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# 第一章 产品概述

## 1.1 产品简介

HDS VSPGx00(Panama)系列主要包含以下几个产品：G200、G400、G600、G800，是HDS新一代中高端存储产品。该系列产品统一运行的存储操作系统为SVOS。

## 1.2 型号升级

存储产品的型号升级，主要是指G400到G600之间的升级，G400可通过购买升级license包及相应的硬件【前后端接口和内存】，可实现无中断应用在线升级到G600，从而提升存储系统的性能。

## 1.3 主要指标

| 指标 | G200 | G400 | G600 | G800 |
|---|---|---|---|---|
| 内部容量 | 1068TB | 1920TB | 2880TB | 5760TB |
| 外部容量 | 8PB | 16PB | | 64PB |
| 最大磁盘数 | 264 | 480 | 720 | 1440 |
| 扩展柜 | 7/7/7/4 | 16/16/16/8 | 24/24/24/12 | 48/48/48/24 |
| 控制柜高度 | 2U【控制柜含磁盘】 | 4U 高度【控制柜不含磁盘】 | | |
| 接口数量 | 1. 16 个 8Gb/s FC<br>2. 8 个 16Gb/s FC<br>3. 8 个 10Gb/s iSCSI（光口或电口）<br>4. 8 个 8Gb/s FC＋4 个 10Gb iSCSI<br>5. 4 个 16Gb/s FC+ 4 个 10Gb iSCSI | 1. 40 个 8Gb/s FC<br>2. 20 个 16Gb/s FC<br>3. 20 个 10Gb/s iSCSI（光口或电口）<br>4. 上述接口混合配置 | 1. 40 个 8Gb/s FC<br>2. 20 个 16Gb/s FC<br>3. 20 个 10Gb/s iSCSI（光口或电口）<br>4. 上述接口混合配置 | 1. 64/80 个 8Gb/s FC<br>2. 32/40 个 16Gb/s FC<br>3. 32/40 个 10Gb/s iSCSI（光口或电口）<br>4. 上述接口混合配置 |
| 后端接口最大速率 | SAS 3.0 链路，单条链路 12GB，共 96Gbps 后端 带宽 | SAS 3.0 链路，单条链路 12GB，共 192Gbps 后端带宽 | SAS 3.0 链路，单条链路 12GB，共 192Gbps 后端 带宽 | SAS 3.0 链路，单条链路 12GB，共 384Gbps 后端带宽 |
| RAID 级别 | RAID1+0，5，6 | | | |
| RAID Group 数量 | 84 | 240 | 480 | 575 |
| 动态备盘 | 16 | 32 | 32 | 64 |
| 最大 LU 数 | 2048 | 4096 | 4096 | 16,384 |
| LU Size | 60TB | | | |
| 磁盘驱动器 | 200GB SAS SSD 12Gbp/s in 2U 24 SFF Tray (DBS)<br>400GB SAS SSD 12Gbp/s in 2U 24 SFF Tray (DBS)<br>400GB SAS SSD 12Gbp/s in 4U 60 LFF Tray (DB60) | | | |

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| | | | | |
|---|---|---|---|---|
| | 300GB (15K) RPM SAS HDD in 2U 24 SFF Tray (DBS)<br>600GB (10K) RPM SAS HDD in 2U 24 SFF Tray (DBS)<br>1200GB (10K) RPM SAS HDD in 2U 24 SFF Tray (DBS)<br>1200GB (10K) RPM SAS HDD in 4U 60 LFF Tray (DB60)<br>1600GB Flash Module Drive in 2U 12 FMD Tray (DBF)<br>3200GB Flash Module Drive in 2U 12 FMD Tray (DBF)<br>4TB (7200) RPM SAS HDD in 2U 12 LFF Tray (DBL)<br>4TB (7200) RPM SAS HDD in 4U 60 LFF Tray (DB60)<br>6TB (7200) RPM SAS HDD in 2U 12 LFF Tray (DBL)<br>6TB (7200) RPM SAS HDD in 4U 60 LFF Tray (DB60) | | | |
| 高密度扩展柜磁盘支持 | 400GB SSD、1.2TB （10k）SAS<br>4TB（7.2K）NL_SAS、6TB（7.2K）NL_SAS | | | |
| 缓存 | 一个控制器 32GB 共 64GB | 128GB | 128GB、256GB | 512GB |

## 1.4 高密度扩展柜

Gxx 系列存储支持高密度柜 DB60，一个扩展柜可支持达 60 个硬盘。不仅支持 SSD 而且支持 SAS 和 NL_SAS 盘，所以不仅是高容量磁盘柜，也是高性能磁盘柜。

## 1.5 RAID 支持

| RAID Level | 硬盘配置支持范围 |
|---|---|
| RAID5 | 3D + 1P 、4D + 1P、6D + 1P、7D + 1P |
| RAID6 | 6D + 2P 、12D + 2P、14D + 2P |
| RAID1+0 | 2D + 2P、4D + 4P |

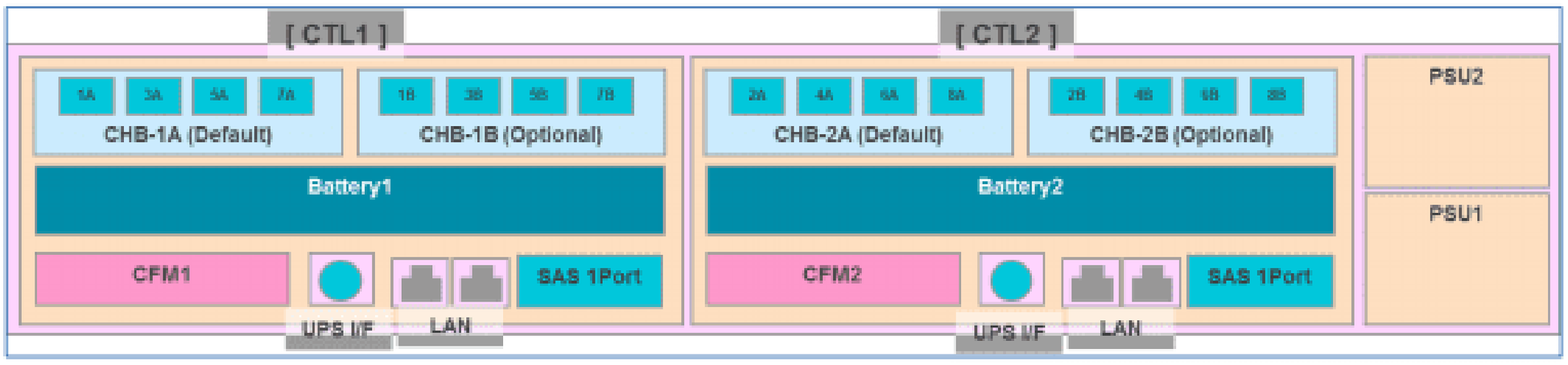
## 1.6 磁盘相关属性

| Mixed Disk Type Name | Recommended Setting Model |
|---|---|
| DKS5x-K300SS | DKS5C-K300SS |
| DKR5x-K300SS | |
| DKR5x-J600SS | DKR5D-J600SS |
| DKS5x-J600SS | |
| DKR5x-K600SS | DKR5C-K600SS |
| DKR5x-J1R2SS | DKR5E-J1R2SS |
| DKS5x-J1R2SS | |
| DKR2x-H4R0SS | DKS2E-H4R0SS |
| DKS2x-H4R0SS | |
| DKS2x-H6R0SS | DKS2F-H6R0SS |
| SLB5x-M200SS | SL"B"5B-M200SS |
| SLB5x-M400SS | SL"B"5B-M400SS |
| NFH1x-P1R6SS | NFH1A-P1R6SS |
| NFH1x-P3R2SS | NFH1B-P3R2SS |

| Drives before replacement | Drives after replacement |
|---|---|
| DKS5x-K300SS | DKS5x-K300SS |
| DKR5x-J600SS | DKR5x-J600SS |
| | DKS5x-J600SS |
| DKS5x-J600SS | DKR5x-J600SS |
| | DKS5x-J600SS |
| DKR5x-K600SS | DKR5x-K600SS |
| DKR5x-J1R2SS | DKR5x-J1R2SS |
| | DKS5x-J1R2SS |
| DKS5x-J1R2SS | DKR5x-J1R2SS |
| | DKS5x-J1R2SS |
| DKS2x-H4R0SS | DKR2x-H4R0SS |
| | DKS2x-H4R0SS |
| DKR2x-H4R0SS | DKR2x-H4R0SS |
| | DKS2x-H4R0SS |
| SLB5x-M200SS | SLB5x-M200SS |
| SLB5x-M400SS | SLB5x-M400SS |
| NFH1x-P1R6SS | NFH1x-P1R6SS |
| NFH1x-P3R2SS | NFH1x-P3R2SS |

# 第二章 存储外观说明

## 2.1 外观说明



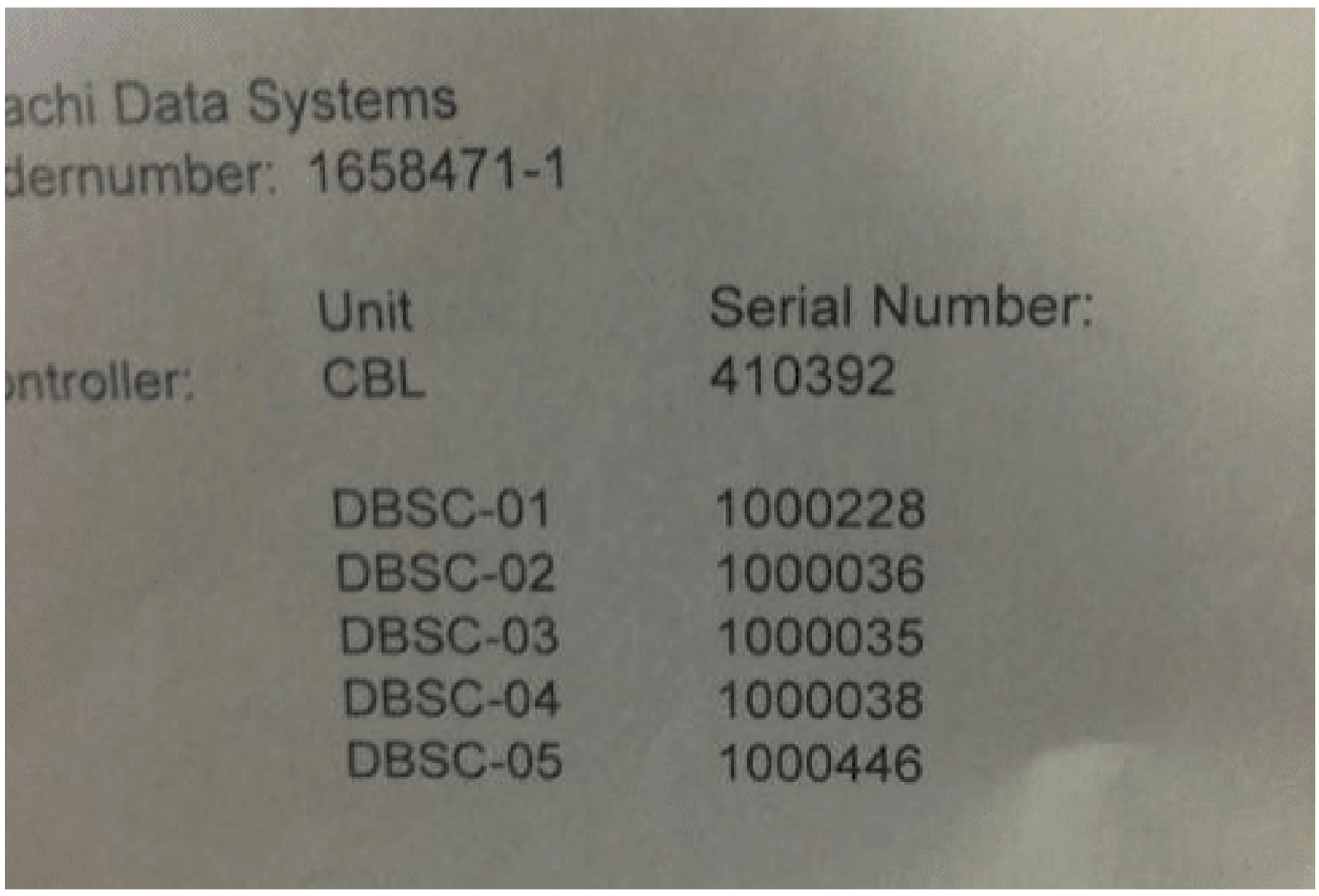

VSP G200 控制器后视示意图

VSP G400/600 控制器后视示意图

VSP G800 控制器后视示意图

## 2.2 设备安装

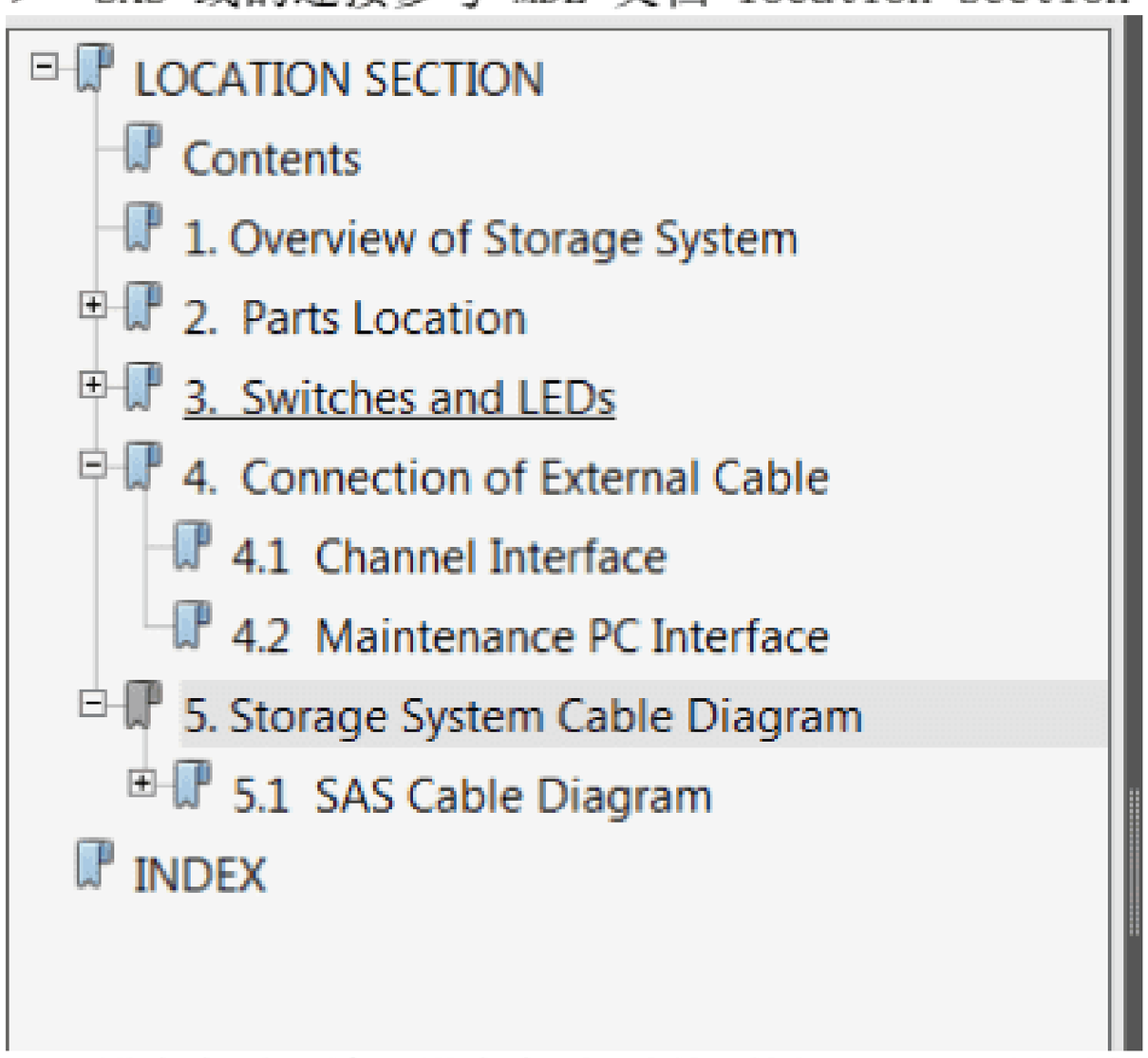
➢ 盘柜的位置顺序需按提示要求上架。



achi Data Systems
dernumber: 1658471-1

| | Unit | Serial Number: |
|---|---|---|
| ontroller: | CBL | 410392 |
| | DBSC-01 | 1000228 |
| | DBSC-02 | 1000036 |
| | DBSC-03 | 1000035 |
| | DBSC-04 | 1000038 |
| | DBSC-05 | 1000446 |

➢ SAS 线的连接参考 MDL 文档 location section




➢ 设备加电开机，设备加电后前面板 Power 显示灯为黄色，Power ON/OFF 键长按 3 秒开机，Power 指示灯变绿色。设备起来后 ready 灯亮绿色。

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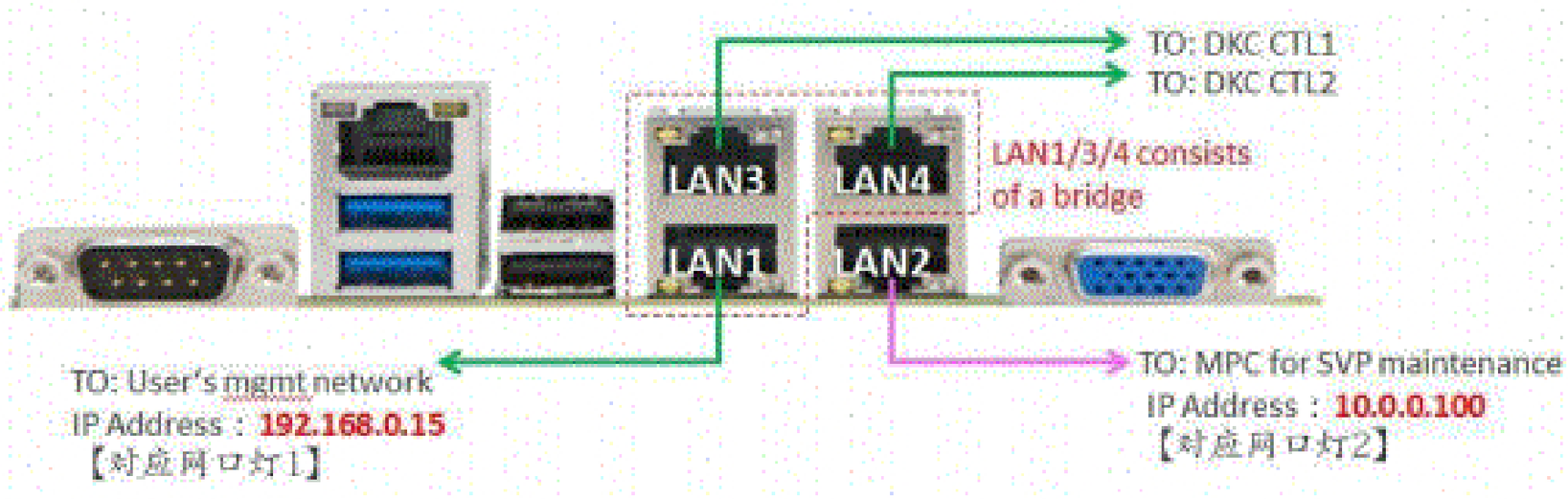
## 2.3 控制器及 SVP 的 IP 地址说明

➢ 各网口及 IP 地址说明

| | 控制器0 | | 控制器1 | | SVP |
|---|---|---|---|---|---|
| 网口说明 | 维护口 | 用户口 | 维护口 | 用户口 | 网口 1,3,4 桥接，网口 2（固定） |
| 默认IP | 10.0.0.16 | 192.168.0.16 | 10.0.0.17 | 192.168.0.17 | 192.168.0.15 / 10.0.0.100 |
| 子网掩码 | 255.255.255.0 | | | | 255.255.255.0 |
| 默认网关 | 0.0.0.0 | | | | 0.0.0.0 |
| 说明 | 用户口分别连接 SVP 的 3 和 4 口 | | | | LAN 1 口接用户网<br>LAN 3,4 口接存储<br>LAN 2 口接 MPC |

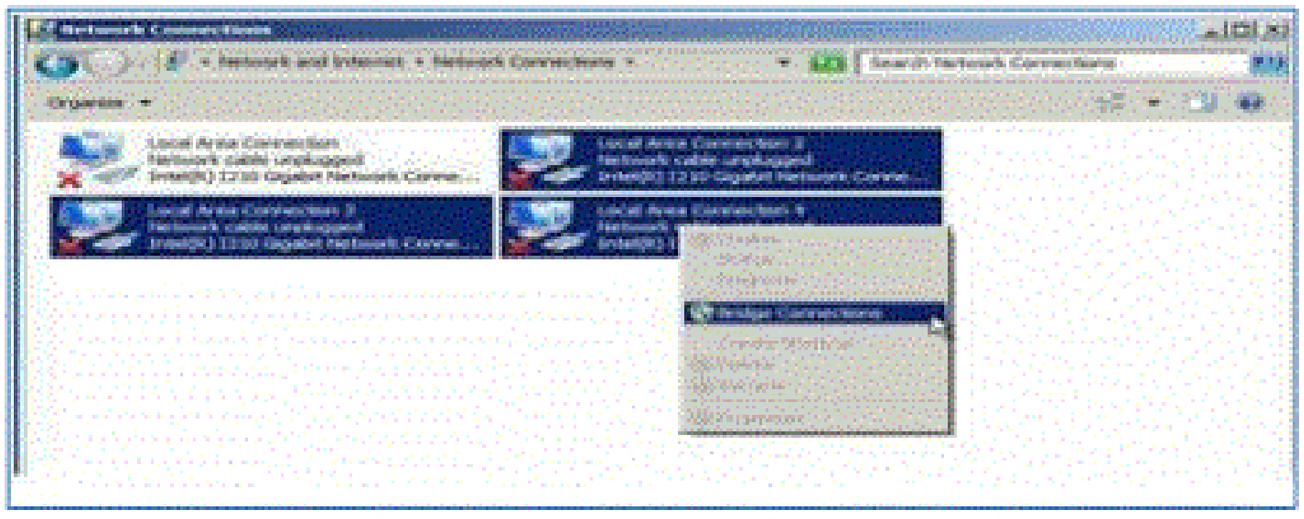
➢ SVP 与存储之间连接示意图

【说明：LAN 1 对应前置面板灯1，LAN2 对应前置面板灯2】




➢ 桥接网卡设置

1. 选择需要桥接的网口，右击选择“桥接”
2. 桥接之后会出现一个新的网卡
3. 右击该新的网卡，设置其IP 地址为：192.168.0.15



➢ 备份电池寿命有 5 年

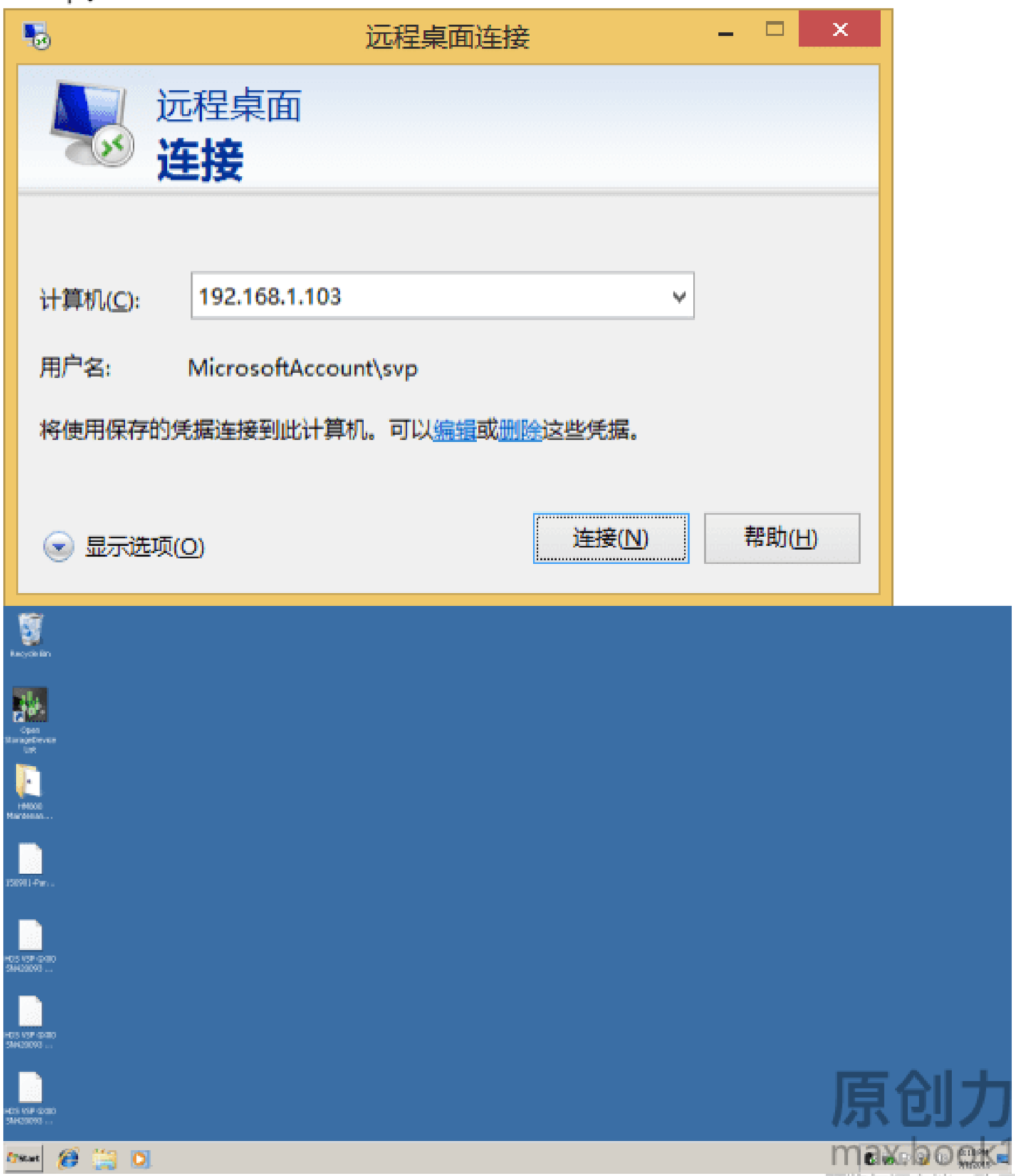
| Storage System Intake Temperature | CBLM\CBLH | CBSS | CBSL |
|---|---|---|---|
| Up to 24 degrees Celsius | 5 years | 5 years | 5 years |
| Up to 30 degrees Celsius | 5 years | 5 years | 4 years |

# 第三章 安装和配置 SVP

VSP GX00 硬件安装与 HUSVM 一样，对盘柜顺序有要求，按提示上架安装即可。

## 3.1 登陆 SVP

1. 配置自己的网口 IP 地址为：192.168.0.X/255.255.255.0；然后用网线连接 SVP 的 LAN 1 口【IP 地址：192.168.0.15】
2. 打开远程连接程序，输入用户名/密码：【SVP/raid-login】，登陆后的界面如下：




3. 打开桌面的管理工具，如下图【正常情况下 SN 号与机器一致，双击该图标即可进入管理界面】

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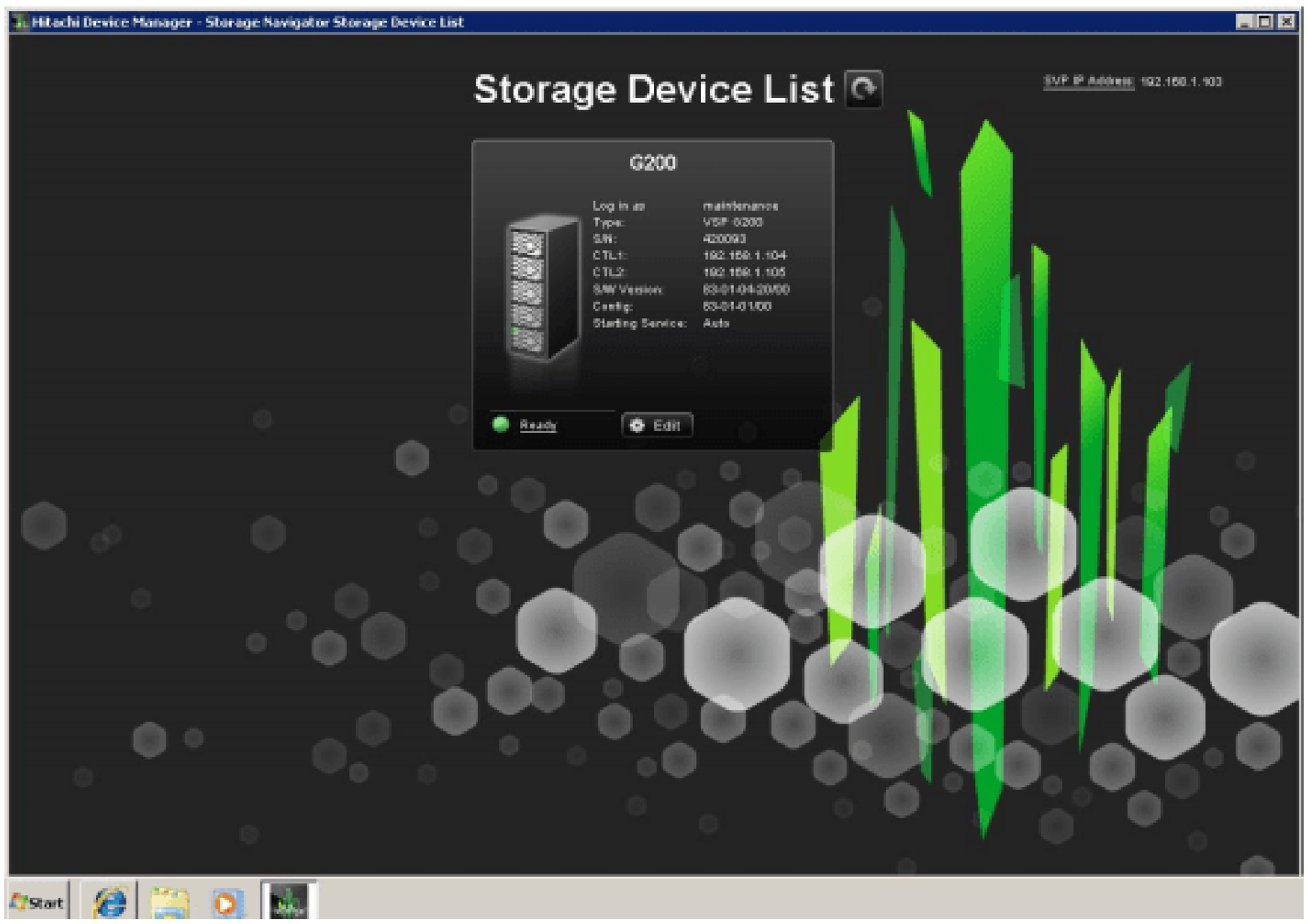
【此图为MPC 上的管理工具截图，SVP 只能管理一台存储，无后面的“+”如下图】



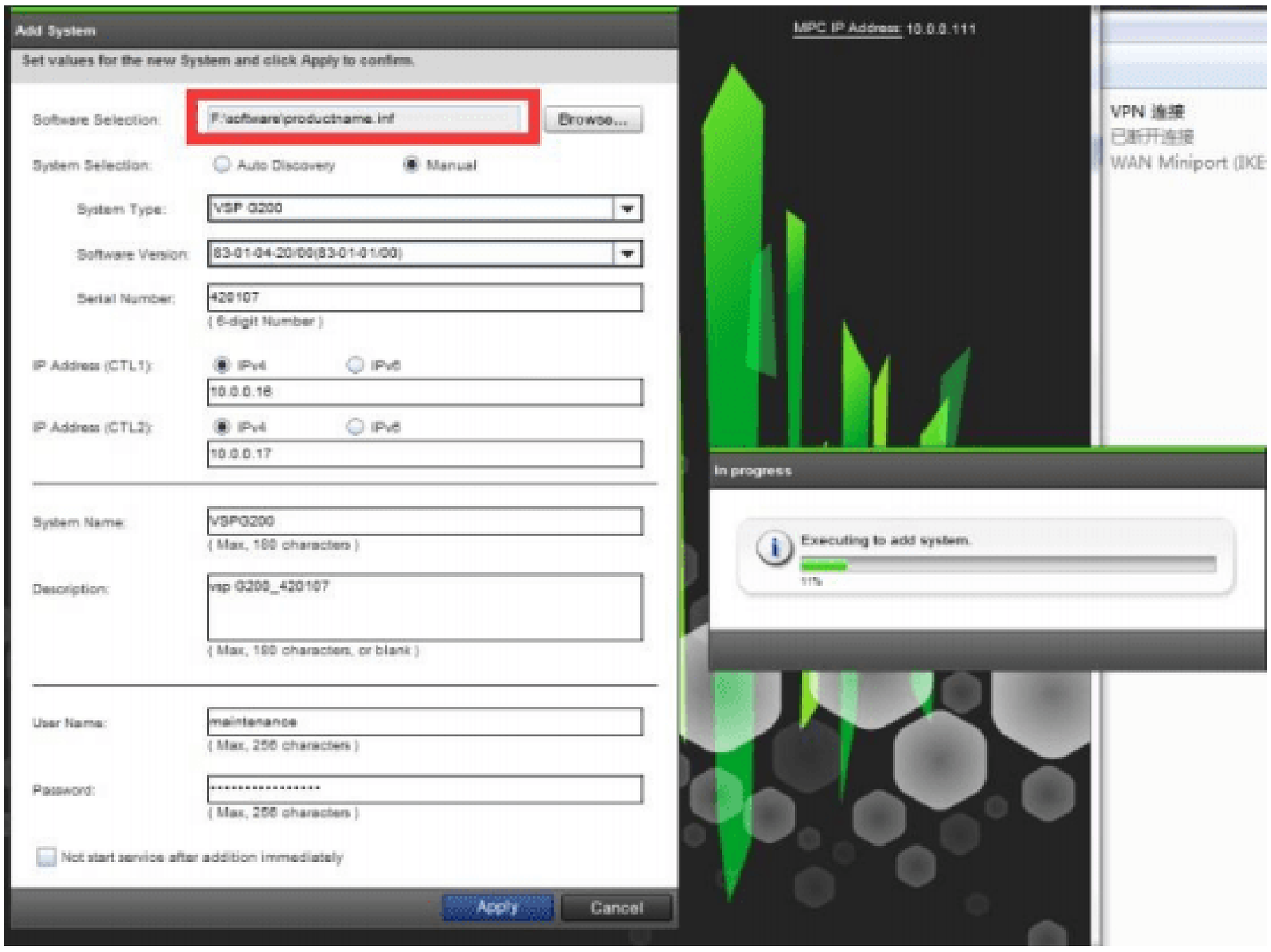

4. 如果不一致，点击 X 删掉再重新添加存储，如下图

5. 然后修改右上角 SVP IP Address，添加管理存储

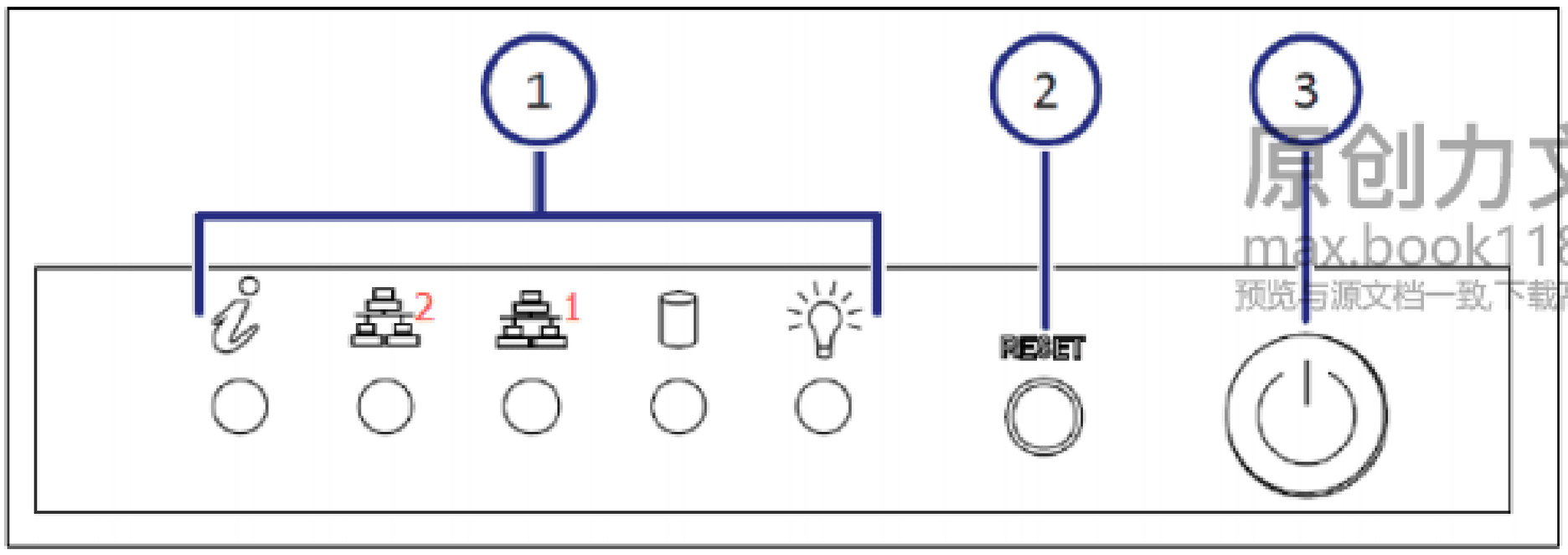
**注意：**

1、所有空白都必须填写，否则下面的Apply 按钮为灰色，无法添加；

2、指定的Software 版本必须与当前SVP 软件版本一致，否则提示版本不一致 无法添加



## 3.2 SVP 前置面板说明

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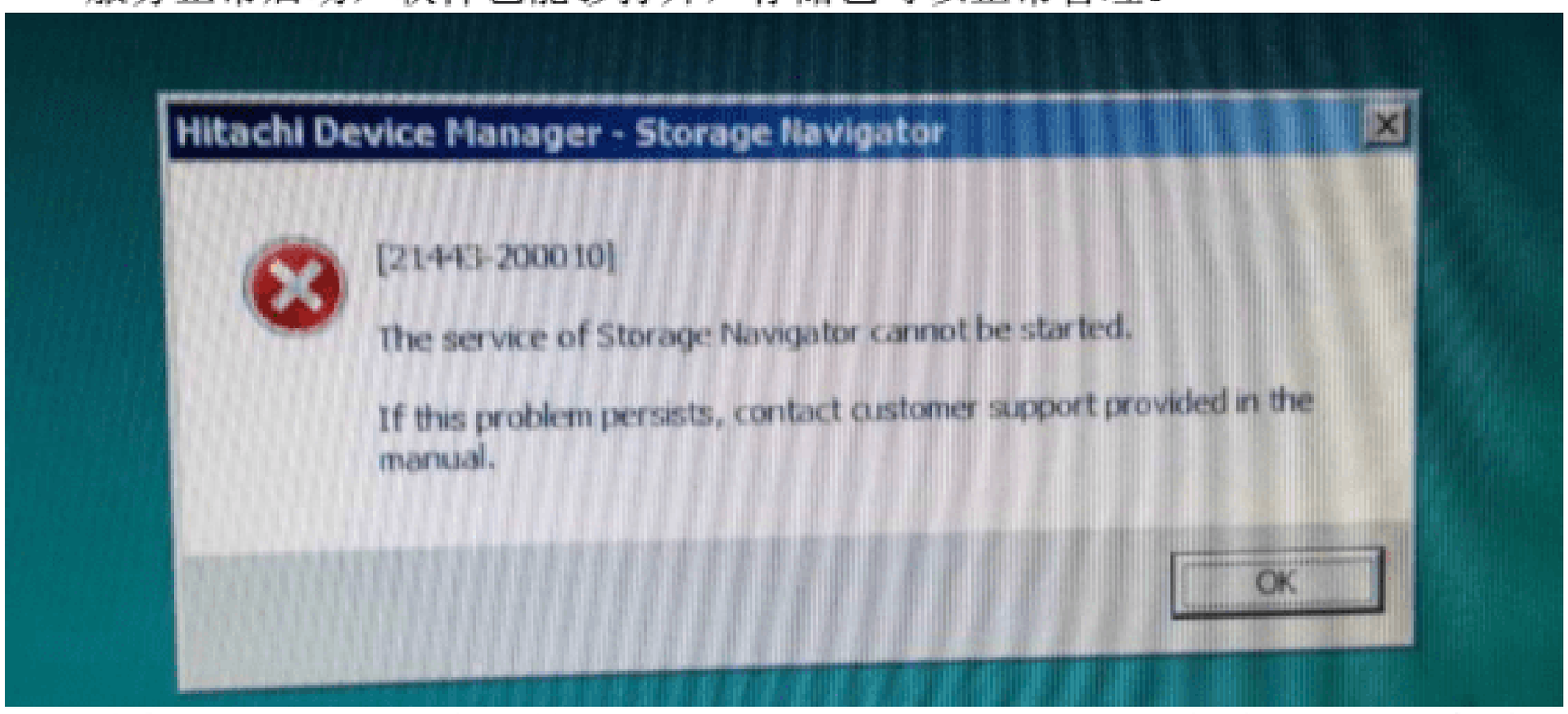
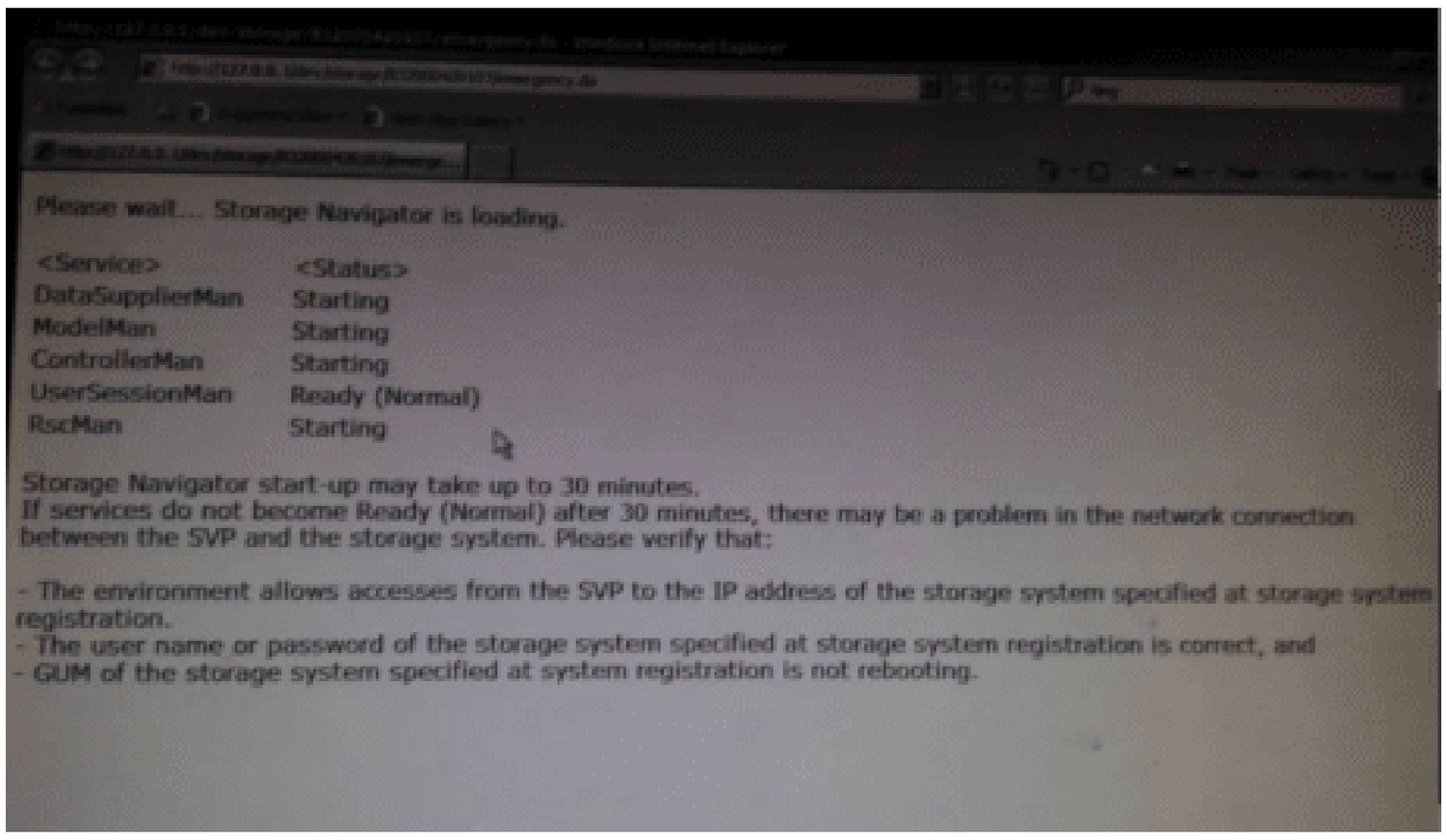
| 序号 | 说明 |
|---|---|
| 1 | LEDs. From left to right, the LEDs are:<br>➢ BMC Heartbeat<br>➢ LAN card 2<br>➢ LAN card 1<br>➢ Hard drive |
| 2 | Reset button. |
| 3 | Power button. Applies power to or removes power from |

## 3.3 重装管理工具 Storage Device

1. 重装之前必须先停止相关服务。主要有三个服务 MAPPAppServer 、MAPPWebServer、DKCMan。停止这三个服务后即可卸载重装。
2. 安装完成后会提示相关无法启动Storage Navigator，查看上面三个服务，发 现有两个没有启动，如果选择启动也提示无法启动，则重启SVP，重启之后服务正常启动，软件也能够打开，存储也可以正常管理。

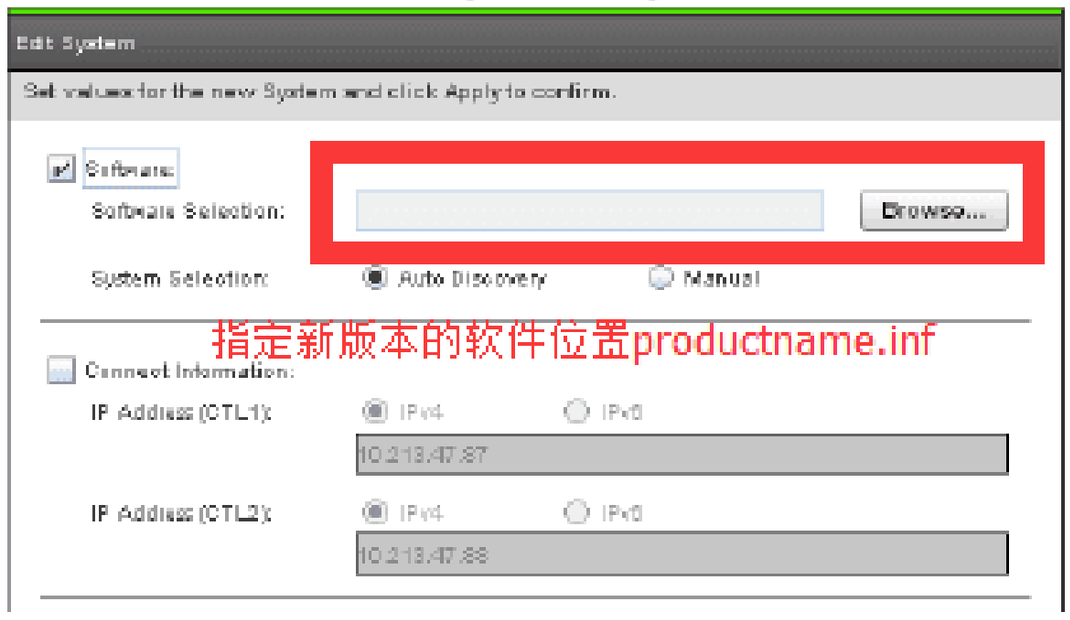



3. 重启 SVP 完成打开桌面的 Open Storage Device 工具，添加存储后，双机存储图标，弹出网页，会有个以下过程。当所有 ready 之后，即可以正常管理存储。




