T01

Bladecenter booting from FAStT: Best practices and performance

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Bladecenter booting from FAStT: Best practices and performance

Agenda:

- Zoning recommendations
- How to create LUNs on FAStT and assign them
- How to configure HS20 Fibre Option
- How to Install the OS
- Post installation activities
- Array/LUN performance considerations

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Zoning recommendations

- Initially, you can setup single initiator zoning (i.e. Port A to FAStT Controller A, Port B to FAStT Controller B) so the HS20 can see both FAStT controllers.
- For OS installation, you only want the HS20 to see ONE path to the boot LUN.
- Recommend disabling the B path (disable Switch Module 4) and assign all LUNs initially to the A Port and A Controller
- After OS is installed AND RDAC is installed, recommend assigning half of the HS20s to one FAStT controller, and half to the other. Then re-enable Switch Module 4.

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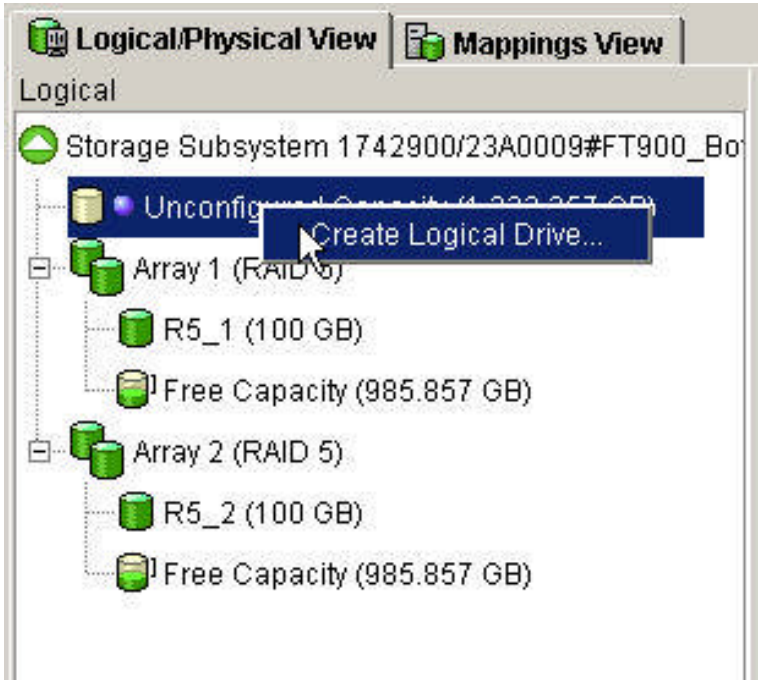
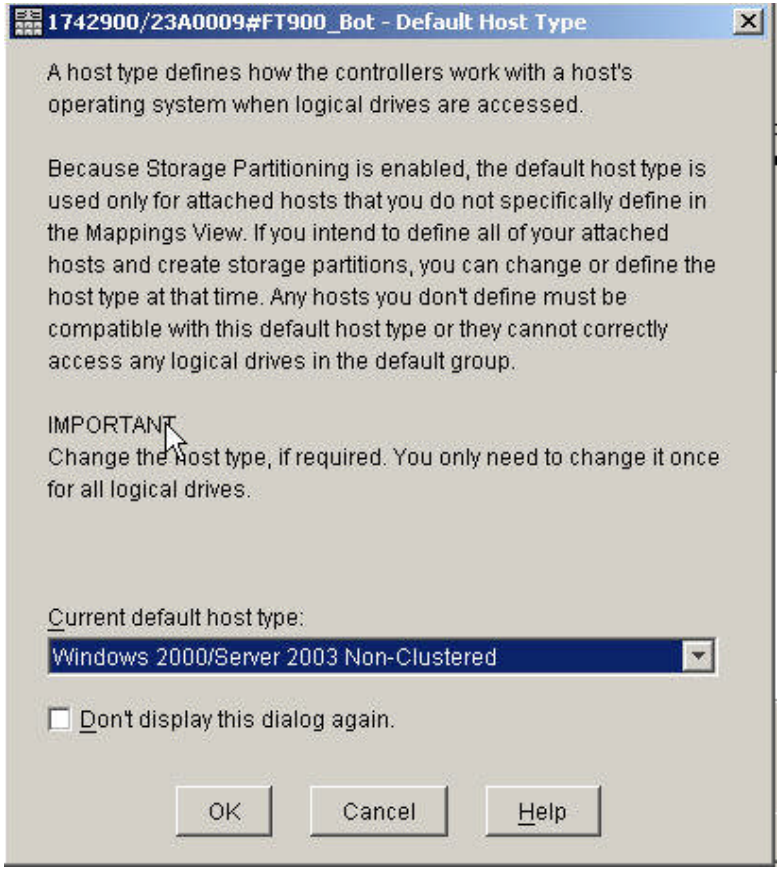
How to create LUNs on FAStT and assign them





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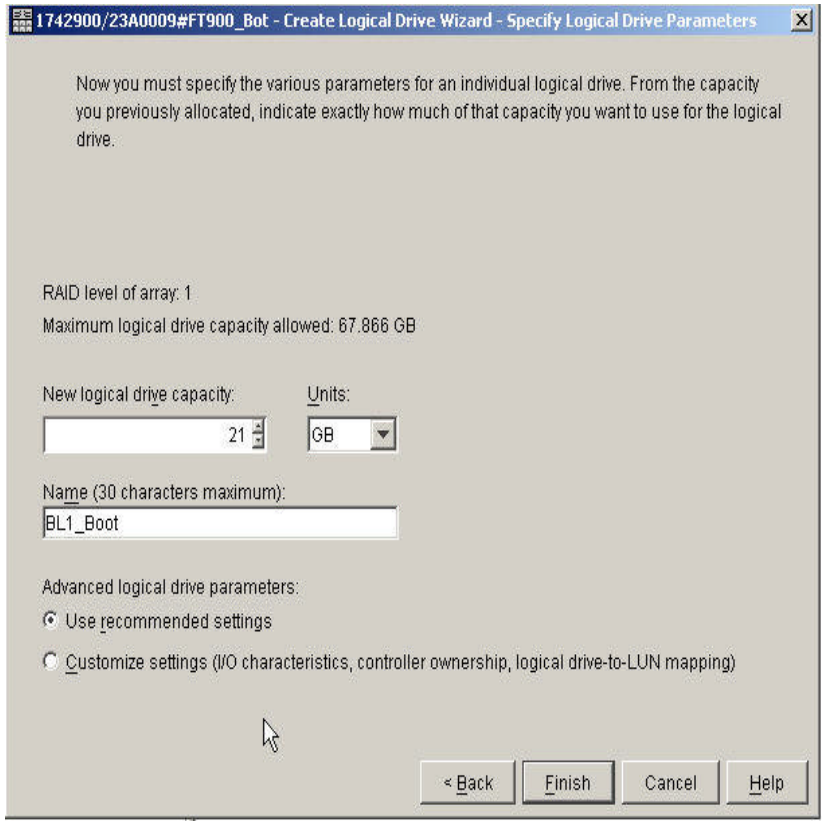
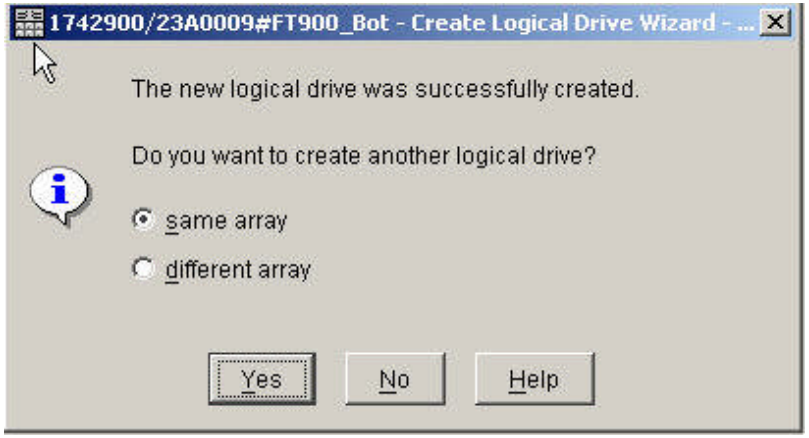
How to create LUNs on FAStT and assign them - Continued





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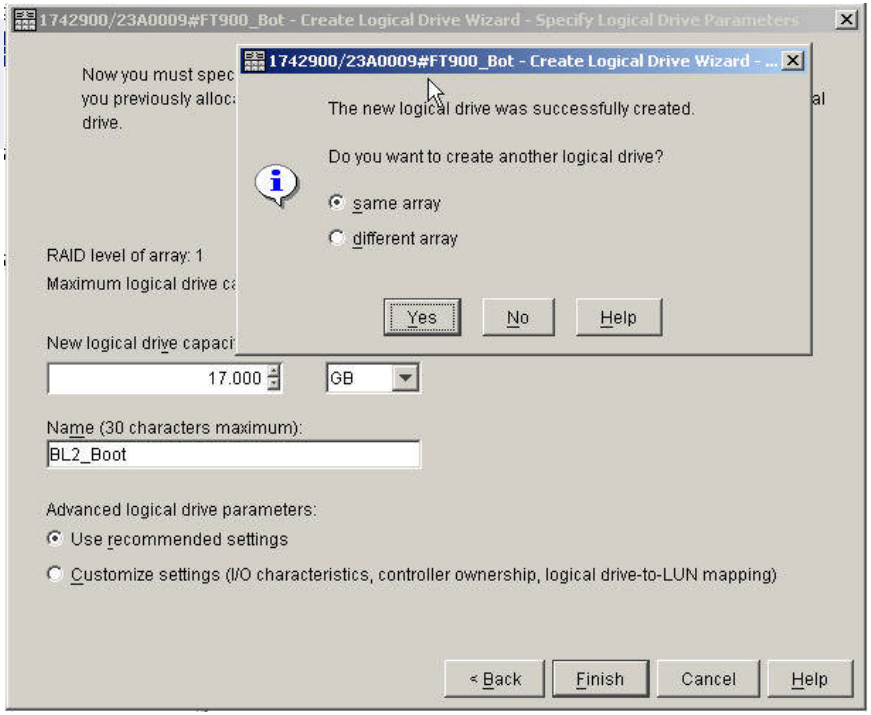
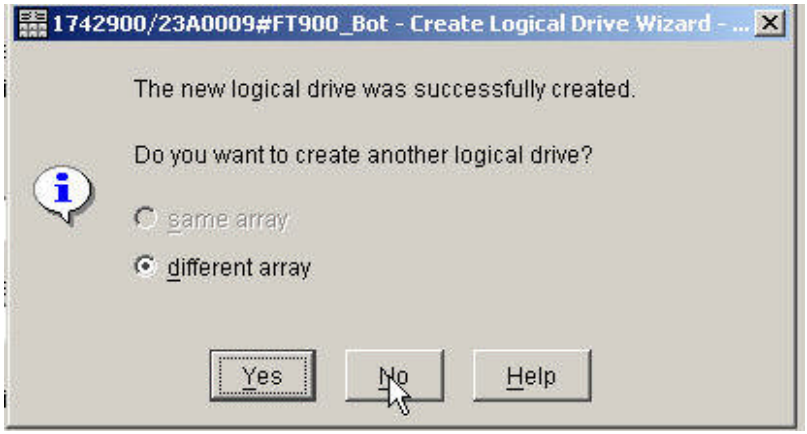
How to create LUNs on FAStT and assign them - Continued





