

HP ProLiant DL360 G9 RAID configuration

Use the following procedures to configure the Avaya HP DL360G9 Raid Controller (P440AR) for Avaya RAID Array configurations.

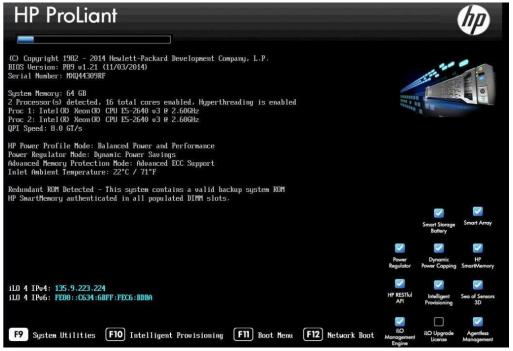
A monitor and USB keyboard and mouse are required to configure the Raid Controller.

- 1. Connect a monitor, USB keyboard, and mouse to HP ProLiant DL360 G9 Server.
- 2. Power up the server.

The system displays the HP DL360G9 hardware boot screen.

ProLiant System BIOS P89 v1.21 (11/03/2014		,	0 I D
(C) Copyright 1982 - 2014 Hewlett-Packard		opment	Company, L.P.
Early system initialization, please wait		775 4	495 0 999 994
Progress: 84%			135.9.223.224
	iLU 4	1800:	FE80::C634:6BFF:FEC6:BDBA
System Chipset Initialization			
QPI Link Initialization – Start			
QPI Link Initialization - Complete			
Early Processor Initialization			
Memory Initialization – Start			
Memory Initialization - Complete			
System Security Initialization			
HP Smart Memory Initialization			
Loading System Firmware Modules - Start			
Loading System Firmware Modules - Complete	<u>,</u>		
USB Controller Initialization			
Chipset Root Ports Initialization			
Processor Root Ports Initialization			
ACPI Table Initialization			
SMBIOS Table Initialization			
iLO Embedded Health Initialization			
BIOS Configuration Initialization			
Early PCI Initialization - Start			
an ry ror in ordination of the			

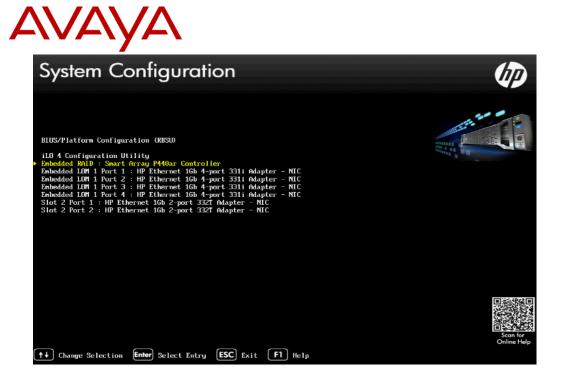




3. When the system displays the HP Splash screen, press *F*9 to go to **System Utilities**.

System Utilities		(p)
► System Configuration One-Time Boot Memu Embedded Applications		
System Information Device Health Status Select Language Exit and resume system boot	(English)	
Reboot the System		
		Scan for Online Help
←↓ Change Selection Enter Select Entry	J ESC Exit F1 Help F7 Defaults	

4. Highlight System Configuration and press Enter to select.



5. Move cursor to highlight **Embedded RAID : Smart Array P440ar Controller** and press **Enter**.



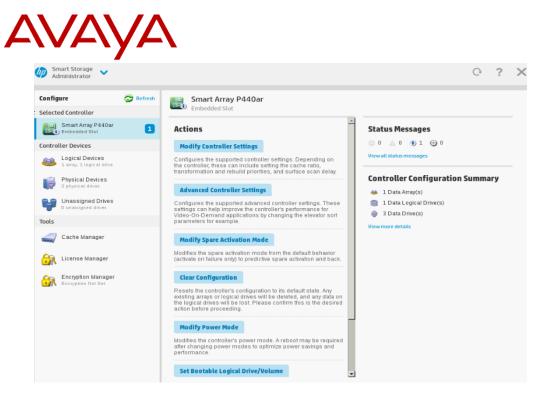
- 6. Move cursor to highlight Exit and launch HP Smart Storage
 - Administrator (HPSSA) and press Enter to select. The system loads the HP Smart Storage Tool and displays the HP Smart Storage Administrator screen.