## 3.4 微码更新

1. 登陆SVP【用户名：SVP；密码：raid-login】
2. 停止svp 相关服务 步骤：click Star 【Hitachi Device Manager-Storage Navigator】 -【Hitachi Device List】-【Edit System】-不勾选【Start service automatically, when the SVP is rebooted】
3. 重启svp，单击开始菜单【start】-【Windows Security】-【Reboot】
4. 重新打开 Storage Navigator，按下图设置，点击 Apply

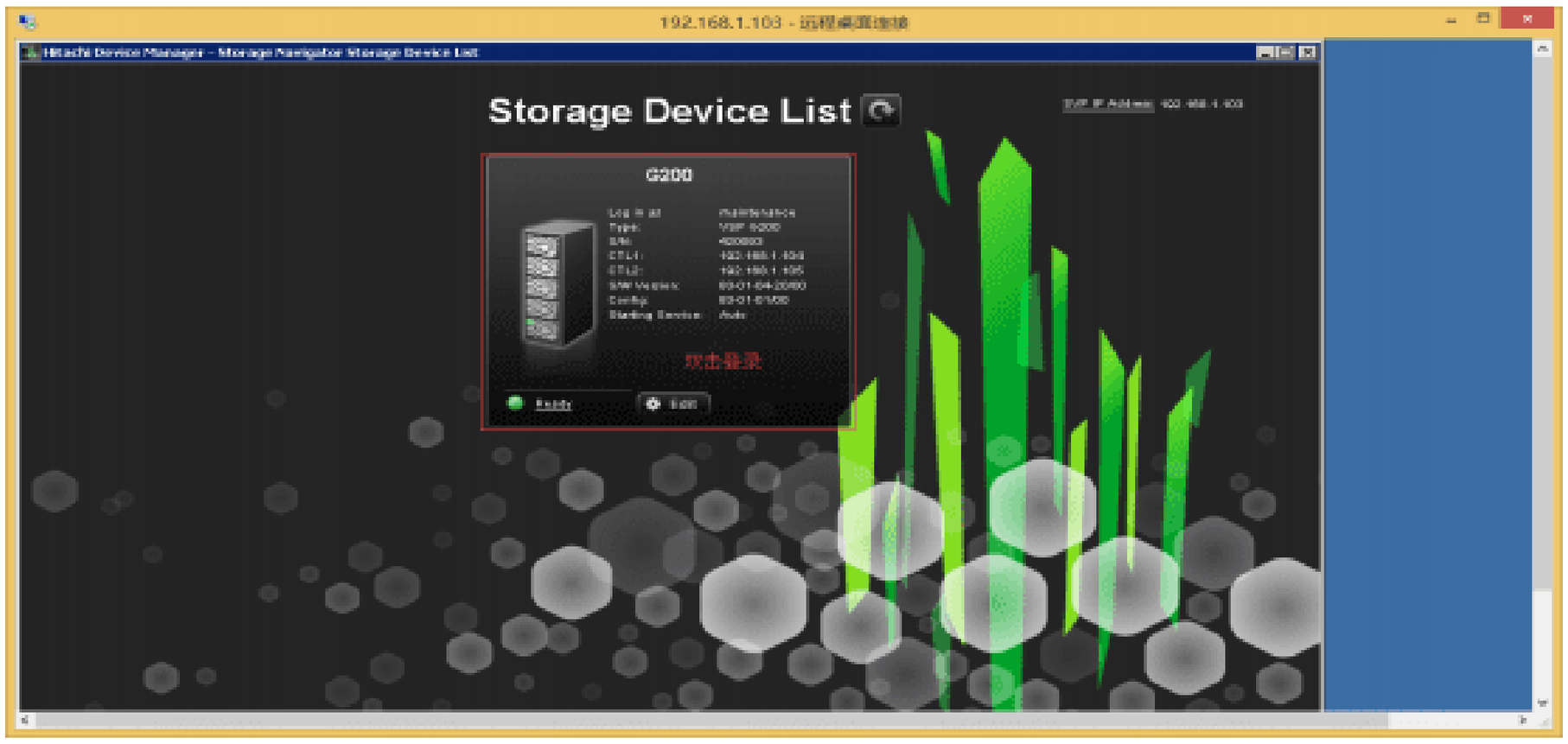


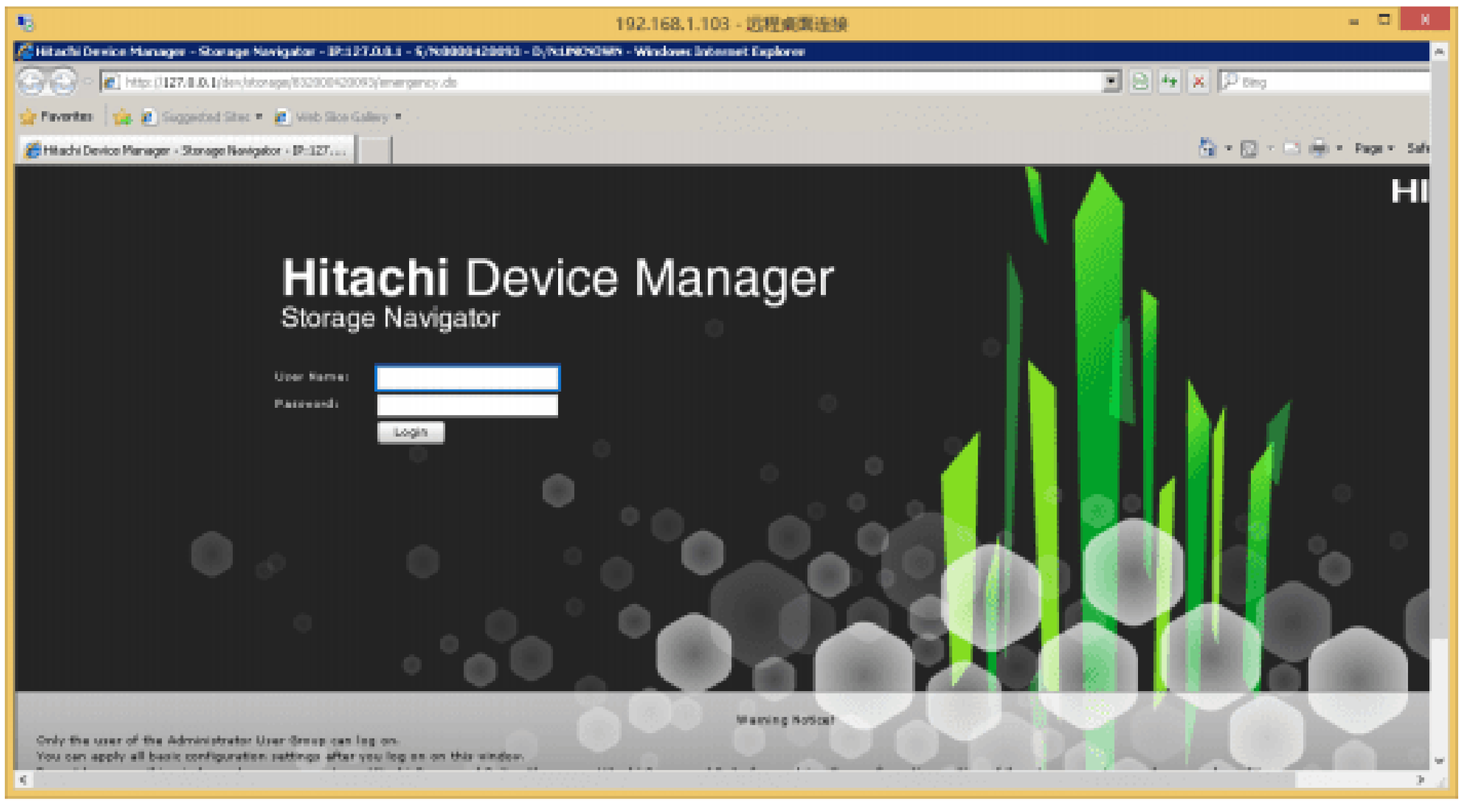

5. 检查微码版本是否更新

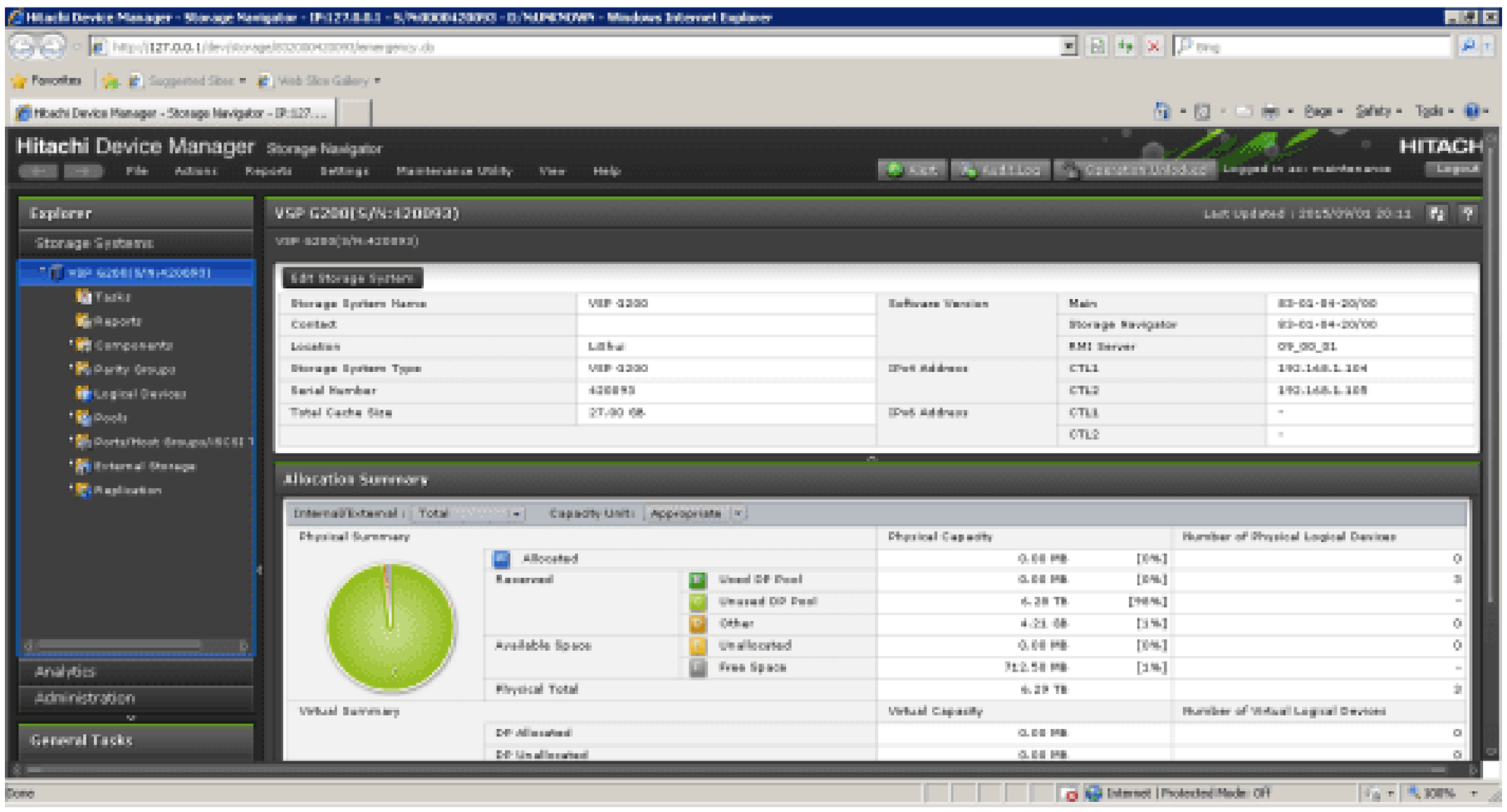
# 第四章 SNM2 基本操作

## 4.1 登录管理工具

用户名/密码：maintenance/raid-maintenance

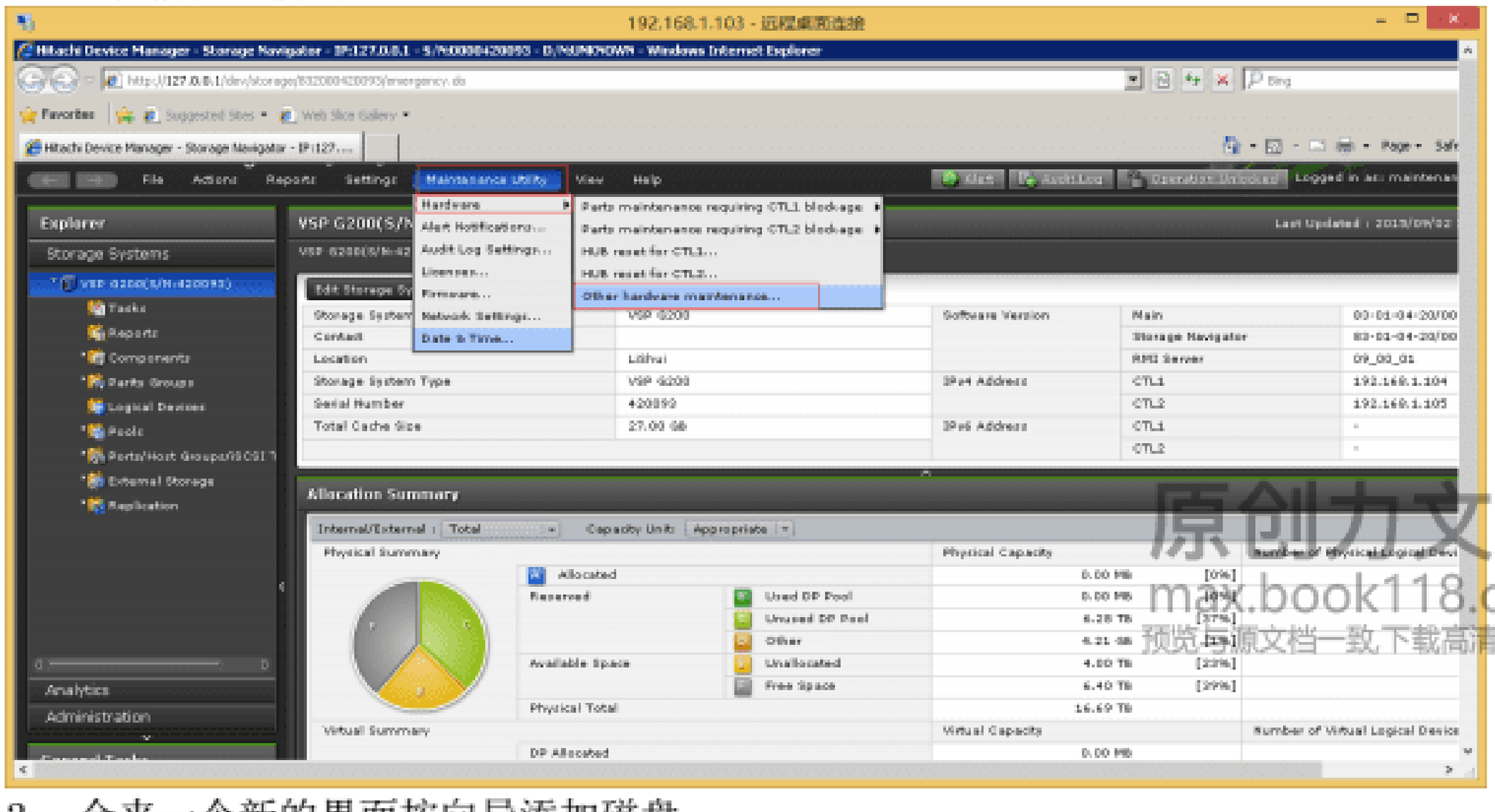





## 4.2 安装硬盘

1. 先把硬盘插入到对应的槽位，如果要删除磁盘，要在控制先 Remove 再把磁盘从槽位里拔出。

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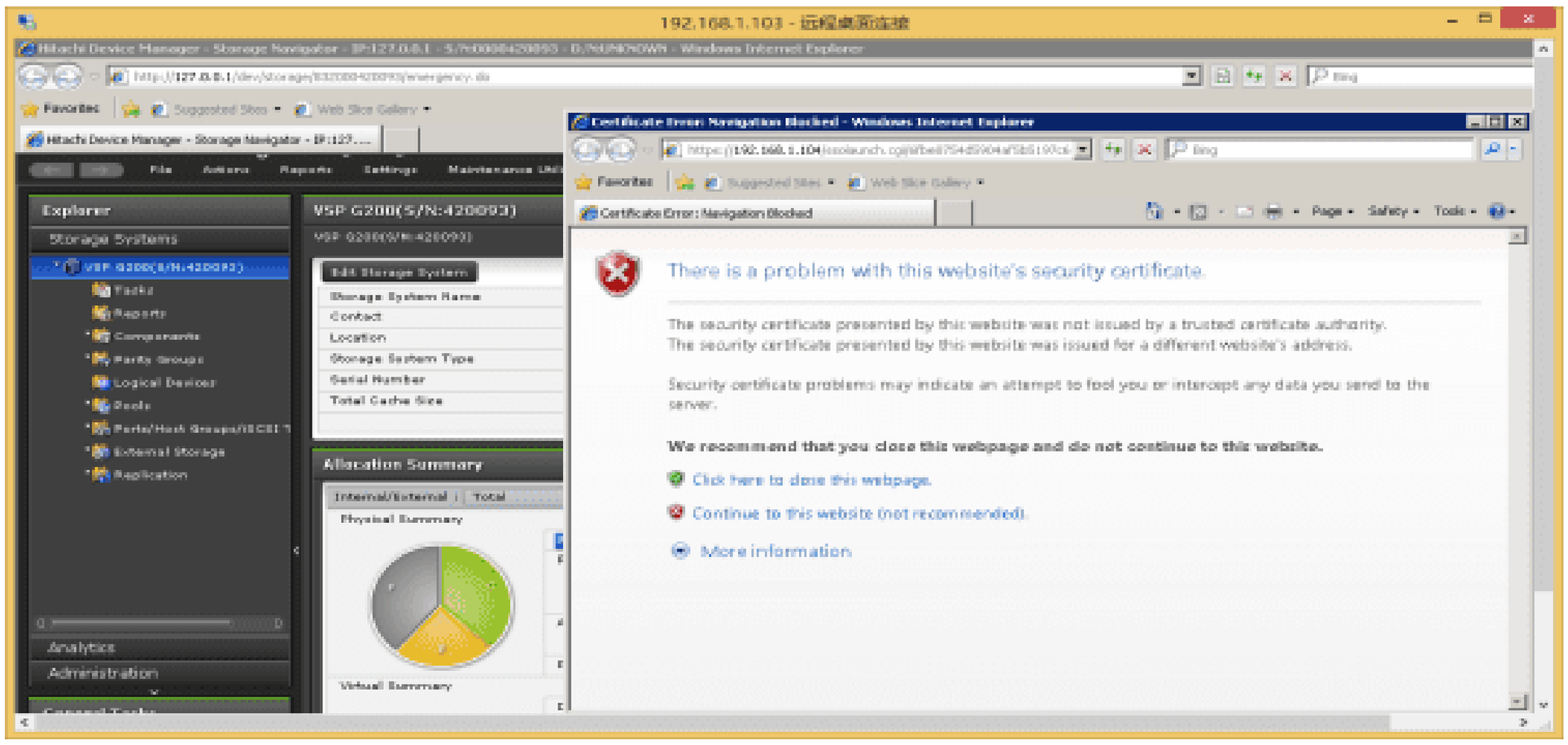
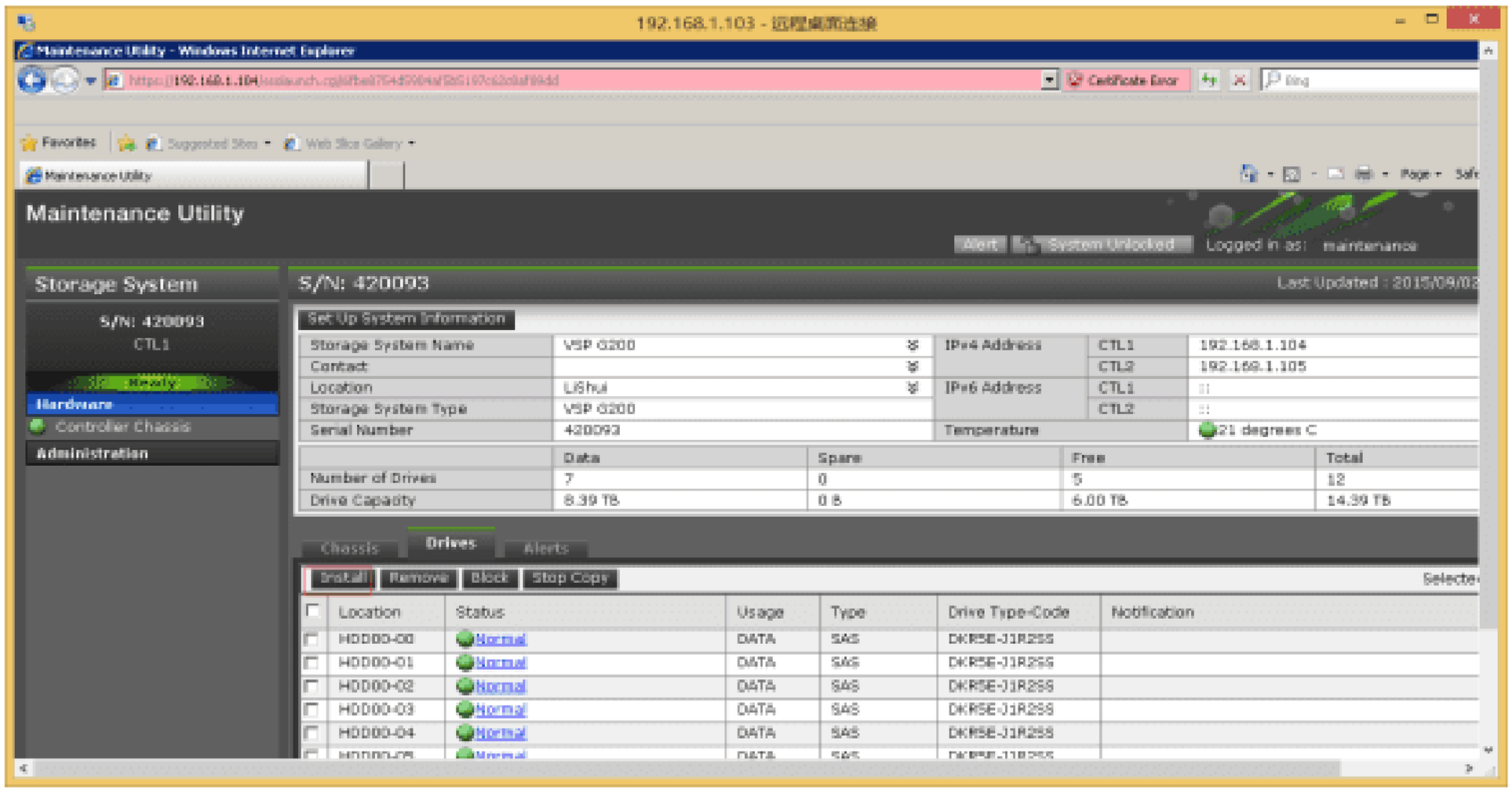
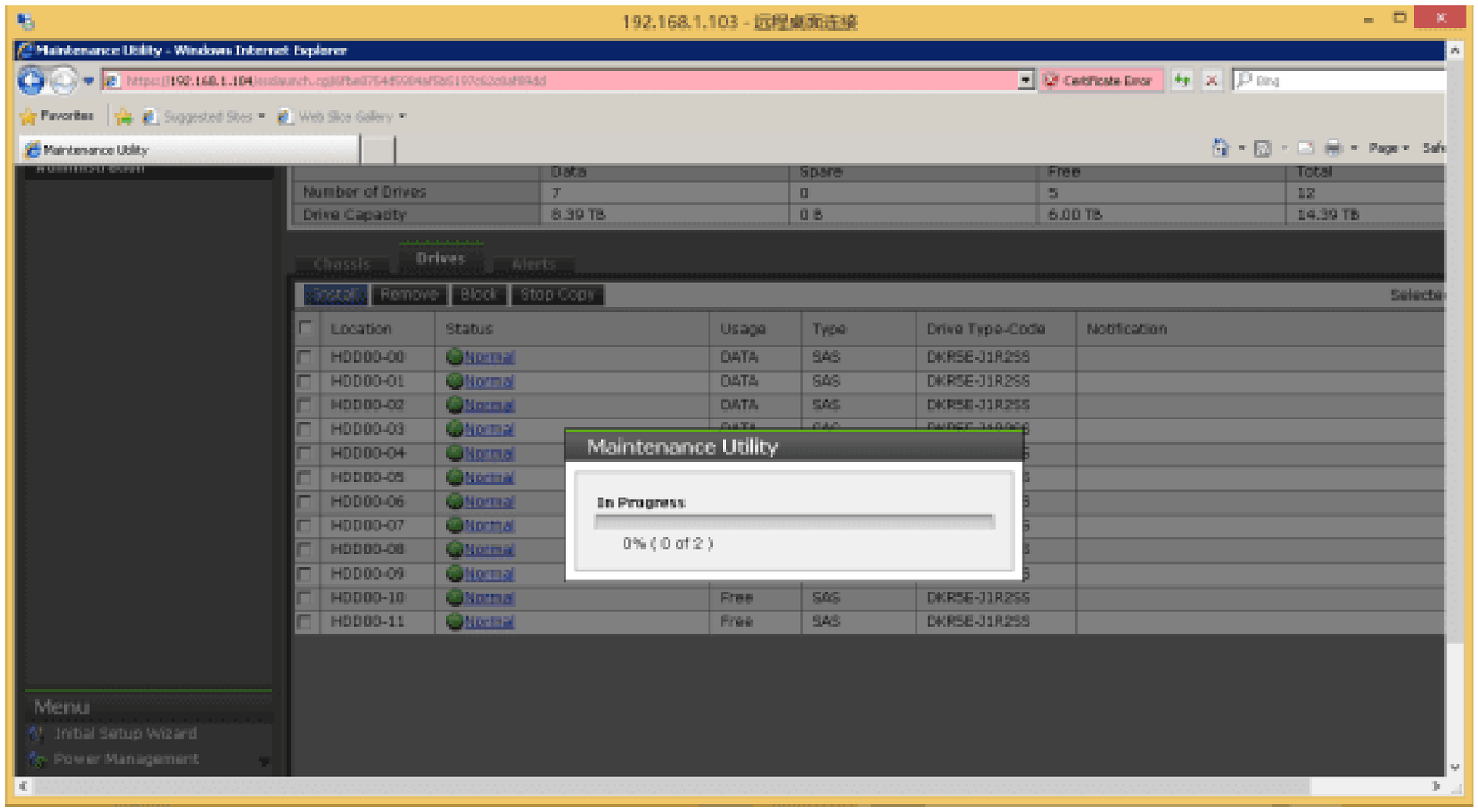
2. 会来一个新的界面按向导添加磁盘


192.168.1.103 - 远程桌面连接
Hitachi Device Manager - Storage Navigator
Certificate Error: Navigation Blocked - Windows Internet Explorer
Explorer
Storage Systems
VSP G200(S/N:420093)
Allocation Summary
There is a problem with this website's security certificate.
The security certificate presented by this website was not issued by a trusted certificate authority.
The security certificate presented by this website was issued for a different website's address.
Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.
We recommend that you close this webpage and do not continue to this website.
Click here to close this webpage.
Continue to this website (not recommended).
More information


192.168.1.103 - 远程桌面连接
Maintenance Utility - Windows Internet Explorer
Maintenance Utility
Storage System
S/N: 420093
Set Up System Information
Storage System Name VSP G200
Contact
Location LiShui
Storage System Type VSP G200
Serial Number 420093
IPv4 Address CTL1 192.168.1.104
CTL2 192.168.1.105
IPv6 Address CTL1 ::
CTL2 ::
Temperature 21 degrees C
Number of Drives 7 0 5 12
Drive Capacity 8.39 TB 0 B 6.00 TB 14.39 TB
Chassis
Drives
Alerts
Install
Remove
Block
Stop Copy
Location
Status
Usage
Type
Drive Type-Code
Notification
HDD00-00 Normal DATA SAS DKR5E-J1R2SS
HDD00-01 Normal DATA SAS DKR5E-J1R2SS
HDD00-02 Normal DATA SAS DKR5E-J1R2SS
HDD00-03 Normal DATA SAS DKR5E-J1R2SS
HDD00-04 Normal DATA SAS DKR5E-J1R2SS


192.168.1.103 - 远程桌面连接
Maintenance Utility - Windows Internet Explorer
Maintenance Utility
In Progress
0% ( 0 of 2 )
HDD00-10 Normal Free SAS DKR5E-J1R2SS
HDD00-11 Normal Free SAS DKR5E-J1R2SS
Menu
Initial Setup Wizard
Power Management



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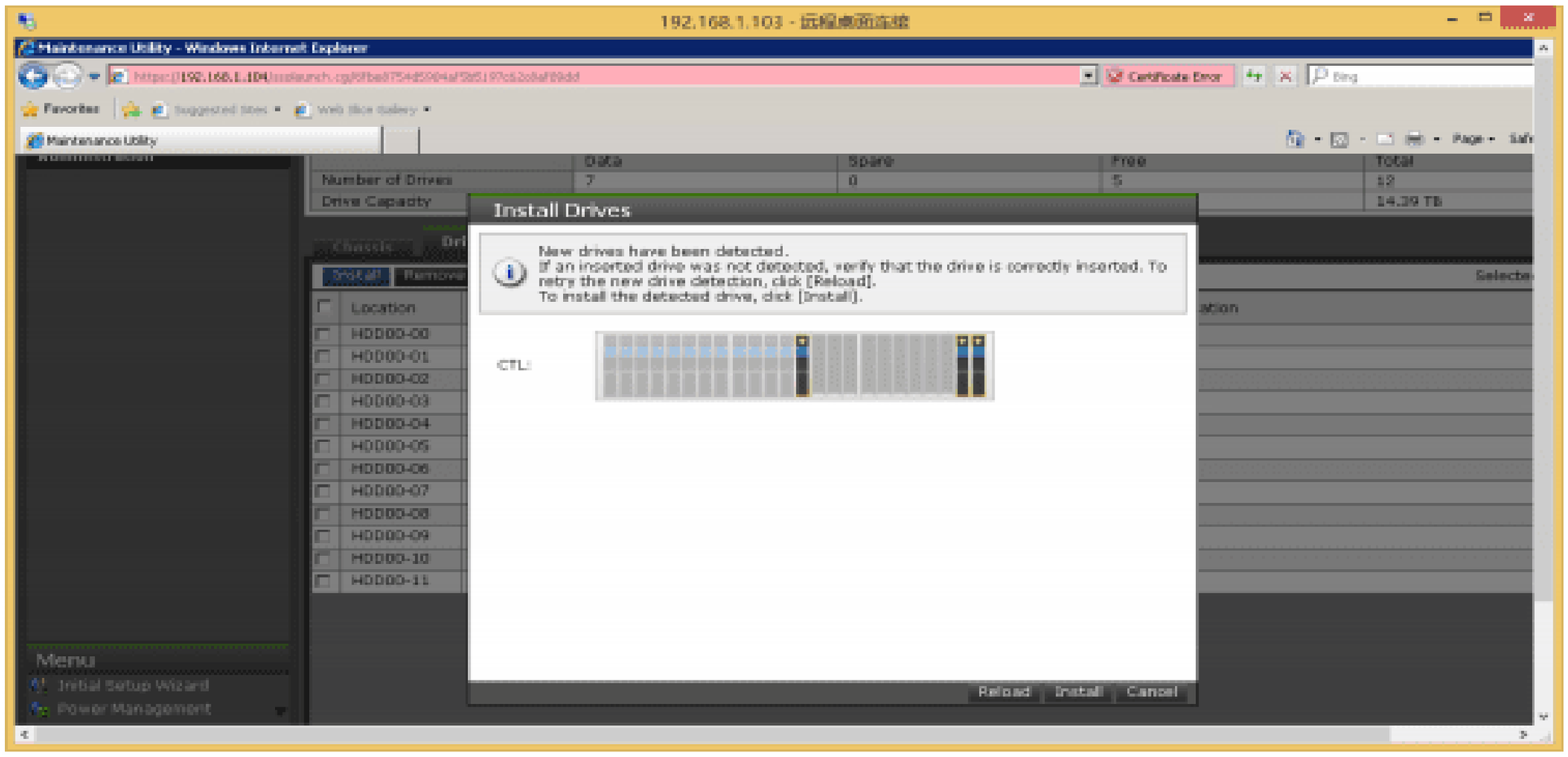
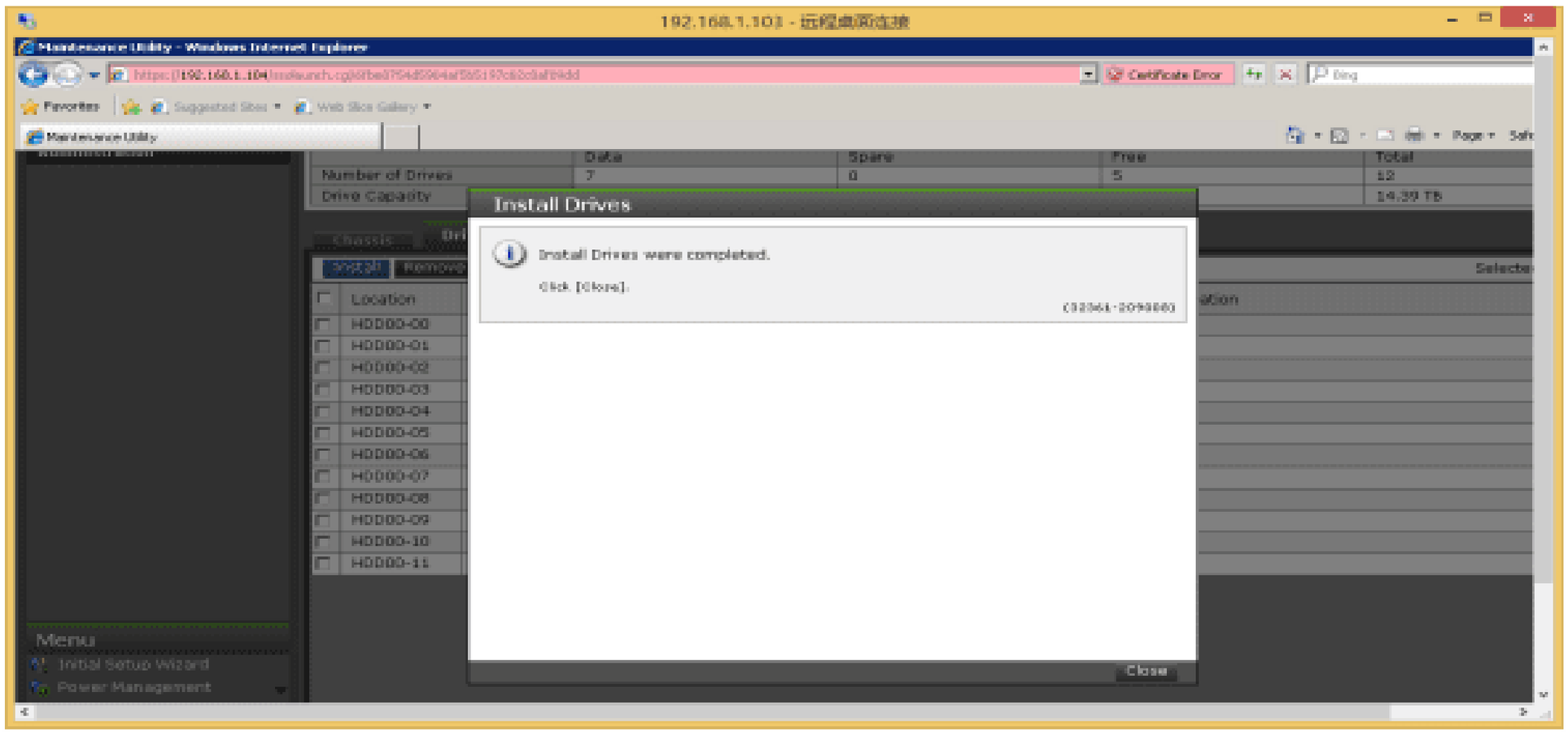
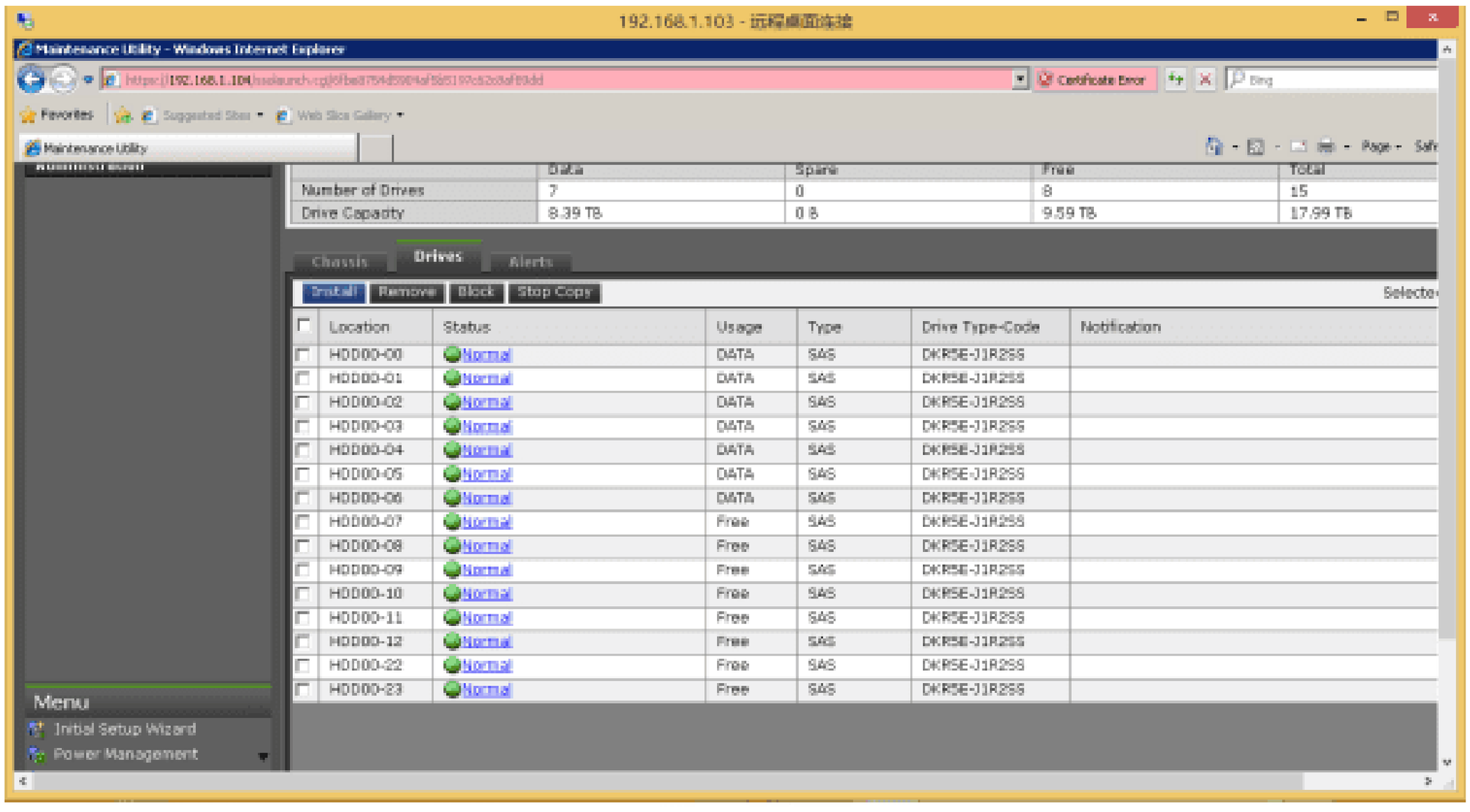
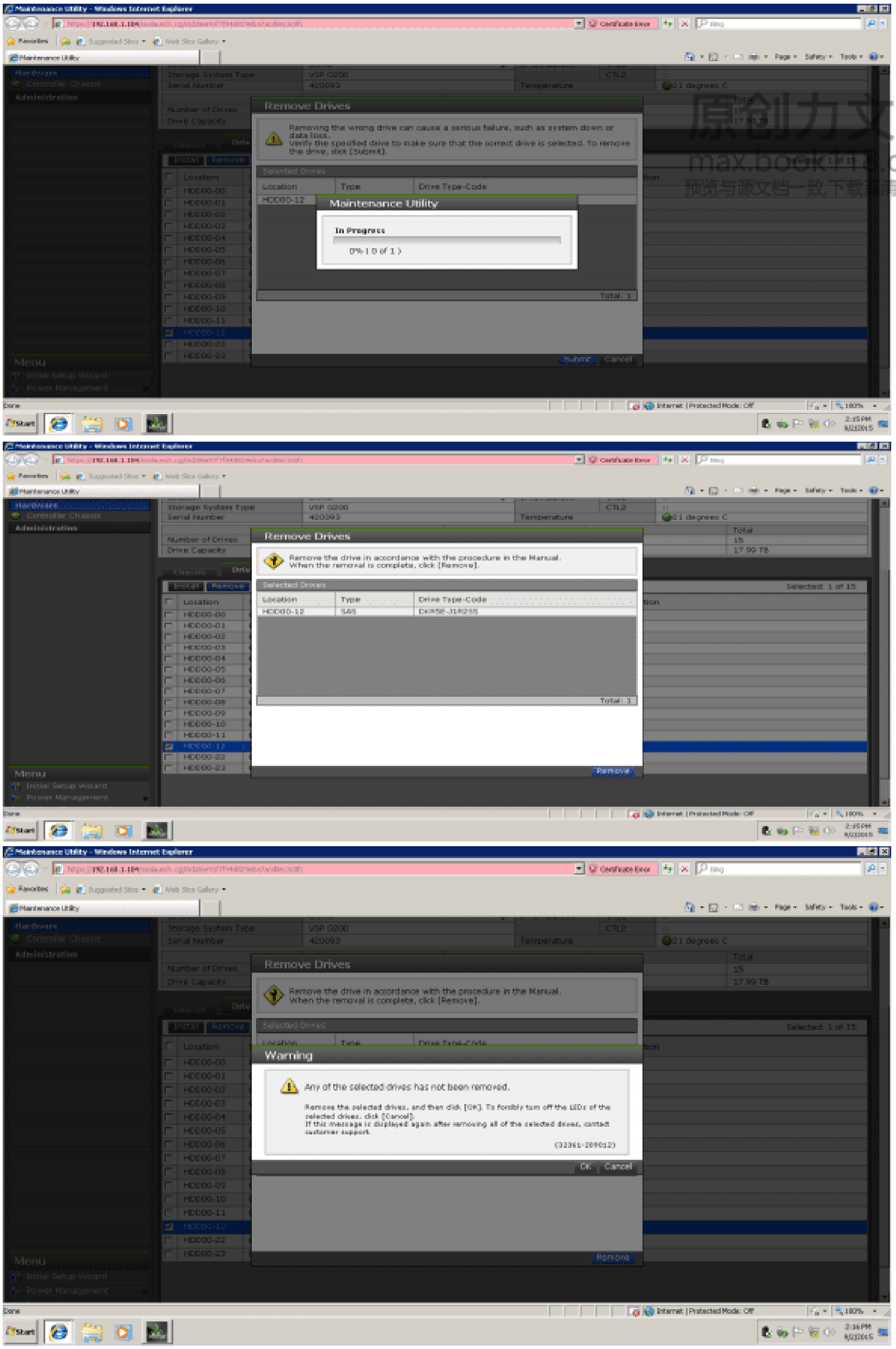

192.168.1.103 - 远程桌面连接
Maintenance Utility - Windows Internet Explorer
Install Drives
New drives have been detected.
If an inserted drive was not detected, verify that the drive is correctly inserted. To retry the new drive detection, click [Reload].
To install the detected drive, click [Install].
CTL:
Reload
Install
Cancel
Number of Drives
Drive Capacity
Menu
Initial Setup Wizard
Power Management


192.168.1.103 - 远程桌面连接
Maintenance Utility - Windows Internet Explorer
Install Drives
Install Drives were completed.
Click [Close].
Close
Number of Drives
Drive Capacity
Menu
Initial Setup Wizard
Power Management


192.168.1.103 - 远程桌面连接
Maintenance Utility - Windows Internet Explorer
Number of Drives 7 0 8 15
Drive Capacity 8.39 TB 0 B 9.59 TB 17.99 TB
Chassis
Drives
Alerts
Install
Remove
Block
Stop Copy
Location Status Usage Type Drive Type-Code Notification
HDD00-00 Normal DATA SAS DKR5E-J1R2SS
HDD00-01 Normal DATA SAS DKR5E-J1R2SS
HDD00-02 Normal DATA SAS DKR5E-J1R2SS
HDD00-03 Normal DATA SAS DKR5E-J1R2SS
HDD00-04 Normal DATA SAS DKR5E-J1R2SS
HDD00-05 Normal DATA SAS DKR5E-J1R2SS
HDD00-06 Normal DATA SAS DKR5E-J1R2SS
HDD00-07 Normal Free SAS DKR5E-J1R2SS
HDD00-08 Normal Free SAS DKR5E-J1R2SS
HDD00-09 Normal Free SAS DKR5E-J1R2SS
HDD00-10 Normal Free SAS DKR5E-J1R2SS
HDD00-11 Normal Free SAS DKR5E-J1R2SS
HDD00-12 Normal Free SAS DKR5E-J1R2SS
HDD00-22 Normal Free SAS DKR5E-J1R2SS
HDD00-23 Normal Free SAS DKR5E-J1R2SS
Menu
Initial Setup Wizard
Power Management

3. 删除硬盘

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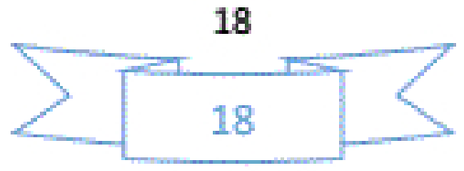
## 4.3 License 管理

