

English ▾



HPE Superdome Flex Server - Overview

[Product description](#)
[What's new](#)
[Product features](#)
[Software overview](#)
[Link to product specifications](#)
[Link to warranty information](#)
[Link to QuickSpecs](#)
[Link to drivers, firmware, software and manuals](#)
[Link to product related documents](#)

Product description

The HPE Superdome Flex Server is a compute breakthrough to power critical applications, accelerate data analytics and tackle Artificial Intelligence (AI) and High-Performance Computing (HPC) workloads holistically. It delivers an unmatched combination of flexibility, performance and reliability for critical environments of any size. Its unique modular architecture and unparalleled scale allows the user to start small and grow at own pace. Leveraging its in-memory design and groundbreaking performance, user can process and analyze the growing amount of data moving through users business at extreme speed. With superior Reliability, Availability and Serviceability (RAS) and end-to-end security, the HPE Superdome Flex Server safeguards the vital workloads.

[top](#)

What's new

- Utilizes new Intel Xeon scalable processors with choice of Gold or Platinum
- Features new, faster Double Data Rate 4th generation (DDR4) memory technology
- Supports HPE Persistent memory, available in 128, 256, and 512GB capacities and featuring Intel optane DC persistent memory
- Offers choice of high performance Dynamic Random-Access Memory (DRAM) only or a combination of DRAM and HPE Persistent memory, to meet individual workload requirements
- Delivers enhanced management, reliability and security ecosystem
- Provides 128GB DDR4 Dual In-Line Memory Modules (DIMMs) and refreshed Solid State Drives (SSDs) and Non-Volatile Memory express (NVMe)

[top](#)

Product features

Feature	Description																									
Processor	Intel Xeon Scalable Processor Family 2nd Generation 62XX and 82XX																									
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Feature

Description

Intel Xeon Scalable Processor Family 2nd Generation 62XX and 82XX

Processor	# Of cores per processor	Frequency	Cache	Power
Intel Xeon Platinum 8276M Processor	28c	2.3 GHz	38.5MB	165 W
Intel Xeon Platinum 8276L Processor	28c	2.3 GHz	38.5MB	165 W
Intel Xeon Platinum 8270 Processor	26c	2.7 GHz	35.75MB	205 W
Intel Xeon Platinum 8268 Processor	24c	2.8 GHz	35.75MB	205 W
Intel Xeon Platinum 8260 Processor	24c	2.4 GHz	35.75MB	165 W
Intel Xeon Platinum 8260M Processor	24c	2.4 GHz	35.75MB	165 W
Intel Xeon Platinum 8260L Processor	24c	2.4 GHz	35.75MB	165 W
Intel Xeon Platinum 8256 Processor	4c	3.8 GHz	16.5MB	105 W
Intel Xeon Platinum 8253 Processor	16c	2.2 GHz	22MB	125 W
Intel Xeon Gold 6254 Processor	18c	3.2 GHz	24.75MB	200 W
Intel Xeon Gold 6252 Processor	24c	2.1 GHz	35.75MB	150 W
Intel Xeon Gold 6248 Processor	20c	2.6 GHz	27.5MB	150 W
Intel Xeon Gold 6246 Processor	12c	3.3 GHz	24.75MB	165W
Intel Xeon Gold 6244 Processor	8c	3.6 GHz	24.75MB	150 W
Intel Xeon Gold 6242 Processor	16c	2.8 GHz	22MB	150 W
Intel Xeon Gold 6240 Processor	18c	2.6 GHz	24.75MB	150 W
Intel Xeon Gold 6240M Processor	18c	2.6 GHz	24.75MB	150 W
Intel Xeon Gold 6240L Processor	18c	2.6 GHz	24.75MB	150 W
Intel Xeon Gold 6230 Processor	20c	2.1 GHz	27.5MB	150 W
Intel Xeon Gold 6226 Processor	12c	2.7 GHz	19.25MB	125 W

Intel Xeon Scalable Processor Family 1st Generation 61XX and 81XX)

