

Подготовка сервера для загрузки к СХД (FC SAN Boot)

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The logo for Dell EMC, featuring the word "DELL" in blue with a stylized "E" and "EMC" in grey.

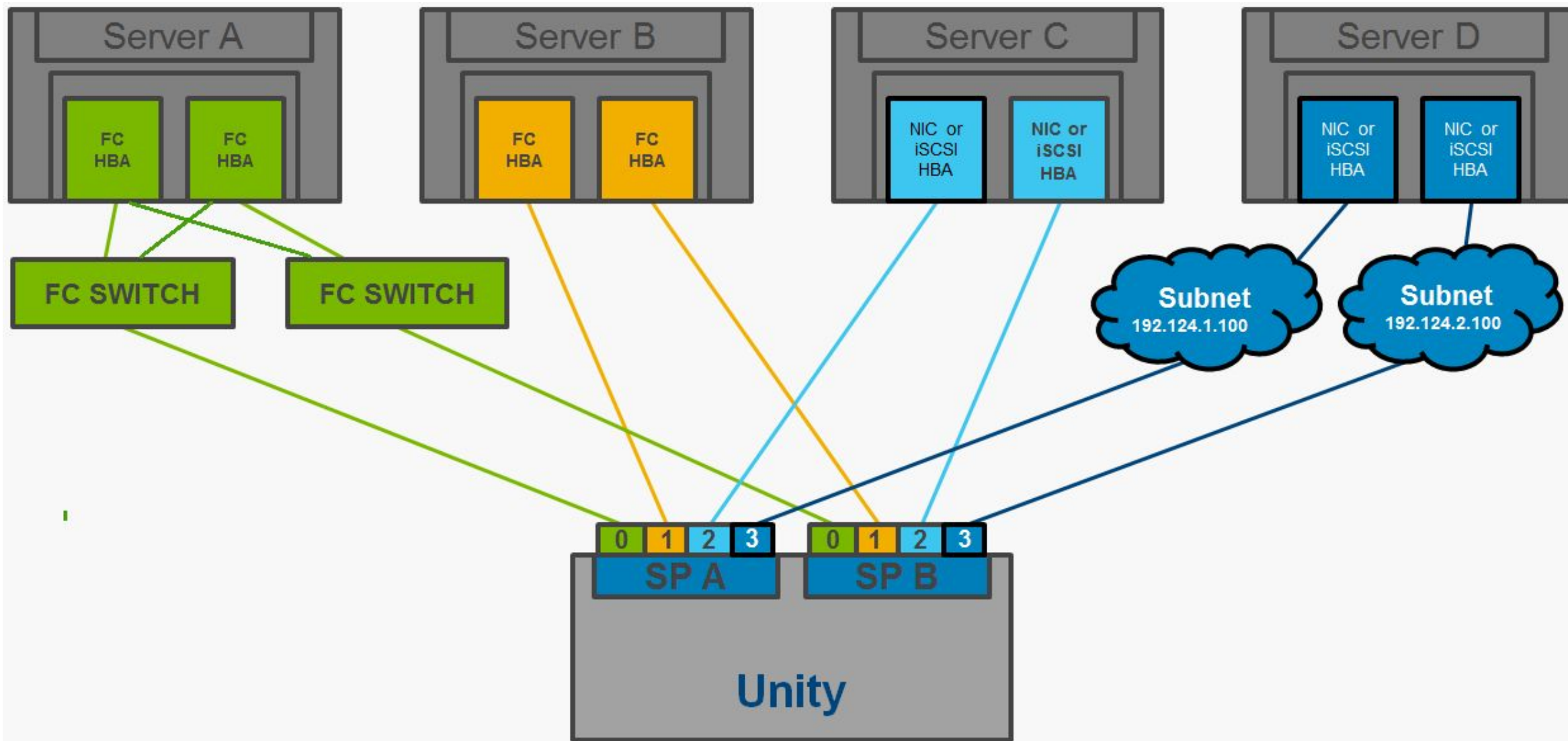
Екатеринбург, 27 сентября 2017

The logo for OCS DISTRIBUTION, featuring the letters "OCS" in grey with a stylized orange "O" and the word "DISTRIBUTION" in orange below it.

Конфигурирование сервера и СХД

Подготовка сервера для загрузки к СХД

к СХД



Подготовка сервера для загрузки к СХД

Загружаем сервер

Заходим в Bios HBA используя клавиши **CTRL+Q** или **ALT+Q** (Qlogic), **CTRL+E** или **ALT+E** (Emulex).

```
Proc 1: Quad-Core Intel(R) Xeon(TM) Processor (1.60 GHz/1066 MHz, 2x4MB L2)
Proc 2: Quad-Core Intel(R) Xeon(TM) Processor (1.60 GHz/1066 MHz, 2x4MB L2)
Power Regulator Mode: OS Control

Advanced Memory Protection Mode: Advanced ECC Support
Redundant ROM Detected - This system contains a valid backup system ROM.

Integrated Lights-Out 2 Advanced
iLO 2 v2.25 Apr 14 2014 10.10.10.24

QMh2462 PCI3.0 Fibre Channel ROM BIOS VERSION 3.12 Subsystem Vendor ID 103C
Copyright (C) QLogic Corporation 1993-2012. All rights reserved.
www.qlogic.com

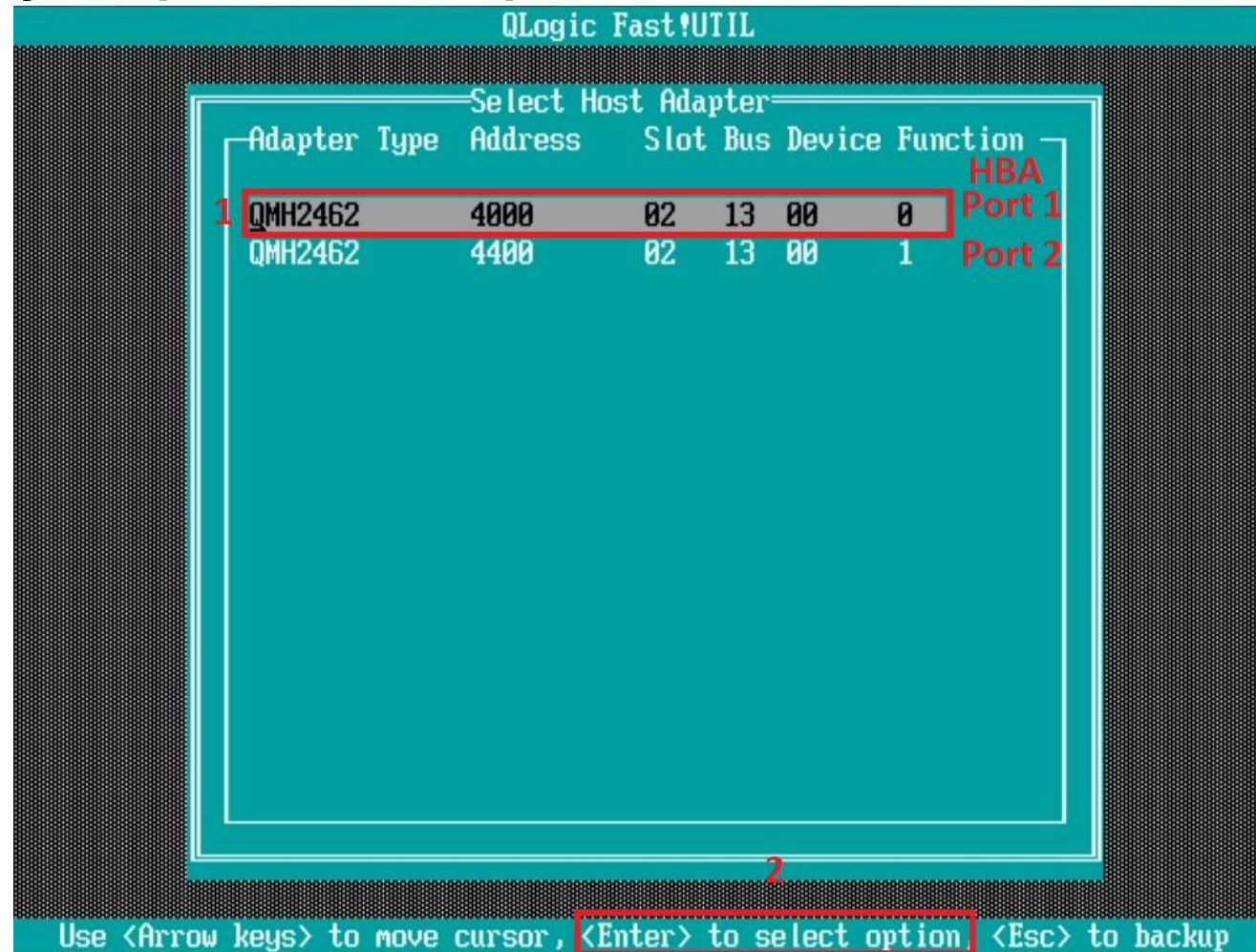
Press <CTRL-Q> or <ALT-Q> for Fast!UTIL ←
Firmware Version 5.03.15

<F9 = Setup>
Checking Adapter 0 Loop ID 02
<Alt-Q> Detected, Initialization in progress, Please wait... ←
Checking Adapter 1 Loop ID 02
```