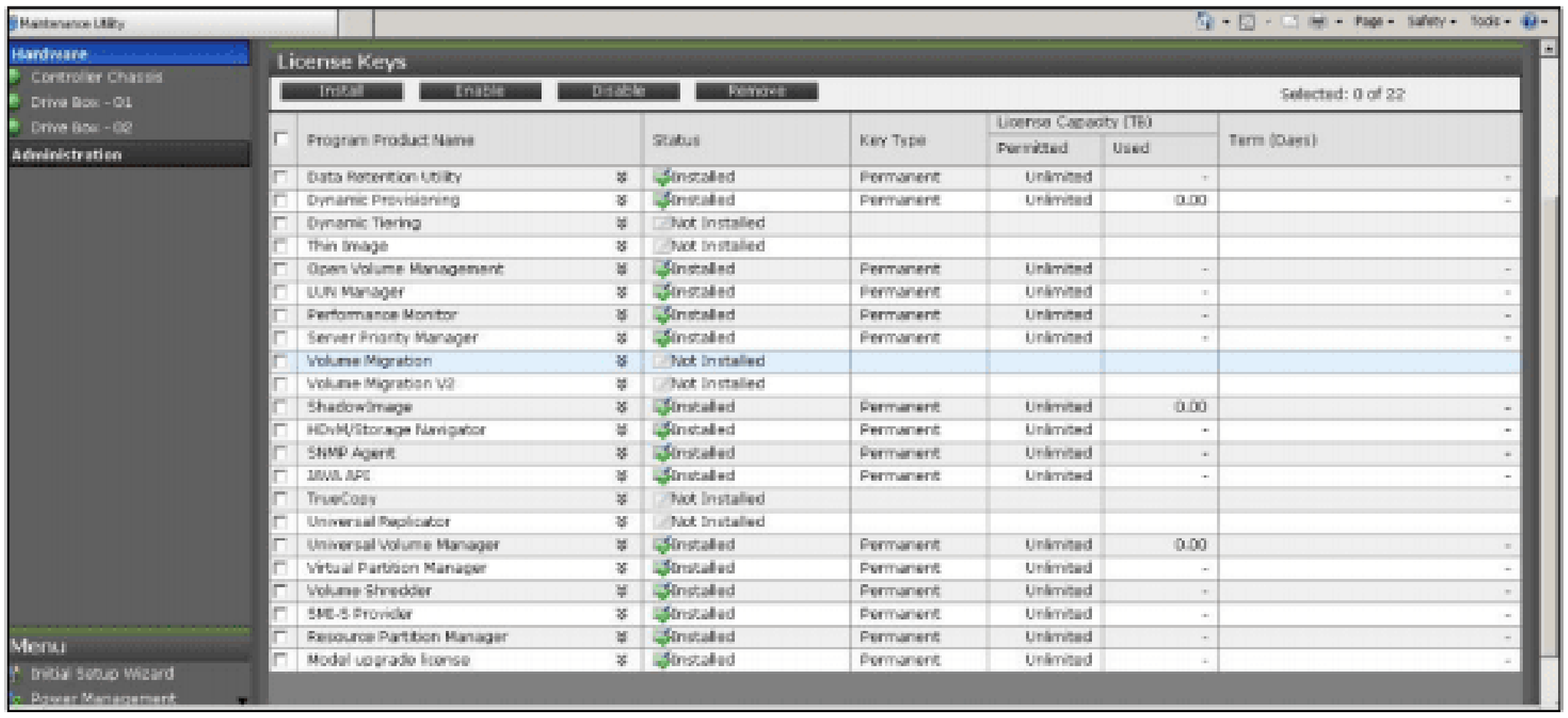
➢ License 说明{实际导入的 SVOS 包含 upgrade 和 ShadowImage}

| Open Volume Management [SVOS] | 中文描述 |
|---|---|
| LUN Manager | LUN 管理基本功能 |
| Performance Monitor | 性能监控基本功能 |
| Server Priority Manager | 服务器优先级管理功能（QoS） |
| HDvM/Storage Navigator | 存储基本功能管理软件包（HCS） |
| SNMP Agent | SNMP 通用监控协议支持功能 |
| Data Retention Utility | 数据保持技术 |
| Volume Shredder | 卷粉碎技术（彻底删除） |
| JAVA API | JAVA 第三方应用接口 |
| Dynamic Provisioning | 动态容量供应功能 |
| SMI-S Provider | SMI-S 通用监控协议支持功能 |
| Universal Volume Manager | 存储虚拟化功能（异构存储支持） |
| Virtual Partition Manager | 虚拟分区技术（针对存储内部软硬件功能） |
| Resource Partition Manager | 资源分区技术 |
| Hitachi Infrastructure Director (Rainier) | HID 存储管理软件包（可与 HCS 集成使用） |
| **Hitachi Remote Replication** | **中文描述** |
| TrueCopy | 同步复制功能（侧重于主站点数据推送） |
| Universal Replicator | 异步复制功能（侧重于备站点数据获取） |
| Hitachi Replication Manager Software | 复制功能软件包（可与 HCS 集成） |
| **Hitachi Local Replication** | **中文描述** |
| ShadowImage | 本地数据镜像功能 |
| Thin Image | 本地快照（Copy-after-Write） |
| Hitachi Replication Manager Software | 复制功能软件包（可与 HCS 集成） |
| **Hitachi Data Mobility** | **中文描述** |
| Hitachi Dynamic Tiering | 数据分层功能 |
| Hitachi Tiered Storage Manager Software | 分层功能软件包（可与 HCS 集成） |
| Volume Migration V2 | 数据迁移功能（支持外部存储卷） |
| **Hitachi Performance Analytics** | **中文描述** |
| Hitachi Command Director Software | 命令行管理软件包 |
| Hitachi Tuning Manager Software | HDS 性能调优软件包（可与 HCS 集成） |
| Hitachi Tiered Storage Manager Software | 分层功能软件包（可与 HCS 集成） |
| **独自购买软件包** | **中文描述** |
| G400 to G600 upgrade | G400 到 G600 的升级 license（不可逆） |

➢ 导入 license 【如下图，点击“install”，选择相应的 license 文件或者 key code 即可。】





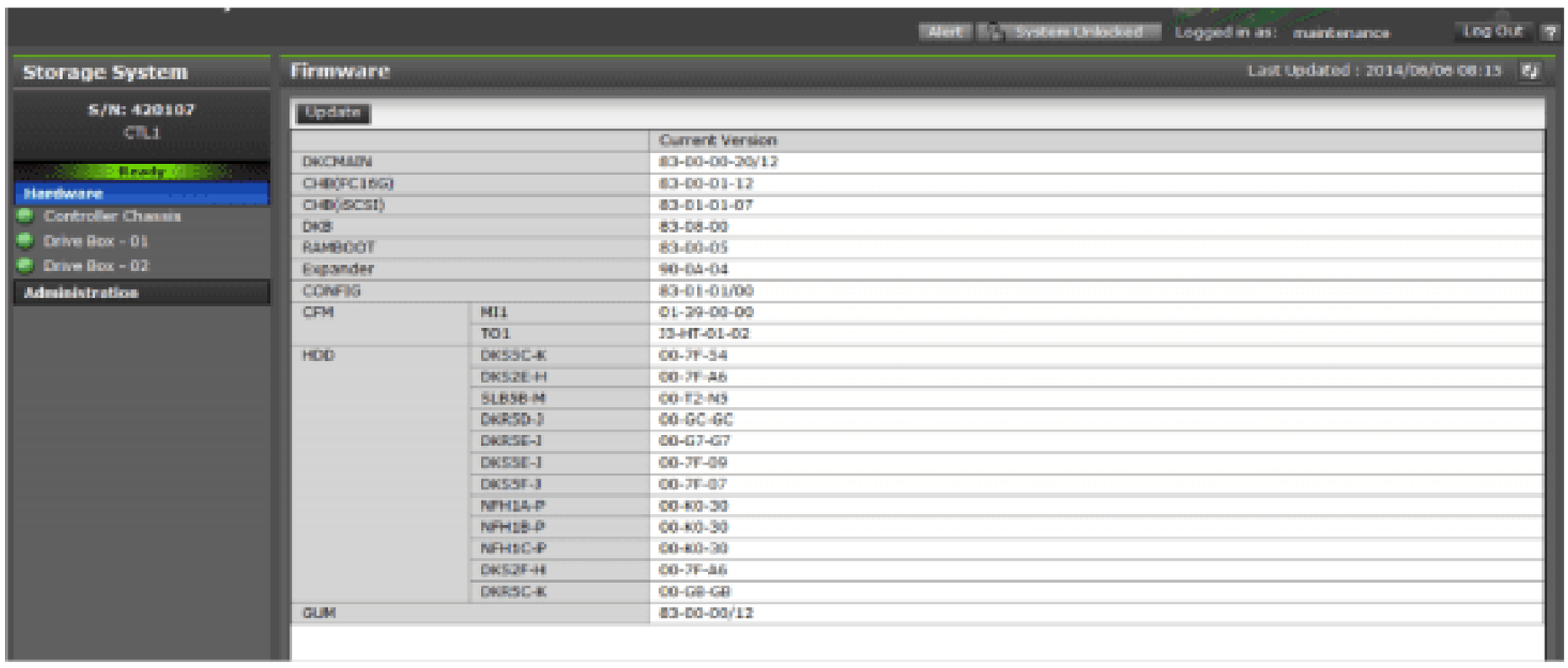



## 4.4 在线微码升级

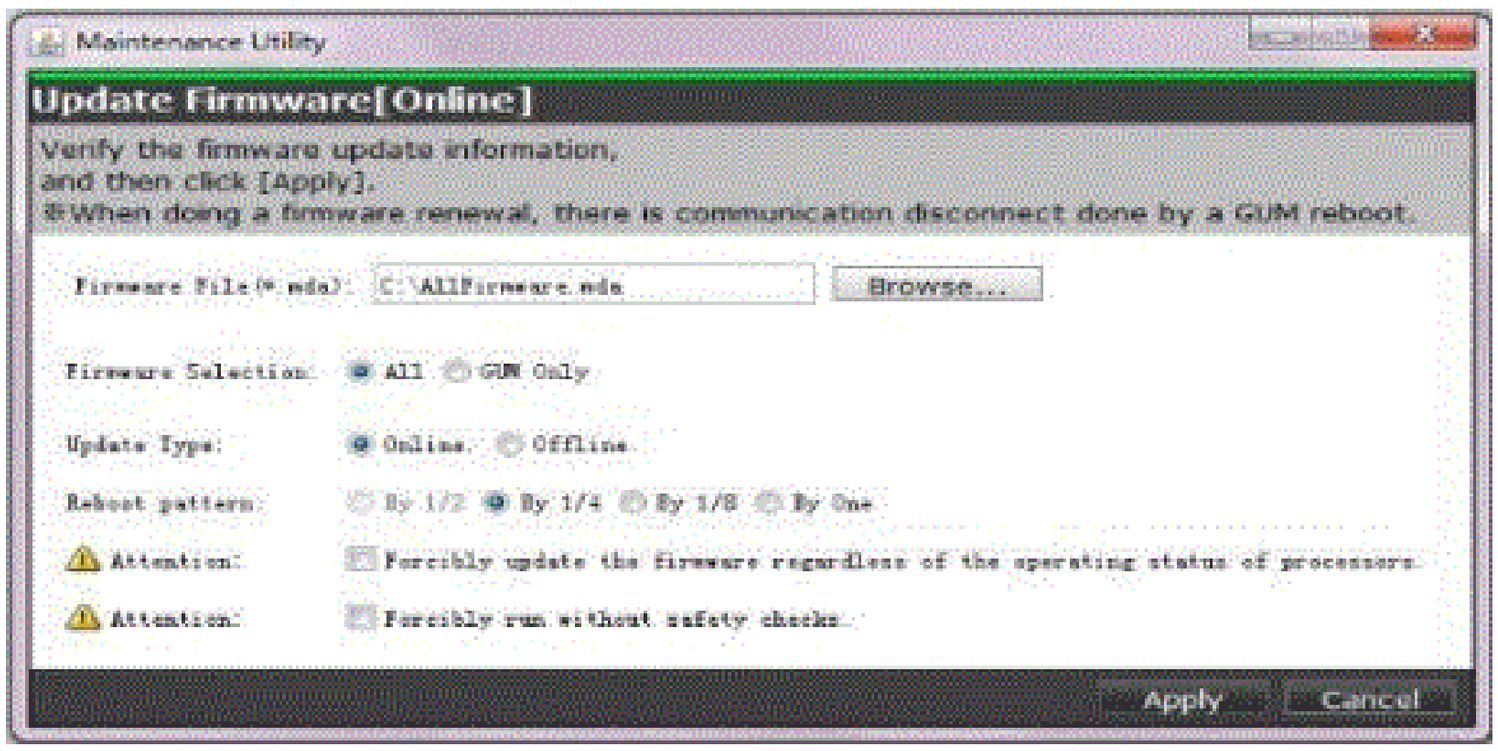
1. 微码说明,微码存放的位置

| Firmware | Written to |
|---|---|
| RAMBOOT | CFM/MP |
| DKCMAIN | CFM/MP |
| CHB(FC16G) | CFM/CHB(FC16G) |
| CHB(iSCSI) | CFM/CHB(iSCSI) |
| DKB | CFM/DKB Port |
| CFM | CFM |
| Expander | DB(ENC) |
| HDD | DB(HDD) |
| CONFIG | CFM/SM |
| GUM | CFM/GUM |

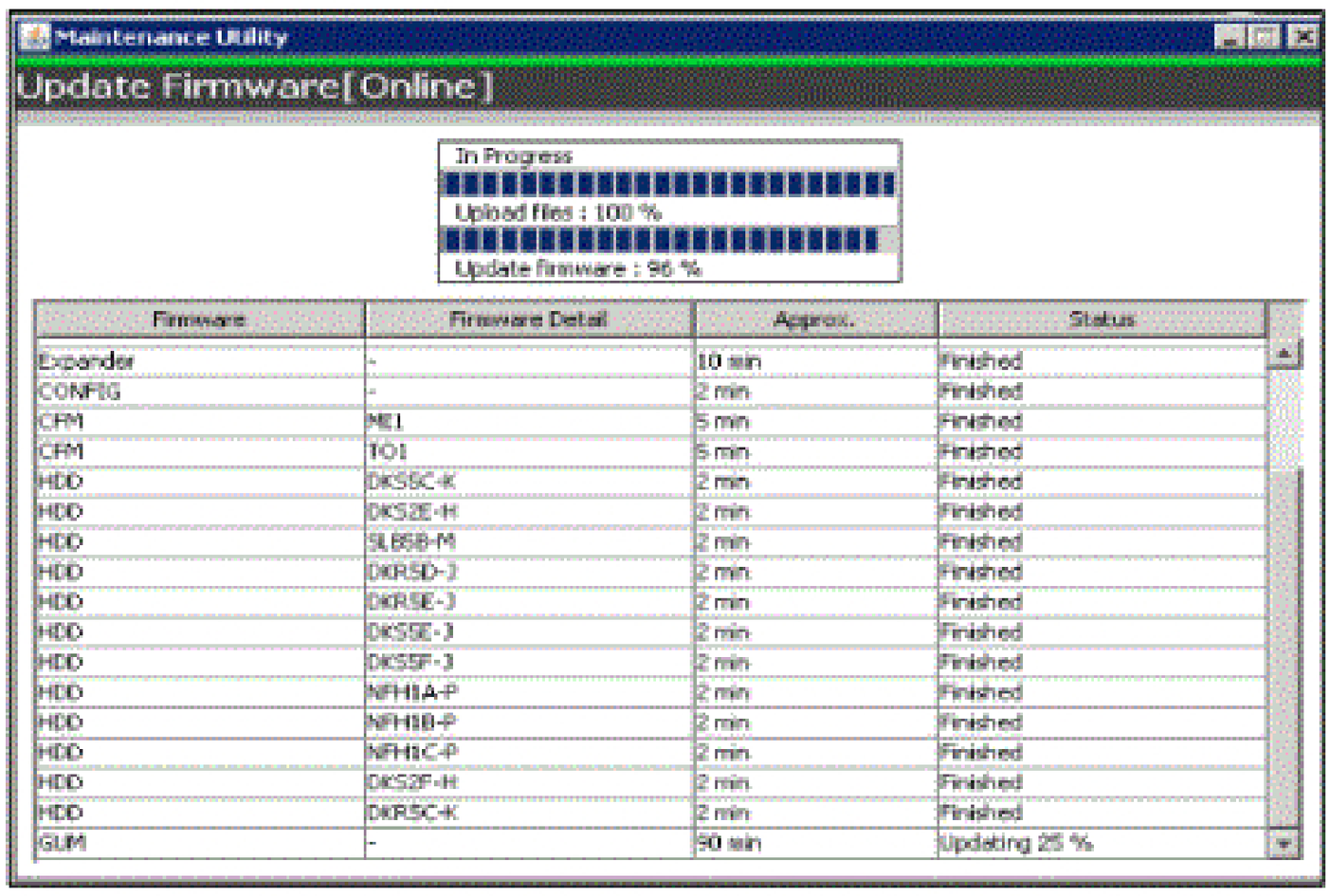
2. 微码升级选择 GUM 工具，如下图所示：



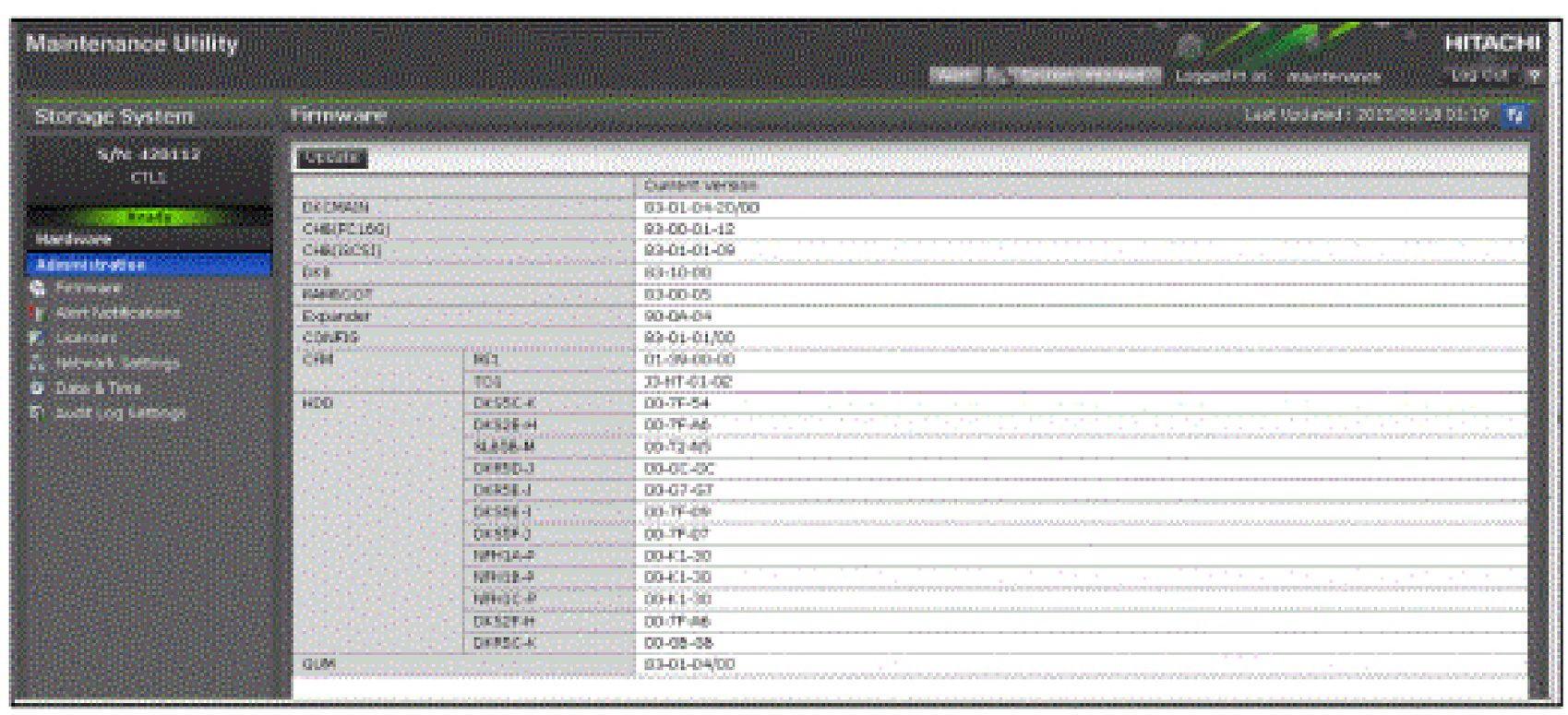

3. 点击 Update 之后，弹出以下界面（事先需将微码文件解压出来得到一个.mda 文 件）【GUM Only 方式只适应于 New Install】




4. 点击“Apply”按钮之后弹出以下界（微码先上传，然后再升级，时间大约 2 个半小时左右）

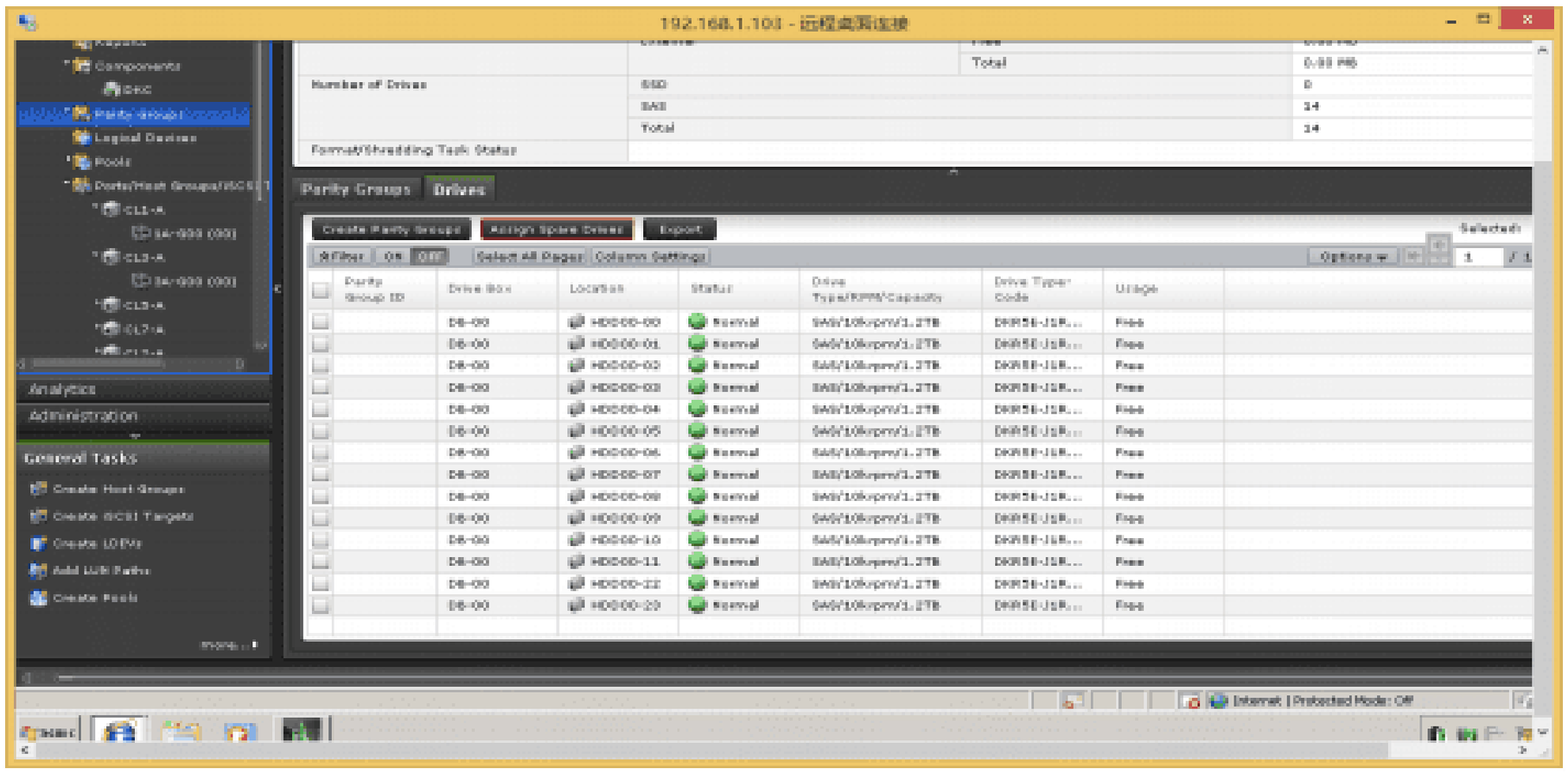


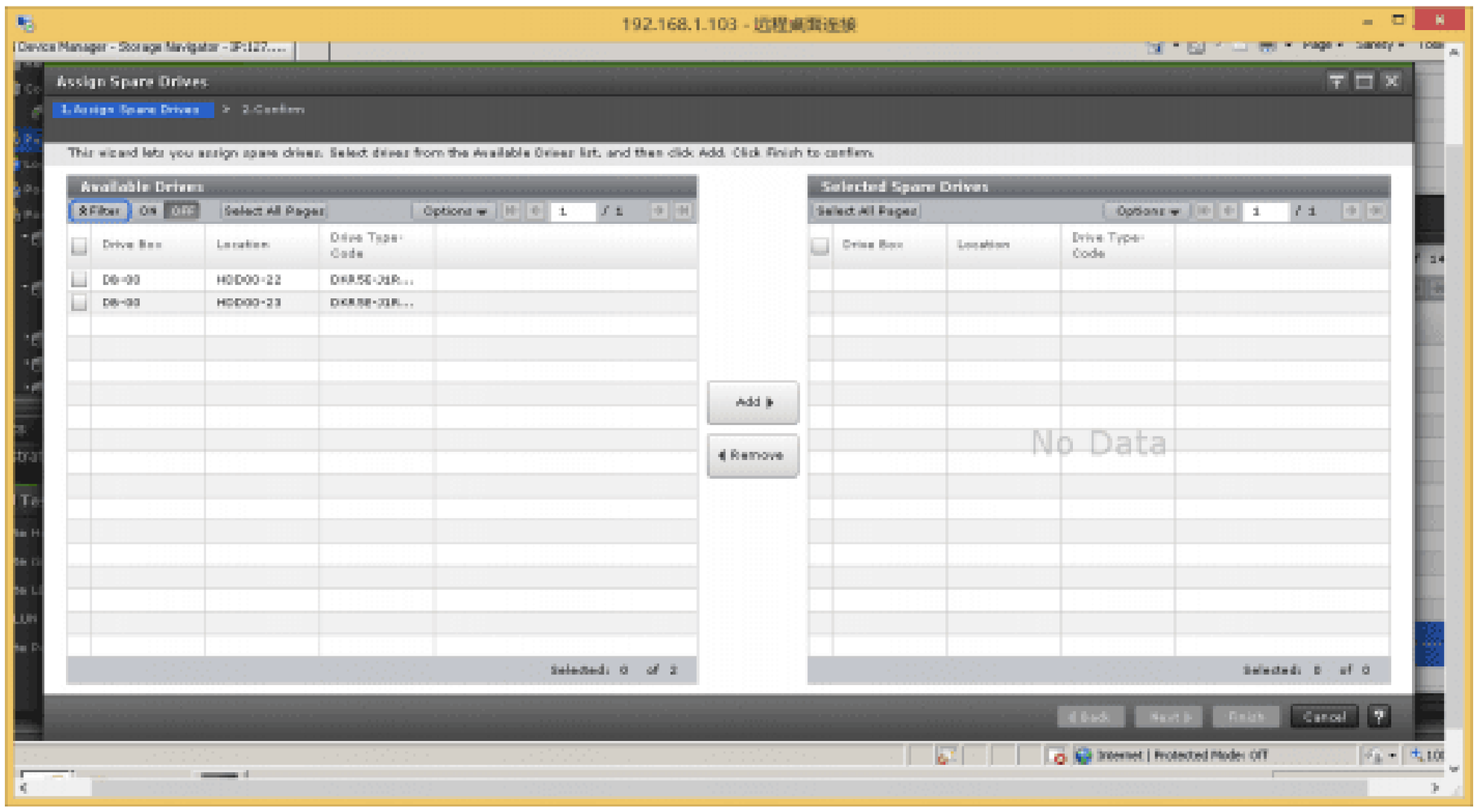

5. 升级完成后检查微码是否升级成功

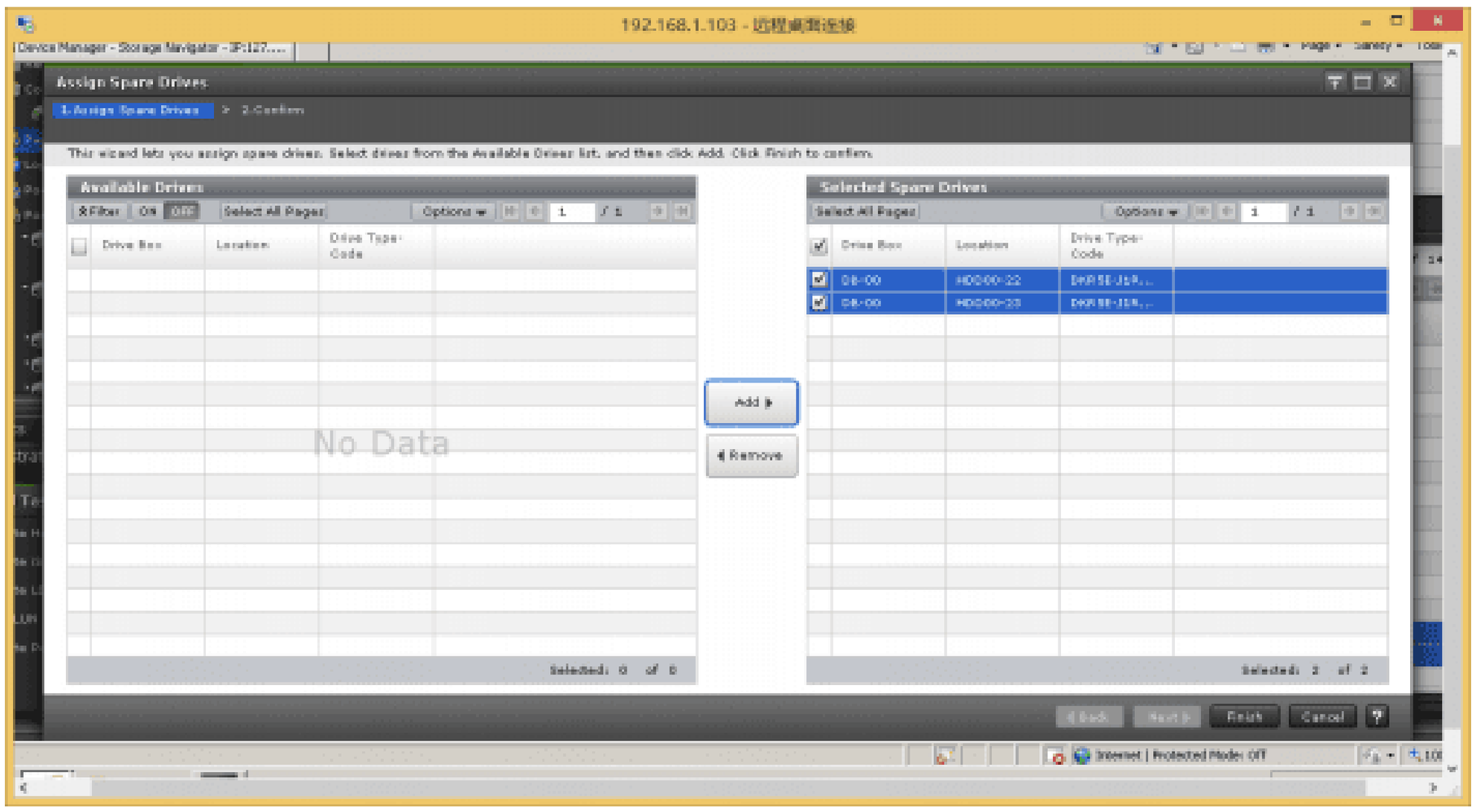



## 4.5 创建热备盘

1. 选择Parity Groups Devices Assign Spare Drives即可，如下图：


192.168.1.103 - 远程桌面连接
Parity Groups
Drives
Create Parity Groups
Assign Spare Drives
Export
Analytics
Administration
General Tasks


192.168.1.103 - 远程桌面连接
Assign Spare Drives
1. Assign Spare Drives
2. Confirm
This wizard lets you assign spare drives. Select drives from the Available Drives list, and then click Add. Click Finish to confirm.
Available Drives
Selected Spare Drives
Add
Remove
No Data
Cancel


192.168.1.103 - 远程桌面连接
Assign Spare Drives
1. Assign Spare Drives
2. Confirm
This wizard lets you assign spare drives. Select drives from the Available Drives list, and then click Add. Click Finish to confirm.
Available Drives
Selected Spare Drives
Add
Remove
No Data
Finish
Cancel



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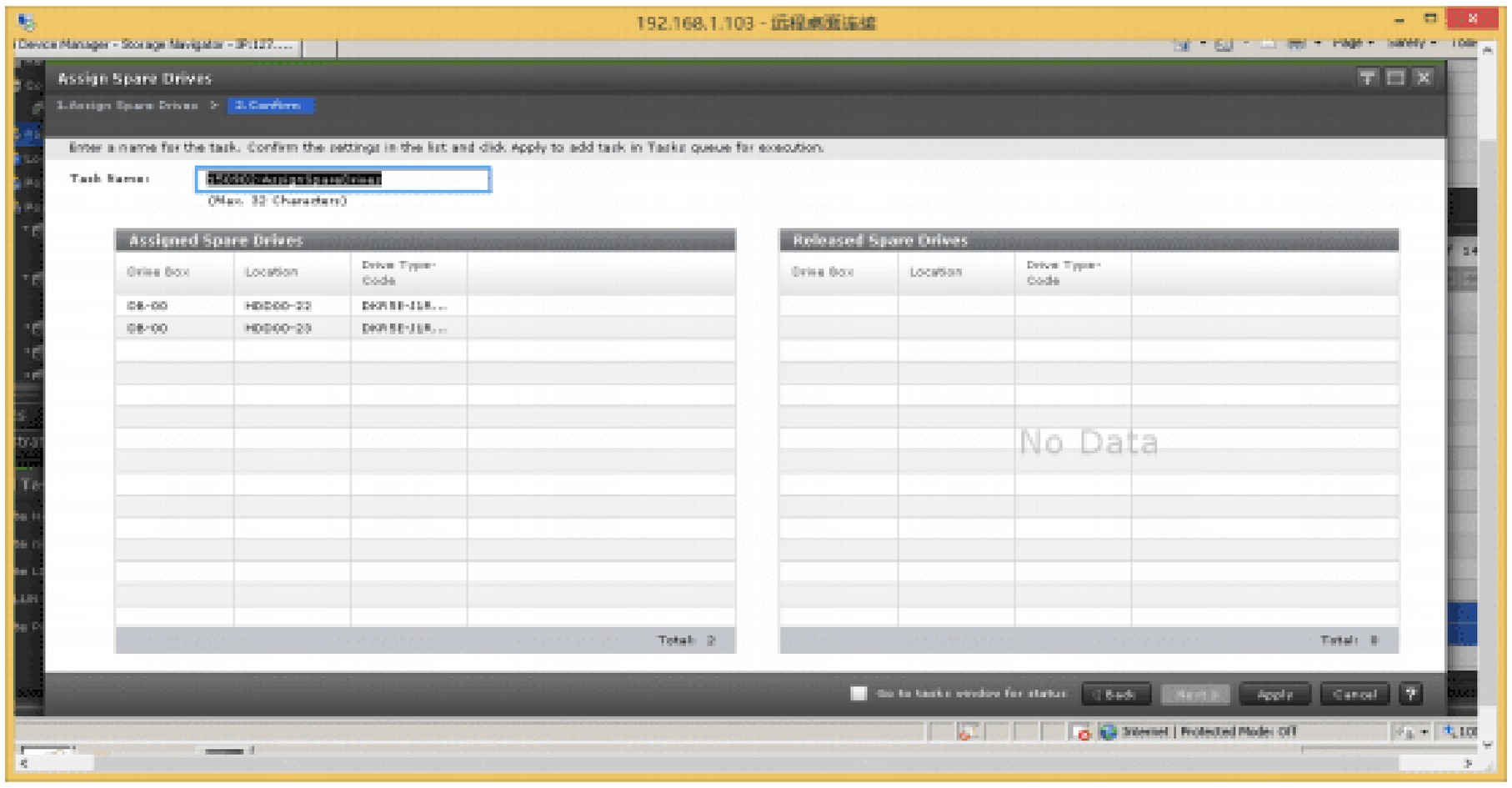
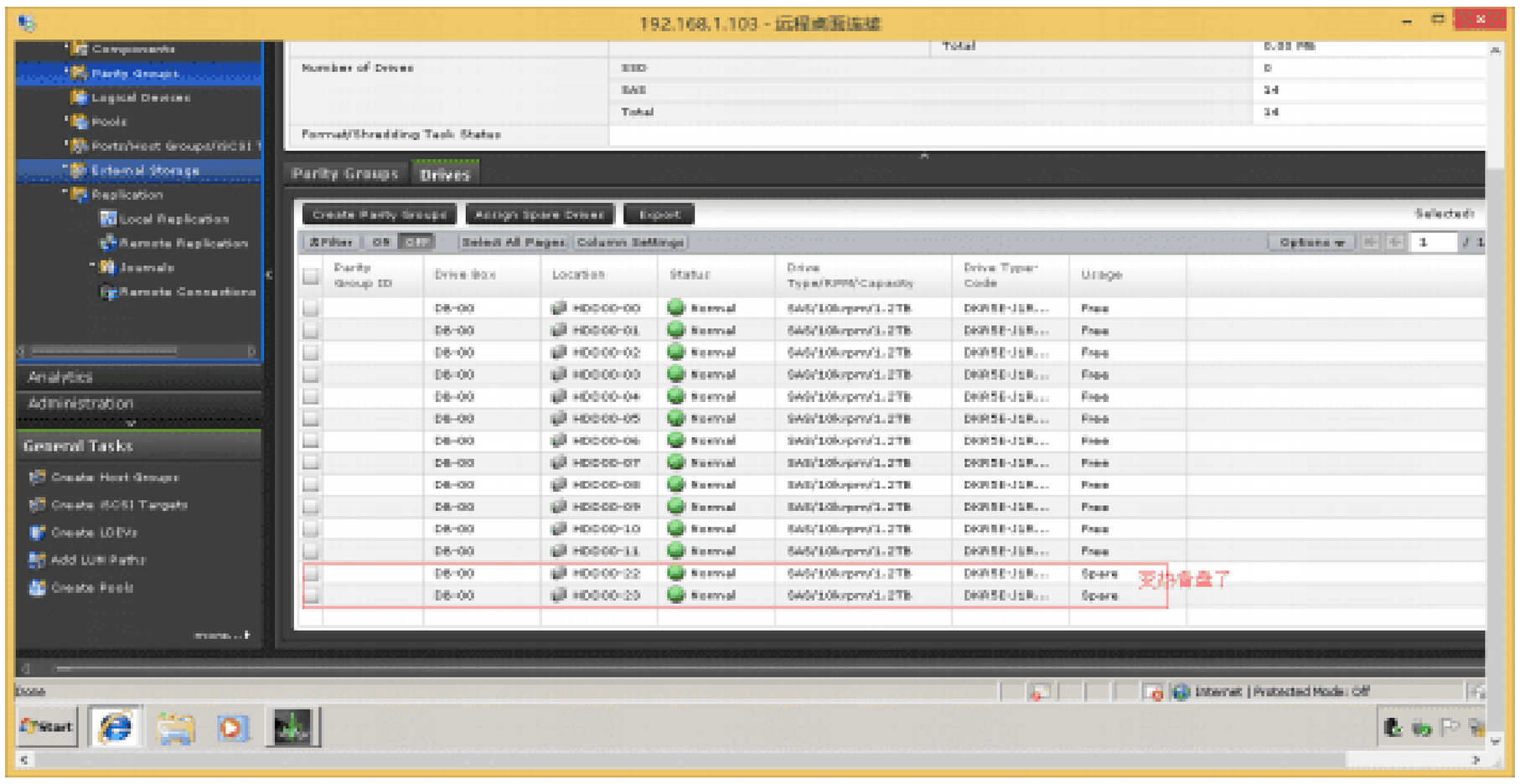
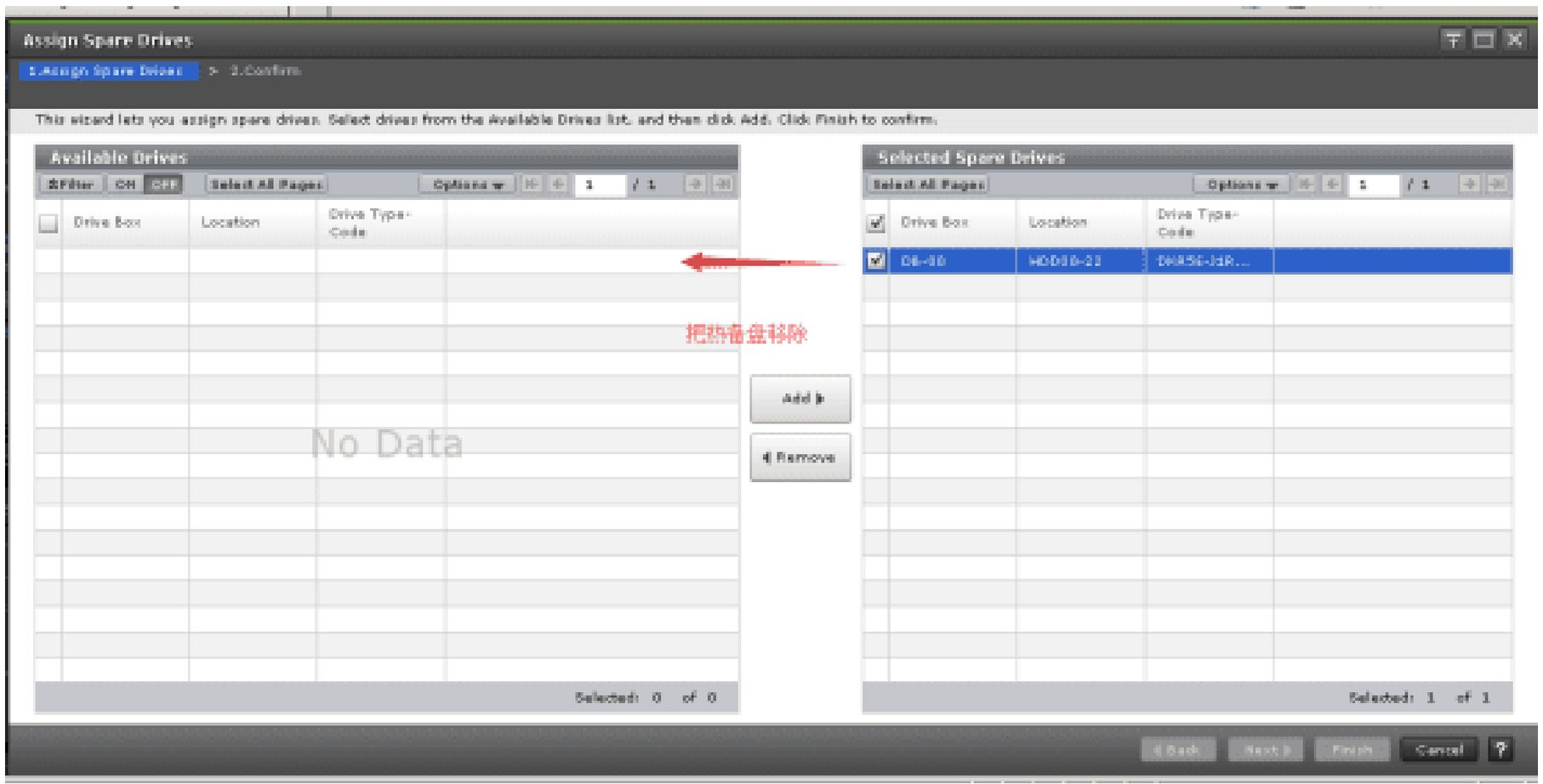

192.168.1.103 - 远程桌面连接
Assign Spare Drives
Enter a name for the task. Confirm the settings in the list and click Apply to add task in Tasks queue for execution.
Task Name:
Assigned Spare Drives
Drive Box
Location
Drive Type-Code
Total: 2
Released Spare Drives
No Data
Total: 0
Back
Next
Apply
Cancel


192.168.1.103 - 远程桌面连接
Parity Groups
Logical Devices
Pools
External Storage
Replication
Local Replication
Remote Replication
Journals
Remote Connections
Analytics
Administration
General Tasks
Create Host Groups
Create iSCSI Targets
Create LDEVs
Add LUN Paths
Create Pools
Number of Drives
SSD
SAS
Total
Format/Shredding Task Status
Parity Groups
Drives
Create Parity Groups
Assign Spare Drives
Export
Parity Group ID
Drive Box
Location
Status
Drive Type/RPM/Capacity
Drive Type-Code
Usage
Normal
Free
Spare
更热备盘了

# 4.6 删除热备盘


Assign Spare Drives
This wizard lets you assign spare drives. Select drives from the Available Drives list, and then click Add. Click Finish to confirm.
Available Drives
Drive Box
Location
Drive Type-Code
把热备盘移除
No Data
Selected: 0 of 0
Add
Remove
Selected Spare Drives
Selected: 1 of 1
Back
Next
Finish
Cancel