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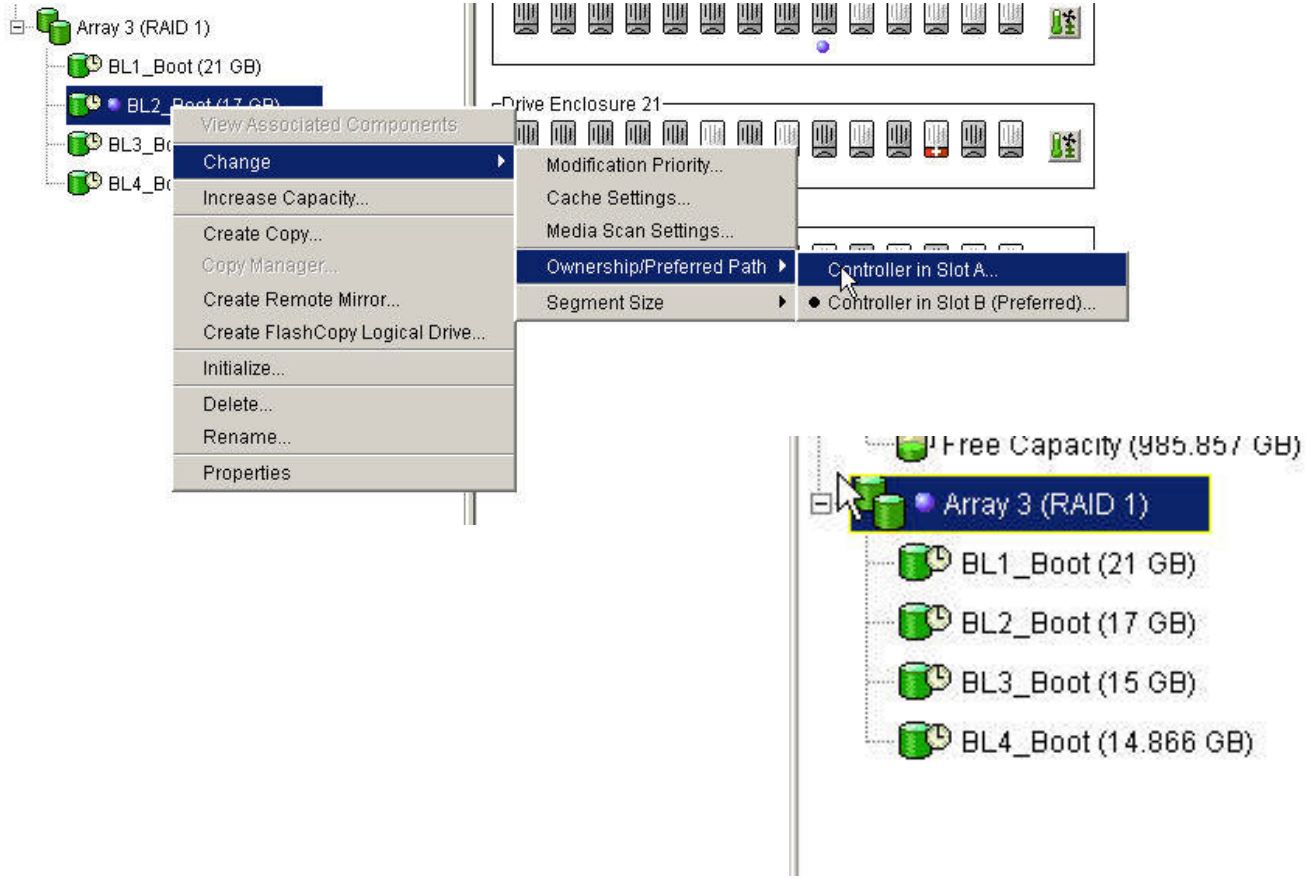
How to create LUNs on FAStT and assign them - Continued



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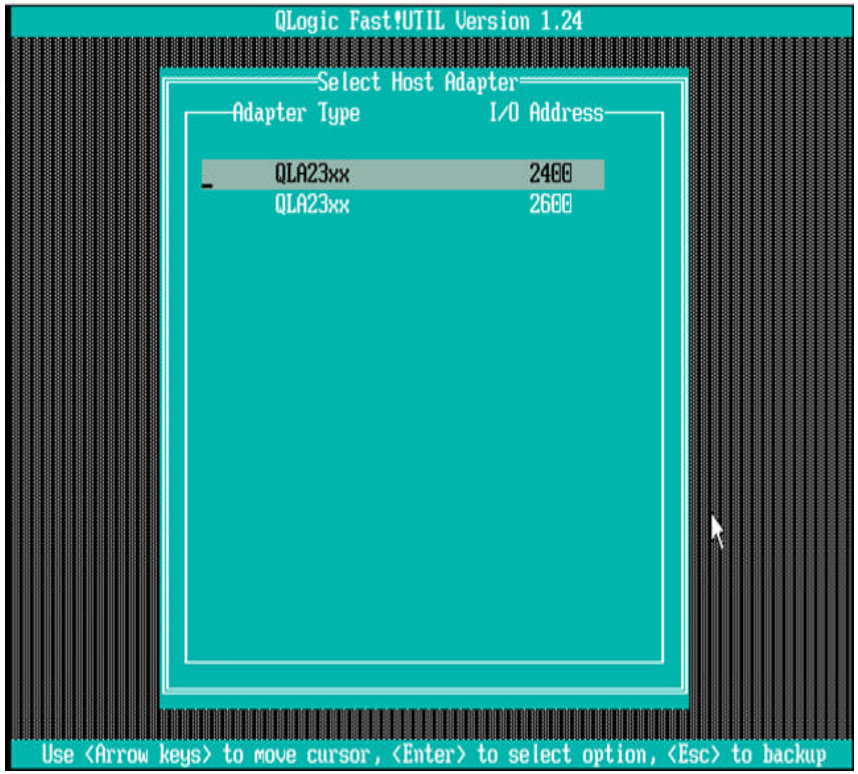
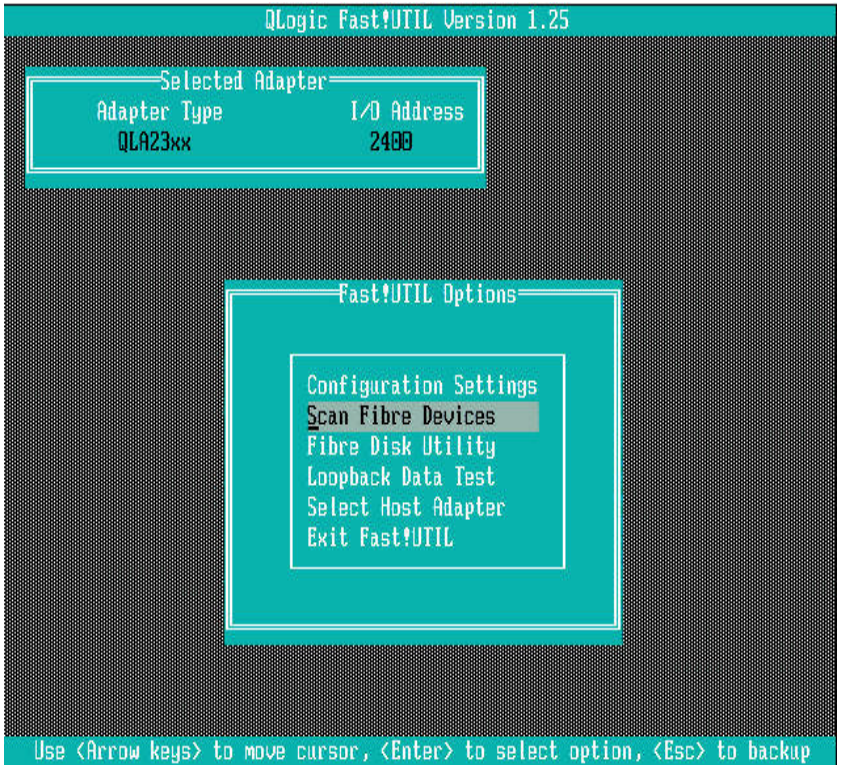
“Tickling the HS20 Fibre Option”

In order for the FAStT to “see” the HBA ports, you need to open the port by doing a Scan Fibre Devices. Do this for both ports.





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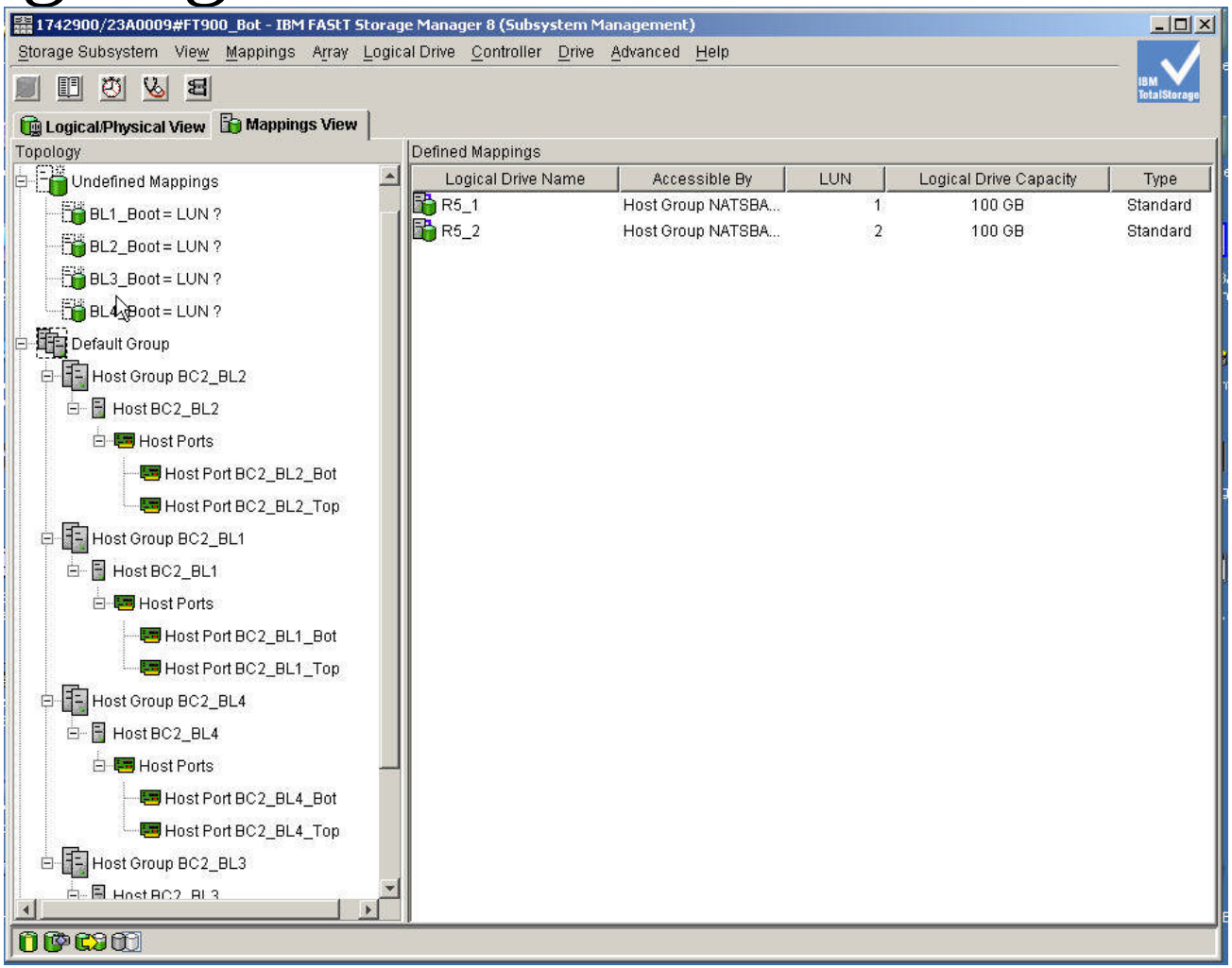
Assigning the Boot LUNs to the HS20s



