

HP Enterprise Solid State Drives



Excellent solid state storage performance for HP ProLiant servers



It is estimated that 2.5 exabytes (a billion gigabytes) of data are created every day. To tap the potential of Big Data, applications must read and write more data, faster than ever. HP Enterprise Solid State Drives (SSDs) help you access data faster by providing exceptional performance, extended endurance, and consistently low latency—all while using less power.

Hard Disk Drive (HDD) industry transitions leave a huge opportunity for SSDs, especially for capacities 800GB and lower.

Peak performance for random data applications

HP Enterprise SSDs are suited to enterprise environments with highly random data under a variety of write-workload applications. The SSDs provide significantly better random read and write I/O operations per second (IOPS) compared to HDDs. While sequential read and write throughput is also improved over HDDs, the greatest benefit is recognized in random data applications. As a result, these high-performance, low-latency, and low-power SSDs provide significant system benefits for applications that previously over-provisioned HDD capacity to achieve better performance.

Enterprise features for data center applications

HP Enterprise Solid State Drives have the key features you need in your data center—full data path error detection, surprise power loss protection, and SmartSSD Wear Gauge support. We enable the SmartSSD Wear Gauge through the HP Smart Carrier. With the SmartSSD Wear Gauge utility, HP Enterprise SSDs monitor the amount of data written and report when the device may be nearing its maximum supported lifetime.

Targeted at extreme operating environments or local storage, these drives provide higher I/O throughput, excellent latency, reduced power consumption, enhanced reliability, and faster reads and writes when compared to traditional rotating media. They remove the latency found in conventional rotating HDDs caused by seek time for each read operation, so they deliver high random read performance. Most of these SSDs are available as small form factor (SFF), large form factor (LFF), quick release carriers, or non-hot plug (NHP) for general use across the HP ProLiant Server portfolio. The drives are fully qualified and fit seamlessly into the existing HP server infrastructure.

With no moving parts, more reliability, and greater power savings than traditional rotating media drives, SSDs are finding new applications in the Big Data era.

Compatible with your server environment

HP SSDs are fully tested and qualified to enable compatibility with HP ProLiant and HP BladeSystem solutions. The HP Qualified Option designation places HP SSDs among the best of the best compared to products available on the open market. It is important to note that SSDs on the open market—even those with similar model numbers—may not have the same level of performance, endurance, and quality as HP Qualified Options. For example, the NAND or even the controller in non-qualified products may be different from an HP Qualified Option. HP firmware optimizes our qualified SSD performance, wear leveling, and over-provisioning.

You get an outstanding product when you buy from HP—and a three-year warranty.

The right SSD for every application

HP Enterprise SSDs are available in four categories based on their endurance: performance, mainstream, light, and value. The categories indicate the number of drive writes per day (DWPD¹) that you can expect from the drive. (DWPD is the maximum number of 4K host writes to the entire drive capacity of the SSD per day over a five-year period.)

HP Qualified Options—HP Enterprise Solid State Drives

Table 1. HP Enterprise SSD categories

	Performance	Mainstream	Light	Value
Interface	12/6 Gb SAS	12/6 Gb SAS or 6 Gb SATA	12/6 Gb SAS or 6 Gb SATA	12/6 Gb SAS, 6 Gb SATA*
Endurance	High endurance ~25 DWPD	Mainstream endurance ~10 DWPD	Light endurance 1–3 DWPD	Value endurance < 1 DWPD
Typical workload	High read/write applications	Mixed read/write applications	Mixed read/write applications	High read/low write applications

*Includes M.2 Enablement Kits with 6 Gb SATA Interface

HP Enterprise Performance Solid State Drives

HP Enterprise Performance 12G SAS SSDs provide high performance and endurance. They are best suited for mission-critical enterprise environments with workloads high in both reads and writes. These SSDs are available in 800, 400, and 200 gigabyte (GB) capacities. SAS SSDs transfer data at full duplex allowing greater I/O bandwidth to alleviate bottlenecks. Additionally SAS uses SCSI commands for error recovery and error reporting, which have more functionality than the ATA command set used by serial ATA (SATA).