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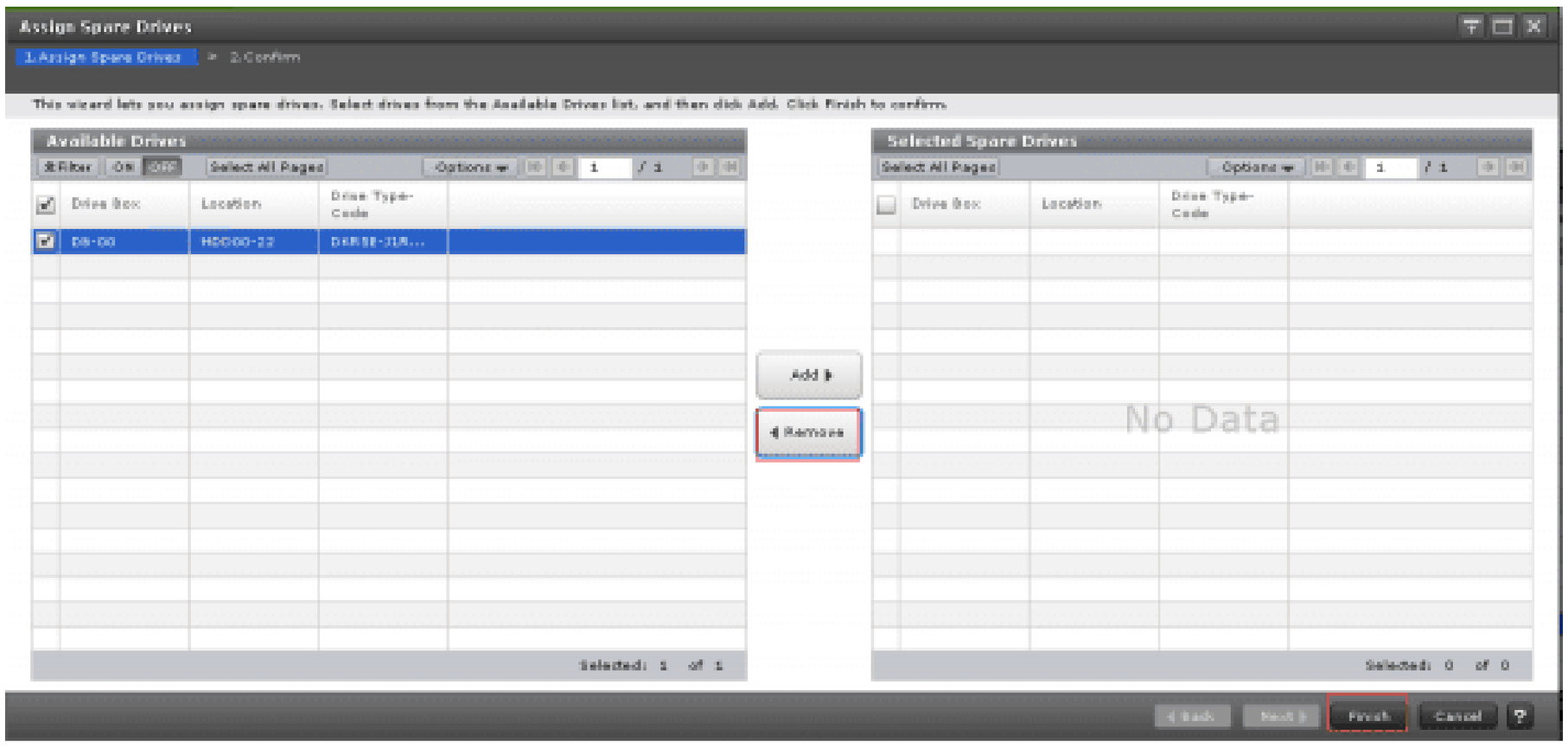
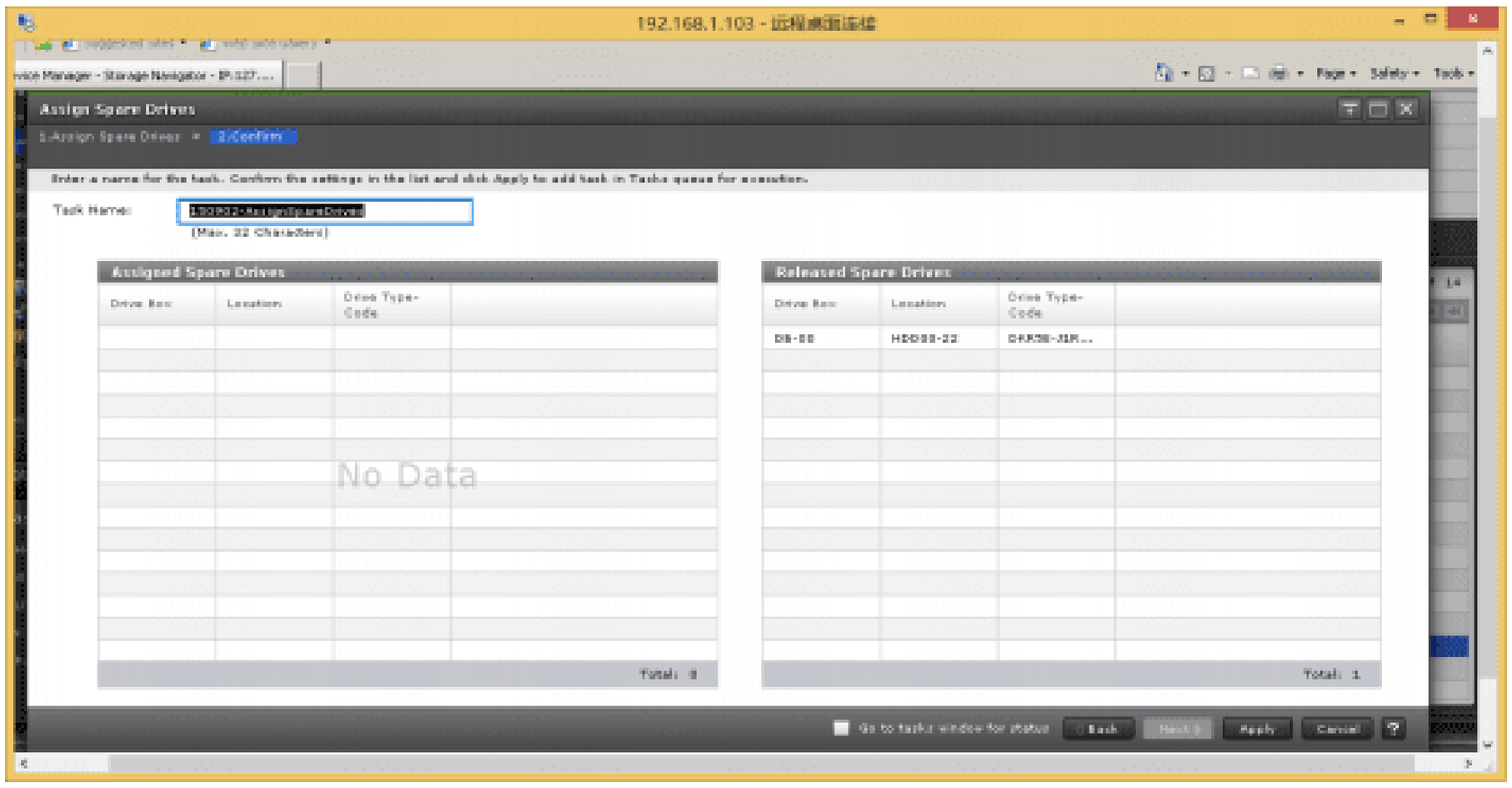
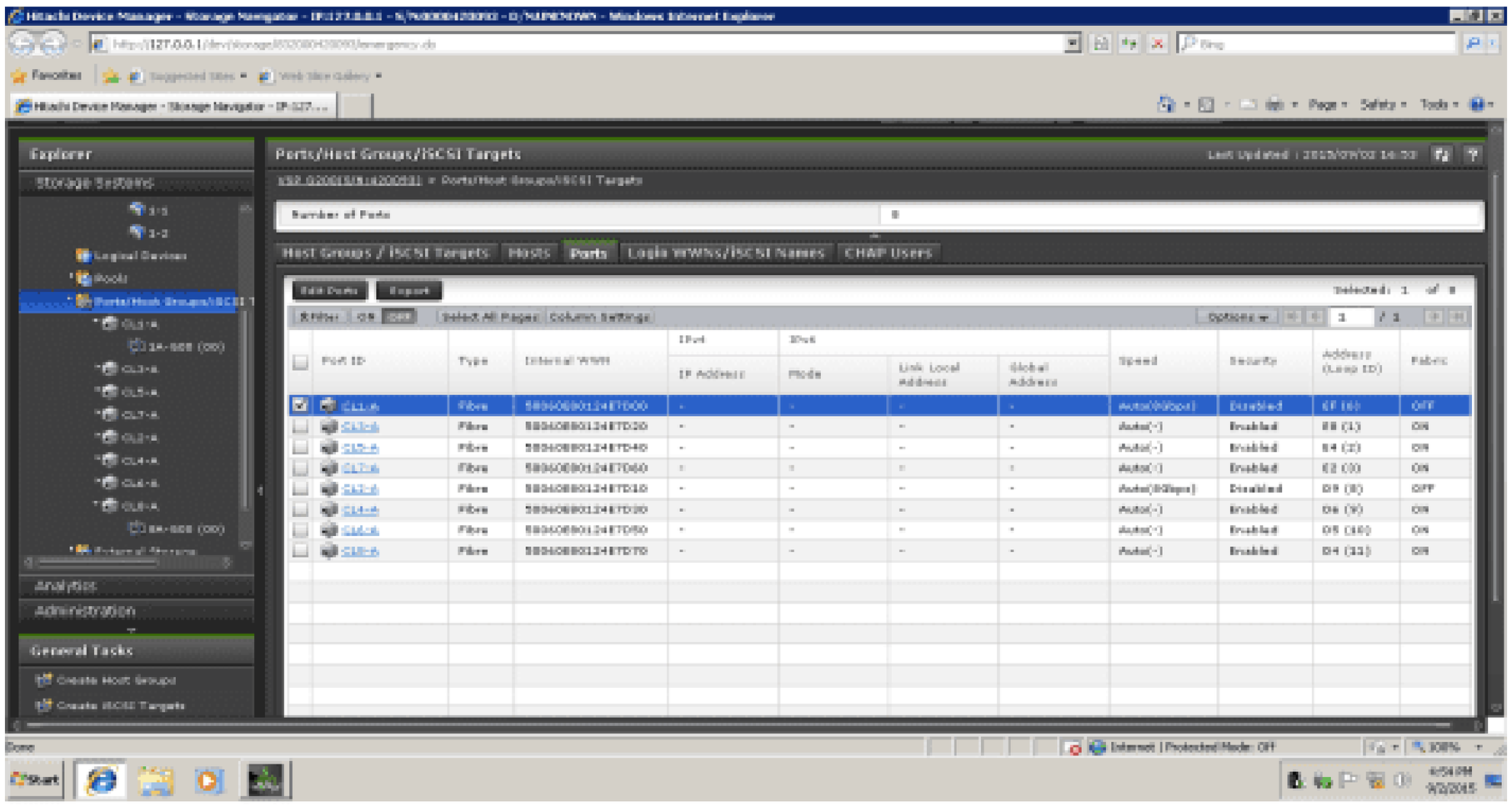



# 4.7 端口设置

1.Ports/Host Groups->Ports->Edit Ports



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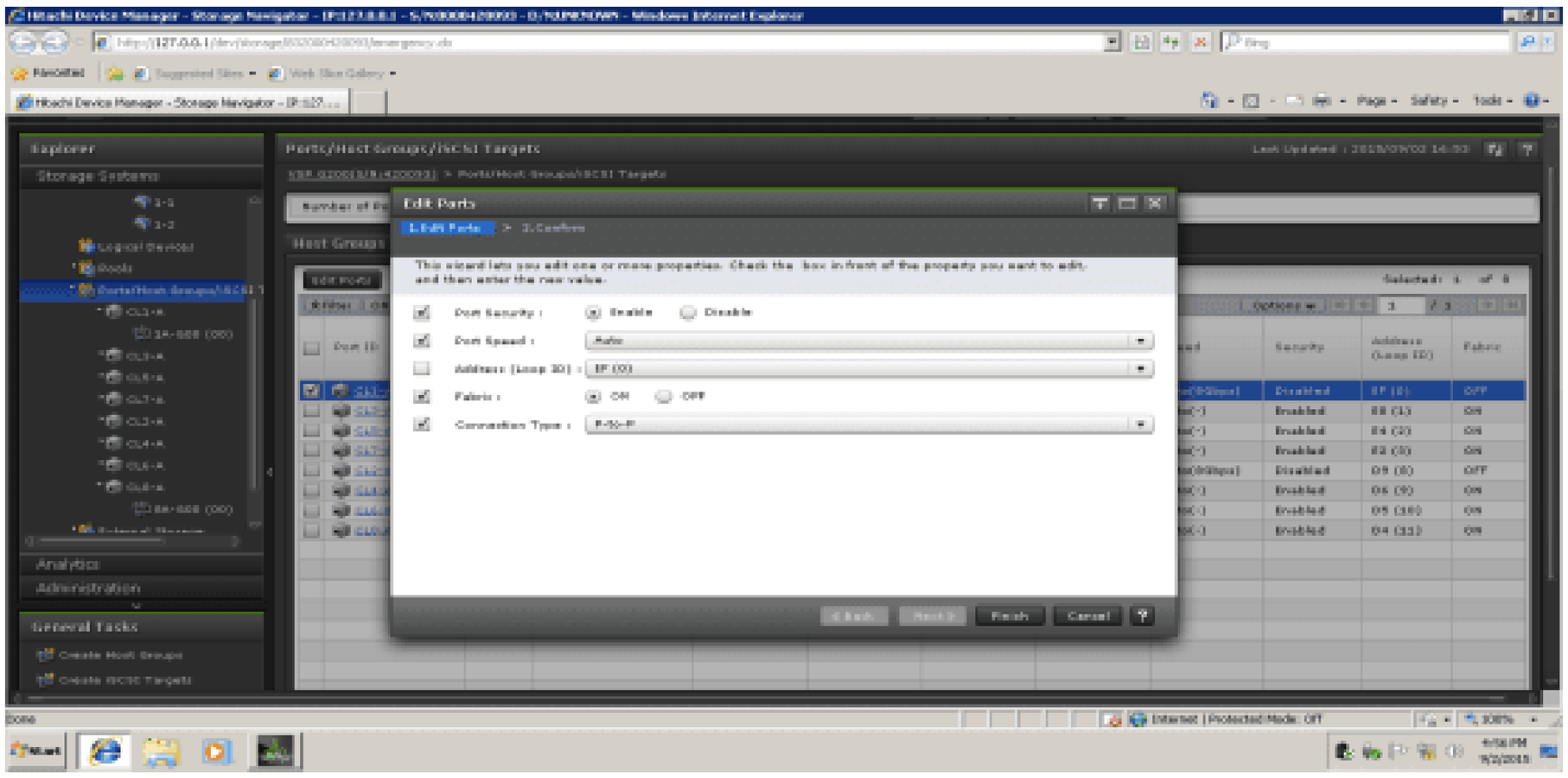
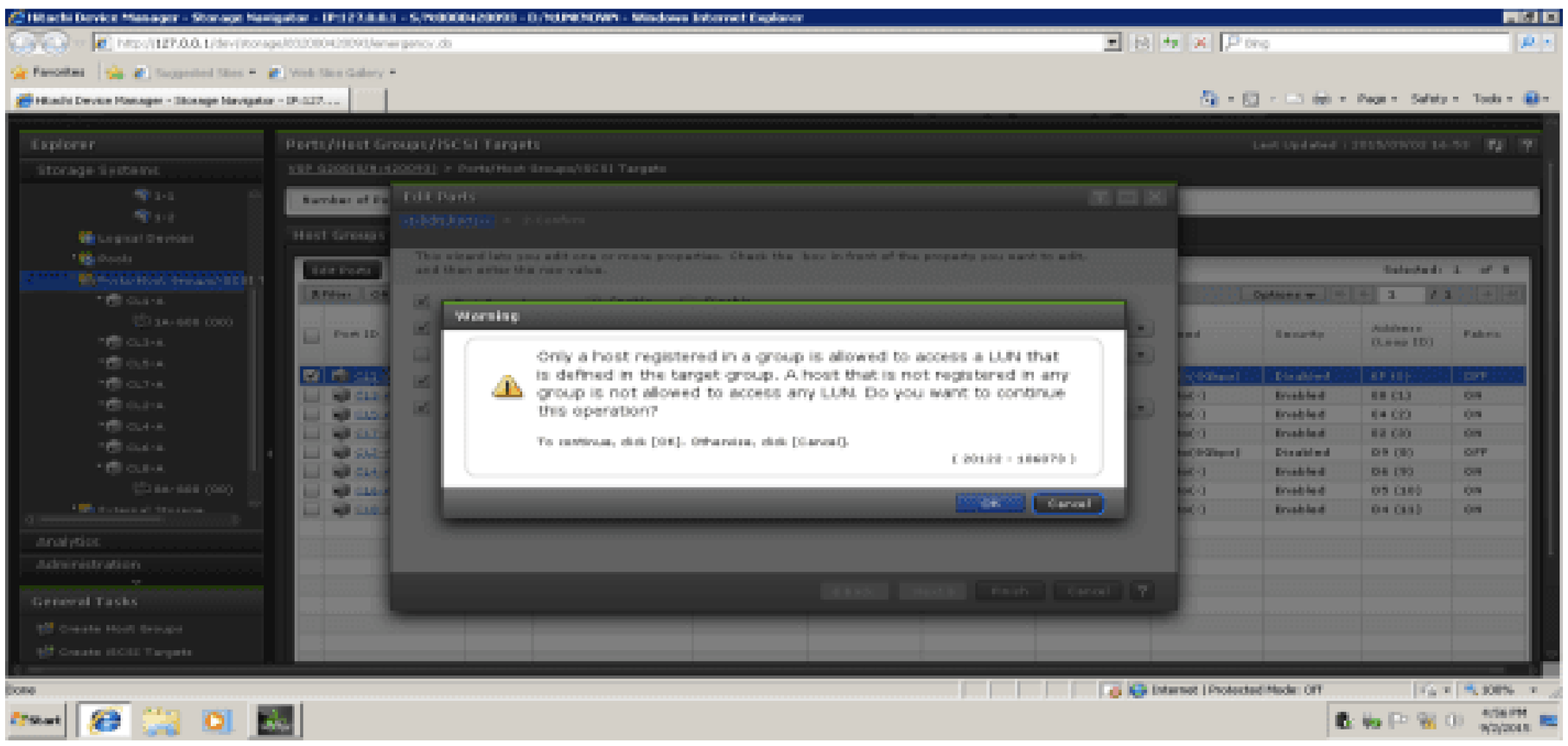
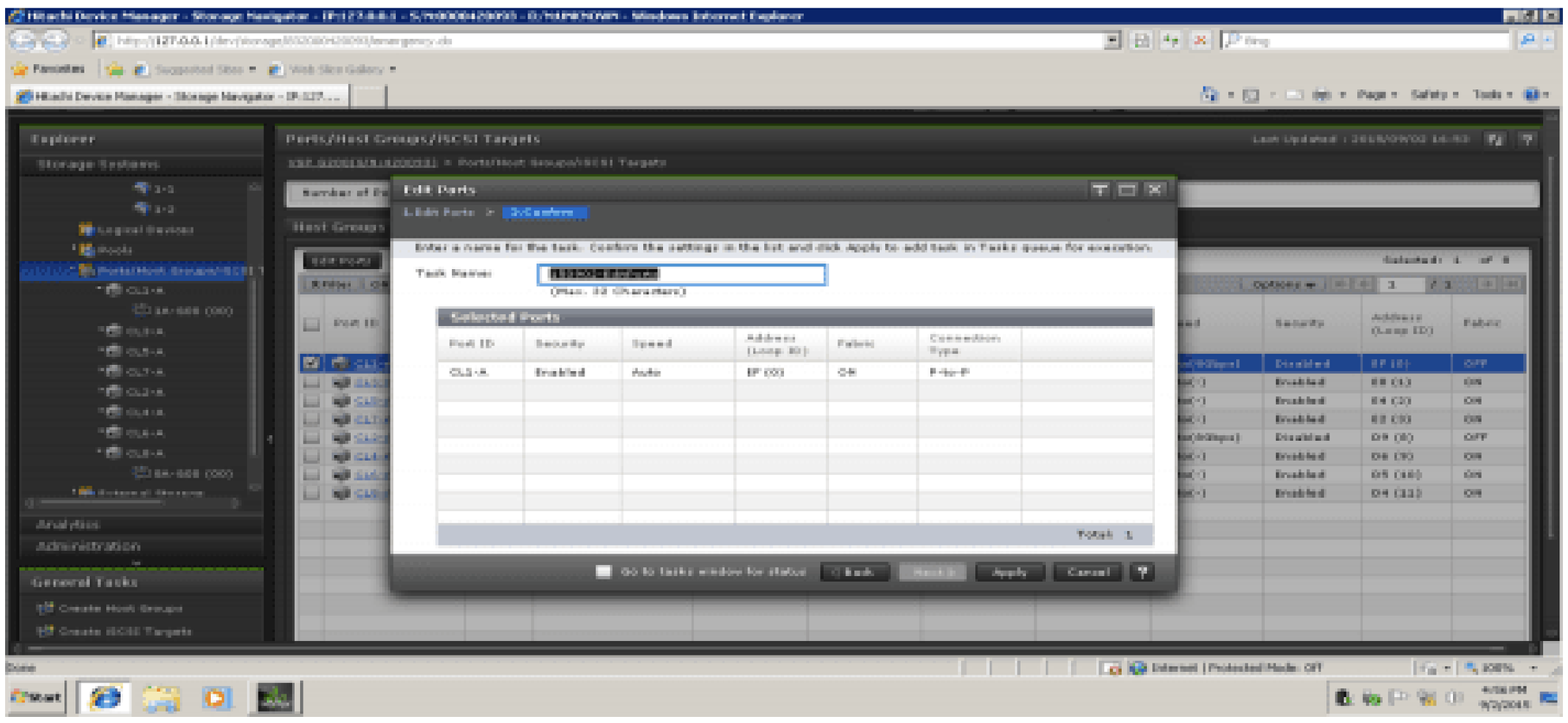
1. 在创建 HostGroup 之前，必须启用 Port 的 Enable Host Group Security 选择上，否则不允许在基本的 HostGroup 之外创建额外的 Host Group。
2. Fabric 参数，如果直连，选择 OFF，连交换机选择 ON
3. Connection Type：直连选择 FC-AL，连交换机选择 P-to-P
4. 选择如下图红框按钮，选择相应端口进行编辑。



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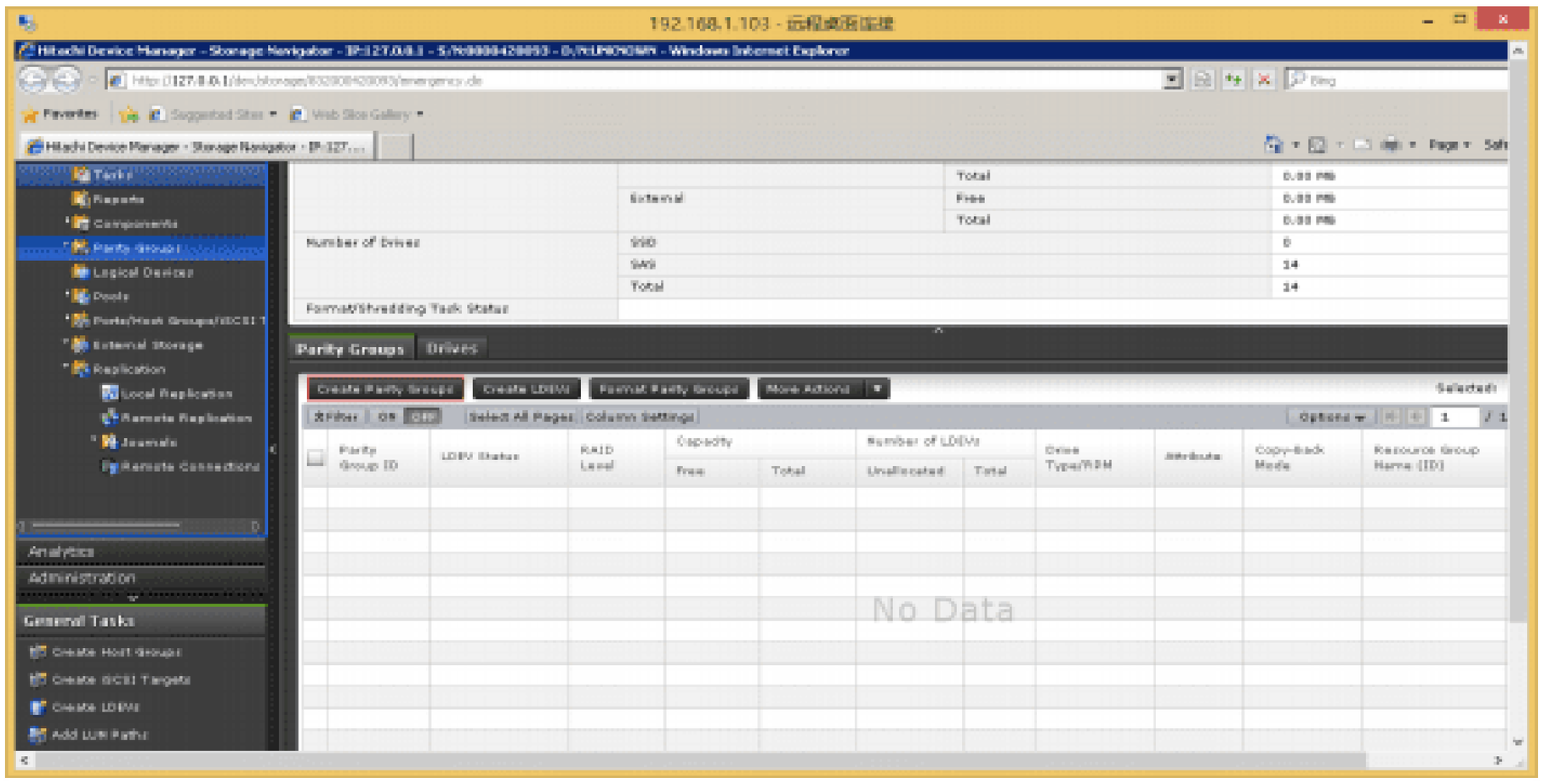
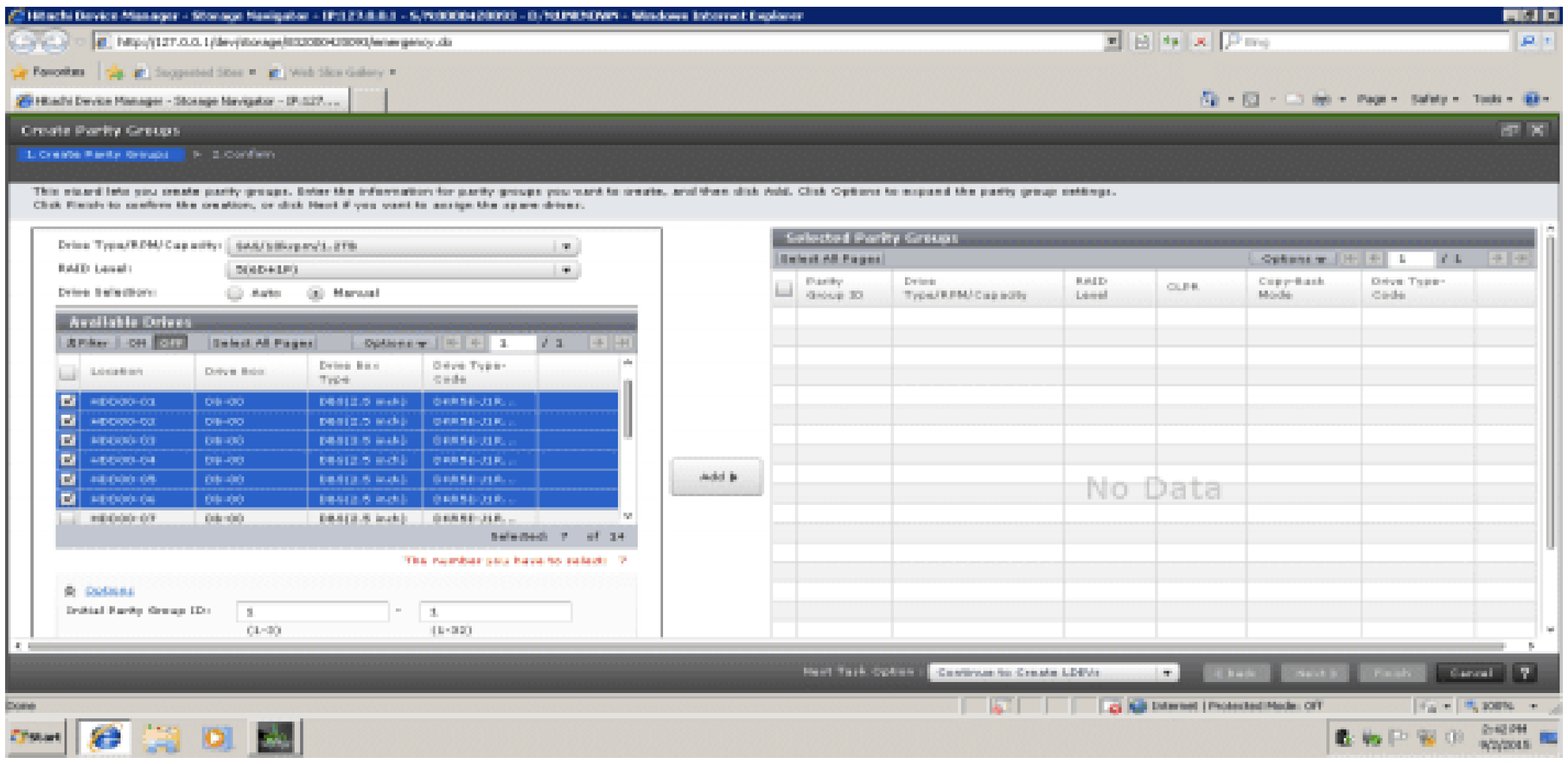
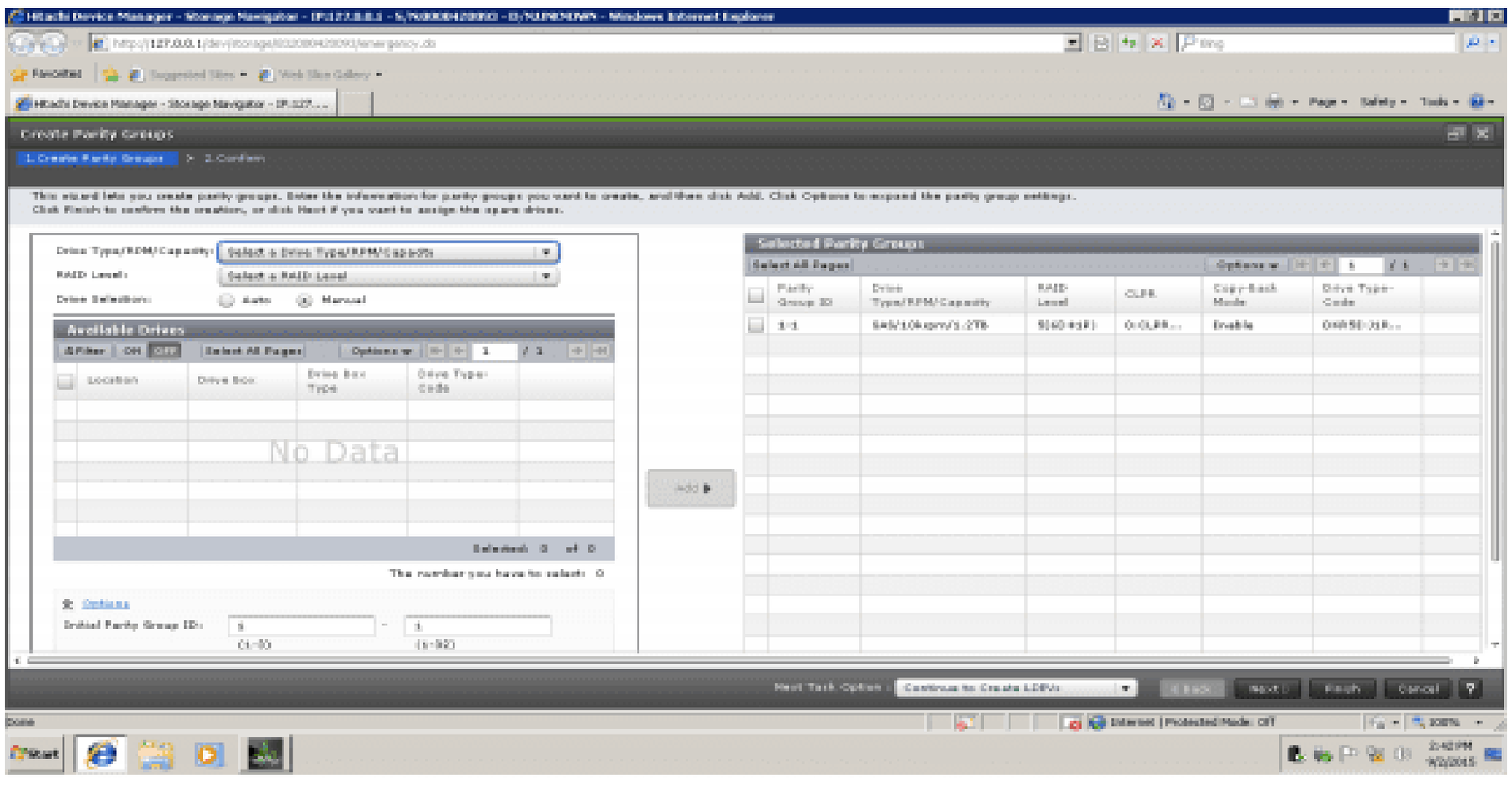
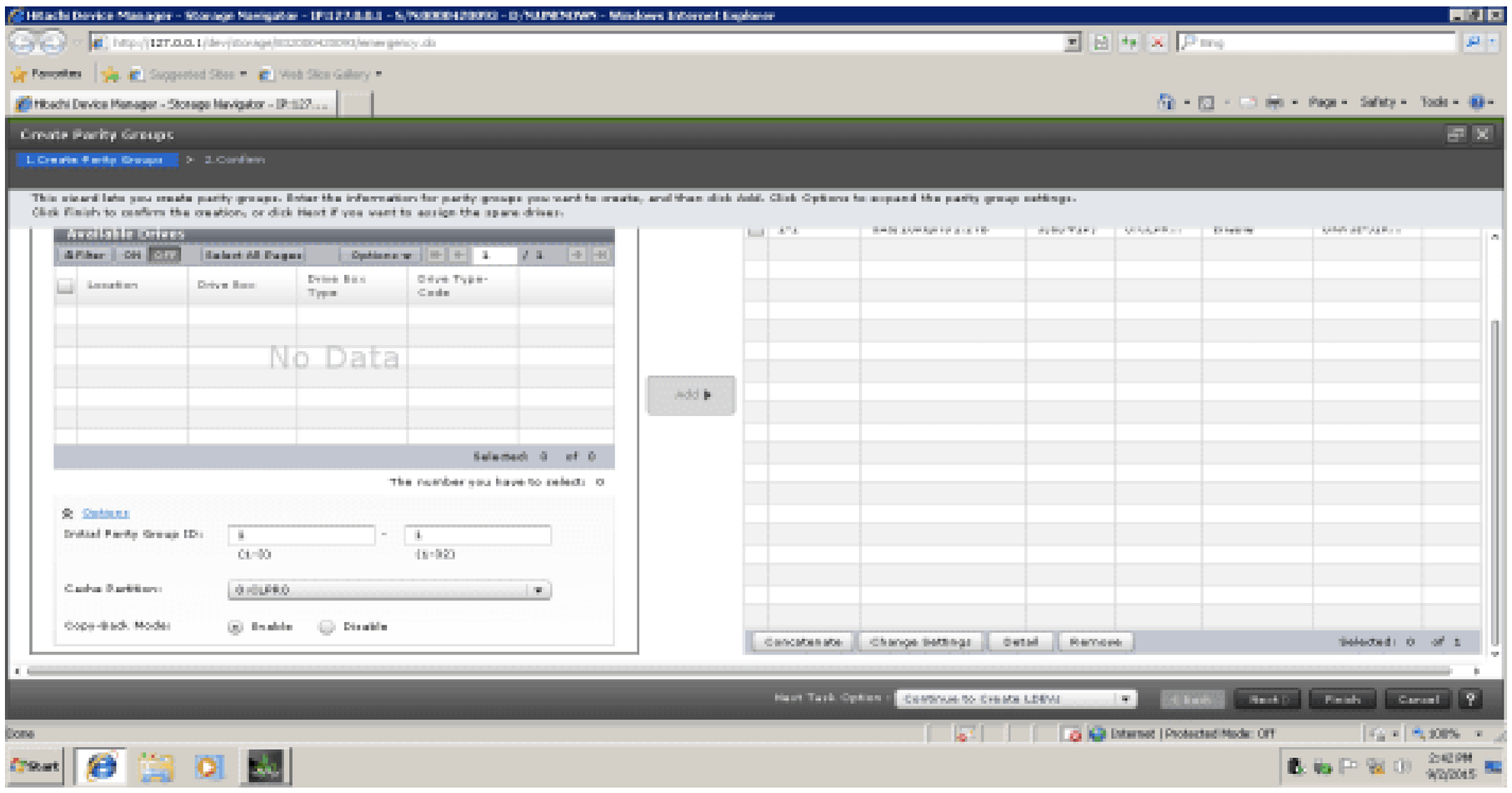
## 4.8 RAID 组划分

1. 创建Parity Groups 选择Parity Groups Parity Groups，如下图所示



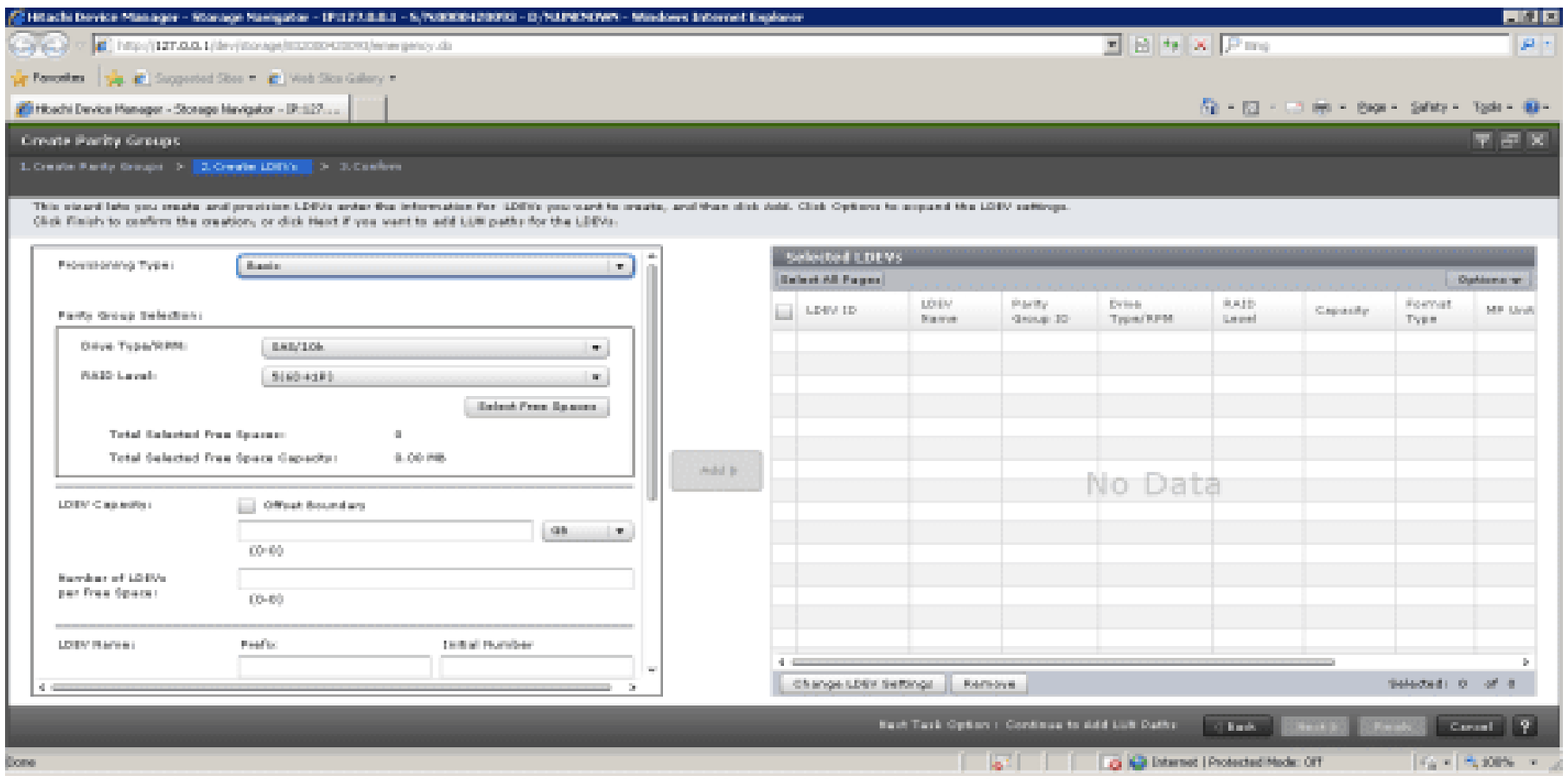



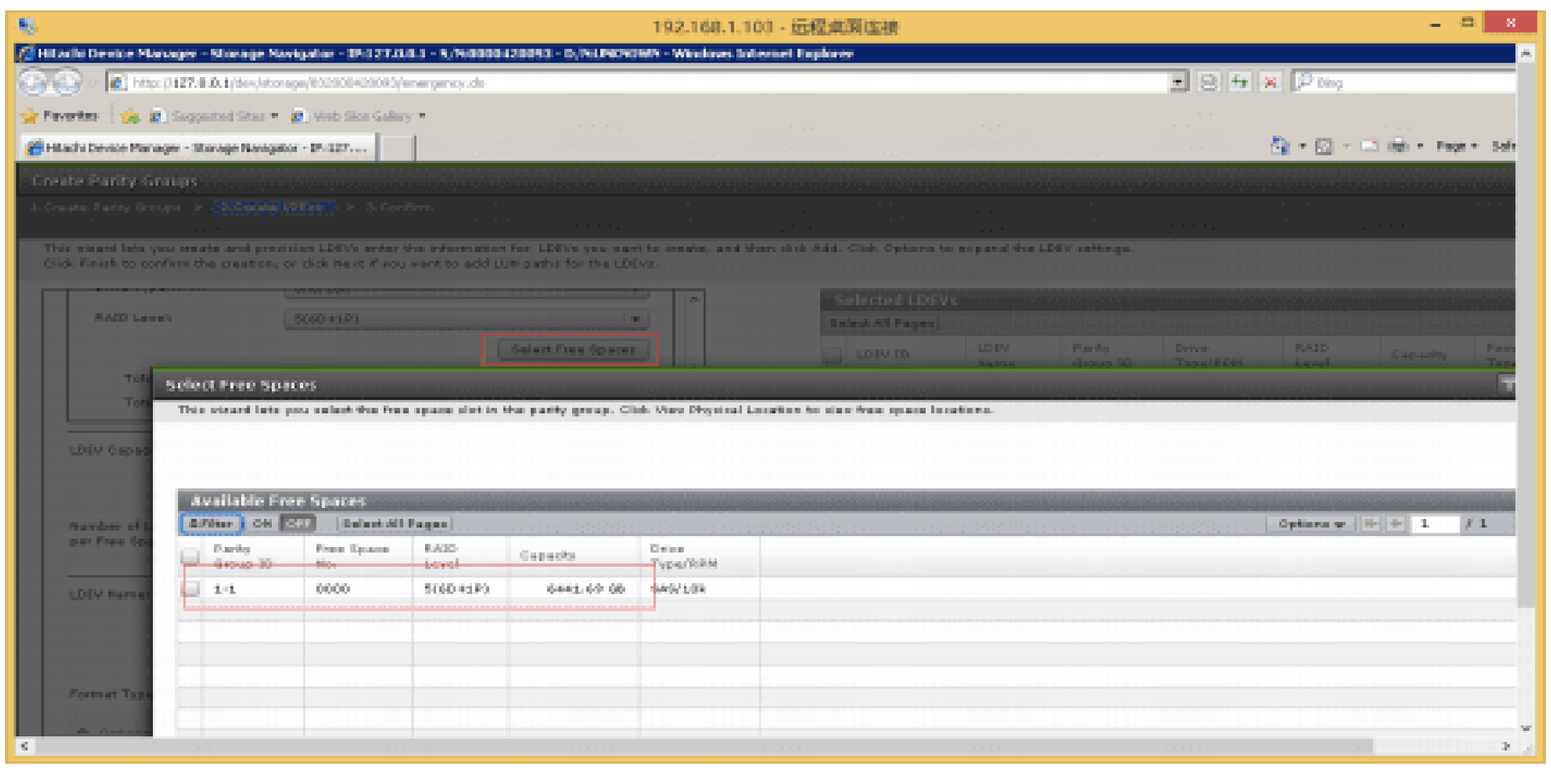



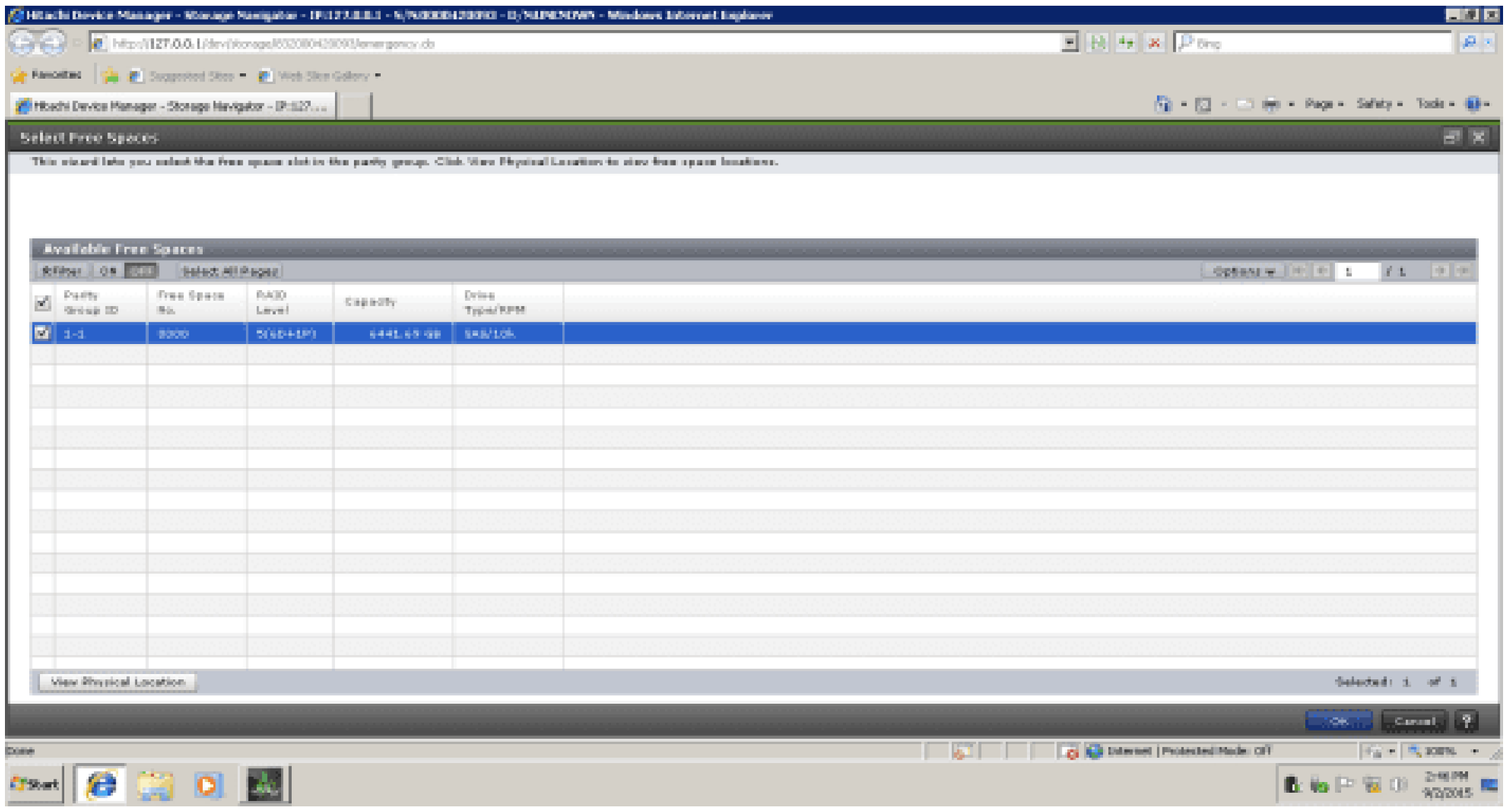


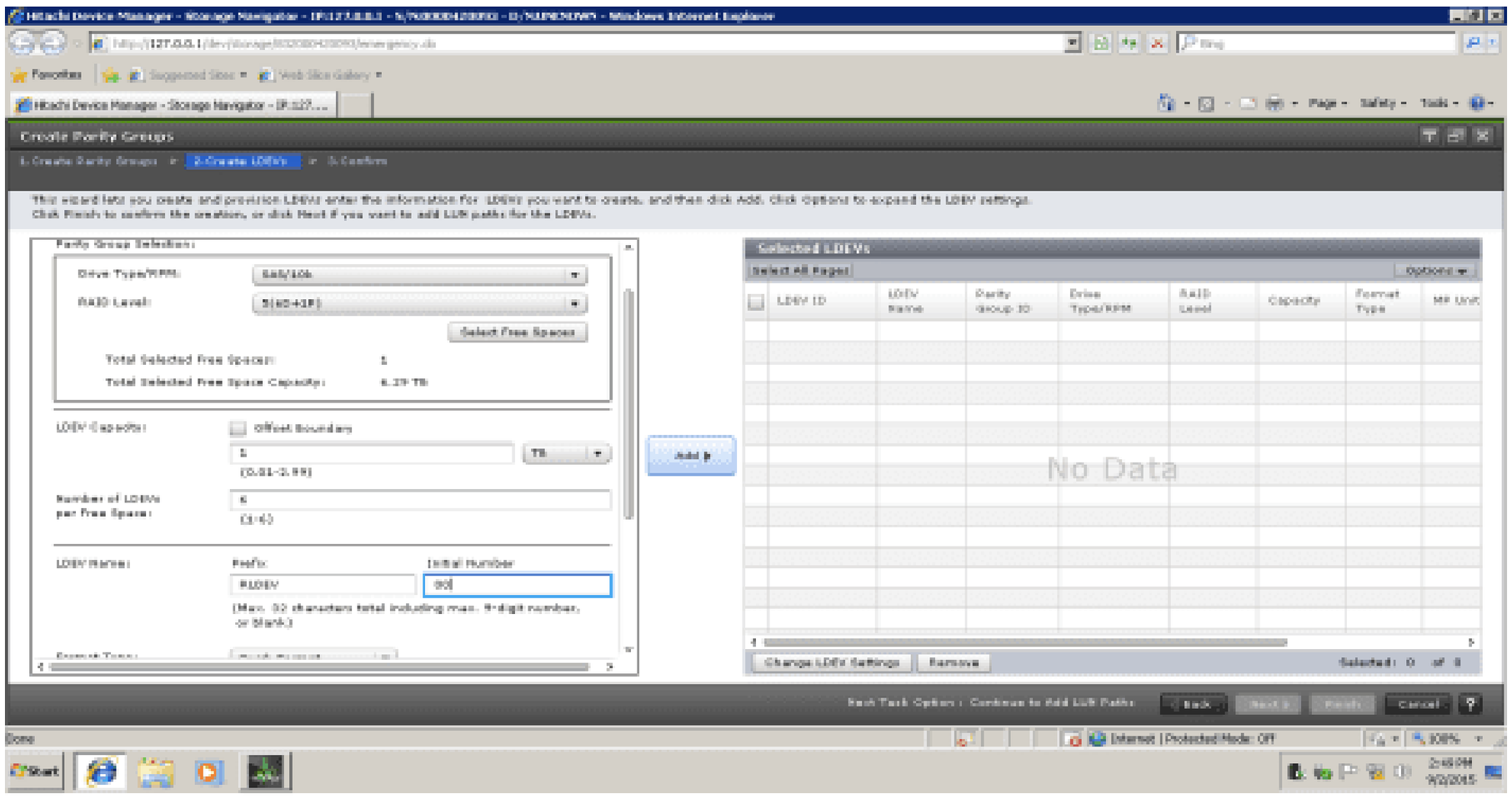

## 4.9 创建 LDEVS

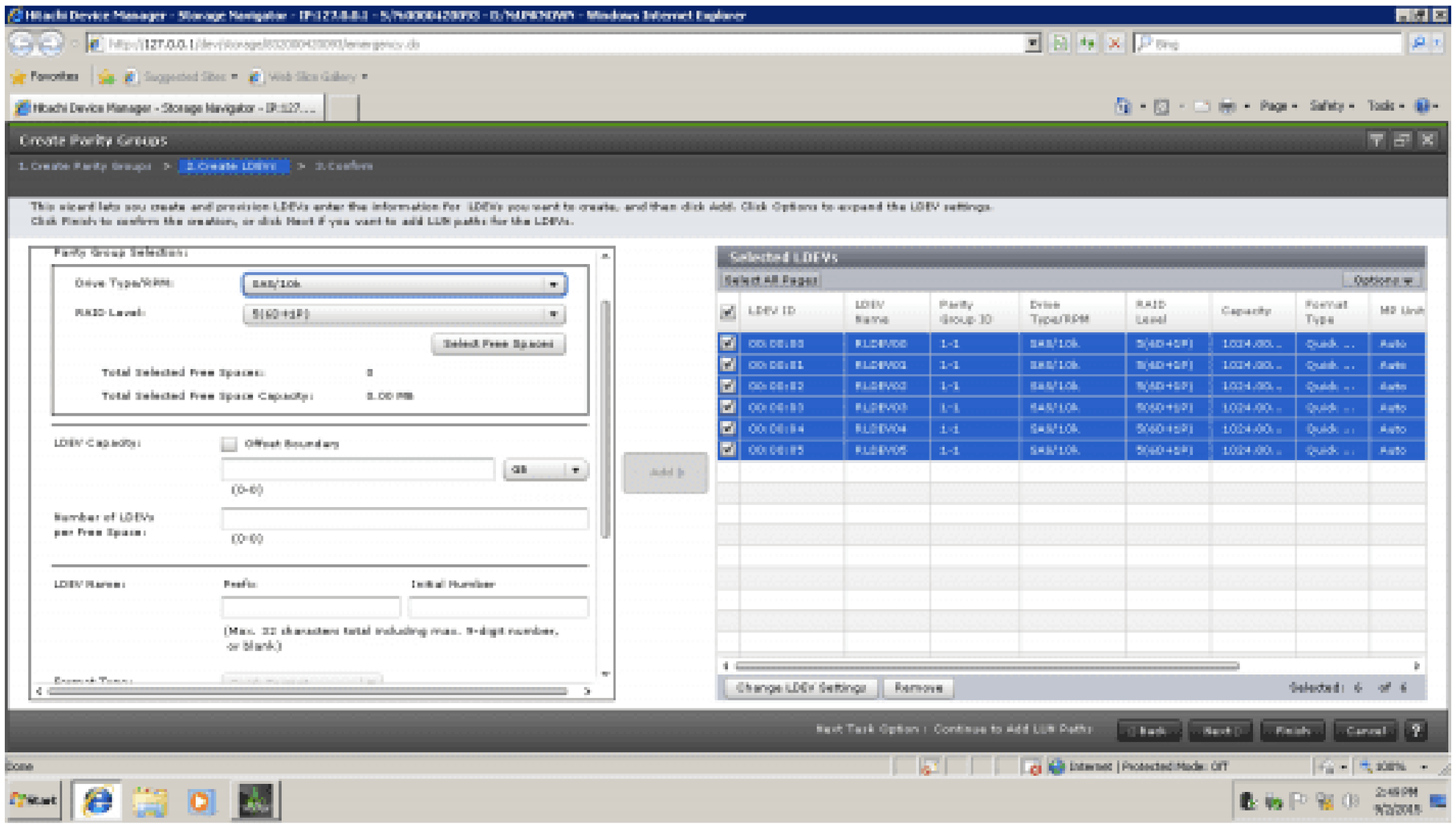
【注意：在 PG 上创建的 LDEVS 是实卷，单个 **LDEVS** 大小不能超过 **3TB**】

