

组网及说明

受测设备为MSA2040 SAN, OS版本RHEL6.6, 服务器主机UEFI模式, 使用82Q光纤卡。

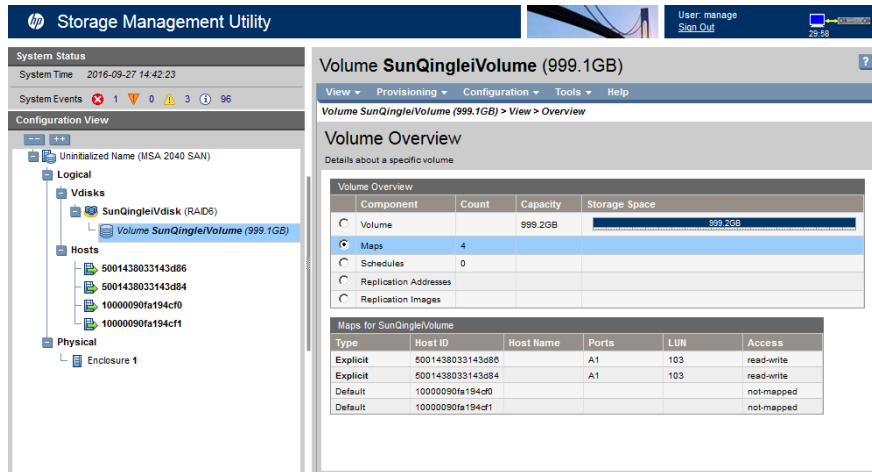
配置步骤

DL380 Gen9服务器配有光纤卡82Q, Port 1 WWPN为5001438033143D84, Port 2 WWPN为5001438033143D86。

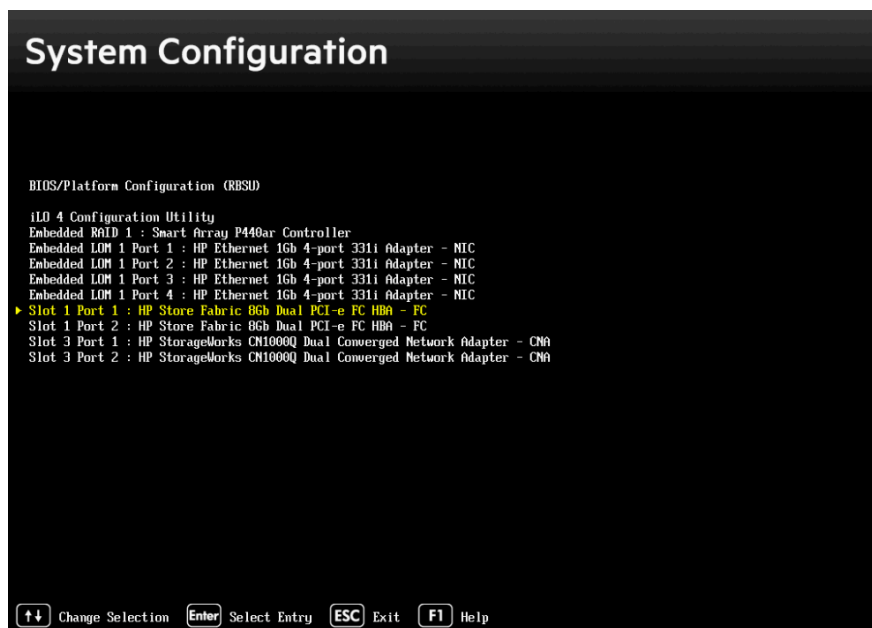
MSA2040 SAN, A1 WWPN为207000c0ff1de213, B1 WWPN为247000c0ff1de213。

Port A1		Port B1	
Property	Value	Property	Value
Health	OK	Health	OK
Health Reason		Health Reason	
Health Recommendation		Health Recommendation	
Status	Up	Status	Up
Ports	A1	Ports	B1
Media	FC(F)	Media	FC(F)
Target ID	207000c0ff1de213	Target ID	247000c0ff1de213
Configured Speed	Auto	Configured Speed	Auto
Actual Speed	8Gb	Actual Speed	8Gb
Configured Topology	Auto	Configured Topology	Auto
Primary Loop ID	N/A	Primary Loop ID	N/A
SFP Status	OK	SFP Status	OK
Part Number	FTLF8529P3BCV-1H	Part Number	FTLF8529P3BCV-1H
Supported Speeds	4G,8G,16G	Supported Speeds	4G,8G,16G

