

H3C G7 飞腾平台服务器

LSI-9560 系列阵列卡在 BIOS 中配置 RAID

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一. 适用范围与注意事项

- 本文档旨在说明 H3C G7 飞腾系列服务器 LSI-9560 系列存储控制卡在 BIOS 下配置阵列的方法，并以 R4970 G7 服务器为例进行配置步骤说明。
- 本文所述安装过程如涉及挂载文件/文件夹（高级版），需要购买 HDM License，如想要使用此功能请联系经销商购买并在激活后使用。
HDM License 的注册安装方法请参考：<https://zhiliao.h3c.com/Theme/details/232557>
- 如文中方法不适用或阵列卡型号不匹配，可以通过下面导航链接查找适用文档：
<https://zhiliao.h3c.com/Theme/details/208527>
- 提示：
本文档中的信息（包括产品，软件版本和设置参数）仅作参考示例，具体操作与目标需求设置请以

实际为准。

本文档不定期更新维护，请以发布的最新版本为准。

二. 配置准备

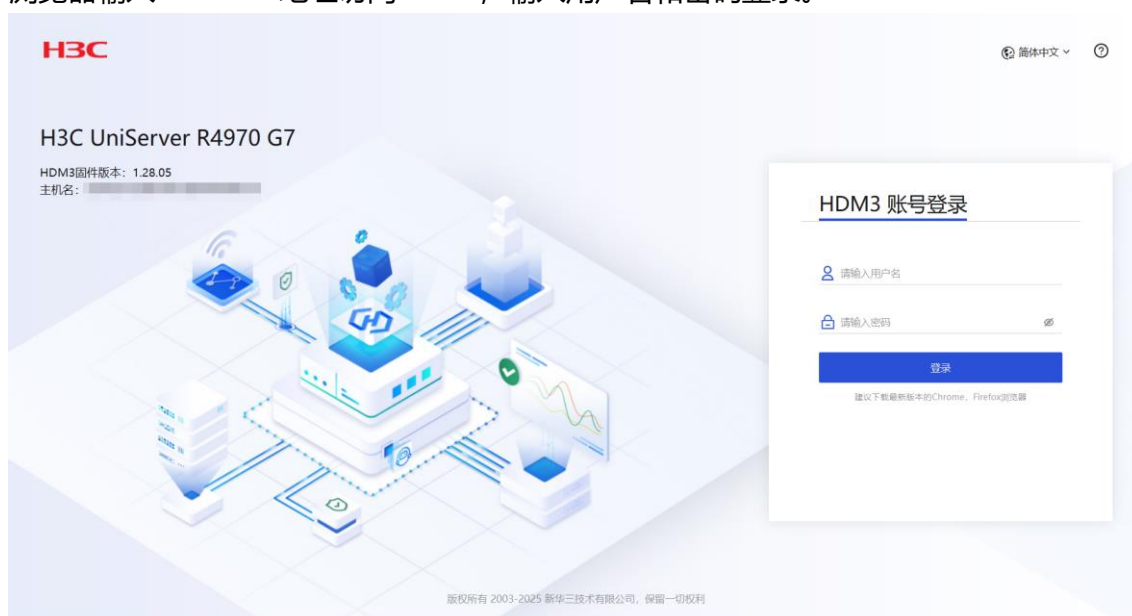
1. 连接 HDM 与启用远程控制台

具体方法请参考：<https://zhiliao.h3c.com/theme/details/232282>

三. 配置步骤

1. 访问 HDM 并启用 KVM/H5 KVM

1) 浏览器输入 HDM IP 地址访问 HDM，输入用户名和密码登录。



2) 选择 **H5 KVM** 或 **KVM** 启用控制台。



注：现场同样可使用显示器、鼠标和键盘等外设与服务器进行交互。

2. 设置阵列卡工作模式

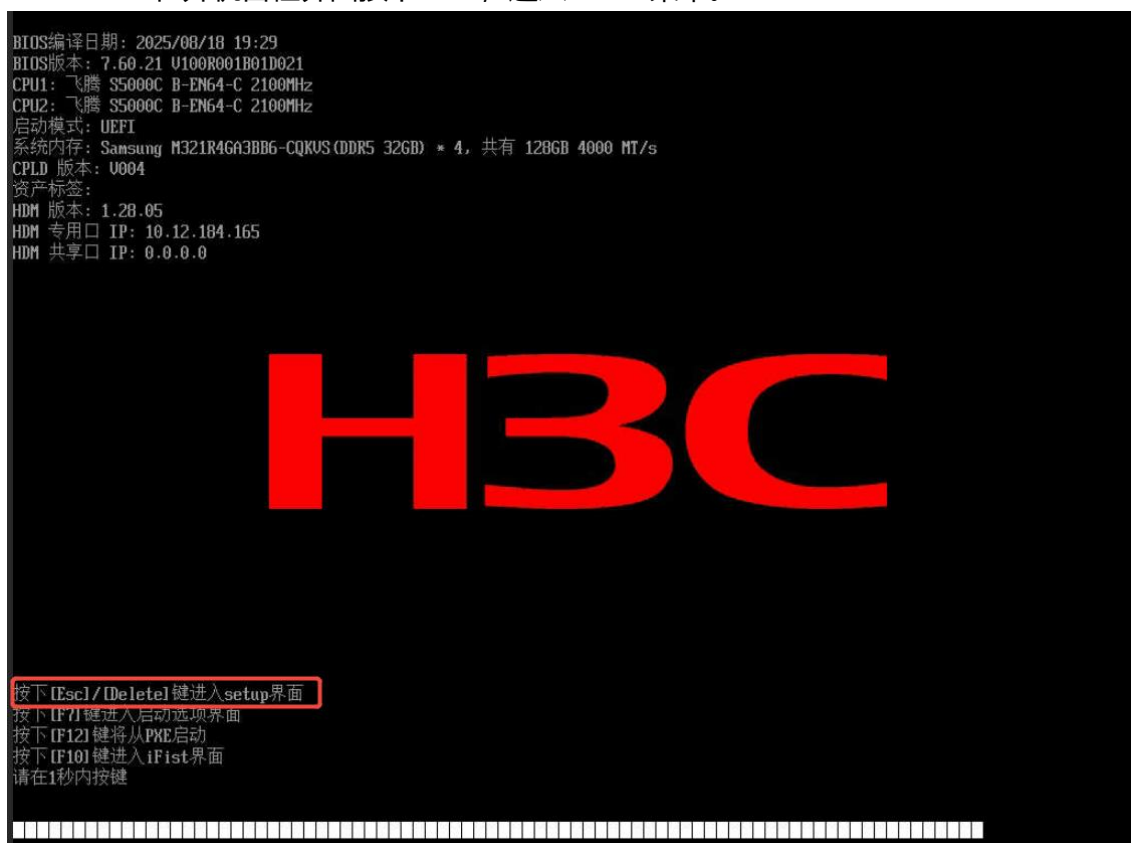
注：

- 切换存储控制卡工作模式后，原模式的系统盘可能出现异常，从而导致操作系统无法正常启动，

执行此操作前请确保提前备份数据。如果既要配置逻辑盘又要配置直通盘，建议在 RAID 模式下直接把需要配置直通盘的硬盘切换为 JBOD 来使用，请参考本文[设置硬盘直通](#)。

- 当切换存储控制卡模式为 JBOD 模式时，存储控制卡上的逻辑盘也可以一并切换至 JBOD 模式，需要注意的是，当强制进行切换的时候，不支持的逻辑盘无法保留数据。以 RAID-LSI-9560-LP-8i-4GB 举例，RAID 5，RAID 6，RAID 50，RAID 60 的逻辑盘无法切换为 JBOD 模式，具体以界面提示信息为准。

- 1) UEFI BIOS 在开机自检界面按下 **ESC**，进入 BIOS 菜单。



- 2) 依次进入 **Advanced>UEFI HII Configuration** 页签下找到并进入阵列卡菜单。



- 3) 依次进入 **Main Menu >Controller Management>Advanced Controller Management>Manage Personality Mode** 设置阵列卡的工作模式, 当前为 RAID 模式, 如需切换到 JBOD 模式, 则选择 **Switch to JBOD Mode**, 按 **Enter**。

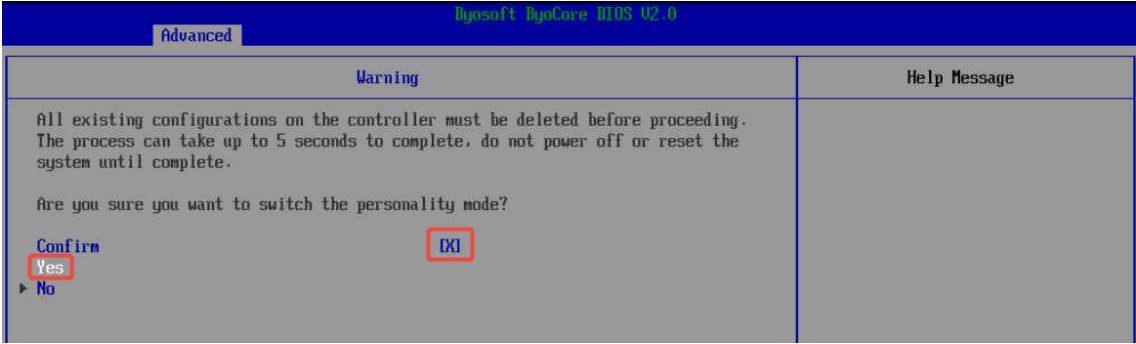
Dyosoft DyoCore BIOS V2.0		
Advanced		
Dashboard View		Help Message
▶ Main Menu ▶ Help PROPERTIES: Status <Needs Attention> Backplane [1] CacheVault <Yes> Enclosure [0] Drives [5] JBODs [0] Drive Groups [3] Virtual Drives [3] ▶ View Server Profile		Shows menu options such as Configuration Management, Controller Management, Virtual Drive Management, Drive Management and Hardware Components.
Dyosoft DyoCore BIOS V2.0		
Advanced		
Main Menu		Help Message
▶ Configuration Management ▶ Controller Management ▶ Virtual Drive Management ▶ Drive Management ▶ Hardware Components		Displays the controller status and basic properties of the controller such as product name, serial number, PCI ID, firmware version and NUDATA Version. You can also use the
Dyosoft DyoCore BIOS V2.0		
Advanced		
Controller Management		Help Message
BASIC PROPERTIES: Product Name MegaRAID 9560-8i 4GB Serial Number SKC3426123 Controller Status <Needs Attention> Personality Mode <RAID> Select Boot Device <Virtual Drive 239: RAID0, 2.182TB, Optimal> PCI ID 0x100010x10E210x100010x4010 PCI Segment:Bus:Device:Function 0x000010x00110x0010x0 PCI Slot Number 3 Package Version 52.28.0-5305 PSOC Firmware Version 0x001A Firmware Version 5.280.02-3972 NUDATA Version 5.2800.00-0752 Supported Device Interfaces SAS,SATA,NUMe Drive Count [5] JBOD Count [0] Virtual Drive Count [3] ▶ Advanced Controller Management ▶ Advanced Controller Properties		Provides a link to various controller management activities such as, clear and save controller events, schedule a consistency check, set factory defaults, and so on.
Dyosoft DyoCore BIOS V2.0		
Advanced		
Advanced Controller Management		Help Message
▶ Clear Controller Events ▶ Save Controller Events ▶ Save TTY Log ▶ Enable Drive Security ▶ Disable Drive Security ▶ Change Security Settings ▶ Manage SAS Storage Link Speed ▶ Manage PCIe Storage Interface ▶ Manage MegaRAID Advanced Software Options ▶ Schedule Consistency Check ▶ Set Factory Defaults ▶ Enable Host LED Management for JBOD ▶ Manage Personality Mode ▶ Manage Controller Profiles		Allows you to change the controller personality, auto-config behavior (if applicable) and it's parameters.