Processor	# Of cores per processor	Frequency	Cache	Power
Intel Xeon Platinum 8180 Processor	28c	2.5 GHz	38.5MB	205 W
Intel Xeon Platinum 8180M Processor	28c	2.5 GHz	38.5MB	205 W
Intel Xeon Platinum 8176 Processor	28c	2.1 GHz	38.5MB	165 W
Intel Xeon Platinum 8176M Processor	28c	2.1 GHz	38.5MB	165 W
Intel Xeon Platinum 8170 Processor	26c	2.1 GHz	35.5MB	165 W
Intel Xeon Platinum 8170M Processor	26c	2.1 GHz	35.5MB	165 W
Intel Xeon Platinum 8168 Processor	24c	2.7 GHz	33MB	205 W
Intel Xeon Platinum 8160 Processor	24c	2.1 GHz	33MB	150 W
Intel Xeon Platinum 8160M Processor	24c	2.1 GHz	33MB	150 W
Intel Xeon Platinum 8158 Processor	12c	3.0 GHz	24.7MB	150 W
Intel Xeon Platinum 8156 Processor	4c	3.6 GHz	16.5MB	150 W
Intel Xeon Gold 6154 Processor	18c	3.0 GHz	24.75MB	200 W
Intel Xeon Gold 6152 Processor	22c	2.1 GHz	30.25MB	140 W
Intel Xeon Gold 6150 Processor	18c	2.7 GHz	24.75MB	165 W
Intel Xeon Gold 6146 Processor	12c	3.2 GHz	24.75MB	165 W
Intel Xeon Gold 6144 Processor	8c	3.5 GHz	24.75MB	150 W
Intel Xeon Gold 6142 Processor	16c	2.6 GHz	22MB	150 W

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RAID options	<ul style="list-style-type: none"> Embedded Base IO HPE 9361-4i RAID Controller HPE 3154-8e RAID Controller 																																			
Processor mixing support	<p>Governing rules for mixing processors are as follows:</p> <ul style="list-style-type: none"> No mixing of processor types within the same chassis or HPE nPartitions (HPE nPars). No support for processors running at different frequencies or different cache sizes within the same chassis or HPE nPars. Processor modules on a chassis must be the same revision, frequency and cache size. 																																			
Persistent memory support	<p>HPE Persistent memory support is available only on systems that have Intel Xeon 2nd Generation 62XX and 82XX processors</p> <p>The following HPE Persistent memory DIMMs are supported:</p> <ul style="list-style-type: none"> HPE 128GB 2666 persistent memory kit featuring Intel optane DC persistent memory HPE 256GB 2666 persistent memory kit featuring Intel optane DC persistent memory HPE 512GB 2666 persistent memory kit featuring Intel optane DC persistent memory 																																			
Key features and benefits	<p>HPE Superdome flex offers scalability that surpasses the market, flexibility, modularity, and mission-critical RAS functionality</p> <ul style="list-style-type: none"> Support for 4 to 32-sockets of Intel Xeon Scalable processors in a single system with up to 28-cores per socket for a maximum of 896 cores. 48 DIMM slots of DDR4 memory per chassis. 1768Gb - 48TB of shared memory. Choice of high performance DRAM only, or with 2nd Generation 62XX and 82XX processors, a combination of DRAM and HPE Persistent memory available in 128, 256 and 512GB kits featuring Intel optane DC persistent memory to meet individual workload requirements. 16 Half-height IO slots, or 8 full-height + 4 half-height IO slots, per four-socket chassis. Base IO includes 4-drive bays, two 1 GbE and two 10 GbE NIC ports, four USB ports. Built-in DVD Superdome flex analysis engine for better diagnostics and mission-critical reliability. HPE nPARs: 4 socket to 16 socket and multiple nPARs configurations per rack supported for greater system reliability and licensing optimization. 																																			
General	<ul style="list-style-type: none"> The superdome flex system is built using 4-socket, 5U chassis that are cabled together to create systems from 4-sockets (1 Chassis) to 32 sockets (8 Chassis) Each chassis supports 8 fans, 4 power supplies (1600 W each), associated power cords, and connecting grid cables 																																			
Power supply (1600 W)	<p>80PLUS Platinum power supply</p> <table border="1"> <thead> <tr> <th>Loading</th> <th>100% maximum</th> <th>50% of maximum</th> </tr> </thead> <tbody> <tr> <td>Minimum efficiency</td> <td>91%</td> <td>94%</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Loading</th> <th>100% maximum</th> <th>50% of maximum</th> </tr> </thead> <tbody> <tr> <td>Platinum minimum efficiency</td> <td>91%</td> <td>94%</td> </tr> </tbody> </table>	Loading	100% maximum	50% of maximum	Minimum efficiency	91%	94%	Loading	100% maximum	50% of maximum	Platinum minimum efficiency	91%	94%																							
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System	The system can support up to 8 chassis																																			