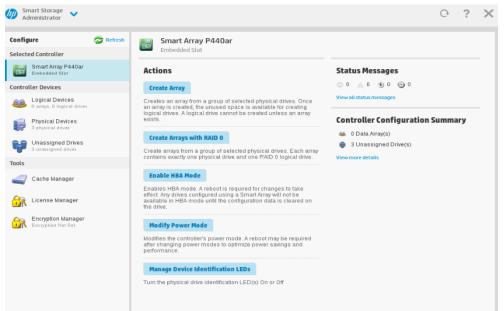
7. In left column, select Smart Array P440ar.

Available Device(s) Server	🗢 Refresh	Smart Array P440ar Embedded Slot	
HP ProLiant		Actions	Status Messages
Irray Controller(s)	0	Configure Configure arrays, logical drives, HP SmartCache, encryption, and settings on the selected array controller.	0 1 0 1 0 0 View all status messages
Other Devices Solid State Devices 0 SSDs		Diagnose View Array Diagnostics and SmartSSD Wear Gauge reports as well as PIS and SOB logs for the selected array controller.	Controller Configuration Summary

8. Select the **Configure** button under **Actions**.



 Select the Clear Configuration button to remove any data or current array configurations. Select Clear/Confirm and Finish buttons to finalize Clear Configuration job. If the Clear Configuration button is not available move to next step.



10. Select the **Create Array** button under **Actions** to initiate Array creation.

Smart Array P440 Embedded Slot	Dar > Create Array	
	ion, mixing single and dual ported SAS drives can lead to a loss of redundancy. .city, select physical drives that are the same size for the new array.	
elect Physical Drives	for the New Array (What's this?)	
ort By Size 🔽		
All Items		
Bas HoD Port 11: Box 1: Bay 3		

11. Select all drives to be included (as indicated by check mark) in Array and click the **Create Array** button.

Smart Array P440ar Create Logical Drive		
RAID Level (What's this?)		-
O RAID 0		
RAID 1 (ADM) RAID 5		
Strip Size / Full Stripe Size (What's this?)		
O 8 KIB / 16 KIB		
O 16 KIB/32 KIB		
O 32 KIB / 64 KIB		
O 64 KIB / 128 KIB O 128 KIB / 256 KIB		
● 256 KB /512 KB		
O 1024 KiB / 2 MiB		
Sectors/Track (What's this?)		
O 63		
● 32 ● 32		
Size (What's this?)		
Maximum Size: 572140 MiB (558.7 GiB)		
Custom Size		
Parity Initialization Method (What's this?)		
O Default: Online, parity block initialization		
Rapid: Offline, full zero-overwrite of all data and parity blocks		_
Caching (What's this?)		
		•
	Create Logical Drive	Cancel
	create Logical Drive	cancer

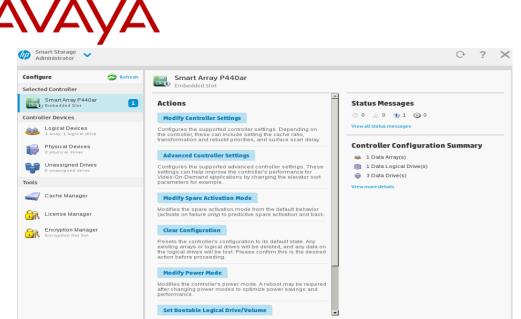
12. Select RAID settings according to Avaya application. Generally, settings on this page should be left at default values unless otherwise specified by Avaya application documentation. If the HP default setting does not align with Avaya specified configuration, the **RAID Level** needs to be changed. Select the **Create Logical Drive** button to create the Logical (Virtual) Drive. Avaya RAID configuration matrix:



