

# HPE Solutions with Aerospike configuration guide

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## Introduction

This configuration guide provides direction on how to configure the supported hardware components for an Aerospike solution approved by Hewlett Packard Enterprise. For each configuration, base components and flexible components are defined. All base components in each category must be included as specified. The flex components allow for supported configuration variances but must be satisfied as detailed in the flex component table for each type of configuration.

## Aerospike solutions overview

An Aerospike solution supported by HPE is built on the HPE Alletra 4110 20EDSFF Data Solutions CTO Server or HPE ProLiant DL380 Gen10 Plus Server platforms. An initial Aerospike cluster deployment must contain a minimum of two identically configured nodes although three nodes are generally recommended. An Aerospike cluster can be expanded by adding nodes to an existing cluster, but all nodes in the cluster must always be identical.

The storage devices in the HPE Alletra 4110 20EDSFF DS CTO Server or HPE ProLiant DL380 Gen10 Plus Server nodes configured with Aerospike solutions are configured as NVMe direct-attach to obtain superior performance. The HPE Alletra or HPE ProLiant server configurations supported for the platform are detailed in the [“Solution details”](#) section.

The HPE Alletra 4110 20EDSFF DS CTO Server or HPE ProLiant DL380 Gen10 Plus Server are 2-socket server platforms. A requirement for multsocket servers supporting Aerospike solutions is for those servers to have a balanced architecture across each processor socket. This applies to memory, storage, and network within the server. For instance, the memory should be configured for maximum performance by populating all memory channels equally on all processors. The solutions supported by HPE with Aerospike have been designed with these requirements and have been validated by HPE and Aerospike. For this reason, these guidelines should be followed exactly to achieve superior performance and a supported solution. Additionally, the server’s internal memory, NVMe storage, and network adapter placement must be slotted correctly to achieve this balance. Figures are included in [“Appendix A—Server configurations for maintaining a balanced architecture”](#) to show component locations.

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### Note

These component locations may not align with how the server is shipped from HPE and therefore may need to be moved once the server is on the customer site and prior to deploying the operating system and Aerospike software.

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## Solution details

### HPE ProLiant DL380 Gen10 Plus Server with Aerospike

#### Base components

The following components are required in all configurations. The quantities in Table 1 reflect the quantity of one HPE ProLiant DL380 Gen10 Plus Server. For a solution, a minimum of two HPE ProLiant DL380 Gen10 Plus Servers are required along with a supported operating system and Aerospike software SKUs. Note that although two servers are supported for an Aerospike solution, for a production deployment, a minimum of three servers is generally recommended.

**Table 1.** HPE ProLiant DL380 Gen10 Plus Server baseline components

Quantity	SKU	Description	Flex component	Notes
1	P05172-B21	HPE DL380 Gen10+ 8SFF NC CTO Server	No	Server chassis
2	P36934-B21	Intel® Xeon® Gold 6346 CPU for HPE	No	Processor
2	P27095-B21	HPE DL380 Gen10+ High Perf Heat Sink Kit	No	Heat sink
1	P20616-B21	HPE DL380 Gen10+ 8NVMe 1P Bal FIO Kit	No	NVMe bundle kit
1	P20617-B21	HPE DL380 Gen10+ 8NVMe 2P Bal FIO Kit	No	NVMe bundle kit
2	P26931-B21	HPE DL300 Gen10+ 2U 8SFF x4Tmode U.3 Kit	No	Drive cage
1	P14581-B21	HPE DL38x Gen10+ 2x8 Tertiary Riser Kit	No	Tertiary PCIe riser
1	P12965-B21	HPE NS204i-p NVMe PCIe3 OS Boot Device	No	Boot device
1	P27089-B21	HPE DL380 Gen10+ 2p x16 SlimSAS Sec Kit	No	Secondary NVMe riser
1	P27090-B21	HPE DL380 Gen10+ 2p x16 SlimSAS Prim Kit	No	Primary NVMe riser
1	P14608-B21	HPE DL38X Gen10+ Max Perf Fan Kit	No	Fan kit
1	786092-B21	HPE DL380 Gen9 8SFF H240 Cable Kit	No	Cable kit
		Memory and storage	Yes	<a href="#">See Table 2</a>
		Cluster network	Yes	<a href="#">See Table 2</a>
		Optional network	Yes	<a href="#">See Table 2</a>
2		Power supply	Yes	<a href="#">See Table 2</a>
		Racking	Yes	<a href="#">See Table 2</a>
		Optional components	Yes	<a href="#">See Table 2</a>
1		HPE iLO Advanced	Yes	<a href="#">See Table 2</a>
		HPE support	Yes	<a href="#">See Table 2</a>
		HPE installation	Yes	<a href="#">See Table 2</a>
		Aerospike SW E-LTU	Yes	<a href="#">See Table 2</a>
		Linux® operating system	Yes	<a href="#">See Table 2</a>

#### Flex components

The following guidelines must be satisfied for each component category. The quantities in Table 2 reflect the quantity of one HPE ProLiant DL380 Gen10 Plus Server. For a solution, a minimum of two HPE ProLiant DL380 Gen10 Plus Servers are required along with a supported operating system and Aerospike software SKUs. Note that although two servers are supported for an Aerospike solution, for a production deployment, a minimum of three servers is generally recommended.