注：工作模式说明如下。

- RAID: 切换存储控制卡到 RAID 模式。默认存储控制卡工作在 RAID 模式。
- JBOD: Just a Bunch Of Disks，直通盘，不可用于配置 RAID。

4) 设置工作模式后，选择 **Confirm**，使其 **Enabled**，选择 **Yes**，按 **Enter**。

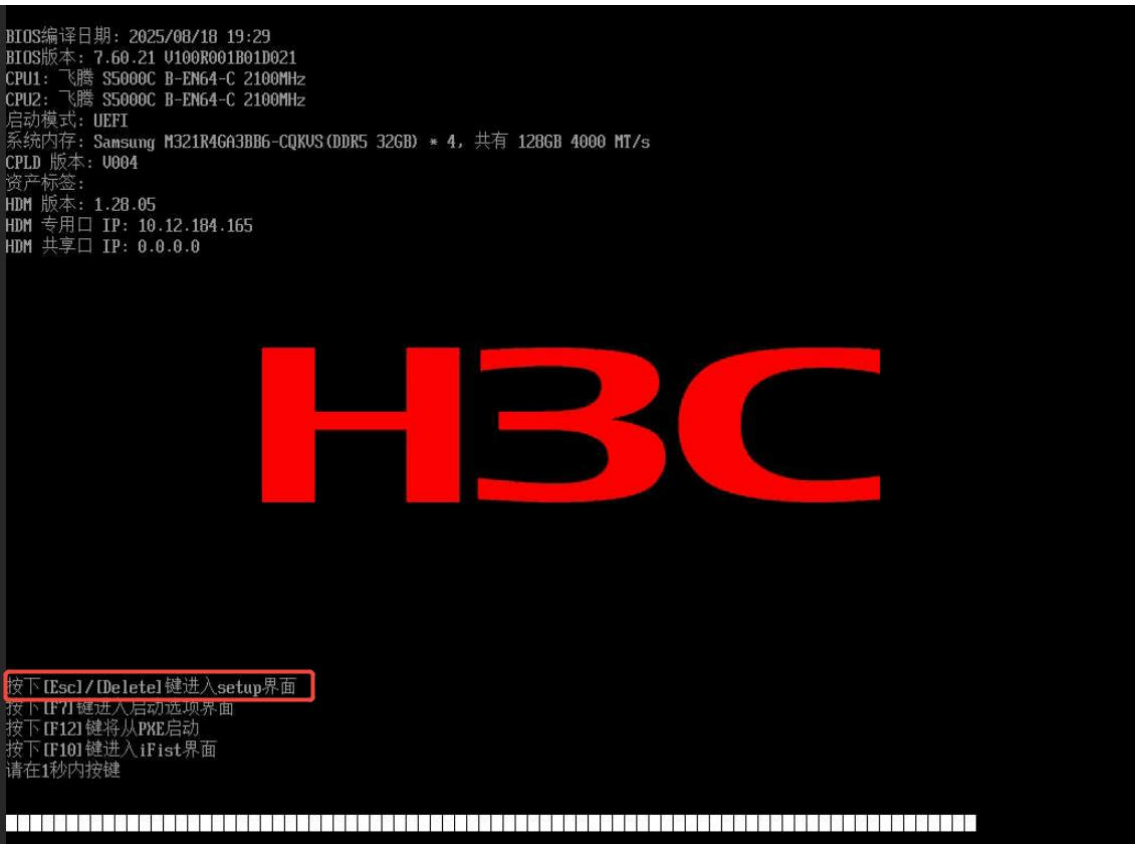


3. 创建与删除阵列

3.1 创建阵列

3.1.1 创建 RAID 0

1) UEFI BIOS 在开机自检界面按下 **ESC**，进入 BIOS 菜单。



2) 依次进入 **Advanced>UEFI HII Configuration** 页签下找到并进入阵列卡菜单。



AdvancedByosoft ByoCore BIOS V2.0	
UEFI HII Configuration	Help Message
<ul style="list-style-type: none">▶ Tls Auth Configuration▶ Driver Health Manager▶ Slot 3: BROADCOM <MegaRAID 9560-8i 4GB> Configuration Utility - 07.28.04.00▶ Slot 1: Port 1 - Intel(R) I350 Gigabit Network Connection - AC:CE:92:FC:69:8E▶ Slot 1: Port 1 - IPv4 Network Configuration (MAC:ACCE92FC698E)▶ Slot 1: Port 1 - IPv6 Network Configuration (MAC:ACCE92FC698E)▶ Slot 1: Port 2 - Intel(R) I350 Gigabit Network Connection - AC:CE:92:FC:69:8F▶ Slot 1: Port 2 - IPv4 Network Configuration (MAC:ACCE92FC698F)▶ Slot 1: Port 2 - IPv6 Network Configuration (MAC:ACCE92FC698F)▶ Slot 1: Port 3 - Intel(R) I350 Gigabit Network Connection - AC:CE:92:FC:69:90▶ Slot 1: Port 3 - IPv4 Network Configuration (MAC:ACCE92FC6990)▶ Slot 1: Port 3 - IPv6 Network Configuration (MAC:ACCE92FC6990)▶ Slot 1: Port 4 - Intel(R) I350 Gigabit Network Connection - AC:CE:92:FC:69:91▶ Slot 1: Port 4 - IPv4 Network Configuration (MAC:ACCE92FC6991)▶ Slot 1: Port 4 - IPv6 Network Configuration (MAC:ACCE92FC6991)	Manage RAID Controller Configurations.

- 3) 依次选择 **Main Menu>Configuration Management>Create Virtual Drive**，按 **Enter** 进入后开始创建

AdvancedByosoft ByoCore BIOS V2.0																	
Dashboard View	Help Message																
<ul style="list-style-type: none">▶ Main Menu▶ Help <p>PROPERTIES:</p> <table><tr><td>Status</td><td><Needs Attention></td></tr><tr><td>Backplane</td><td>[1]</td></tr><tr><td>CacheVault</td><td><Yes></td></tr><tr><td>Enclosure</td><td>[0]</td></tr><tr><td>Drives</td><td>[5]</td></tr><tr><td>JBODs</td><td>[0]</td></tr><tr><td>Drive Groups</td><td>[3]</td></tr><tr><td>Virtual Drives</td><td>[3]</td></tr></table> <ul style="list-style-type: none">▶ View Server Profile	Status	<Needs Attention>	Backplane	[1]	CacheVault	<Yes>	Enclosure	[0]	Drives	[5]	JBODs	[0]	Drive Groups	[3]	Virtual Drives	[3]	Shows menu options such as Configuration Management, Controller Management, Virtual Drive Management, Drive Management and Hardware Components.
Status	<Needs Attention>																
Backplane	[1]																
CacheVault	<Yes>																
Enclosure	[0]																
Drives	[5]																
JBODs	[0]																
Drive Groups	[3]																
Virtual Drives	[3]																

AdvancedByosoft ByoCore BIOS V2.0	
Main Menu	Help Message
<ul style="list-style-type: none">▶ Configuration Management▶ Controller Management▶ Virtual Drive Management▶ Drive Management▶ Hardware Components	Displays the controller status and basic properties of the controller such as product name, serial number, PCI ID, firmware version and MUDATA Version. You can also use the

AdvancedByosoft ByoCore BIOS V2.0	
Configuration Management	Help Message
<ul style="list-style-type: none">▶ Auto Configure RAID 0▶ Create Virtual Drive▶ Create Profile Based Virtual Drive▶ Make JBOD▶ Clear Configuration	Creates a virtual drive by selecting the RAID level, drives, and virtual drive parameters.