	-		
# of HDDs installed	RAID option	Approx. Logical (Virtual) Drive Size based on 300GB HDDs	Notes
1	N/A	N/A	Must have at least 2 HDDs Installed
2	1	279.4 GB	Set for RAID 1
3	5	558.7 GB	Set for RAID 5
4	5 or 10	838.1 GB or 558.7 GB	User should set for RAID 5 or 1+0 depending on Avaya Application.
5	5	1.09TB	User should set for RAID 5
6	5, 10 or 50	1.4 TB, 838.1 GB or 1.09TB	User should set for RAID 5, 1+0 or 50 depending on Avaya Application.

	fully created. Please choose one of the actions below.
Array Details	
Status	ОК
Used Space	838.0 GiB (100.0%)
Total Usable Space	838.0 GIB
Acceleration Mode	Independent: Caching can be enabled or disabled for each individual logical drive
Logical Drives	
Logical Drive 1	558.73 GIB (599.93 GB)
Physical Drives	
300 GB SAS HDD at Port 1I : Bo	x1:Bay1
300 GB SAS HDD at Port 11 : Box	x 1 : Bay 2
300 GB SAS HDD at Port 11 : Bo	x1:Bay3
Device Path	
Smart Array P440ar in Embedde	ad Slot

13. Click **Finish** to exit application or to delete current array and start new Array creation process.



14. Select "X" in upper right corner of screen to Exit Array tool or click the **Clear Configuration** button to start new array creation process. Once exited from this tool software installation can commence.



Supplementary RAID Array configuration size example screens:

Mart Storage 🗸		Ċ	?	>
Configure 🤝 Refresh	😝 Unassigned Drives			
Selected Controller	Group By Enclosure V			
Smart Array P440ar Embedded Slot	Internal Drive Cage at Port 11 : Box 1			
Controller Devices	Select All (2)			
Logical Devices O arrays, O logical drives	👜 300 GB			
Physical Devices 2 physical drives	SAS HDD Bay 1 SAS HDD Bay 2			
Unassigned Drives				
2 unassigned drives				
Tools				
🔐 License Manager				
Encryption Manager				
	Selected: 2 Size: 558.79 GIB (600.00 GB) Create Array	Iden	tify Dev	ce
Smart Array P440ar	Create Logical Drive			
Embedded Slot	Create Logical Drive			
 The size may be automatically adjust Certain operating systems do not sup documentation for details. 	ed slightly to optimize performance. port logical drives greater than 502 GiB or boot volumes greater than 2 TiB. Check operating system	n	Hide	
AID Level (What's this?)				
RAID 1				
Strip Size / Full Stripe Size (who	t's this _7)			
	L3 MIS17			
○ 16 KIB / 16 KIB ○ 32 KIB / 32 KIB ○ 64 KIB / 64 KIB				
128 KIB / 128 KIB 256 KIB / 256 KIB				
🔾 512 КІВ / 512 КІВ О 1024 КІВ / 1024 КІВ				
Sectors/Track (What's this?)				
 ○ 63 ○ 32 				
_				
Size (What's this?)				
● Maximum Size: 286070 MIB (279.3 Gi ○ Custom Size	B)			
aching (What's this?)				
• Enabled				
	Create Logical I	Drive	Can	el
Const Americ D440-5			can	
Embedded Slot	Create Logical Drive			
 Logical Drive was successfully create 	d. Please choose one of the actions below.			
Array Details				
itatus	ок			
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otal Usable Space	558.7 GIB Independent: Caching can be enabled or disabled for each individual logical drive			
	independent, caving car be enabled of disabled of each individual logical drive			
ogical Drives				
ogical Drive 1	279.37 GIB (299.97 GB)			
Physical Drives				
00 GB SAS HDD at Port 1I : Box 1 : Bay 1				
00 GB SAS HDD at Port 1I : Box 1 : Bay 2				
Device Path				
imart Array P440ar in Embedded Slot				
			Fir	in the second