**Table 2.** HPE ProLiant DL380 Gen10 Plus Server flex component guidelines

Name	Guidelines																																	
Memory and storage	<p data-bbox="316 338 938 369">Required. Select and configure one of the following capacity options:</p> <p data-bbox="316 371 528 403"><b>Small capacity option</b></p> <p data-bbox="316 405 1377 461">Select one memory option and one NVMe SSD drive option from the following. Must configure 16x16 GB DIMMs and 16x1.6 TB NVMe drives.</p> <table border="1" data-bbox="316 472 1457 647"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>P06029-B21</td> <td>HPE 16GB 1Rx4 PC4-3200AA-R Smart Kit</td> </tr> <tr> <td>16</td> <td>P06031-B21</td> <td>HPE 16GB 2Rx8 PC4-3200AA-R Smart Kit</td> </tr> <tr> <td>16</td> <td>P50227-B21</td> <td>HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD</td> </tr> </tbody> </table> <p data-bbox="316 658 552 689"><b>Medium capacity option</b></p> <p data-bbox="316 692 1377 748">Select one memory option and one NVMe SSD drive option from the following. Must configure 16x32 GB DIMMs and 16x3.2 TB NVMe drives.</p> <table border="1" data-bbox="316 759 1457 983"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>P06033-B21</td> <td>HPE 32GB (1x32GB) Dual Rank x4 DDR4-3200 CAS-22-22-22 Registered Smart Memory Kit</td> </tr> <tr> <td>16</td> <td>P40007-B21</td> <td>HPE 32GB (1x32GB) Single Rank x4 DDR4-3200 CAS-22-22-22 Registered Smart Memory Kit</td> </tr> <tr> <td>16</td> <td>P50230-B21</td> <td>HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD</td> </tr> </tbody> </table> <p data-bbox="316 994 531 1025"><b>Large capacity option</b></p> <p data-bbox="316 1028 1377 1084">Select one memory option and one NVMe SSD drive option from the following. Must configure 16x64 GB DIMMs and 16x6.4 TB NVMe drives.</p> <table border="1" data-bbox="316 1095 1457 1256"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>P06035-B21</td> <td>HPE 64GB (1x64GB) Dual Rank x4 DDR4-3200 CAS-22-22-22 Registered Smart Memory Kit</td> </tr> <tr> <td>16</td> <td>P50233-B21</td> <td>HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD</td> </tr> </tbody> </table>	Quantity	SKU	Description	16	P06029-B21	HPE 16GB 1Rx4 PC4-3200AA-R Smart Kit	16	P06031-B21	HPE 16GB 2Rx8 PC4-3200AA-R Smart Kit	16	P50227-B21	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD	Quantity	SKU	Description	16	P06033-B21	HPE 32GB (1x32GB) Dual Rank x4 DDR4-3200 CAS-22-22-22 Registered Smart Memory Kit	16	P40007-B21	HPE 32GB (1x32GB) Single Rank x4 DDR4-3200 CAS-22-22-22 Registered Smart Memory Kit	16	P50230-B21	HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD	Quantity	SKU	Description	16	P06035-B21	HPE 64GB (1x64GB) Dual Rank x4 DDR4-3200 CAS-22-22-22 Registered Smart Memory Kit	16	P50233-B21	HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD
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Cluster network	<p data-bbox="316 1301 1007 1332">Required. Must select a quantity of two network adapters from the following:</p> <table border="1" data-bbox="316 1344 1457 1473"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>P25960-B21</td> <td>MLX MCX623106AS 100GbE 2p QSFP56 Adapter</td> </tr> <tr> <td>2</td> <td>P21112-B21</td> <td>INT E810 100GbE 2p QSFP28 Adapter</td> </tr> </tbody> </table>	Quantity	SKU	Description	2	P25960-B21	MLX MCX623106AS 100GbE 2p QSFP56 Adapter	2	P21112-B21	INT E810 100GbE 2p QSFP28 Adapter																								
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2	P21112-B21	INT E810 100GbE 2p QSFP28 Adapter																																
Optional network	<p data-bbox="316 1514 1425 1570">Any network adapters supported with the platform. Limited to available PCIe and OCP slots after required components are configured.</p>																																	
Power supply	<p data-bbox="316 1590 1442 1646">Dual power supplies required. To ensure N+1 is achieved in all operating modes, a single power supply's wattage must equal or exceed the server's required input wattage at 100% utilization.</p> <p data-bbox="316 1648 1436 1700">To select the right size power supply for your HPE ProLiant DL380 Gen10 Plus Server, it is highly recommended to use the <a href="#">HPE Power Advisor</a> to determine the right size power supply for your server needs.</p>																																	
Racking	<p data-bbox="316 1720 786 1751">Any HPE rail kit supported with the server platform.</p>																																	
Optional components	<p data-bbox="316 1771 1461 1827">Any optional components supported with the platform; limited platform support for the component after required components are configured; additional components can be items such as a TPM module, bezel kit, intrusion kit, and such.</p>																																	
HPE iLO Advanced	<p data-bbox="316 1848 815 1879">Required. HPE iLO Advanced license such as BD505A.</p>																																	
HPE support	<p data-bbox="316 1899 995 1930">HPE support recommended. Select support to meet customer requirement.</p>																																	
HPE installation	<p data-bbox="316 1951 1038 1982">HPE installation recommended. Select HPE installation to meet customer needs.</p>																																	
Aerospike SW E-LTU	<p data-bbox="316 2002 1366 2033">Required. Select Aerospike SW E-LTU SKUs for required capacity. <a href="#">See the HPE Solutions with Aerospike QuickSpecs</a></p>																																	