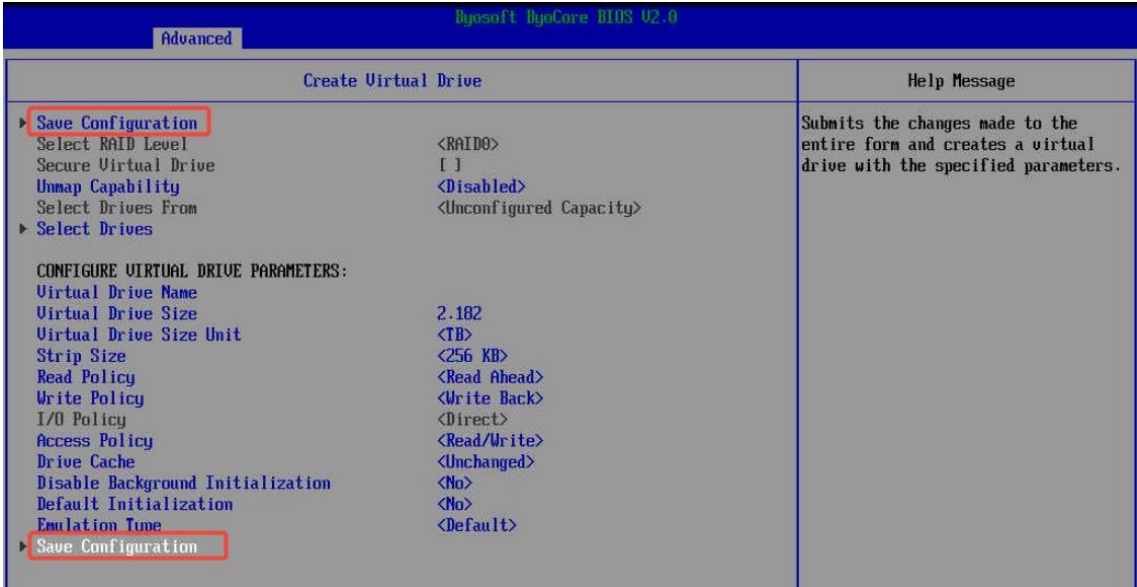
- 4) 设置 RAID Level 为 RAID 0；在 **Select Drives** 中选择成员盘，**Enabled** 表明已选中成员盘，点击 **Apply Changes** 保存选项。

Advanced		Byosoft ByoCore BIOS V2.0	
Create Virtual Drive		Help Message	
<div>▶ Save Configuration</div> <div>Select RAID Level</div> <div>Secure Virtual Drive</div> <div>Unmap Capability</div> <div>Select Drives From</div> <div>▶ Select Drives</div>	<div><RAID0></div> <div>[]</div> <div><Disabled></div> <div><Unconfigured Capacity></div>	<div>Selects the desired RAID level. The RAID levels that can be configured, if supported, are 0, 1, 5, 6, 00, 10, 50, and 60.</div> <div>RAID 0 -- uses drive striping to provide high data throughput, especially for large files in an environment that requires no data redundancy.</div> <div>RAID 1 -- uses drive mirroring on one pair of drives and stripped mirroring on more than one pair of drives so that data written to one drive is simultaneously written to another drive. RAID 1 configuration works well for small databases or other applications that require small capacity and complete data redundancy.</div>	
CONFIGURE VIRTUAL DRIVE PARAMETERS:			
Virtual Drive Name			
Virtual Drive Size			
Virtual Drive Size Unit	<GB>		
Strip Size	<256 KB>		
Read Policy	<Read Ahead>		
Write Policy	<Write Back>		
I/O Policy	<Direct>		
Access Policy	<Read/Write>		
Drive Cache	<Unchanged>		
Disable Background Initialization	<No>		
Default Initialization	<No>		
Emulation Type	<Default>		
▶ Save Configuration			

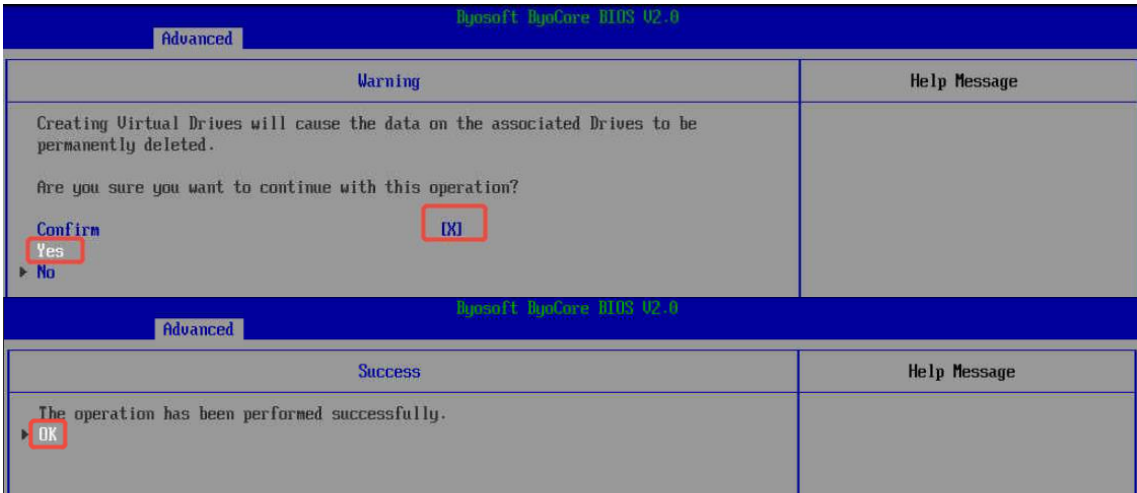
Advanced		Byosoft ByoCore BIOS V2.0	
Select Drives		Help Message	
<div>▶ Apply Changes</div> <div>Select Media Type</div> <div>Select Interface Type</div> <div>Logical Sector Size</div>	<div><Both></div> <div><All></div> <div><Both></div>	<div>Submits the changes made to the entire form.</div>	
CHOOSE UNCONFIGURED DRIVES:			
Drive C0.0:01:00: HDD, SAS, 2.182TB, Unconfigured Good, (512B)	[X]		
Drive C0.0:01:01: HDD, SAS, 2.182TB, Unconfigured Good, (512B)	[]		
Drive C0.0:01:02: HDD, SAS, 2.182TB, Unconfigured Good, (512B)	[]		
Drive C0.1:01:04: HDD, SAS, 2.182TB, Unconfigured Good, (512B)	[]		
Check All			
Uncheck All			
▶ Apply Changes			

Advanced		Byosoft ByoCore BIOS V2.0	
Success		Help Message	
<div>The operation has been performed successfully.</div> <div>▶ OK</div>			