Подготовка сервера для загрузки к СХД

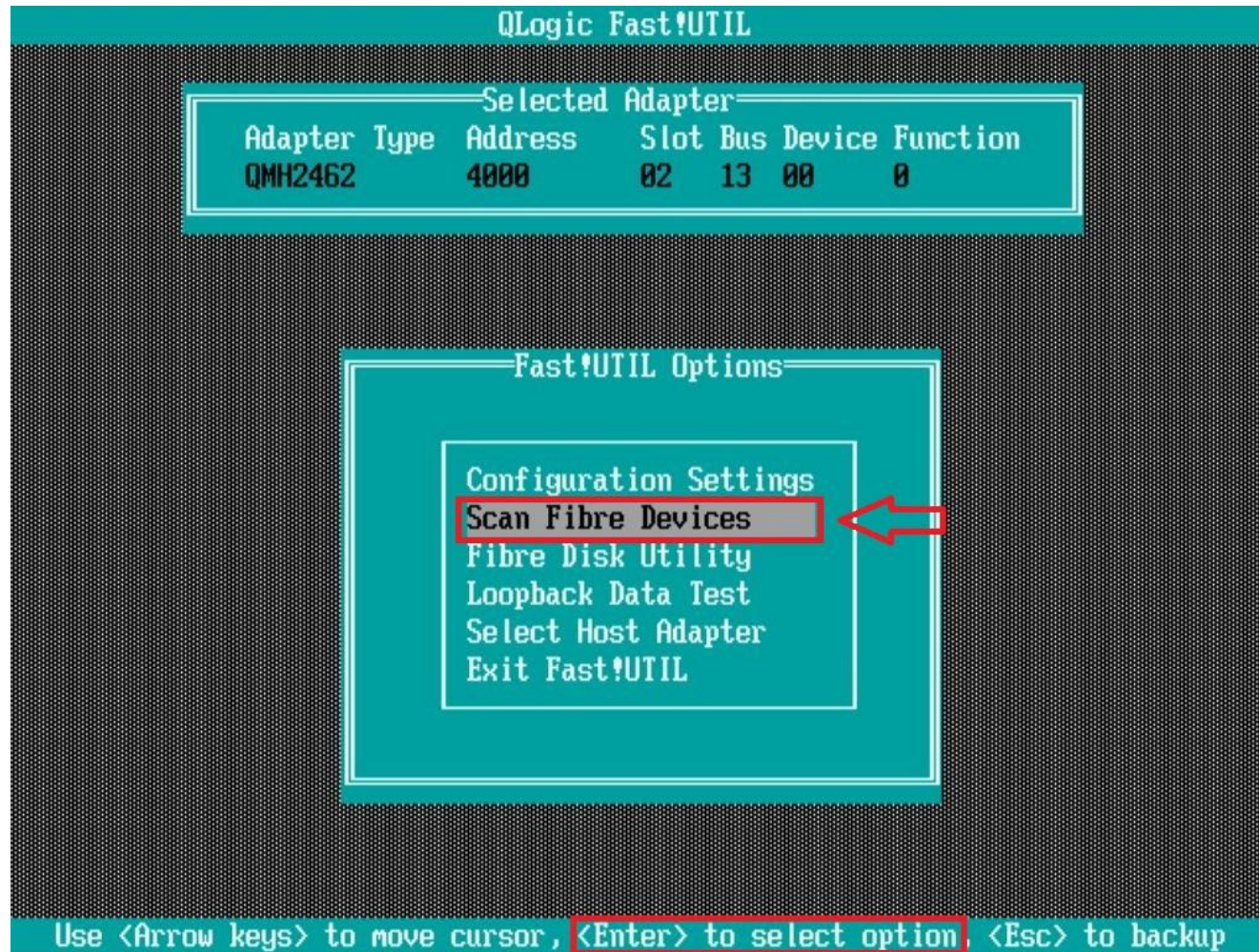
Выбор первого порта HBA

Каждый порт двух-портовой HBA представлен, как самостоятельное устройство.



Подготовка сервера для загрузки к СХД

Выполнение сканирования сети для обнаружения устройств



Подготовка сервера для загрузки к СХД

устройства

Port Name в данном случае показывает **wwn** – портов СХД

QLogic Fast!UTIL

Scan Fibre Channel Loop

ID	Vendor	Product	Rev	Port Name	Port ID
0	DGC	LUNZ	4000	5006016247E01068	0B1400
1	DGC	LUNZ	4000	5006016A47E01068	0B1600
2	No device present				
3	No device present				
4	No device present				
5	No device present				
6	No device present				
7	No device present				
8	No device present				
9	No device present				
10	No device present				
11	No device present				
12	No device present				
13	No device present				
14	No device present				
15	No device present				

