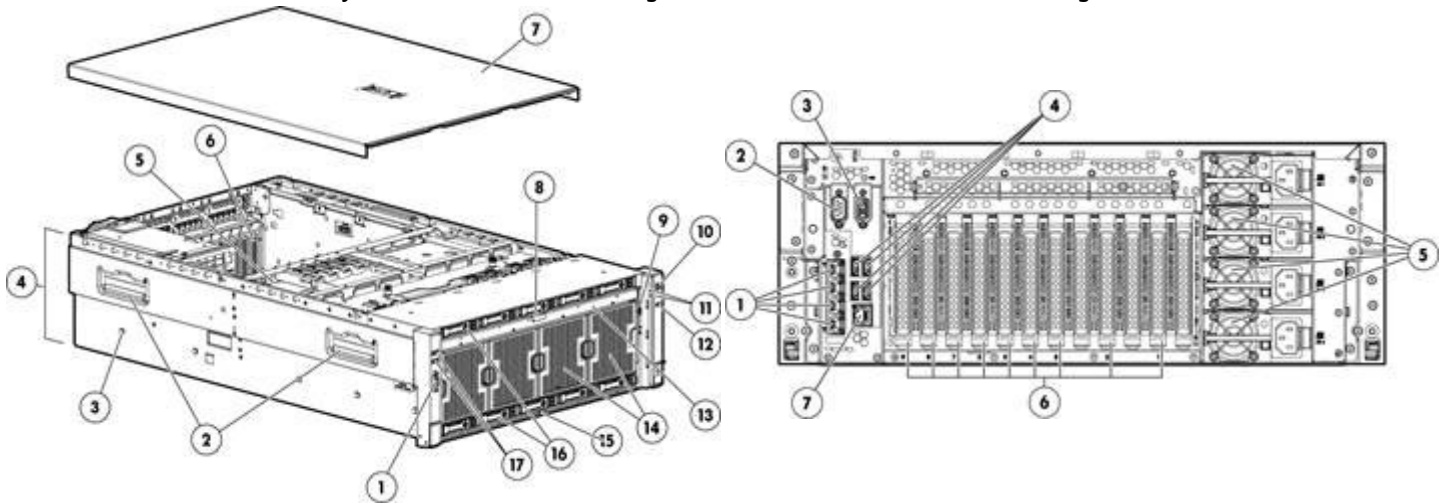# HP ProLiant DL580 Gen9

The HP ProLiant DL580 Gen9 Server is HP's four socket (4S) enterprise standard x86 server offering commanding performance, rock-solid reliability and availability, and compelling consolidation and virtualization efficiencies.

Supporting Intel® Xeon® E7-4800/8800 v3 processors, the HP DL580 Gen9 offers enhanced processor performance, up to 6 TBs of memory, greater IO bandwidth (9 PCIe Gen3.0 slots), and 12 Gb/s of SAS speeds. HP ProLiant DL580 Gen9 has security and data protection features for system resiliency that your business can depend on. All, making it ideal for mission-critical enterprise, business intelligence, and database applications.

Whether needed for highly virtualized or cloud based deployments, with intelligence and simplicity of automated management with HP OneView and HP iLO 4 your business can achieve agile and lower cost infrastructure management.

Front View:

1. One front video port
2. Server lifting handles
3. Universal Tool-less "Snap in" sliding rail solution
4. 4U (7" height) form factor
5. Support for up to four Intel® Xeon® 4800/8800 v3 Processors
6. Up to 9 slots supported; all full-length/full-height
7. Quick removal access panel
8. Quick release lever for Processor and Memory drawer
9. Slide out Systems Insight Display
10. Power button
11. Health and Network LEDs
12. Unit ID LED
13. Front accessible Processor and memory drawer
14. 4 Hot Plug Fans (eight rotors with N+1 redundancy)
15. Asset tag
16. Support for up to 10 Small Form-Factor (SFF) drives
17. Two front accessible USB 2.0 ports

Rear View:

1. NIC ports
2. Serial port
3. Video port
4. Four (4) USB ports
5. Hot Plug Redundant Power Supplies (2 or 4 depending on the model)
6. 9 PCIe 3.0 IO Expansion Slots
7. iLO connector

What's New

- Intel Xeon E7-4800/8800 v3 processor support
- DDR4 memory support with operational speeds up to 1866 Mhz
- Support for five NVMe drives with Express Bays backplane kit* (*available post announcement)
- Broader choice of power supplies with additional 1500W -48 VDC power supply

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor One or more of the following depending on model	**Eighteen-Core Processors** Intel® Xeon® E7-8890v3 (2.5GHz/18-core/45MB/165W) Processor Intel® Xeon® E7-8880v3 (2.3GHz/18-core/45MB/150W) Processor Intel® Xeon® E7-8870v3 (2.1GHz/18-core/45MB/140W) Processor Intel® Xeon® E7-8880Lv3 (2.0GHz/18-core/45MB/115W) Processor **NOTE:** This is a power optimized processor **Sixteen-Core Processors** Intel® Xeon® E7-8860v3 (2.2GHz/16-core/40MB/140W) Processor Intel® Xeon® E7-8867v3 (2.5GHz/16-core/45MB/165W) Processor **NOTE:** This is a frequency optimized processor suited high performance computing applications **Fourteen-Core Processors** Intel® Xeon® E7-4850v3 (2.2GHz/14-core/35MB/115W) Processor **Twelve-Core Processors** Intel® Xeon® E7-4830v3 (2.1GHz/12-core/30MB/115W) Processor **Ten-Core Processors** Intel® Xeon® E7-8891v3 (2.8GHz/10-core/45MB/165W) Processor **NOTE:** This is a lower core, higher frequency processor for software licensing cost optimization Intel® Xeon® E7-4820v3 (1.9GHz/10-core/25MB/115W) Processor **Eight-Core Processors** Intel® Xeon® E7-4809v3 (2.0GHz/8-core/20MB/115W) Processor **Four-Core Processors** Intel® Xeon® E7-8893v3 (3.2GHz/4-core/45MB/140W) Processor **NOTE:** This is a lower core, higher frequency processor for software licensing cost optimization
Cache Memory One of the following depending on model	45MB (1 x 45MB) Level 3 cache (E7-8890 v3, E7-8880Lv3, E7-8880v3, E7-8870v3, E7-8891v3, E7-8893v3, E7-8867v3) 40MB (1 x 40MB) Level 3 cache (E7-8860v3) 35MB (1 x 35MB) Level 3 cache (E7-4850v3) 30MB (1 x 30MB) Level 3 cache (E7-4830v3) 25MB (1 x 25MB) Level 3 cache (E7-4820v3) 20MB (1 x 20MB) Level 3 cache (E7-4809v3)
Chipset	Intel® C602J Chipset Intel® Xeon® E7-4800/8800 v3 Processor Family **NOTE:** For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/
On System Management Chipset	HP iLO (Firmware HP iLO4 2.0), 4GB NAND with 1GB USB user space configurable via UEFI and accessible via iLO. Read and learn more in the iLO QuickSpecs.
Upgradeability	Up to: Four (4) processors Ninety-six (96) DDR4 DIMM slots Nine (9) PCIe Gen3 expansion slots **NOTE:** PCIe slot availability is dependent on the number of processors installed. Please refer to the

"Expansion slots" section for more details.
Ten (10) SFF internal HDD/SSD SAS drive bays or
Five SFF Internal Express Bays + Five SFF Internal HDD/SSD drive bays
NOTE: Five drive bays come standard. An optional five SAS drive or five Express backplane kit with five drive bays can be ordered for ten drives.
Four (4) redundant hot-plug power supplies

Memory One of the following depending on Model	Type	HP SmartMemory
		DDR4 Registered (RDIMM) and Load Reduced (LRDIMM)
	DIMM Slots Available	96 DIMM slots
	Maximum	6TB (96 x 64GB)

NOTE: HP memory from previous generation servers are not qualified or warranted with this HP ProLiant Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the HP SmartMemory QuickSpecs at:
http://h18004.www1.hp.com/products/quickspecs/15051_na/15051_na.html
NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1866MHz, 1600MHz, or 1333MHz. Please see Memory Population Table below or the Online Memory Configuration Tool at: http://www.hp.com/go/ddr4config.

System Fault Management and Diagnostics

HP ProLiant DL580 Gen9 offers advanced error recovery, component quarantine, fault tolerance and event reporting features to enable class-leading availability and rock-solid reliability that businesses can depend on. The DL580 Gen9 server firmware features advanced machine check architecture and memory fault tolerance capabilities that customers need for running their mission-critical applications. These advanced fault management features combine with quality components (HP Qualified Options) and extensive qualification to provide a high degree of system availability.

HP Advanced Error Recovery
Introduced with the HP ProLiant DL580 Gen9, HP Advanced Error Recovery enables applications to recover from uncorrectable errors found in processor, cache and memory during execution. The system firmware works with the operating system and/or hypervisor and/or end-application to enable the optimal recovery response so that the impact of the error can be avoided or minimized. Where such an error would have crashed the system in the past, with HP Advanced Error Recovery, the system can continue to function with limiting the impact of the error to a killed/re-started thread, process and/or virtual machine.

NOTE:
- Supported on Intel® E7-4800/8800 v2 or v3 based systems only
- On select Operating Systems, Hypervisors and end-applications that support Intel Machine Check Architecture Recovery feature.
  - Windows Server 2012 R2 and Hyper-V 2012 R2
  - Windows Server 2012 (requires Microsoft hotfix 2901012) and Hyper-V 2012
  - Redhat Enterprise Linux 6.4 and later
  - SLES 11 SP3 and later

HP Memory Quarantine
HP Memory Quarantine Identifies memory regions containing uncorrectable hardware errors by using a patrol scrubber and isolates the bad memory location before it affects other data. If an error is found, the hardware attempts to correct it. If the hardware cannot correct the error, the platform firmware notifies the operating system. Depending on the state of the memory pages associated with the identified memory region, the OS or hypervisor may take those pages out of the available pool. If the memory pages are already committed to a virtual machine (VM), the OS or hypervisor may choose to shut down the associated VM (Guest OS) or cause a Machine Check Exception to the Guest OS. The

associated VM (Guest OS) might in turn close down the affected thread or process or it might shut down on its own. You can restart the halted VM or process once you replace the bad memory at the server's next maintenance cycle.

NOTE:

- Supported on Intel® E7-4800/8800 and E7 v2 or v3 based systems only
- On select Operating Systems, Hypervisors and end-applications that support Machine Check Architecture Recovery functionality.
    - Windows Server 2012 R2 and Hyper-V 2012 R2
    - Windows Server 2012 (requires Microsoft hotfix 2901012) and Hyper-V 2012
    - Windows Server 2008 R2 and Hyper-V 2008 R2
    - Windows Server 2008 and Hyper-V 2008
    - Redhat Enterprise Linux 6.4
    - SLES 11 SP3

HP Advanced Error Containment

The DL580 Gen9 features advanced PCIe error containment capability that prevents corrupted data propagation. If data corruption is found on the PCIe bus, the system re-sets the PCIe root port and re-starts the transaction. This feature helps protect customer data and prevents the error from creating a chain of failures across the datacenter.

