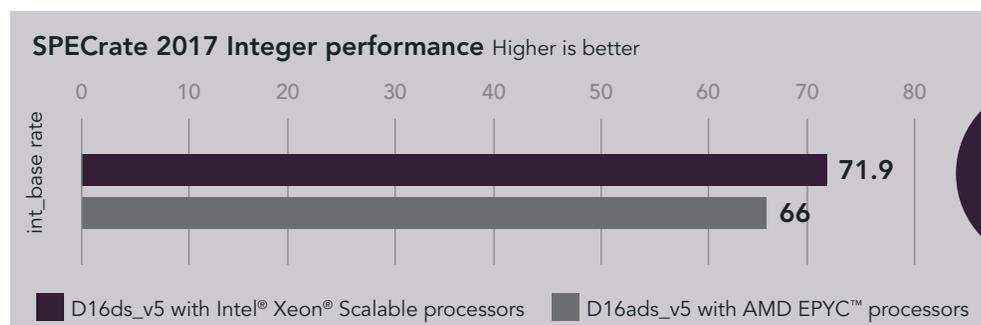**ResNet50**

Deep learning

Get a clearer picture of potential cloud performance by looking beyond SPECrate 2017 Integer scores

with ResNet50

When we ran ResNet50 image classification workloads on two Microsoft Azure VMs, the performance differences varied considerably from SPECrate 2017 Integer scores

What's the best way to gauge cloud instance performance? Using an industry-standard benchmark such as SPECrate® 2017 Integer can deliver good compute performance data, but it may not paint the same picture as workloads more directly representative of your applications.
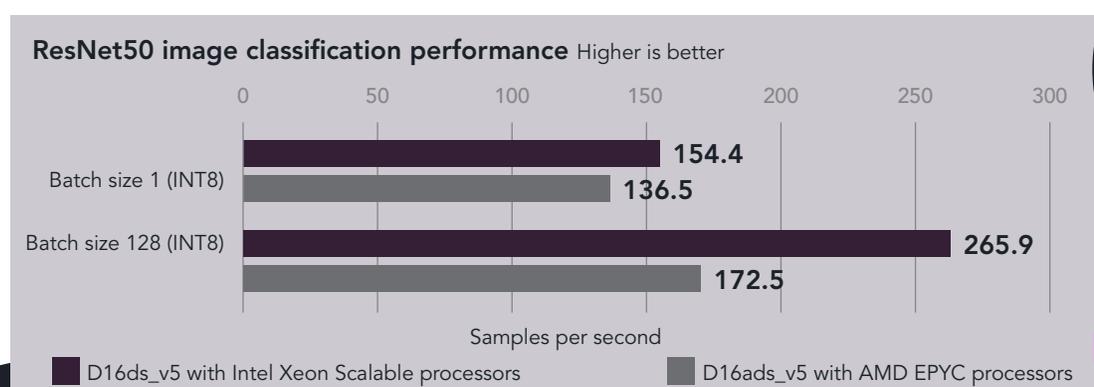
Running SPECrate 2017 Integer—which uses a broad range of applications that target the processor, memory, and compilers—we saw the following results on the Azure VMs we tested:

SPECrate 2017 Integer performance Higher is better

int_base rate

| | | | | | | | | |
|0|10|20|30|40|50|60|70|80|

71.9 — D16ds_v5 with Intel® Xeon® Scalable processors

66 — D16ads_v5 with AMD EPYC™ processors

■ D16ds_v5 with Intel® Xeon® Scalable processors   ■ D16ads_v5 with AMD EPYC™ processors

8% faster int_base rate

Deep learning workloads that analyze data with image classification have resource needs that a general-purpose benchmark may not account for. ResNet50 is a convolutional neural network designed to classify images in a computationally efficient manner. Running ResNet50 implementations in the TensorFlow framework, we saw the following results:

ResNet50 image classification performance Higher is better

| | | | | | | |
|0|50|100|150|200|250|300|

Batch size 1 (INT8): 154.4 / 136.5

Batch size 128 (INT8): 265.9 / 172.5

Samples per second

■ D16ds_v5 with Intel Xeon Scalable processors   ■ D16ads_v5 with AMD EPYC processors

up to **54%** more samples/s

Why test with ResNet50?

Organizations that use deep learning to make sense of data may be interested in gauging VM performance with image classification workloads such as ResNet50. Image classification models can help diagnose medical conditions, assess damages from natural disasters, teach self-driving cars to recognize surroundings, and speed city planning.

Get the bigger picture when you branch out to specific workloads.

Learn more about the other real-world workloads we ran at https://facts.pt/odi9nGQ

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