Name	Guidelines
Linux operating system	A Linux operating system is required. Aerospike SW E-LTU SKUs do not include an OS. See the following URLs for Aerospike-supported operating systems and HPE server, operating system, driver, and firmware support. <a href="#">Aerospike—Planning a Deployment</a> <a href="#">HPE Servers Support &amp; Certification Matrices</a>

### HPE Alletra 4110 20EDSFF Server for Aerospike

The HPE Alletra 4110 20EDSFF Data Solutions CTO Server for Aerospike is configured using an OCA Wizard. The wizard is located in OCA by starting a new normal configuration and searching on Aerospike and then selecting S1S84A HPE Alletra 4110 20EDSFF Server for Aerospike. The wizard allows selections of memory, NVMe drives, networking, optional components, and Aerospike software subscriptions. Tables 3 and 4 detail the requirements for HPE Alletra 4110 20EDSFF DS CTO Server for Aerospike.

#### Base components

The following components are required in all configurations.

The quantities in Table 3 reflect quantity one HPE Alletra 4110 20EDSFF DS CTO Server. For a solution, a minimum of two HPE Alletra 4110 20EDSFF DS CTO Servers are required; however, for a production deployment a minimum of three servers are recommended.

#### Note

Component placement requirement for the HPE Alletra 4110 20EDSFF DS CTO Server are defined in Appendix A.

**Table 3.** HPE Alletra 20EDSFF DS CTO Server Bundle baseline components

Quantity	SKU	Description	Flex component	Notes
1	S1R94A	HPE Alletra 4110 20EDSFF Data Solutions Configure-to-order Server	No	Server chassis
2	P50794-B21	Intel Xeon-Gold 6426Y 2.5GHz 16-core 185W Processor Kit for HPE Alletra 41x0	No	Processor
2	P51169-B21	HPE Alletra 4110 High Performance Heat Sink Kit	No	Heat sink
1	P51673-B21	HPE Alletra 4110 Gen11 High Perf Fan Kit	No	Fan kit
1	P48183-B21	HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device	No	Boot device
1	P51206-B21	HPE Alletra 4110 NVMe M.2 Enablement Kit	No	Boot device kit
*	*	Memory and storage	Yes	<a href="#">See Table 4</a>
*	*	Cluster network	Yes	<a href="#">See Table 4</a>
*	*	Optional network	Yes	<a href="#">See Table 4</a>
2	*	Power supply	Yes	<a href="#">See Table 4</a>
*	*	Racking	Yes	<a href="#">See Table 4</a>
*	*	Optional components	Yes	<a href="#">See Table 4</a>
1	*	HPE iLO Advanced	Yes	<a href="#">See Table 4</a>
*	*	HPE support	Yes	<a href="#">See Table 4</a>
*	*	HPE installation	Yes	<a href="#">See Table 4</a>
*	*	Aerospike LTU	Yes	<a href="#">See Table 4</a>
*	*	Linux operating system	Yes	<a href="#">See Table 4</a>

\*See [Table 4](#). HPE Alletra 4110 EDSFF DS CTO Server flex component

#### Flex components

The following guidelines must be satisfied for each component category.



The quantities in Table 4 reflect quantity one HPE Alletra 4110 20EDSFF DS CTO Server. For a solution, a minimum of two HPE Alletra 4110 20EDSFF DS CTO Servers are required; however, for a production deployment a minimum of three servers are recommended.