NOTE:

- Supported on Intel® E7-4800/8800, E7 v2 or v3 based systems only

HP Advanced Fault Resiliency

- Double Data Device Correction (DDDC+1) - Detects and corrects up to two DRAM chip failures for every x4 DIMM plus single bit error in the server. DDDC requires memory lockstep mode and may impact performance to varying degrees depending on workload memory access characteristics.
  NOTE: Supported on Intel® E7-4800/8800 based systems only.
- Single Data Device Correction (SDDC+1) - Detects and corrects one DRAM chip failure for every x4 DIMM in the server. Further corrects single-bit errors after one DRAM chip failure. SDDC is supported in performance mode and does not impact system performance.
  NOTE: Supported on Intel® E7-4800/8800 based systems only.
- Online Memory Sparing - Tracks excessive number of correctable errors and copies the contents of an unhealthy rank to an available spare rank in advance of multi-bit or persistent single-bit failures that may result in future uncorrectable faults. Since a DIMM or a rank is needed to perform sparing, this technique reduces the total amount of available memory by the amount of memory used for sparing.
- Memory Mirroring - System maintains two copies of all data. If an uncorrectable memory error occurs, the system automatically retrieves the good data from the mirrored (redundant) copy. Memory Mirroring consumes 50% of the system memory capacity.
- Redundant Interconnects and Failover - The DL580 Gen9 system and Intel® Xeon® E7-4800/8800 v3 processors combine to provide a high degree of fault tolerance and failover capabilities for key processor-processor or memory-processor links or clocks.
- Hot-plug redundant power supplies and hot-plug fans - The DL580 Gen9 server features N+N redundant power supplies and N+1 rotor (each fan module contains two rotors) redundancy to keep your system running in the unlikely case a power supply or rotor malfunctions.
    - Each fan contains two independent rotors. If one rotor fails, system continues operation in a degraded condition with remaining rotors. If two rotors fail, system initiates an OS shutdown. Two rotor failures is a highly unlikely event.
    - If a fan module (i.e. two rotors) is removed as a hot-plug event, the replacement fan module must be installed within approximately 60 seconds before the system initiates an OS shutdown.

FlexibleLOM	HP ProLiant Gen9 servers offer a new flexible network technology - FlexibleLOMs, which offers customers a choice of 1Gb, 10Gb, or 10Gb base-T Ethernet or converged networking in their embedded adapter.

FlexibleLOM   HP ProLiant Gen9 servers offer a new flexible network technology - FlexibleLOMs, which offers customers a choice of 1Gb, 10Gb, or 10Gb base-T Ethernet or converged networking in their embedded adapter.
HP Ethernet 1Gb 4-port 331FLR FIO Adapter
HP Ethernet 1Gb 4-port 366FLR FIO Adapter
HP Ethernet 10Gb 2-port 533FLR-T FIO Adapter
HP FlexFabric 10Gb 2-port 534FLR-SFP+ FIO Adapter
HP Ethernet 10Gb 2-port 560FLR-SFP+ FIO Adapter
HP Ethernet 10Gb 2-port 561FLR-T FIO Adptr
HP Ethernet 10G 2P 546FLR-SFP+ FIO Adptr
NOTE: For additional details see the Networking Section of this document.
NOTE: Wake-on-Lan feature is not supported on the DL580 Gen9 with FlexLOMs

Expansion Slots
NOTE: Up to 9 slots supported; all full-length/full-height. Standard: 4 PCI-E 3.0 x8, 5 PCI-E 3.0 x16.

Processor	Expansion Slot #	Technology	Width	Connector Width*	Bus / Dev Number**	Form Factor	Notes
4	1	PCIe 3.0	x16	x16	C0/03/0	FH/FL	N/A
4	2	PCIe 3.0	x16	x16	C0/02/0	FH/FL	N/A
3	3	PCIe 3.0	x16	x16	80/03/0	FH/FL	N/A
3	4	PCIe 3.0	x8	x16	80/02/0	FH/FL	N/A
3	5	PCIe 3.0	x8	x16	80/02/1	FH/FL	N/A
2	6	PCIe 3.0	x16	x16	40/03/0	FH/FL	N/A
2	7	PCIe 3.0	x8	x16	40/02/0	FH/FL	N/A
2	8	PCIe 3.0	x8	x16	40/02/1	FH/FL	N/A
1	9	PCIe 3.0	x16	x16	00/03/0	FH/FL	N/A

NOTE: PCIe slot availability is dependent on the number of processors installed.
* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
FL= Full length; FH = Full height.

Storage Controller One of the following depending on Model	HP Smart Array P830i/2G or P830i/4G FBWC Controller

Storage Controller
One of the following depending on Model

HP Smart Array P830i/2G or P830i/4G FBWC Controller

The Flash Backed Write Cache (FBWC) increases cache data retention capabilities from two days of existing battery backed write cache (BBWC) to infinite data retention.

- Delivers 12 Gb/s line rate performance
- Standard on all Models
- Supports HP Secure Encryption as an option
- Transportable data protection
- Increases overall controller performance

NOTE: Please refer to the HP Smart Array P830 Controller QuickSpecs for more information.

Internal Storage Devices   Hard Disk Drive Backplane   Internal SAS lower and upper backplanes support up to ten SFF hard disk drives or solid state drives or Express Bays (NVMe drives)

NOTE: For Factory Integrated models, five (5) lower drive bays ship standard and five (5) upper drive bays can be ordered separately with a drive backplane kits. For Pre-configured models, please refer to the pre-configured models section below.

	Diskette Drive	None	
	Optional Optical Drive	External	
	Hard Drives	None ship standard	

Maximum Internal Storage	Hot Plug SFF SAS	12 TB	10 x 1.2 TB
	Hot Plug SFF SAS SSD	16 TB	10 x 1.6 TB
	Hot Plug SFF SATA SSD	8 TB	10 x 800 GB

Interfaces	Serial	1
	Video	1 front; 1 rear
	Network RJ-45	4
	iLO 4 Remote Management	1
	micro-SD Slot	1
	USB 2.0 Ports	8 total: 2 front; 4 rear; 2 internal

Industry Standard Compliance	ACPI 2.0. Compliant
	PCIE 2.0 Compliant
	PXE Support
	WOL Support **NOTE:** Not supported with FlexLOMs on DL580 Gen9
	Physical Address Extension (PAE) Support
	Microsoft® Logo certifications
	USB 2.0 Support Ashrae A3/A4 **NOTE:** For additional technical thermal details regarding ambient temperatures, humidity and features support please visit: http://www.hp.com/servers/ASHRAE.

Server Power Cords	Server ships with high-voltage server to PDU power cord **NOTE:** If customers require a local power cord, they can check the power cord matrix for the appropriate sku. Please see the following power cord matrix for details: http://www.hp.com/go/powercordmatrix

Common Slot Power Supply One of the following depending on power requirements	HP 1500W Common Slot Platinum Plus Hot Plug Power Supply
	HP 1500W Common Slot 48VDC Hot Plug Power Supply
	HP 1200W Common Slot Platinum Plus Hot Plug Power Supply
	NOTE: 1500W power supply supports high line voltage only **NOTE:** A minimum of two (2) power supplies are required. Four (4) 1500W power supplies offers N+N redundancy for highly loaded configurations.
	Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.
	HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HP CS power supply options provide efficiency ratings of up to 94% (80 Plus Platinum) and are available in three power output options - 460W, 750W, and 1200W - allowing the customer to "right-size" a power supply for their specific server configuration. All HP Common Slot

power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations.

HP CS Platinum Plus power supplies are required when enabling HP's Intelligent Power Discovery (IPD) solution. IPD is the first technology to create an automated, energy-aware network between IT systems and facilities. This allows your company to reclaim millions of dollars in wasted power capacity and downtime costs across data centers. For more information on HP's IPD solution, go to www.hp.com/go/ipd.

NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail.

System Fans	4 Hot Plug Fans (eight rotors with N+1 redundancy)
Graphics	Integrated Matrox G200 video standard 1280 x 1024 (32 bpp) 1920 x 1200 (16 bpp) HP iLO 4 On System Management Memory 16 MB Flash 256 MB DDR 3 with ECC (112 MB after ECC and video)
Form Factor	4U rack
HP Server UEFI /Legacy ROM	Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration while interacting with your server at boot time. HP ProLiant Gen9 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode. **NOTE:** The UEFI System Utilities function is analogous to the HP ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit http://www.hp.com/go/proliantuefi/docs. UEFI enables numerous new capabilities specific to HP ProLiant servers such as: • Secure Boot • Operating system specific functionality • Support for > 2.2 TB (using GPT) boot drives • USB 3.0 Stack • Embedded UEFI Shell • Mass Configuration Deployment Tool using HP RESTful API • PXE boot support for IPv6 networks • Boot support for option cards that only support a UEFI option ROM For more information please visit http://www.hp.com/go/proliant/uefi **NOTE:** For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI. **NOTE:** HP UEFI FIO Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.
Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware **NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our

Embedded Management	HP Integrated Lights-Out (HP iLO)	Monitor your servers for ongoing management, service alerting, reporting and remote management with iLO. Learn more at http://www.hp.com/go/ilo
	UEFI	Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at www.hp.com/go/ProLiant/uefi.
	HP RESTful API	RESTful API is an application programming interface. RESTful Web Service API served by iLO's web server. Learn more at http://www.hp.com/go/restfulapi
	Intellient Provisioning	Provision servers by discovering and deploying 1 to few servers with Intelligent Provisioning. Learn more at http://www.hp.com/go/intelligentprovisioning
	Embedded Remote Support	HP's embedded remote support, used with Insight Online direct connect or HP Insight Remote Support, allows HP ProLiant servers to transmit hardware events directly to HP or an HP Authorized Partner for automated phone home support. Learn more at http://www.hp.com/go/insightonline/info
Server utilities	HP Smart Update	Optimize firmware and driver updates with HP Smart Update solutions. Learn more at www.hp.com/go/smartupdate.
	HP Systems Insight Manager (HP SIM)	HP SIM allows you to monitor the health of your HP ProLiant Servers and HP Integrity Servers, and also provides you with basic support for non-HP servers. HP SIM also integrates with HP SUM to provide quick and seamless firmware updates. Learn more at http://www.hp.com/go/sim
	Scripting Tool Kit and Windows PowerShell	Provision 1 to many servers using your own scripts to discover and deploy them with HP Scripting Tool Kit for Windows and Linux or HP Scripting Tools for Windows PowerShell. Learn more at http://www.hp.com/go/ProLiantSTK or http://www.hp.com/go/powershell.
	HP RESTful Interface Tool	HP RESTful Interface tool is a scripting tool to provision servers using RESTful API Interface to discover and deploy servers at scale. Learn more at http://www.hp.com/go/restfulapi.
	HP iLO Mobile Application	Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www.hp.com/go/ilo/mobileapp.
	HP Insight Online	HP Insight Online, available at no additional cost as part of your HP warranty, Care Pack or contractual support agreement with HP, is a personalized dashboard for simplified tracking of IT operations and support information from anywhere, anytime. Learn more at www.hp.com/go/insightonline/info.