盘柜创建卷, 大小1000GB, LUN 103, 通过A1映射至82Q Port1和Port2。



UEFI下设置光纤卡  
设置82Q Port1。



Adapter Settings、Boot Settings等过程略。  
WWN Database, Drive WWPN中可见 A1、B1。

# System Configuration

HP Store Fabric 8Gb Dual Port PCI-e FC HBA - FC

## LUN Database

▶ Drive 0 WWPN [0000000000000000:-]  
Drive 0 LUN [0000:-]  
  
Drive 1 WWPN [0000000000000000:-]  
Drive 1 LUN [0000:-]  
  
Drive 2 WWPN [01  
Drive 2 LUN [01  
  
Drive 3 WWPN  
Drive 3 LUN

Changes Pending  
Reboot Required

0000000000000000:-  
247000C0FF1DE213:.\*  
207000C0FF1DE213:.\*

↑↓ Change Selection Enter Select Entry ESC Back F1 Help F7 Defaults F10 Save

Drive0 WWPN选择A1后， Drive0 LUN可见十六进制数值0067，即十进制数值103，为MSA2040卷的LUN值。

# System Configuration

HP Store Fabric 8Gb Dual Port PCI-e FC HBA - FC

## LUN Database

Drive 0 WWPN [207000C0FF1DE213:.\*]  
▶ Drive 0 LUN [0000:-]  
  
Drive 1 WWPN [0000000000000000:-]  
Drive 1 LUN [0000:-]  
  
Drive 2 WWPN [01  
Drive 2 LUN [01  
  
Drive 3 WWPN  
Drive 3 LUN

Changes Pending  
Reboot Required

0000:.\*  
0067:.\*

↑↓ Change Selection Enter Select Entry ESC Back F1 Help F7 Defaults F10 Save

本次测试中，卷仅通过A1端口进行映射至82Q Port1和Port2，未通过B1端口进行映射，故Drive WWPN如选择B1后， Drive LUN中无LUN信息。

# System Configuration

HP Store Fabric 8Gb Dual Port PCI-e FC HBA - FC

## WWN Database

Drive 0 WWPN	[247000C0FF1DE213:~]
▶ Drive 0 LUN	[0000:~]
Drive 1 WWPN	[0000000000000000:~]
Drive 1 LUN	[0000:~]
Drive 2 WWPN	[0]
Drive 2 LUN	[0]
Drive 3 WWPN	[0]
Drive 3 LUN	[0000:~]

Changes Pending  
Reboot Required

↑↓ Change Selection   Enter Select Entry   ESC Back   F1 Help   F7 Defaults   F10 Save

同样，Drive1 WWPN选择A1后， Drive1 LUN选择MSA2040 LUN后，保存配置。

# System Configuration

HP Store Fabric 8Gb Dual Port PCI-e FC HBA - FC

## WWN Database

Drive 0 WWPN	[207000C0FF1DE213:~]
Drive 0 LUN	[0067:~]
Drive 1 WWPN	[207000C0FF1DE213:~]
▶ Drive 1 LUN	[0067:~]
Drive 2 WWPN	[0]
Drive 2 LUN	[0]
Drive 3 WWPN	[0]
Drive 3 LUN	[0]

Changes Pending  
Reboot Required

Change saved.