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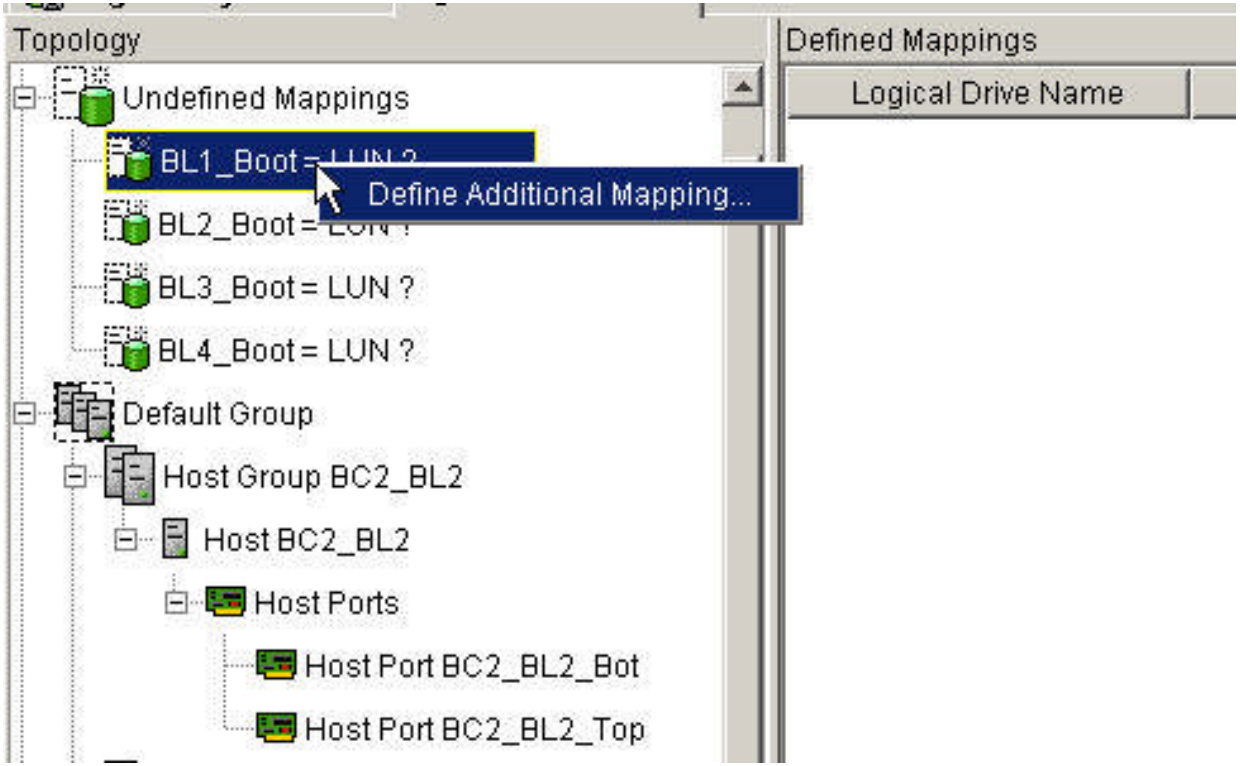
Assigning the Boot LUNs to the HS20s



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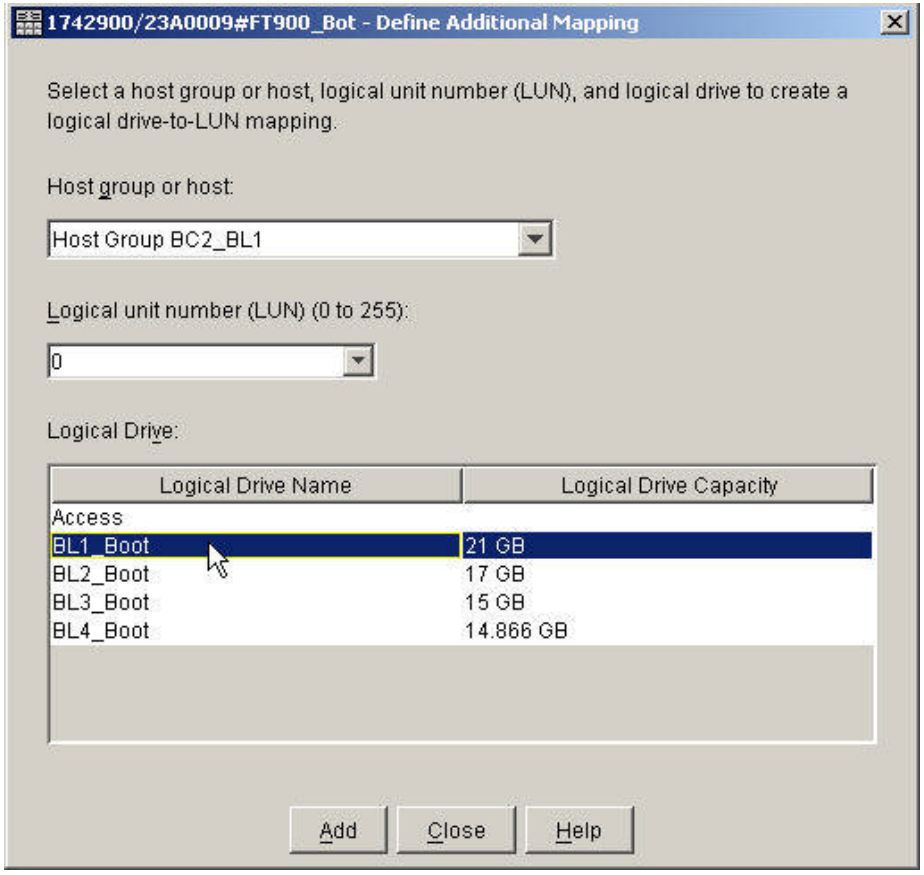
Assigning the Boot LUNs to the HS20s



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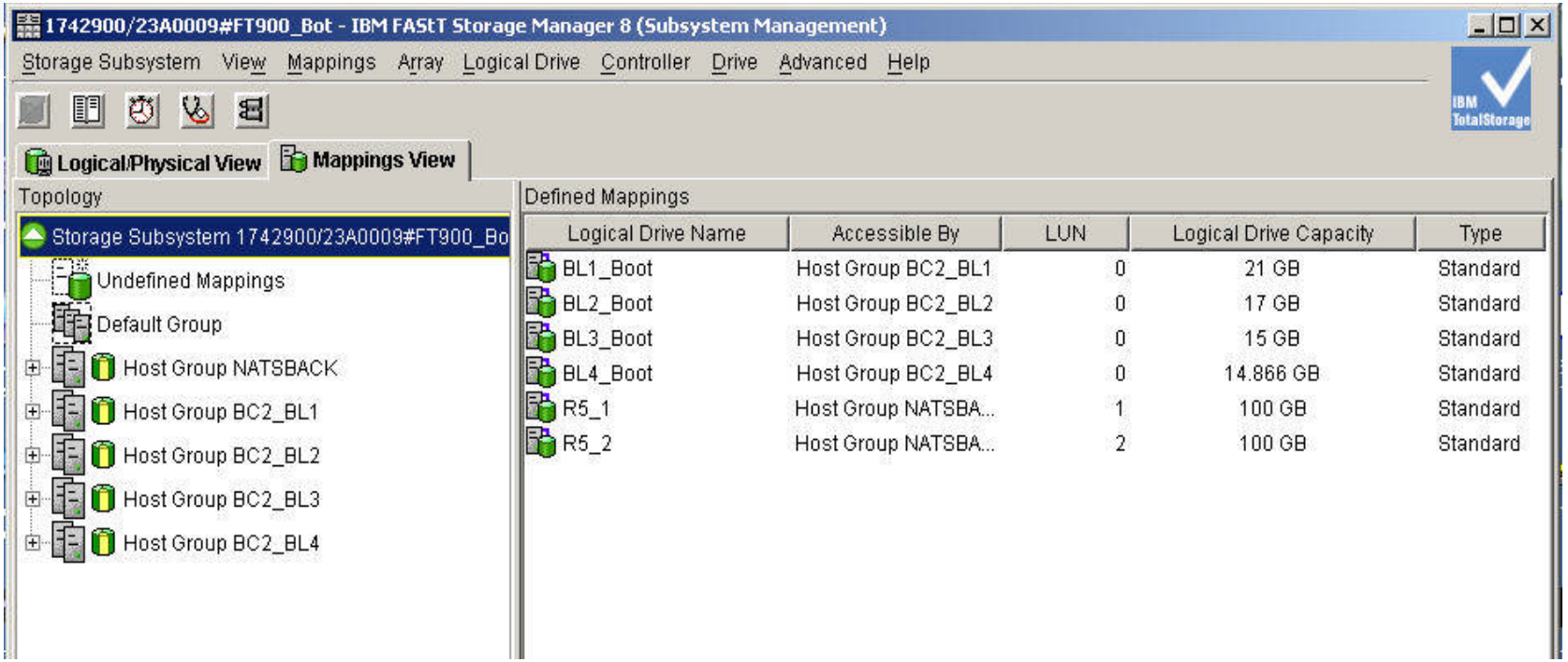
Assigning the Boot LUNs to the HS20s