**Table 4.** HPE Alletra 4110 20EDSFF DS CTO Server flex component guidelines

Name	Guidelines																											
<b>Memory and storage</b>	<p>Required. Select and configure one of the following capacity options:</p> <p><b>Small capacity option</b></p> <p>Select one memory option and one NVMe SSD drive option from the following. Must configure 16x16 GB DIMMs and from 2 to 20 NVMe drives.</p> <table border="1"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>P43322-K21</td> <td>HPE 16GB 1Rx8 PC5-4800B-R Smart Kit</td> </tr> <tr> <td>2 to 20</td> <td>P56585-K21</td> <td>HPE 1.92TB NVMe RI E3S EC1 CD7 SSD <a href="#">See Notes</a></td> </tr> </tbody> </table> <p><b>Medium capacity option</b></p> <p>Select one memory option and one NVMe SSD drive option from the following. Must configure 16x32 GB DIMMs and from 2 to 20 NVMe drives.</p> <table border="1"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>P43328-K21</td> <td>HPE 32GB 2RX8 PC5-4800B-R Smart Kit</td> </tr> <tr> <td>2 to 20</td> <td>P57799-K21</td> <td>HPE 3.84TB NVMe RI E3S EC1 PM1743 SSD <a href="#">See Notes</a></td> </tr> </tbody> </table> <p><b>Large capacity option</b></p> <p>Select one memory option and one NVMe SSD drive option from the following. Must configure 16x64 GB DIMMs and from 2 to 20 NVMe drives.</p> <table border="1"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>P43331-K21</td> <td>HPE 64GB 2RX4 PC5-4800B-R Smart Kit</td> </tr> <tr> <td>2 to 20</td> <td>P57803-K21</td> <td>HPE 7.68TB NVMe RI E3S EC1 PM1743 SSD <a href="#">See Notes</a></td> </tr> </tbody> </table> <p><b>Notes</b></p> <ol style="list-style-type: none"> <li>Only quantity 2, 4, 6, 8, 10, 12, 14, 16, 18, or 20 drives are supported per node.</li> <li>See <a href="#">Appendix A</a> for drive loading requirements.</li> </ol>	Quantity	SKU	Description	16	P43322-K21	HPE 16GB 1Rx8 PC5-4800B-R Smart Kit	2 to 20	P56585-K21	HPE 1.92TB NVMe RI E3S EC1 CD7 SSD <a href="#">See Notes</a>	Quantity	SKU	Description	16	P43328-K21	HPE 32GB 2RX8 PC5-4800B-R Smart Kit	2 to 20	P57799-K21	HPE 3.84TB NVMe RI E3S EC1 PM1743 SSD <a href="#">See Notes</a>	Quantity	SKU	Description	16	P43331-K21	HPE 64GB 2RX4 PC5-4800B-R Smart Kit	2 to 20	P57803-K21	HPE 7.68TB NVMe RI E3S EC1 PM1743 SSD <a href="#">See Notes</a>
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2 to 20	P57803-K21	HPE 7.68TB NVMe RI E3S EC1 PM1743 SSD <a href="#">See Notes</a>																										
Cluster network	<p>Required. Must select quantity two of one of the network adapters from the following:</p> <table border="1"> <thead> <tr> <th>Quantity</th> <th>SKU</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>P25960-B21</td> <td>Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE</td> </tr> <tr> <td>2</td> <td>P21112-B21</td> <td>Intel® E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE</td> </tr> <tr> <td>2</td> <td>P31324-B21</td> <td>HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 MCX653106A-HDAT Adapter</td> </tr> </tbody> </table>	Quantity	SKU	Description	2	P25960-B21	Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE	2	P21112-B21	Intel® E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE	2	P31324-B21	HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 MCX653106A-HDAT Adapter															
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2	P31324-B21	HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 MCX653106A-HDAT Adapter																										
Optional network	Any network adapter supported with the platform. Limited to OCP slots after required components are configured.																											
Power Supply	<p>Dual power supplies required. A single supply wattage output must exceed maximum server wattage at 100% utilization.</p> <p>In order to select the right size power supply for your HPE Alletra 4110 20EDSFF DS CTO Server, it is highly recommended that you use the HPE Power Advisor located at: <a href="http://poweradvisorext.it.hpe.com/?Page=Index">poweradvisorext.it.hpe.com/?Page=Index</a> to determine the right size power supply for your server needs.</p>																											



**Table 4.** HPE Alletra 4110 20EDSFF DS CTO Server flex component guidelines (continued)

Name	Guidelines
Racking	Any HPE rail kit supported with server platform.
Optional components	Any optional components supported with the platform. Limited to platform support for the component after required components are configured. Additional components can be items such as a TPM module, bezel kit, intrusion kit, and such.
HPE iLO Advanced	Required. HPE iLO Advanced license such as BD505A.
HPE support	HPE support recommended. Select support to meet customer requirement.
HPE installation	HPE installation recommended. Select HPE installation to meet customer needs.
Aerospike LTU	Required. Select Aerospike SW E-LTU SKUs for required usable capacity.
Linux operating system	A Linux operating system is required. Aerospike SW E-LTU SKUs do not include an OS. See the following URLs for Aerospike-supported operating systems and HPE server, operating system, driver, and firmware support. <a href="#">Aerospike—Planning a Deployment</a> <a href="#">HPE Servers Support &amp; Certification Matrices</a>

## Sample configurations

### HPE ProLiant DL380 Gen10 Plus Server with Aerospike

The following configuration example shows four HPE ProLiant DL380 Gen10 Plus Server small capacity nodes with 36 TB Aerospike database 5-year subscription.