↑↓ Change Selection   Enter Select Entry   ESC Back   F1 Help   F7 Defaults   F10 Save

设置82Q Port2，过程与Port1设置方法相同，不再赘述。

System Utility → System Configuration → BIOS/Platform Configuration (RBSU) → Boot Options → UEFI Boot Order

测试中，已使用iLO挂载OS镜像，故将iLO Virtual USB CD/DVD ROM调整为第一位置；  
为OS安装完成后，直接从盘柜卷引导启动，故将MSA2040 Volume调整至第二、三位置。

# BIOS/Platform Configuration (RBSU)

BIOS/Platform Configuration (RBSU)

Boot Options → UEFI Boot Order

Press the '+' key to move an entry higher in the boot list and the '-' key to move an entry lower in the boot list. Use the arrow keys to navigate through the Boot Order list.

```
▶ iLO Virtual USB 2 : HPE iLO Virtual USB CD/DVD ROM
Slot 1 Port 1 : HP Store Fabric 8Gb Dual Port PCI-e FC HBA - FC -
Fibre(WUN:207000C0FF1DE213,LUN:0000000000000067)/HP MSA 2040 SAN 622x)
Slot 1 Port 2 : HP Store Fabric 8Gb Dual Port PCI-e FC HBA - FC -
Fibre(WUN:207000C0FF1DE213,LUN:0000000000000067)/HP MSA 2040 SAN 622x)
Windows Boot Manager
Embedded RAID 1 : Smart Array P440ar Controller - 111.76 GiB, RAID 1 Logical Drive
(Target:0, Lun:0)
Generic USB Boot
Embedded LOM 1 Port 1 : HP Ethernet 1Gb 4-port 331i Adapter - NIC (PXE IPv4)
Embedded LOM 1 Port 1 : HP Ethernet 1Gb 4-port 331i Adapter - NIC (PXE IPv6)
Slot 3 Port 1 : HP StorageWorks CN1000Q Dual Port Converged Network Adapter - NIC (PXE IPv4)
Slot 3 Port 1 : HP StorageWorks CN1000Q Dual Port Converged Network Adapter - NIC (PXE IPv6)
```

↑↓ Change Selection   Enter Select Entry   ESC Back   F1 Help   F7 Defaults   F10 Save

## 安装OS

退出System Utility后，主机重启，再次启动后，通过OS安装镜像引导启动。

测试使用rhel-server-6.6-x86\_64-dvd.iso。

Press any key to enter the menu

Booting Red Hat Enterprise Linux 6.6 in 3 seconds... █

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What type of devices will your installation involve?

### Basic Storage Devices

Installs or upgrades to typical types of storage devices. If you're not sure which option is right for you, this is probably it.

### Specialized Storage Devices

Installs or upgrades to enterprise devices such as Storage Area Networks (SANs). This option will allow you to add FCoE / iSCSI / zFCP disks and to filter out devices the installer should ignore.

← Back

Next →

Please select the drives you'd like to install the operating system on, as well as any drives you'd like to automatically mount to your system, below:

Basic Devices Firmware RAID Multipath Devices Other SAN Devices Search

Model	Capacity (MB)	Interconnect	Serial Number	Identifier
HP LOGICAL VOLUME 114439		SCSI	3600508b1001c451c5cb1e363058aeaf	3:60:05:08:b1:00:1c:45:1c:5c:b8:1e:36:30:58:ae

0 device(s) (0 MB) selected out of 2 device(s) (1067311 MB) total.

**Tip:** Selecting a drive on this screen does not necessarily mean it will be wiped by the installation process. Also, note that post-installation you may mount drives you did not select here by modifying your /etc/fstab file.

Device Options Add Advanced Target

Back Next

Multipath Devices中可见聚合后的MSA2040 Volume。

Please select the drives you'd like to install the operating system on, as well as any drives you'd like to automatically mount to your system, below:

Basic Devices Firmware RAID Multipath Devices Other SAN Devices Search

Filter By: Show Only Devices Using:

Identifier	Capacity (MB)	Vendor	Interconnect	Paths
<input checked="" type="checkbox"/> 3:60:0c:0f:f0:00:1e:04:2f:fd:84:ea:57:01:00:00:00	952872	HP	SCSI	sdb sdc


1 device(s) (952872 MB) selected out of 2 device(s) (1067311 MB) total.

**Tip:** Selecting a drive on this screen does not necessarily mean it will be wiped by the installation process. Also, note that post-installation you may mount drives you did not select here by modifying your /etc/fstab file.