5) RAID 级别与成员盘设置完成后，选择 **Save Configuration** 保存阵列选项。

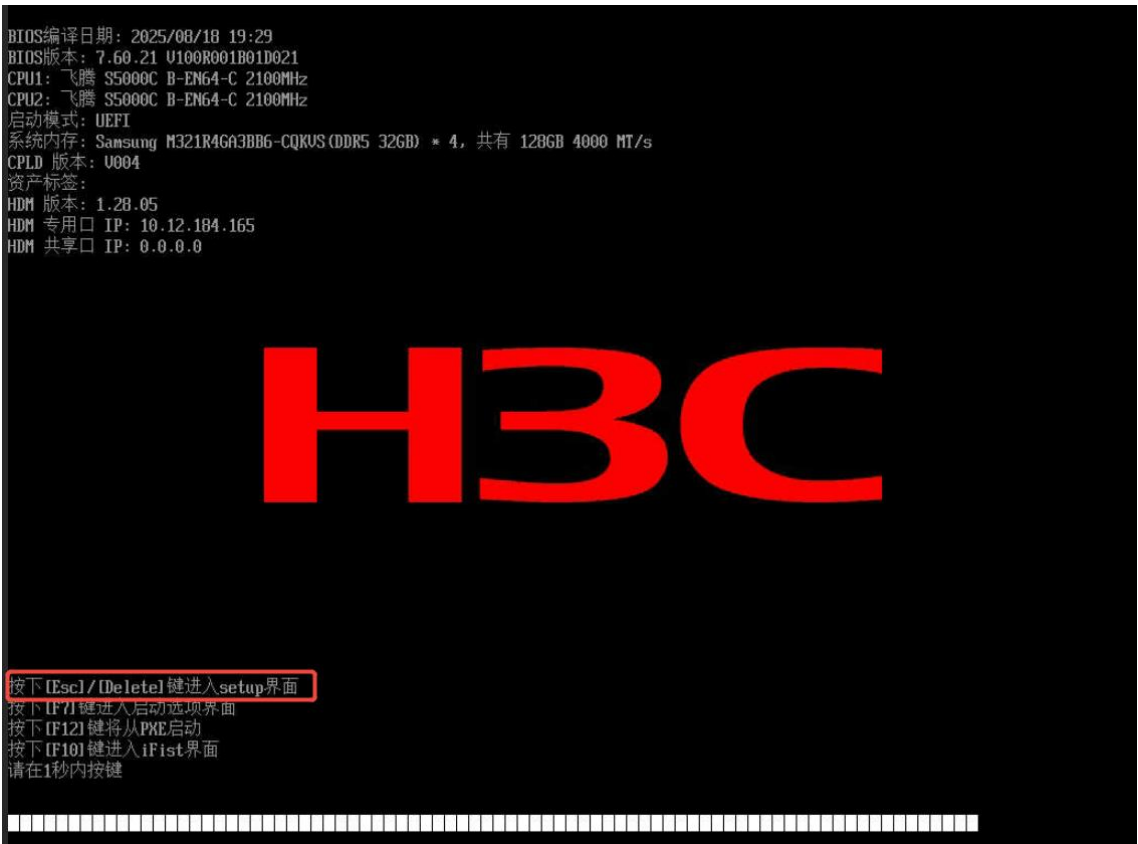


6) 将 **Confirm** 选项设置为 **Enabled**，点击 **Yes**，再点击 **OK**，完成配置。

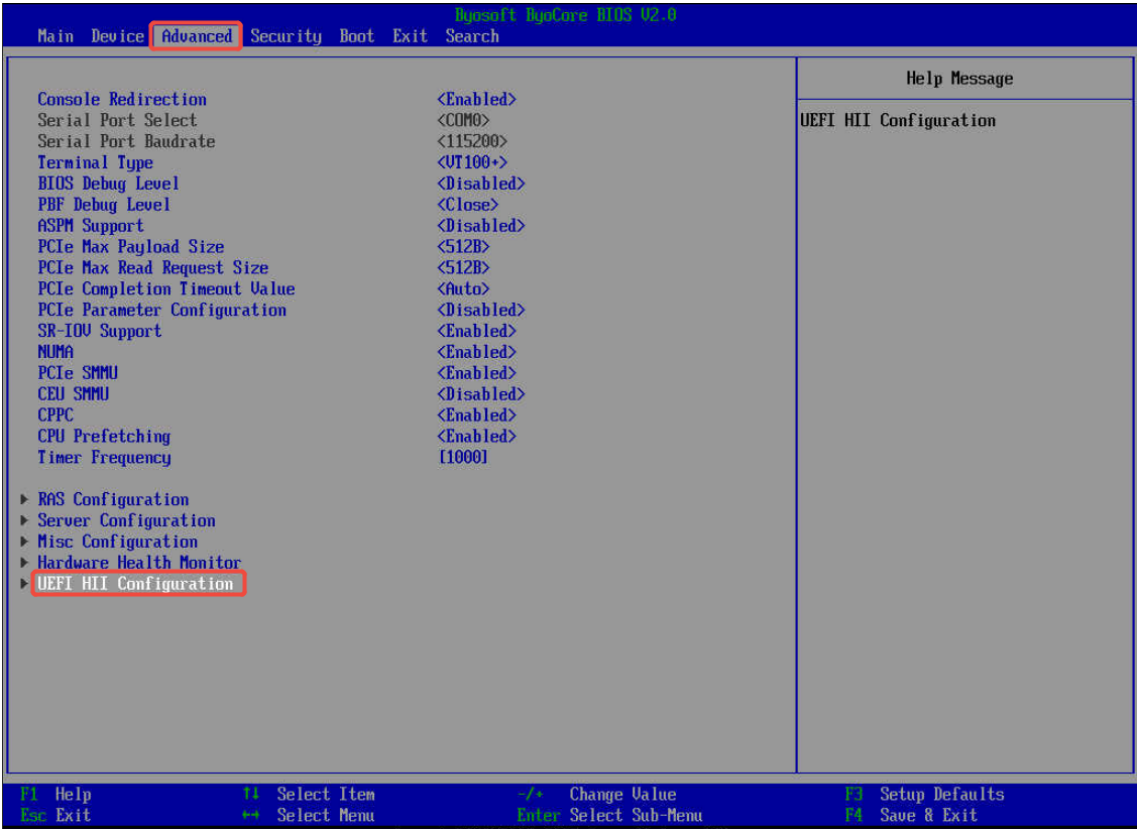


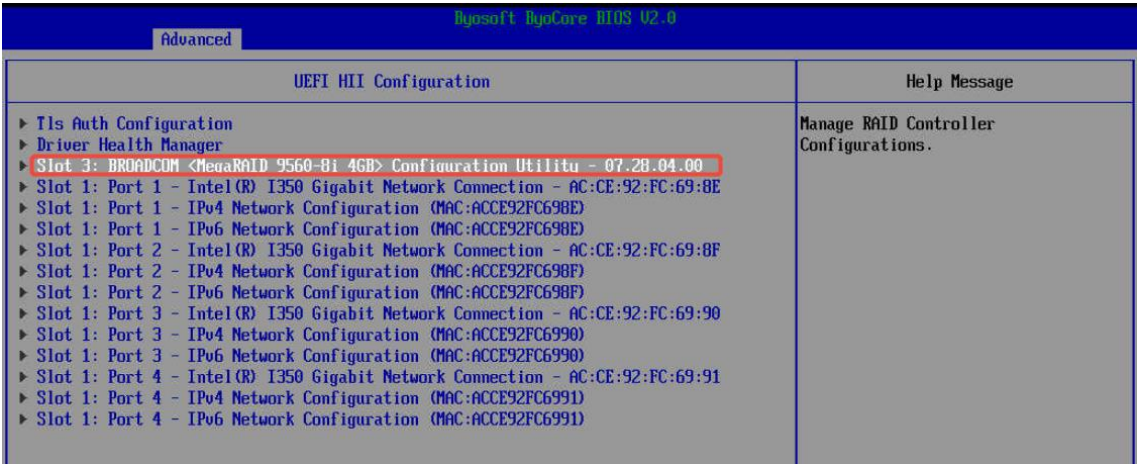
3.1.2 创建 RAID 10

1) UEFI BIOS 在开机自检界面按下 **ESC**，进入 BIOS 菜单。

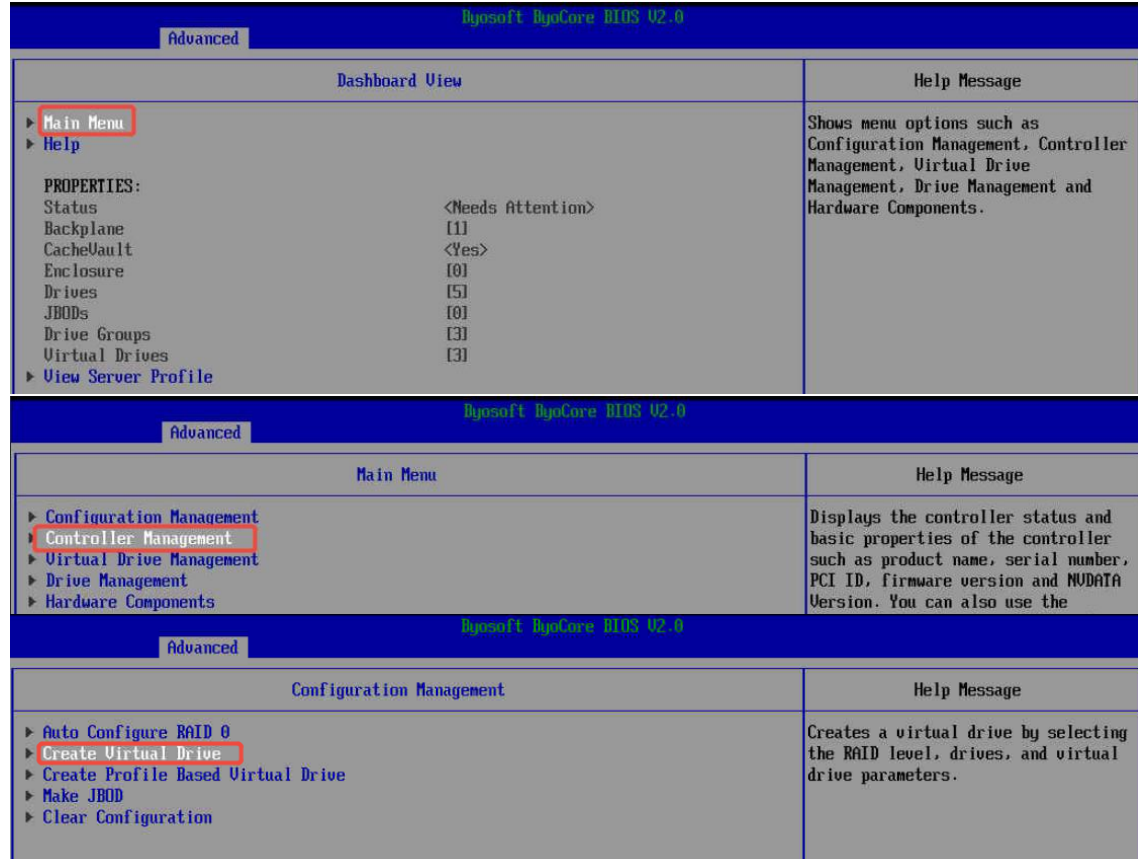


2) 依次进入 **Advanced>UEFI HII Configuration** 页签下找到并进入阵列卡菜单

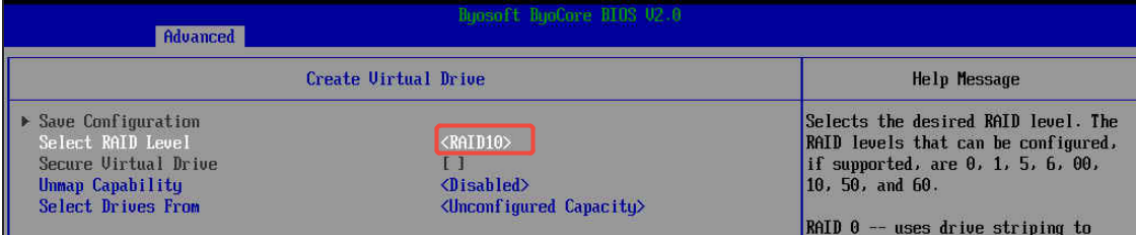




3) 依次选择 **Main Menu>Configuration Management>Create Virtual Drive**，按 **Enter** 进入后开始创建。



4) 设置 RAID Level 为 RAID 10。



- | | | | |
|--|--|---|--|
| Advanced | | Dyosoft DyoCore BIOS V2.0 | |
| Create Virtual Drive | | Help Message | |
| <p>► Save Configuration</p> <p>Select RAID Level <RAID10></p> <p>Secure Virtual Drive []</p> <p>Unmap Capability <Disabled></p> <p>Select Drives From <Unconfigured Capacity></p> <p>SELECT SPAN(S) :</p> <p>Span 0:</p> <p>► Select Drives</p> <p>Add More Spans</p> | | Allows you to select drives for creating virtual drive. | |
| Advanced | | Dyosoft DyoCore BIOS V2.0 | |
| Select Drives | | Help Message | |
| <p>► Apply Changes</p> <p>Select Media Type <Both></p> <p>Select Interface Type <All></p> <p>Logical Sector Size <Both></p> <p>CHOOSE UNCONFIGURED DRIVES:</p> <p>Drive C0.0:01:00: HDD, SAS, 2.182TB, [X]</p> <p>Unconfigured Good, (512B)</p> <p>Drive C0.0:01:01: HDD, SAS, 2.182TB, [X]</p> <p>Unconfigured Good, (512B)</p> <p>Drive C0.0:01:02: HDD, SAS, 2.182TB, []</p> <p>Unconfigured Good, (512B)</p> <p>Drive C0.1:01:04: HDD, SAS, 2.182TB, []</p> <p>Unconfigured Good, (512B)</p> <p>Check All</p> <p>Uncheck All</p> <p>► Apply Changes</p> | | | |
| Advanced | | Dyosoft DyoCore BIOS V2.0 | |
| Success | | Help Message | |
| <p>The operation has been performed successfully.</p> <p>► OK</p> | | | |