**Table 5.** Sample configuration—HPE ProLiant DL380 Gen10 Plus Server with Aerospike

Component	Qty	SKU	Product description
Server	4	P05172-B21	HPE ProLiant DL380 Gen10 Plus 8SFF NC Configure-to-order Server
Localization opt.	4	P05172-B21 ABA	HPE DL380 Gen10 ICX CTO Mod-X 8SFF
Processor	8	P36934-B21	Intel Xeon-Gold 6346 3.1GHz 16-core 205W Processor for HPE
Memory	64	P06029-B21	HPE 16GB Single Rank x4 DDR4-3200 CAS-22-22-22 Registered Smart Memory Kit
Drive cage	8	P26931-B21	HPE ProLiant DL300 G10 Plus 2U 8SFF x4 Tri-Mode 24G U.3 BC FT Drive Cage Kit
NVMe drives	64	P50227-B21	HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD
PCIe riser	4	P14581-B21	HPE DL38X Gen10 Plus x8/x8 Tertiary Riser Kit
Boot device	4	P12965-B21	HPE NS204i-p x2 Lanes NVMe PCIe3 x8 OS Boot Device
Cluster network	8	P21112-B21	Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE
NVMe riser	4	P27089-B21	HPE ProLiant DL380 Gen10 Plus 2-port 4NVMe x16 SlimSAS Secondary Riser Kit
NVMe riser	4	P27090-B21	HPE ProLiant DL380 Gen10 Plus 2-port 4NVMe x16 SlimSAS Primary Riser Kit
Optional network	4	P08449-B21	Intel I350-T4 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE
Fan kit	4	P14608-B21	HPE DL38X Gen10 Plus Maximum Performance Fan Kit
Power supply	8	P38997-B21	HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
HPE iLO license	4	BD505A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
Cable kit	4	786092-B21	HPE DL380 SFF Smart Array HBA H200/P400 Series SAS Cable Kit
Bezel	4	867809-B21	HPE Gen10 2U Bezel Kit



**Table 5.** Sample configuration—HPE ProLiant DL380 Gen10 Plus Server with Aerospike (continued)

Component	Qty	SKU	Product description
NVMe bundle kit	4	P20616-B21	HPE ProLiant DL380 Gen10 Plus 8NVMe 1P Balanced FIO Bundle Kit
NVMe bundle kit	4	P20617-B21	HPE ProLiant DL380 Gen10 Plus 8NVMe 2P Balanced FIO Bundle Kit
Rail kit	4	P22018-B21	HPE DL38X Gen10 Plus 2U SFF Easy Install Rail Kit
CMA	4	P22020-B21	HPE DL38X Gen10 Plus 2U Cable Management Arm for Rail Kit
Heat sink	8	P27095-B21	HPE ProLiant DL380 Gen10 Plus High Performance Heat Sink Kit
Aerospike SW	10	S1J25AAE	ASDB EE Std AP/TB 1-10TB 5yr Sub E-LTU
Aerospike SW	15	S1J26AAE	ASDB EE Std AP/TB 11-25TB 5yr Sub E-LTU
Aerospike SW	11	S1J27AAE	ASDB EE Std AP/TB 26-50TB 5yr Sub E-LTU
Operating system	4	G3J32A	RHELServer 2 Sockets or 2 Guests 5 Year Subscription 24x7 Support LTU
HPE install	1	HA114A1	HPE Installation and Startup Service
HPE install	4	HA114A1 5A6	HPE Startup 300 Series OS SVC
HPE support	1	HU4A6A5	HPE 5Y Tech Care Essential Service
HPE support	4	HU4A6A5 ZSB	HPE ProLiant DL380 Gen10+ Support
HPE support	4	HU4A6A5 R2M	HPE iLO Advanced Non Blade Support

**HPE Alletra 4110 20EDSFF DS CTO Server for Aerospike**

**Table 6.** Sample configuration—HPE Alletra 4110 20EDSFF DS CTO Server for Aerospike: Initial cluster—medium capacity six nodes with 60 TB usable Aerospike Database Enterprise Edition Standard AP with 3-year support

Component	Qty	SKU	Product description
Tracking SKU	1	S1S84A	HPE Alletra 4110 20EDSFF Server for Aerospike Tracking
Option	1	S1S84A 001	Aerospike Initial Cluster
Server	6	S1R94A	HPE Alletra 4110 20EDSFF Data Solutions Configure-to-order Server
Processor	12	P50794-B21	Intel Xeon-Gold 6426Y 2.5GHz 16-core 185W Processor Kit for HPE Alletra 41X0
Memory	96	P43328-K21	HPE 32GB Dual Rank x8 DDR5-4800 CAS-40-39-39 EC8 Registered Smart Memory Kit
NVMe drives	60	P57799-K21	HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF PM1743 SSD
Network	12	P21112-B21	Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE
Power supply	12	P38997-B21	HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
HPE iLO	6	BD505A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features
M.2 Kit	6	P51206-B21	HPE Alletra 4110 NVMe M.2 Enablement Kit
Boot device	6	P48183-B21	HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device
Heat sink	12	P51169-B21	HPE Alletra 4110 High Performance Heat Sink Kit
Fan kit	6	P51673-B21	HPE Alletra 4110 High Performance Fan Kit