Intelligent Manageability	HP Systems Insight Manager Intelligent Provisioniong Redundant ROM Remote Flash ROM Management Agents Integrated Management Log (IML) Automatic Server Recovery-2 (ASR-2) ROM-Based Setup Utility (RBSU) Dynamic Sector Repairing (with Smart Array Controllers) Drive Parameter Tracking (with Smart Array Controllers) Pre-Failure Warranty (covers processors, SAS hard drives and memory) Redundant/adaptive load balancing NIC Support Hot Spare Boot **NOTE:** Upon the event of a failed processor in a multi-processing environment, the system will automatically reboot and use the remaining good processor(s).
HP Insight Online	HP Insight Online is a new capability available through the HP Support Center portal for one stop, secure access to product and HP support information specific to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime. www.hp.com/go/insightonline
HP Proactive Insight experience	Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consist of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: www.hp.com/go/proactiveinsightexperience
Security	Power-on password Keyboard password External USB port enable/disable Network Server Mode Serial interface control Administrator's password Trusted Platform Module (TPM) Intel® Secure Key HP Secure Encryption (Smart Array Controller) HP Advanced Data Guard (Smart Array Controller)
Warranty	This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details. **NOTE:** Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Server management	HP Insight Control	HP Insight Control, lets you deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol.
	HP iLO Advanced	HP iLO Advanced licenses offer smart remote functionality without compromise, for all HP ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality. Learn more about HP iLO Advanced at http://www.hp.com/go/iloadvanced
	HP OneView Advanced	HP OneView Advanced is converged management that eliminates infrastructure complexity with automation simplicity. This modern architecture is designed to accelerate your IT operations across servers, storage, and network resources using software-defined approaches and automation, see http://www.hp.com/go/oneview.
High Performance Clusters	HP Cluster Platforms	HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters
	HP HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html
	HP Insight Cluster Management Utility	HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu
Storage Software		Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HP storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities.

Storage software that gets the job done:

- **Data Protection and Recovery Software**
  Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
  HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- **Storage Resource Management Software (SRM)**
  HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical

and virtual environments.

- **Data Replication Software**
  HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.
- **Storage Device Management Software**
  Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.
- **HP StoreVirtual VSA**
  With HP StoreVirtual VSA you can use the power of virtualization to turn a set of heterogeneous and disconnected physical disk drives in your servers and storage devices into a single pool of logical storage capacity.

NOTE: For more information available Storage Software including QuickSpecs, please see: www.hp.com/go/storage/software.

Factory Express Portfolio for Servers and Storage	HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches. For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.
One Config Simple (SCE)	SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support	**HP Technology Services for Industry Standard Servers**

HP Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HP to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HP Care Pack Services

HP Care Pack Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

Recommended HP Care Pack Services for your HP product

Optimized Care	**HP Proactive Care with 6 hour call-to-repair commitment, three year Care Pack Service**

HP Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. This Care Pack Service combines three years' proactive reporting and advice with our highest level reactive coverage and enhanced escalation management, HP's 24x7, six hour call-to-repair hardware commitment. HP is the only leading manufacturer who makes this level of coverage available as a standard service offering for your most valuable servers. Service includes 24x7 collaborative software support for leading industry standard software running on your HP ProLiant server.

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf

Standard Care | **HP Proactive Care with 24x7 coverage, three year Care Pack Service**

HP Proactive Care helps prevent problems and stabilize IT by utilizing secure, real-time, predictive analytics and proactive consultations when your products are connected to HP. This Care Pack Service combines three years' proactive reporting and advice with our 24x7 coverage and enhanced escalation management, four hour hardware response time and two hour call back for software questions on leading industry standard software running on your HP ProLiant server.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf

Related Services | **HP ProLiant Server Hardware Installation**
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf

Factory Express for Servers and storage
HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

Data Privacy Services
Protect your data through better media management. HP Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you

to safely retire IT assets and capture any remaining value from the hardware.
www.hp.com/services/dataprivacy

Additional HP Care Pack services can be found at: http://www.hp.com/go/cpc

Get connected to HP to improve your support experience	Prevent problems with innovative, automated monitoring tools and proactive services. Combining Proactive Care Services with our remote support technology such as Insight Online provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: www.hp.com/go/proactiveinsightexperience
HP Support Center	Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc

HP's Support Center Mobile App allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalize IT support anywhere, anytime. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

NOTE: HP Support Center Mobile App is subject to local availability. |
| **Parts and Materials** | HP will provide HP-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. |
| **For more information** | To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: http://www.hp.com/services/proliant |

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.
NOTE: Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
NOTE: HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
NOTE: If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

High Performance Models

HP ProLiant DL580 Gen9 E7-8890v3 4P 256GB-R P830i SAS 5 SFF 1500W RPS Server
793312-B21

Processor(s)	(4) Intel® Xeon® E7-8890v3 (2.5GHz/18-core/45MB/165W) Processor
Cache Memory	45MB (1 x 45MB) Level 3 cache
Memory	256GB (16 x 16GB DIMMs) PC4-2133P-R DIMMs (DDR4) installed in (8) Memory Cartridges
IO Expansion	(9) PCIe Gen3.0 I/O Expansion slots (5 x16 slots; 4 x8 slots)
Network Controller	HP FlexFabric 10Gb 2P 534FLR-SFP+ Adapter
Storage Controller	HP Smart Array P830i/4GB FBWC 12 Gbps SAS controller
Bays and Hard Drives	Five (5) SFF HDD/SSD drive bays. No drives ship standard
Optical Drive	None
Power Supply	(4) HP 1500W Common Slot Platinum Plus Hot Plug Power Supplies
Fans	4 Hot Plug Fans (eight rotors with N+1 redundancy)
HP iLO	Integrated Lights-Out 4 (iLO 4) advanced ships standard as part of HP OneView Advanced
HP OneView Advanced	HP OneView Advanced Integrated server license, including 3 year of 24x7 Technical Support and Updates (also provides usage rights for Insight Control with 1 year of 24 x 7 support)
Form Factor	Rack 4U (rail kit and cable management arm is included)
BIOS	Legacy BIOS (field configurable) or UEFI BIOS (default)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

HP ProLiant DL580 Gen9 E7-4850v2 4P 128GB-R P830i/4G 534FLR-SFP+ 1200W RPS Svr
793310-B21

Processor(s)	(4) Intel® Xeon® E7-4850v3 (2.2GHz/14-core/35MB/115W) Processor
Cache Memory	35MB (1 x 35MB) Level 3 cache
Memory	128GB (8 x 16GB DIMMs) PC4-2133P-R DIMMs (DDR4) installed in (4) Memory Cartridges
IO Expansion	(9) PCIe Gen3.0 I/O Expansion slots (5 x16 slots; 4 x8 slots)
Network Controller	HP FlexFabric 10Gb 2P 534FLR-SFP+ Adapter
Storage Controller	HP Smart Array P830i/4GB FBWC 12 Gbps SAS controller
Bays and Hard Drives	Five (5) SFF HDD/SSD drive bays. No drives ship standard
Optical Drive	None
Power Supply	(4) HP 1200W Common Slot Platinum Plus Hot Plug Power Supplies
Fans	4 Hot Plug Fans (eight rotors with N+1 redundancy)
HP iLO	Integrated Lights-Out 4 (iLO 4) advanced ships standard with HP OneView Advanced License
HP OneView Advanced	HP OneView Advanced Integrated server license, including 3 year of 24x7 Technical Support and Updates (also provides usage rights for Insight Control with 1 year of 24 x 7 support)
Form Factor	Rack 4U (rail kit and cable management arm is included)

BIOS	Legacy BIOS (field configurable) or UEFI BIOS (default)	
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response	

Database Models

HP ProLiant DL580 Gen9 E7-8893v3 4P 256GB-R P830i/4G 534FLR 1500W PS Server
793314-B21

Processor(s)	(4) Intel® Xeon® E7-8893v3 (3.2GHz/4-core/45MB/140W) Processor
Cache Memory	45MB (1 x 45MB) Level 3 cache
Memory	256GB (16 x 16GB DIMMs) PC4-2133P-R DIMMs (DDR4) installed in (8) Memory Cartridges
IO Expansion	(9) PCIe Gen3.0 I/O Expansion slots (5 x16 slots; 4 x8 slots)
Network Controller	HP FlexFabric 10Gb 2P 534FLR-SFP+ Adapter
Storage Controller	HP Smart Array P830i/4GB FBWC 12 Gbps SAS controller
Bays and Hard Drives	Five (5) SFF HDD/SSD drive bays. No drives ship standard
Optical Drive	None
Power Supply	(4) HP 1500W Common Slot Platinum Plus Hot Plug Power Supplies
Fans	4 Hot Plug Fans (eight rotors with N+1 redundancy)
HP iLO	Integrated Lights-Out 4 (iLO 4) advanced ships standard as part of HP OneView Advanced
HP OneView Advanced	HP OneView Advanced Integrated server license, including 3 year of 24x7 Technical Support and Updates (also provides usage rights for Insight Control with 1 year of 24 x 7 support)
Form Factor	
BIOS	
Warranty	

Base Models

HP ProLiant DL580 Gen9 E7-4809v2 2P 64GB-R P830i/2G 331FLR 1200W PS Server
793308-B21

Processor(s)	(2) Intel® Xeon® E7-4809v3 (2.0GHz/8-core/20MB/115W) Processors
Cache Memory	20MB (1 x 20MB) Level 3 cache
Memory	64GB (4 x 16GB DIMMs) PC4-2133P-R DIMMs (DDR4) installed in (2) Memory Cartridges
IO Expansion	(9) PCIe Gen3.0 I/O Expansion slots (5 x16 slots; 4 x8 slots)
	NOTE: PCIe slot availability is dependent on the number of processors installed. Please refer to the expansion slots section for more details.
Network Controller	HP Ethernet 1Gb 4P 331FLR Adptr
Storage Controller	HP Smart Array P830i/2GB FBWC 12 Gbps SAS controller
Bays and Hard Drives	Five (5) lower drive bays. No drives ship standard
Optical Drive	None
Power Supply	(2) HP 1200W Common Slot Platinum Plus Hot Plug Power Supplies
Fans	4 Hot Plug Fans (eight rotors with N+1 redundancy)
HP iLO	Integrated Lights-Out 4 (iLO 4) ships standard
Form Factor	Rack 4U (rail kit and cable management arm is included)
BIOS	Legacy BIOS (field configurable) or UEFI BIOS (default)
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

	Smart Buy Models	
[SKU Number]	793309-S01	793311-S01
Model Name	HP ProLiant DL580 Gen9 E7-8880v3 2P 128GB-R P830i/2G 331FLR 1200W RPS US Server/S-Buy	HP ProLiant DL580 Gen9 E7-8860v3 2P 128GB-R P830i/2G 331FLR 1200W RPS US Server/S-Buy
Processor	Intel® Xeon® E7-8880v3	Intel® Xeon® E7-8860v3
Number of Processors	Two, upgradeable to three or four	
Memory	128GB (16x8GB Registered DIMMs, 2133MHz) installed in (4) Memory Cartridges **NOTE:** The DIMM will operate at maximum 1866 MHz with this processor	
Network Controller	HP Ethernet 1Gb 4P 331FLR Adapter	
Storage Controller	HP Smart Array P830i/2GB FBWC 12 Gbps SAS controller	
Hard Drive	None ship standard	
Internal Storage	Five (5) SFF HDD/SSD drive bays, upgradeable to ten (10).	
Optical Drive Bay	None Included, (Optional: USB external DVD-RW Optical Drive)	
PCI-Express Slots	Nine (9) PCIe Gen3.0 I/O Expansion slots (5 x16 slots; 4 x8 slots) **NOTE:** Slots 6-9 enabled by default, slots 1-5 require 4-sockets	
Power Supply	(2) HP 12000W Common Slot Platinum Plus Hot Plug Power Supplies	
Fans	4 Hot Plug fans (eight rotors with N+1 redundancy)	
Management	Standard: iLO Management Engine Optional: iLO Advanced, Insight Control, HP OneView	
Form Factor	Rack 4U (rail kit and cable management arm included)	
Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response	

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.
NOTE: Factory Integrated Models must start with a CTO Server
NOTE: FIO indicates that this option is only available as a factory installable option.