Вендор DGC
LUNZ

Port Name - это wwn портов СХД

Use <PageUp/PageDown> keys to display more devices, <ESC> to exit

Подготовка сервера для загрузки к СХД

Unity

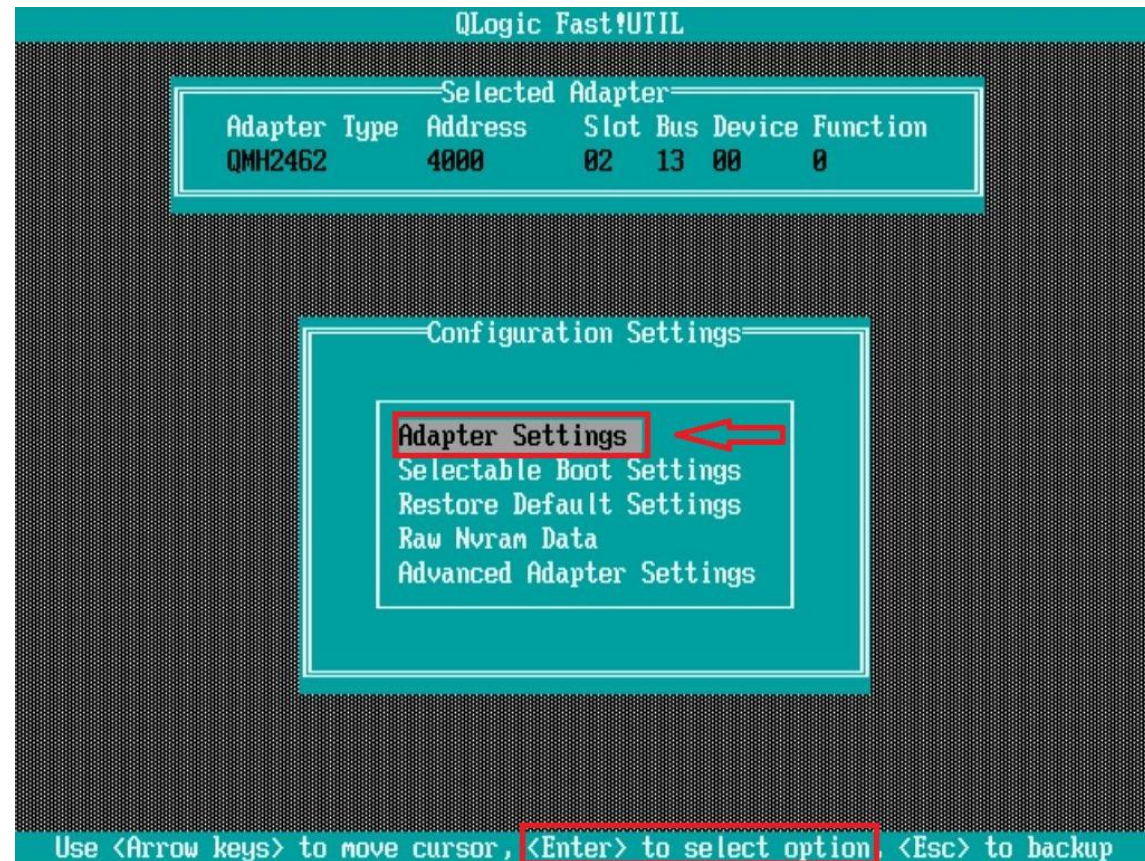
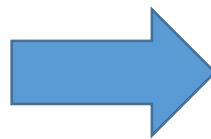
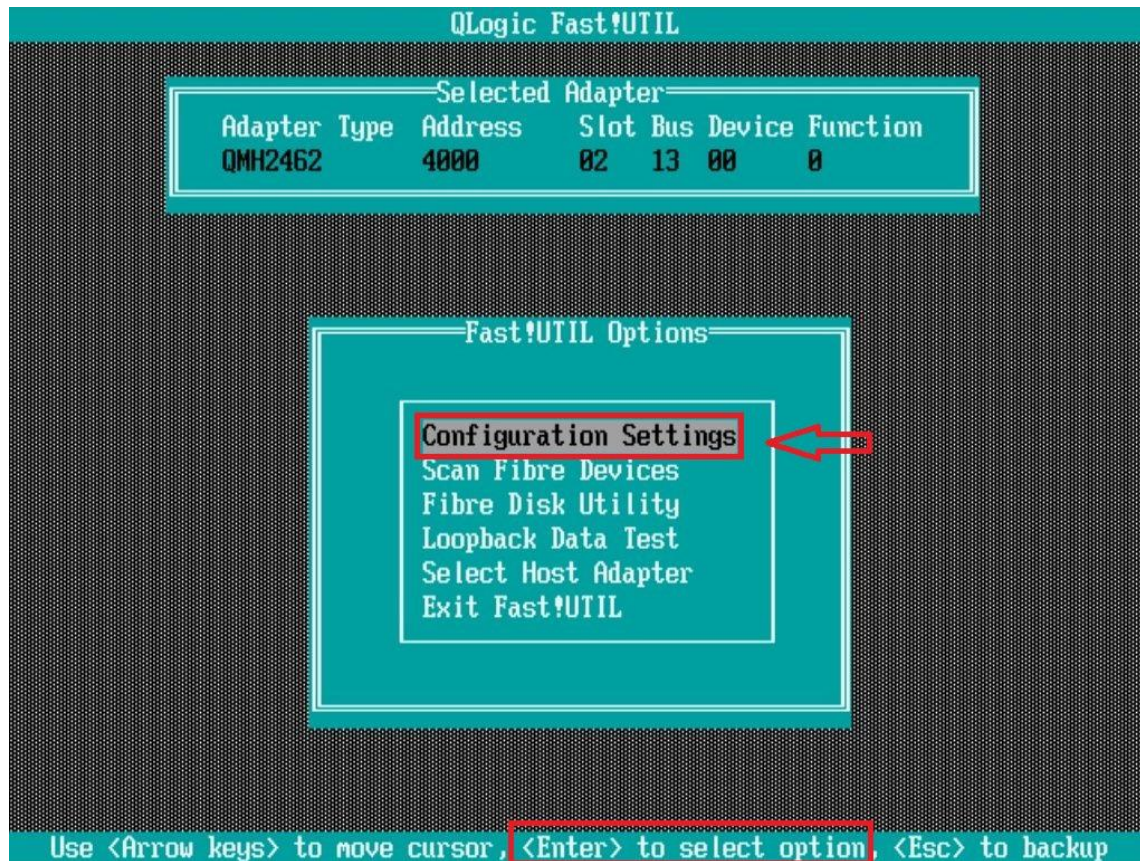
The screenshot displays the EMC Unisphere web interface. On the left is a navigation sidebar with categories: DASHBOARD, SYSTEM (with 'System View' highlighted and marked with a red box and '1'), STORAGE, ACCESS, DATA PROTECTION, and EVENTS. The main content area is titled 'Enclosures' and shows a dropdown menu for 'Enclosure: DPE 2' (marked with a red box and '2'). Below this is a 3D server rack view with a red box and '4' highlighting a specific port on the front panel. Above the rack view are view controls: 'Front', 'Rear' (highlighted with a red box and '3'), and 'Top'. To the right, a detailed view of 'SP B FC Port 4' (highlighted with a red box) shows a status of 'OK' with a green checkmark and the message 'The port is operating normally.' Below this, a table of port details is shown:

Port Number:	4
Link Status:	Link Up
Current Speed:	4 Gbps
Requested Speed:	--
WWN:	60:06:01:60:C7:E0:10:68 60:06:01:6A:47:E0:10:68
SFP Supported Speed:	4 Gbps, 8 Gbps, 16 Gbps
SFP Supported Protocols:	Fibre Channel

A red arrow points from the WWN value '60:06:01:6A:47:E0:10:68' (highlighted with a red box) to the corresponding port on the server rack image.