HP Enterprise Mainstream Solid State Drives

HP Enterprise Mainstream 12G SAS and 6G SATA SSDs are best suited for high I/O applications with workloads balanced between reads and writes. The SAS and SATA SSDs provide the workload-optimized performance required for demanding I/O-intensive applications. When paired with HP ProLiant servers, these SSDs help you meet the challenges of Big Data. They achieve twice the performance and endurance of previous HP SAS and SATA SSDs. The SATA SSDs come with a six gigabit per second (Gb/s) SATA hot-plug interface and are available in 800, 400, 200, and 100 gigabyte (GB) capacities. The SAS SSDs come with a 12 gigabit per second (Gb/s) SAS hot-plug interface and are available in 800, 400, and 200 gigabyte capacities.

HP Enterprise Light Solid State Drives

HP Enterprise Light 6G SATA SSDs deliver optimized performance for workloads balanced between reads and writes. From read caching workloads to Big Data Analytics and more, these SSDs deliver the performance customers can count on. The 6G SATA SSDs are available in the 960GB capacity with an endurance of 3.8 drive writes per day (DWPD) over a 5 year life.

HP Enterprise Value Solid State Drives

HP Enterprise Value 12G SAS and 6G SATA SSDs deliver enterprise features for a low price in HP ProLiant server systems. This entry-level pricing is fueling rapid SSD adoption for read-intensive workloads because the cost per IOPS compares very favorably to HDDs. Available capacities for the HP Enterprise Value 12G SAS SSDs are 800GB and 1.6TB. The 6G SATA SSDs are available in 120GB, 240GB, 480GB, 800GB, and 1.6TB capacities. HP Enterprise Boot SSDs come in capacities of 80GB and 120GB and include an Endurance Manager feature to dynamically throttle writes, which maintains endurance for boot/swap applications.

¹DWPD = Full drive writes per day for 5 years

HP Value Endurance M.2 Solid State Enablement Kits

HP Value Endurance M.2 Solid State Enablement Kit is the newest addition to our value endurance solid state drive product family and is best suited for boot/swap. The M.2 Solid State Enablement Kit is available in dual and single 64GB capacity compatible for ProLiant Gen9 blades. The M.2 Enablement kits currently support a SATA interface and have an endurance of 0.3 drive writes per day (DWPD).

Key features and benefits

Higher performance and better latency

HP SSDs enable rapid reads and writes of transactional data. On an HDD, random reads require constant repositioning of the read/write head to seek the exact location of data on the platter before the data transfer can begin. However, SSDs have no moving parts or rotating platters that can cause latency problems, and that results in faster access to data. Therefore, with faster seek times, the drives achieve high IOPS, producing quicker data access and better latency.

The drives also pack the operating performance of several rotating HDDs into the same space as a single HDD, so you can get more performance out of your existing data center.

Lower power consumption

Steadily increasing storage requirements pose power and performance challenges to data centers. Solid state devices have a significantly better performance-to-power rating than traditional rotating HDDs. The lack of a motor greatly reduces an SSD's power consumption, so the drives draw less energy—less than two watts idle and less than nine watts maximum—for SSDs.

Environmental ruggedness

The inherent environmental ruggedness of SSDs makes them well suited for extreme environments where traditional drives cannot operate. The drives can tolerate significantly higher operating shock and vibration levels compared to traditional rotating HDDs. In fact, they virtually eliminate rotational vibration problems.

High reliability

Reliability is important for any storage medium, and it is essential when considering a storage device that can be used in servers. HP Enterprise SSDs pass a rigorous HP ProLiant qualification of 2.4 million test hours.

Investment protection

HP Enterprise SSDs are a drop-in replacement for existing HDDs. They fit into existing HDD hot-plug bays and require no modification to operating system or infrastructure tools. The drives are recognized as standard SAS or SATA devices with no special changes in firmware or hardware. Although you cannot mix SSDs and HDDs in the same logical array, you can mix them within the system to provide a more effective use of both technologies.

Technical specifications

HP SSDs come in a range of performance, endurance, and interface options.