**Table 6.** Sample configuration—HPE Alletra 4110 20EDSFF DS CTO Server for Aerospike: Initial cluster—medium capacity six nodes with 60 TB usable Aerospike Database Enterprise Edition Standard AP with 3-year support (continued)

Component	Qty	SKU	Product description
Rail kit	6	P52341-B21	HPE ProLiant DL3XX Gen11 Easy Install Rail 3 Kit
Aerospike SW	10	S1J20AAE	Aerospike Database Enterprise Edition Standard AP per TB 1-10TB 3-year Subscription E-LTU
Aerospike SW	15	S1J21AAE	Aerospike Database Enterprise Edition Standard AP per TB 11-25TB 3-year Subscription E-LTU
Aerospike SW	25	S1J22AAE	Aerospike Database Enterprise Edition Standard AP per TB 26-50TB 3-year Subscription E-LTU
Aerospike SW	10	S1J23AAE	Aerospike Database Enterprise Edition Standard AP per TB 51-100TB 3-year Subscription E-LTU
HPE support	6	P8B26AAE	HPE OneView w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU
HPE GL Ops	6	S1E13AAE	HPE GreenLake for Compute Ops Mgmt Enhanced 5-year Upfront Alletra 4000 SaaS
HPE install	1	HA113A1	HPE Installation SVC
HPE install	6	HA113A1 V1L	HPE Installation SVC
HPE support	1	HU4A6A5	HPE 5Y Tech Care Essential Service
HPE support	6	HU4A6A5 SVP	HPE OneView w/o iLO Support
HPE support	6	HU4A6A5 R2M	HPE iLO Advanced Non Blade Support
HPE support	6	HU4A6A500G8	HPE Alletra 4x10 Support

## Appendix A—Server configurations for maintaining a balanced architecture

### HPE Alletra 4110 20EDSFF DS CTO Server for Aerospike

#### NVMe drive placement—front of server

NVMe drives are supported in increments of two drives only with a minimum per node drive quantity of two (that is, 2, 4, 6, 8, 10, 12, 14, 16, 18, or 20). This ensures that the system maintains balance across CPU sockets.

**Table 7.** HPE Alletra 4110 DS CTO Server drive loading order

EDSFF NVMe Population Order:					
	Column 1	Column 2	Column 3	Column 4	Column 5
Row 1	10	14	4	13	9
Row 2	16	2	20	1	15
Row 3	6	18	3	17	5
Row 4	12	8	19	7	11

**Table 8.** HPE Alletra 4110 DS CTO Server drive bay numbering

EDSFF Drive Bay Numbering:					
	Column 1	Column 2	Column 3	Column 4	Column 5
Row 1	Bay1	Bay5	Bay9	Bay13	Bay17
Row 2	Bay2	Bay6	Bay10	Bay14	Bay18
Row 3	Bay3	Bay7	Bay11	Bay15	Bay19
Row 4	Bay4	Bay8	Bay12	Bay16	Bay20



CPU to drive assignment are shown in Table 8 by the following legend.

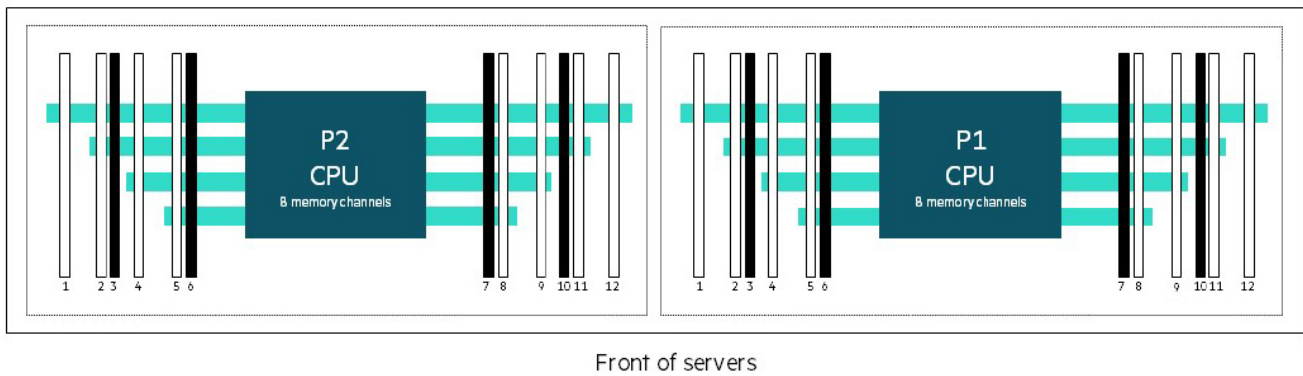
**Table 9.** HPE Alletra 4110 DS CTO Server CPU to drive bay connections