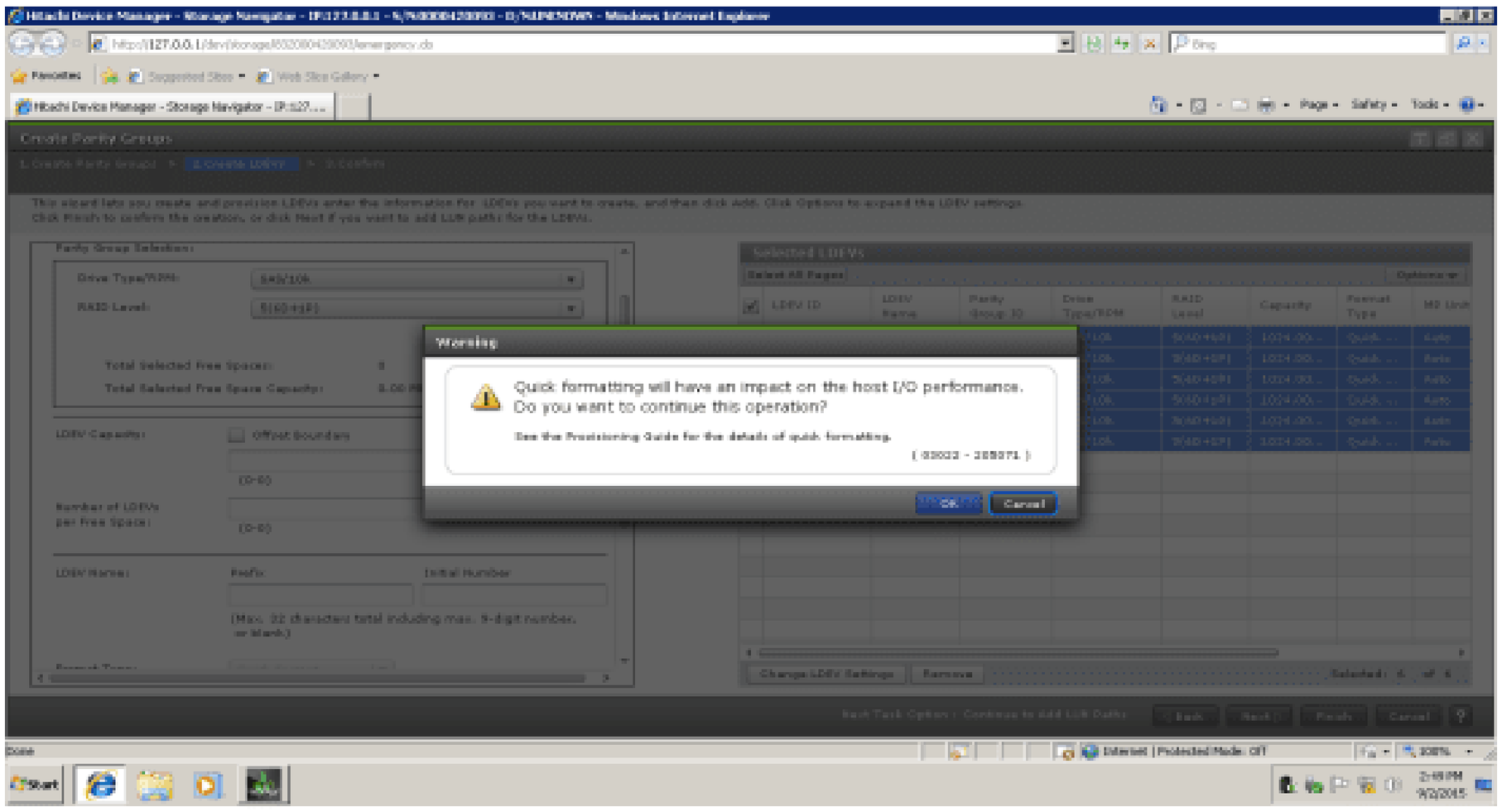


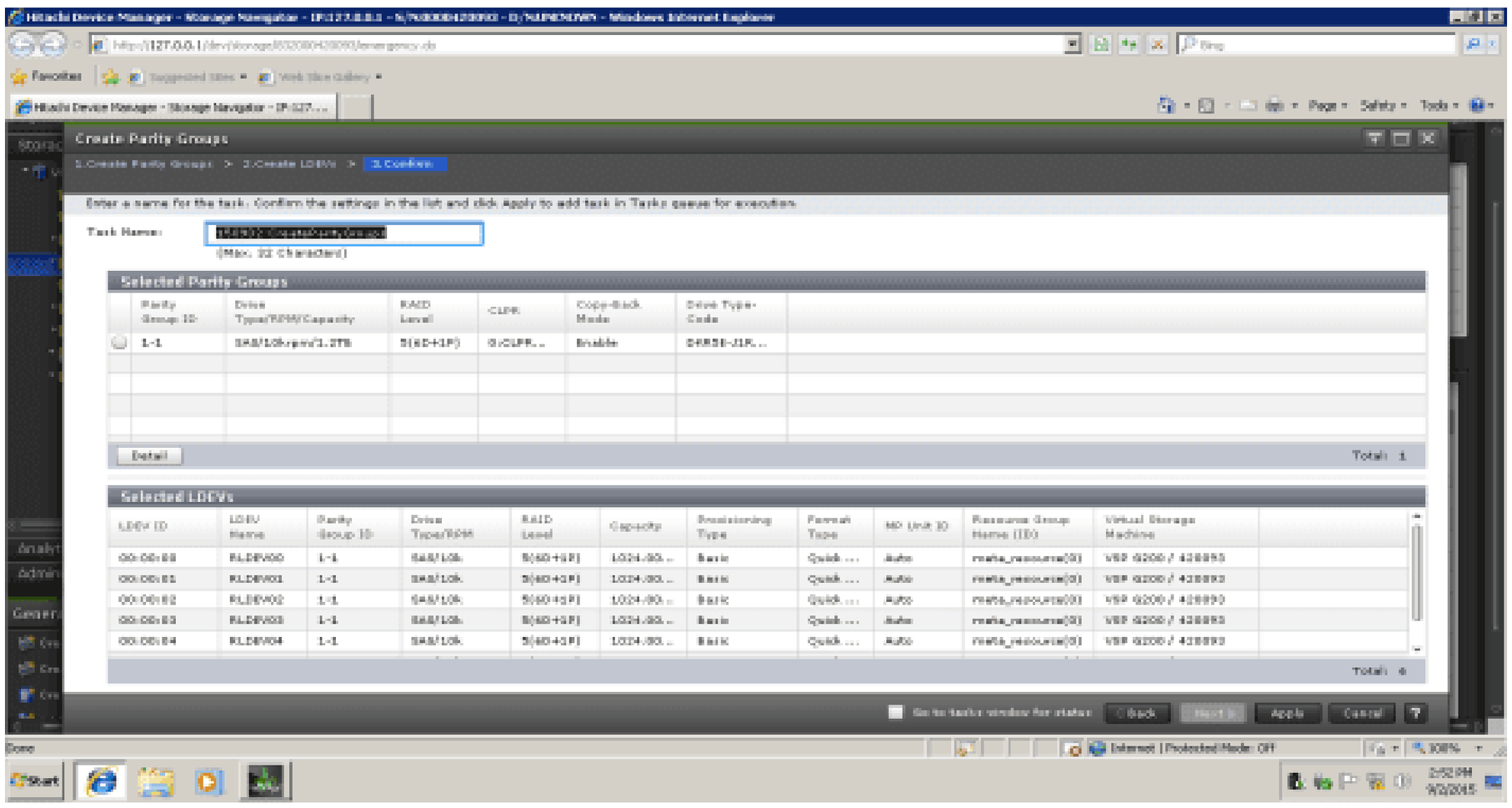



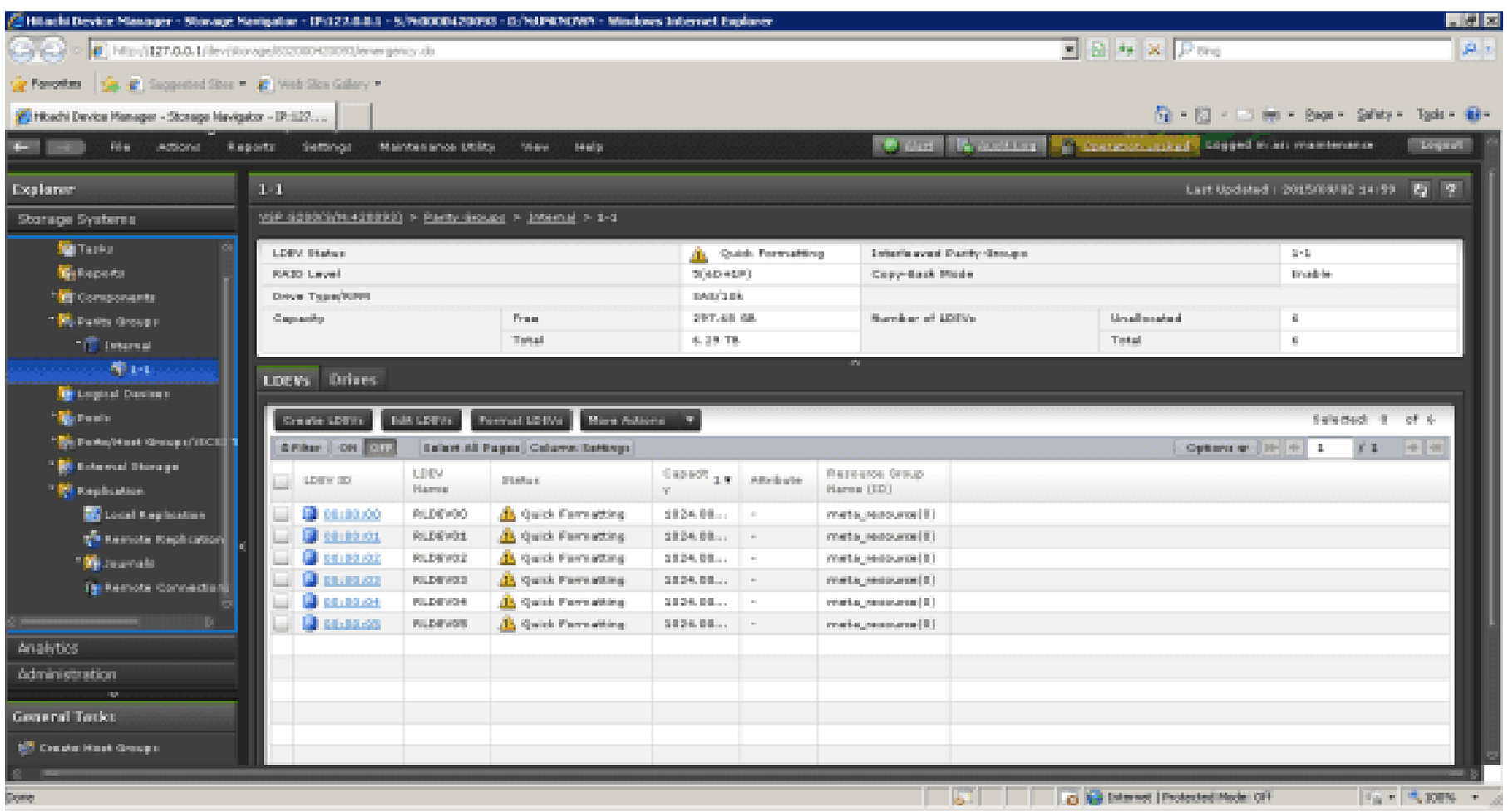

Select Free Spaces
Available Free Spaces
View Physical Location
OK
Cancel

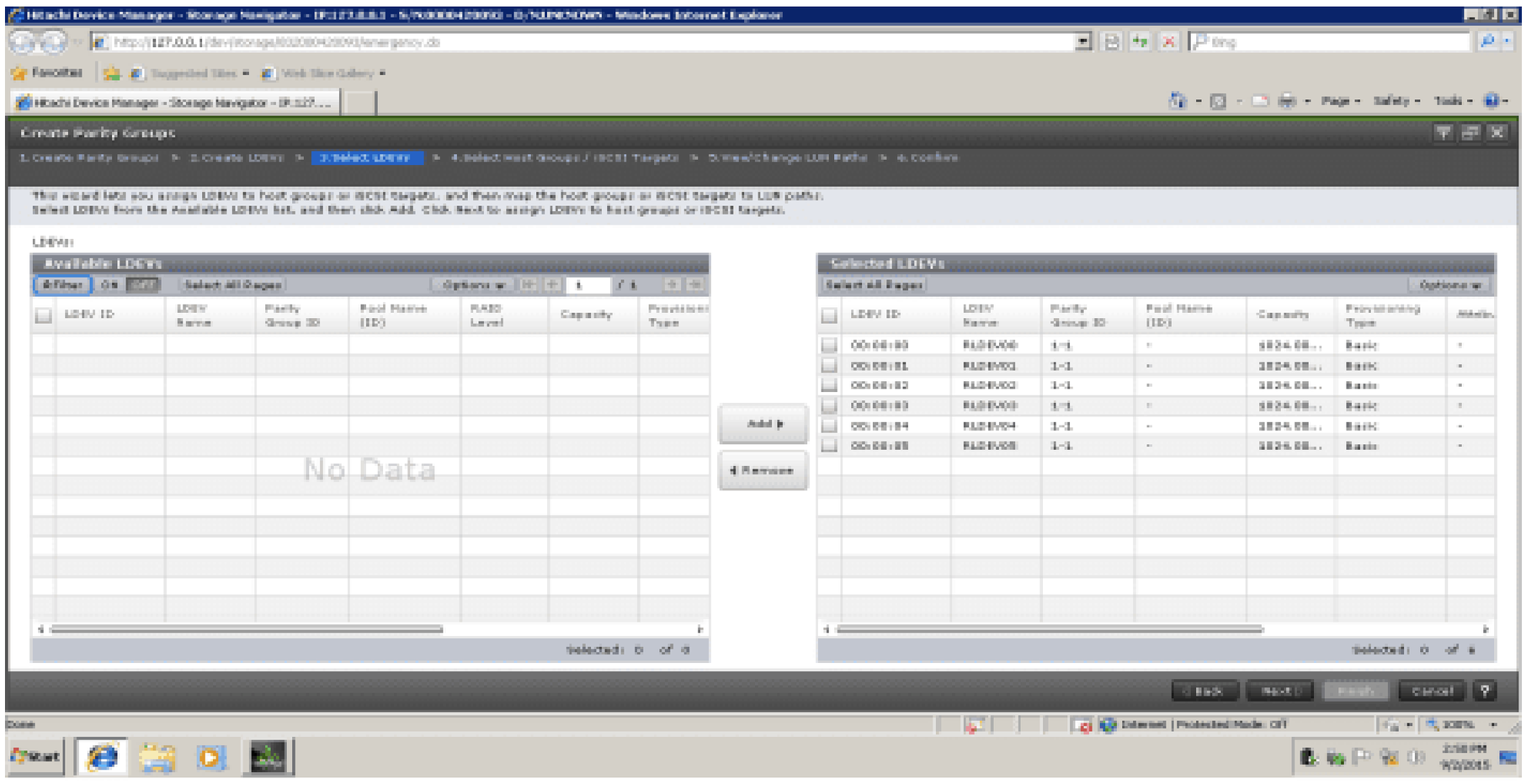

Create Parity Groups
Parity Group Selection
Drive Type/RPM
RAID Level
Select Free Spaces
Total Selected Free Spaces
Total Selected Free Space Capacity
LDEV Capacity
Number of LDEVs per Free Space
LDEV Name
Prefix
Initial Number
Add
Selected LDEVs
No Data
Change LDEV Settings
Remove
Back
Next
Finish
Cancel


Create Parity Groups
Parity Group Selection
Drive Type/RPM
RAID Level
Select Free Spaces
Total Selected Free Spaces
Total Selected Free Space Capacity
LDEV Capacity
Number of LDEVs per Free Space
LDEV Name
Prefix
Initial Number
Add
Selected LDEVs
Change LDEV Settings
Remove
Back
Next
Finish
Cancel


Create Parity Groups
Warning
Quick formatting will have an impact on the host I/O performance.
Do you want to continue this operation?
OK
Cancel

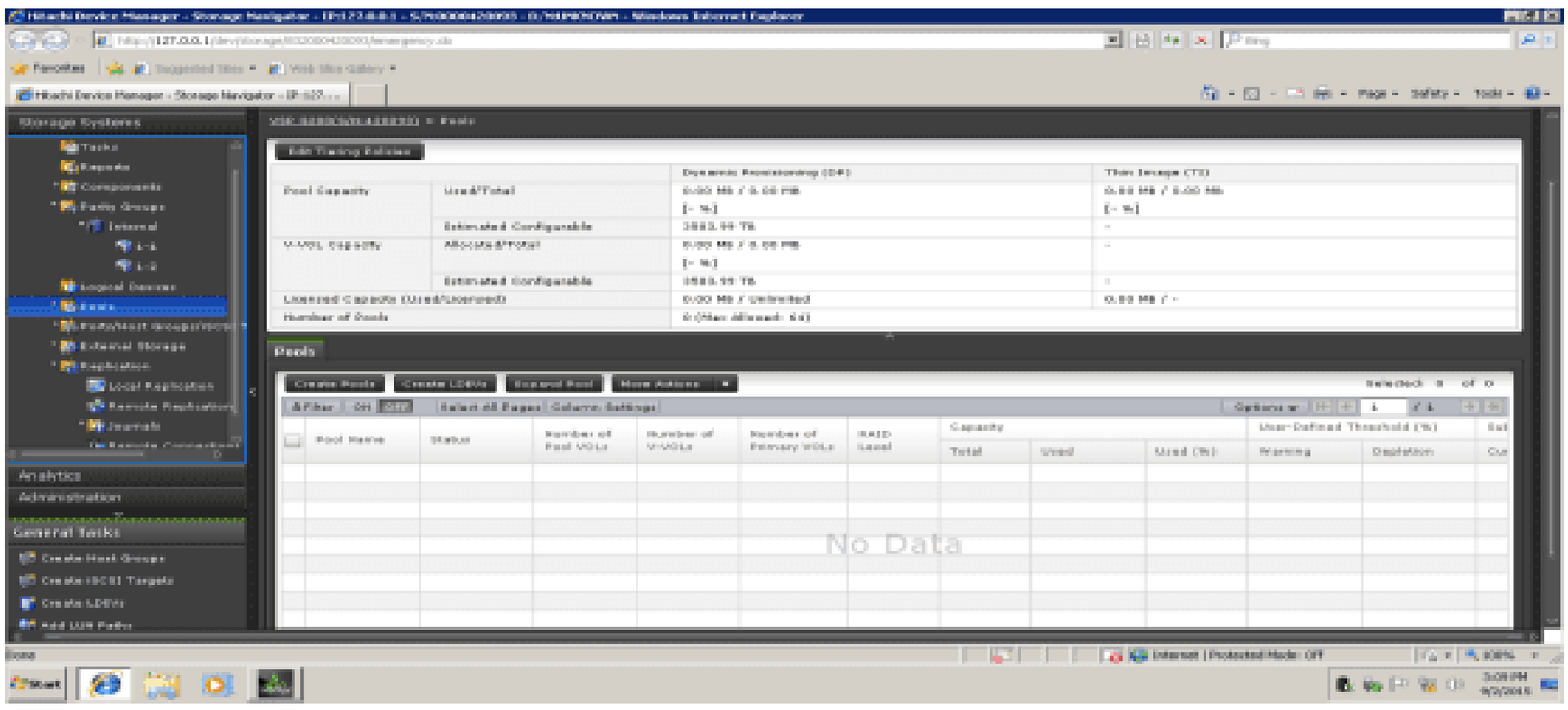

Create Parity Groups
Selected Parity Groups
Selected LDEVs
Apply
Cancel

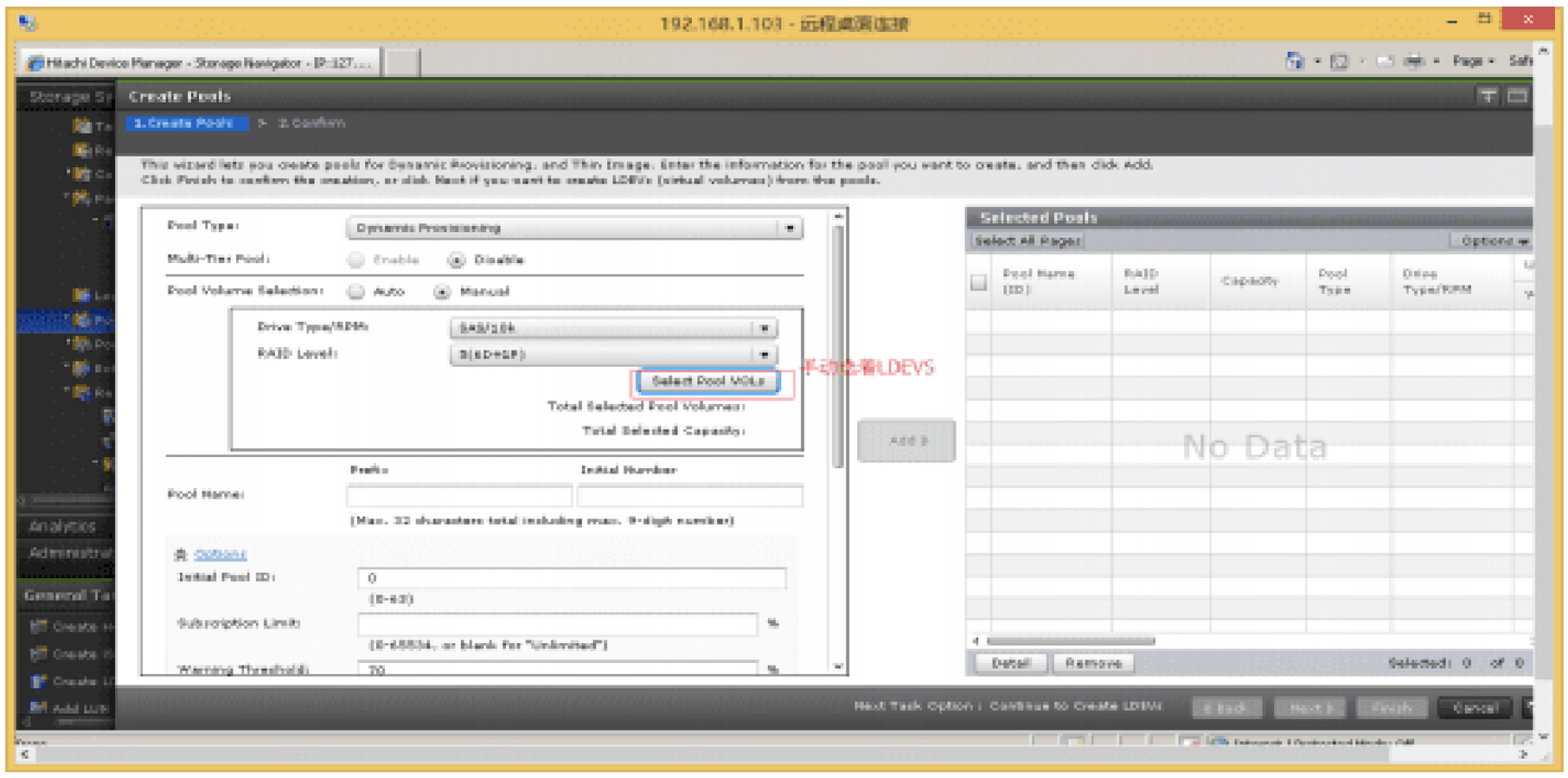

Explorer
Storage Systems
LDEVs
Drives
Quick Formatting

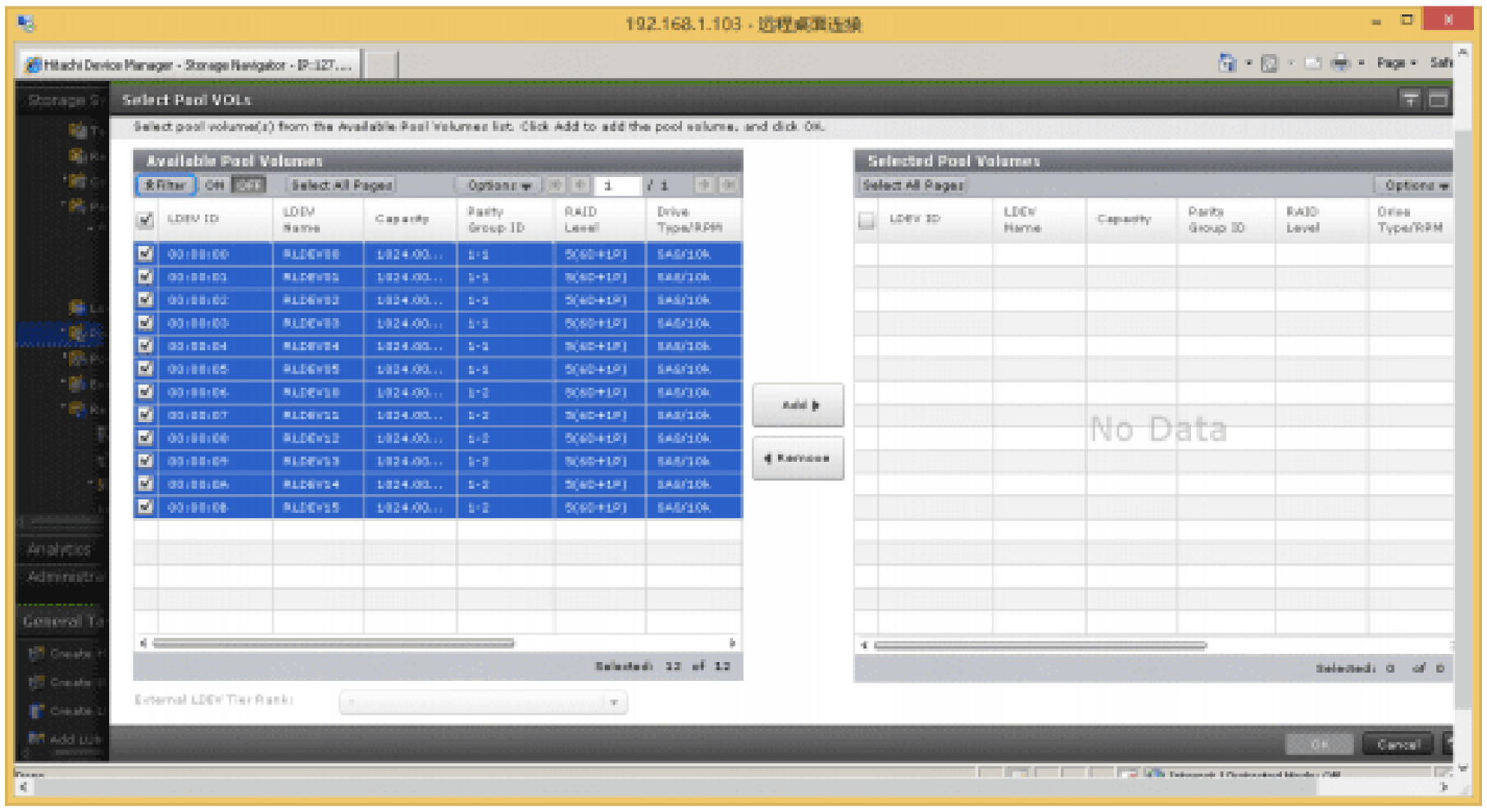


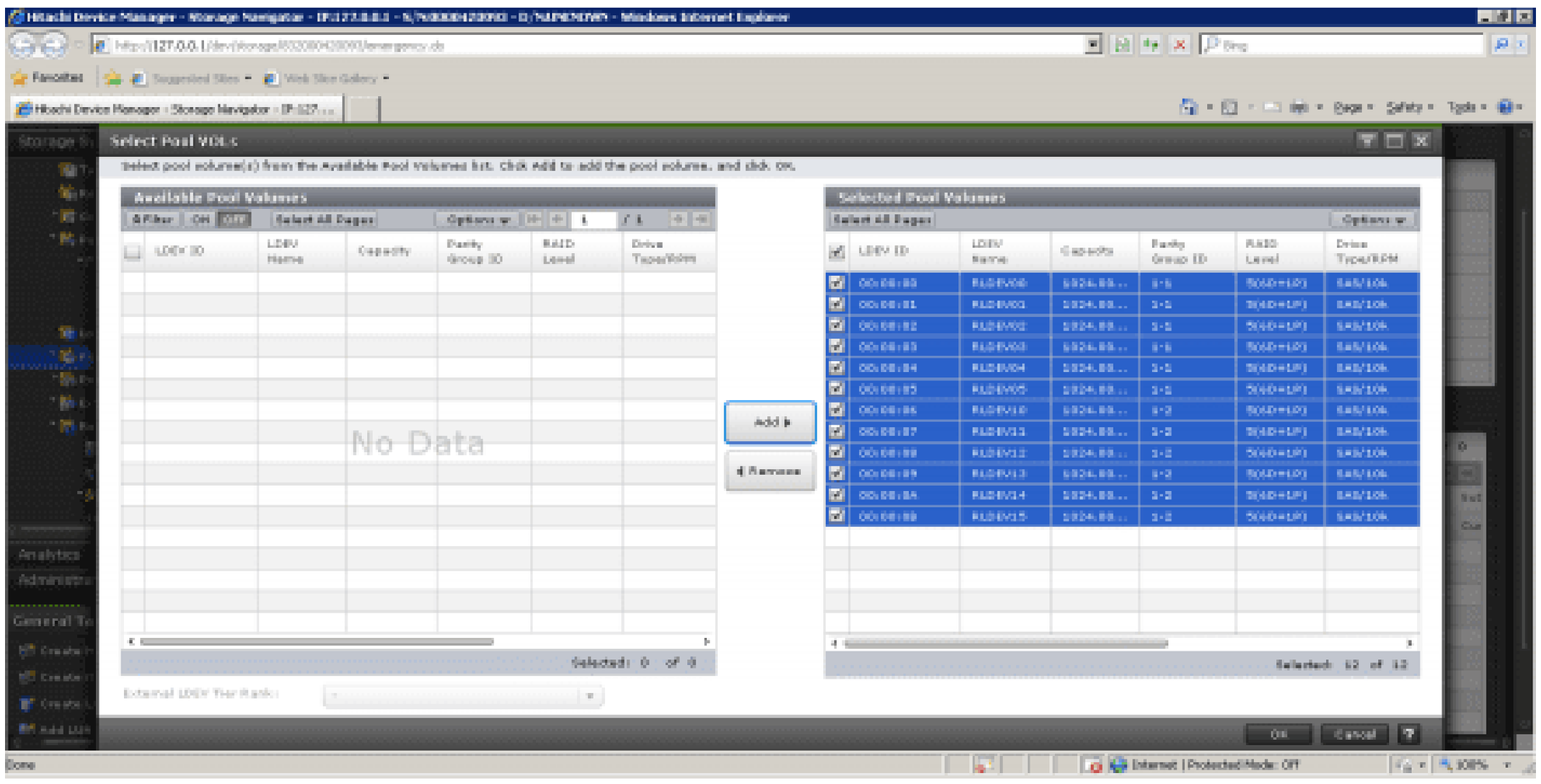

## 4.10 Pool 配置

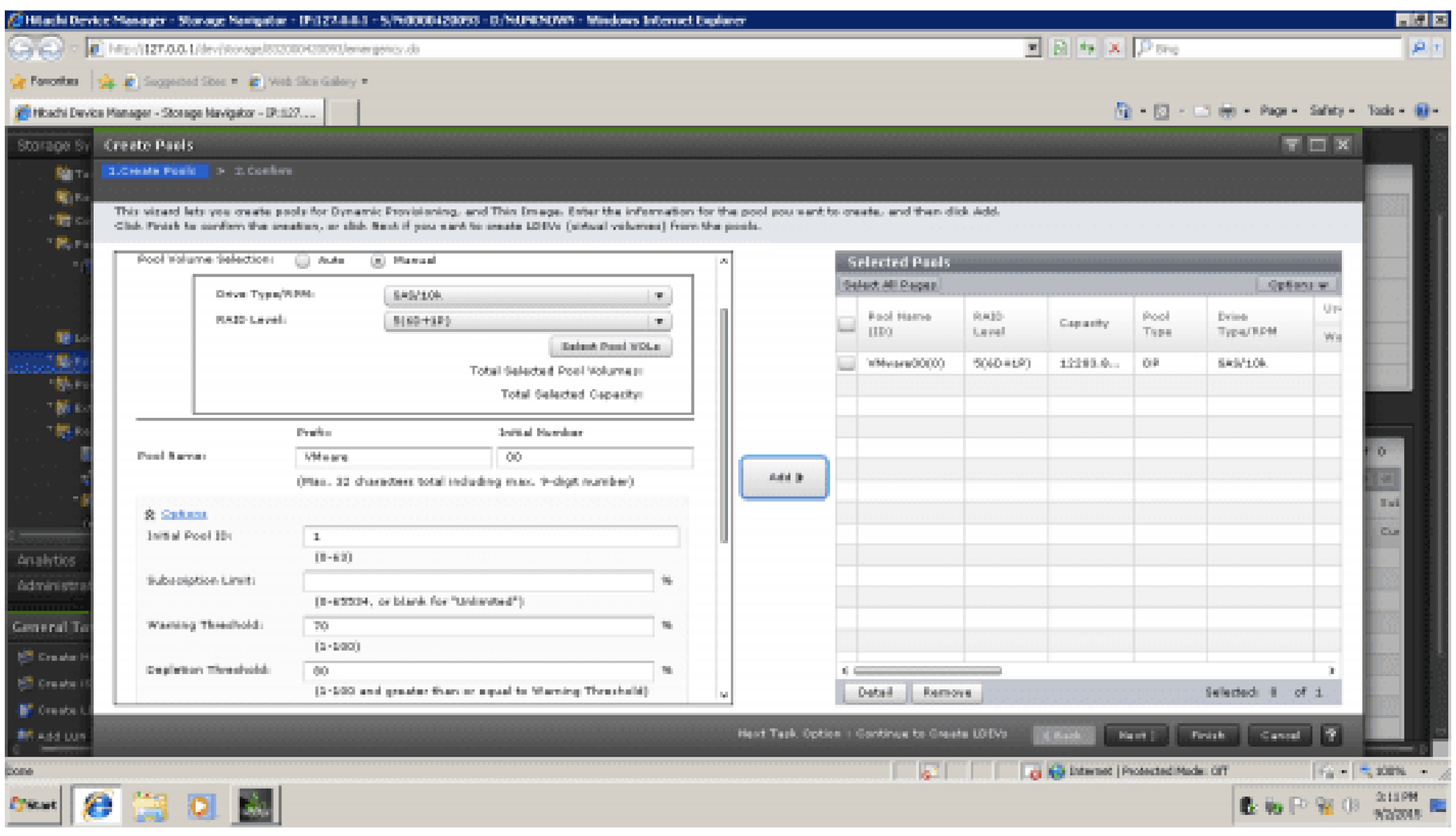
【VSP Gx00 的 POOL 配置与其他高端存储类似，先建 RAID 组，创建 LDEV，POOL 的建立是在 LDEV 的基础上。】做 Pool 建议用 RAID6 如果一个 POOL 的一个 RAID 坏了这个 POOL 就坏了，创建 Pool



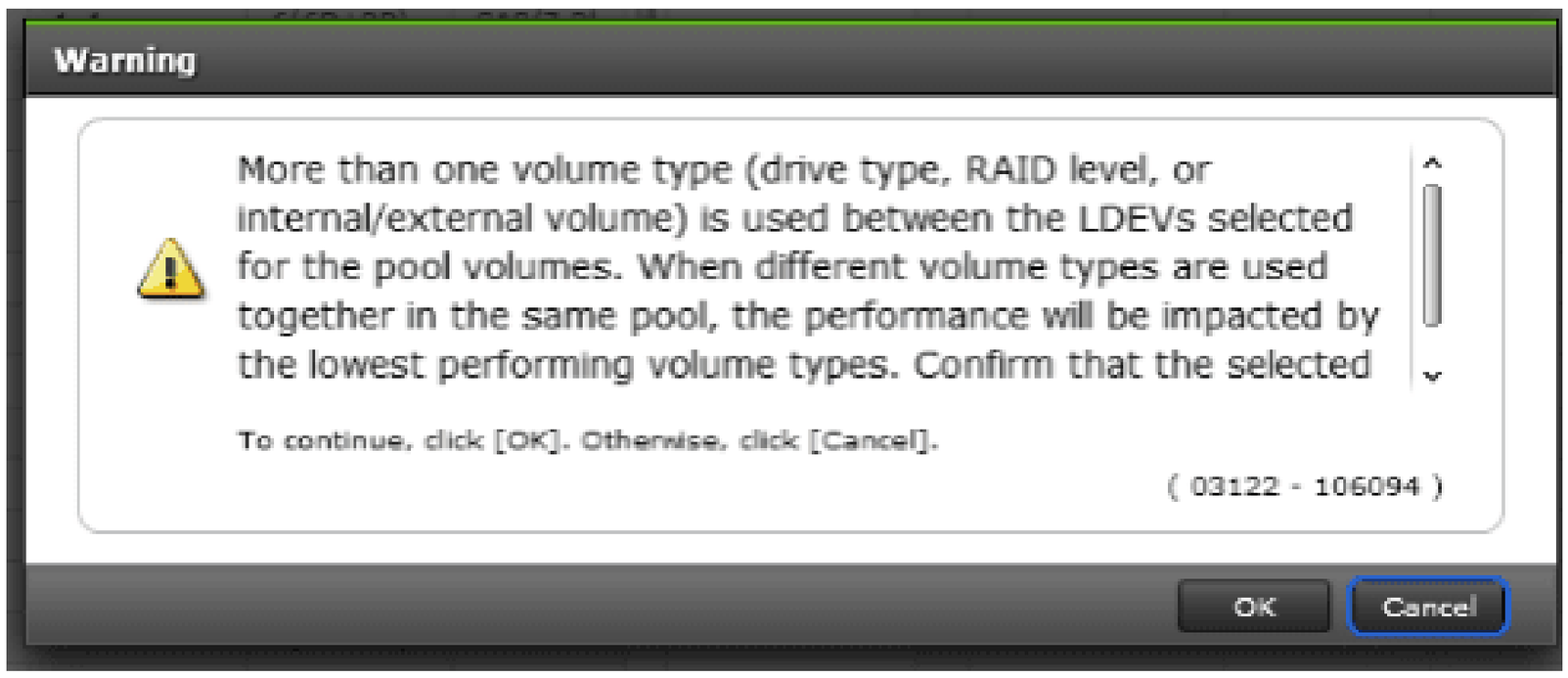

Select Pool VOLs
Available Pool Volumes
Selected Pool Volumes
No Data
Add
Remove
OK
Cancel


Select Pool VOLs
Available Pool Volumes
Selected Pool Volumes
No Data
Add
Remove
OK
Cancel


Create Pools
Selected Pools
Add
Remove
Finish
Cancel

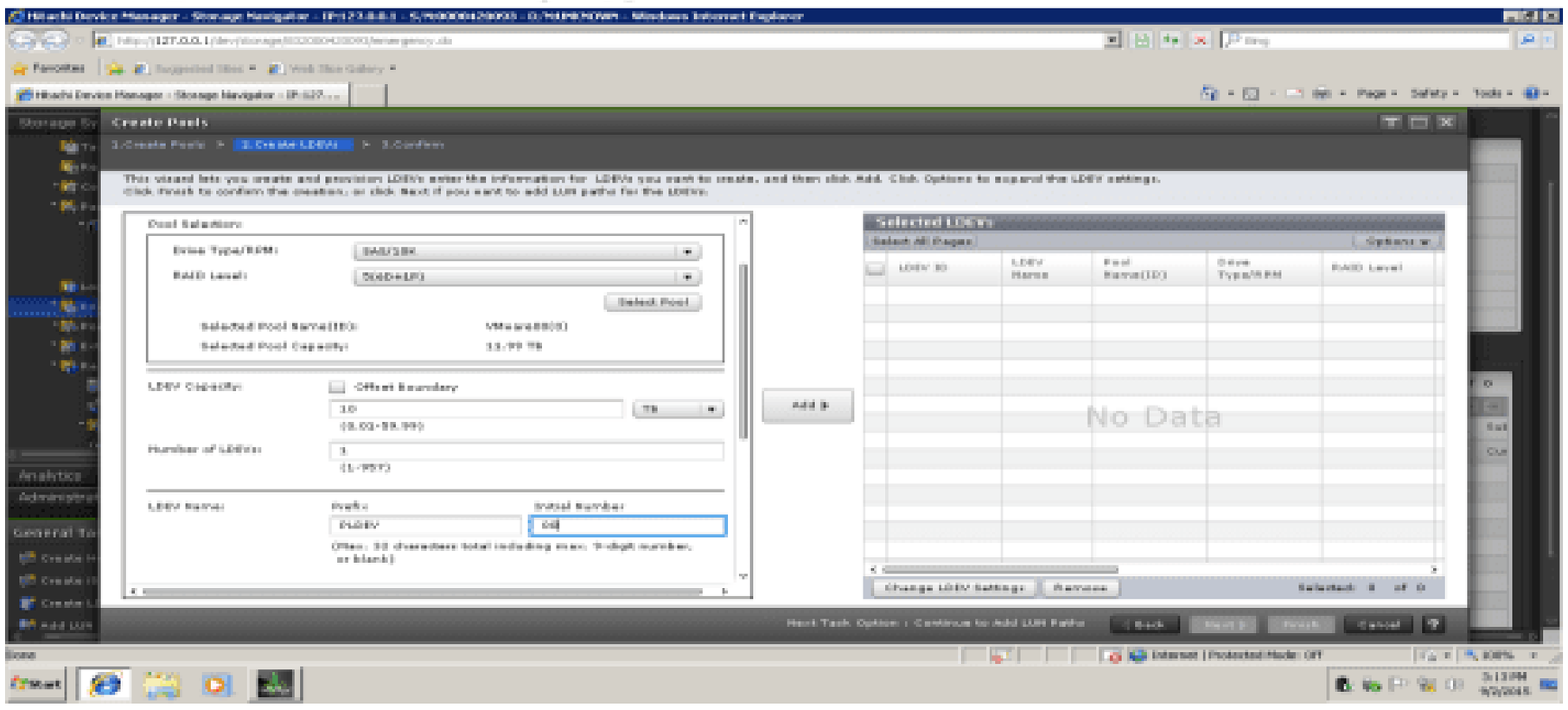
说明：

在创建 POOL 选择对应的 LDEV 作为 POOL 容量时，如果 POOL 中的 LDEV 来自不同的 RAID 组，不同盘，不同容量，则 POOL 的性能会有所下降，在创建完成时会弹出以下提示：