Step 1: Base Configuration

HP Models	HP ProLiant DL580 Gen9 Configure-to-order Server	793161-B21

Factory Integrated Models ship with:

4U Server Chassis with front-accessible processor and memory drawer
Intel® 602J Chipset
Embedded HP Smart Array 12 G P830i Controller
NOTE: FBWC is required and should be selected separately when ordering
(5) Hot-plug SAS/SATA SFF SSD or HDD Bays (Lower)
(9) PCIe Gen3.0 I/O Expansion slots (5 x16 slots; 4 x8 slots)
(8) USB 2.0 ports (2 front, 4 rear, 2 internal)
(2) video ports (1 front, 1 rear)
(1) microSD card slot
(1) Trusted Platform Module (TPM) connector
4 Hot Plug Fans (eight rotors with N+1 redundancy), front accessible
BIOS Legacy mode(field configurable) or Unified Extensible Firmware Interface (UEFI) mode (default)
HP Integrated Lights-Out 4 (iLO4) standard management
HP iLO4 Embedded Remote Support Technology
Intelligent Provisioning
HP Insight Control Server Provisioning
HP Insight Online
HP Active Health System
System Insight Display
Rack rails and cable management arm
NOTE: PCIe slot availability is dependent on the number of processors installed. Please refer to the "Expansion slots" section for more details.
NOTE: A minimum of two processors are required. The system may have three or four processors installed.
NOTE: A minimum of two memory cartridges are required (one per processor).
NOTE: A minimum of two memory DIMMs are required per cartridge (minimum of four DIMMs per server).
NOTE: A minimum of two power supplies are required.

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

HP Processors	**NOTE:** All processor kits contain one processor. Two processors are required. Must select one xxxxxx-L21 and at least one corresponding xxxxxx-B21.	
	Eighteen-Core Processors	
	HP DL580 Gen9 Intel® Xeon® E7-8890v3 (2.5GHz/18-core/45MB/165W) FIO Processor Kit	788317-L21
	HP DL580 Gen9 Intel® Xeon® E7-8890v3 (2.5GHz/18-core/45MB/165W) Processor Kit	788317-B21
	HP DL580 Gen9 Intel® Xeon® E7-8880v3 (2.3GHz/18-core/45MB/150W) FIO Processor Kit	788319-L21
	HP DL580 Gen9 Intel® Xeon® E7-8880v3 (2.3GHz/18-core/45MB/150W) Processor Kit	788319-B21

HP DL580 Gen9 Intel® Xeon® E7-8870v3 (2.1GHz/18-core/45MB/140W) FIO Processor Kit	788321-L21
HP DL580 Gen9 Intel® Xeon® E7-8870v3 (2.1GHz/18-core/45MB/140W) Processor Kit	788321-B21
HP DL580 Gen9 Intel® Xeon® E7-8880Lv3 (2.0GHz/18-core/45MB/115W) FIO Processor Kit	788337-L21
HP DL580 Gen9 Intel® Xeon® E7-8880Lv3 (2.0GHz/18-core/45MB/115W) Processor Kit	788337-B21

NOTE: This is a power optimized processor

Sixteen-Core Processors

HP DL580 Gen9 Intel® Xeon® E7-8860v3 (2.2GHz/16-core/40MB/140W) FIO Processor Kit	788323-L21
HP DL580 Gen9 Intel® Xeon® E7-8860v3 (2.2GHz/16-core/40MB/140W) Processor Kit	788323-B21
HP DL580 Gen9 Intel® Xeon® E7-8867v3 (2.5GHz/16-core/45MB/165W) FIO Processor Kit	788339-L21
HP DL580 Gen9 Intel® Xeon® E7-8867v3 (2.5GHz/16-core/45MB/165W) Processor Kit	788339-B21

NOTE: This is frequency optimized processor suited high performance computing applications

Fourteen-Core Processors

HP DL580 Gen9 Intel® Xeon® E7-4850v3 (2.2GHz/14-core/35MB/115W) FIO Processor Kit	788325-L21
HP DL580 Gen9 Intel® Xeon® E7-4850v3 (2.2GHz/14-core/35MB/115W) Processor Kit	788325-B21

Twelve-Core Processors

HP DL580 Gen9 Intel® Xeon® E7-4830v3 (2.1GHz/12-core/30MB/115W) FIO Processor Kit	788327-L21
HP DL580 Gen9 Intel® Xeon® E7-4830v3 (2.1GHz/12-core/30MB/115W) Processor Kit	788327-B21

Ten-Core Processors

HP DL580 Gen9 Intel® Xeon® E7-8891v3 (2.8GHz/10-core/45MB/165W) FIO Processor Kit	788333-L21
HP DL580 Gen9 Intel® Xeon® E7-8891v3 (2.8GHz/10-core/45MB/165W) Processor Kit	788333-B21

NOTE: This is a lower core, higher frequency processor for software licensing cost optimization

HP DL580 Gen9 Intel® Xeon® E7-4820v3 (1.9GHz/10-core/25MB/115W) FIO Processor Kit	788329-L21
HP DL580 Gen9 Intel® Xeon® E7-4820v3 (1.9GHz/10-core/25MB/115W) Processor Kit	788329-B21

Eight-Core Processors

HP DL580 Gen9 Intel® Xeon® E7-4809v3 (2.0GHz/8-core/20MB/115W) FIO Processor Kit	788331-L21
HP DL580 Gen9 Intel® Xeon® E7-4809v3 (2.0GHz/8-core/20MB/115W) Processor Kit	788331-B21

Four-Core Processors

HP DL580 Gen9 Intel® Xeon® E7-8893v3 (3.2GHz/4-core/45MB/140W) FIO Processor Kit	788335-L21
HP DL580 Gen9 Intel® Xeon® E7-8893v3 (3.2GHz/4-core/45MB/140W) Processor Kit	788335-B21

NOTE: This is a lower core, higher frequency processor for software licensing cost optimization

HP Memory	**Registered DIMMs (R-DIMMs)**	
	HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
	HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
	HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21
	Load Reduced DIMMs (LRDIMMS)	
	HP 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
	HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21
	Memory Expansion Options	
	HP DL580 Gen9 12 DIMM Slots Memory Cartridge	788360-B21

NOTE: Up to Eight (8) memory cartridges are supported for 96 DIMM slots
NOTE: A minimum of two memory cartridges are required (one per processor).
NOTE: A minimum of two memory DIMMs are required per cartridge (minimum of four DIMMs per server).

FlexibleLOMs	**NOTE:** Only one FlexibleLOM can be added to the server. These options are upgradeable and can be changed from the original configuration after the server is shipped.	

NOTE: For 10Gb adapters, a minimum of two Gigabytes (2 GB) of server memory is required per each adapter.
NOTE: Wake-on-Lan feature is not supported on the DL580 Gen9 with FlexLOMs

	HP Ethernet 1Gb 4-port 331FLR FIO Adapter	684208-B21
	HP Ethernet 1Gb 4-port 366FLR FIO Adapter	684217-B21
	HP FlexFabric 10Gb 2-port 533FLR-T FIO Adapter	700760-B21
	HP FlexFabric 10Gb 2-port 534FLR-SFP+ FIO Adapter	700752-B21
	HP FlexFabric 10Gb 2-port 556FLR-SFP+ FIO Adapter	732456-B21
	HP Ethernet 10G 2P 546FLR-SFP+ FIO Adptr	779800-B21
	HP Ethernet 10Gb 2-port 560FLR-SFP+ FIO Adapter	684218-B21
	HP Ethernet 10Gb 2-port 561FLR-T FIO Adapter	700700-B21

HP Power Supplies	**NOTE:** Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.	

HP Common Slot Platinum Plus Power Supply Kits
NOTE: 94% efficiency with support for HP Power Discovery Services.

	HP 1500W Common Slot Platinum Plus Hot Plug Power Supply Kit	684532-B21
	HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit	656364-B21
	HP 1500W Common Slot 48VDC Hot Plug Powr Supply Kit	746708-B21

NOTE: Minimum of two (2) power supplies are required.
All power supplies in a server should match. Mixing Power Supplies is not supported.
NOTE: Option Kits contain the specified power supply and a PDU IEC cable.
NOTE: 1500W Power Supplies only support High Line Voltage.
NOTE: HP ProLiant servers ship with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs). For a full list of optional HP power cords please go to www.hp.com/products/powercords

Storage Controller FBWC	HP 2GB FIO Flash Backed Write Cache	758836-B21
	HP 4GB FIO Flash Backed Write Cache	698537-B21
	NOTE: One Flash Backed Write Cache is required for P830i SAS Controller **NOTE:** Max of 4 capacitor modules can be installed.	