<b>Bays 1-10 connect to CPU socket 1</b>
<b>Bays 11-20 connect to CPU socket 2</b>

**Memory DIMM placement—internal to server**

For optimal performance, memory is configured across all memory channels of both CPU sockets. The HPE Alletra 4110 20EDSFF DS CTO server uses the Intel 4th Generation processor, which has eight memory channels. The HPE Alletra 4110 20EDSFF DS CTO server is a dual CPU server, and for the Aerospike solution both CPUs are populated, so the requirement is to populate all eight memory channels in each CPU with the same capacity DIMM. There are three capacities of DIMMs supported (16 GB, 32 GB, and 64 GB), but only one capacity size is used in a server. This maintains a balanced and maximum performing memory subsystem.

In Figure 1, populate all white memory DIMM slots (slot 1, 2, 4, 5, 8, 9, 11, and 12) for each processor.

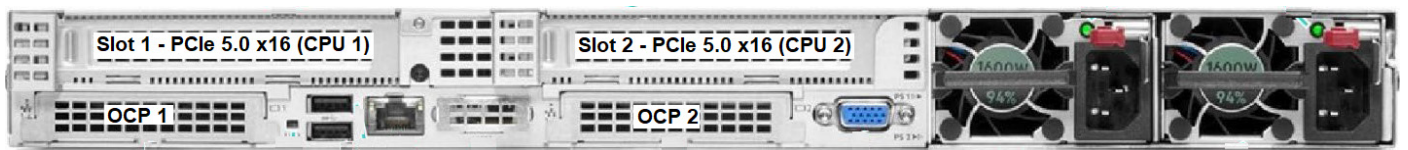


**Figure 1.** HPE Alletra 4110 20EDSFF DS CTO server memory slot

**Network adapter placement—rear of server**

Network adapters are supported in quantity of two only. Each network adapter must have two ports, be 100GbE or faster, and be a PCIe form factor. Network adapters are installed in PCIe Slot 1 and PCIe Slot 2. If additional 1GbE or 10/25GbE adapters are required, then these are OCP form factor and installed in either OCP Slot 1 or OCP Slot 2.

Network adapters are installed in rear PCIe slots 1 and 2. This placement ensures a balanced configuration.



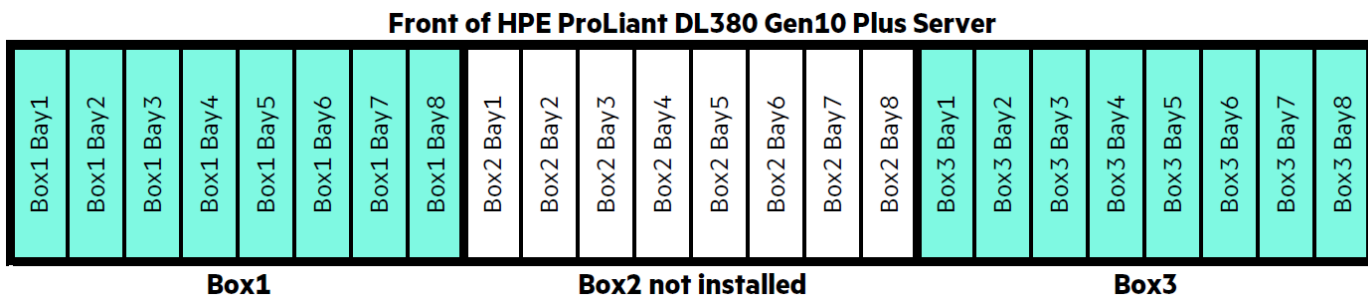
**Figure 2.** HPE Alletra 4110 20EDSFF DS CTO server network adapter slot locations

**HPE ProLiant DL380 Gen10 Server with Aerospike**

**NVMe drive placement—front of server**

NVMe drives are installed in the front of the HPE ProLiant DL380 Gen10 Plus Server. To maintain a balanced configuration, NVMe drives must be loaded in Box1 Bays1 to 8 and Box3 Bays1 to 8 as shown in Figure 3. This ensures eight drives are attached to each CPU socket.