Feature	Description
Keep pace with the evolving demands on critical data environments	<ul style="list-style-type: none"> • HPE Superdome Flex Server utilizes a unique modular architecture that scales flexibly and seamlessly from 4- to 32-sockets in a single-system. Grow at users own pace, in 4-socket increments, avoiding the need to over-provision. With up to 32 sockets/896 cores, user have plenty of headroom to scale. • Leverage a cost-efficient entry point for mission-critical workloads at 4 sockets, and the ability to scale up to 32 sockets with choice of either economical gold or high-end Platinum Intel Xeon scalable processors. • Meet in-memory computing demands with a platform that delivers from 768GB up to 48TB of shared memory. User can choose DRAM only or a combination of DRAM and HPE Persistent memory, depending on workload requirements. • Benefit from unbounded Input/Output (I/O) with support for up to 128 Peripheral Component Interconnect Express (PCIe) standup cards. • Simplify hybrid cloud environment with choice of management including open Redfish software ecosystem, OpenStack and HPE OneView monitoring.
Process and analyze user's ever-growing data at extreme speed	<ul style="list-style-type: none"> • HPE Superdome Flex Server provides the compute power needed for the most demanding workloads by delivering ground breaking performance at any scale. • Achieve the performance levels required by critical applications with ultra-low latency and high bandwidth technology. • Leverage innovative in-memory design and unmatched shared memory capacity of up to 48TB in a single platform. • Designed for the future based on memory-driven computing design principles to boost analytics performance.
Safeguard user's mission-critical workloads	<ul style="list-style-type: none"> • The HPE Superdome Flex Server delivers the highest service levels on industry standards with extreme and proven RAS capabilities not available on other x86 platforms. • Contain errors at the firmware level, including memory errors, before any interruption can occur at the operating system layer with the HPE's firmware first approach. • Reduce human error with the proven fault-handling analysis engine, which predicts hardware faults and initiates self-repair without operator assistance. • Isolate workloads and/or consolidate multiple workloads onto a single managed complex with the unique x86 hard partitioning (HPE nPars). Service individual partitions and/or reconfigure while other partitions continue to run undisturbed. • Deliver business continuity for Linux workloads with HPE Serviceguard for Linux (SGLX) high availability and disaster recovery clustering solution. It protects from a multitude of infrastructure and application faults across physical or virtual environments over any distance.