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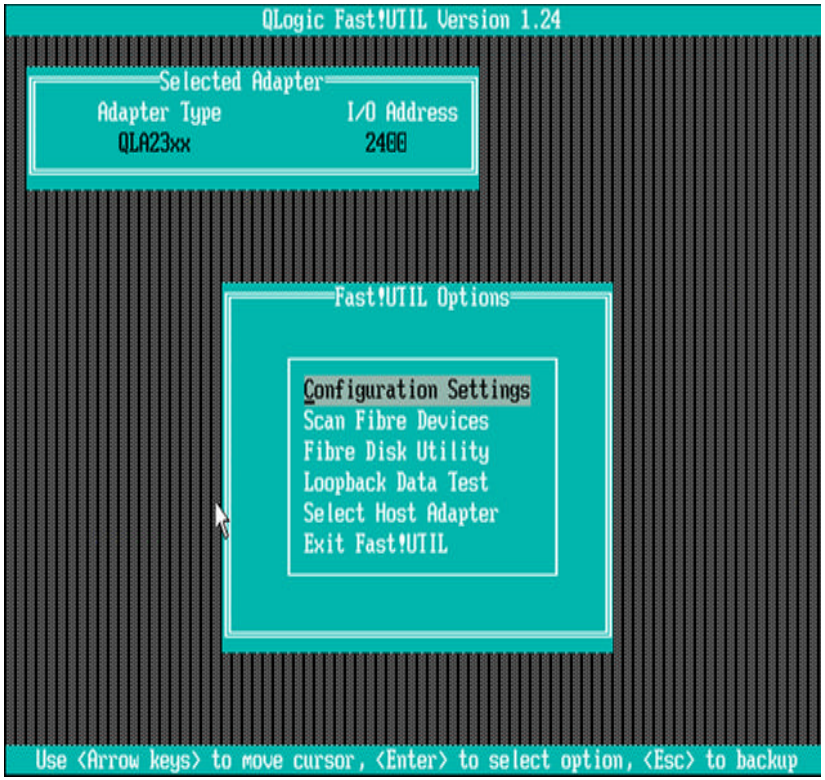
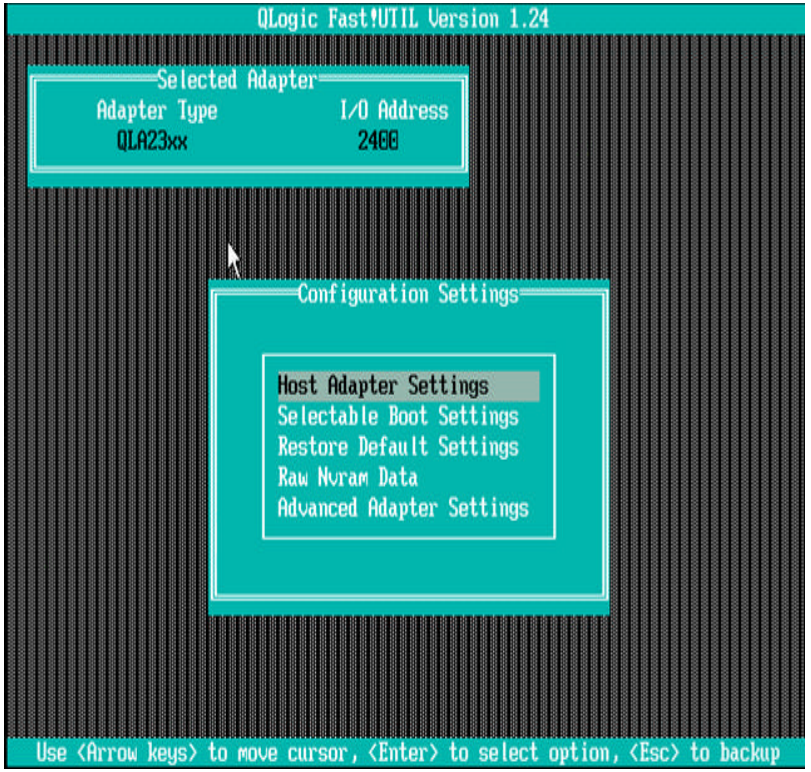
How to configure HS20 Fibre Option

We are going to assign the Boot LUN to HBA Port A





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How to configure HS20 Fibre Option

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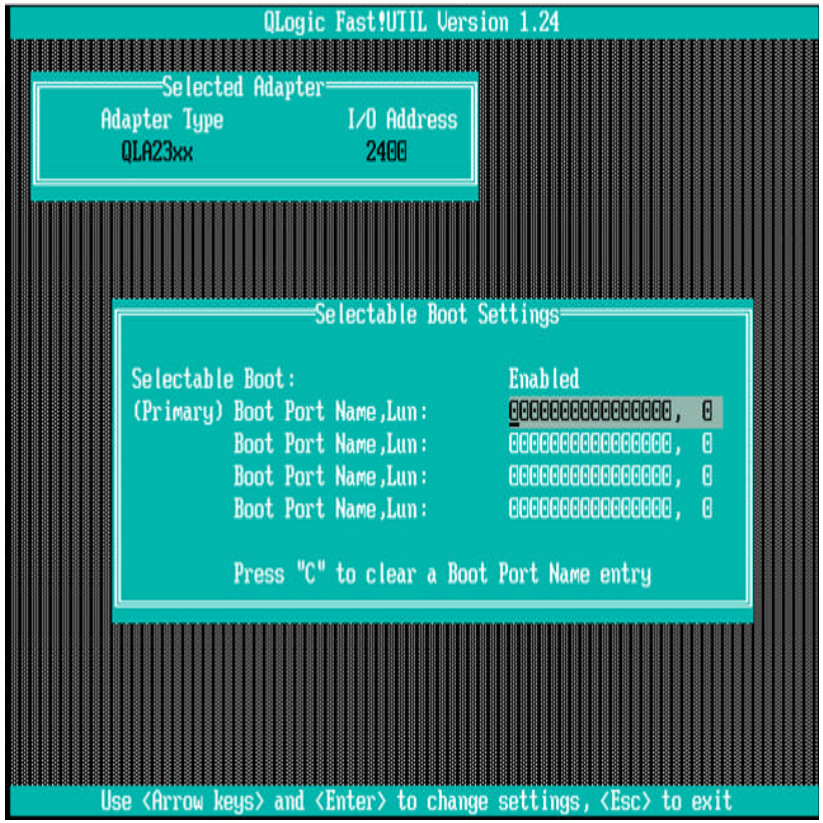

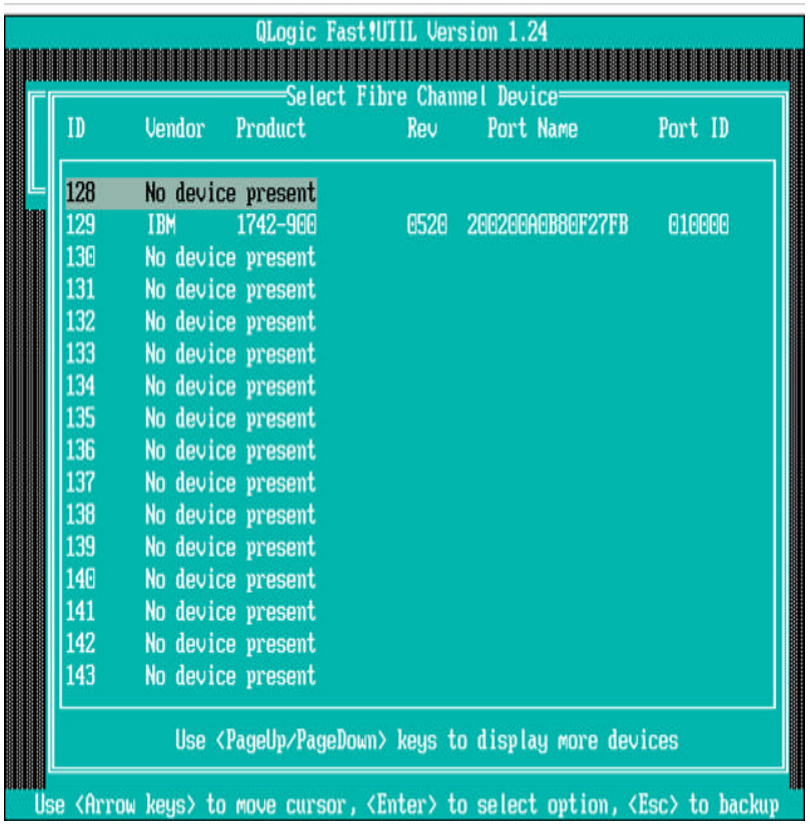

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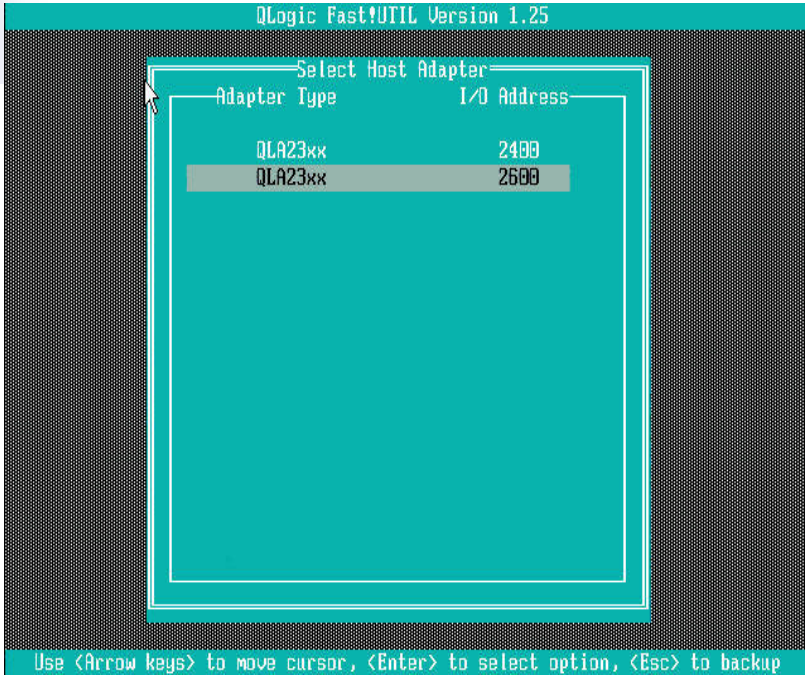
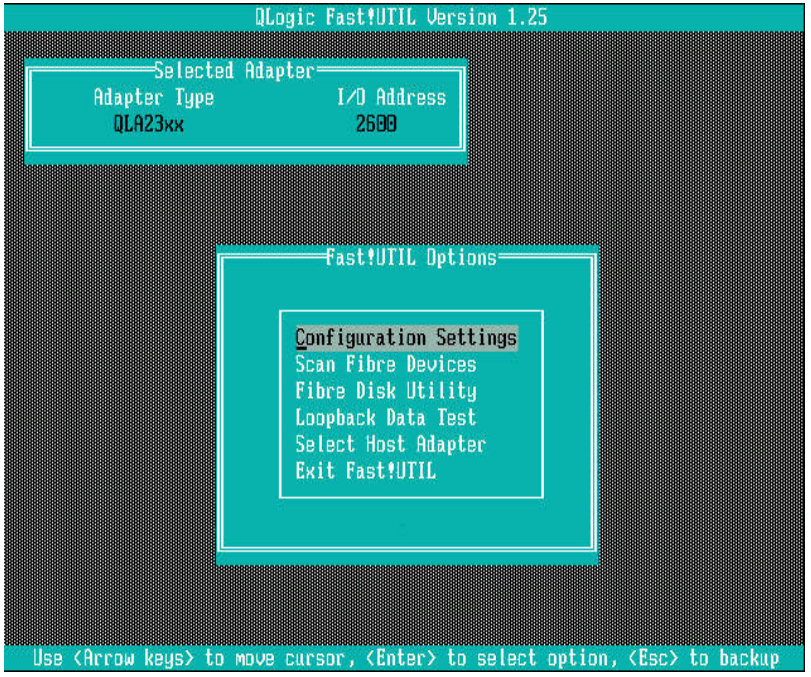
How to configure HS20 Fibre Option

