that each instance needed to load the home page in Microsoft Edge. Lower is better. Source: Principled Technologies.

Notepad

Start app

Average duration in seconds | Lower is better

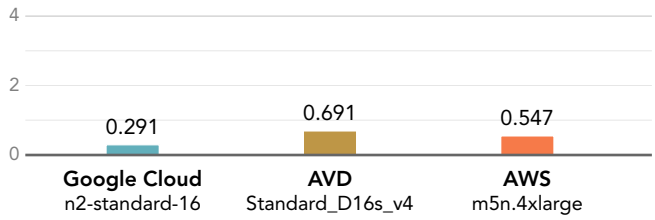

Figure 2: The average time that each instance needed to start Notepad. Lower is better. Source: Principled Technologies.

Microsoft Outlook

Start app

Average duration in seconds | Lower is better

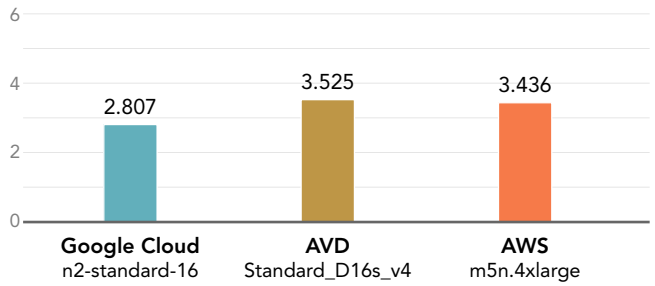

Figure 3: The average time that each instance needed to start Microsoft Outlook. Lower is better. Source: Principled Technologies.

Microsoft Word

Start app › Open window › Open Word file › Save file

Average duration in seconds | Lower is better

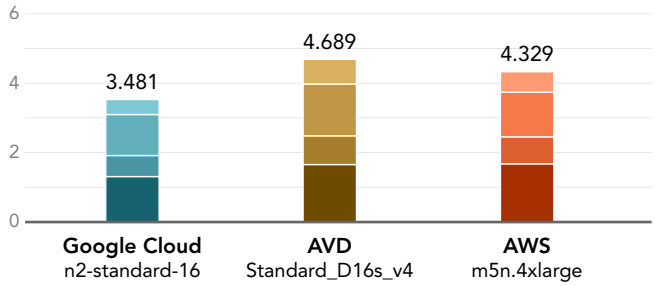

Figure 4: The average time that each instance needed to complete four Microsoft Word tasks. Lower is better. Source: Principled Technologies.

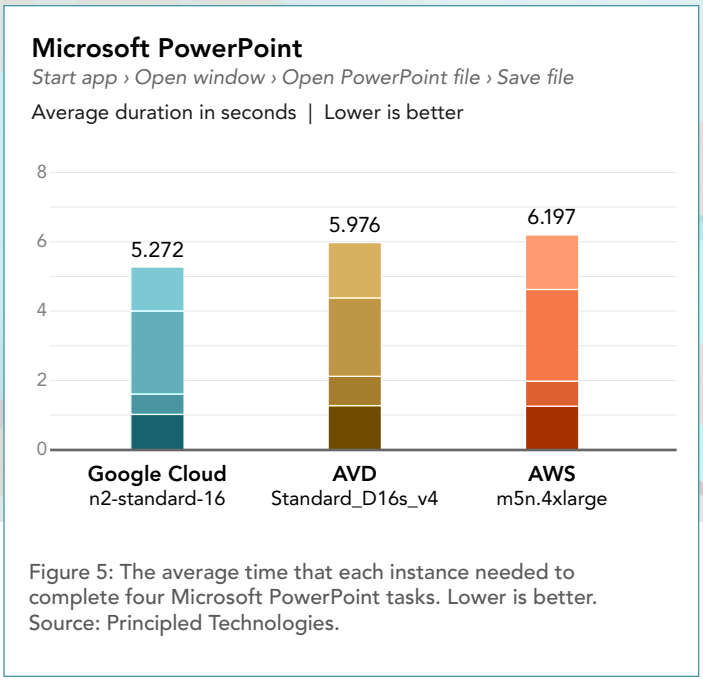

Figure 5: The average time that each instance needed to complete four Microsoft PowerPoint tasks. Lower is better. Source: Principled Technologies.

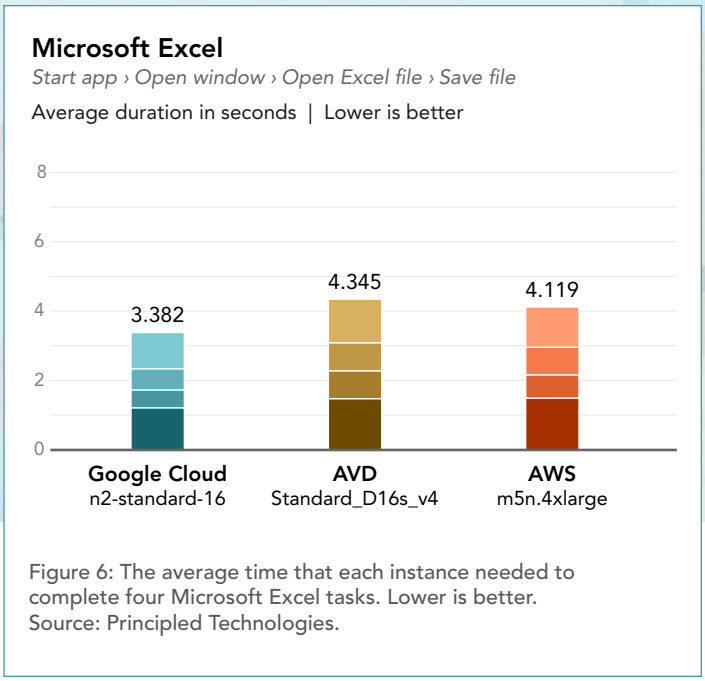

Figure 6: The average time that each instance needed to complete four Microsoft Excel tasks. Lower is better. Source: Principled Technologies.

Conclusion

Many organizations understand the potential operational and economic value of running common productivity through VDI environments in the cloud. However, differences among the CSPs can lead to better application responsiveness that helps end users finish tasks quickly. When using Citrix Virtual Apps and Desktops integrations, we found that the Google Cloud n2-standard-16 instance needed less time to complete basic productivity tasks than either an Amazon EC2 m5n.4xlarge instance or an AVD Standard_D16s_v4 instance. As just one example, the Google Cloud instance needed 46.8 and 57.8 percent less time, respectively, to start Notepad than either the Amazon EC2 or Microsoft Azure instances we tested.

Read the science behind this report at https://facts.pt/TLuDp1X ▶

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This project was commissioned by Google.