Feature	Description
Processors ¹	<p>Each server chassis supports four 81XX, 61XX, 82XX or 62XX Intel Xeon scalable processors:</p> <ul style="list-style-type: none"> • Intel Xeon Platinum 8180 processor 28-cores/2.5 GHz/205 W/38.5M • Intel Xeon Platinum 8180M processor 28-cores/2.5 GHz/205 W/38.5M • Intel Xeon Platinum 8176 processor 28-cores/2.1 GHz/165 W/38.5M • Intel Xeon Platinum 8176M processor 28-cores/2.1 GHz/165 W/38.5M • Intel Xeon Platinum 8170 processor 26-cores/2.1 GHz/165 W/35.5M • Intel Xeon Platinum 8170M processor 26-cores/2.1 GHz/165 W/35.5M • Intel Xeon Platinum 8168 processor 24-cores/2.7 GHz/205 W/33M • Intel Xeon Platinum 8160 processor 24-cores/2.1 GHz/150 W/33M • Intel Xeon Platinum 8160M processor 24-cores/2.1 GHz/150 W/33M • Intel Xeon Platinum 8156 processor 4-cores/3.6 GHz/105 W/16.5M • Intel Xeon Platinum 8158 processor 12-cores/3.0 GHz/150 W/24.75M • Intel Xeon Gold 6150 processor 18-cores/2.7 GHz/165 W/24.75M • Intel Xeon Gold 6152 processor 22-cores/2.1 GHz/140 W/30.25M • Intel Xeon Gold 6154 processor 18-cores/3.0 GHz/200 W/24.75M • Intel Xeon Gold 6146 processor 12-cores/3.2 GHz/165 W/24.75M • Intel Xeon Gold 6144 processor 8-cores/3.5 GHz/150 W/24.75M • Intel Xeon Gold 6142 processor 16-cores/2.6 GHz/150 W/22M • Intel Xeon Gold 6142M processor 16-cores/2.6 GHz/150 W/22M • Intel Xeon Gold 6140 processor 18-cores/2.3 GHz/140 W/24.75M • Intel Xeon Gold 6140M processor 18-cores/2.3 GHz/10 W/24.75M • Intel Xeon Gold 6138 processor 20-cores/2.0 GHz/125 W/27.5M • Intel Xeon Gold 6132 processor 14-cores/2.6 GHz/140 W/19.25M • Intel Xeon Gold 6130 processor 16-cores/2.1 GHz/125 W/22M • Intel Xeon-Gold 6226 (2.7 GHz/12-core/125 W) processor kit • Intel Xeon-Gold 6230 (2.1 GHz/20-core/150 W) processor kit • Intel Xeon-Gold 6240 (2.6 GHz/18-core/150 W) processor kit • Intel Xeon-Gold 6240M (2.6 GHz/18-core/150 W) processor kit • Intel Xeon-Gold 6240L (2.6 GHz/18-core/150 W) processor kit • Intel Xeon-Gold 6242 (2.8 GHz/16-core/150 W) processor kit • Intel Xeon-Gold 6244 (3.6 GHz/8-core/150 W) processor kit • Intel Xeon-Gold 6246 (3.3 GHz/12-core/165 W) processor kit • Intel Xeon-Gold 6248 (2.6 GHz/20-core/150 W) processor kit • Intel Xeon-Gold 6252 (2.1 GHz/24-core/150 W) processor kit • Intel Xeon-Gold 6254 (3.2 GHz/18-core/200 W) processor kit • Intel Xeon-Platinum 8253 (2.2 GHz/16-core/125 W) processor kit • Intel Xeon-Platinum 8256 (3.8 GHz/4-core/105 W) processor kit • Intel Xeon-Platinum 8260 (2.4 GHz/24-core/165 W) processor kit • Intel Xeon-Platinum 8260M (2.4 GHz/24-core/165 W) processor kit • Intel Xeon-Platinum 8260L (2.4 GHz/24-core/165 W) processor kit • Intel Xeon-Platinum 8268 (2.9 GHz/24-core/205 W) processor kit • Intel Xeon-Platinum 8270 (2.7 GHz/26-core/205 W) processor kit • Intel Xeon-Platinum 8276 (2.3 GHz/28-core/165 W) processor kit • Intel Xeon-Platinum 8276M (2.3 GHz/28-core/165 W) processor kit • Intel Xeon-Platinum 8276L (2.3 GHz/28-core/165 W) processor kit • Intel Xeon-Platinum 8280 (2.7 GHz/28-core/205 W) processor kit • Intel Xeon-Platinum 8280M (2.7 GHz/28-core/205 W) processor kit • Intel Xeon-Platinum 8280L (2.7 GHz/28-core/205 W) processor kit