Now we want to assign the Boot LUN to port B also, but we will disable this path during the initial OS install





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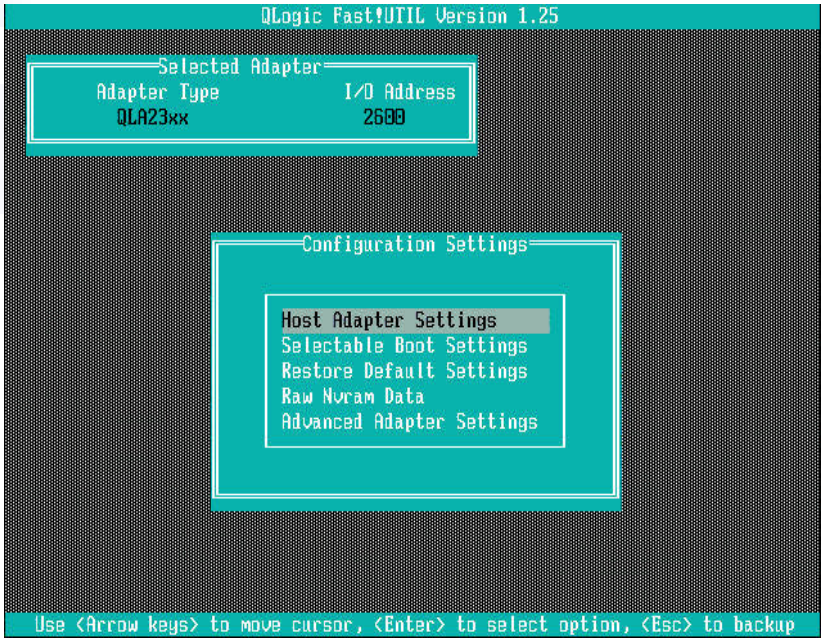
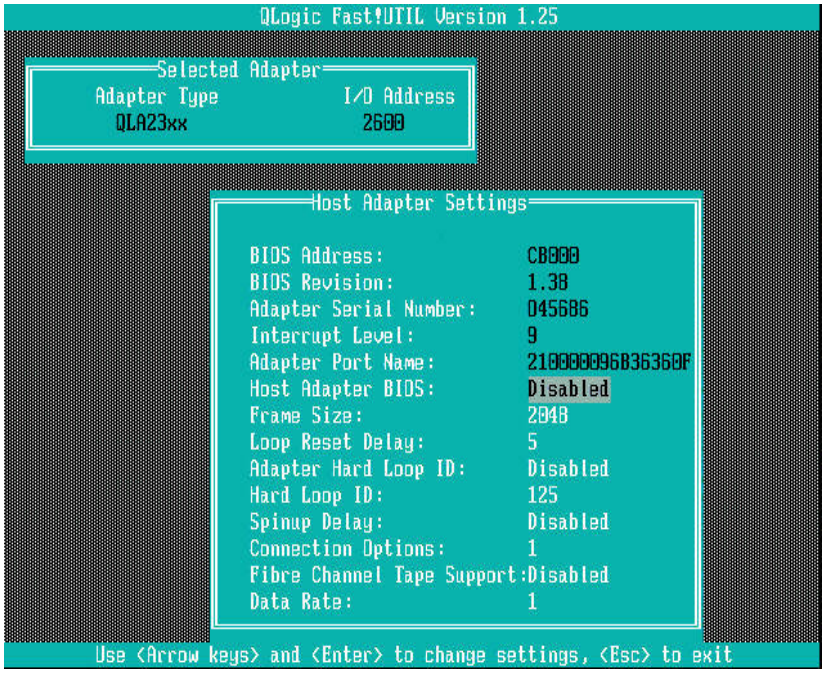
How to configure HS20 Fibre Option





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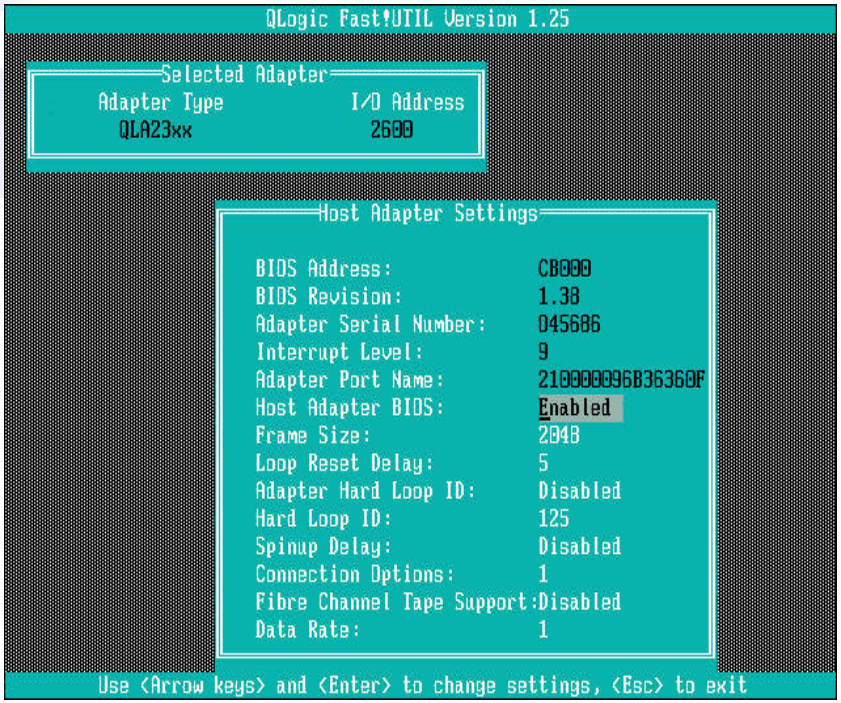
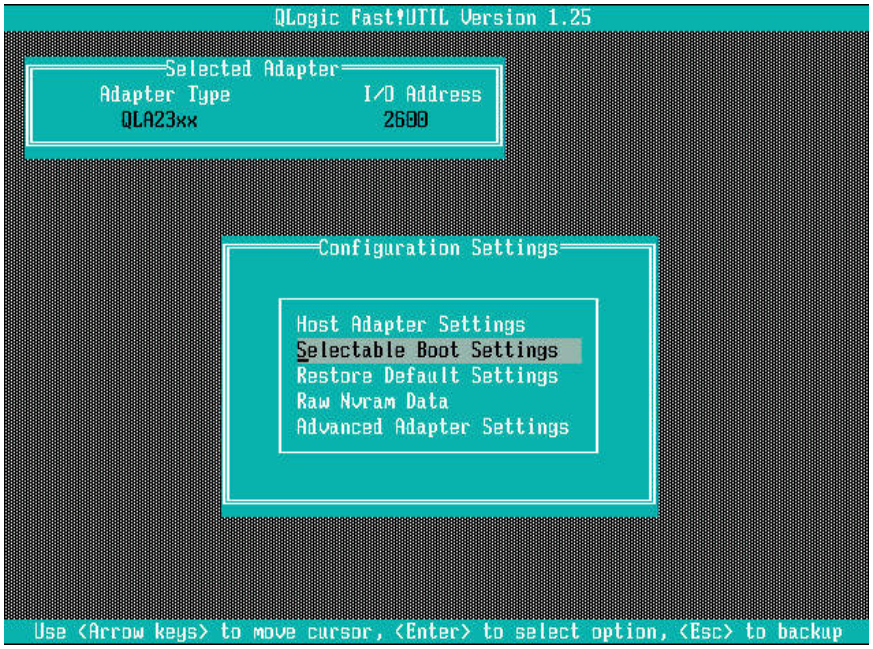
How to configure HS20 Fibre Option





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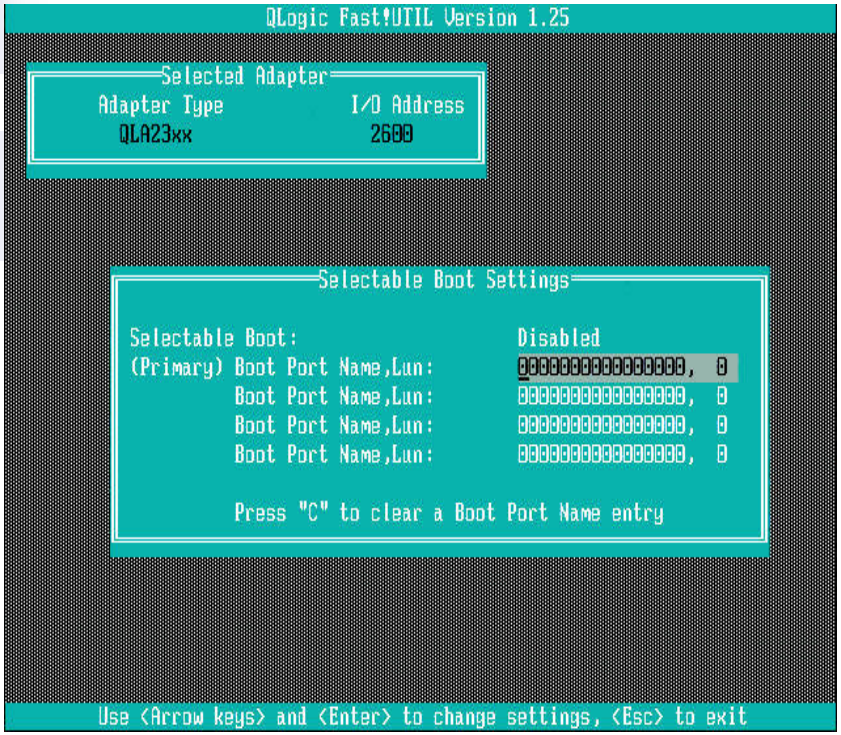
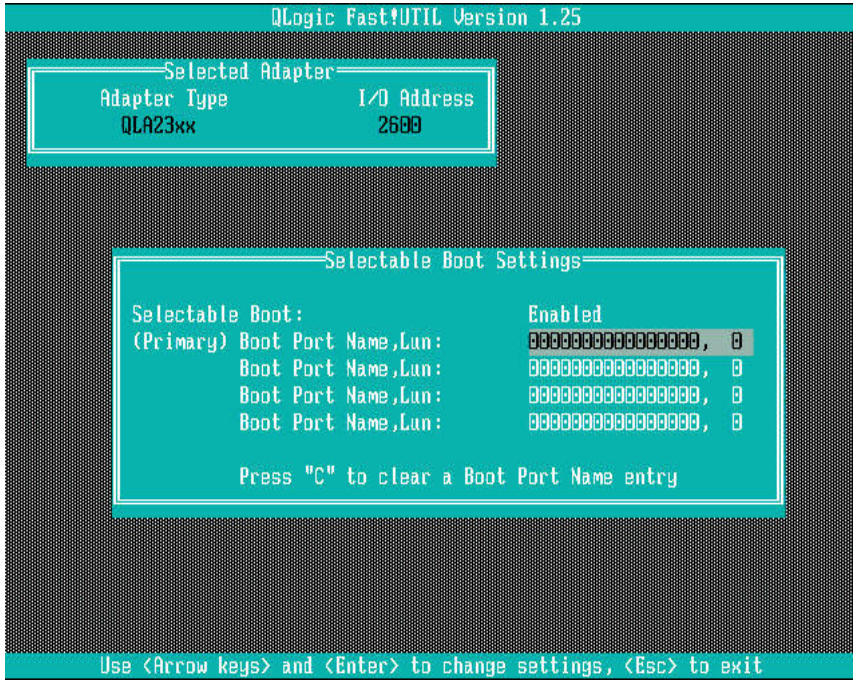
How to configure HS20 Fibre Option