Step 3: Choose Additional Factory Integratable Options

SAS Storage Controller	HP H240 FIO Smart HBA **NOTE:** This controller may be selected to support a secondary drive cage. **NOTE:** This controller can support up to 8 internal SAS/SATA devices. **NOTE:** HP DL580 Gen9 H240 Card Cable Kit (P/N 805356-B21) is required when ordering this HBA Controller.	761873-B21
Converged Infrastructure Management Software	**HP OneView with iLO Advanced - Server hardware required on same purchase order**	
	HP OneView for ProLiant DL Server incl 3yr 24x7 Supp FIO Bundle Physical 1 Svr Lic	E5Y43A
	HP OneView incl 3yr 24x7 Supp FIO Bundle 1 Svr E-LTU	E5Y43AAE
	NOTE: OneView is supported in Legacy BIOS mode only.	
HP Insight Software	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle FIO Electronic License	C6N36ABE
Advanced Memory Protection	HP Lockstep Memory Mode FIO Setting **NOTE:** Minimum of four memory DIMMs per cartridge are required if selecting this mode. All cartridges must be configured with identical number of DIMMs.	773559-B21
BIOS Mode	HP Legacy FIO Mode Setting	758959-B22
	NOTE: Selecting this option will change the default UEFI BIOS setting into Legacy BIOS setting	

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Processors	**Eighteen-Core Processors**	
	HP DL580 Gen9 Intel® Xeon® E7-8890v3 (2.5GHz/18-core/45MB/165W) Processor Kit	788317-B21
	HP DL580 Gen9 Intel® Xeon® E7-8880v3 (2.3GHz/18-core/45MB/150W) Processor Kit	788319-B21
	HP DL580 Gen9 Intel® Xeon® E7-8870v3 (2.1GHz/18-core/45MB/140W) Processor Kit	788321-B21
	HP DL580 Gen9 Intel® Xeon® E7-8880Lv3 (2.0GHz/18-core/45MB/115W) Processor Kit	788337-B21
	NOTE: This is a power optimized processor	
	Sixteen-Core Processors	
	HP DL580 Gen9 Intel® Xeon® E7-8860v3 (2.2GHz/16-core/40MB/140W) Processor Kit	788323-B21
	HP DL580 Gen9 Intel® Xeon® E7-8867v3 (2.5GHz/16-core/45MB/165W) Processor Kit	788339-B21
	NOTE: This is frequency optimized processor suited high performance computing applications	
	Fourteen-Core Processors	
	HP DL580 Gen9 Intel® Xeon® E7-4850v3 (2.2GHz/14-core/35MB/115W) Processor Kit	788325-B21
	Twelve-Core Processors	
	HP DL580 Gen9 Intel® Xeon® E7-4830v3 (2.1GHz/12-core/30MB/115W) Processor Kit	788327-B21
	Ten-Core Processors	
	HP DL580 Gen9 Intel® Xeon® E7-8891v3 (2.8GHz/10-core/45MB/165W) Processor Kit	788333-B21
	NOTE: This is a lower core, higher frequency processor for software licensing cost optimization	
	HP DL580 Gen9 Intel® Xeon® E7-4820v3 (1.9GHz/10-core/25MB/115W) Processor Kit	788329-B21
	Eight-Core Processors	
	HP DL580 Gen9 Intel® Xeon® E7-4809v3 (2.0GHz/8-core/20MB/115W) Processor Kit	788331-B21
	Four-Core Processors	
	HP DL580 Gen9 Intel® Xeon® E7-8893v3 (3.2GHz/4-core/45MB/140W) Processor Kit	788335-B21
	NOTE: This is a lower core, higher frequency processor for software licensing cost optimization	

HP Memory	**NOTE:** HP memory from previous generation servers are not qualified or warranted with this HP ProLiant Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html **NOTE:** LRDIMM, RDIMM, UDIMM, and HDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen9 servers support LRDIMM, RDIMM and UDIMMs.

Registered DIMMs (RDIMMs)

HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726718-B21
HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	726719-B21
HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory Kit	728629-B21

Load Reduced DIMMs (LRDIMMS)

HP 32GB (1x32GB) Quad Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726722-B21
HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Load Reduced Memory Kit	726720-B21

Memory Expansion Options

HP DL580 Gen9 12 DIMM Slots Memory Cartridge	788360-B21

NOTE: Up to Eight (8) memory cartridges are supported for 96 DIMM slots
NOTE: A minimum of two memory cartridges are required (one per processor).
NOTE: A minimum of two memory DIMMs are required per cartridge (minimum of four DIMMs per server).

HP Optical Drives	HP Mobile USB Non Leaded System DVD RW Drive	701498-B21

HP Hard Drives	**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.	
	NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	

12G SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759212-B21
HP 450GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759210-B21
HP 300GB 12G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	759208-B21

12G SAS Hot Plug SFF (2.5-inch) Enterprise Drives

HP 1.2TB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	781518-B21
HP 900GB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	785069-B21
HP 600GB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	781516-B21
HP 300GB 12G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	785067-B21

12G SAS Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State

HP 1.6TB 12G SAS Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	762263-B21
HP 800GB 12G SAS Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	762261-B21

12G SAS Hot Plug SFF (2.5-inch) SC 512e Drives

HP 2TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765466-B21
HP 1TB 12G SAS 7.2K rpm SFF (2.5-inch) SC 512e 1yr Warranty Hard Drive	765464-B21
HP 600GB 12G SAS 15K rpm SFF (2.5-inch) SC 512e Enterprise 3yr Warranty Hard Drive	748387-B21

12G SAS Hot Plug SFF (2.5-inch) SC Write Intensive Solid State Drives

HP 800GB 12G SAS Write Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802586-B21
HP 400GB 12G SAS Write Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802582-B21

HP 200GB 12G SAS Write Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802578-B21

12G SAS Read Intensive Hot Plug SFF (2.5-inch) Solid State Drives

NOTE: These drives support Gen8 servers and beyond only.

HP 1.92TB 12G SAS Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	802891-B21

6G SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 1.2TB 6G SAS 10K rpm SFF (2.5-inch) SC Dual Port Enterprise 3yr Warranty Hard Drive	718162-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21

6G SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21

6G SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream H2 Solid State Drives

HP 200GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779164-B21
HP 400GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779168-B21
HP 800GB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779172-B21
HP 1.6TB 12G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream SC 3yr Wty H2 Solid State Drive	779176-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/12244_na/12244_na.html

6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Boot Solid State Drives

HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	717965-B21
HP 80GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Boot 3yr Wty Solid State Drive	734360-B21

6G SATA Value Endurance Hot Plug SFF (2.5-inch) Enterprise Value Solid State Drives

HP 1.6TB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	757339-B21
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717973-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717971-B21
HP 600GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739898-B21
HP 300GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	739888-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty Solid State Drive	717969-B21

6G SATA ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 800GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691868-B21
HP 400GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691866-B21
HP 200GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691864-B21
HP 100GB 6G SATA Mainstream Endurance SFF 2.5-in SC Enterprise Mainstream 3yr Wty Solid State Drive	691862-B21

6G SATA Value Endurance Hot Plug SFF (2.5-inch) SC Enterprise Value M1 Solid State Drives

HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764923-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764925-B21
HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764927-B21
HP 800GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty M1 Solid State Drive	764929-B21

6G SATA Value Endurance Hot Plug SFF (2.5-inch) SC Enterprise Value G1 Solid State Drives

HP 480GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756657-B21
HP 240GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756636-B21
HP 120GB 6G SATA Value Endurance SFF 2.5-in SC Enterprise Value 3yr Wty G1 Solid State Drive	756621-B21

6G SATA Light Endurance Hot Plug SFF (2.5-inch) SC Enterprise Light G1 Solid State Drives

HP 960GB 6G SATA Light Endurance SFF 2.5-in SC Enterprise Light 3yr Wty G1 Solid State Drive	756601-B21

6G SATA Hot Plug SFF (2.5-inch) SC Read Intensive Solid State Drives

HP 960GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789155-B21
HP 480GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789145-B21
HP 240GB 6G SATA Read Intensive SFF 2.5-in SC 3yr Wty Solid State Drive	789135-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18004.www1.hp.com/products/quickspecs/14038_na/14038_na.html

Hard Drive Blank Kits

HP ProLiant DL580 Gen9 5 Small Form Factor Drive Backplane Cage Kit	739405-B21
HP Small Form Factor Hard Drive Blank Kit	666987-B21
HP DL580 Gen9 SAS Cable Kit	748916-B21
NOTE: This cable is required when ordering Smart Array Controllers for installation in a PCIe slot.	
HP DL580 Gen9 H240 Card Cable Kit	805356-B21
NOTE: This cable is required when ordering H240 Smart HBA for installation in a PCIe slot.	

HP Networking   **Gigabit Ethernet Adapters**

HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-B21

10 Gigabit Ethernet Adapters
NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.

HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
HP Ethernet 10Gb 2-port 530T Adapter	656596-B21
HP Ethernet 10Gb 2-port 561T Adapter	716591-B21

FlexibleLOM Adapters

HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B21
HP Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
HP FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21

NOTE: This adapter does not support FCOE Boot from SAN functionality on VMWare and FCOE functionality with RHEL 5.9.

HP Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
HP Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
HP Ethernet 10Gb 2P 546FLR-SFP+ Adptr	779799-B21
HP FlexFabric 10Gb 2P 556FLR-SFP+ Adptr	727060-B21
HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter	764285-B21

NOTE: Wake-On-LAN not supported with FlexLOMs on DL580 Gen9

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs

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HP Power Supplies

NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.

HP Common Slot Platinum Plus Power Supply Kits
NOTE: 94% efficiency with support for HP Power Discovery Services.

HP 1500W Common Slot Platinum Plus Hot Plug Power Supply Kit	684532-B21
HP 1500W Common Slot 48VDC Hot Plug Powr Supply Kit	746708-B21
HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit	656364-B21

NOTE: All power supplies in a server should match. Mixing Power Supplies is not supported.
NOTE: Option Kits contain specified power supply and PDU IEC cable.
NOTE: 1500W Power Supplies only support High Line Voltage.
NOTE: HP ProLiant servers ship with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs). For a full list of optional HP power cords please go to www.hp.com/products/powercords

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HP Graphic Options

NOTE: Up to five cards are supported on the DL580 Gen9. Supporting multiple number of cards on the DL580 Gen9 blocks some active IO cards as follows due to space constraints:
For 2P config: Max of 2 double-wide cards are supported on slot 6 and slot 9 (slot 8 is blocked)
For 3P config: Max of 3 double-wide cards are supported on slot 3, slot 6 and slot 9

(slot 5 and slot 8 are blocked)
For 4P config: Max of 5 double wide cards are supported on Slot 1, Slot 3, Slot 2, Slot 6 and Slot 9 (slot 5 and slot 8 are blocked).
NOTE: HP DL580/DL585/DL980 Power Cable Kit (631660-B21) is required for Graphics cards. Each cable kit has two 8-pin connectors (one 150W and other 225W) and can support up to two cards. For three cards, two cable kits are required. For five cards, three cable kits are required. The cards pull up to 75W of power from the IO slot and the rest from the auxiliary power connectors.

NOTE: Supported at Gen2 speeds

| NVIDIA Tesla K40C 12GB Computational Accelerator | 753960-B21 |

NOTE: Supported at Gen2 speeds

Auxiliary Power Cables   **NOTE:** The DL580 Gen9 supports six auxiliary power connectors

| HP DL580/DL585/DL980 Power Cable Kit | 631660-B21 |

NOTE: Order with GPGPUs for providing additional power to the IO cards.