- | Create Virtual Drive | | Help Message |
|---|---|--------------|
| <p>▶ Save Configuration</p> <p>Select RAID Level <RAID10></p> <p>Secure Virtual Drive []</p> <p>Unmap Capability <Disabled></p> <p>Select Drives From <Unconfigured Capacity></p> <p>SELECT SPAN(S) :</p> <p>Span 0: (Drive C0.0:01:00 SAS) (Drive C0.0:01:01 SAS)</p> <p>▶ Select Drives</p> <p>Add More Spans</p> | <p>Active when configuring a spanned virtual drive. It allows the user to add additional spans.</p> | |



7) 所有 Span 设置完成后，选择 **Save Configuration** 完成配置，生成阵列。

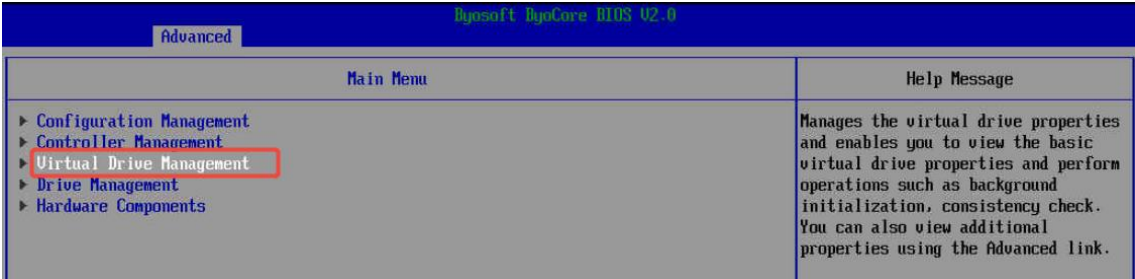


注：配置 RAID 50 和 RAID 60 时也需要先配置 Span，配置方法与 RAID 10 相同，下面为设置 Span 的说明：

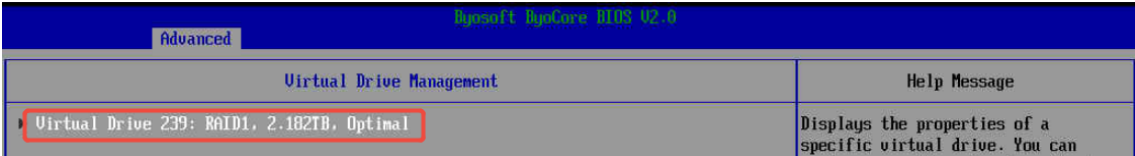
- RAID 10 支持 2~8 个 Span，每个 Span 支持的硬盘数为 2~16（偶数），且各个 Span 的硬盘数量必须保持一致。
- RAID 50 支持 2~8 个 Span，每个 Span 支持的硬盘数为 3~32，且各个 Span 的硬盘数量必须保持一致。
- RAID 60 支持 2~8 个 Span，每个 Span 支持的硬盘数为 3~32，且各个 Span 的硬盘数量必须保持一致。

3.2 删除阵列

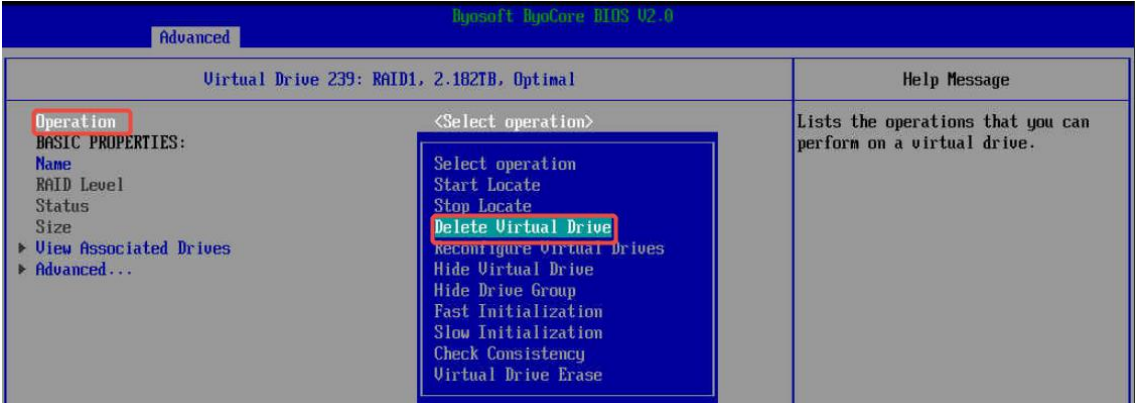
- 1) 在存储控制卡配置界面选择 **Virtual Drive Management**，按 **Enter**。



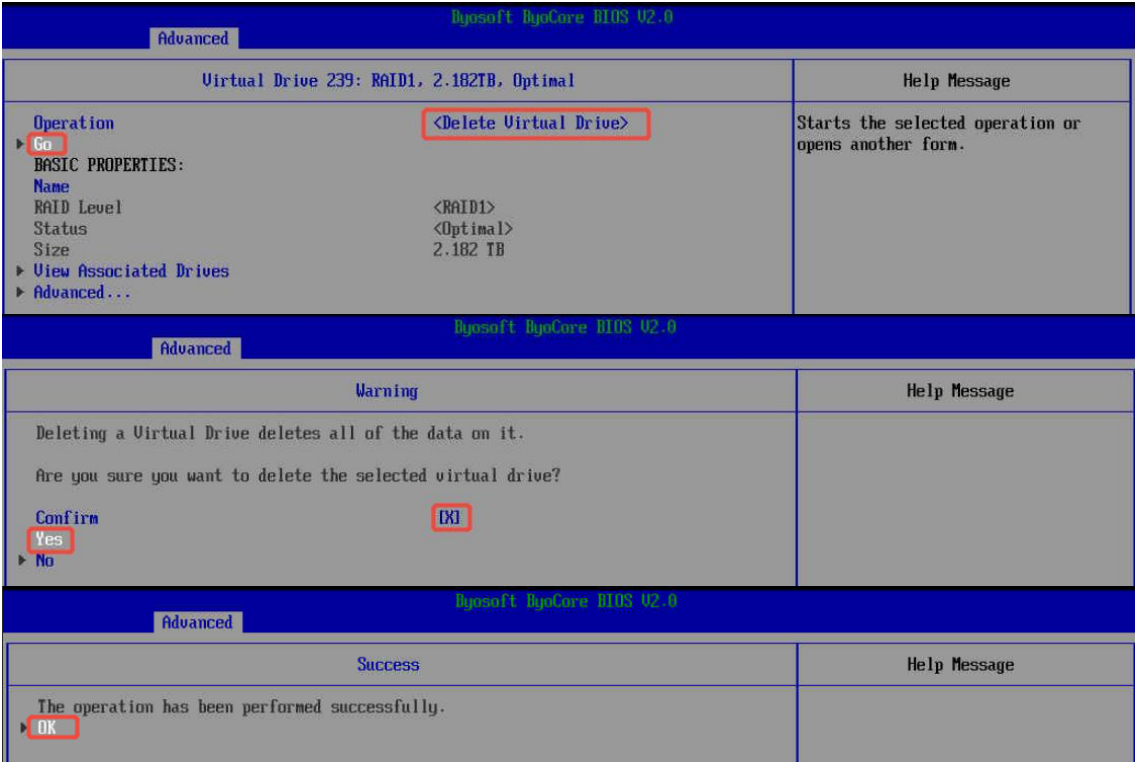
2) 选择待删除的逻辑磁盘，按 **Enter**。



3) 选中 **Operation**，按 **Enter**，然后在对话框中选择 **Delete Virtual Drive**，按 **Enter**。



4) 选择 **Go**，确认操作；选择 **Confirm**，使其 **Enabled**，选择 **Yes**，按 **Enter**。



4. 创建与删除热备

热备盘类型：

- 全局热备盘 (Global Spare)：为存储控制卡上存在的全部具有冗余功能的 RAID 提供热备，可将一块或多块磁盘配置为全局热备盘。全局热备盘可自动替换任意 RAID 中出现的故障盘。
- 专属热备盘 (Dedicated Spare)：为存储控制卡上某个指定具有冗余功能的 RAID 提供热备，每个 RAID 都可配置一个或多个专属热备盘。专属热备盘可自动替换指定 RAID 内出现的故障盘。

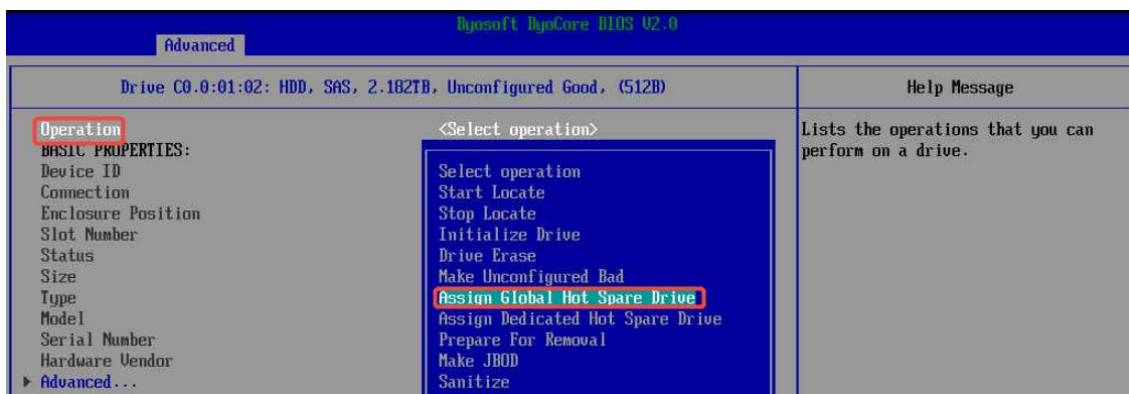
4.1 创建热备

4.1.1 创建全局热备

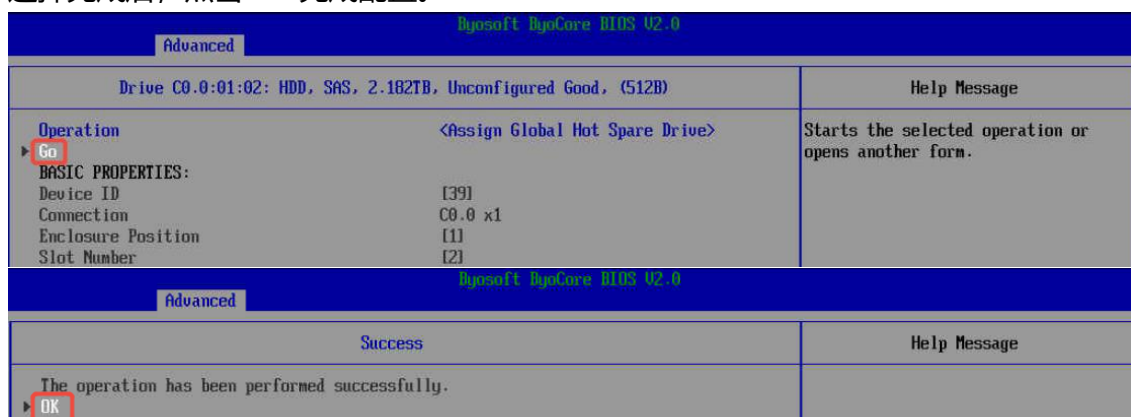
1) 选择 **Main Menu > Drive Management**，找到并进入需要配置为热备盘的硬盘。