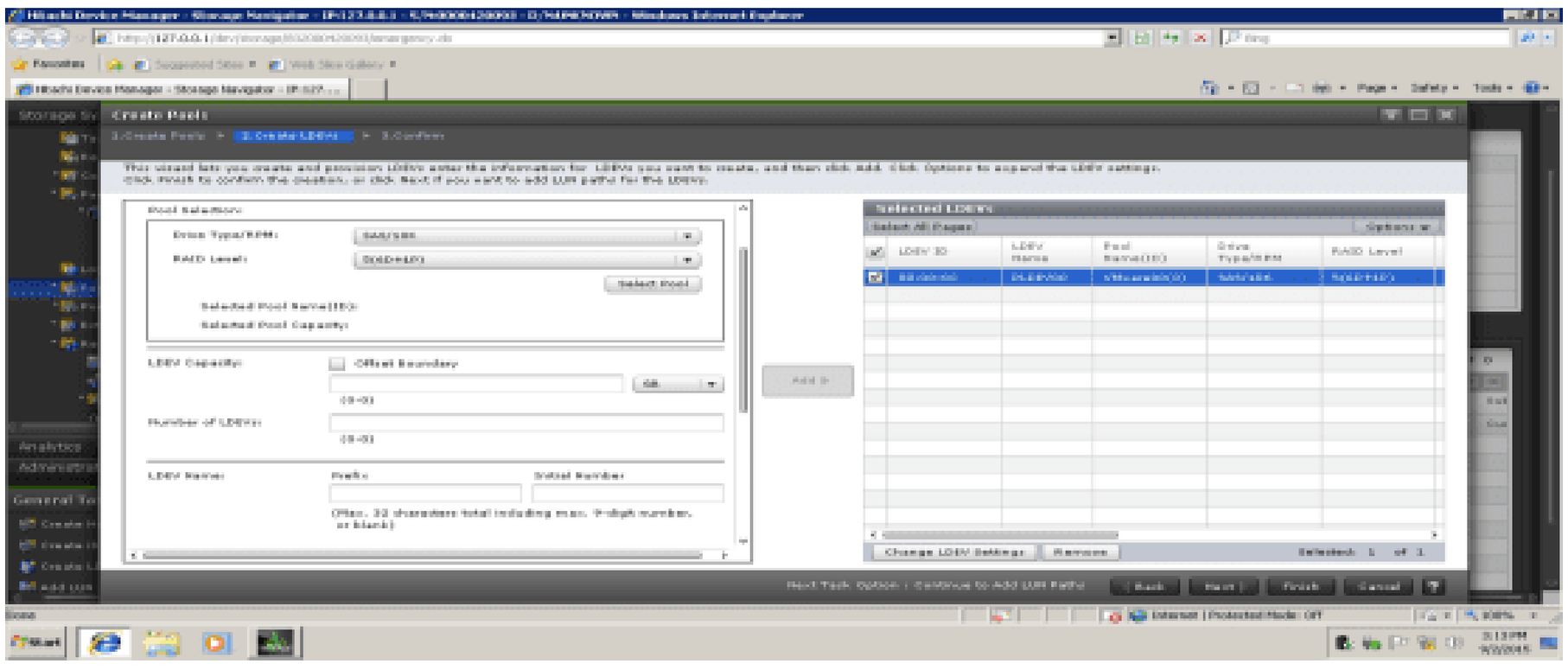



## 4.11 在 pool 上创建 LDEVs

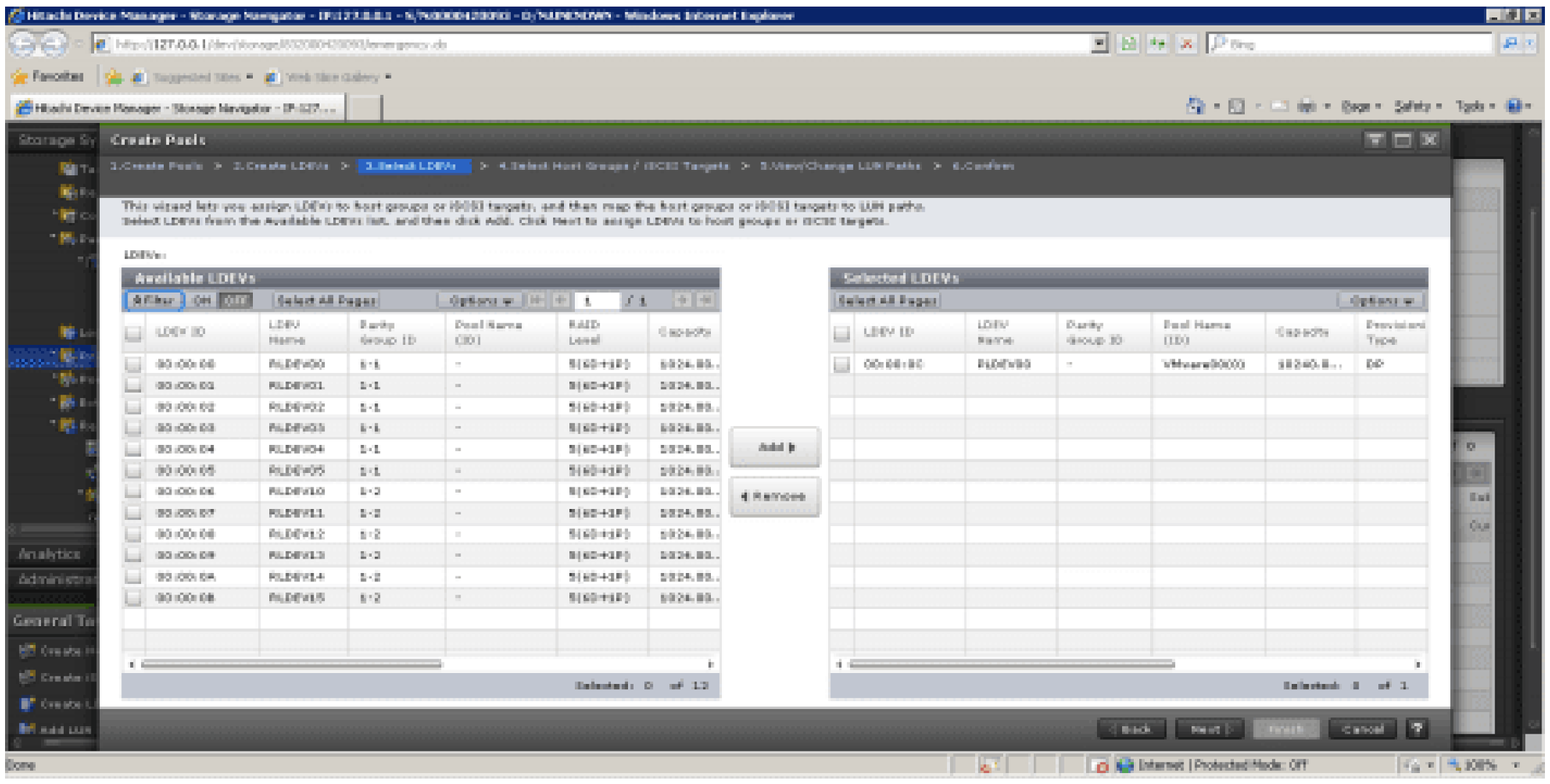
在 Pool 上创建的卷是虚卷，容量可以超过 3TB。创建虚卷和实卷一样在 LDEVS 那里创建，在 Provisioning Type 里选者所创建的 Pool



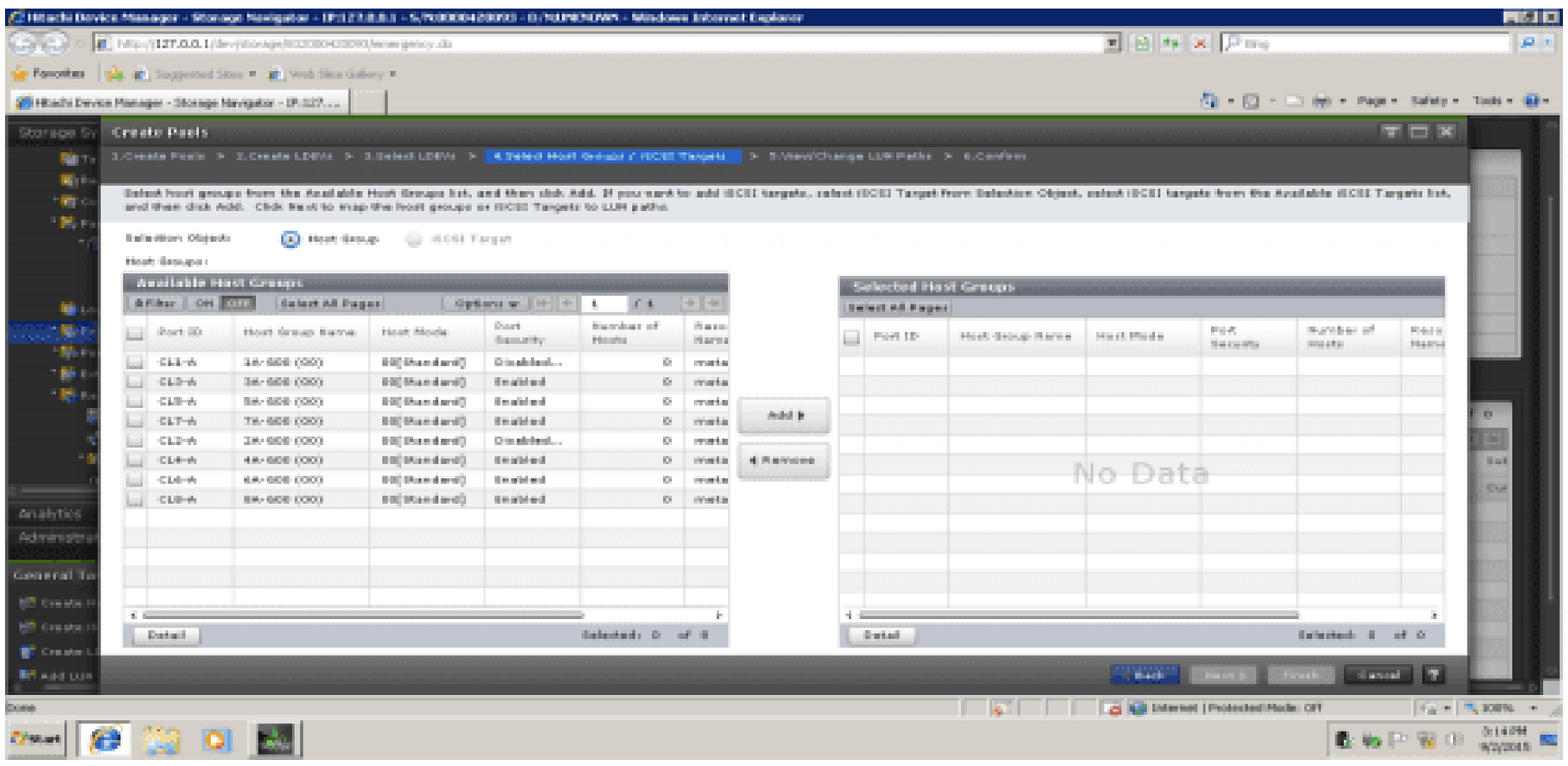

如下图点击 Next 会进入 LDEVS 映射向导，点 Finish 先创建卷，跳过 LDEVS 映射那几步



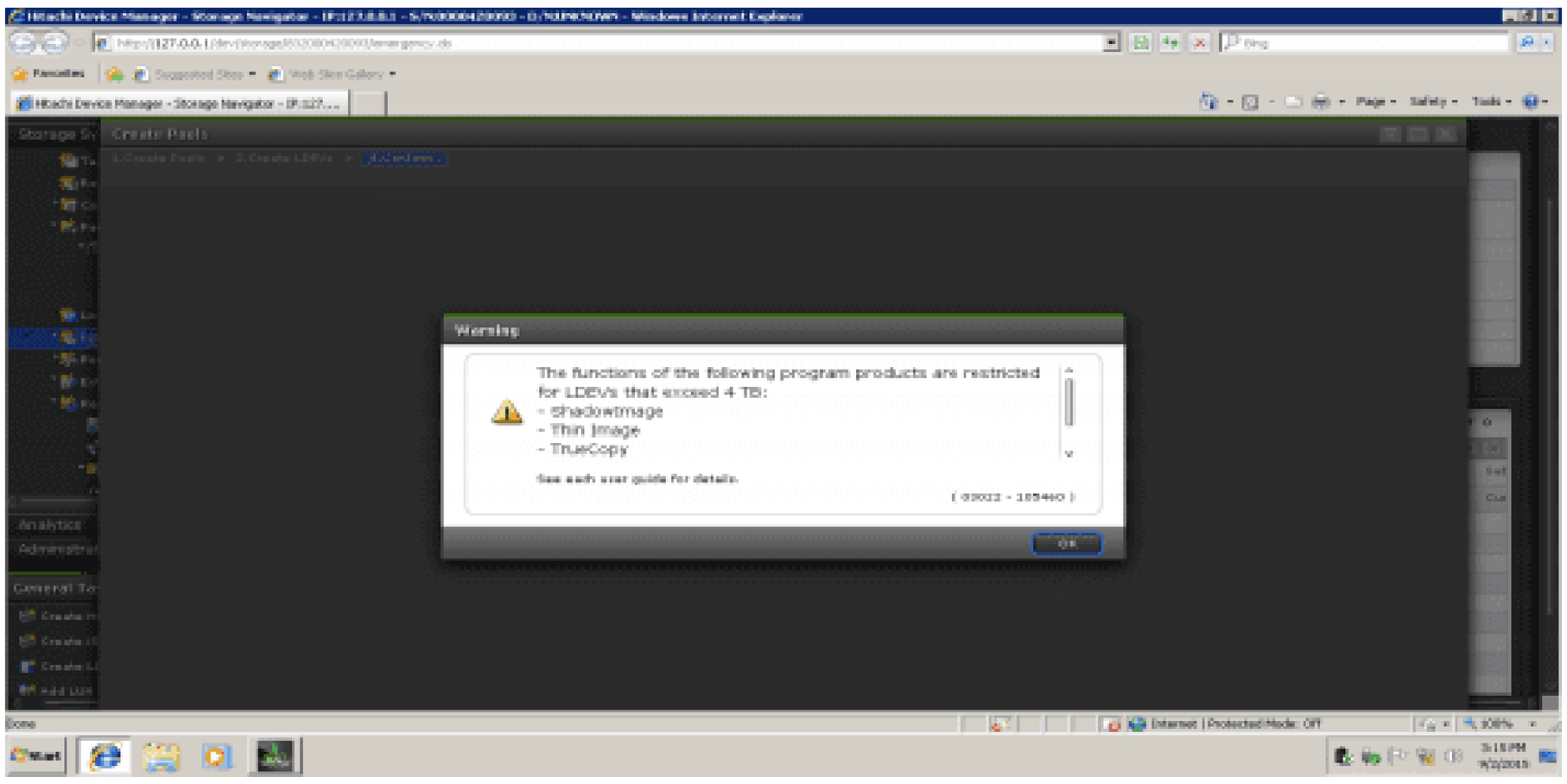
点击 Next 后进入 LDEVS 映射向导，如下图。选中要映射的 LDEVS（注意组成 Pool 的 LDEV 不要映射出去，选择基于 Pool 创建的 LDEVS），

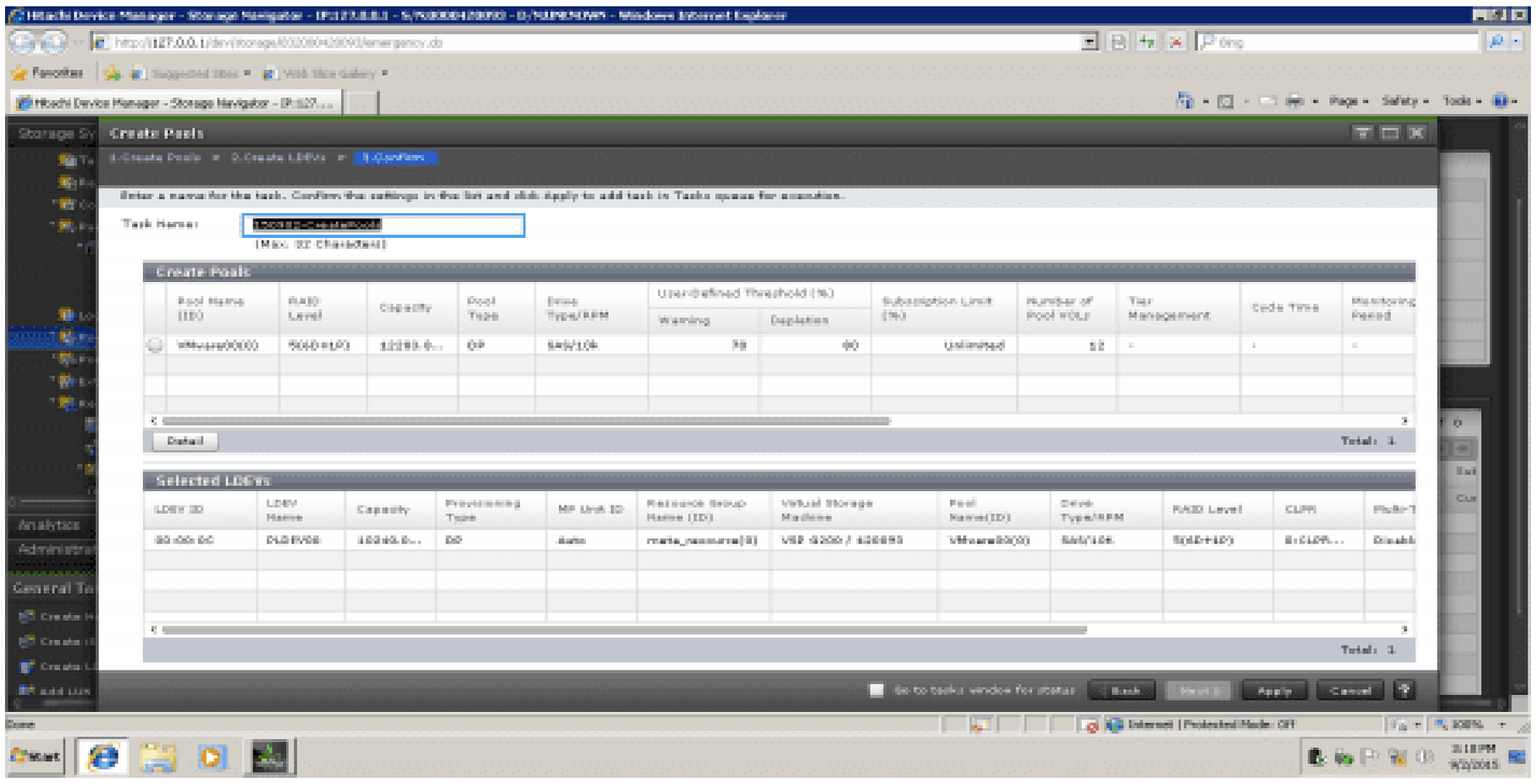



选中要从那个端口映射出去。




这里会有用作下面这个几个功能的 LDEVS 的大小不能超过 4TB 的提示

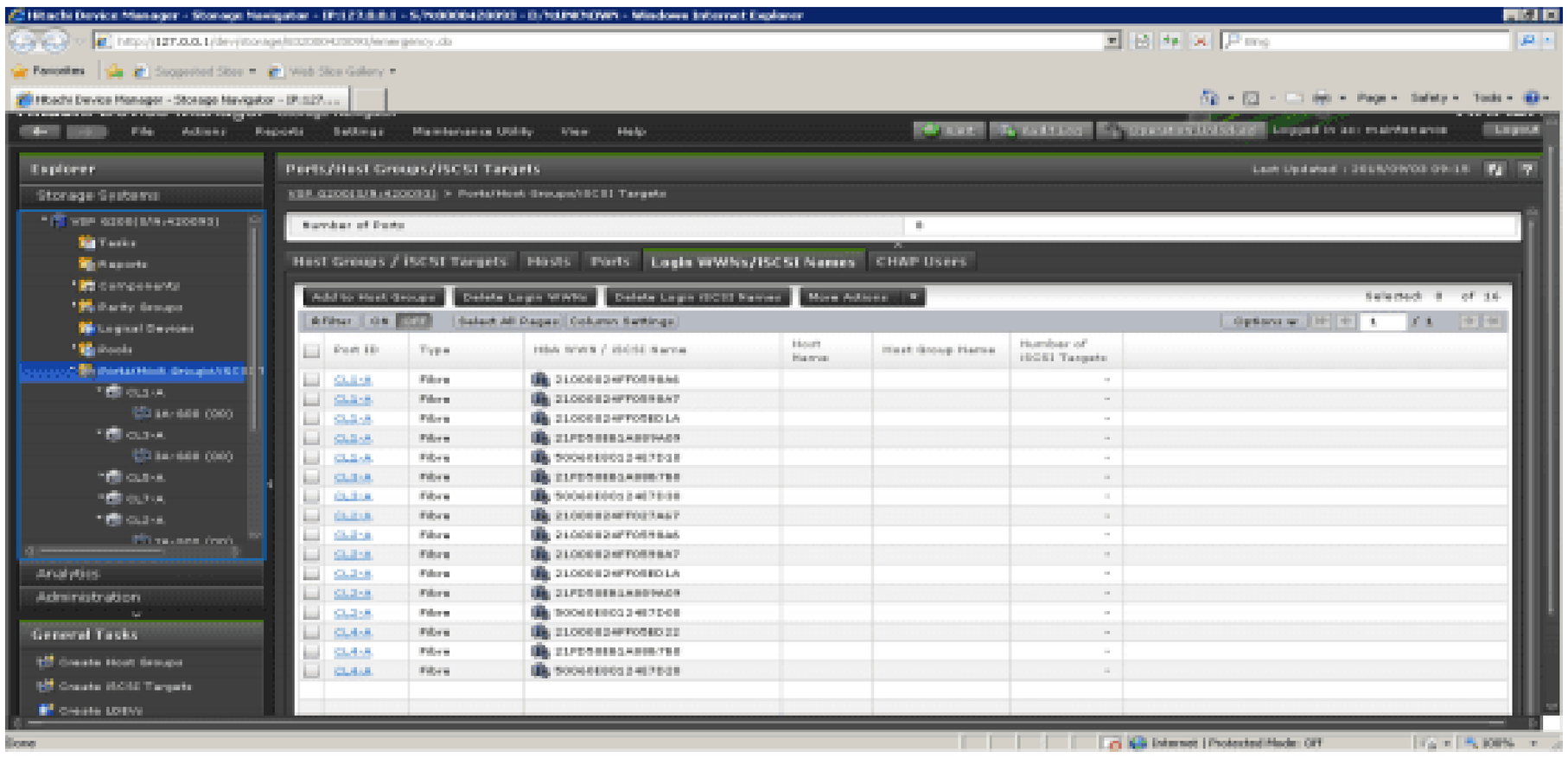




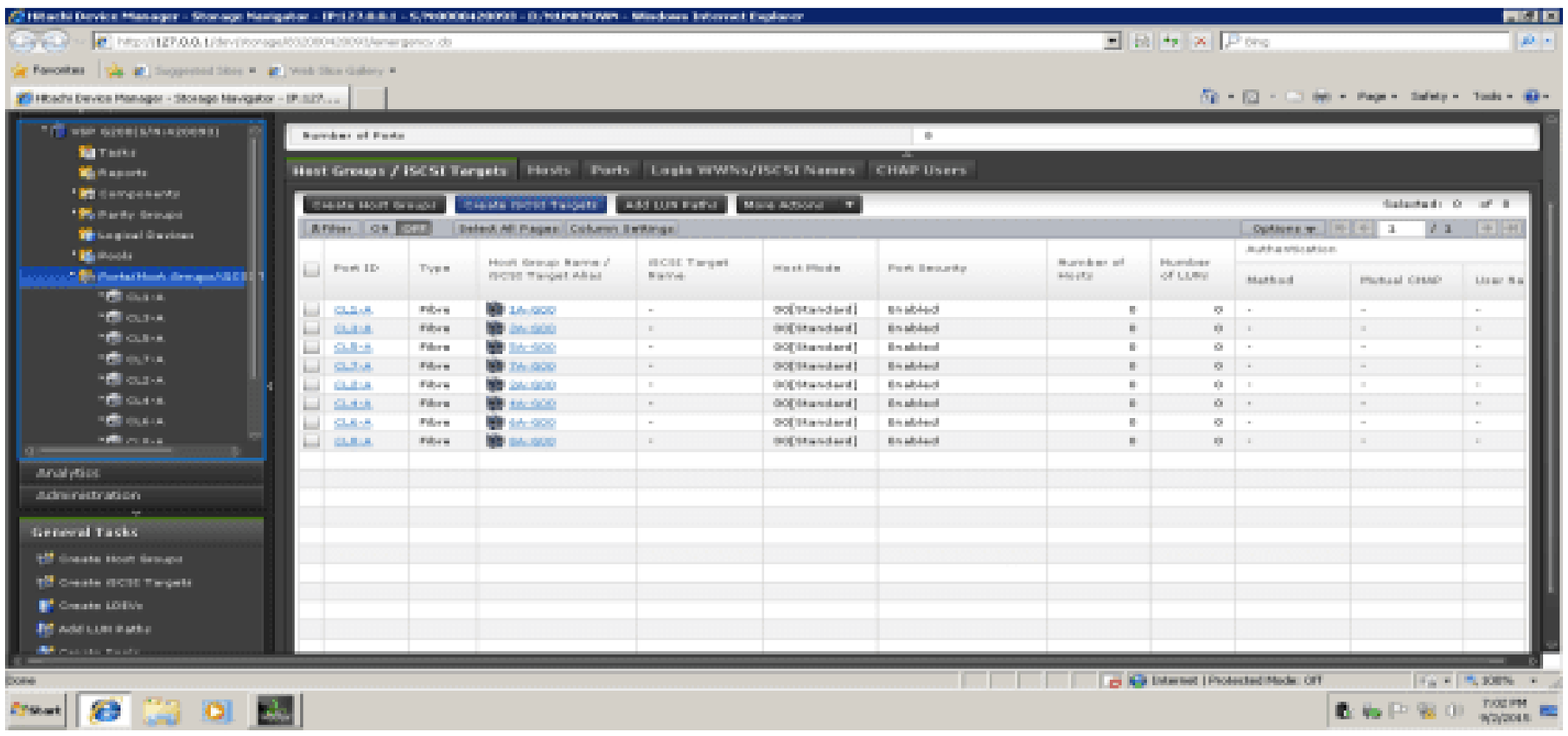

## 4.12 Host Group 配置

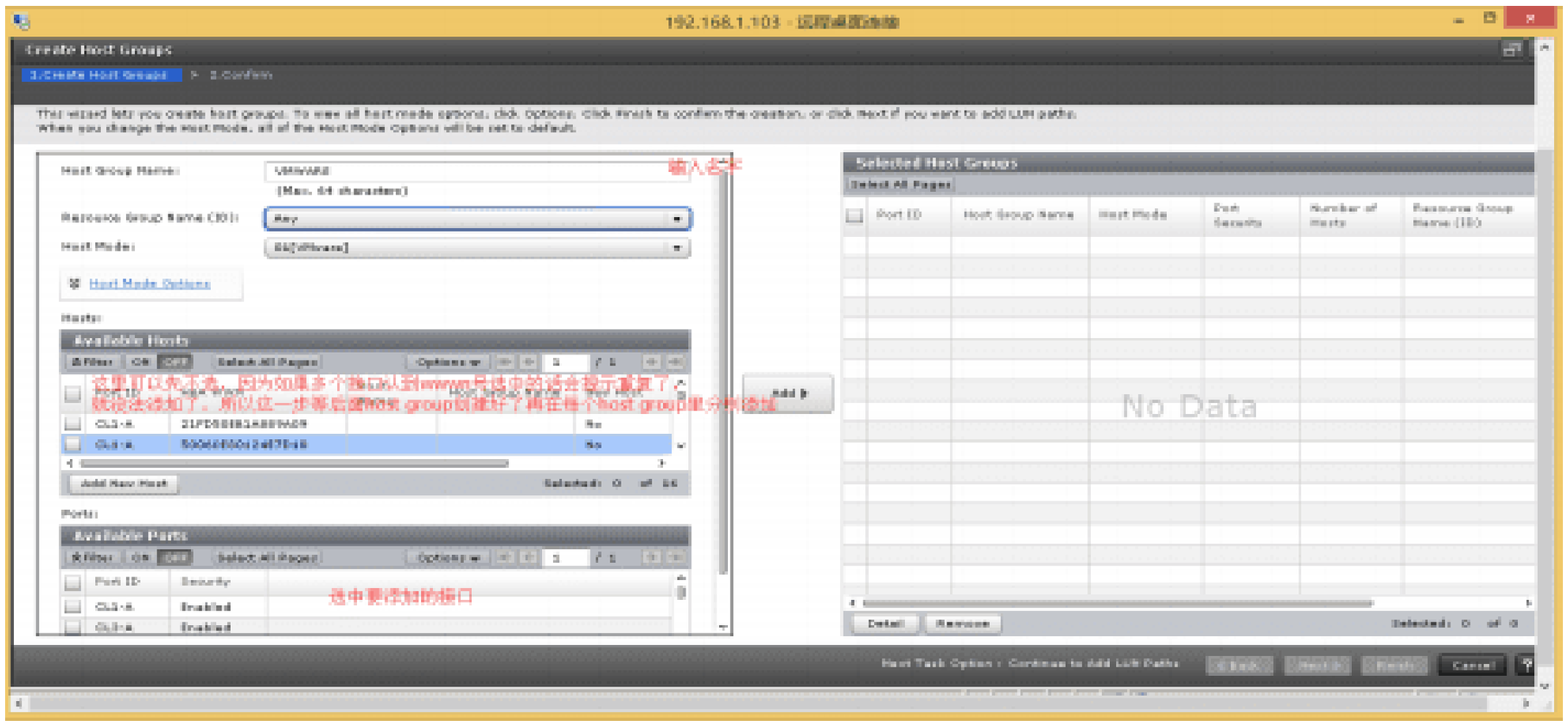
创建 HOST group 建议先建 host group ->ADD lun paths>host

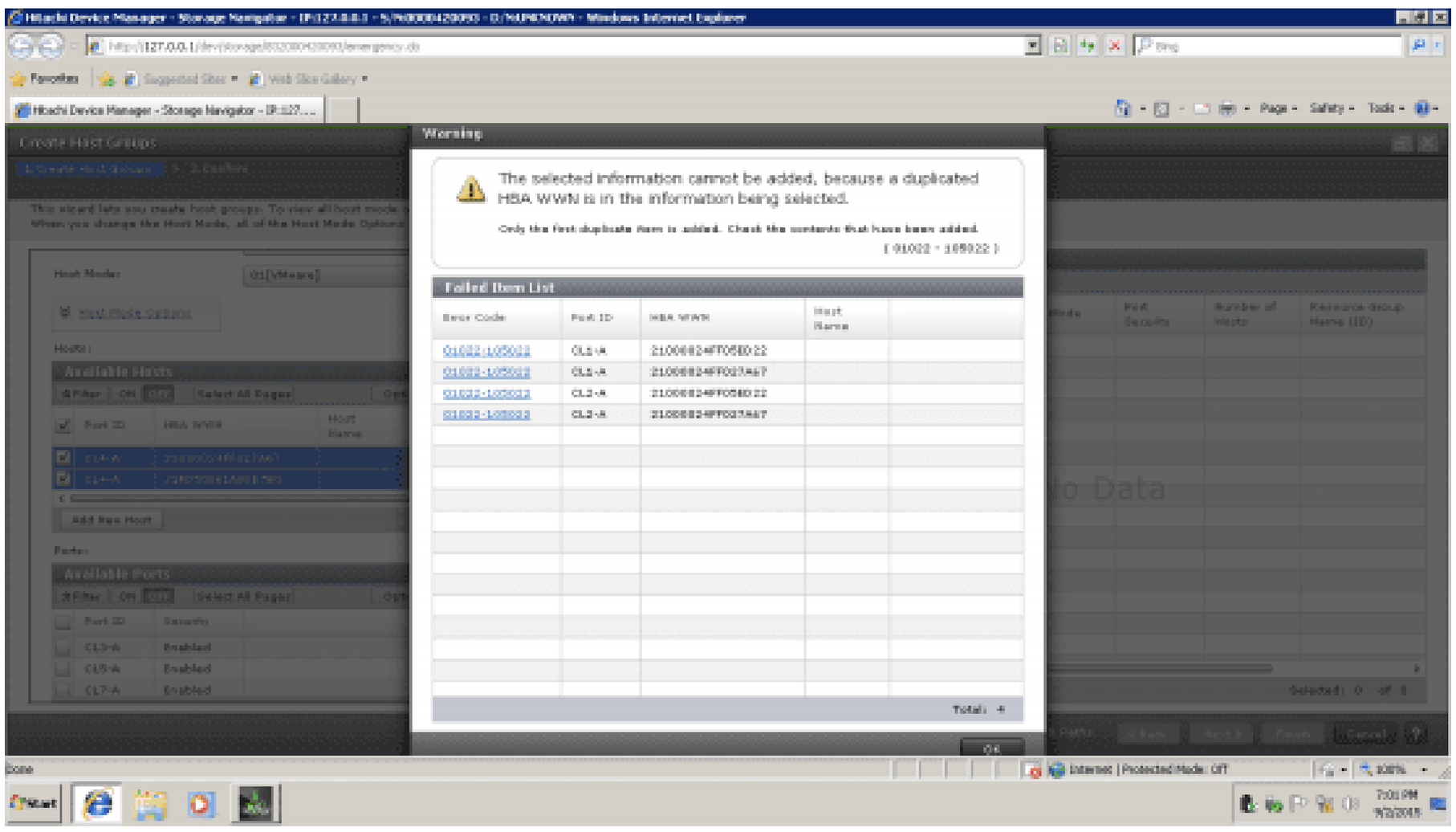
选择 Login WWNs/iSCSI Name 查看认到的 WWN 号

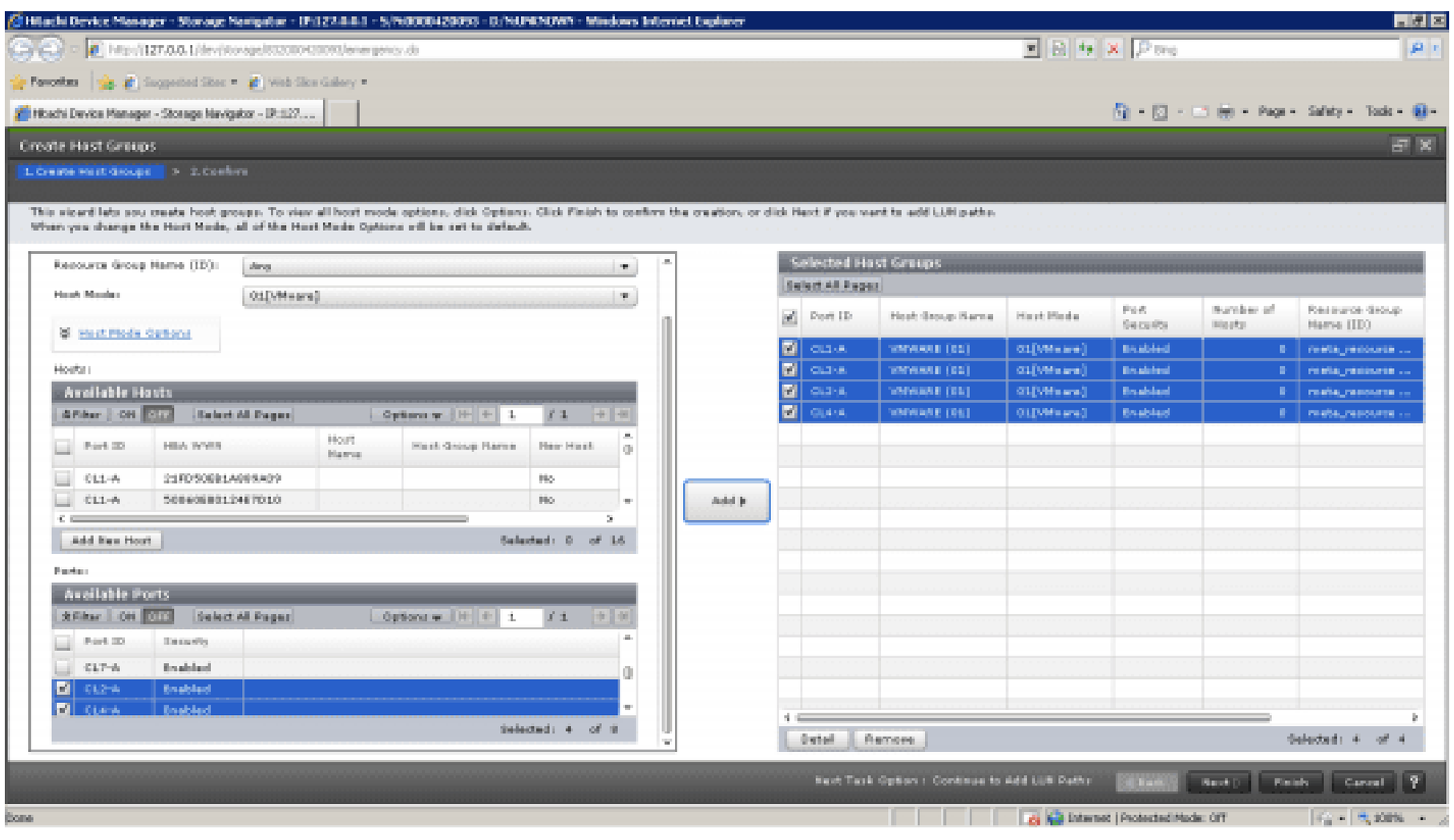


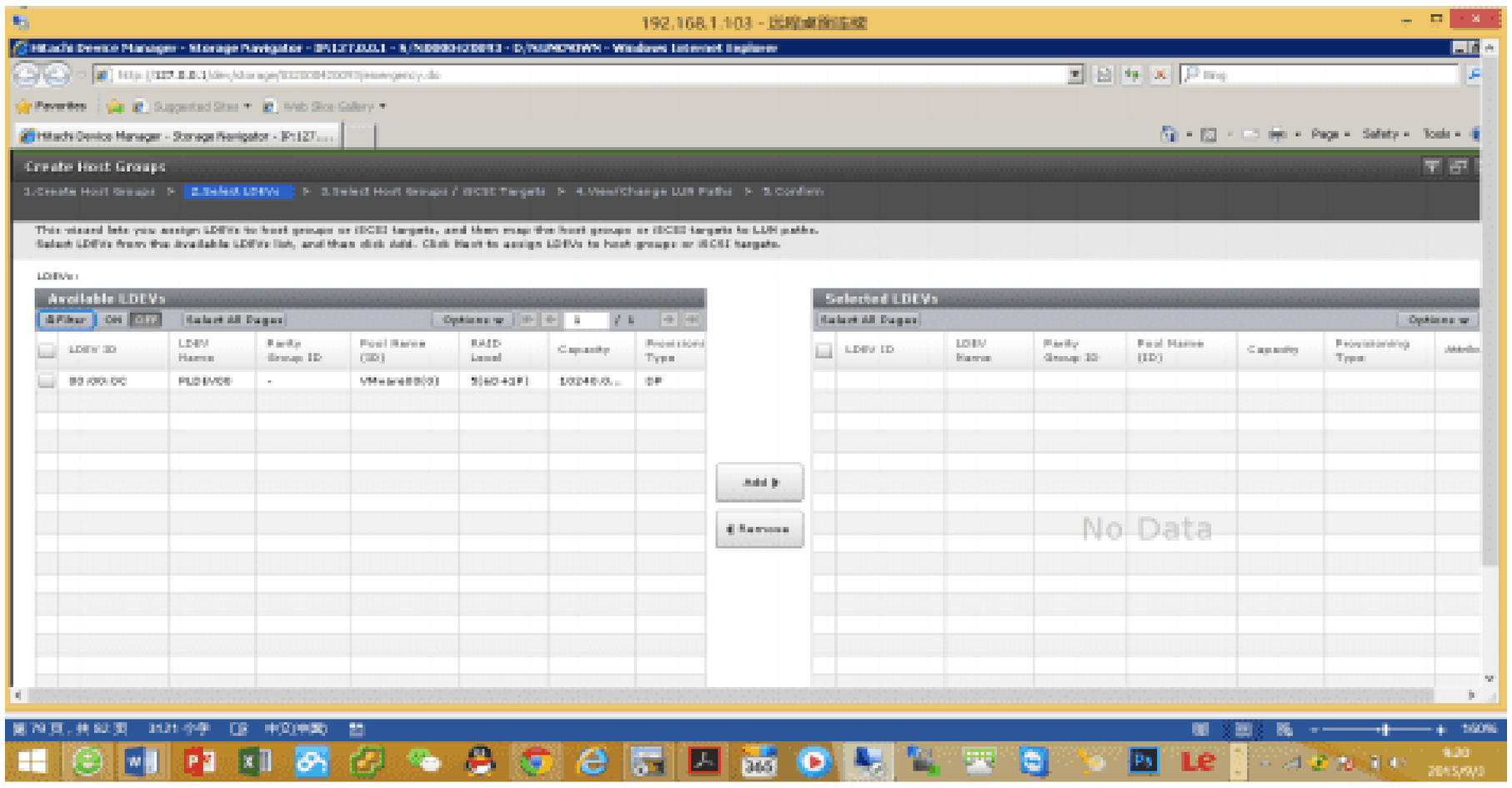

点击“Create Host Groups”创建 Host Groups。

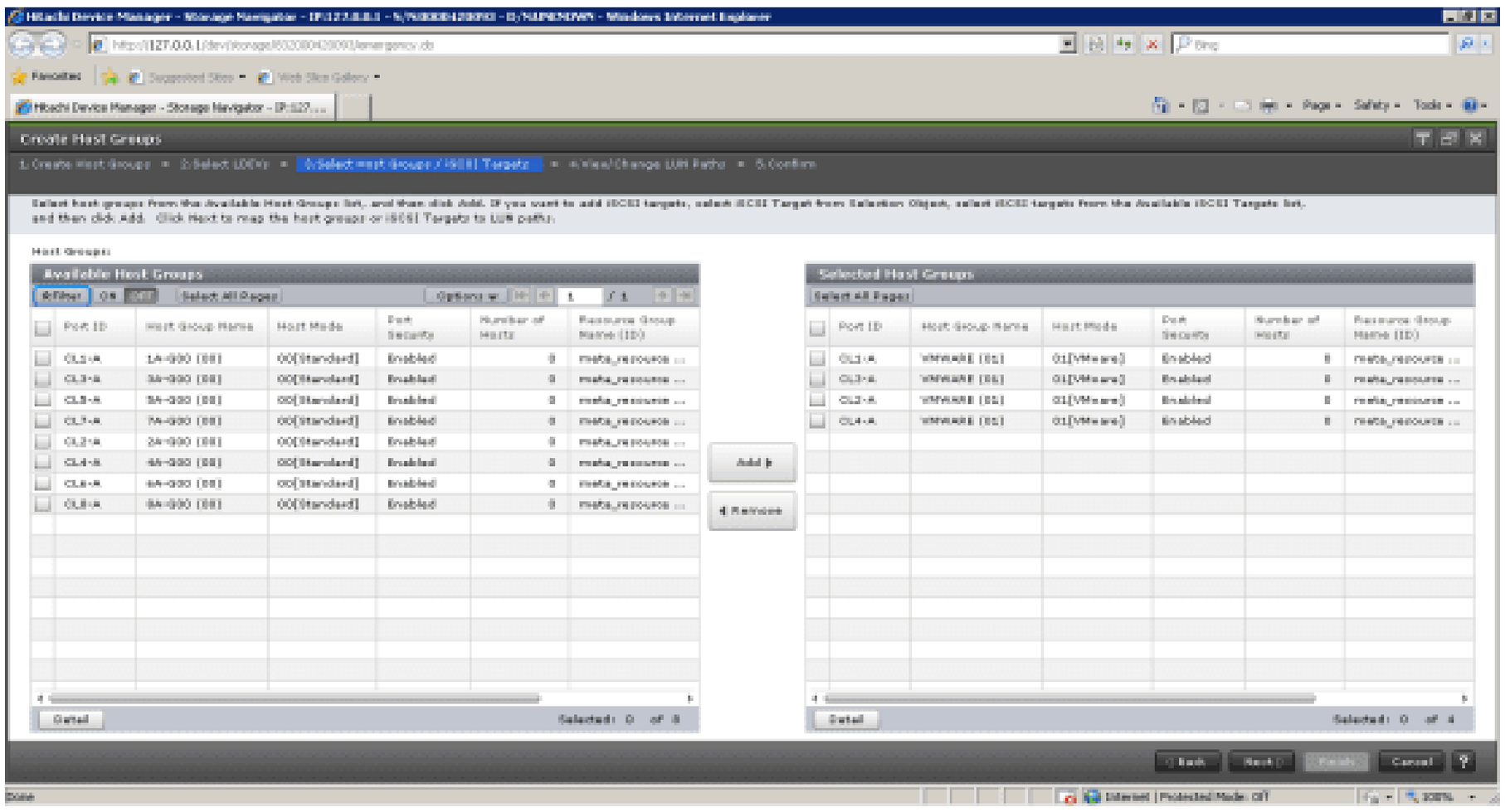


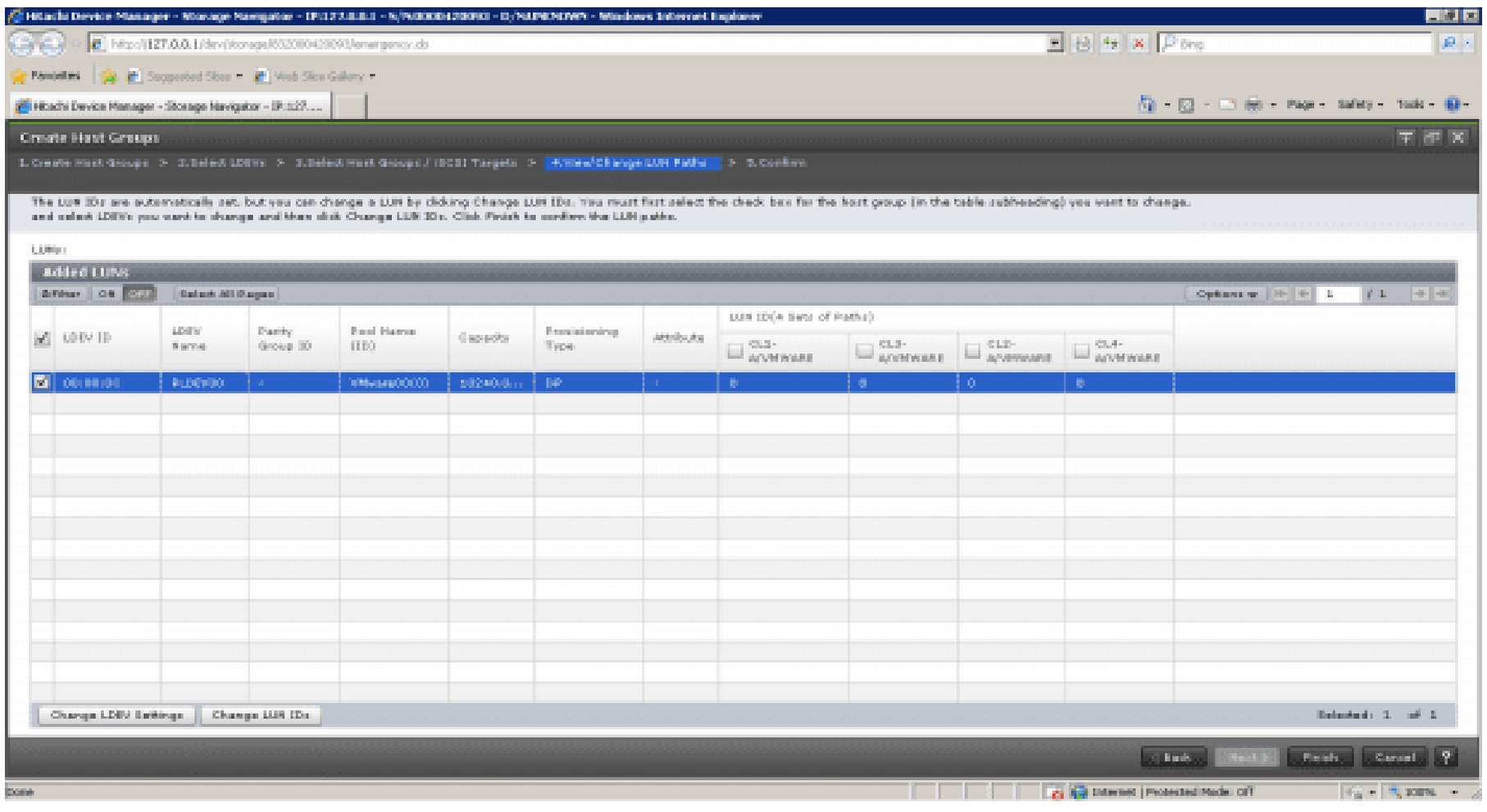

Create Host Groups
输入名字
Available Hosts
Available Ports
选中要添加的接口
Selected Host Groups
No Data