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Insight Software	**HP Insight Control**	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	C6N27A
	HP Insight Control Server Provisioning Media Kit	BD883A
	HP Insight Management Media Kit	C6N31A

NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.
NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.
NOTE: For additional license options please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html

HP Integrated Lights-Out (iLO) Advanced for ProLiant

	HP iLO Advanced including 1yr 24x7 Technical Support and Updates E-LTU	E6U59ABE
	HP iLO Advanced including 3yr 24x7 Technical Support and Updates E-LTU	E6U64ABE
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
	HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A

NOTE: For additional license options please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/14276_na/14276_na.html

NOTE: For more information, visit: http://www.hp.com/go/ilo

Converged Infrastructure Management Software	**HP OneView**	
	HP OneView with iLO Advanced	
	HP OneView Media Kit Phys No Lic	E5Y37A
	HP OneView incl 3yr 24x7 Supp Phys 1 Svr Lic	E5Y34A
	HP OneView incl 3yr 24x7 Supp Flex Qty E-LTU	E5Y35AAE
	HP OneView without iLO Advanced	
	HP OneView w/o iLO Adv incl 3yr 24x7 Supp Phys 1 Svr Lic	E5Y38A
	HP OneView w/o iLO Adv inc 3yr 24x7 Supp Flex Qty E-LTU	E5Y39AAE

NOTE: OneView is supported in Legacy BIOS mode only
Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14621_na/14621_na.html

HP I/O Accelerator Options	**Second Generation Accelerators**	
	HP 1.3TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763834-B21
	HP 1.6TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763836-B21
	HP 3.2TB HH/HL Value Endurance (VE) PCIe Workload Accelerator	763838-B21
	HP 6.4TB FH/HL Value Endurance (VE) PCIe Workload Accelerator	763840-B21
	HP 1.0TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775666-B21
	HP 1.3TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775668-B21

HP 2.6TB HH/HL Light Endurance (LE) PCIe Workload Accelerator	775670-B21
HP 5.2TB FH/HL Light Endurance (LE) PCIe Workload Accelerator	775672-B21
HP 350GB HH/HL High Endurance (HE) PCIe Workload Accelerator	708088-B21
HP 700GB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator	729305-B21
HP 700GB HH/HL High Endurance (HE) PCIe Workload Accelerator	708090-B21
HP 1.4TB HH/HL Mainstream Endurance (ME) PCIe Workload Accelerator	729307-B21
HP 365GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673642-B21
HP 785GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673644-B21
HP 1205GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673646-B21
HP 2410GB Multi Level Cell G2 PCIe ioDrive2 Duo for ProLiant Servers	673648-B21
HP 3TB G2 FH/HL PCIe ioDrive2 IO Accelerator for ProLiant Servers	721458-B21

NOTE: Both Legacy and UEFI BIOS modes are supported. Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13587_na/13587_na.html

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HP Storage Controllers	**SAS Controllers**	
	Smart Array P430 Controller	
	HP Smart Array P430/2GB FBWC 12Gb 1-port Int SAS Controller	698529-B21
	HP Smart Array P430/4GB FBWC 12Gb 1-port Int SAS Controller	698530-B21
	Smart Array P431 Controller	
	HP Smart Array P431/2GB FBWC 12Gb 2-ports Ext SAS Controller	698531-B21
	HP Smart Array P431/4GB FBWC 12Gb 2-ports Ext SAS Controller	698532-B21
	Smart Array P830 Controller	
	HP Smart Array P830/4GB FBWC 12Gb 2-ports Int SAS Controller	698533-B21
	Optional Upgrades	
	HP SmartCache No Media 24x7 Technical Support 1 Svr License	D7S26A
	HP SmartCache No Media 24x7 Technical Support Flexible License	D7S27A
	HP SmartCache No Media 24x7 Technical Support Electronic License	D7S27AAE

NOTE: A maximum of four HP Smart Array Controllers (including embedded controller) can be installed
NOTE: For more information about HP SmartCache, go to www.hp.com/go/smartcache
NOTE: Both Legacy and UEFI modes are supported

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14624_na/14624_na.html (Smart Array P430 Controller)
http://h18000.www1.hp.com/products/quickspecs/14625_na/14625_na.html (Smart Array P431 Controller)
http://h18000.www1.hp.com/products/quickspecs/14744_na/14744_na.html (Smart Array P830 Controller)
http://h18000.www1.hp.com/products/quickspecs/14532_na/14532_na.html (SmartCache)

HP Secure Encryption	HP Secure Encryption No Media E-LTU per Drive	D8S85AAE
	HP Secure Encryption No Media Flexible License per Drive	D8S84A

NOTE: HP Secure Encryption is supported on the HP Smart Array P830, P430 and

P431 as an option. HP Secure Encryption licensing is based on the number of physical drives requiring encryption.

NOTE: For more information about HP Secure Encryption, go to www.hp.com/go/hpsecureencryption

HP Power Cords	HP Power Cord 1.83m 10Amp C13-UL Dom	AF556A

HP Tape Backup	**NOTE:** For the complete range of tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape. For hardware and software compatibility of HP tape backup products see: http://www.hp.com/storage/SPOCK and www.hp.com/go/ebs. **NOTE:** For Internal drives to be connected to DL servers please make sure that you order rack mount kit as well.	
	HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	C0L99A
	HP StoreEver LTO-6 Ultrium 6650 SAS Internal Tape Drive	EH963A
	HP StoreEver LTO-6 Ultrium 6650 SAS External Tape Drive	EH964A
	HP StoreEver LTO-6 Ultrium 6250 Internal Tape Drive	EH969A
	HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
	HP StoreEver 1/8 G2 LTO-6 Ultrium 6250 FC Tape Autoloader	C0H19A

HP Tape Storage Systems	**HP StoreEver MSL6480**	
	HP StoreEver MSL6480 Scalable Base Module	QU625A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14604_na/14604_na.html	

HP Disk Backup	**NOTE:** For the complete range of RDX drives and media see: http://www.hp.com/go/rdx. For hardware and software compatibility of HP disk backup products see: http://www.hp.com/storage/SPOCK. NOTE: For Internal drives to be connected to DL servers please make sure that you order rack mount kit as well.	
	HP RDX320 USB3.0 External Disk Backup System	B7B63A
	HP RDX500 USB3.0 Internal Disk Backup System	B7B64A
	HP RDX500 USB3.0 External Disk Backup System	B7B66A
	HP RDX1000 USB3.0 Internal Disk Backup System	B7B67A
	HP RDX1000 USB3.0 External Disk Backup System	B7B69A
	HP RDX 2TB USB3.0 Internal Disk Backup System	E7X52A
	HP RDX 2TB USB3.0 External Disk Backup System	E7X53A

HP Disk Storage Systems	**Disk Enclosures**	
	HP D2600 w/12 4TB 6G SAS 7.2K LFF Dual Port MDL HDD 48TB Bundle	E7W32A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13404_na/13404_na.html	

HP Converged Network Adapters	HP StoreFabric CN1100R Dual Port Converged Network Adapter	QW990A
	NOTE: FCOE boot from SAN is not supported with VMWare.	
	HP StoreFabric CN1200E 10Gb Converged Network Adapter	E7Y06A
	NOTE: Both UEFI and Legacy mode are supported.	
HP Infiniband Options	HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter	764284-B21
	NOTE: UEFI and Legacy modes are supported with Ethernet and Infiniband functionality.	
	HP InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter	764285-B21
	NOTE: UEFI and Legacy modes are supported with Ethernet and Infiniband functionality.	
	HP InfiniBand FDR 2-port 545QSFP Adapter	702211-B21
	NOTE: Legacy and UEFI modes are supported	
HP Storage Options	**Storage Fibre Channel HBA** **NOTE:** The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html	
	QLogic Fibre Channel HBAs	
	HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
	HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
	HP StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
	HP StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A
	Emulex Fibre Channel HBAs	
	HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
	HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
	HP StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	C8R38A
	HP StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
	NOTE: Both Legacy and UEFI mode is supported.	
HP Uninterruptible Power Systems	**HP Rack-mountable UPS**	
	HP R1500 Uninterruptible Power Supply (UPS)	
	HP R1500 G4 NA Uninterruptible Power System	J2Q99A
	HP R1.5kVA G3 1U NA Uninterruptible Power System	AF469A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14059_na/14059_na.html	
	HP R/T2000 Uninterruptible Power System (UPS)	
	HP R/T2200 G4 NA/JP Uninterruptible Power System	J2R00A
	HP R/T2200 G4 Extended Runtime Module	J2R09A
	HP 2U Rack/Tower UPS Shipping Kit	L4Q11A

HP R/T3000 Uninterruptible Power System (UPS)

HP R/T3000 G4 Low Voltage NA/JP Uninterruptible Power System	J2R01A
HP R/T3000 G4 High Voltage NA/JP Uninterruptible Power System	J2R02A
HP R/T3000 G4 Extended Runtime Module	J2R10A
HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System	AF467A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14058_na/14058_na.html

R5000 Uninterruptible Power System (UPS)

HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14109_na/14109_na.html

R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A
HP R5KVA and R7KVA 3U Extended Runtime Module	AF464A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/14110_na/14110_na.html

HP Rackmountable 3 Phase Uninterruptible Power Systems (UPS R8000/3 and R12000/3)

HP R8000/3 8000kVA Three Phase NA 6U Rackmount Uninterruptible Power System	AF431A
HP R12000/3 12000VA Three Phase NA 6U Rackmount Uninterruptible Power System	AF429A

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/12857_na/12857_na.html

NOTE: For additional information on HP Uninterruptible Power Systems please go to:
www.hp.com/servers/rackups.

NOTE: For additional information on sizing your server, please reference:
http://www.upssizer.com.

NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.

HP Basic Power Distribution Units (pPDU)	**HP Basic Power Distribution Unit: 1U/0U Version**	
	HP 1.9kVA 120 Volt L5-20 Input (12xNEMA 5-20R) NA/JP Basic PDU	H5M54A
	HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Basic PDU	H5M56A
	HP Basic Power Distribution Unit: Half Height Version	
	HP 2.8kVA 120 Volt L5-30 Input (18xNEMA 5-20R) NA/JP Basic PDU	H5M55A
	HP 3.6kVA 200-240 Volt Detachable C20 Input (18xC13) WW Basic PDU	H5M57A
	HP 4.9kVA 208 Volt L6-30 Input (20xC13) NA/JP Basic PDU	H5M58A

HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13) NA/JP Basic PDU	H5M61A
HP Basic Power Distribution Unit: Mid Height Version	
HP 4.9kVA 208 Volt L6-30 Input (24xC13/6xC19) NA/JP Basic PDU	H5M59A
HP 8.3kVA 208 Volt CS8265C Input (30xC13/6xC19) NA/JP Basic PDU	H5M60A
HP Hardwired 200-240 Volt Input (30xC13/6xC19) WW Basic PDU	H5M75A
HP 5.7kVA 208 Volt L21-20 3-Phase Input (24xC13/3xNEMA 5-20R) NA/JP Basic PDU	H5M63A
HP 8.6kVA 208 Volt L21-30 3-Phase Input (24xC13/3xC19/3xNEMA 5-20R) NA/JP Basic PDU	H5M64A
HP 8.6kVA 208 Volt L15-30 3-Phase Input (24xC13/6xC19) NA/JP Basic PDU	H5M62A
HP Basic Power Distribution Unit: Full Height Version	
HP 11kVA 400 Volt IEC309 30A 3-Phase Input (36xC13/6xC19) NA Basic PDU	H5M67A
HP Basic Power Distribution Unit: 480/277 Volt Version	
HP 13.2kVA 480 Volt IEC309 30A 3-Phase Input (15 Outlet) NA Basic PDU	H3X07A
HP 19.9kVA 480 Volt IEC309 30A 3-Phase Input (30 Outlet) NA Basic PDU	H3X08A
HP 800VA - 277V Input / 230V Output NA Rack Mount Transformer	H3X09A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/14557_na/14557_na.html

NOTE: Additional HP Power Distribution Units are available. For a complete list of all HP PDUs and additional information please visit: www.hp.com/go/rackandpower.