Feature	Description
HPE D-Rack	<p>The HPE D-Rack is available for Superdome Flex in two models:</p> <ul style="list-style-type: none"> • HPE 42U 610 mm x 1156 mm D-Rack (H7C27A) • HPE D-Rack 42U 610 mm x 1156 mm extended (Q2T97A) The extended rack includes a 2U extension for a total of 44 rack units (44U) <p>The following PDUs are supported with the HPE D-Rack</p> <ul style="list-style-type: none"> • HPE D-Rack 21 x 3-phase 240 V NA/JP PDU (H7C28A) order 2 PDUs for 1-4 SD Flex chassis in rack; order 4 PDUs for 5-8 SD Flex chassis in rack • HPE D-Rack 21 x 3-phase 400 V international PDU (H7C29A) order 2 PDUs for 1-4 SD Flex chassis in rack; order 4 PDUs for 5-8 SD Flex chassis in rack • HPE D-Rack 8 x single-phase 240 V NA PDU (H7C30A) order 2 PDUs per chassis for 1-4 SD Flex chassis in rack; order 1 PDU per chassis for 5-8 SD Flex chassis in rack • HPE D-Rack 8 x single-phase 240 V international PDU (H7C31A) order 2 PDUs per chassis for 1-4 SD Flex chassis in rack; order 1 PDU per chassis for 5-8 SD Flex chassis in rack • HPE D-Rack 8 x single-phase 240 V AU PDU (H7C32A) order 2 PDUs per chassis for 1-4 SD Flex chassis in rack; order 1 PDU per chassis for 5-8 SD Flex chassis in rack
Chipset	HPE Superdome flex ASIC
Networking	<ul style="list-style-type: none"> • HPE Ethernet 10/25Gb 2-Port 640SFP28 Adapter (Requires transceivers or Direct Attached Copper (DAC)) • HPE Ethernet 10Gb 2P 562T Adapter • HPE Ethernet 10Gb 2-port 562SFP+ Adapter (Requires transceivers or DAC) • HPE Ethernet 1Gb 4-port 331T Adapter • HPE Ethernet 1Gb 2P 361T Adapter • HPE Eth 10/25Gb 2p 631SFP28 Adapter (Requires transceivers or DAC) • HPE Ethernet 100Gb 1-port 842QSFP28 Adapter (Requires transceivers or DAC) • HPE Eth 10/25Gb 2p 621SFP28 Adapter (Requires transceivers or DAC)
Storage and boot support	<ul style="list-style-type: none"> • HPE SN1200E 16Gb 2p FC HBA • HPE SN1100Q 16Gb 2p FC HBA • HPE SN1600E 32Gb 2p FC HBA • HPE SN1600Q 32Gb 2p FC HBA • HPE 9361-4i RAID Controller (Internal) • HPE 3154-8e RAID Controller (External) • HPE 3162-8i Encryption RAID Controller (Internal encryption) • HPE 9300-8e 12Gb 8p external SAS Controller
Upgradability and scalability	Scalable from 4-socket configurations to 32-socket configurations in 4-socket increments
Memory type registered	<p>For Intel Xeon scalable 61XX and 81XX processor family:</p> <ul style="list-style-type: none"> • 32GB 2R x 4 DDR4-2666 CAS-19-19-19 Registered DIMM • 64GB 4R x 4 DDR4-2666 CAS-19-19-19 Load reduced Dual In-Line Memory Module (LRDIMM) • 128GB Octal rank x 4 DDR4-2666 CAS-22-19-19 3DS load reduced DIMM <p>For Intel Xeon Scalable 62XX and 82XX processor family:</p> <ul style="list-style-type: none"> • 32GB (1 x 32GB) Dual rank x 4 DDR4-2933 registered memory kit • 64GB (1 x 64GB) Quad rank x 4 DDR4-2933 load reduced memory kit • 128GB (1 x 128GB) Quad rank x 4 DDR4-2933 load reduced memory kit
Memory protection	<ul style="list-style-type: none"> • Error Checking and Correcting (ECC) on memory and caches • Adaptive Double Device Data Correction (ADDDC) and Single Device Data Correction (SDDC) are supported options
I/O slots	<p>Chassis support either of the below:</p> <ul style="list-style-type: none"> • 16 Half-Height PCIe slots (7 x 16 and 9 x 8 slots) • 12 Slots with 8 full-height slots (4 x 16 and 4 x 8 slots) + 4 half-height slots (1 x 16 and 3 x 8 slots) • Or a compute-only configuration (No PCIe slots) • The compute-only configuration is only supported with the expansion chassis