Device Options Add Advanced Target

Back Next

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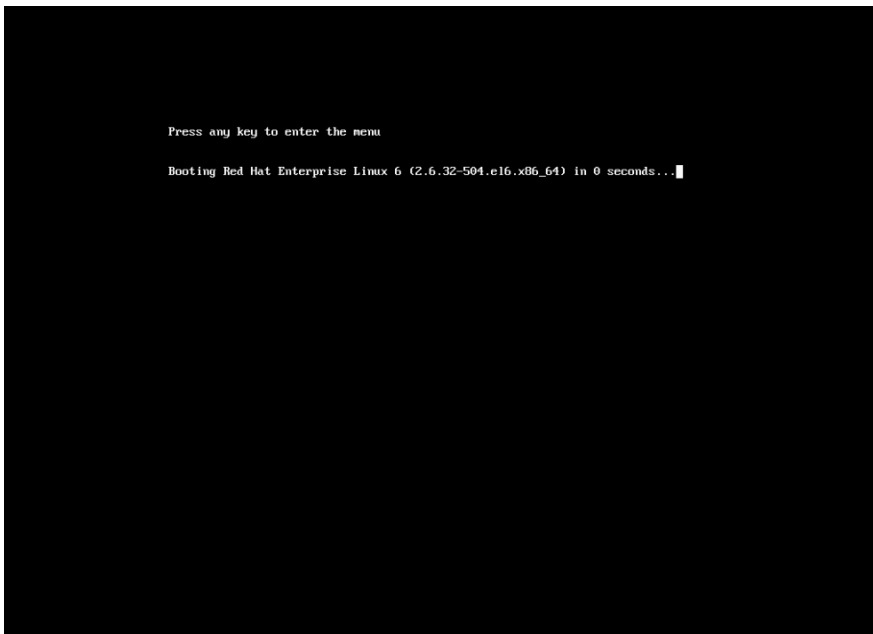


Congratulations, your Red Hat Enterprise Linux installation is complete.

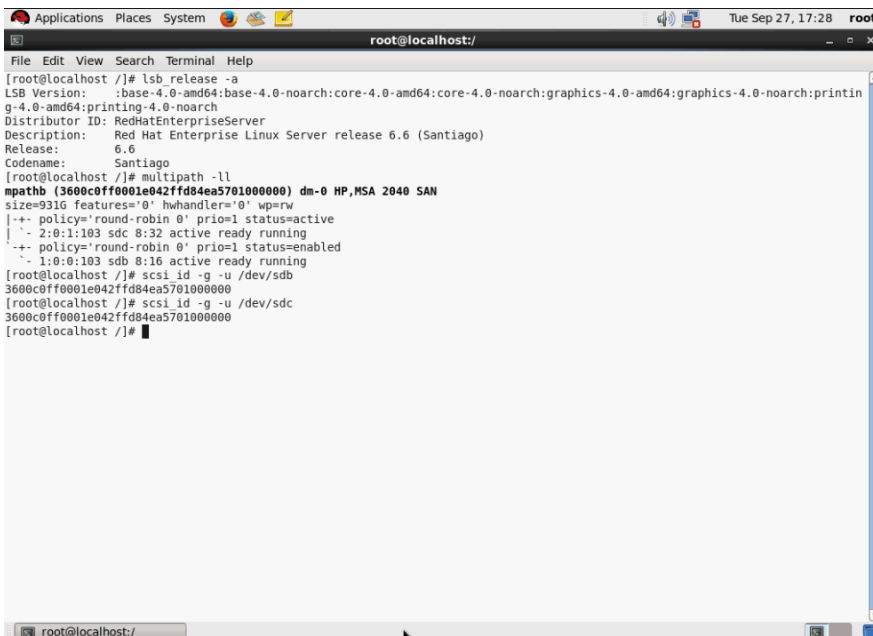
Please reboot to use the installed system. Note that updates may be available to ensure the proper functioning of your system and installation of these updates is recommended after the reboot.

Back Reboot

安装完成后，登录OS。



RHEL主机已使用Native Device-Mapper将存储卷进行多路径聚合，若非优化配置，需按照《Native Linux Device-Mapper Multipath for HPE StorageWorks Arrays Reference Guide》进一步进行优化配置，非本次实验测试范围，不进行测试说明。



#### 配置关键点