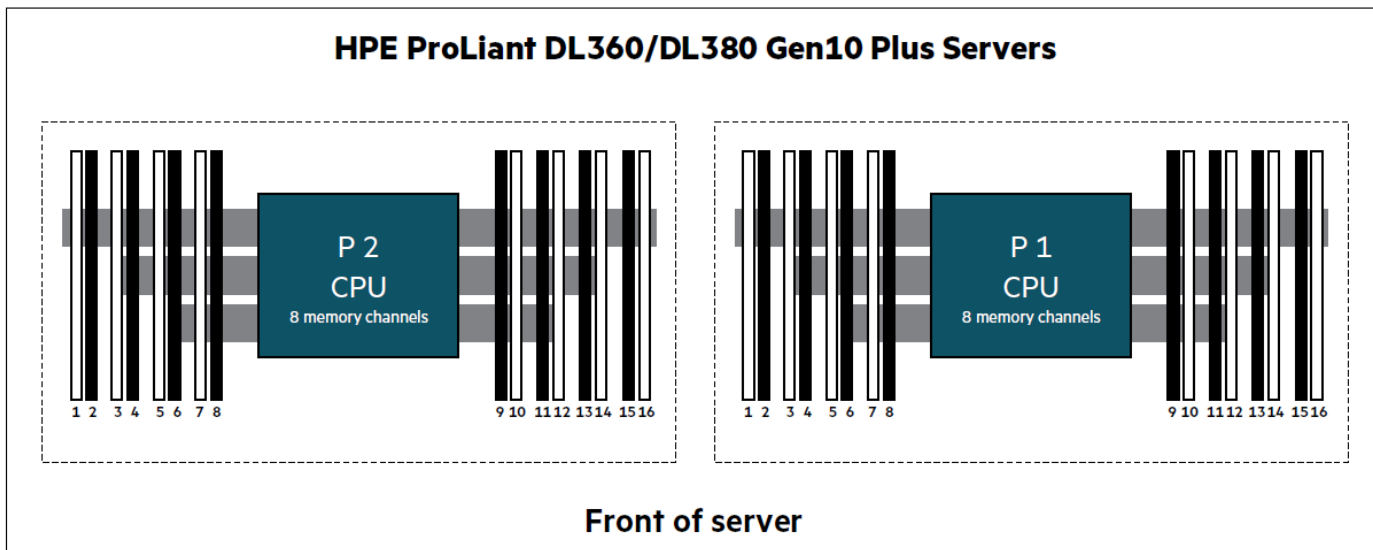


**Figure 3.** HPE ProLiant DL380 Gen10 Plus Server drive box and drive bay locations

**Memory DIMM placement—internal to server**

For optimal performance, memory is configured across all memory channels of both CPU sockets. The HPE ProLiant DL380 Gen10 Plus Server uses the 3rd Generation Intel processor, which has eight memory channels. The HPE ProLiant Gen10 Plus Server is a dual CPU server, and for the Aerospike solution, both the processors are populated. The requirement is to populate all eight memory channels in each CPU with the same capacity DIMM. There are three capacities of DIMMs supported (16 GB, 32 GB, and 64 GB), but only one capacity size is used in a server and within an Aerospike cluster. This maintains a balanced and higher performing memory subsystem.

As shown in Figure 4, populate all white memory DIMM slots (slot 1, 3, 5, 7, 10, 12, 14, and 16) for each processor.



**Figure 4.** HPE ProLiant DL380 Gen10 Plus Server memory population

**Network adapter placement—rear of server**

High-speed network adapters for Aerospike solution cluster connections are supported in a quantity of two only. Each network adapter must have two ports, 100GbE or faster, and must have a PCIe form factor. One of these network adapters must be placed in the primary riser PCIe x16 slot and the other in the secondary riser PCIe x16 slot. See Figure 5.

If an additional 1GbE or 10/25GbE adapter is needed for a customer requirement, then an x8 PCIe slot in the tertiary riser is available for this requirement. Although this tertiary riser is a two-slot riser, one PCIe slot in this riser is occupied by the HPE NS204i-p NVMe OS Boot Device.



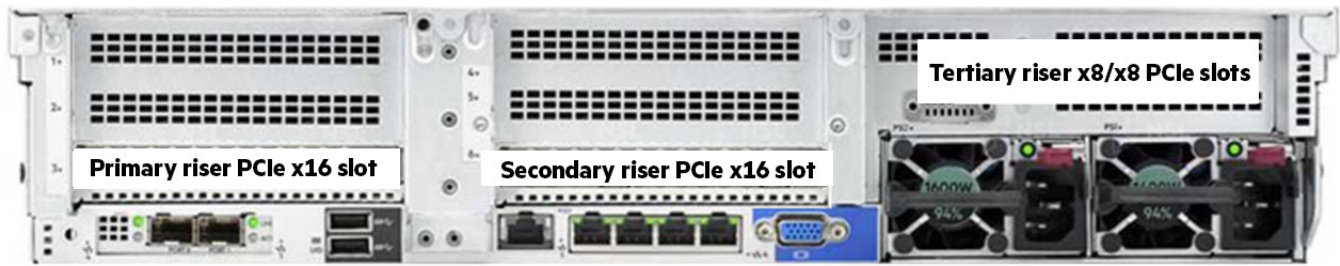


Figure 5. HPE ProLiant DL380 Gen10 Plus Server network adapter location

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