Table 2. HP Enterprise Performance SSDs
Server support may vary. Please refer to HP SSD QuickSpecs

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 12G SAS High Endurance Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives (supports Gen8 servers and beyond only)						
800GB 741159-B21	1,000	560	87,000	73,000	9	25
400GB 741155-B21	960	585	86,000	73,000	9	25
200GB 741151-B21	960	520	84,000	66,000	9	25
HP 12G SAS High Endurance Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives (supports G7)						
800GB 741157-B21	1,000	560	87,000	73,000	9	25
400GB 741153-B21	960	585	86,000	73,000	9	25
200GB 741148-B21	960	520	84,000	66,000	9	25

* DWPD = Full drive writes per day for 5 years

Table 3. HP Enterprise Mainstream SSDs
Server support may vary. Please refer to HP SSD QuickSpecs

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 12G SAS Mainstream Endurance Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives (supports Gen8 servers and beyond only)						
1.6TB 779176-B21	1,000	565	66,000	62,000	9	10
800GB 779172-B21	1,000	565	66,000	64,000	9	10
800GB 741146-B21	1,000	570	87,000	58,000	9	10
400GB 779168-B21	1,000	700	70,000	62,000	9	10
400GB 741142-B21	1,000	625	86,000	58,000	9	10
200GB 779164-B21	1,000	510	70,000	51,000	9	10
200GB 741138-B21	1,000	450	84,000	42,000	9	10
HP 12G SAS Mainstream Endurance Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives (supports G7)						
1.6TB 779174-B21	1,000	565	66,000	62,000	9	10
800GB 779170-B21	1,000	565	66,000	64,000	9	10
800GB 741144-B21	1,000	570	87,000	58,000	9	10
400GB 779166-B21	1,000	700	70,000	62,000	9	10
400GB 741140-B21	1,000	625	86,000	58,000	9	10
200GB 779162-B21	1,000	510	70,000	51,000	9	10
200GB 741136-B21	1,000	450	84,000	42,000	9	10

HP Enterprise Mainstream SSDs (continued)

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives (supports Gen8 servers and beyond only)						
800GB 691868-B21	480	450	61,000	35,000	9	10
400GB 691866-B21	480	450	63,000	35,000	9	10
200GB 691864-B21	480	350	63,000	32,000	9	10
100GB 691862-B21	480	185	63,000	19,200	9	10
HP 6G SATA ME Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives (supports Gen8 servers and beyond only)						
800GB 691860-B21	480	450	61,000	35,000	9	10
400GB 691856-B21	480	450	63,000	35,000	9	10
200GB 691854-B21	480	350	63,000	32,000	9	10
100GB 691852-B21	480	185	63,000	19,200	9	10
HP 6G SATA ME Quick Release (2.5-inch) Enterprise Mainstream Solid State Drives (supports select SL, Gen8 and G7 servers)						
800GB 730057-B21	480	450	61,000	35,000	9	10
400GB 730055-B21	480	450	63,000	35,000	9	10
200GB 730053-B21	480	350	63,000	32,000	9	10
100GB 730051-B21	480	185	63,000	19,200	9	10
HP 6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives (supports G7)						
800GB 730065-B21	480	450	61,000	35,000	9	10
400GB 730063-B21	480	450	63,000	35,000	9	10
200GB 730061-B21	480	350	63,000	32,000	9	10
100GB 730059-B21	480	185	63,000	19,200	9	10

* DWPD = Full drive writes per day for 5 years

Table 4. HP Enterprise Light SSDs
Server support may vary. Please refer to HP SSD QuickSpecs

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 6G SATA LE Hot Plug SFF (2.5-inch) Enterprise Light Solid State Drives (supports Gen8 servers and beyond only)						
9600GB 756601-B21	470	455	58,800	13,200	9	3.8
HP 6G SATA LE Hot Plug SFF (2.5-inch) Enterprise Light Solid State Drives (supports G7)						
9600GB 756611-B21	470	455	58,800	13,200	9	3.8
HP 6G SATA LE Hot Plug LFF (3.5-inch) Enterprise Light Solid State Drives (supports Gen8 servers and beyond only)						
9600GB 756604-B21	470	455	58,800	13,200	9	3.8
HP 6G SATA LE Non-hot Plug SFF (2.5-inch) Enterprise Light Solid State Drives						
9600GB 756614-B21	470	455	58,800	13,200	9	3.8
HP 6G SATA LE Quick-release SFF (2.5-inch) Enterprise Light Solid State Drives (supports select SL Gen8 servers)						
9600GB 756607-B21	470	455	58,800	13,200	9	3.8

* DWPD = Full drive writes per day for 5 years

Table 5. HP Enterprise Value SSDs
Server support may vary. Please refer to HP SSD QuickSpecs

