



# NVMe SSDs help keep remote workforces productive and easier to manage

The working world is a different place today for your IT and security manager customers. It's not just the road warriors who need fast client storage at good value, there's a larger remote workforce to support. But in these times of supply chain delays, it's about breathing new life into existing laptops and workstations. Yet upgrading just to catch up to competitors is counterproductive. Organizations that add NVMe Express™ (NVMe™) storage with its fast PCIe 4.0 bus connections to client SSDs can future proof their workforce IT. Here are four reasons to add client NVMe SSDs.

## 1 Primarily? Performance!

Faster transfer speeds and lower latency than SATA SSDs (see Figure 1) equals higher performance. NVMe SSDs can read and write up to 6x faster than SATA<sup>1</sup> SSDs. (HDD speeds? Barely a blip.) NVMe continues to optimize on PCIe, which doubles its speed with each generation. With Crucial NVMe SSDs delivering low latency and cost-efficient capacity from 3D NAND density innovations, you can help your customers get this performance at Crucial's ultra-competitive prices.

4K Random Read IOPS - Client Storage



Figure 1: 4K random read IOPS for NVMe SSDs are 7x faster than SATA SSDs.<sup>1</sup>

# Four Reasons to Move to NVMe Right Now

## 2

### Workforce productivity for the win.

The right storage choices can help organizations move faster, serve customers better and outpace their competition. NVMe SSDs help relieve data bottlenecks with faster load times, more efficient workflows, and multiple I/O queues (“parallelism”) to lower latency. NVMe is in fact nearly 2000 times more parallel than SATA<sup>3</sup>. Plus, seconds add up! NVMe SSDs are known to accelerate application performance, especially for large graphics files (see Figure 2), and decrease wait and boot times.

For road warriors with data-intensive workloads, NVMe SSDs launching 1GB Photoshop PSD files<sup>2</sup> can be:

up to **1.5x** faster than SATA SSDs

nearly **15x** faster than HDDs

Figure 2: NVMe SSDs can launch large media files up to 15x faster than HDD<sup>2</sup>

## 3

### Improve TCO and your time management.

Upgrade to NVMe storage to extend the lifecycle of hardware. Upgrading can also cost 3-5x less than purchasing comparable new devices<sup>4</sup>. NVMe storage is faster than SATA for remote upgrades and backups, so can only take hours versus days to keep a medium to large remote workforce in compliance. More efficient battery use also helps TCO, and the Crucial P3 Plus enables lower laptop power consumption than HDDs.

 **One in five**  
Companies are fully confident that their infrastructure security can support long-term remote work. — 2021 survey by Pulse

# Four Reasons to Move to NVMe Right Now

## 4

### Laptops can stay safer and stronger.

From the moment of installation, Crucial NVMe SSDs can begin delivering built-in data security with flash-based protection of data-at-rest. Further encryption with SEDs is available<sup>5</sup>, plus our specialized algorithms can help improve data protection<sup>6</sup>. That's in addition to the road-worthy durability, reliability, consistency and extended longevity of SSDs. Crucial NVMe SSDs provide the hardware-assisted protection now mandated for [Windows 11 security](#), so secure boot and device encryption are ready to help safeguard against online attacks.

	Crucial® P2	Crucial® P3	Crucial® P3 Plus	Crucial® P5 Plus
Sequential Read (MB/s)	2400	3500	5000	6600
Sequential Write (MB/s)	1900	3000	4200	5000
Random Read (IOPS)	170K	650K <sup>7</sup>	700K	630K
Random Write (IOPS)	370K	640K <sup>7</sup>	800K	700K
Endurance Total Bytes Written (TBW)	600TB	440TB <sup>8</sup>	440TB	1200TB
NVMe PCIe Interface	Gen 3 x4	Gen 3 x4	Gen 4 x4	Gen 4 x4
Warranty <sup>9</sup>	5-year limited	5-year limited	5-year limited	5-year limited

Table 1: Crucial NVMe SSDs for client and consumer

## Micron and Crucial: Two brands. One channel.

Because Crucial is a brand of Micron, business customers enjoy reliable supply, competitive pricing and quality assurance. Micron's vertical integration manages every link in the supply chain from sand to silicon to testing to shipping, under our own roof. Our team of experts listens to our partners, carefully assesses their needs, and embeds the right SSD mix that will best help their business thrive.

For more info, visit [microncp.com/whynvme](https://microncp.com/whynvme) or contact your Micron salesperson.

1. Comparing IOPS for random reads of a commercially available 1TB HDD vs a Crucial MX500 SATA SSD 1TB vs a Crucial P5 Plus NVMe SSD 1TB. Typical I/O performance numbers as measured using CrystalDiskMark® with command queue full and write cache enabled. Fresh out-of-box (FOB) state is assumed.
2. Testing application response times in Crucial labs: average time elapsed in seconds and microseconds to launch 1GB Photoshop PST files: Crucial P5 Plus 2000 = 4:20; Crucial MX500 1TB SATA = 7:08; commercially available 7200 2TB HDD = 33:12.
3. Parallelism: NVMe can have up to 65,355 I/Os, each with up to 64,000 queues, as reported in [Network World](#) and others.
4. Replacing 1500 PCs vs. upgrading storage and memory. Based on NewEgg list prices for 1250 ASUS Zenbook 14 UltraThin Laptops with 16GB DDR4 memory and 1TB NVMe SSD, equaling \$1,350,000 compared to 1250 Crucial 16GB laptop memory modules and 1250 1TB Crucial P2 NVMe SSDs, equaling \$300,000, for a savings of \$1,050,000, as of October, 2020.
5. To set up SEDs in Crucial using BitLocker: <https://www.crucial.com/support/articles-faq-ssd/setup-ssd-encryption-via-bitlocker>
6. No hardware, software or system can provide absolute security under all conditions. Micron assumes no liability for lost, stolen or corrupted data arising from the use of any Micron products, including those products that incorporate any of the mentioned security features. Micron's new Secure Execution Environment is an isolated security processing engine within the SSD controller.
7. Crucial P3 SSD random reads/writes are up to 700K; lower for the 1TB and 500GB capacities.
8. Crucial P3 SSD endurance is up to 800TB for the 4TB capacity.
9. Warranty on most Micron SSDs is valid for five years from the original date of purchase or before writing the maximum total bytes written (TBW) as published in the product datasheet and as measured in the product's SMART data, whichever comes first.