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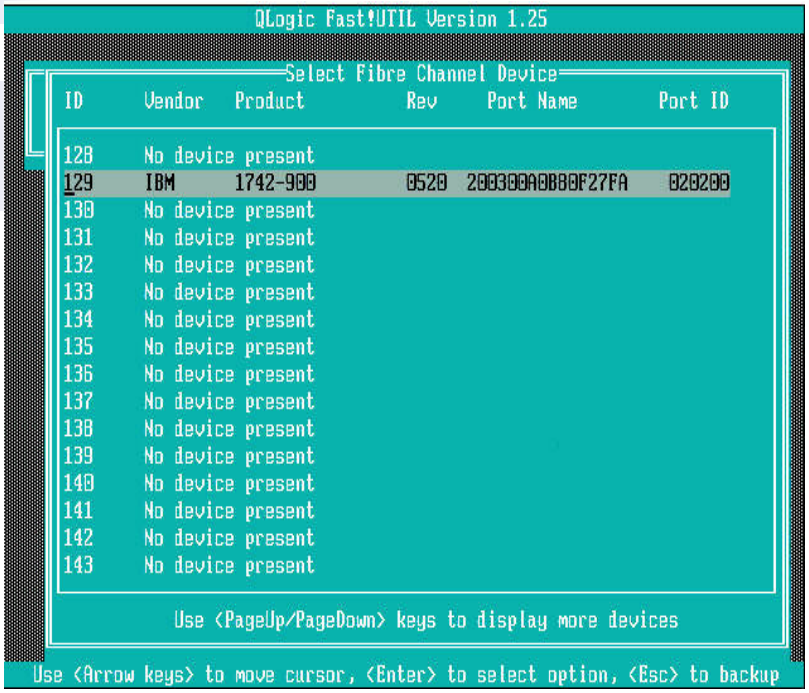
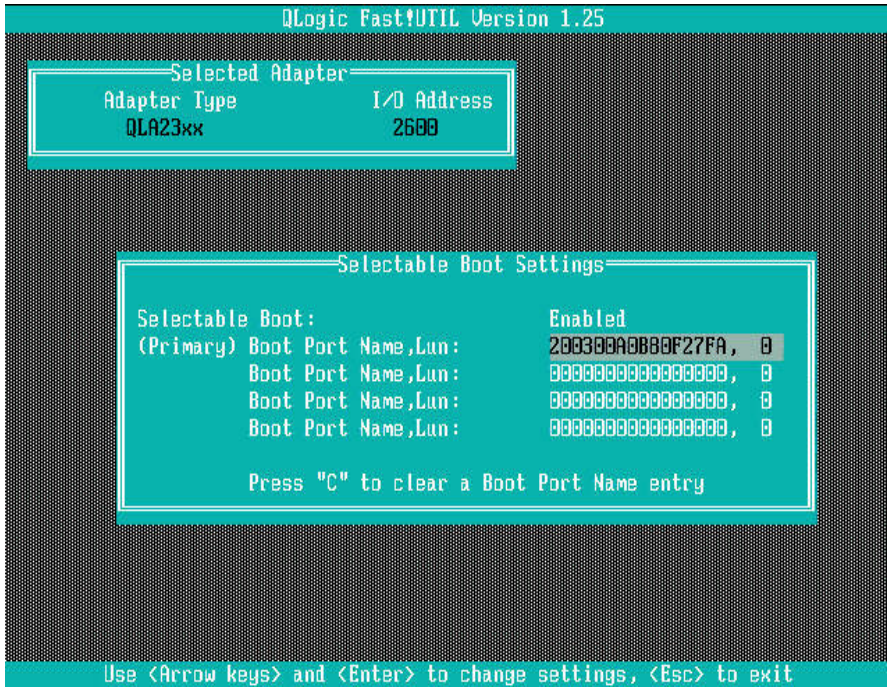
How to configure HS20 Fibre Option





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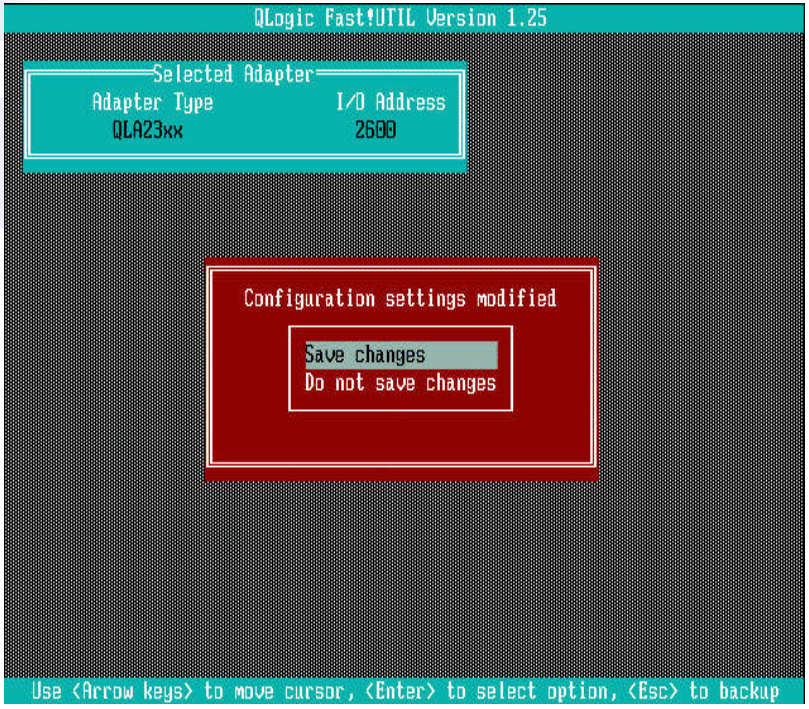