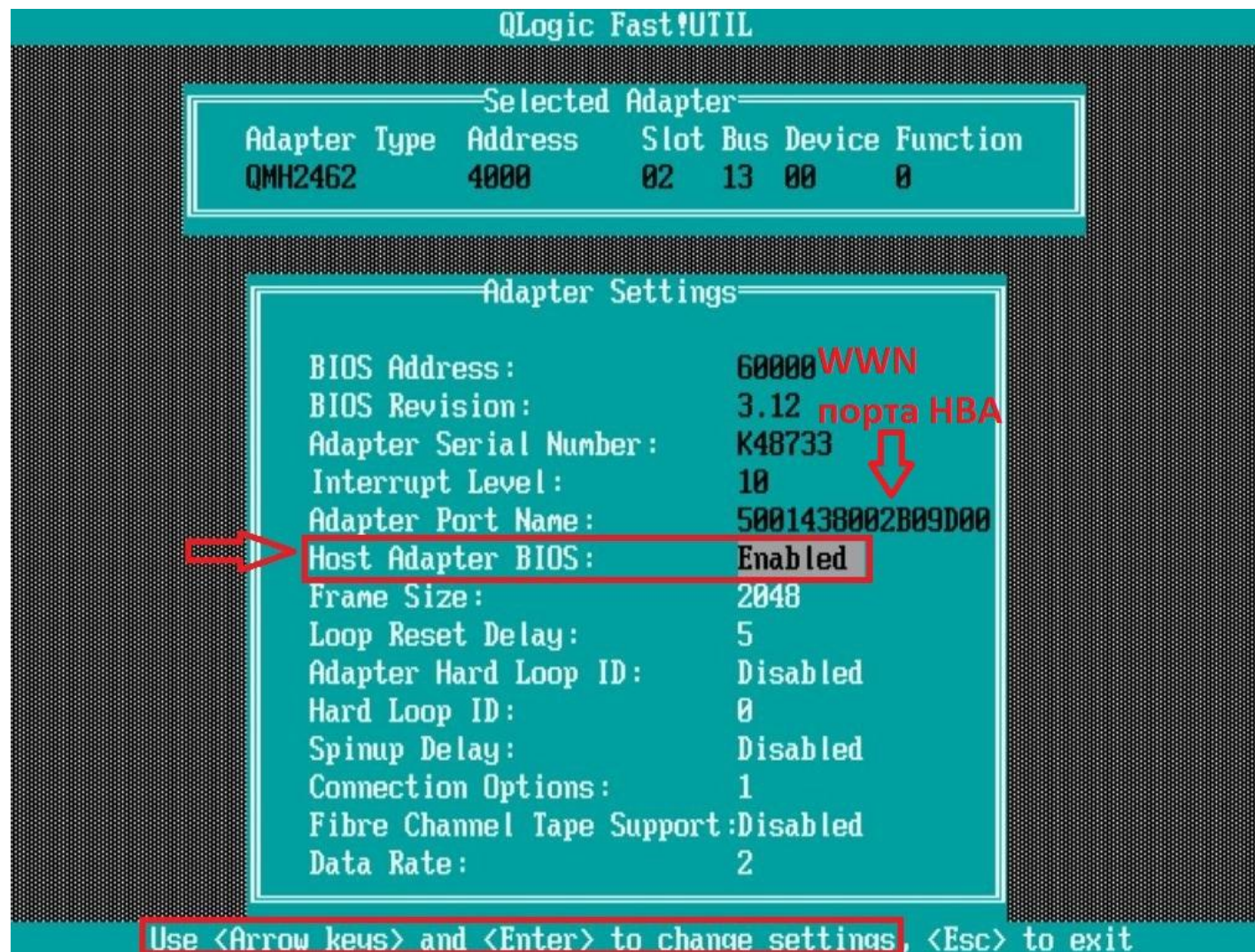
Подготовка сервера для загрузки к СХД

конфигурированию НВА



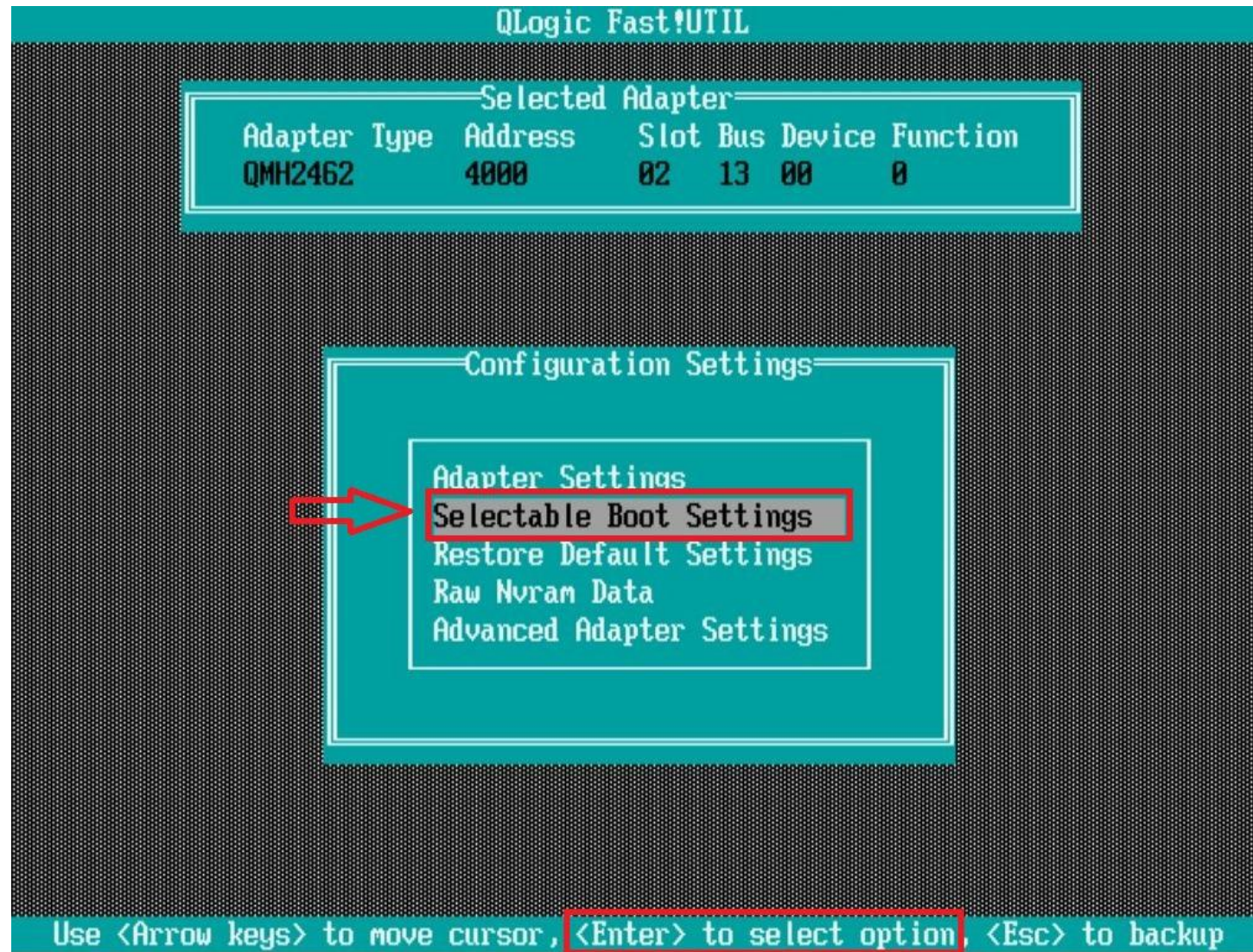
Подготовка сервера для загрузки к СХД

BIOS



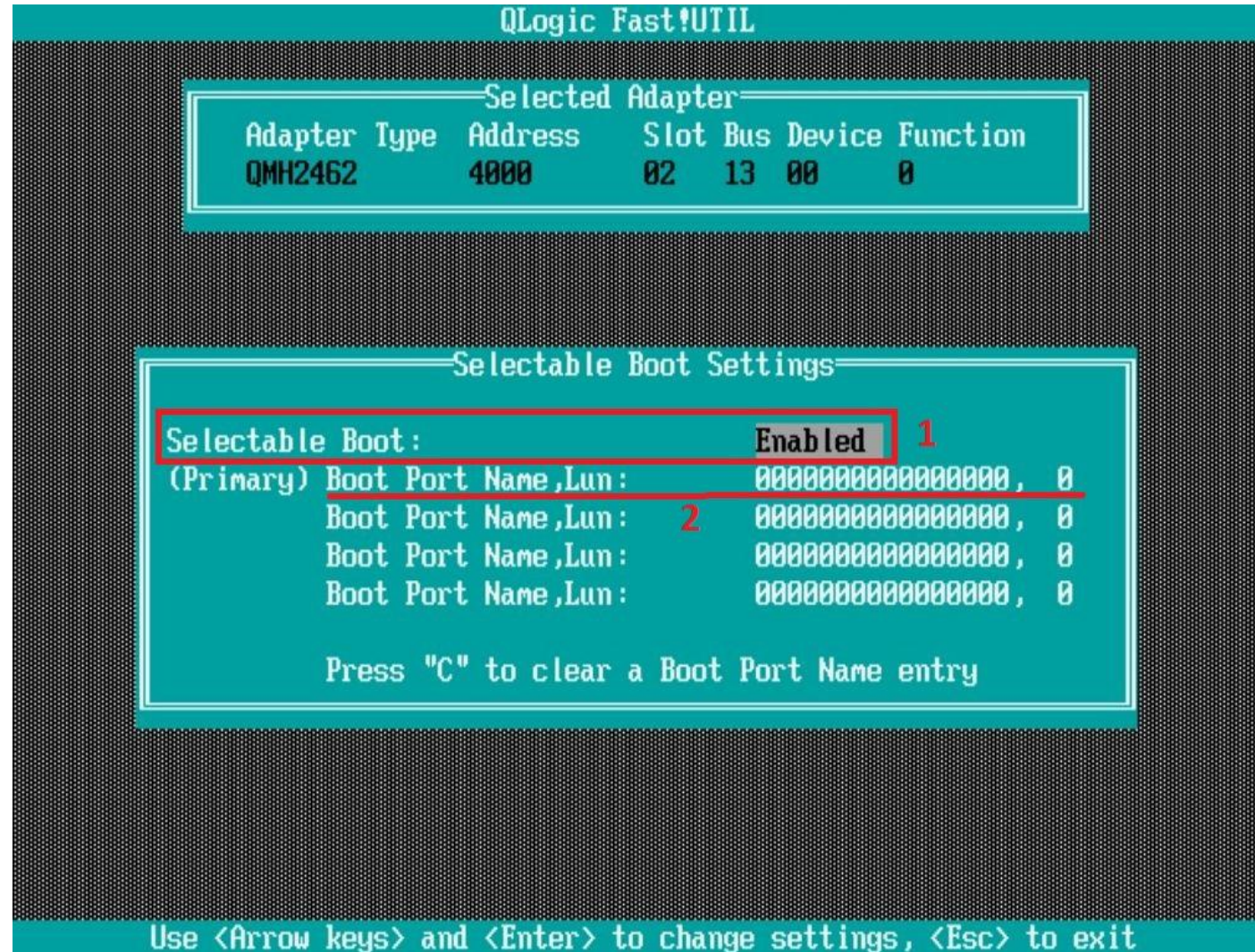
Подготовка сервера для загрузки к СХД

Settings»



Подготовка сервера для загрузки к СХД

устройства



Подготовка сервера для загрузки к СХД

устройства

QLogic Fast!UTIL

Select Fibre Channel Device

ID	Vendor	Product	Rev	Port Name	Port ID
0	DGC	LUNZ	4000	5006016247E01068	0B1400
1	DGC	LUNZ	4000	5006016A47E01068	0B1600
2	No device present				
3	No device present				
4	No device present				
5	No device present				
6	No device present				
7	No device present				
8	No device present				
9	No device present				
10	No device present				
11	No device present				
12	No device present				
13	No device present				
14	No device present				
15	No device present				

Use <PageUp/PageDown> keys to display more devices

Use <Arrow keys> to move cursor, <Enter> to select option, <Esc> to backup

↑
Исторически сложилось, что midrange массивы EMC видны как устройства компании DGC (Data General Company)