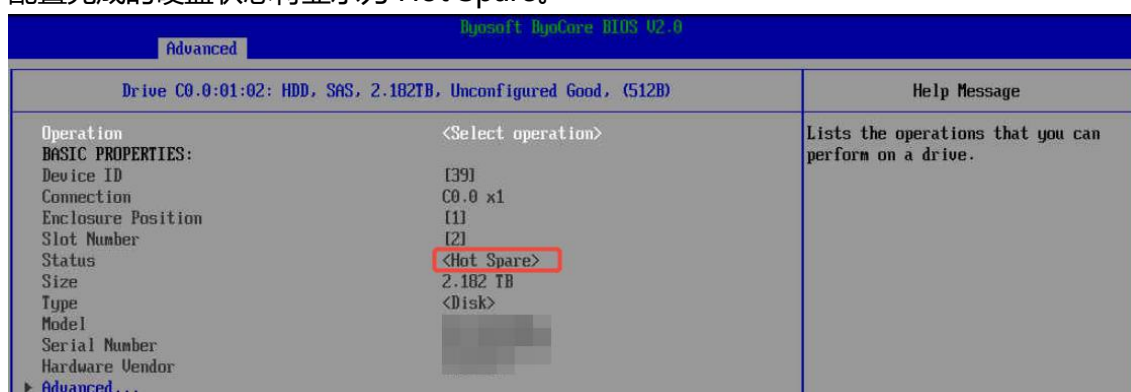
2) 选中 **Operation**，按 **Enter**，然后再选择 **Assign Global Hot Spare Drive**，按 **Enter**。



3) 选择完成后，点击 **Go** 完成配置。

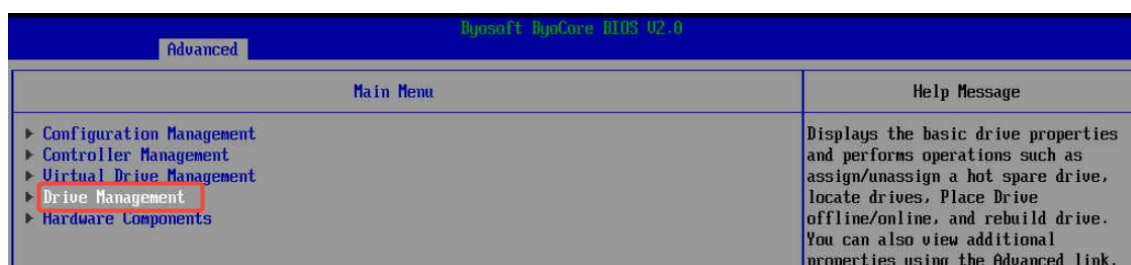
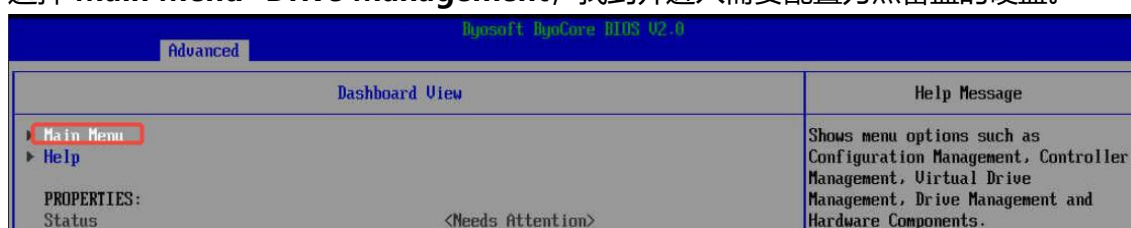


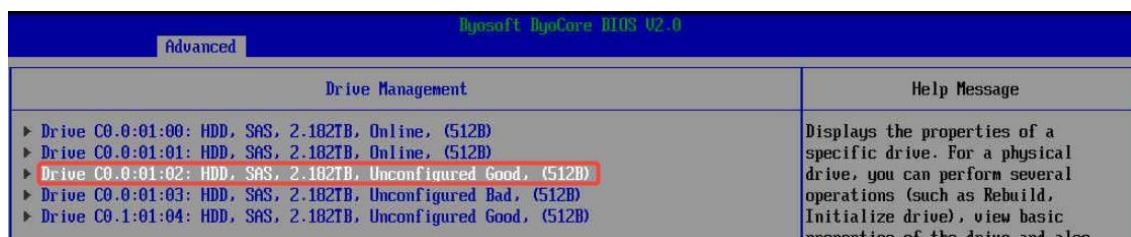
4) 配置完成的硬盘状态将显示为 Hot Spare。



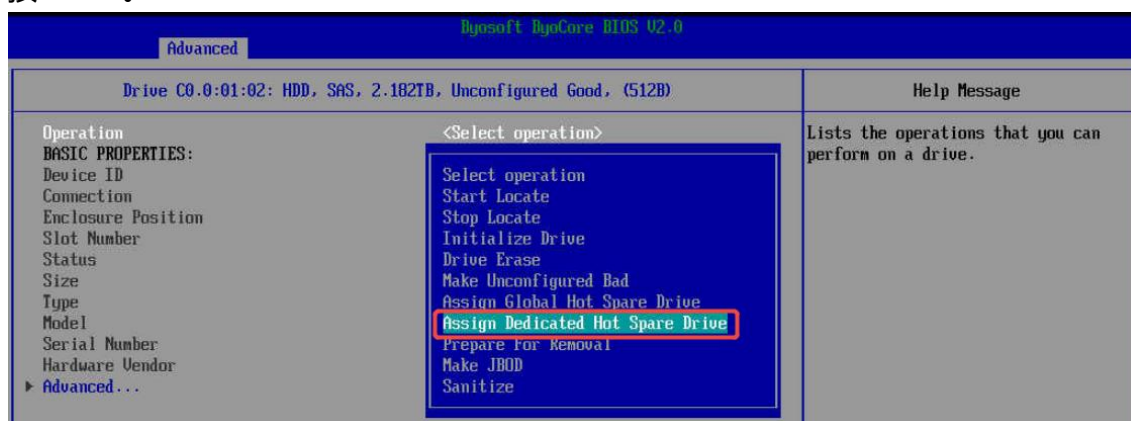
4.1.2 创建专用热备

1) 选择 **Main Menu > Drive Management**，找到并进入需要配置为热备盘的硬盘。

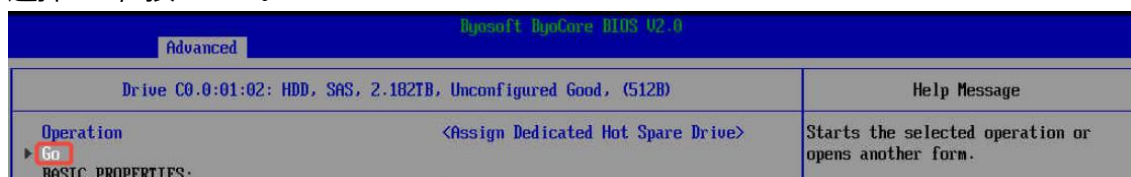




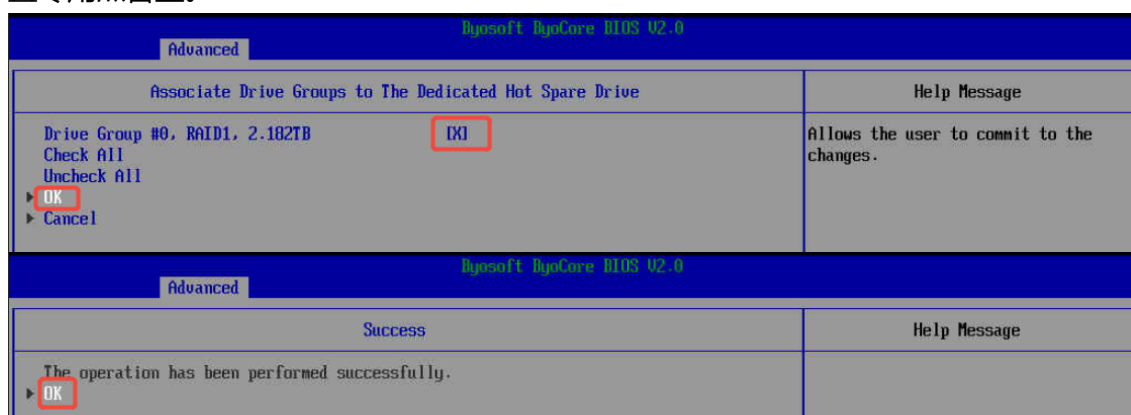
- 2) 选中 **Operation**，按 **Enter**，然后再选择 **Assign Dedicated Hot Spare Drive**，按 **Enter**。