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 12G SAS Value Endurance Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives (supports Gen8 servers and beyond only)						
1.6TB 762272-B21	1,000	385	96,000	25,000	9	1
800GB 762270-B21	1,000	390	91,000	28,000	9	1
HP 12G SAS Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives (supports Gen8 servers and beyond only)						
1.6TB 762263-B21	1,000	385	96,000	25,000	9	1
800GB 762261-B21	1,000	390	91,000	28,000	9	1
HP 6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives (supports Gen8 servers and beyond only)						
1.6TB 757339-B21	485	400	59,000	14,300	9	0.3
800GB 764929-B21	420	335	58,000	26,000	9	
800GB 717973-B21	480	445	64,000	12,000	9	0.3
480GB 764927-B21	420	390	58,000	35,000	9	
480GB 756657-B21	470	470	59,500	14,400	9	1.9
480GB 717971-B21	480	400	64,000	10,000	9	0.3
240GB 764925-B21	420	325	58,000	35,000	9	
240GB 756636-B21	470	460	59,500	14,300	9	1.9
240GB 717969-B21	475	250	64,000	8000	9	0.3
120GB 764923-B21	430	205	58,000	24,000	9	
120GB 756621-B21	470	310	60,000	10,200	9	1.9
HP 6G SATA Value Endurance Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives (supports Gen8 servers and beyond only)						
1.6TB 757342-B21	485	400	59,000	14,300	9	0.3
800GB 764945-B21	420	335	58,000	26,000	9	
800GB 718189-B21	480	445	64,000	12,000	9	0.3
480GB 764943-B21	420	390	58,000	35,000	9	
480GB 756660-B21	470	470	59,500	14,400	9	1.9
480GB 718183-B21	480	400	64,000	10,000	9	0.3
240GB 764941-B21	420	325	58,000	35,000	9	
240GB 756639-B21	470	460	59,500	14,300	9	1.9
240GB 718177-B21	475	250	64,000	8000	9	0.3
120GB 764939-B21	430	205	58,000	24,000	9	
120GB 756624-B21	470	310	60,000	10,200	9	1.9

HP Enterprise Value SSDs (continued)

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives (supports G7)						
1.6TB 757351-B21	485	400	59,000	14,300	9	0.3
800GB 764921-B21	420	335	58,000	26,000	9	
800GB 728743-B21	480	445	64,000	12,000	9	0.3
480GB 764918-B21	420	390	58,000	35,000	9	
480GB 756666-B21	470	470	59,500	14,400	9	1.9
480GB 728739-B21	480	400	64,000	10,000	9	0.3
240GB 764916-B21	420	325	58,000	35,000	9	
240GB 756651-B21	470	460	59,500	14,300	9	1.9
240GB 728735-B21	475	250	64,000	8000	9	0.3
120GB 764914-B21	430	205	58,000	24,000	9	
120GB 756630-B21	470	310	60,000	10,200	9	1.9
HP 6G SATA Value Endurance Hot Plug LFF (3.5-inch) Enterprise Value Solid State Drives (supports G7)						
1.6TB 757354-B21	485	400	59,000	14,300	9	0.3
800GB 764937-B21	420	335	58,000	26,000	9	
800GB 728745-B21	480	445	64,000	12,000	9	0.3
480GB 764935-B21	420	390	58,000	35,000	9	
480GB 728741-B21	480	400	64,000	10,000	9	0.3
240GB 764933-B21	420	325	58,000	35,000	9	
240GB 728737-B21	475	250	64,000	8000	9	0.3
120GB 764931-B21	430	205	58,000	24,000	9	
HP 6G SATA Value Endurance Hot Plug SFF (2.5-inch) Solid State Drives (supports Gen8 servers and beyond only)						
120GB 717965-B21	410	n/a	64,000	n/a	9	n/a
80GB 734360-B21	335	n/a	59,000	n/a	9	n/a
HP 6G SATA Value Endurance Hot Plug LFF (3.5-inch) Solid State Drives (supports Gen8 servers and beyond only)						
120GB 718171-B21	410	n/a	64,000	n/a	9	n/a
80GB 734362-B21	335	n/a	59,000	n/a	9	n/a

HP Enterprise Value SSDs (continued)