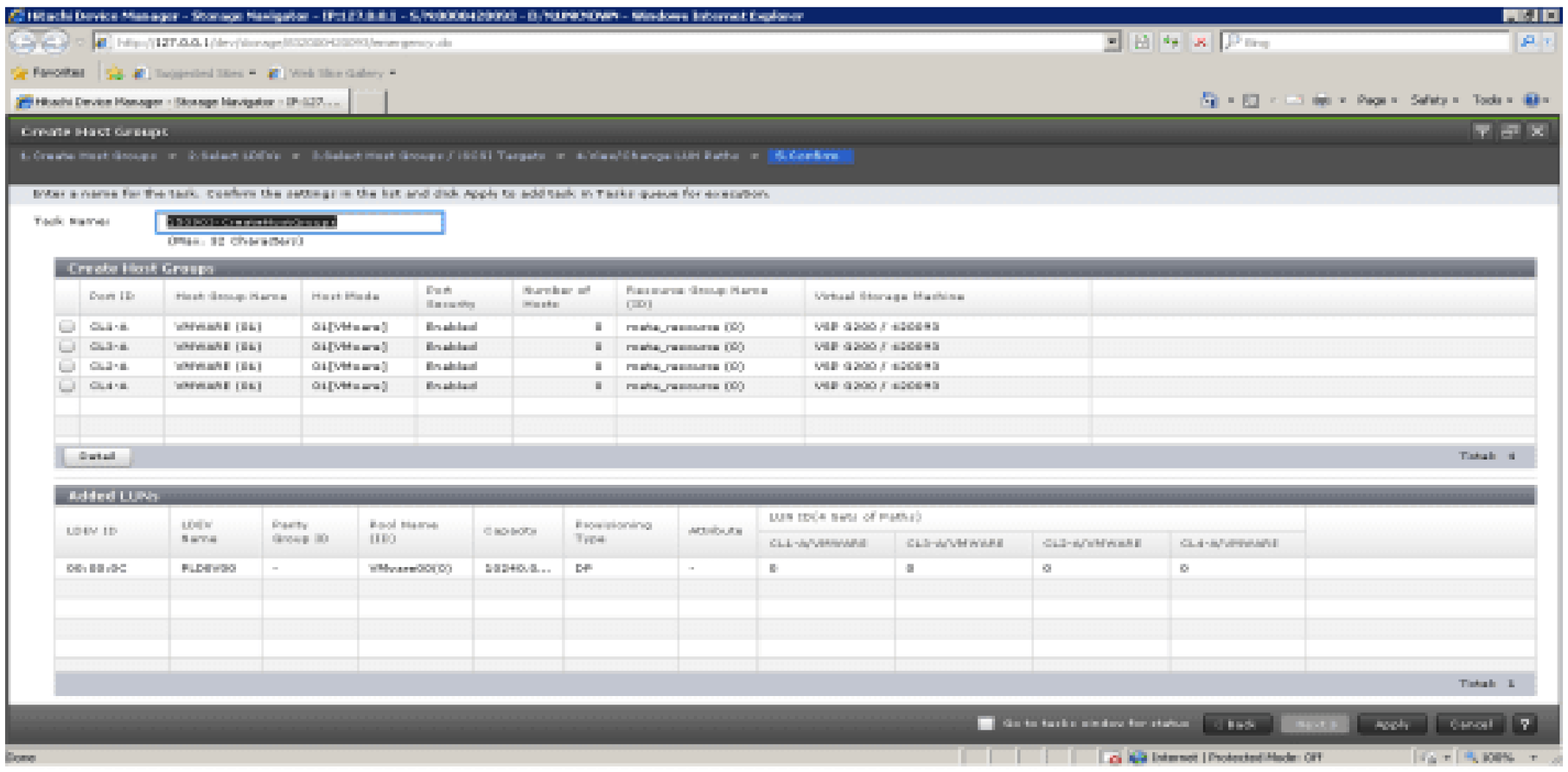

Warning
The selected information cannot be added, because a duplicated HBA WWN is in the information being selected.
Failed Item List


Create Host Groups
Available Hosts
Available Ports
Selected Host Groups

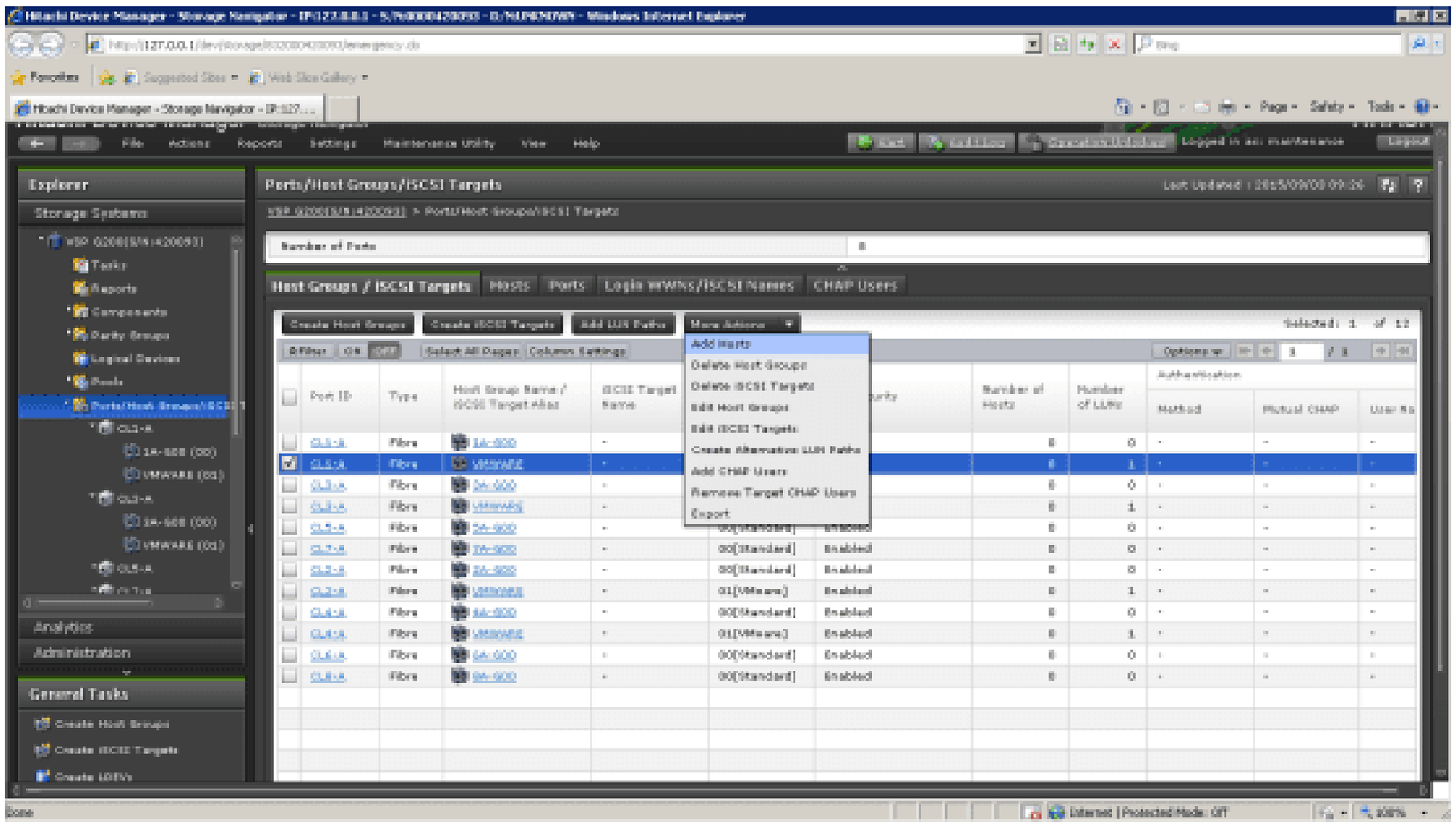

Create Host Groups
Available LDEVs
Selected LDEVs
Add
Remove
No Data

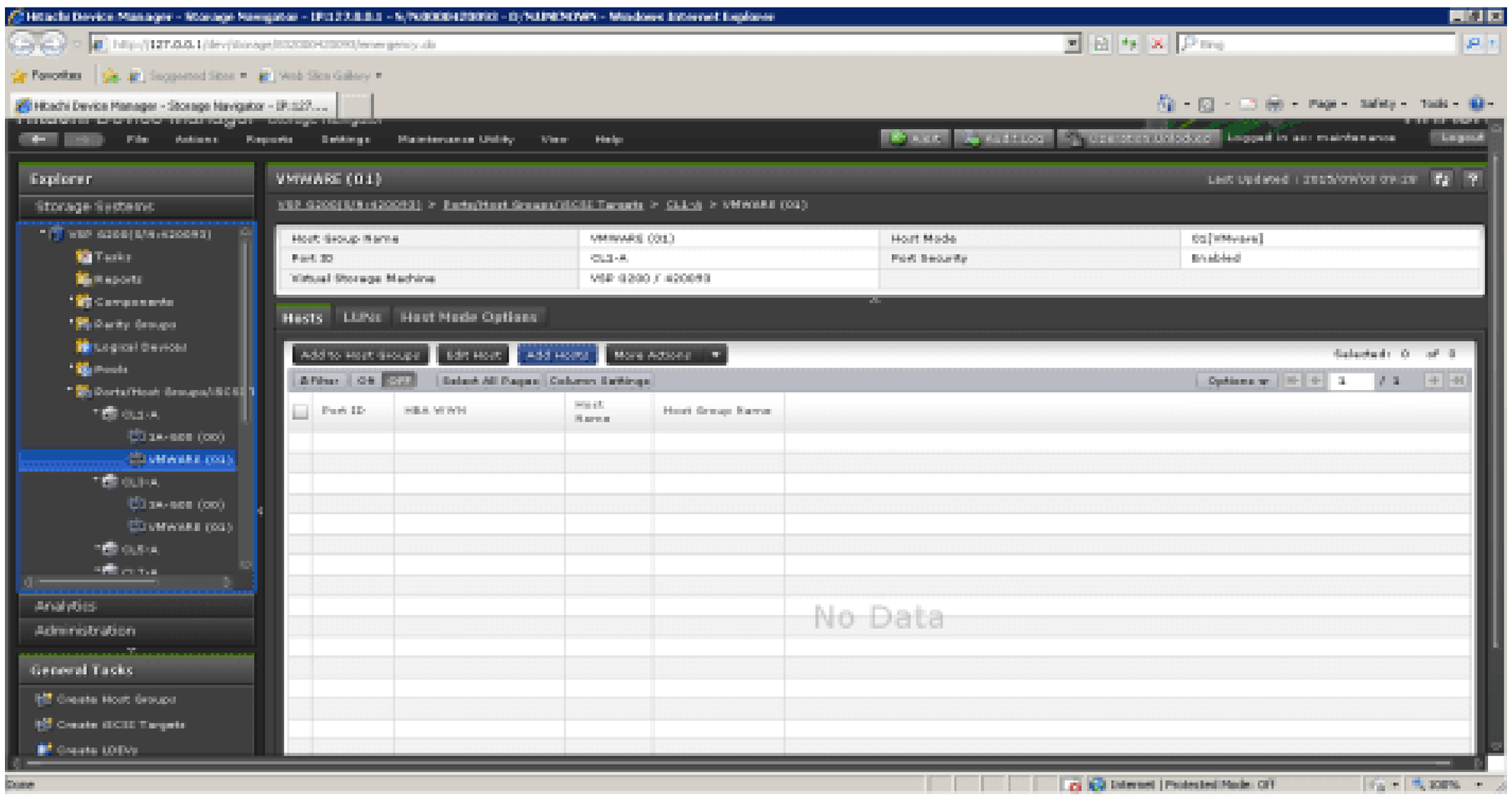

Create Host Groups
Available Host Groups
Selected Host Groups
Add
Remove

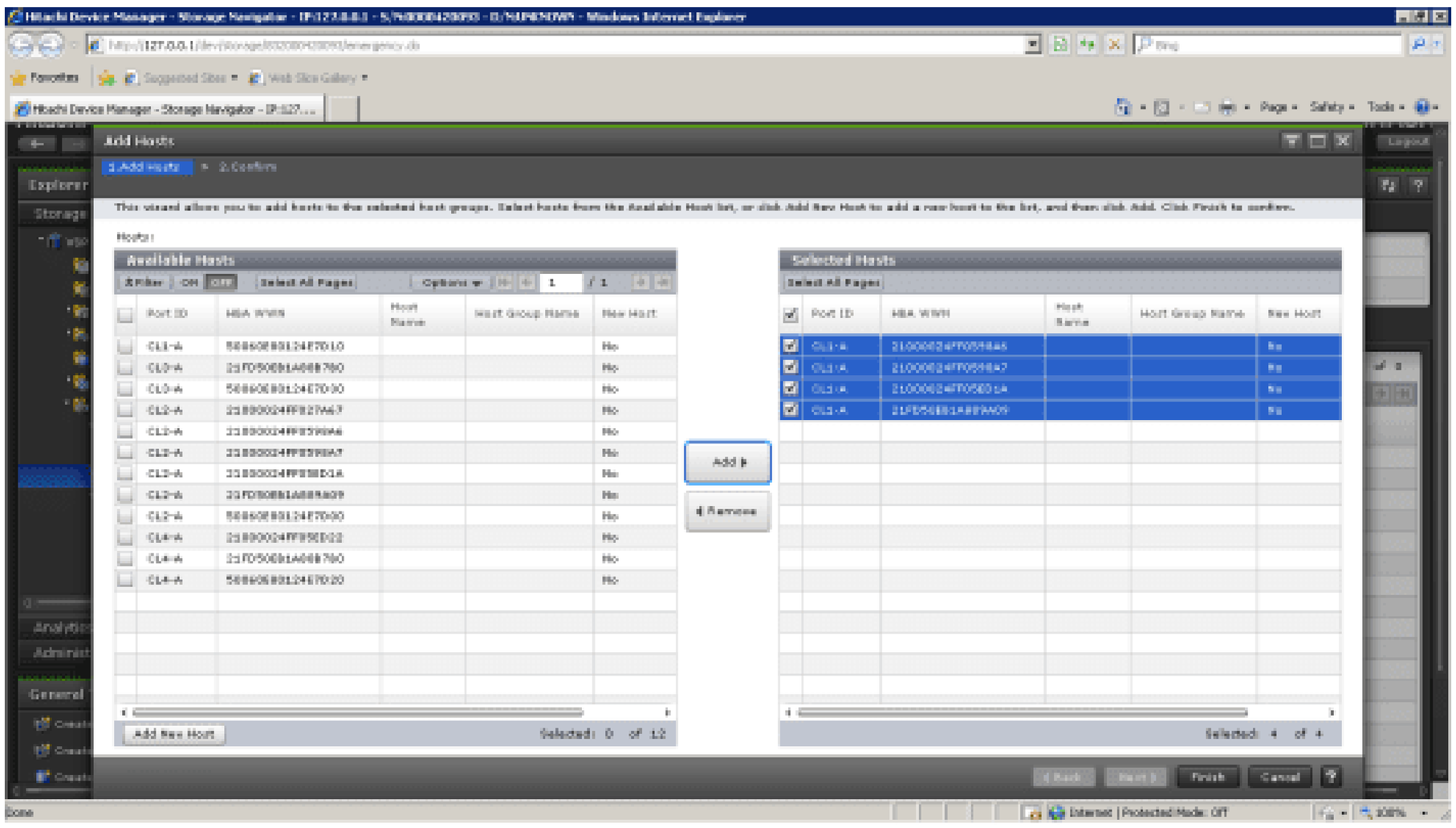

Create Host Groups
Added LUN

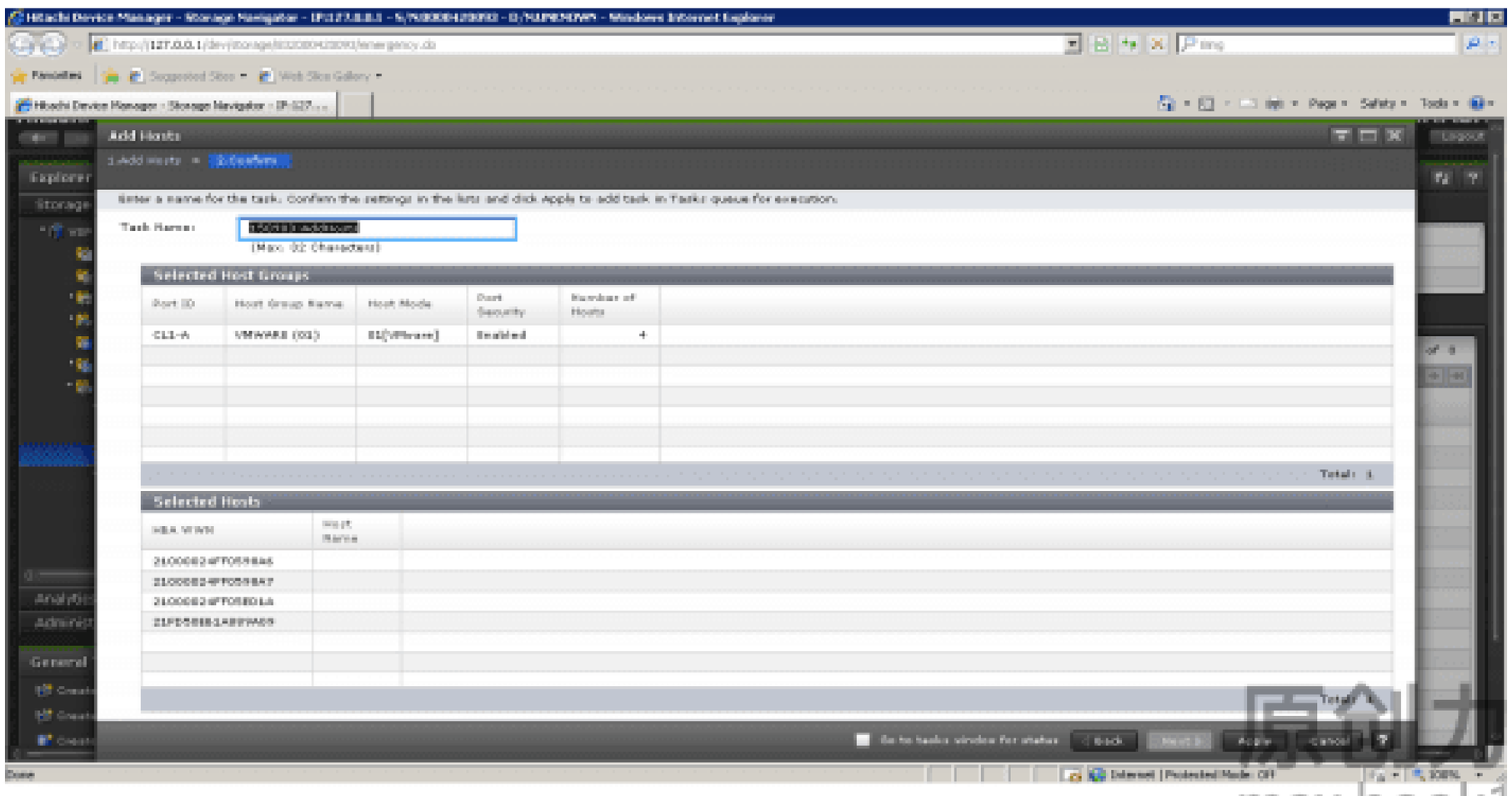


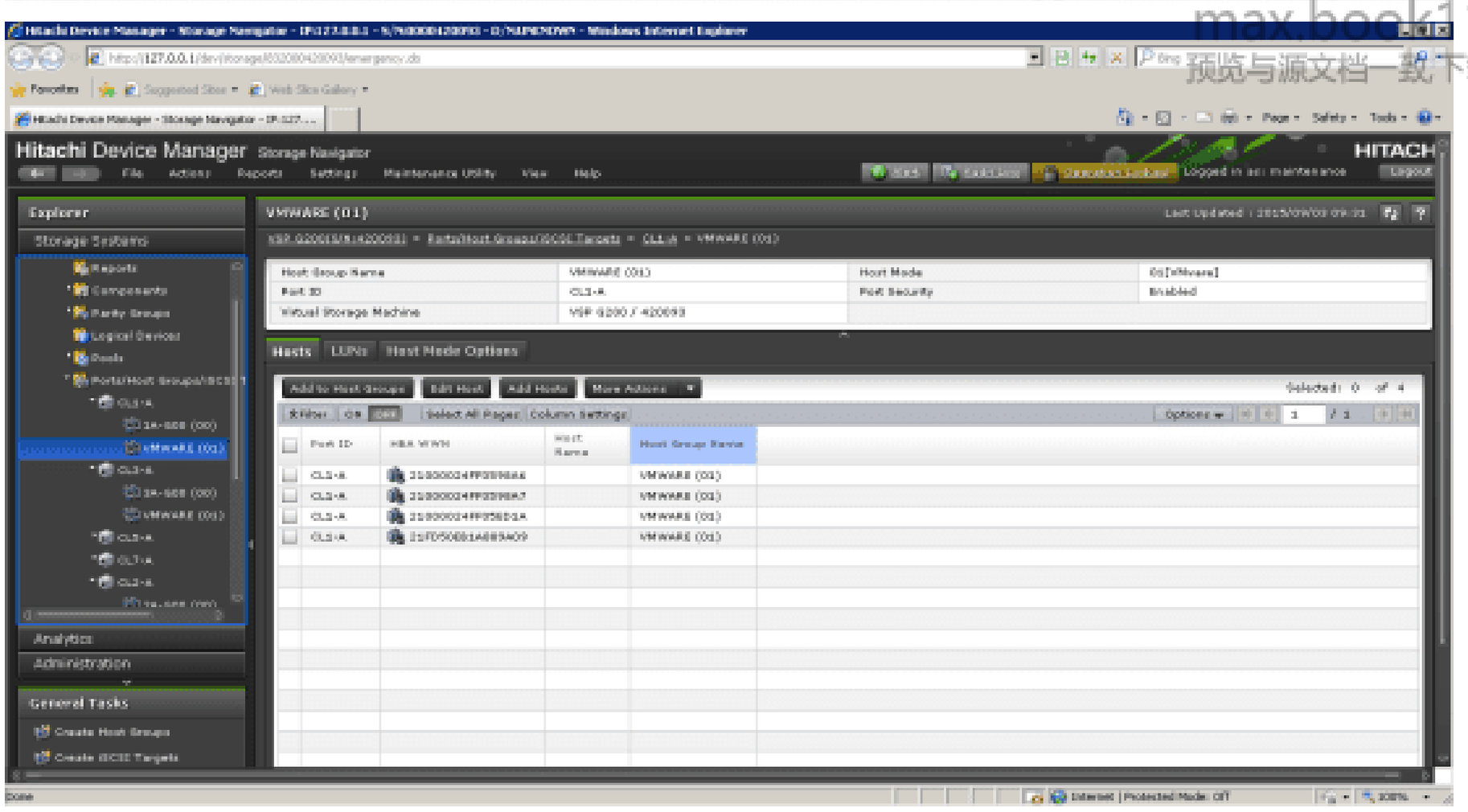

点击“Add Hosts”添加Host到创建好的Host Group，每个Host Group都要单独加



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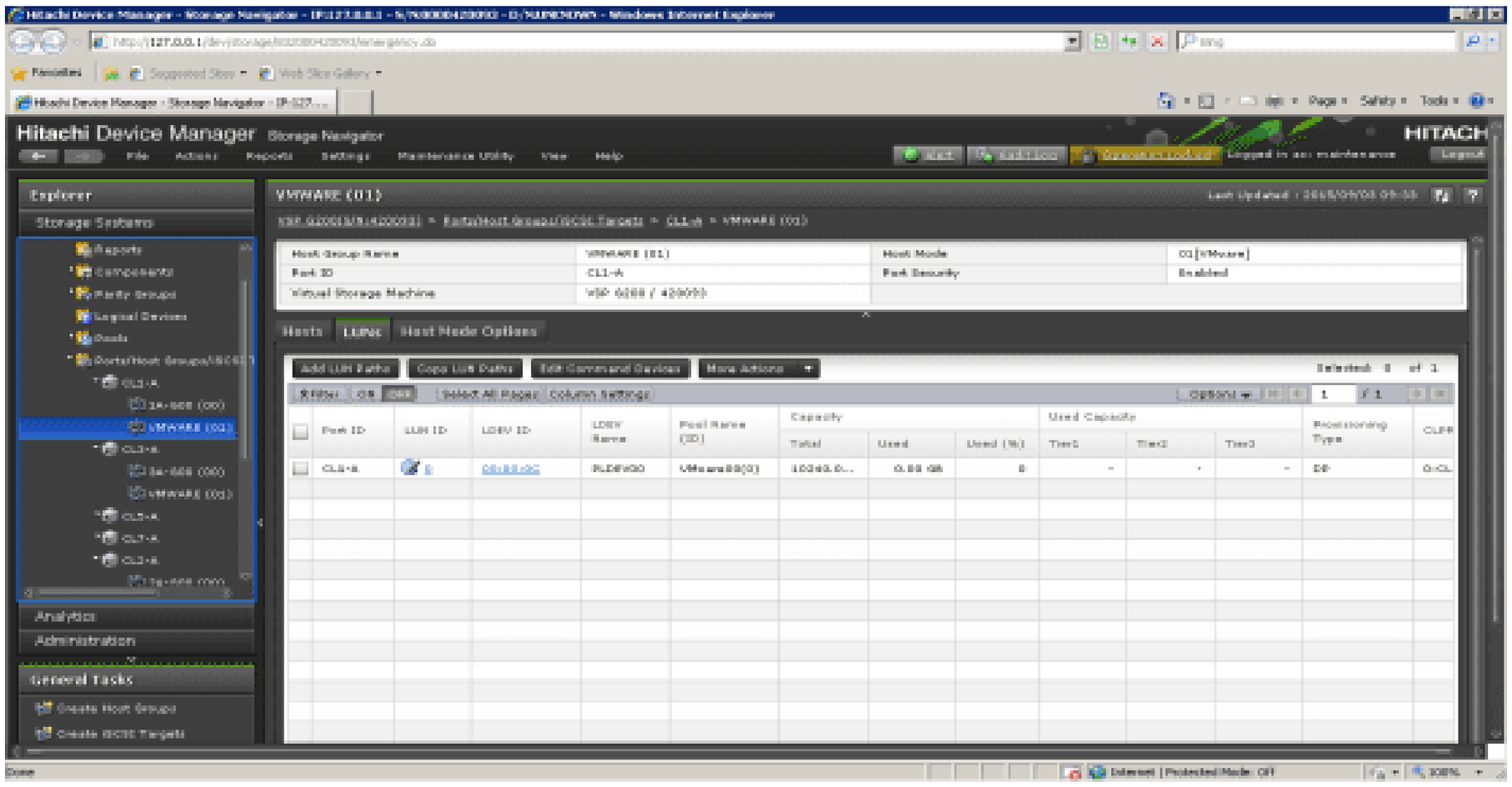
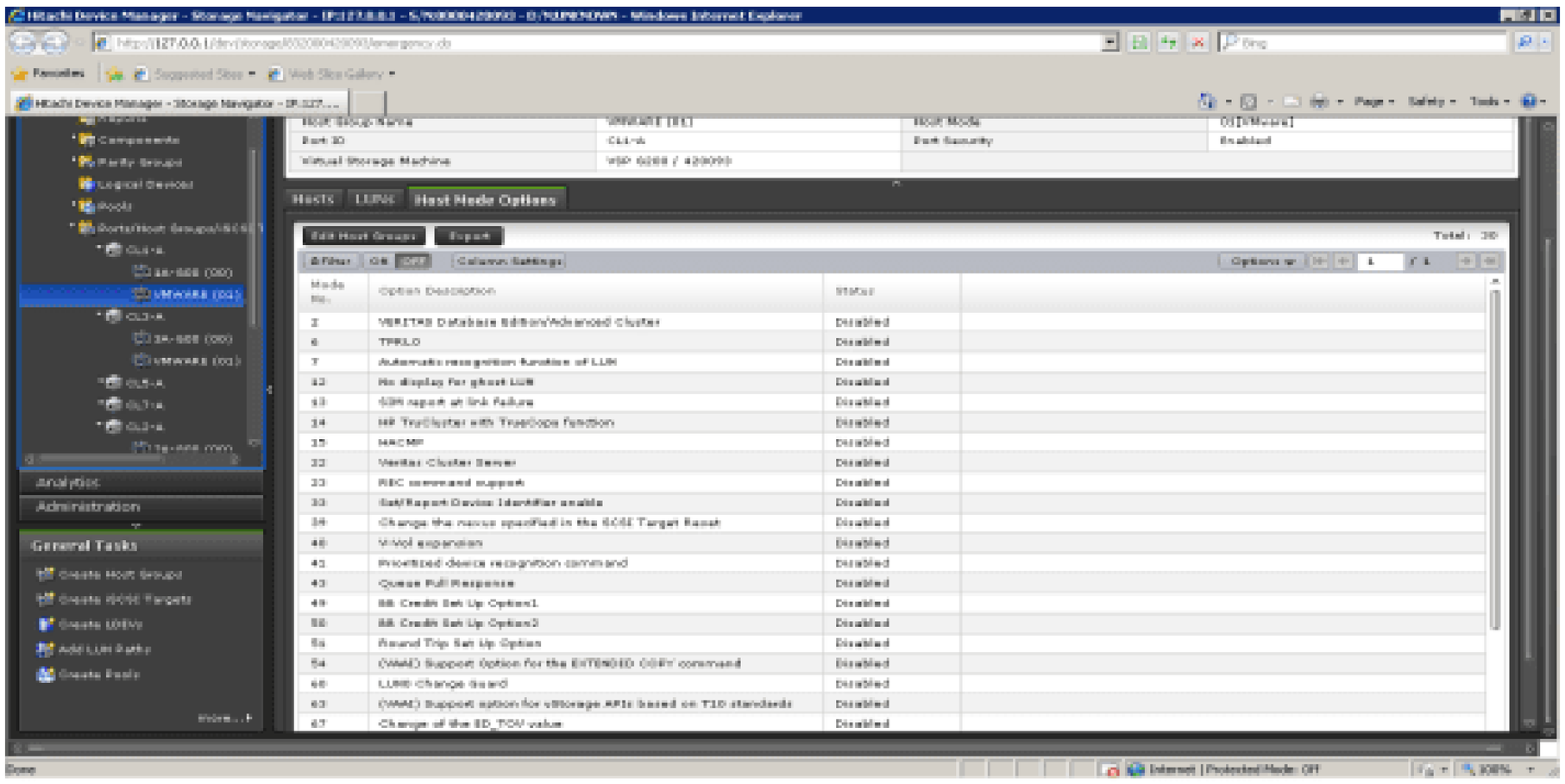
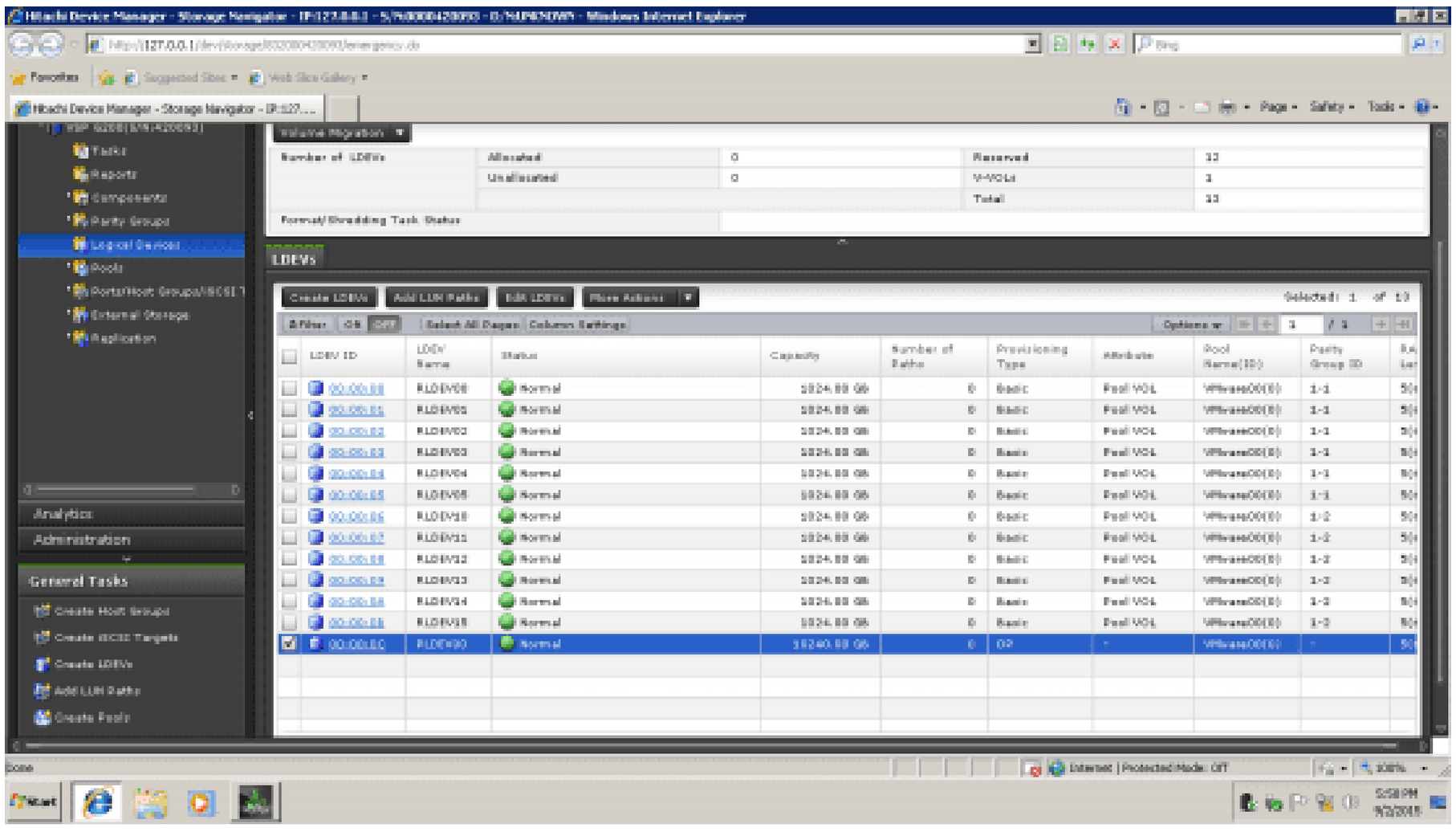



映射 LDEVS 到主机 ADD lun paths 就是把 ldevs 和 host group 对应



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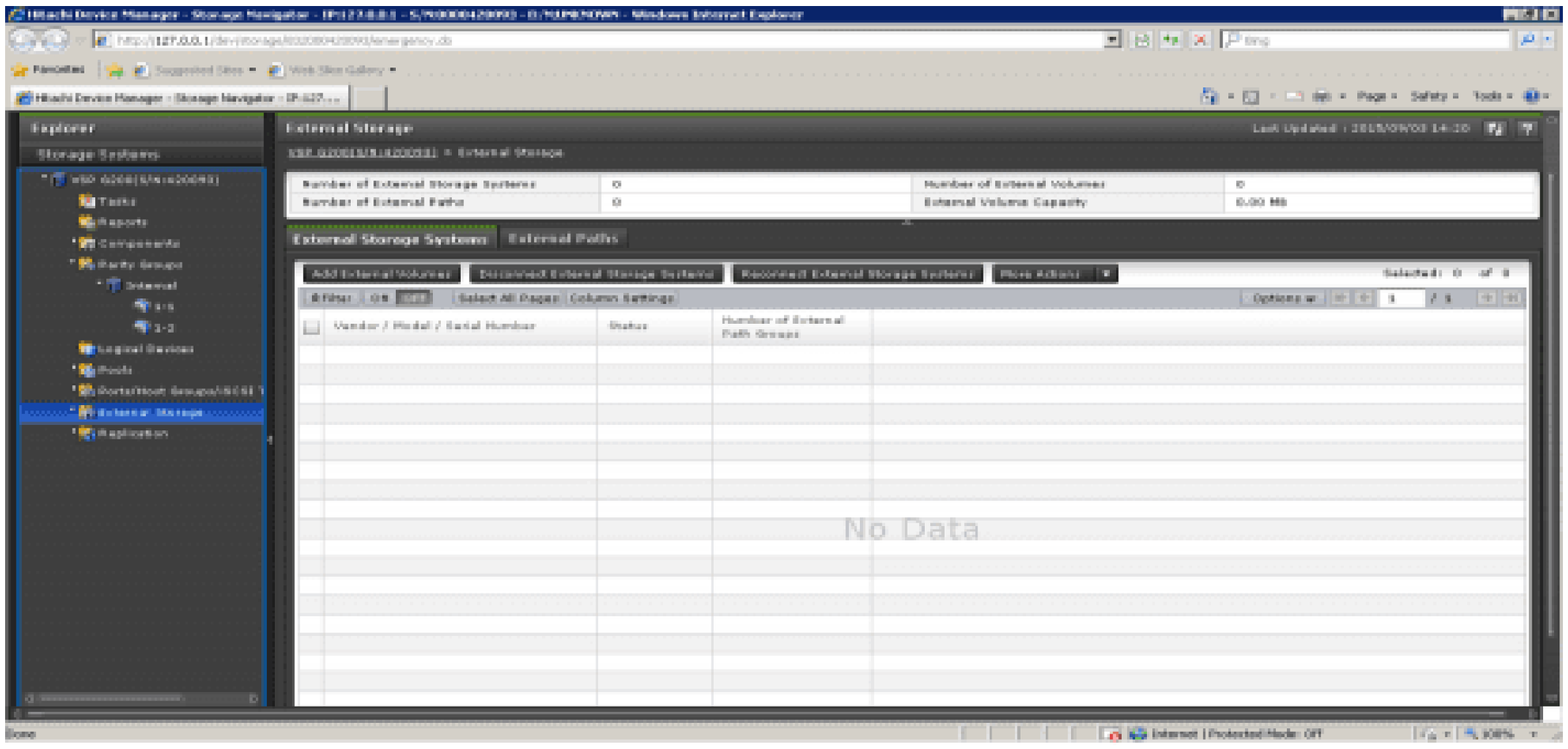
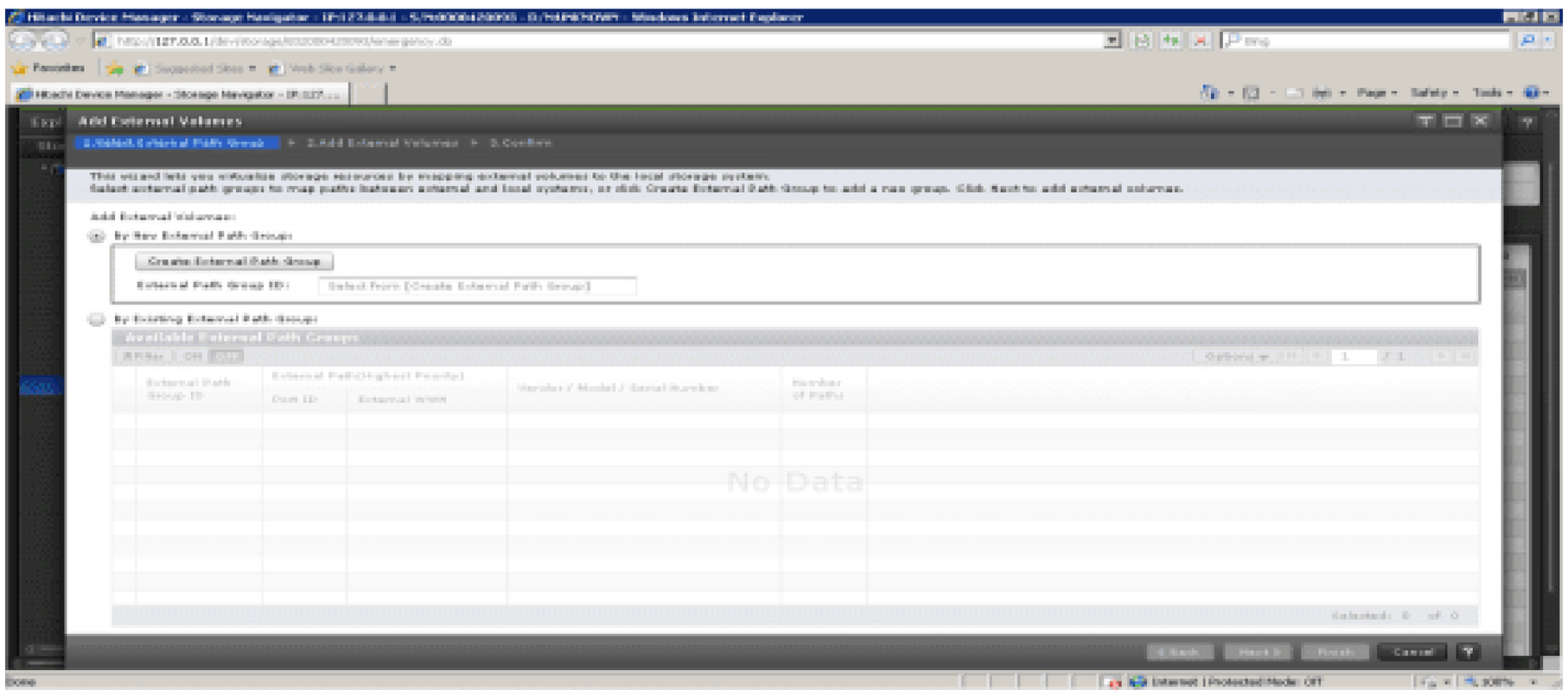
## 4.13 添加外部卷