QLogic Fast!UTIL

Selected Adapter

Adapter	Type	Address	Slot	Bus	Device	Function
QM2462		4000	02	13	00	0

Selectable Boot Settings

Selectable Boot : Enabled

(Primary) Boot Port Name,Lun : 5006016247E01068, 0

Boot Port Name,Lun : 5006016A47E01068, 0

Boot Port Name,Lun : 0000000000000000, 0

Boot Port Name,Lun : 0000000000000000, 0

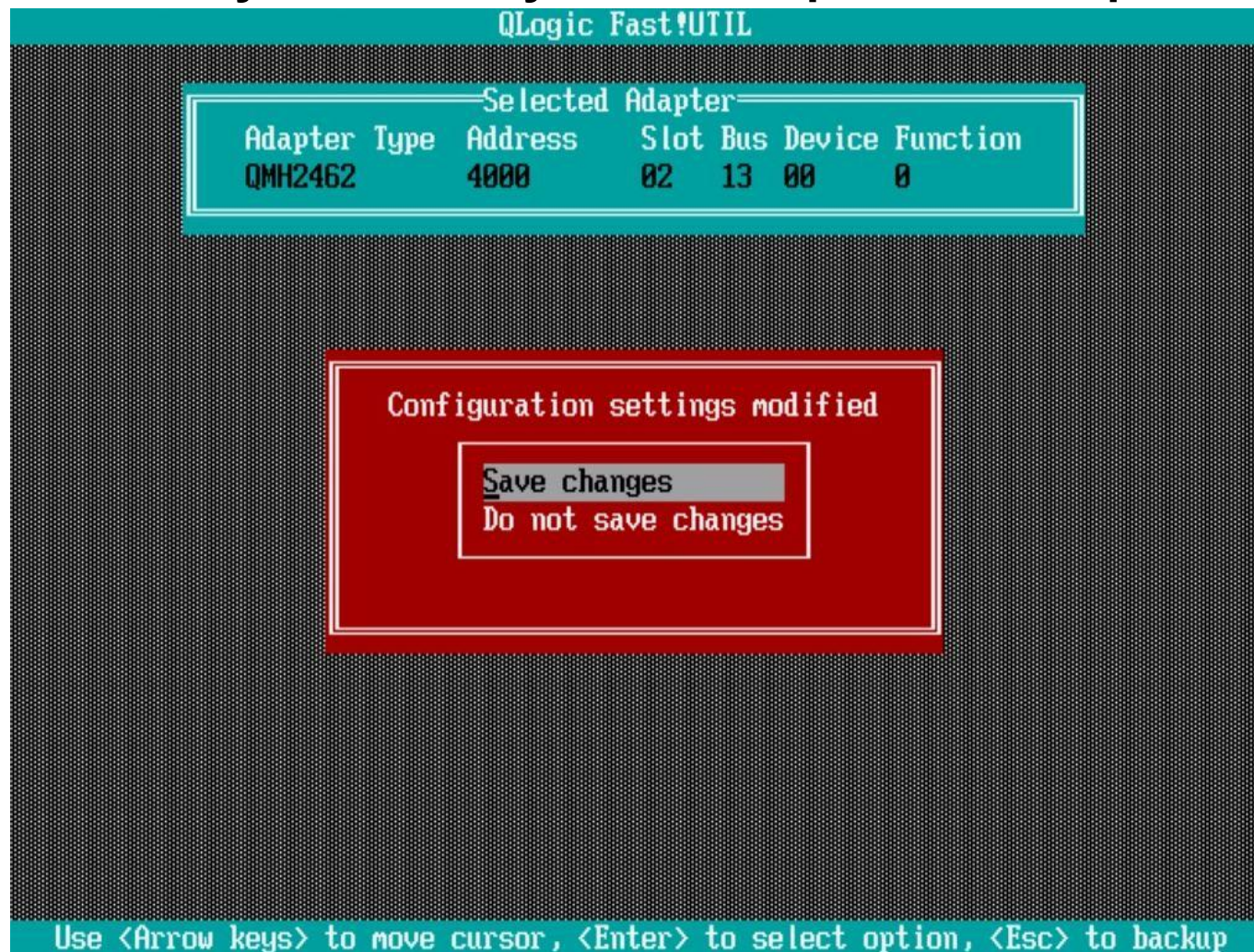
Press "C" to clear a Boot Port Name entry

Use <Arrow keys> and <Enter> to change settings, <Esc> to exit

Подготовка сервера для загрузки к СХД

порта

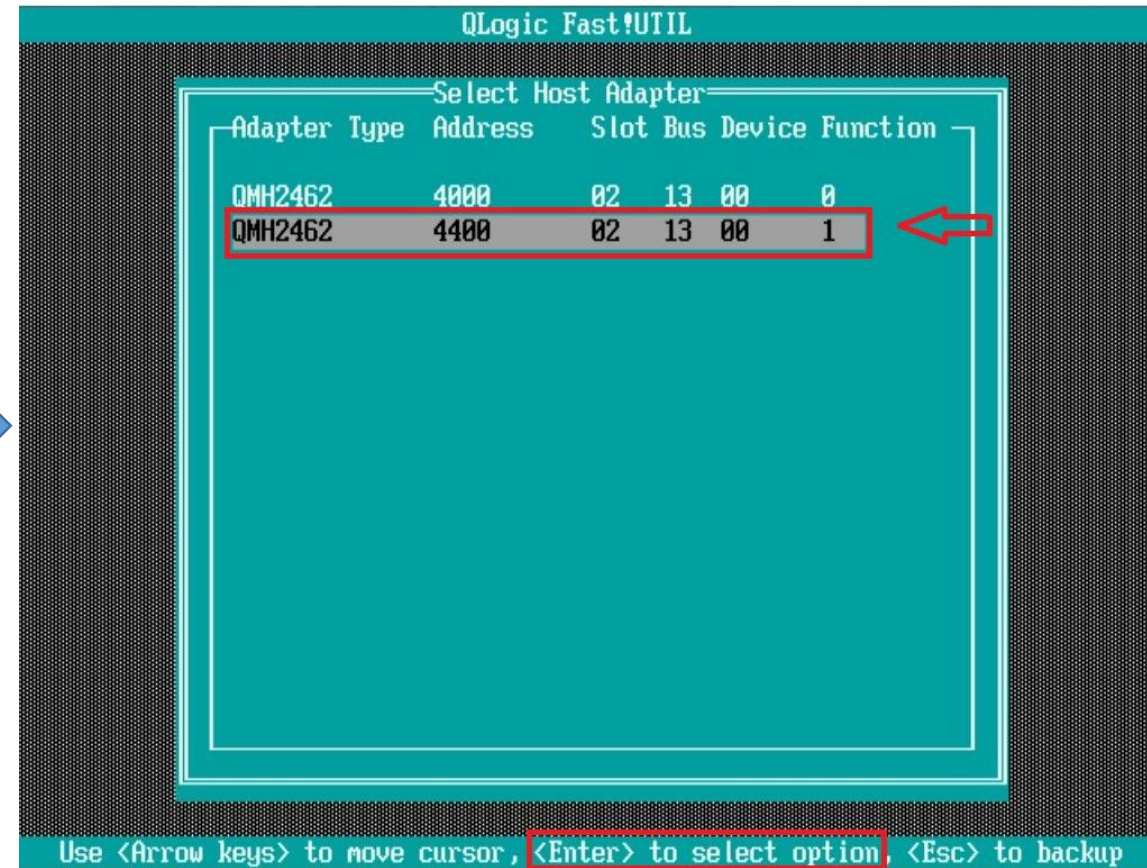
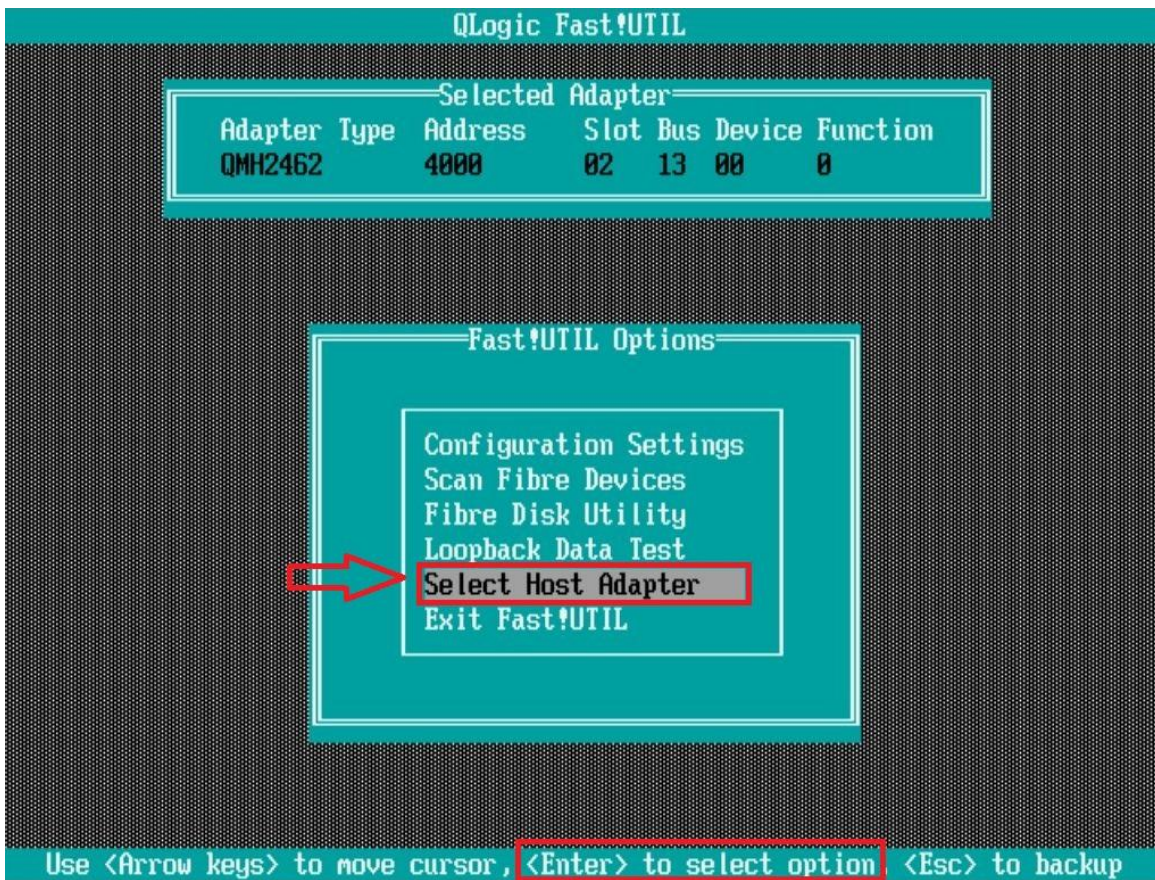
Используем клавишу **ESC** и сохраняем настройки