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 6G SATA Value Endurance Quick Release (2.5-inch) Solid State Drives (supports select Gen9, 8, 7)						
1.6TB 757345-B21	485	400	59,000	14,300	9	0.3
800GB 764953-B21	420	335	58,000	26,000	9	
800GB 718192-B21	480	445	64,000	12,000	9	0.3
480GB 764951-B21	420	390	58,000	35,000	9	
480GB 756663-B21	470	470	59,500	14,400	9	1.9
480GB 718186-B21	480	400	64,000	10,000	9	0.3
240GB 764949-B21	420	325	58,000	35,000	9	
240GB 756642-B21	470	460	59,500	14,300	9	1.9
240GB 718180-B21	475	250	64,000	8000	9	0.3
120GB 764947-B21	430	205	58,000	24,000	9	
120GB 756627-B21	470	310	60,000	10,200	9	1.9
120GB 718174-B21	410	n/a	64,000	n/a	9	n/a
80GB 734364-B21	335	n/a	59,000	n/a	9	n/a
HP 6G SATA Value Endurance Non-hot Plug (2.5-inch) Solid State Drives (supports select Gen9, Gen8, G7)						
1.6TB 757357-B21	485	400	59,000	14,300	9	0.3
480GB 756669-B21	470	470	59,500	14,400	5	1.9
240GB 756654-B21	470	460	59,500	14,300	5	1.9
120GB 756633-B21	470	310	60,000	10,200	5	1.9

* DWPD = Full drive writes per day for 5 years

Table 6. HP Enterprise Boot SSDs

Server support may vary. Please refer to HP SSD QuickSpecs

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives (supports G7)						
120GB 728726-B21	410	n/a	64,000	n/a	9	n/a
80GB 734366-B21	335	n/a	59,000	n/a	9	n/a
HP 6G SATA Value Endurance Hot Plug LFF (3.5-inch) Enterprise Boot Solid State Drives (supports G7)						
120GB 728732-B21	410	n/a	64,000	n/a	9	n/a
80GB 734368-B21	335	n/a	59,000	n/a	9	n/a

*Represents number of full rewrites of drive "surface" per day for five years using 100 percent random 4 KiB writes.

Table 7. HP Value Endurance M.2 Solid State Enablement Kit

Server support may vary. Please refer to HP SSD QuickSpecs

Model	Sequential reads (MB/s)	Sequential writes (MB/s)	Random reads (IOPS)	Random writes (IOPS)	Maximum power watts	Endurance (drive writes/day)*
HP 64GB Value Endurance Solid State M.2 Enablement Kit for ProLiant Blades (supports BL Gen9 only)						
64GB 785233-B21	330	1.9	10,000	710	9	0.3
Dual 64GB 775588-B21	330	1.9	10,000	710	9	0.3

*Performance shown is for a single 120GB and 64GB M.2 Enablement Kit and will vary for the Dual 120GB and 64GB M.2 Enablement

Specifications common to all HP SSDs

Table 8. Common specifications

Data compression	No
Throttling to guarantee a minimum lifetime	No
Interface	SATA, SAS
Write cache—default	Yes, enabled
User settable	No
Volatile/nonvolatile	Nonvolatile
Operating temperature	0° to 60°C
MTBF	2,000,000 hours
Logical block size	512 bytes
Warranty	3-year warranty, warranty does not cover wear out
Command queuing	Yes
Trim (SATA trim)	Yes
SmartSSD Wear Gauge support	Yes, full ACU/ADU support required. Smart Array Firmware version 5.0 or greater is required
Universal hot-plug carrier	Yes

Resources

See [QuickSpecs](#) for more product details.

Customize your IT lifecycle management, from acquisition of new IT, management of existing assets, and removal of unneeded equipment.

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HP Factory Express provides customization and deployment services along with your storage and server purchases. You can customize hardware to your exact specifications in the factory—helping speed deployment. hp.com/go/factoryexpress

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Enable your success with HP support services

Simplify implementation and support of your server solution.

To streamline installation and enhance ongoing support, HP recommends the following service offerings:

- HP Installation and Startup Service—HP Services offers complete installation and implementation support—including global rollout capabilities—to get your HP server-based solution up and running rapidly, with reduced business disruption. You can choose from all server options and storage for inclusion in the server: Microsoft®, Linux®, Solaris®, and VMware® operating software, plus HP Insight Control software management solutions.
- Hardware support—You can cover all the options installed in your server with a single convenient service package. HP Care Pack Services for HP ProLiant servers and storage systems provide support for all HP-branded hardware options qualified for inclusion in your server at the time of purchase or afterward. Any additional HP-qualified options installed within the server are covered at the same service level and for the same period as the server.

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