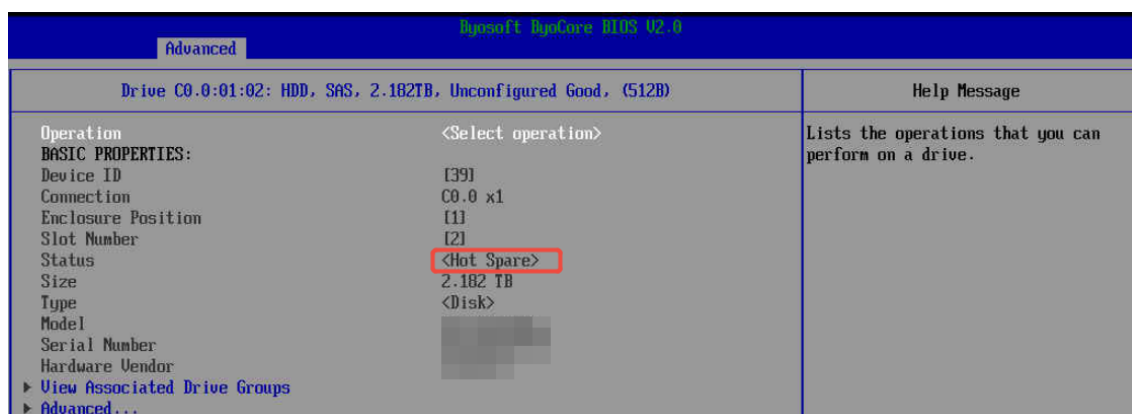


- 3) 选择 **Go**，按 **Enter**。



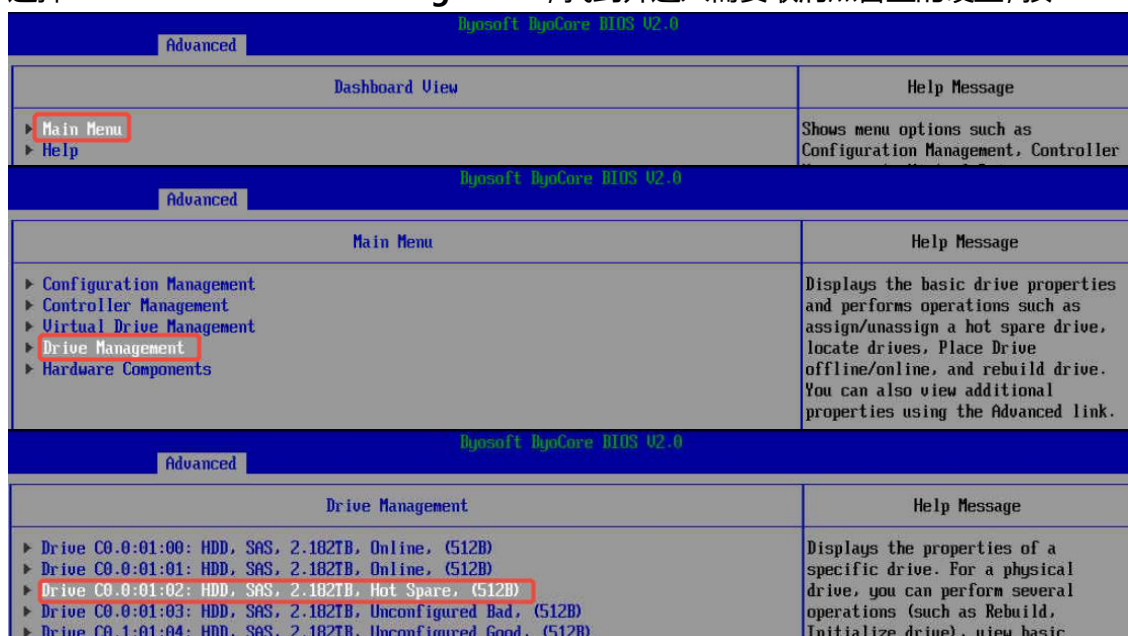
- 4) 选择需要配置专用热备盘的逻辑磁盘，使其 **Enabled**，选择 **OK**，按 **Enter**，完成配置专用热备盘。



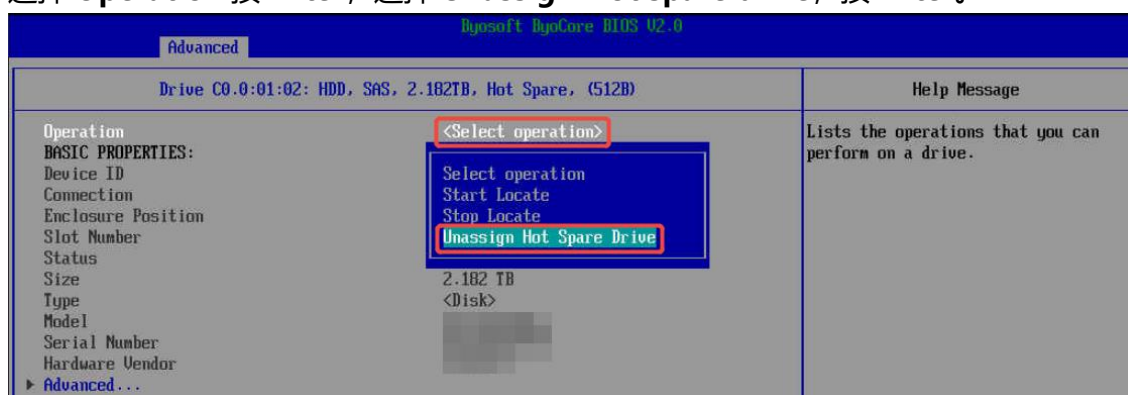


4.2 删除热备

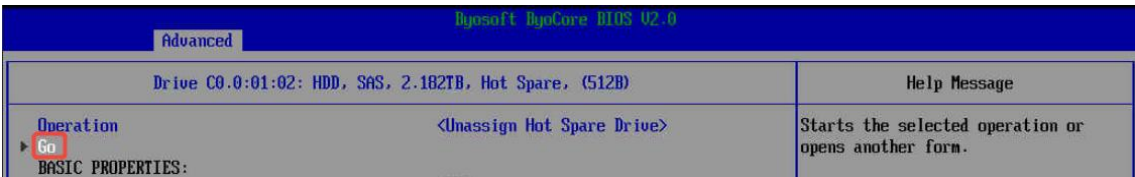
- 1) 选择 **Main Menu>Drive Management**, 找到并进入需要取消热备盘的硬盘, 按 **Enter**。



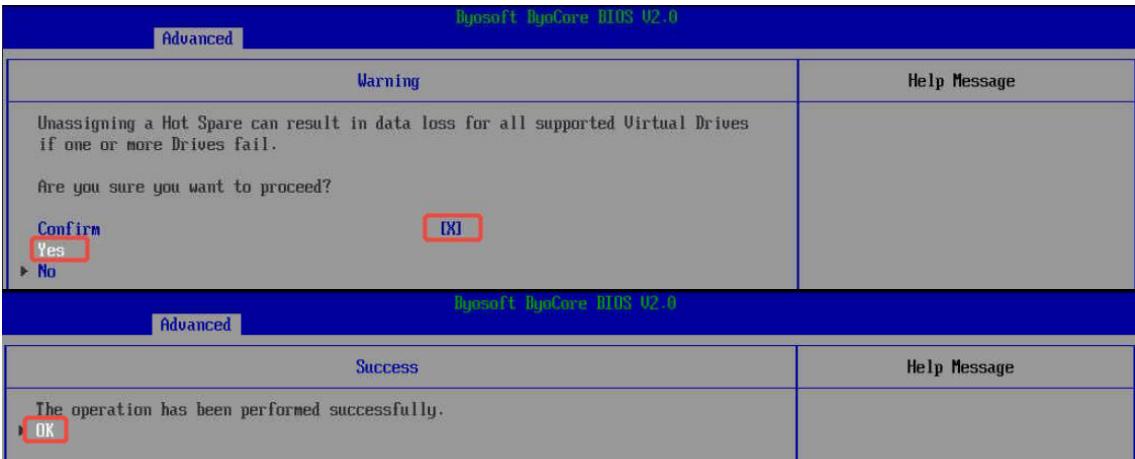
- 2) 选择 **Operation** 按 **Enter**, 选择 **Unassign Hot spare drive**, 按 **Enter**。



- 3) 选择 **Go**, 按 **Enter**。



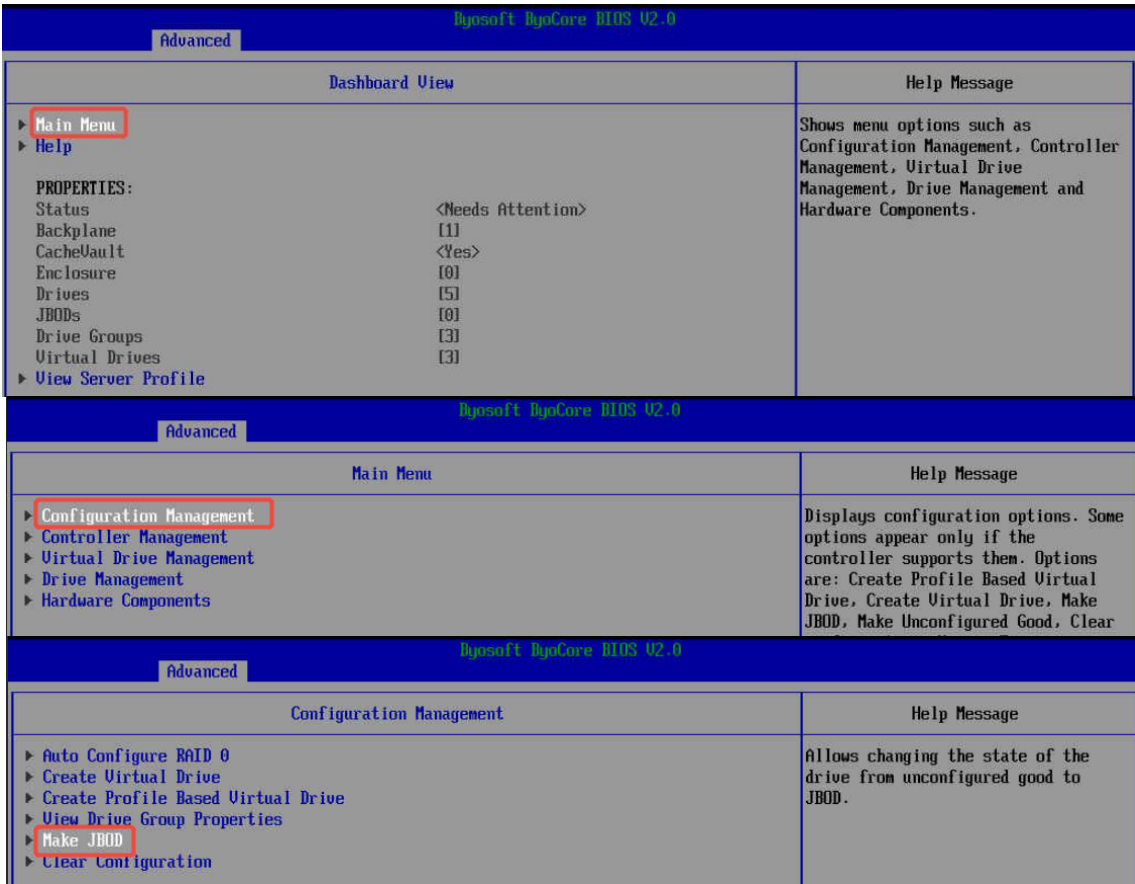
4) Confirm 选项选择为 **Enabled**，选择 **Yes** 后按 **Enter**。