HP Remote Monitoring Power Distribution Units (mPDU)	**HP Remote Monitored Power Distribution Unit: 1U Version**	
	HP 2.8kVA 120 Volt L5-30 Input (12xNEMA 5-20R)NA/JP Monitored PDU	D9N43A
	HP 3.6kVA 200-240 Volt Detachable C20 Input (12xC13) WW Monitored PDU	D9N46A
	HP 4.9kVA 208 Volt L6-30 Input (12xC13) NA/JP Monitored PDU	D9N44A
	HP Remote Monitored Power Distribution Unit: Half Height Version	
	HP 3.6kVA 200-240 Volt Detachable C20 Input (16xC13) WW Monitored PDU	D9N45A
	HP Remote Monitored Power Distribution Unit: Mid Height Version	
	HP 4.9kVA 208 Volt L6-30 Input (20xC13/4xC19) NA/JP Monitored PDU	D9N47A
	HP 8.6kVA 208 Volt L15-30 3-Phase Input (18xC13/3xC19) NA/JP Monitored PDU	D9N51A
	HP 5.7kVA 208 Volt L21-20 3-Phase Input (18xC13/3xNEMA 5-20R) NA/JP Monitored PDU	D9N52A
	HP 8.6kVA 208 Volt L21-30 3-Phase Input (20xC13/3xC19/3xNEMA 5-20R) NA/JP Monitored PDU	D9N53A
	HP Remote Monitored Power Distribution Unit: Full Height Version	
	HP 8.3kVA 208 Volt CS8265C Input (30xC13/3xC19) NA Monitored PDU	D9N49A
	HP 14.4kVA 208 Volt CS8365C 3-Phase Input (12xC13/12xC19)NA Monitored PDU	D9N58A
	HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (30xC13/3xC19) NA Monitored PDU	D9N61A

HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (24xC13/3xC19) NA/JP Monitored PDU	D9N54A
HP 17.3kVA 208 Volt IEC309 60A 3-Phase Input (12xC13/12xC19) NA/JP Monitored PDU	D9N59A
HP 16.6kVA 400 Volt IEC309 30A 3-Phase Input (12xC13/12xC19) NA Monitored PDU	D9N62A
HP 19.9kVA 480 Volt 3-Phase (30 Outlet) NA Monitored PDU	D9N63A
HP Environmental Sensor for Remote Monitored PDUs	
HP Environmental Sensor for Remote Monitored PDUs	E2D53A
NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14669_na/14669_na.html	

HP Intelligent Power Distribution Units (iPDU)	**iPDU Core Units**	
	HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
	HP 8.3kVA 40A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF521A
	HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
	HP 14.4kVA 40A Three Phase NA/JP Intelligent Modular Power Distribution Unit	AF533A
	HP 17.3kVA 48A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF523A
	HP 11.4kVA 16A 415V Three Phase L22-20 NA Core Intelligent Power Distribution Unit	AF900A
	HP 17.3kVA 24A 415V Three Phase IEC309 NA Core Intelligent Power Distribution Unit	AF901A
	HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF535A
	HP 17.3kVA 24A 415V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit	AF537A
	iPDU Kits with Standard Extension Bars	
	HP 4.9kVA 24A Single Phase NA/JP Intelligent Modular Power Distribution Kit	AF531A
	HP 8.6kVA 24A Three Phase NA/JP Intelligent Modular Power Distribution Kit	AF532A
	iPDU Extension Bars	
	HP 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
	HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13650_na/13650_na.html	

HP Rack Options	**HP Location Discovery Services**	
	HP 36U Location Discovery Kit	BW945A
	HP 42U Location Discovery Kit	BW946A
	HP 47U Location Discovery Kit	BW947A
	HP TFT7600 G2 KVM Console and Monitor (TFT7600 G2)	

HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor   AZ870A

HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor   AZ885A

NOTE: Please see the QuickSpecs for Technical Specifications and additional
information:
http://h18000.www1.hp.com/products/quickspecs/13731_na/13731_na.html

HP Server Console Switches

HP Server Console 0x2x8 Port Analog Switch   AF616A
HP Server Console 0x2x16 Port Analog Switch   AF617A
HP TAA 0x2x16xKVM Server Console G2 Switch   AF626A

NOTE: Please see the QuickSpecs for Technical Specifications and additional
information:
http://h18000.www1.hp.com/products/quickspecs/11834_na/11834_na.html

HP Server Console Switch G2 with Virtual Media & CAC

HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software   AF618A

HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software   AF619A

KVM USB Cnsl Itfc Adapter 1PK ALL   336047-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional
information:
http://h18000.www1.hp.com/products/quickspecs/13475_na/13475_na.html

HP IP Console Switch G2 with Virtual Media & CAC

	HP 1x4 USB/PS2 KVM Console Switch	**AF611A**
	HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	**AF620A**
	HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	**AF621A**
	HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	**AF622A**

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13474_na/13474_na.html

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HP USB and SD Options

HP Flash Media Kits for USB Drives

HP 8GB USB Enterprise Mainstream Flash Media Drive Key Kit	**737953-B21**

HP Enterprise Mainstream Flash Media Kits for Memory Cards

HP 8GB SD Enterprise Mainstream Flash Media Kit	**726113-B21**
HP 32GB microSD Enterprise Mainstream Flash Media Kit	**700139-B21**

NOTE: Please see the QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/13971_na/13971_na.html

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HP Care Pack Services

Proactive Care
NOTE: Collaborative Support plus Proactive services delivered by the onshore, local language Advanced Solution Center (ASC), end-to-end case ownership from a Technical Solution Specialists and Technical Account Manager who remotely delivers firmware/software revision management, proactive scans and incident trend reports. Recommended for customers running a virtualized infrastructure and/or customers who desire an enhanced call support experience.

HP 3 year 4 hour 24x7 ProLiant DL58x Proactive Care Service	**U2Z68E**
HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant DL58x Proactive Care Service	**U2Z71E**
HP 3 year 6 hour Call To Repair 24x7 ProLiant DL58x Proactive Care Service	**U2Z74E**
HP 3 year 6 hour Call To Repair 24x7 withDefective Media Retention ProLiant DL58x Proactive Care SVC	**U2Z77E**

Proactive Care Personalized Support - Environmental Option
NOTE: To add an onsite Account Support Manager (ASM) to Proactive Care. ASM is an assigned resource who delivers support planning and brings technical expertise and best practices advices for the customer's environment.

HP 3 year ISS ProactiveCare Personalized Support	**U6W98E**

Installation Services
NOTE: Reduce the time required to get your system up and running and help minimize disruptions to your business.

HP Install ProLiant DL58x Service	**U4617E**
HP Startup ProLiant DL58x Service	**U4618E**
HP Installation and Startup for Insight Control Software	**UF369E**
HP Startup HP Systems Insight Manager Service	**UA041E**

NOTE: For more information, customer/resellers can contact:
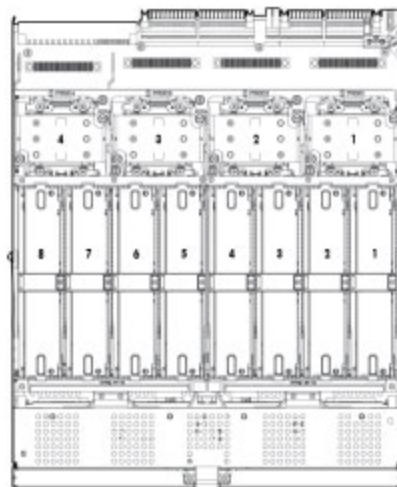http://www.hp.com/services/carepack

HP SmartMemory

New HP SmartMemory now provides additional protection for your servers. With HP Authentication it can verify that you have true HP Qualified Memory in your HP ProLiant Gen9 server. With HP SmartMemory your new HP ProLiant server can take advantage of additional Gen9 enhancements in performance, durability and future manageability support through HP Active Health System.

For detailed memory configuration rules and guidelines, please use the Online DDR4 Memory Configuration Tool:
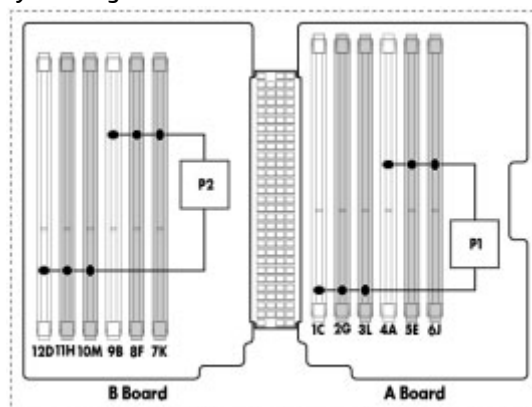http://www.hp.com/go/ddr4config

Memory Sub-system Architecture

As shown in the figure above, memory cartridge to processor association as follows:

- Memory cartridges installed without a corresponding processor are not utilized:
  - Processor 1 corresponds to memory cartridges 1 and 2.
  - Processor 2 corresponds to memory cartridges 3 and 4.
  - Processor 3 corresponds to memory cartridges 5 and 6.
    NOTE: Memory cartridges 5 and 6 are not recognized if processor 3 is not installed.
  - Processor 4 corresponds to memory cartridges 7 and 8.
    NOTE: Memory cartridges 7 and 8 are not recognized if processor 4 is not installed.

Each memory cartridge contains 12 DIMM slots as shown in figure below:

The memory subsystem in this server is divided into channels. Each processor supports eight channels, and each channel supports three DIMM slots, as shown in the table below. White DIMM slots denote the first slot of a channel (Ch 4A, Ch 9B, Ch 1C, Ch 12D...).

Channel	Population order	Slot number
1	A	4
	E	5
	J	6
2	B	9
	F	8
	K	7
3	C	1
	G	2
	L	3
4	D	12
	H	11
	M	10

The server can operate in independent channel mode (performance) or combined channel mode (lockstep). Lockstep mode improves the system reliability and availability. If running with RDIMM (built with x4 DRAM devices), the system can survive the complete failure of two DRAM devices (DDDC). Running in independent mode, the server can only survive the complete failure of a single DRAM device (SDDC).

Memory performance depends on selected processor and whether the system is configured for independent channel mode (performance mode) or lockstep mode (RAS mode).