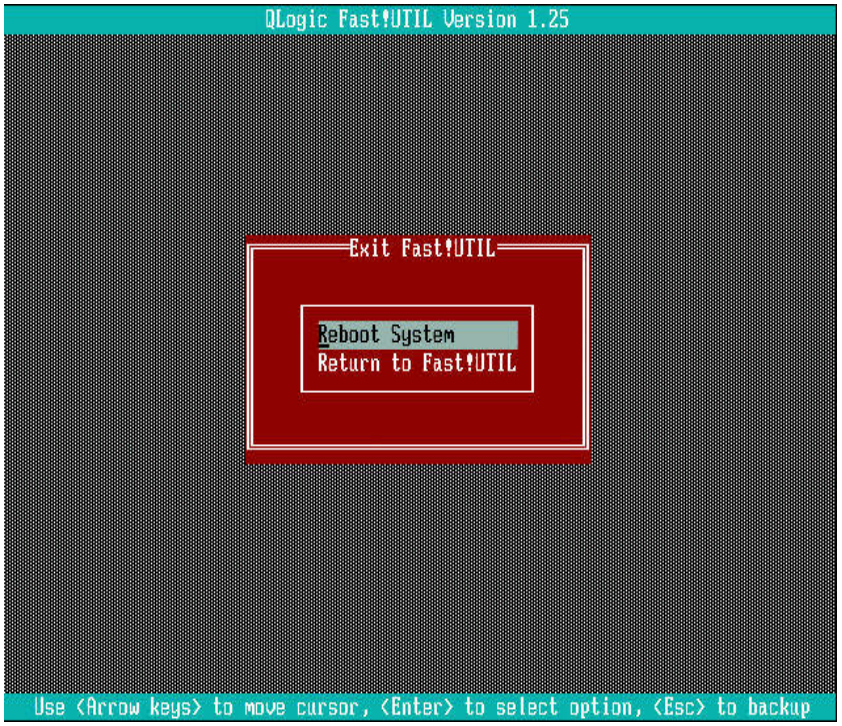

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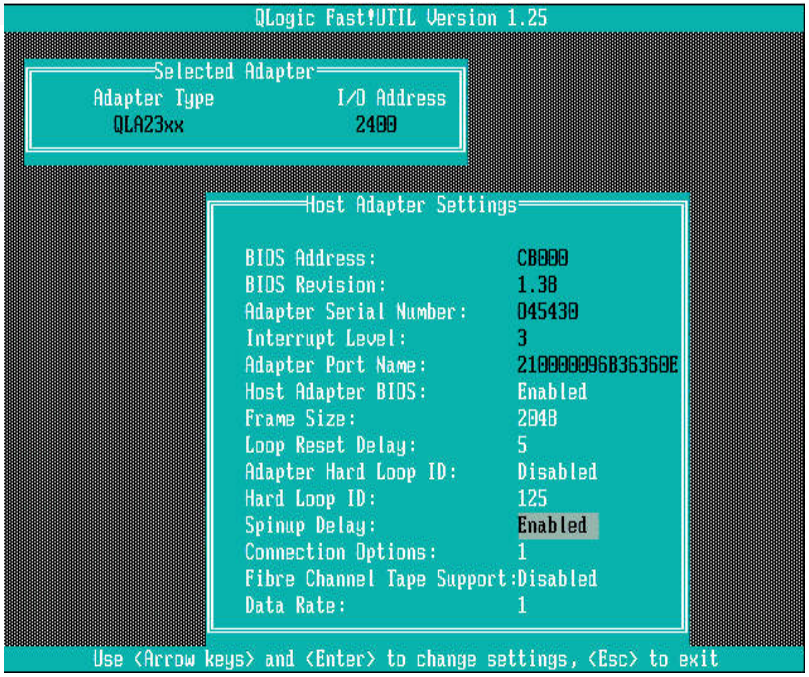
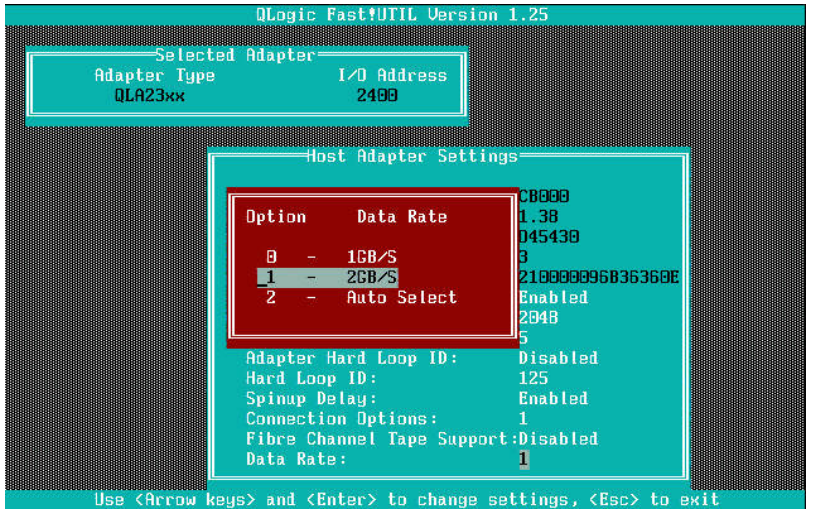
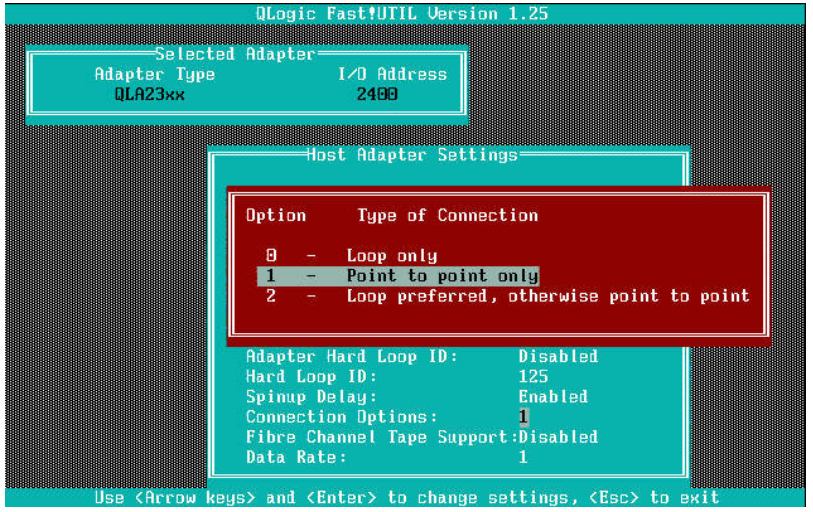
Optional Settings If Needed







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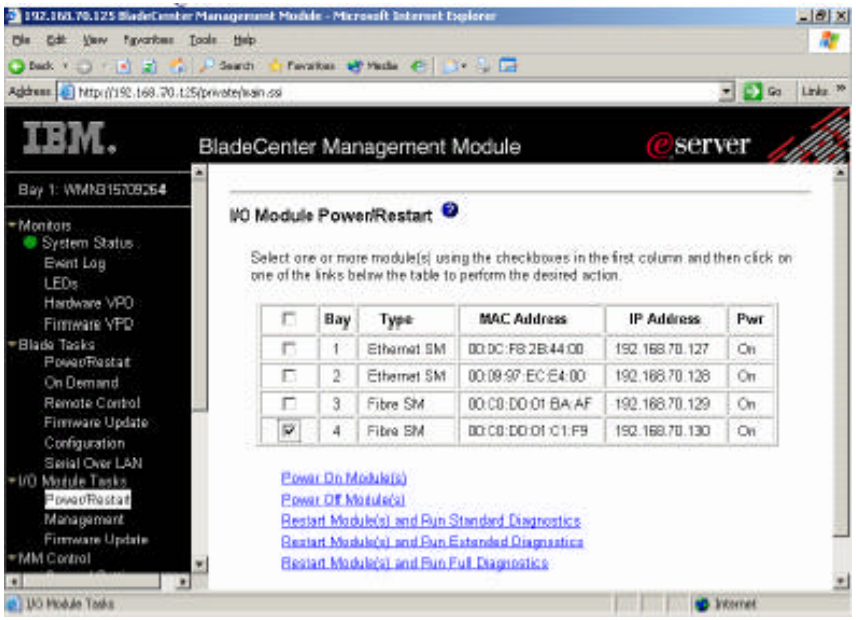
Disabling Path B

- After making sure all of your LUNs are on FAStT controller A, then you should disable Switch Module B, so there is only one path to the Boot LUN



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How to Install the OS

- You must use the HS20 W2003 Qlogic Driver diskette during the install (Press F6 for boot disk)
- During the POST sequence you will notice the following text:
  Drive letter C: is moved to the Drive letter D:

  Loop ID 129,0 is installed as Drive C:
- This indicates that the Blade is now booting from the LUN 0 associated to the first HBA adapter

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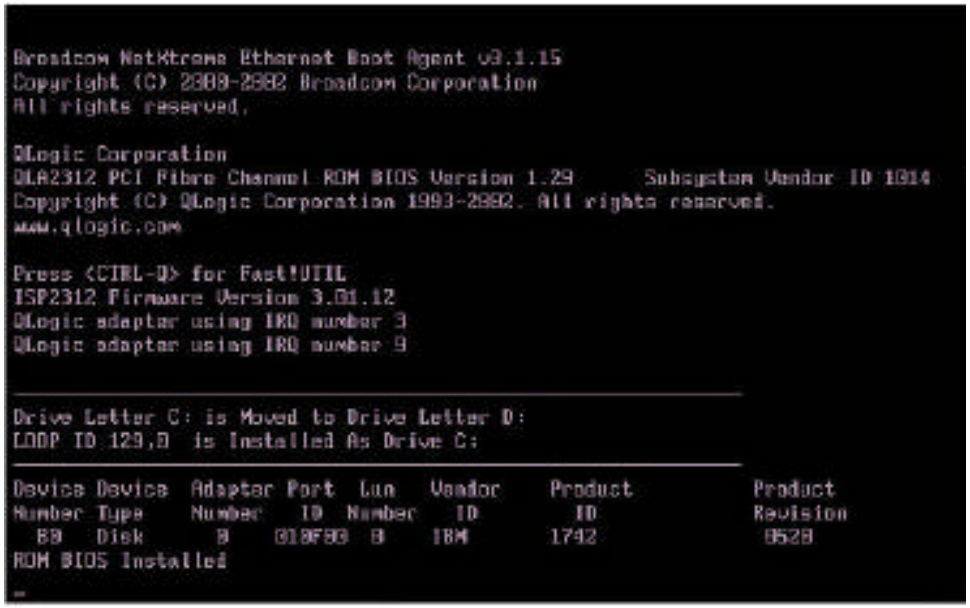
How to Install the OS



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Post installation activities

- Install RDAC 8.42 for W2003
- Re-enable Switch Module 4

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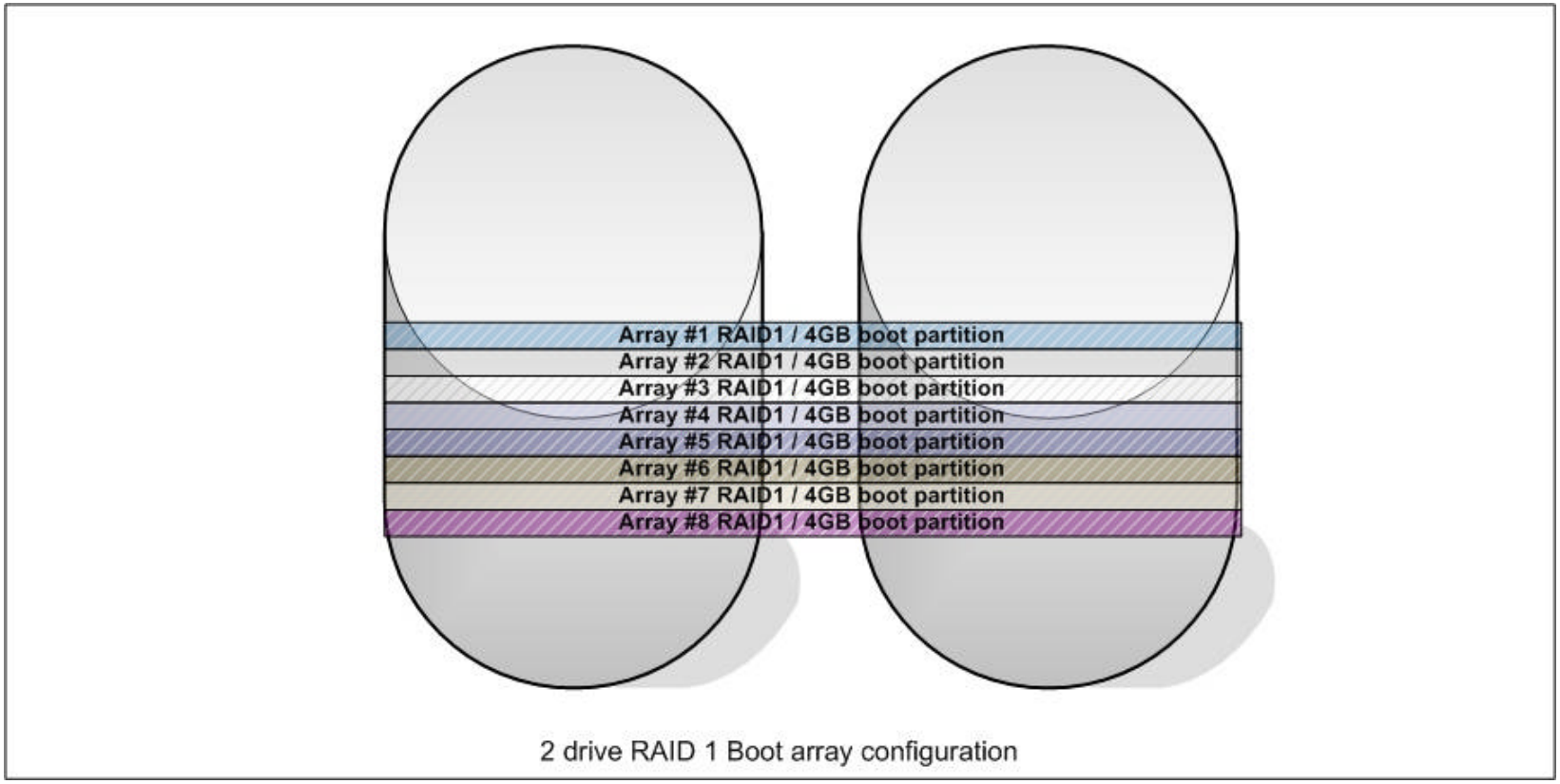
Array/LUN performance considerations