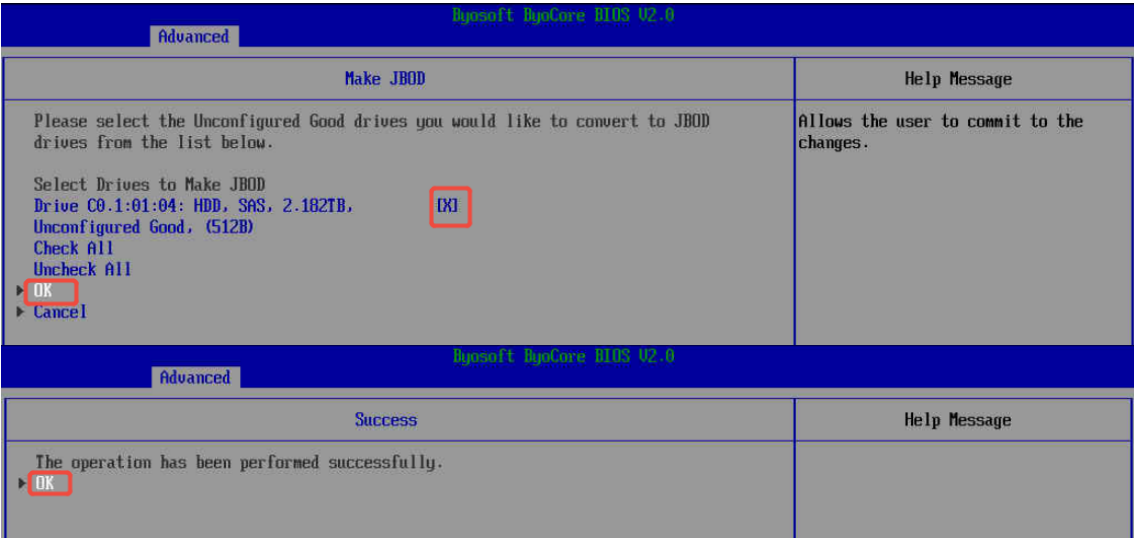
5. 设置与取消直通盘

5.1 设置硬盘直通

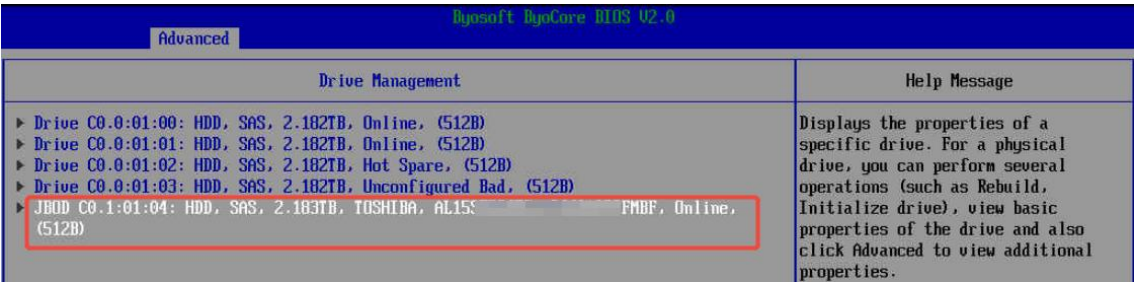
1) 依次进入 **Main Menu>Configuration Management>Make JBOD**



2) 选择 **Unconfigured Good** 硬盘进行配置即可

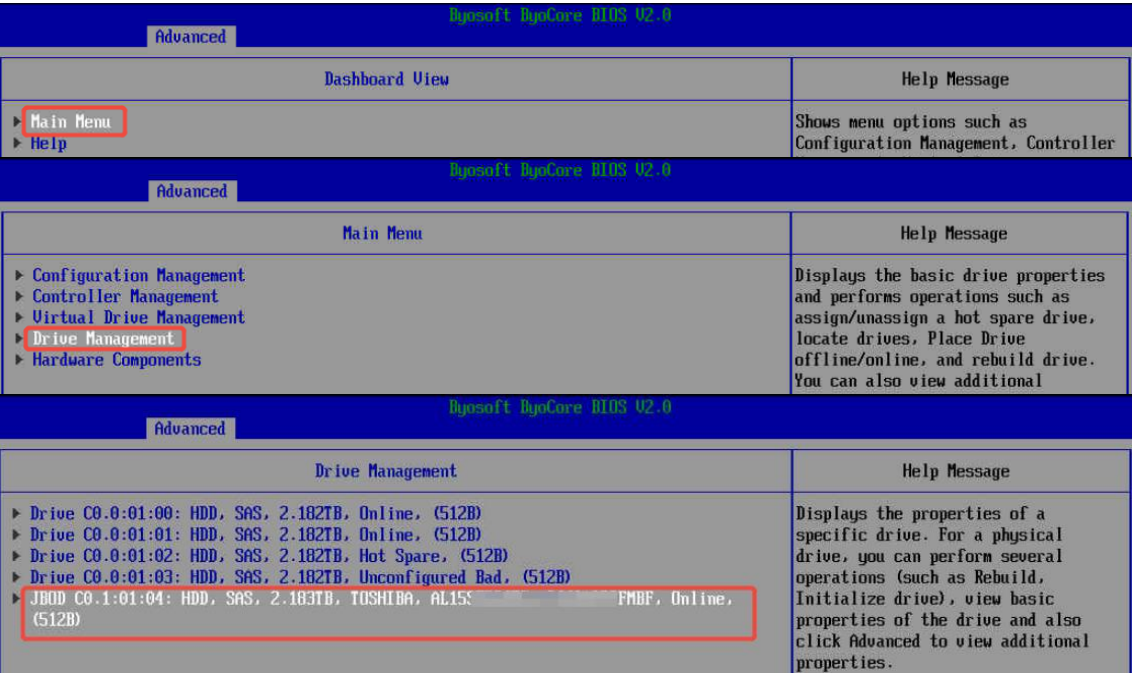


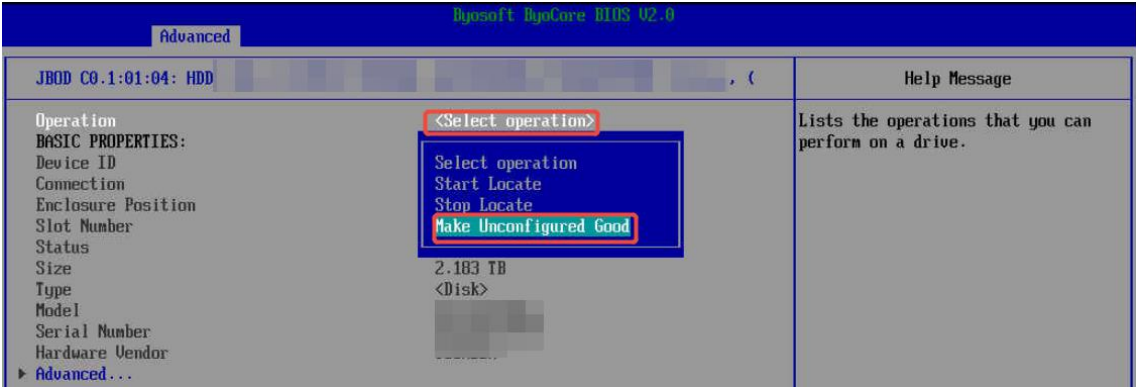
3) 查看硬盘状态为 JBOD。



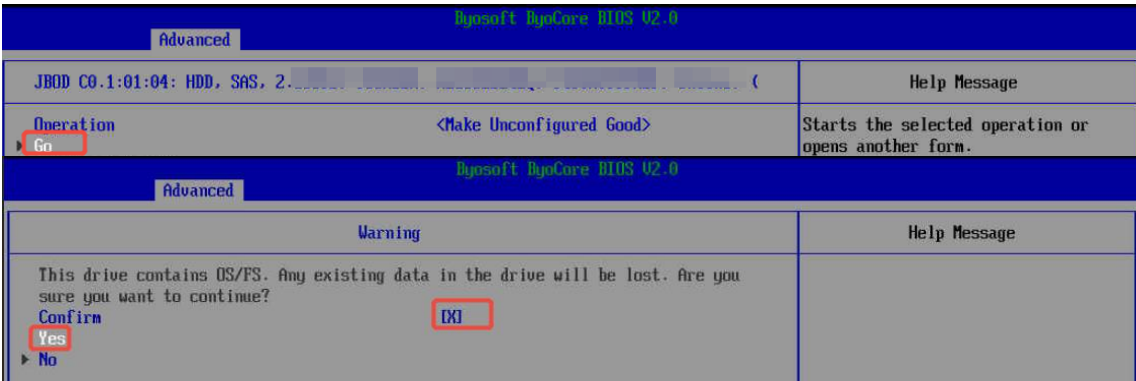
5.2 取消硬盘直通

1) 依次进入 **Main Menu>Drive Management**，选中需要取消 JBOD 状态的硬盘，在 **Operation** 中选择 **Make Unconfigured Good**。





2) 选择 Go 保存。



3) 查看硬盘状态为 Unconfigured Good。