Max memory speed	Processors
1866MHz	E7-8893 v3, E7-8891 v3, E7-8880L v3, E7-8867 v3, E7-8890 v3, E7-8880 v3, E7-8870 v3, E7-4860 v3
1600MHz	E7-4850 v2, E7-4830 v2, E7-4820 v2, E7-4809 v2

Performance or Independent Mode :
In this mode each DDR4 channel works independently and the SMI2 channel operates at twice the DDR4 speed (2667 MT/s max).
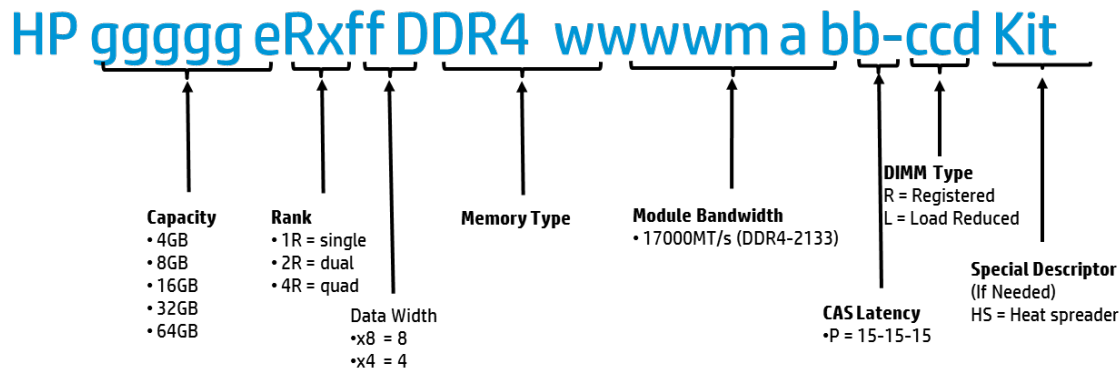
Lockstep mode:
In this mode, the memory controller operates two DDR4 channels behind one memory buffer as single channel and the SMI2 channel operates at the DDR4 transfer rate (1600 MT/s max).

The server supports the following DIMM speeds as shown below in the table Performance (Lockstep).

DIMM type	DIMM rank	Voltage	1 DIMM per channel	2 DIMMs per channel	3 DIMMs per channel
RDIMM	Single-rank (8 GB)	LV	1600 (1866)	1600 (1866)	1600 (1600)
RDIMM	Dual-rank (16 GB)	LV	1600 (1866)	1600 (1866)	1333 (1333)
RDIMM	Dual-rank (32 GB)	LV	1600 (1866)	1600 (1866)	1333 (1333)
LRDIMM	Dual-rank (16GB)	LV	1600 (1866)	1600 (1866)	1600 (1600)
LRDIMM	Quad-rank (32GB)	LV	1600 (1866)	1600 (1866)	1600 (1600)

DIMM Classification and Identification

HP ggggg eRxff DDR4 wwwwm a bb-ccd Kit

Capacity
- 4GB
- 8GB
- 16GB
- 32GB
- 64GB

Rank
- 1R = single
- 2R = dual
- 4R = quad

Data Width
- x8 = 8
- x4 = 4

Memory Type

Module Bandwidth
- 17000MT/s (DDR4-2133)

CAS Latency
- P = 15-15-15

DIMM Type
R = Registered
L = Load Reduced

Special Descriptor
(If Needed)
HS = Heat spreader

Memory Population Guidelines

- To maximize performance, install two memory cartridges per processor and balance the total memory capacity between all installed processors.
- When multiple processors are installed, HP recommends installing the DIMMs in sequential alphabetical order: 4A, 9B, 1C, 12D, and so on.
- LRDIMMs support higher densities than single- and dual-rank RDIMMs, and higher speeds than quad-rank RDIMMs. This support enables you to install more high capacity DIMMs, resulting in higher system capacities and higher bandwidth.
- Do not mix LRDIMMs with any other DIMM type (RDIMM, LVDIMM).
- RDIMM population is limited to a maximum of eight logical ranks per channel. Therefore, only two quad rank RDIMMs are supported per channel. If there are more than eight physical ranks per channel, LRDIMMs rank multiplication provides support for three DIMMs per channel.
- Lockstep mode requires specific population requirements. See lock-step configuration below for more information.

NOTE: UDIMMs are not supported. This server does not support mixing LRDIMMs, RDIMMs, or UDIMMs. Attempting to mix any combination of these DIMMs can cause the server to halt during BIOS initialization.
For detailed memory configuration rules and guidelines, use the Online DDR4 Memory Configuration Tool on the HP website (http://www.hp.com/go/ddr3memory-configurator).
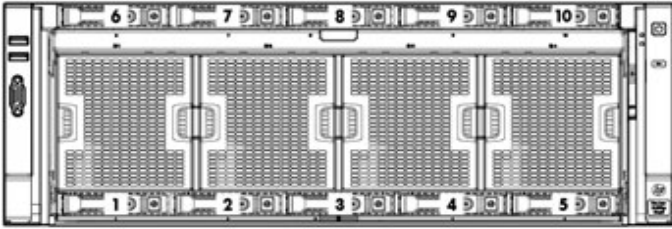
Online Sparing Configuration Guidelines

Online spare memory provides protection against degraded DIMMs by reducing the likelihood of uncorrected memory errors. This protection is available without any operating system support.

Online spare memory protection dedicates one rank of each memory channel for use as spare memory. The remaining ranks are available for OS and application use. If correctable memory errors occur at a rate higher than a specific threshold on any of the non-spare ranks, the server automatically copies the memory contents of the degraded rank to the online spare rank. The server then deactivates the failing rank and automatically switches over to the online spare rank.

For Online Spare memory mode configurations, observe the following guidelines:

- Observe the general DIMM slot population guidelines.
- Each channel must have a valid online spare configuration.
- Each channel can have a different valid online spare configuration.
- Each populated channel must have a spare rank.
- A single dual-rank DIMM is not a valid configuration.
- LRDIMMs are treated as dual-rank DIMMs.

1-10   Ten (10) SFF Hot-plug HDD/SSD drive bays
NOTE: Drives installed in bays 6-10 require the optional SAS backplane kit.

Maximum Internal Storage

Hot Plug SFF SAS	12TB	10 x 1.2TB
Hot Plug SFF SAS SSD	16TB	10 x 1.6TB
Hot Plug SFF SATA SSD	8TB	10 x 800GB

System Unit	**Dimensions** (H x W x D) (with bezel)	6.88" x 17.48" x 29" (17.5cm x 44.4cm x 73.6cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, DIMMs and processors installed)	116.56.0 lb (52.87 kg)
		Minimum (one hard drive, two power supplies, four DIMMs, and two processors installed)	70.94 lb (32.18 kg)
	Input Requirements (per power supply)	Rated Line Voltage	100 - 120 VAC (1200W PS only) 200 - 240 VAC (1200W & 1500W PS)
		Rated Input Current	9.2A (100 VAC), 6.6A (200 VAC) - 1200W PS8.3A (200 VAC) - 1500W PS
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	1000 W (120 VAC), 1320 W (230VAC) - 1200W PS 1652 W (at 230 VAC) - 1500W PS
	BTU Rating	Maximum	3408 BTU/hr (120 VAC), 4500 BTU/hr (at 230 VAC) - 1200W PS5637 BTU/hr (230 VAC) - 1500W PS
	Power Specifications	**NOTE:** To review typical system power ratings use the HP Power Advisor which is available online located at url: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor

- Click on the system of interest. Example: DL580 G7
- Follow the instructions of the next screens. | |
	Power Supply Output (per power supply)	Rated Steady-State Power and Maximum Peak Power	800 W (100 VAC low line),900 W (120 VAC low line), 1200W (200 - 240 VAC) for 1200W PS 1500W (200 - 240V) for 1500W PS
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-40° to 70°C (-40° to 158°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed.

		Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise		Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 24°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Typical configuration (Two Intel® Xeon® E7-4890 v2 processors, 8x16 GB DIMMs, five HDDs, Eight fans, Four power supplies)
Idle
- LWAd – 6.8 B
- LpAm – 51.2

Operating
- LWAd – 6.9 B
- LpAm – 51.2

Performance Configuration (Four Intel® Xeon® E7-4890 v2 processors, 16x16 GB DIMMs, Ten HDDs, Eight fans, Four power supplies)
Idle
- LWAd – 6.7 B
- LpAm – 50.7

Operating
- LWAd – 6.9 B
- LpAm – 51.3

Emissions Classification (EMC)	**FCC Rating**	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

HP Smart Array P830i	**Dimensions**	Embedded
	Disk Drive and Enclosure Interface - Transfer rate	12 Gb/s SAS, 6 Gb/s SAS & SATA
	SAS Connectors	2 internal x8 Mini-SAS double-wide internal
	Cache Memory Speed	DDR2-1866MHz with 72-bit wide bus at 14.9 GB/s (4 GiBytes Cache Module)
	SAS Speed	12Gb/s per physical link
	Cache Memory	FBWC cache is required. 2GB is included with BTO models. For CTO, 2GB or 4GB FBWC cache is required.
	Logical Drives Supported	Up to 64 logical volumes
	Host Memory Addressing	64-bit, supporting greater than 4GiB server memory space
	RAID Support	RAID 6, 60 (Advanced Data Guarding)

RAID 5, 50 (Distributed Data Guarding)

RAID 1, 10 (Drive Mirroring), RAID 1 ADM, 10 ADM (Advanced Data Mirroring)

RAID 0 (Striping)

HP Ethernet 1Gb 4-port 331FLR Adapter	HP Flexible Network Technology	HP Flexible Network Technology consists of replaceable network solutions to meet customer requirements now and in the future.	
	Network Interface	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX IEEE 802.3x IEEE 802.3ad 1000Base-TX IEEE 802.3az IEEE 1588 802.1as IEEE 802.1q 100Base-TX	
	Data Transfer Method	PCI-Express 2.0 x4	
	Controller	BCM5719	
	Network Transfer Rate	10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Full-Duplex)	2000 Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4, or 5 UTP; up to 328 ft (100 m)
		100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
		1000Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	HP Flexible Network Technology	HP Flexible Network Technology consists of replaceable network solutions to meet customer requirements now and in the future.	
	Network Interface	IEEE 802.3 SFP+ (SX, SR & LR)	
	Compatibility	802.3, 802.3ae, 802.3x, 802.2x, 802.3ad, 802.1Qaz, 802.1Qau, 802.1Qbb, 802.1Qbg, 802.1ax	
	Data Transfer Method	PCI-Express 2.0 x8	
	Controller	Broadcom BCM57810S chipset	
	Network Transfer Rate	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth.	
	Connector	Two SFP+	
	Cable Support	Maximum distances for CAT6 cable are 30 meters (98 feet). Maximum distances for CAT6a are 100 meters (328 feet).	
HP Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	HP Flexible Network Technology	HP Flexible Network Technology consists of replaceable network solutions to meet customer requirements now and in the future.	
	Network Interface	SFP+ for Direct Attach Cable copper or fiber	
	Compatibility	802.3, 802.1ab, 802.3x, 802.3ad, 802.1p/ 802.1q, 802.3ae, 802.1Qau	
	Data Transfer Method	PCI-Express 2.0 x8	
	Controller	Intel® 82599 Controller	
	Network Transfer Rate	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth.	

Connector	Two SFP+	
Cable Support	10Base-T	Categories 3, 4, or 5 UTP; up to 328 ft (100 m)
	100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
	1000Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Date	Version History	Action	Description of Change
01-May-2015	From Version 0 to 1	New	New QuickSpecs