Подготовка сервера для загрузки к СХД

НВА

Настраиваем аналогично первому порту!!!



Подготовка сервера для загрузки к СХД

СХД

EMC² Unisphere

Initiators Initiator Paths

14 items

	!	Initiator IQN/WWN	↑	Host	Ho...	Protocol	Ignore	i	E	C
<input type="checkbox"/>	✓	50:01:43:80:00:AC:8C:B9:50:01:43:80:00:AC:8C:B8		Blade2.EMC	A...	FC	No			
<input type="checkbox"/>	✓	50:01:43:80:00:AC:8C:BB:50:01:43:80:00:AC:8C:BA		Blade2.EMC	A...	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:00:C0:68:71:50:01:43:80:00:C0:68:70		Blade6	...	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:00:C0:68:71:50:01:43:80:00:C0:68:72		Blade6	...	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:02:22:E5:01:50:01:43:80:02:22:E5:00		Blade5	...	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:02:22:E5:03:50:01:43:80:02:22:E5:02		Blade5	...	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:02:AE:DD:0B:50:01:43:80:02:AE:DD:0A		--	--	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:02:AE:DD:09:50:01:43:80:02:AE:DD:08		--	--	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:02:B0:9D:01:50:01:43:80:02:B0:9D:00		Blade4	...	FC	No			
<input type="checkbox"/>	⚠	50:01:43:80:02:B0:9D:03:50:01:43:80:02:B0:9D:02		Blade4	...	FC	No			
<input type="checkbox"/>	✓	50:01:43:80:03:BC:51:95:50:01:43:80:03:BC:51:94		Blade1.EMC	A...	FC	No			
<input type="checkbox"/>	✓	50:01:43:80:03:BC:51:97:50:01:43:80:03:BC:51:96		Blade1.EMC	A...	FC	No			
<input type="checkbox"/>	⚠	iqn.1990-07.com.emulex:44-1e-a1-43-45-49		Blade1.EMC	A...	iSCSI	Yes		F	Y
<input type="checkbox"/>	⚠	iqn.1991-05.com.microsoft.blade2		Blade2.EMC	A...	iSCSI	Yes		F	Y

Подготовка сервера для загрузки к СХД

EMC² Unisphere

DASHBOARD

SYSTEM
System View
Performance
Service

STORAGE
Pools
Block
File
VMware

ACCESS
1 Hosts
VMware
Initiators

DATA PROT
Snapshot Sche
Replication

EVENTS
Alerts
Jobs

SUPPORT

Hosts

3 items

BLADE4

Status: ⚠ Degraded
Status Description: The host does not

Add a Host

Select Fibre Channel Initiators

Auto-Discovered Initiators

Initiator WWN	Connected To
<input checked="" type="checkbox"/> 60:01:43:80:02:AE:DD:0B:60:01:43:80:02:AE:DD:0A	SP A FC Port 5, SP B FC Port 5
<input checked="" type="checkbox"/> 60:01:43:80:02:AE:DD:09:60:01:43:80:02:AE:DD:08	SP A FC Port 4, SP B FC Port 4

Manually Created Initiators

WWN

[Create Initiator](#)

From the list of auto-discovered initiators, select the FC initiators the host will use to access storage resources. If you do not find the initiator you want in the list, click Create Initiator to manually add an initiator, and then select it from the list of manually added initiators.

Cancel [Back](#) [Next](#)

Подготовка сервера для загрузки к СХД

Создаем загрузочный LUN

The screenshot displays the EMC Unisphere web interface for creating a LUN. The left sidebar shows the navigation menu with 'Block' highlighted under the 'STORAGE' section. The main content area is titled 'Create a LUN' and features a 'Configure Storage Characteristics' form. The form includes the following fields and options:

- Pool:** A dropdown menu with 'Pool1' selected.
- Tiering Policy:** A dropdown menu with 'Start High Then Auto-Tier' selected.
- Size:** A numeric input field set to '100' and a unit dropdown set to 'GB'.
- Thin:** A checkbox labeled 'Yes'.
- Host I/O Limit:** A dropdown menu with 'No Limit' selected.

At the bottom right of the form, there are three buttons: 'Cancel', 'Back', and 'Next'. The 'Next' button is highlighted with a red box.

Подготовка сервера для загрузки к СХД

Даем серверу доступ к созданному LUN

Create a LUN

✓ Name
✓ Storage
• **Access** 1
Snapshot
Replication
Summary
Results

Configure Access

2

Select Host Access

Access Type: LUN 3

Hosts:

More Actions - Filtered down to 6 items

	!	Name	Operating System	Protocols
<input type="checkbox"/>	✓	Blade1.EMC	VMware ESXi 5.5.0	iSCSI, FC, File
<input type="checkbox"/>	✓	Blade2.EMC	VMware ESXi 5.5.0	iSCSI, FC, File
<input checked="" type="checkbox"/>	✓	Blade3	Windows Server	FC, File
<input type="checkbox"/>	!	Blade4	Windows Server	FC, File
<input type="checkbox"/>	!	Blade5	Windows Server	FC, File

4

5

Cancel OK

6

Cancel Back Next

Select the hosts that can access the storage resource.
For block-based storage, you can configure each host to access the storage resource, snapshots of the storage resource, or both.