Feature	Description
Base I/O	<p>Base chassis</p> <p>The Base I/O includes:</p> <ul style="list-style-type: none"> • The Board Management Controller (BMC) • DVD Bay • 4 Drive bays • Two 10 GbE + two 1 GbE NIC ports • Serial console • VGA and 4 USB ports • Management LAN port • 1 GbE Rack Management Controller (RMC) port <hr/> <p>Expansion chassis</p> <p>The Base IO includes:</p> <ul style="list-style-type: none"> • The BMC • Management LAN port • 1 GbE RMCr port
I/O Options	<ul style="list-style-type: none"> • 1Gb, 10Gb, 25Gb Network Interface Card (NIC) • 16Gb/32Gb Fibre Channel (FC) • Internal and external SAS controllers • InfiniBand EDR/Ethernet 100Gb • I/O Accelerators • GPU options
Partitioning	<ul style="list-style-type: none"> • Multiple 4, 8, 12 or 16-socket electrically isolated HPE nPars supported per rack • All processors and memory must be the same within a partition • DVD Is required per base chassis and per partition expansion chassis • Repartitioning does not require recabling
Form factor²	<ul style="list-style-type: none"> • 5U Base chassis or expansion chassis • 1U External RMC
Chassis	<p>Each chassis has the following specifications:</p> <ul style="list-style-type: none"> • Support for 4 Intel Xeon scalable processors • Supports 48 DDR4 DIMM slots (12 DIMMs/Processor) • Supports up to 16 PCIe Gen3 slots • Supports additional I/O capability in a base I/O chassis
Base and expansion chassis	<ul style="list-style-type: none"> • Every superdome flex system starts with one 4-socket base chassis (With boot support) • Up to 7 expansion/partition chassis can be added to expand the system from 4 to 32 sockets
High availability standard server features	<ul style="list-style-type: none"> • 2N (N+N) Redundant power supplies reduced to N+1 when GPUs are included • N+1 Fans (Or greater depending on the load) • Hot-Swappable and redundant fans, power supplies • Online, replaceable and redundant fans, power supplies • Fault tolerant fabric built on dynamic multi-pathing and end-to-end retry technology • Enhanced MCA Gen2 recovery • ADDDC memory options • SATA RAID 5 support • ECC, Re-Tries and Link width reduction on data paths • Automatic de-configuration of DIMMs. Processor de-configuration in subsequent releases • I/O advanced error recovery, and live error recovery • Redundant network paths • Redundant FC paths

Feature	Description
Security	<ul style="list-style-type: none"> • Firmware update protected by RMC Admin • Air-Gapped manageability • Secure Out-of-Box • Secure protocols • UEFI secure boot • Directory access control (LDAP/Active directory) • Alternatives to PXE (Directed LAN boot, HTTP boot) • Tamper-free updates - components digitally signed and verified • Multiple local accounts • Ability to rollback firmware

NOTE:

- All processors can be used to scale to 32 sockets.
 - All processors must be identical within a partition, system and chassis. No mixing is allowed between Intel Xeon scalable processor families.
- An embedded Rack Management Controller (eRMC) option is available for 4s and 8s systems which means the 1U RMC is not required when the eRMC is used. It is recommended to configure 4s or 8s systems with the 1U external RMC if end users might scale to greater than 8s at a later date
 - The 1U RMC is required for partitioned systems regardless of socket count

[top](#)

Software overview

FeaturesDescription

	<ul style="list-style-type: none"> • Red Hat Enterprise Linux (RHEL) • SUSE Linux Enterprise Server (SLES) • Oracle Linux/Oracle UEK • Oracle VM
OS	<ul style="list-style-type: none"> • VMware • Microsoft Windows Server 2016 Standard and Datacenter (For all processor families) • Microsoft Windows Server 2019 Standard and Datacenter (For 62XX and 82XX processors) <p>Click here to access more information on the Server OS and Virtualization Software and latest listing of software drivers available for the server .</p>

NOTE: HPE Foundation software is required for all Linux OS environments.

[top](#)

Link to product specifications

[Click here to view the product specifications .](#)

[top](#)

Link to warranty information

[Click here to check warranty status .](#)

[Click here for detailed information regarding worldwide limited warranty and technical support .](#)

[top](#)

Link to QuickSpecs

Information for this Overview is taken from the product QuickSpecs. To access the complete QuickSpecs for this product, select the desired link from the following list:

- [Click here to see the HPE Superdome Flex Server Worldwide QuickSpecs in html format .](#)
- [Click here to see the HPE Superdome Flex Server Worldwide QuickSpecs in pdf format .](#)
- [Click here to see the QuickSpecs homepage, which provides access to the QuickSpecs for other regions/countries .](#)

[top](#)

Link to drivers, firmware, software and manuals

[Click here to access the drivers, firmware, software and user manuals information .](#)

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Link to product related documents

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[top](#)

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