1. Example 2x300GB RAID 1.

Smart Array P440ar Embedded Slot In a dual domain configuration, n To avoid wasting drive capacity, so Solect Physical Drives for t Solect All (4) Select All (4) Select All (4) Select All (5) Select All (4) Select	Create Array mixing single and dual ported SAS drives can lead to a loss of redundancy. Helect physical drives that are the same size for the new array. the New Array (what's this?) So 00 GB Same Port 11: Box 1: Bay 1 Same Port 11: Box 1: Bay 1 Same Port 11: Box 1: Bay 1	
To avoid wasting drive capacity, s Select Physical Drives for t All tems Select All (4) Select All (4)	the New Array (what's this?)	
All Items	300 GB 300 GB 300 GB 300 GB	
All Items Select All (4) 300 GB	● 300 GB ● 300 GB ● 300 GB	
Select All (4)	● 300 GB ● 300 GB ● 300 GB	
300 GB	● 300 GB ● 300 GB ● 300 GB	
	SASHDD FORTELBOX 1. BOX	
Hectad 4 ee 1.00 THB (1.20 TB) Smart Array P440ar Embedded Stot	Create	Array
 The size may be automatically ad Certain operating systems do not 	ljusted slightly to optimize performance. t support logical drives greater than 502 GiB or boot volumes greater than 2 TiB. Check operating system	Hide
© RAID 5 RAID 6 (ADG) *trip Size / Full Stripe Size ○ 8 KiB / 24 KiB ○ 32 KiB / 48 KiB ○ 32 KiB / 96 KiB ○ 64 KiB / 192 KiB	(What's UNs?)	
 128 KIB / 384 KIB 256 KIB / 768 KIB 512 KIB / 1.5 MIB 		
Sectors/Track (What's this?)		
cectors/Track (What's this7)		
ectors/Track (What's this7) 63 32 iize (What's this7) Maximum Size: 858210 MiB (838	GIB)	
63 32 iize (what's this?) Maximum Size: 858210 MiB (838) Custom Size Custom Size		
63 32 iize (what's this?) Maximum Size: 858210 MiB (838) Custom Size Custom Size		rive Can
	d (What's this?)	rive Can
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	d (What's this?) Create Logical Drive Create Logical Drive	rive Can
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Embedded Slot		rive Can

2. Example 4x300GB RAID 5.

To avoid wasting drive capacity, se Select Physical Drives for th Sort By Size All Items Setect All (4) 300 GB	⊜ 300 GB ⊕ 300 GB
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All Items Select All (4) 300 GB	
300 GB	● 300 GB ● 300 GB ● 300 GB
BOD GB SAS NDD Port 11: Box 1: Bay 4	⊜ 300 GB ⊜ 300 GB ⊜ 300 GB
	SAS HOD Port 11: Box 1: Bay 3 SAS HOD Port 11: Box 1: Bay 2 SAS HOD Port 11: Box 1: Bay 1
elected 4 Size: 1.09 TiB (1.20 TB) Smart Array P440ar	Create Array
Embedded Slot	Create Logical Drive
 The size may be automatically adjusted Certain operating systems do not 	usted slightly to optimize performance. support logical drives greater than 502 GiB or boot volumes greater than 2 TiB. Check operating system
documentation for details.	
© RAID 0 © RAID 1+0 © RAID 5 © RAID 5 © RAID 6 (ADG)	
Strip Size / Full Stripe Size (
 8 KIB / 16 KIB 16 KIB / 32 KIB 32 KIB / 64 KIB 64 KIB / 128 KIB 128 KIB / 1256 KIB 226 KIB / 256 KIB 	
• 256 KIB / 512 KIB	
250 NB / 1024 KB 1024 KB 1024 KB / 2 MB	
© 512 KiB / 1024 KiB O 1024 KiB / 2 MiB Sectors/Track (What's this?)	
C 200 NIB / 312 KIB S12 KIB / 1024 KIB 1024 KIB / 2 MIB Sectors/Track (what's this7) 63 32	
9 512 kill / 1025 kill 01024 kill / 2 Mill 8 Sectors/Track (what's this?) 63 9 Size (what's this?) 0 Madmum Size, 572140 Mills (558.7)	GIB)
•••••••••••••••••••••••••	G(B)
0 512 kill / 1024 kill 0 1024 kill / 2 kill 0 1024 kill / 2 kill 0 63 0 52 Size (what's this?) Q MaxImum Size: 572140 Mills (558.7)	
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3. Example 4x300GB RAID 1 + 0.