Подготовка сервера для загрузки к СХД

сервере

EMC² Unisphere

Hosts

4 items

BLADE3

!	Name	Network Addre...	Operating Syst...	Type	LUNs	Initiators	Initiator Paths
<input checked="" type="checkbox"/>	Blade3	10.10.10.43	Windows Server	Manual	1	2	4
<input type="checkbox"/>	Blade						
<input type="checkbox"/>	Blade						
<input type="checkbox"/>	Blade						

Blade3 Properties

General LUNs Network Addresses Initiators Initiator Paths

Modify LUN IDs

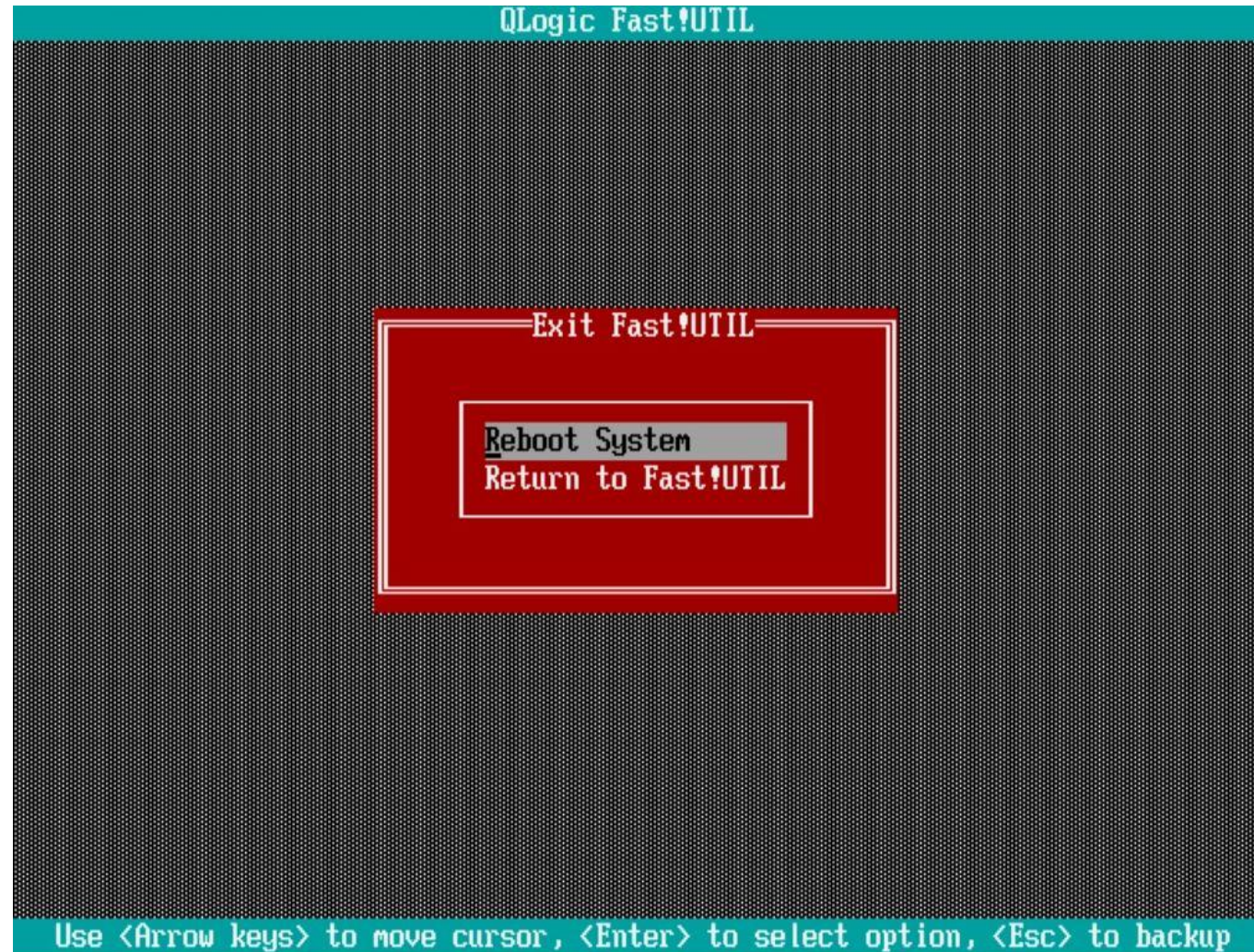
!	Storage Resource	Name	Att...	Size (GB)	LUN ID	WWN	Pool
<input checked="" type="checkbox"/>	Boot-Lun	Boot-Lun		100.0	0	60:06:01:60:E1:30...	Pool1

Close

Подготовка сервера для загрузки к СХД

настройки НВА

Используем клавишу **ESC** и подтверждаем перезагрузку



Подготовка сервера для загрузки к СХД

сервера

Проверяем, что порты HBA указаны как первичные загрузочные HDD

ROM-Based Setup Utility, Version 2.10
Copyright 1982, 2011 Hewlett-Packard Development Company, L.P.

System Options
PCI Devices
Standard Boot Order (IPL)
Boot Controller Order
Date and Time
Server Availability
Server Passwords
BIOS Serial Console & EMS
Server Asset Text
Advanced Options
Utility Language



ROM-Based Setup
Copyright 1982, 2011 Hewlett-Packard Development Company, L.P.

HP ProLiant
S/N: GB879
Product ID
HP BIOS II
Backup Ver
Bootblock
13312MB M
Proc 1:Int
Proc 2:Int
MAC address
iSCSI
MAC address
iSCSI

IPL:1 CD-ROM
IPL:2 Hard Drive C: (See Boot Controller Order)
IPL:3 USB DriveKey (C:)
IPL:4 Floppy Drive (A:)



Сохраняем настройки и перезагружаемся

ROM-Based Setup
Copyright 1982, 2011 Hewlett-Packard Development Company, L.P.

Ctrl:1 PCI Slot 2 QLogic QMH2462 4Gb FC HBA Port 1
Ctrl:2 PCI Slot 2 QLogic QMH2462 4Gb FC HBA Port 2
Ctrl:3 PCI Embedded HP Smart Array E200i Controller



<Enter> to View/Modify System Specific Options
<↑/↓> for Different Selection; <ESC> to Exit Utility

<Enter> to Select IPL Device; <F1> for Help
<↑/↓> for Different IPL Device; <ESC> to Close Menu

<Enter> to Select Mass Storage Controller
<↑/↓> for Different Mass Storage Controller; <ESC> to Close Menu; <F1> for Help

Подготовка сервера для загрузки к СХД

сервера

При загрузке сервера должно быть видно загрузочное устройство как на скриншоте

```
QMh2462 PCI3.0 Fibre Channel ROM BIOS Version 3.29 Subsystem Vendor ID 103C
Copyright (C) QLogic Corporation 1993-2015. All rights reserved.
www.qlogic.com

Press <CTRL-Q> or <ALT-Q> for Fast!UTIL
Firmware Version 8.01.02

                                                                    <F9 = Setup>
Device Device Adapter Port Lun Vendor Product Product
Number Type Number ID Number ID ID Revision
      Disk      0      0B1400 0      DGC      VRAID      4000
ROM BIOS Installed
```

Подготовка сервера для загрузки к СХД

Спасибо за внимание!

Подготовка сервера для загрузки к СХД