2 drive RAID 1 Boot array configuration

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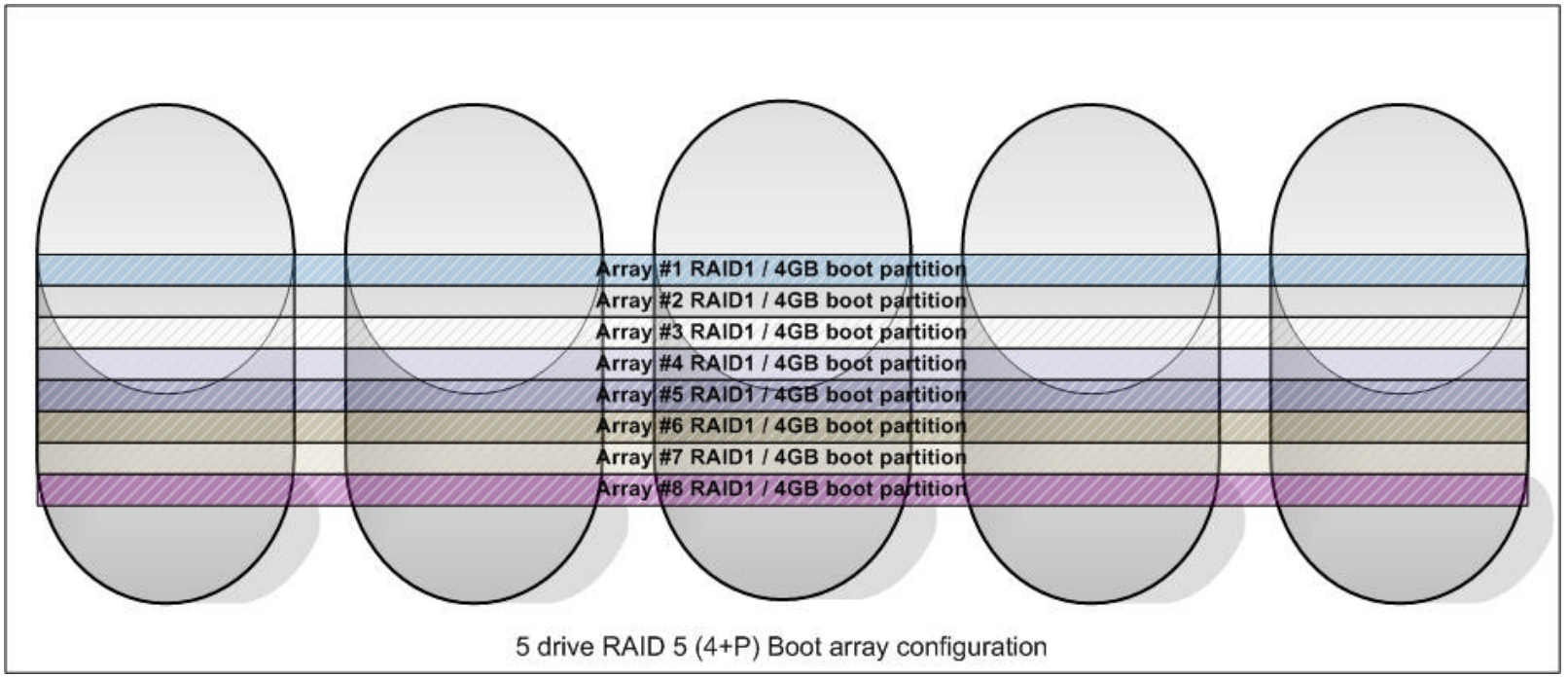
Array/LUN performance considerations



5 drive RAID 5 (4+P) Boot array configuration

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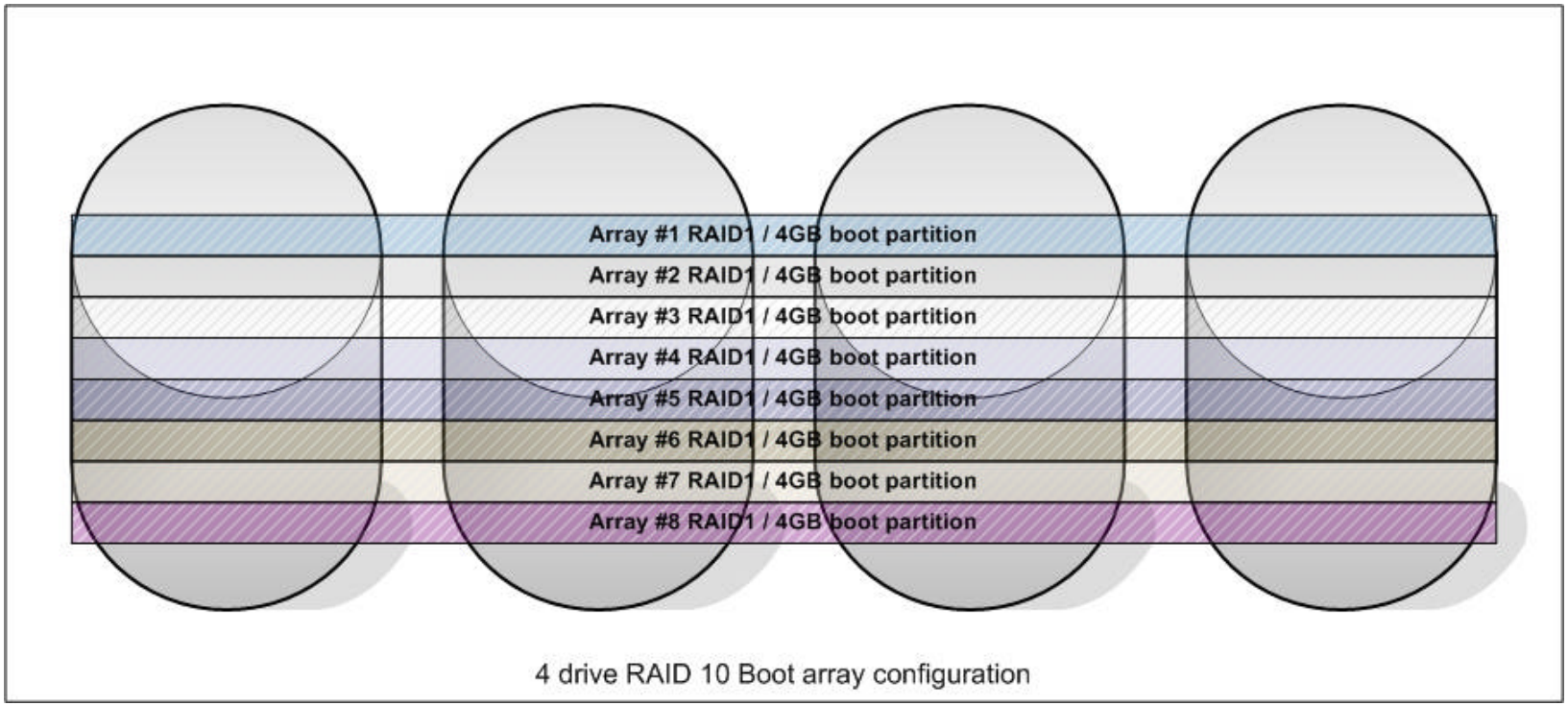
Array/LUN performance considerations



4 drive RAID 10 Boot array configuration

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Array/LUN performance considerations

- Helpcenter “supports” 4 LUNs per array
- ATS tested 8 LUNs per 2 drive R1 array on FT200 – Good performance
- ATS tested 8 LUNs per 5 drive R5 array on FT200 – Good performance
- ATS tested 8 LUNs per 4 drive R10 array on FT200 – Good performance
- Some customers using 14 LUNs per 4 drive R10 array on FT900 with no problems

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Simultaneous FT900 14 Blade Boot

FAStT900_Bot_SANBOOT_Test - Performance Monitor

Devices	Total IOs	Read Percentage	Cache Hit Percentage	Current KB/second	Maximum KB/second	Current IO/second	Maximum IO/second
CONTROLLER IN SLOT A	87,324	82.8	41.5	19,305.0	28,083.6	1,032.0	1,762.0
CONTROLLER IN SLOT B	0	0.0	0.0	0.0	0.0	0.0	0.0
Logical Drive BL10_Boot	1,855	99.4	40.8	124.0	1,658.6	28.8	144.8
Logical Drive BL11_Boot	1,819	99.4	42.7	115.2	1,663.6	26.6	198.0
Logical Drive BL12_Boot	1,554	99.5	49.0	256.8	1,643.6	35.4	218.8
Logical Drive BL13_Boot	1,377	99.9	49.9	0.0	1,756.0	0.0	152.4
Logical Drive BL14_Boot	1,270	100.0	51.0	470.4	1,003.2	32.2	71.8
Logical Drive BL1_Boot	6,316	75.2	97.7	0.0	16,239.6	0.0	505.2
Logical Drive BL2_Boot	8,779	86.0	33.8	180.0	15,396.2	29.8	515.8
Logical Drive BL3_Boot	15,961	71.6	46.1	3.2	13,773.2	0.6	819.4
Logical Drive BL4_Boot	15,957	71.7	41.6	12.2	15,606.8	2.2	841.2
Logical Drive BL5_Boot	7,050	84.5	34.7	225.6	5,074.0	41.4	312.0
Logical Drive BL6_Boot	8,416	85.7	38.7	370.6	6,180.8	88.4	568.4
Logical Drive BL7_Boot	3,845	99.3	37.6	13,129.8	13,129.8	417.6	417.6
Logical Drive BL8_Boot	7,322	91.4	30.6	3,139.6	16,629.6	183.2	486.8
Logical Drive BL9_Boot	5,803	97.4	31.3	1,277.6	14,327.6	145.8	447.4
Logical Drive W2003_Master_RD...	0	0.0	0.0	0.0	0.0	0.0	0.0
Logical Drive W2K_Master_RDA...	0	0.0	0.0	0.0	0.0	0.0	0.0
STORAGE SUBSYSTEM TOTALS	**87,324**	**82.8**	**41.5**	**19,305.0**	**28,083.6**	**1,032.0**	**1,762.0**

Stop | Update | Settings... | Save As... | Close | Help

Start: 7/23/04 2:38:24 PM Stop: Time Monitored: 00:09:57

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Gotchas

- Easiest to implement if all boot LUNs on the same controller
- You can setup for boot LUNs to be owned by alternate controllers – BUT
- You must set servers booting from CTRL-B to have CTRL-B LUN listed first in Boot Settings order
- You may see LUNs move at boot time on some servers (I observered this), but once the servers are up, and RDAC has been properly loaded, the LUN will move back to the right controller.

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Suggestions

- Smaller boot LUN (4GB-6GB)
- Create a swap LUN for SWAP file
- Data LUNs for date files
- Use Volumecopy to save master LUNs OR
- Use RDM to save Boot LUN image for deployment

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Update 8/11/04

- Assign BOTH controllers to the HBA Ports under Assignable Boot Setting screen.
- Put the controller that is the preferred path for the boot LUN as the first entry, put the alternate controller as the second entry
- Choose a host port type with ADT Enabled OR run the ADT Enable script. Windows2000/2003 Non-Clustered (DMP support) has ADT Enabled
- Now, the HBA will be able to use both of the paths to the boot LUN and move the LUN if needed.
- (i.e.) If you have the boot LUN on the preferred path to the A Controller, and you lose the path to the A controller for some reason, then the HBA BIOS will initiate I/O down the path and signal the FAStT controller to move the LUN to the other path, and it will then try booting from the alternate path.

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Questions?

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