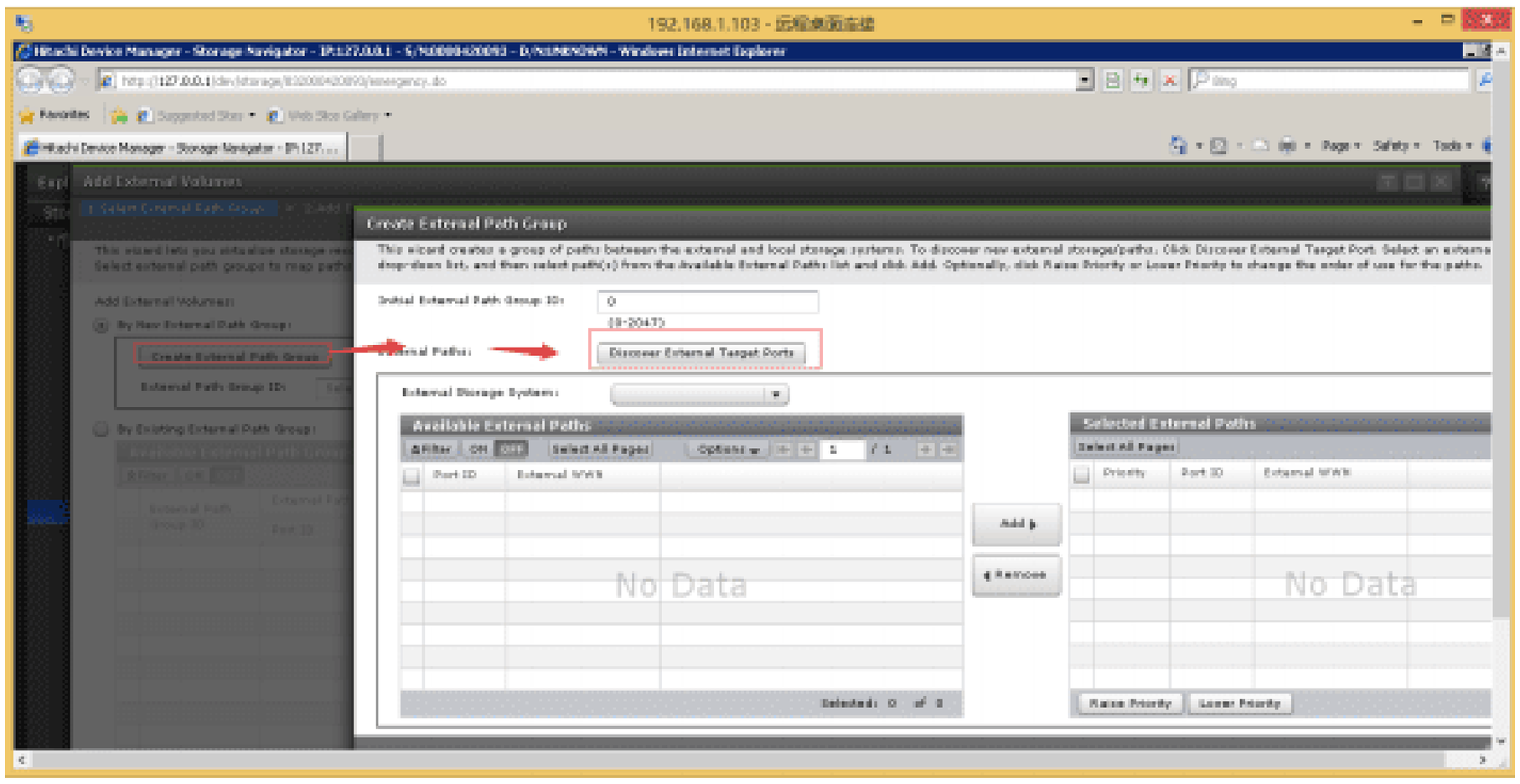
点击 Add External Volumes 添加外部卷

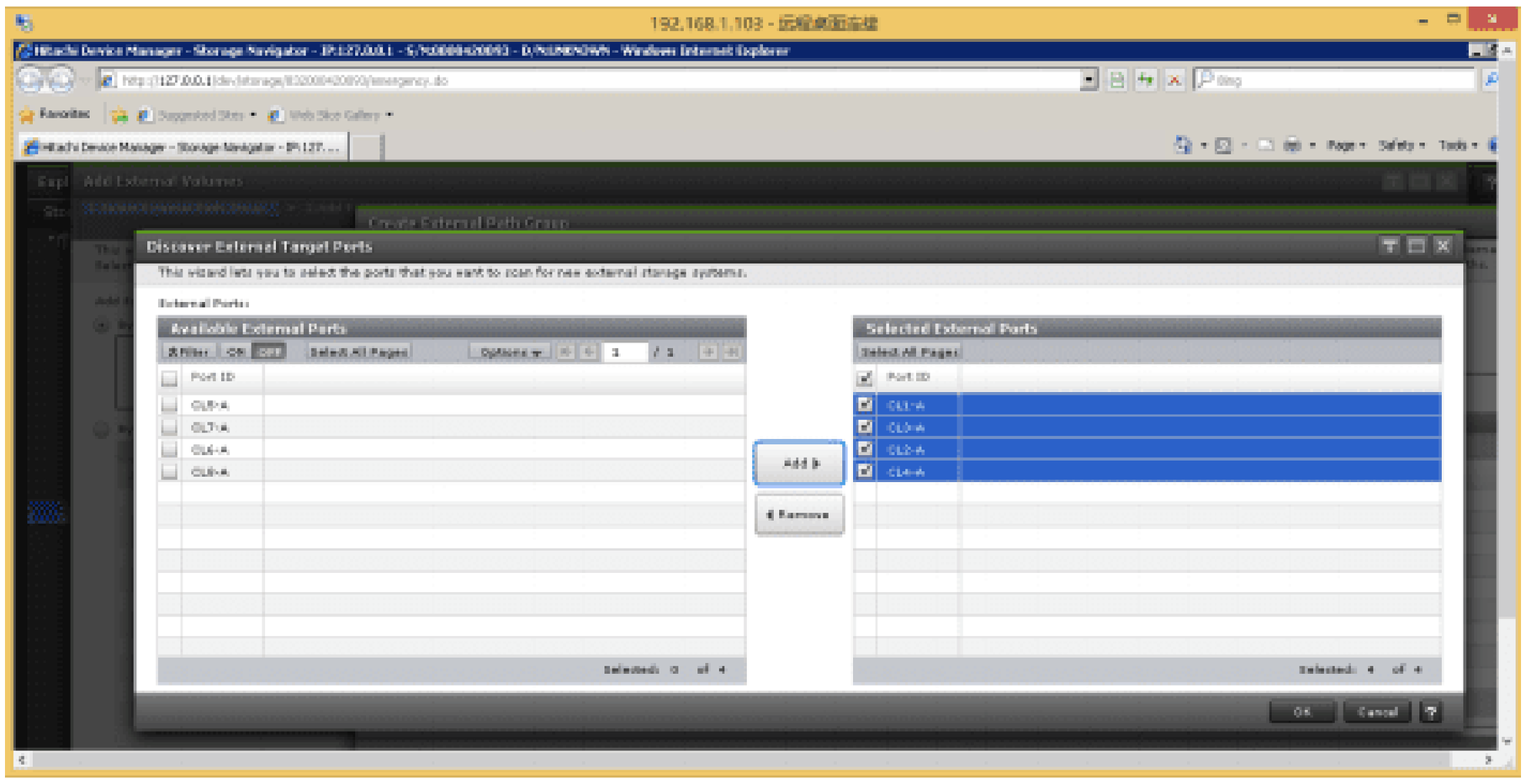


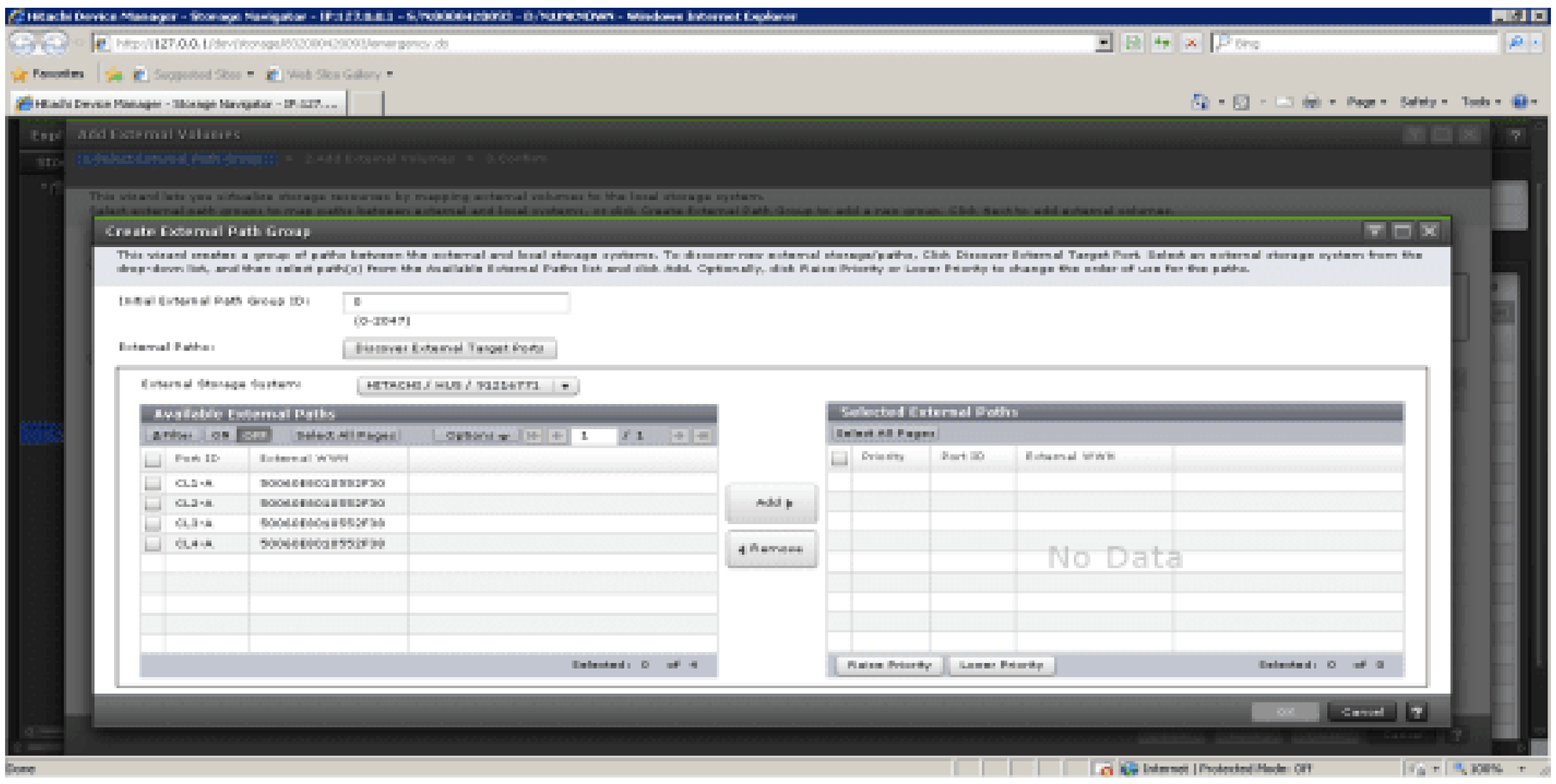

如果是新的外部卷，点击“Create External Path Group”，先创建到外部卷的路径

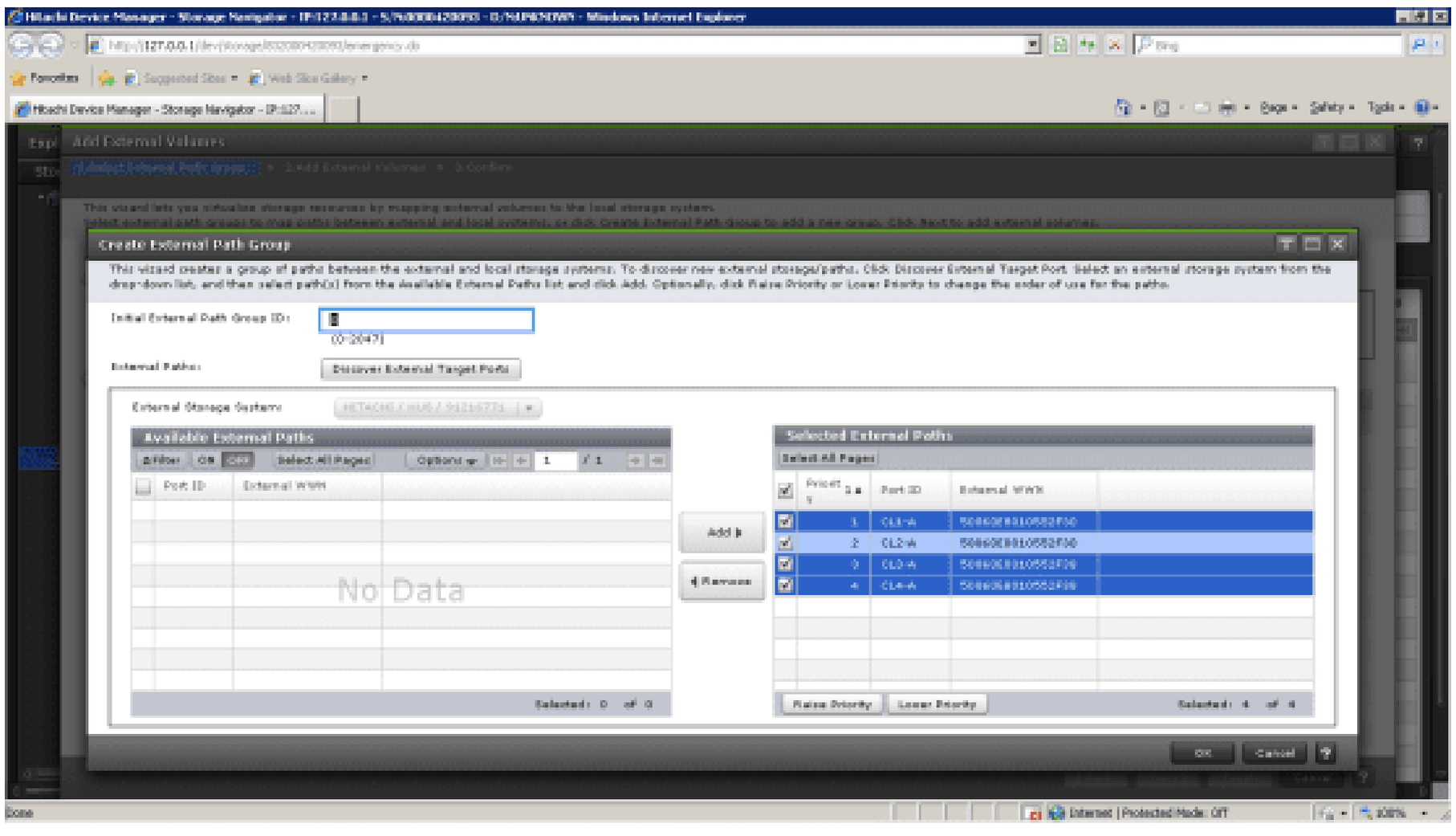



点击“Discover External Target Ports”添加用于连接外部卷的 FC 接口

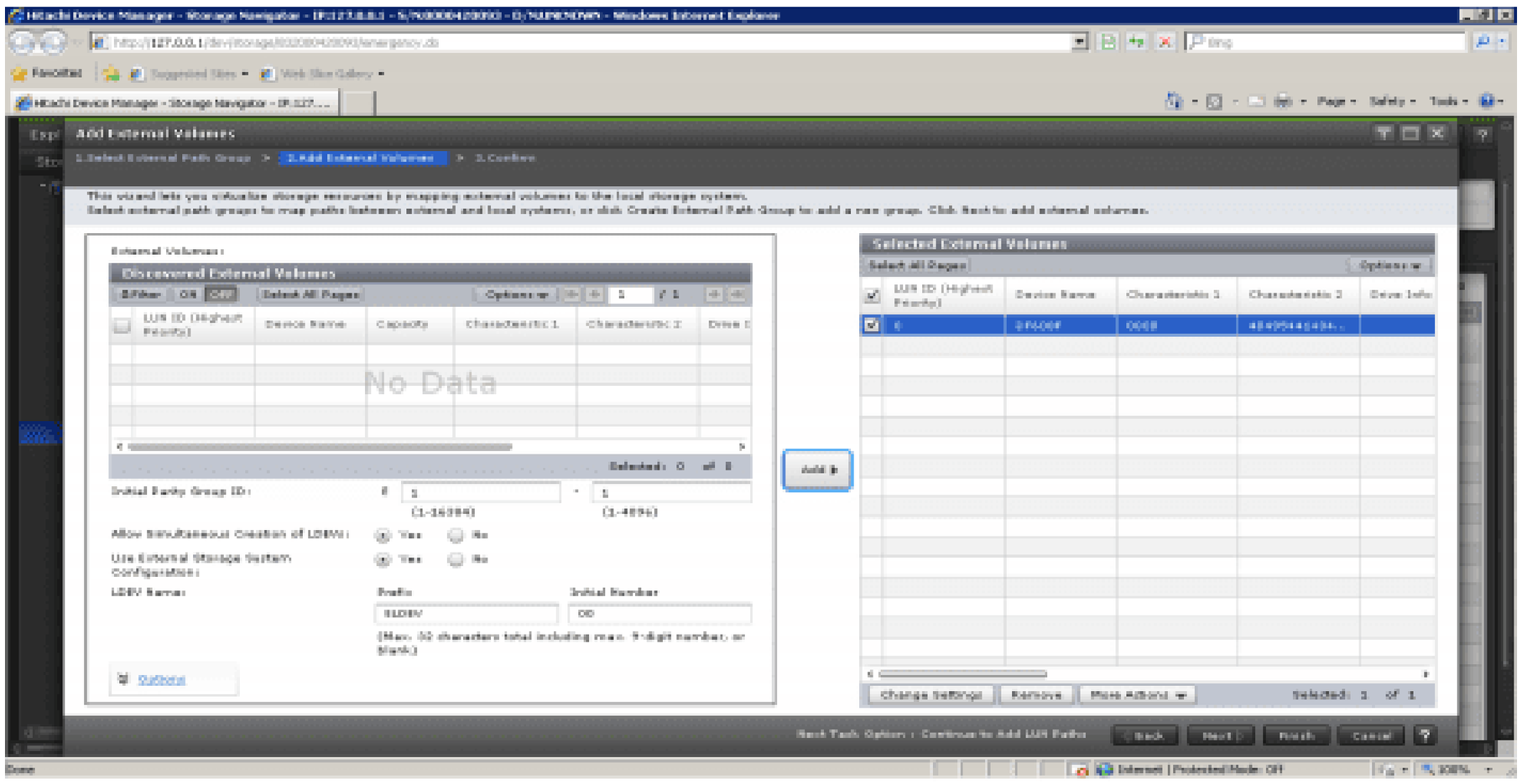


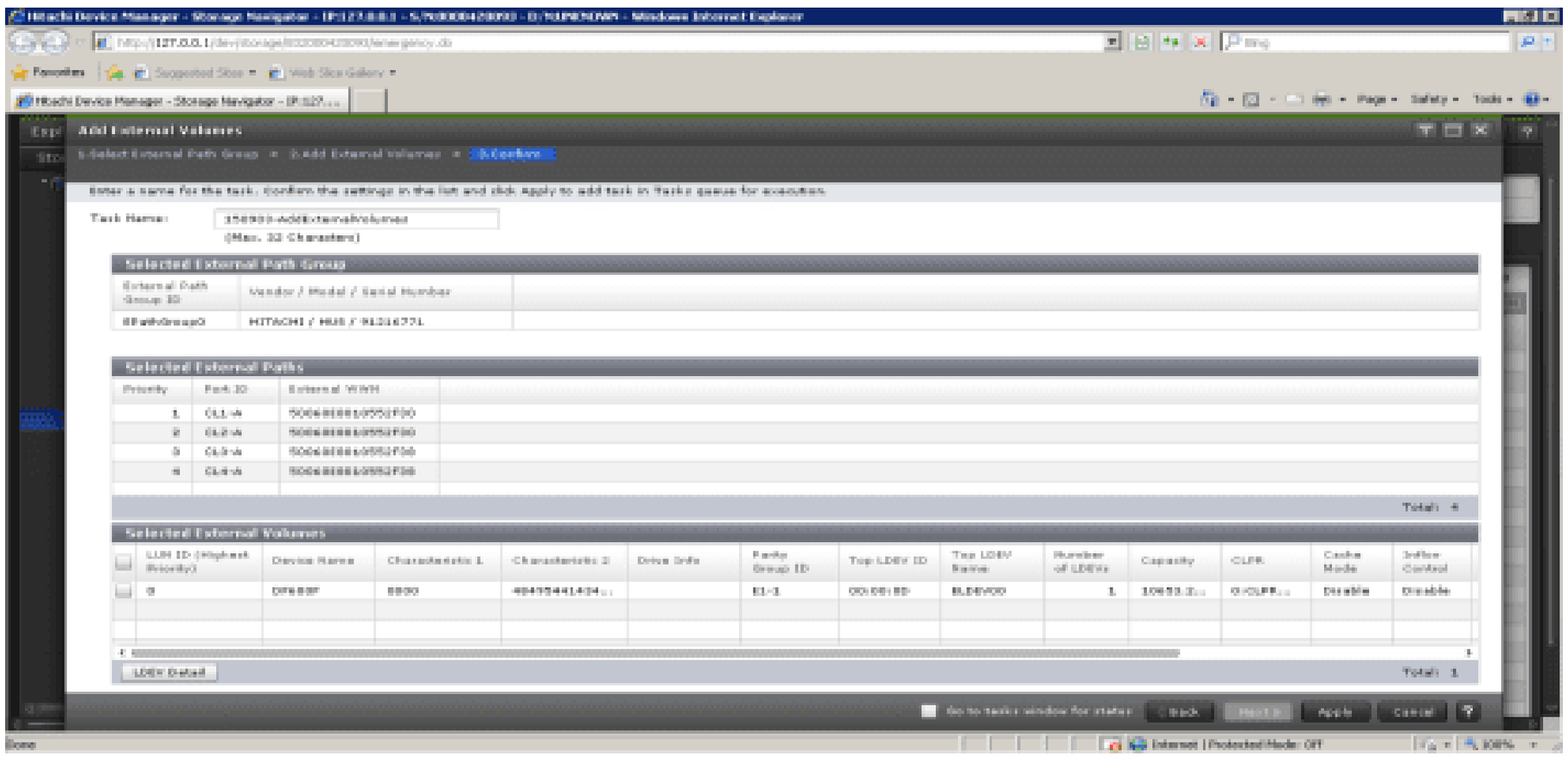

Discover External Target Ports
Available External Ports
Selected External Ports
Add
Remove
OK
Cancel

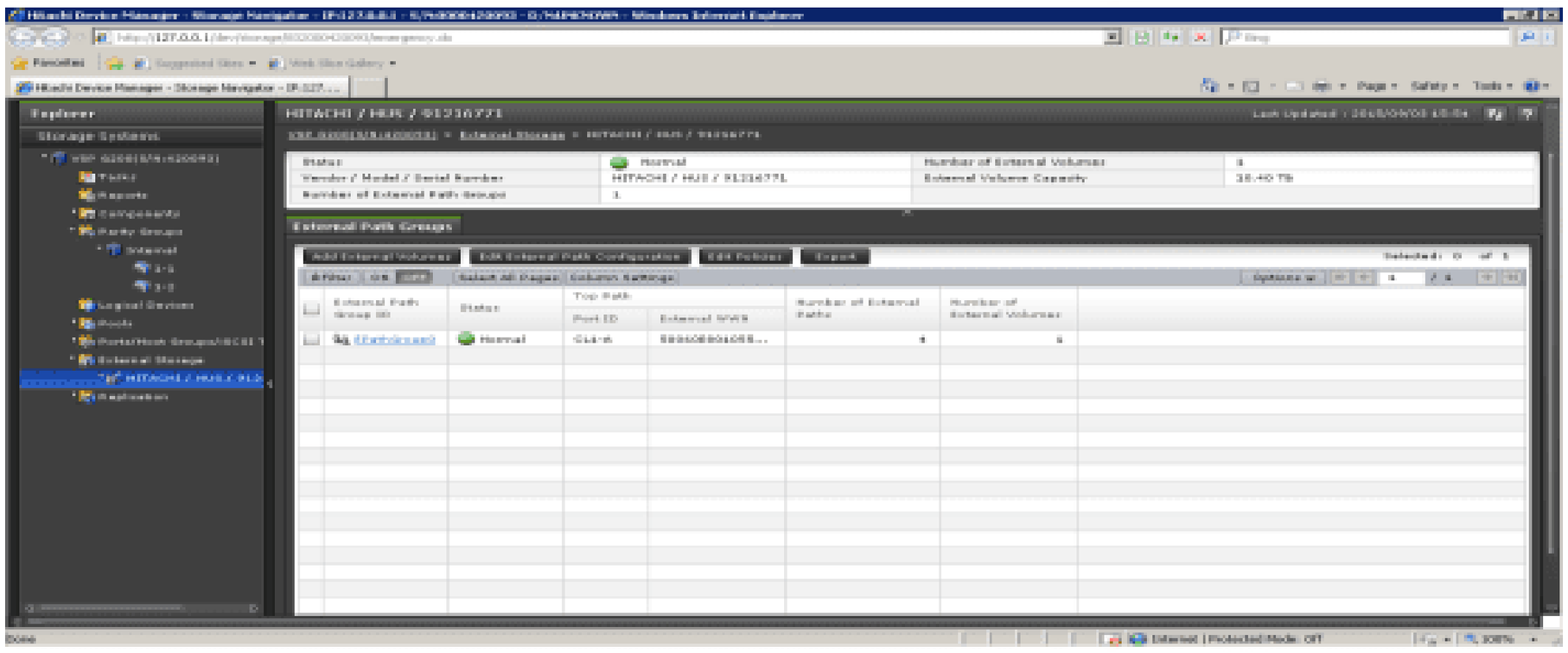

Create External Path Group
Discover External Target Ports
Available External Paths
Selected External Paths
Add
Remove
No Data
Raise Priority
Lower Priority

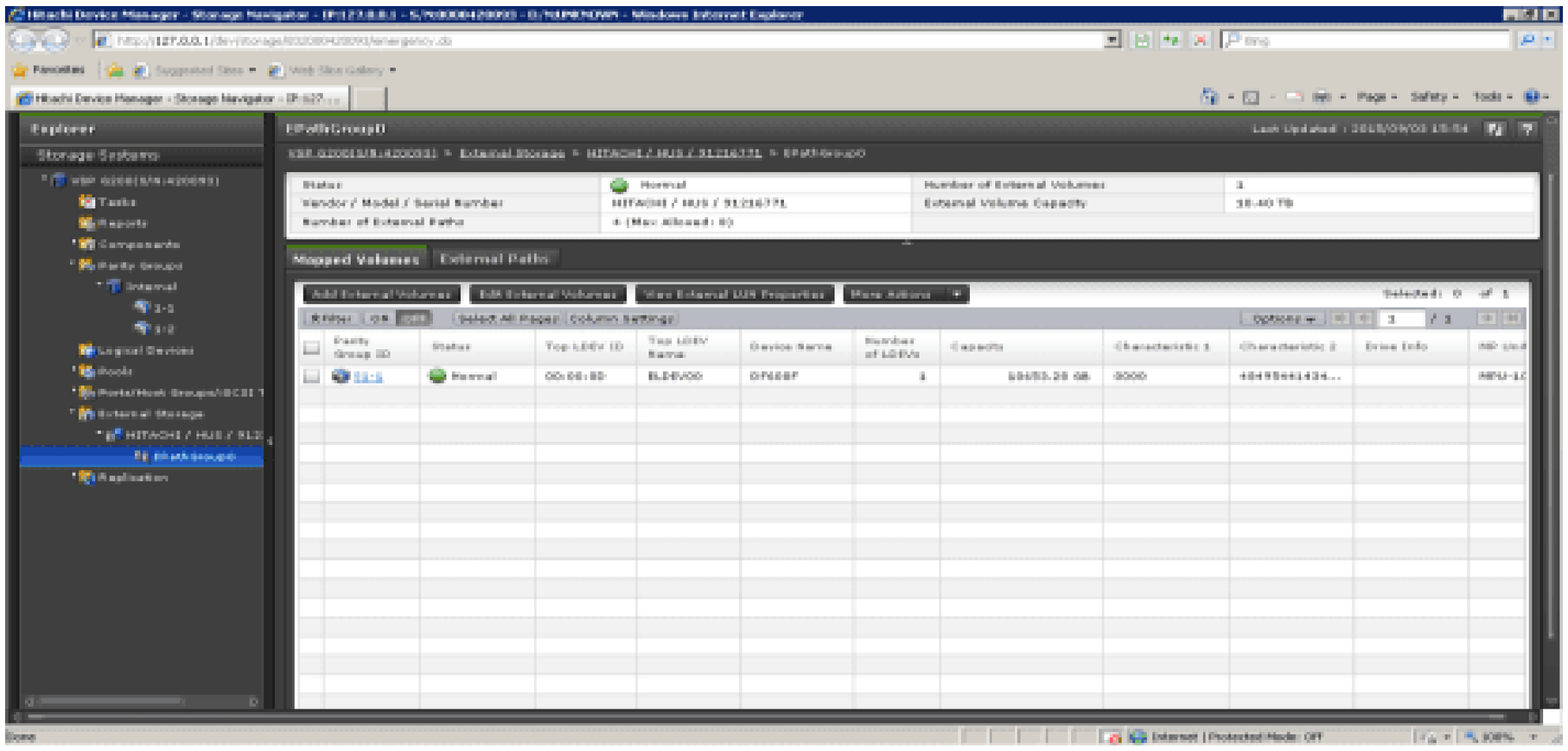

Create External Path Group
Discover External Target Ports
Available External Paths
Selected External Paths
Add
Remove
No Data
Raise Priority
Lower Priority

下面这个界面会直接在外部卷上创建 LDEVS，点 Next 还会去映射卷，如果不创建 LEDVS 建议直接点 finish。如果要让主机直接认到外部卷，比如让 HDS 110 上的卷直接通过 G200 被主机认到需要做如下选择 Allow simultaneous Creation of LDEVs:选 YES。Use External Storage System Configuration 选 NO。这样主机就能直接认到 110 的卷。如果 Allow simultaneous Creation of LDEVs:选 YES。Use External Storage System Configuration 选 YES 的话系统会自动创建一个 4TB 的 LDEVS。



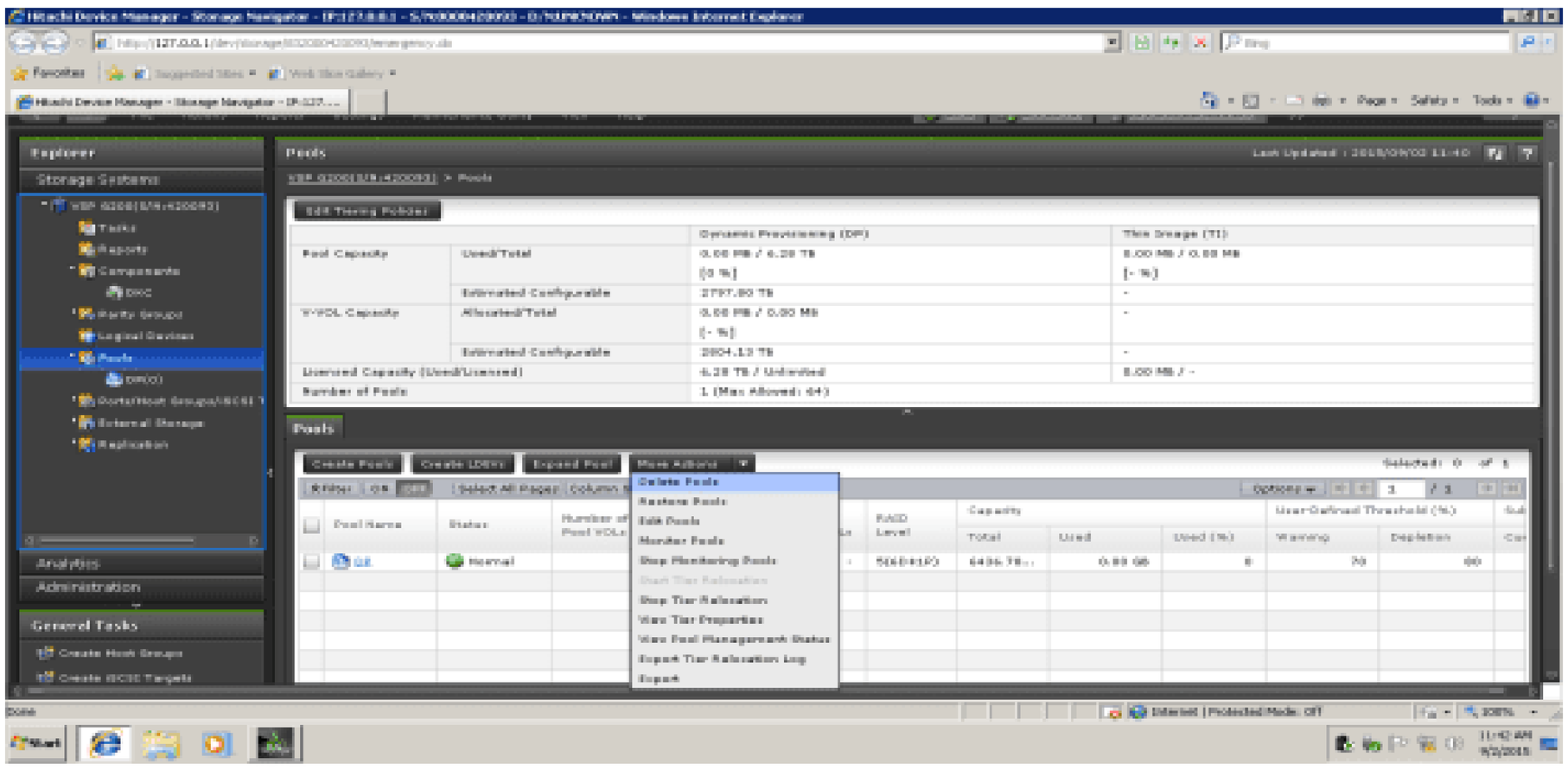



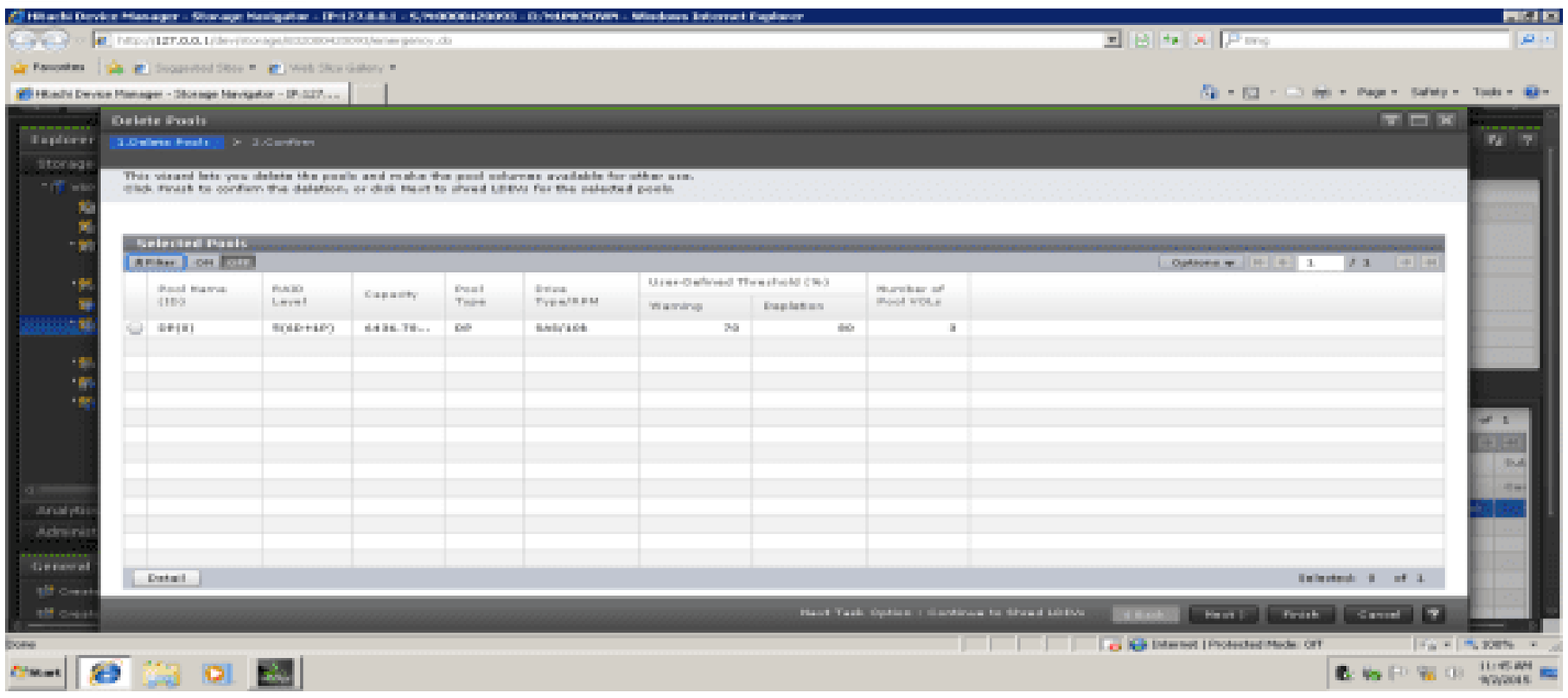





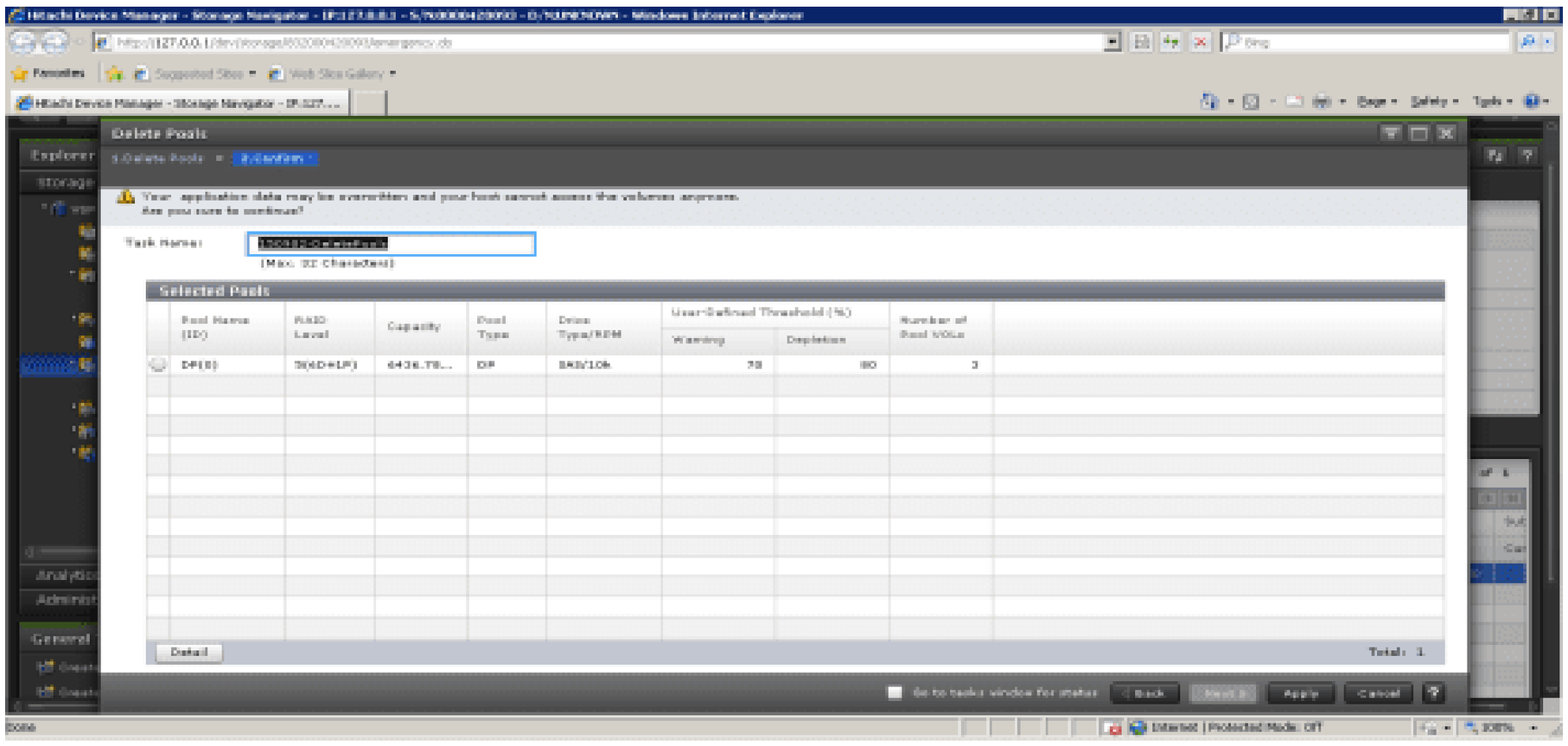
## 4.14 删除 Pool

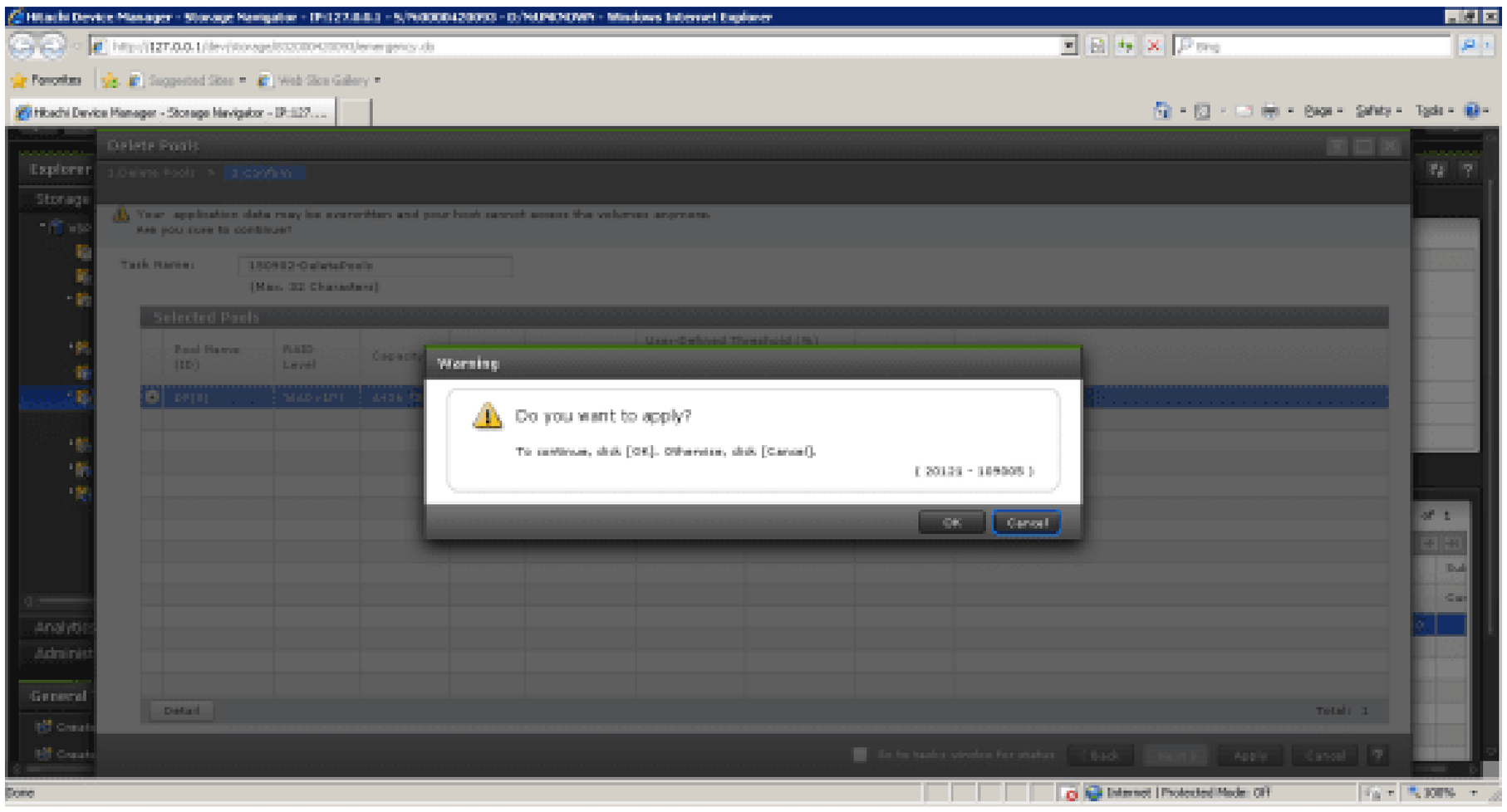
在删除 Pool 最好先把基于 POOL 的虚卷先从 LEDvs 上移除，在把组成 POOL 的 LEDVs 从 Pool 中移除

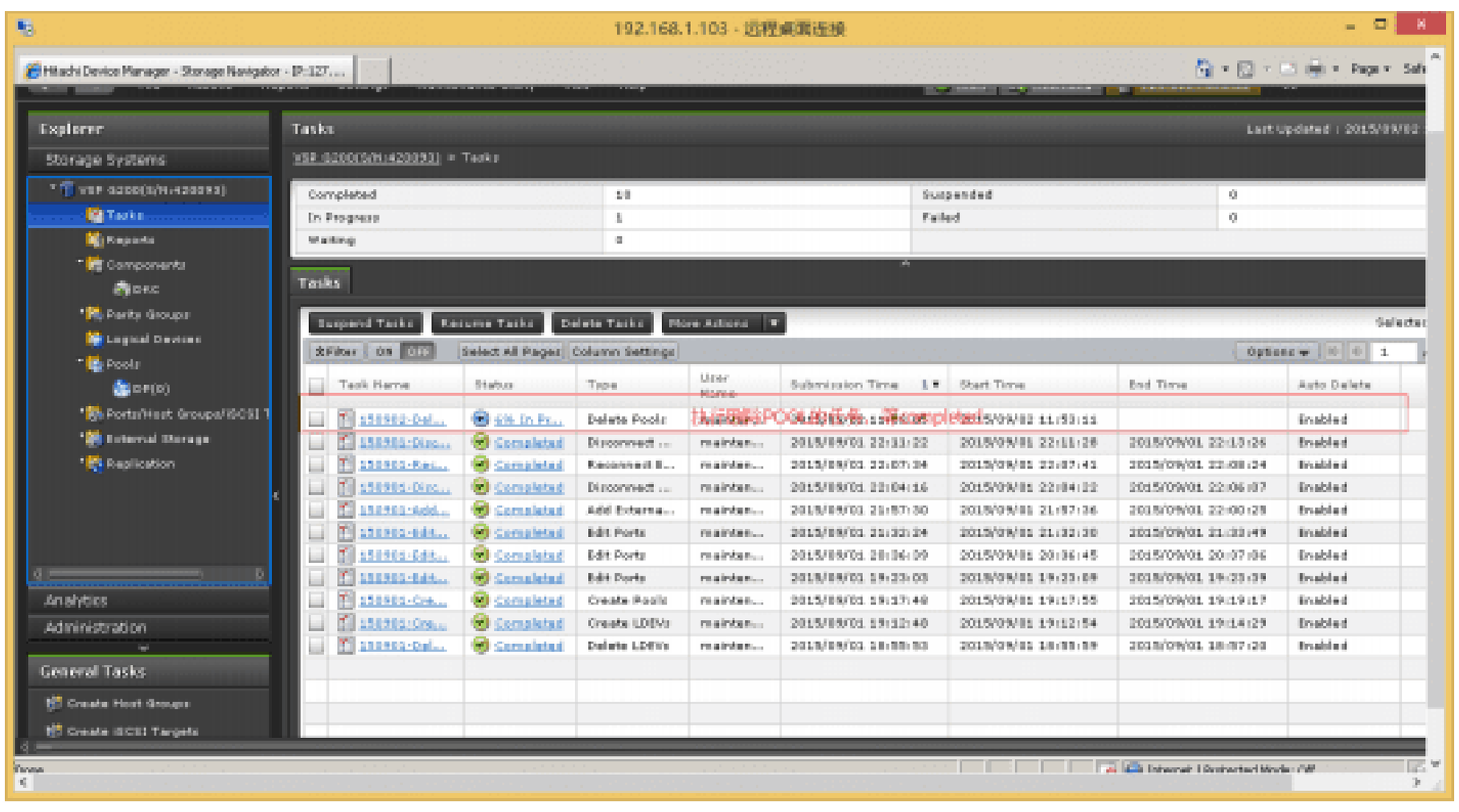


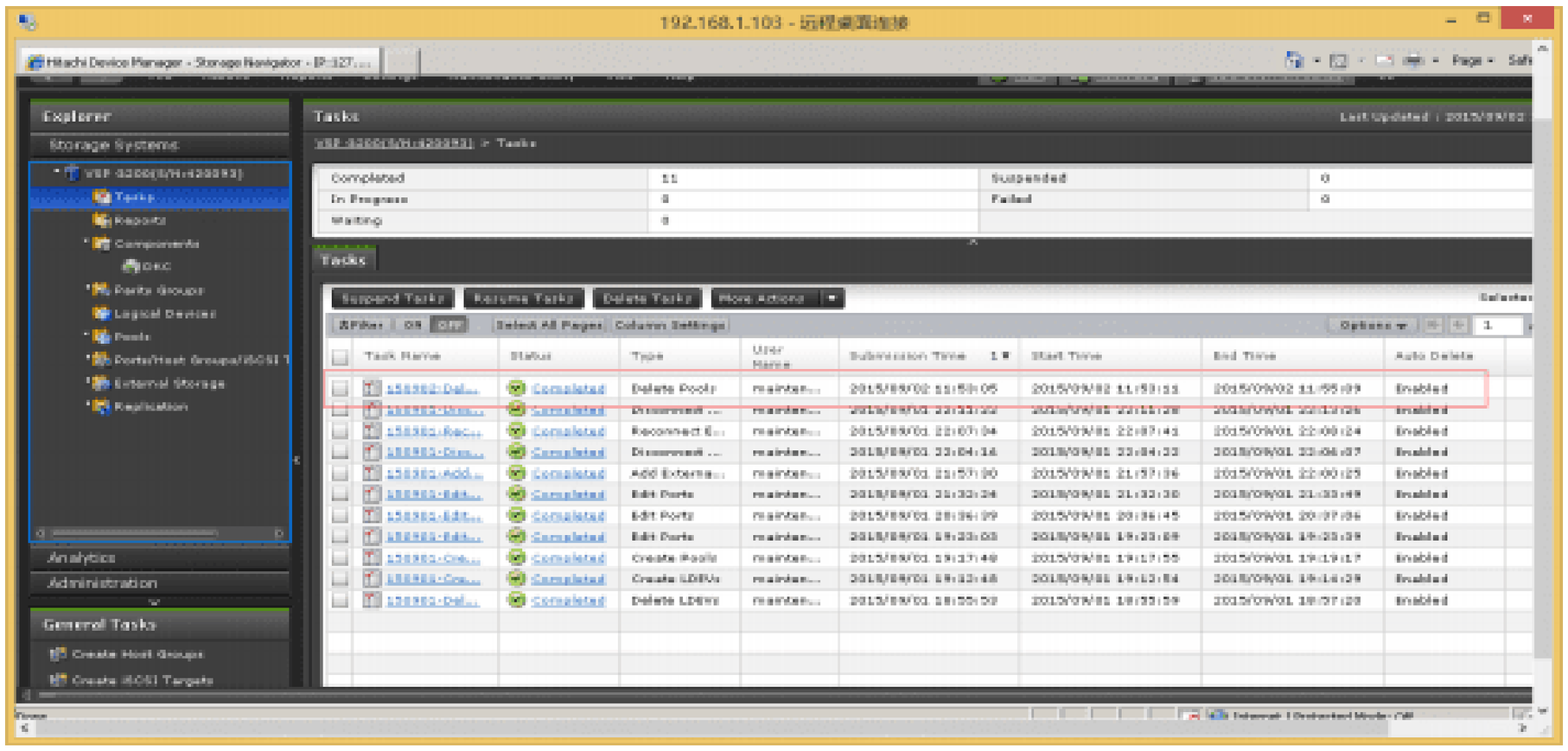


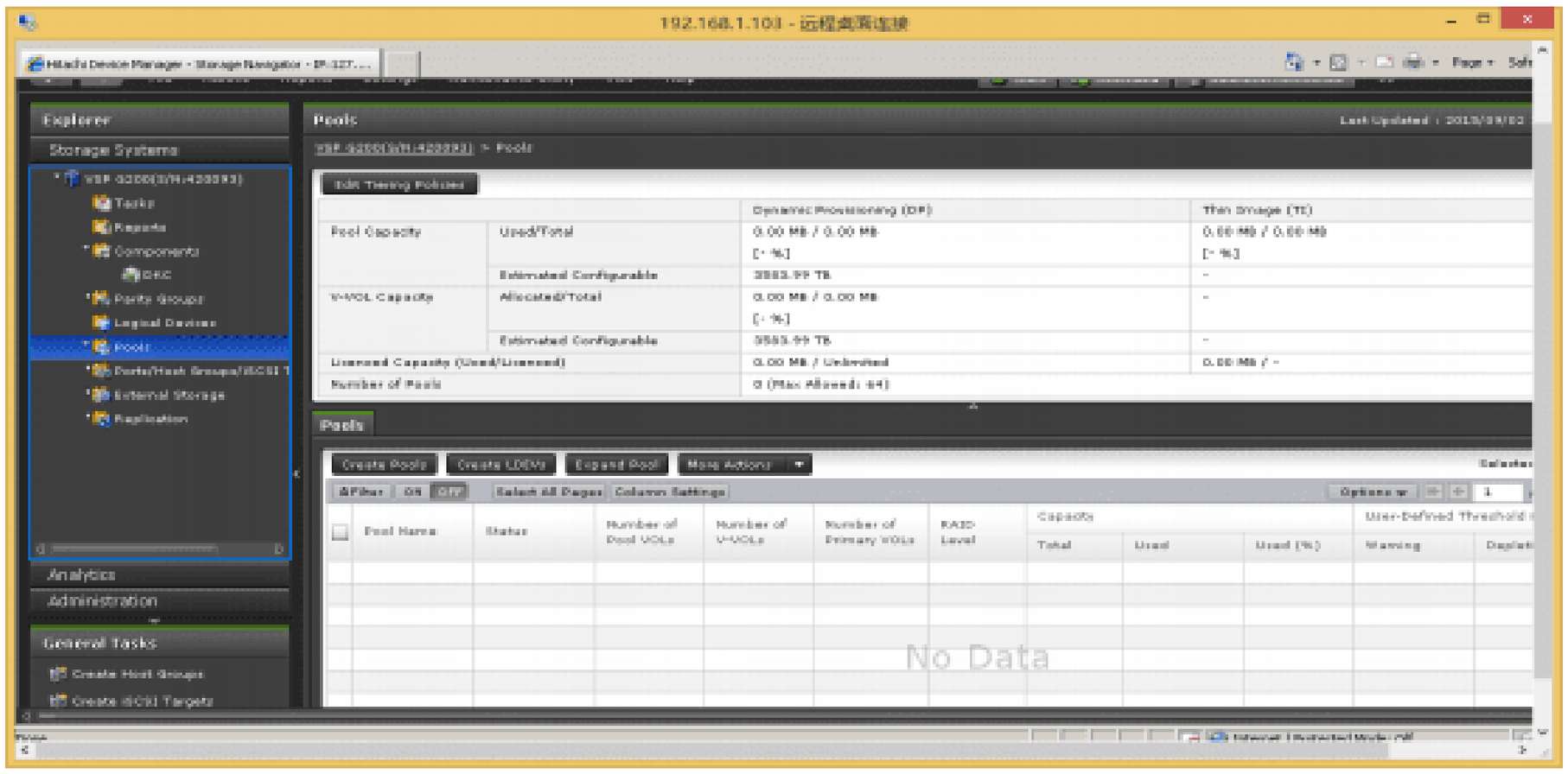
选 Finsh 直接进入删除 Pool 界面，会直接执行 shred LEDVS，LEDVS 的数据就被毁坏。但是 LEDVS 还是在的。格式化以后还能用。


Delete Pools
Selected Pools

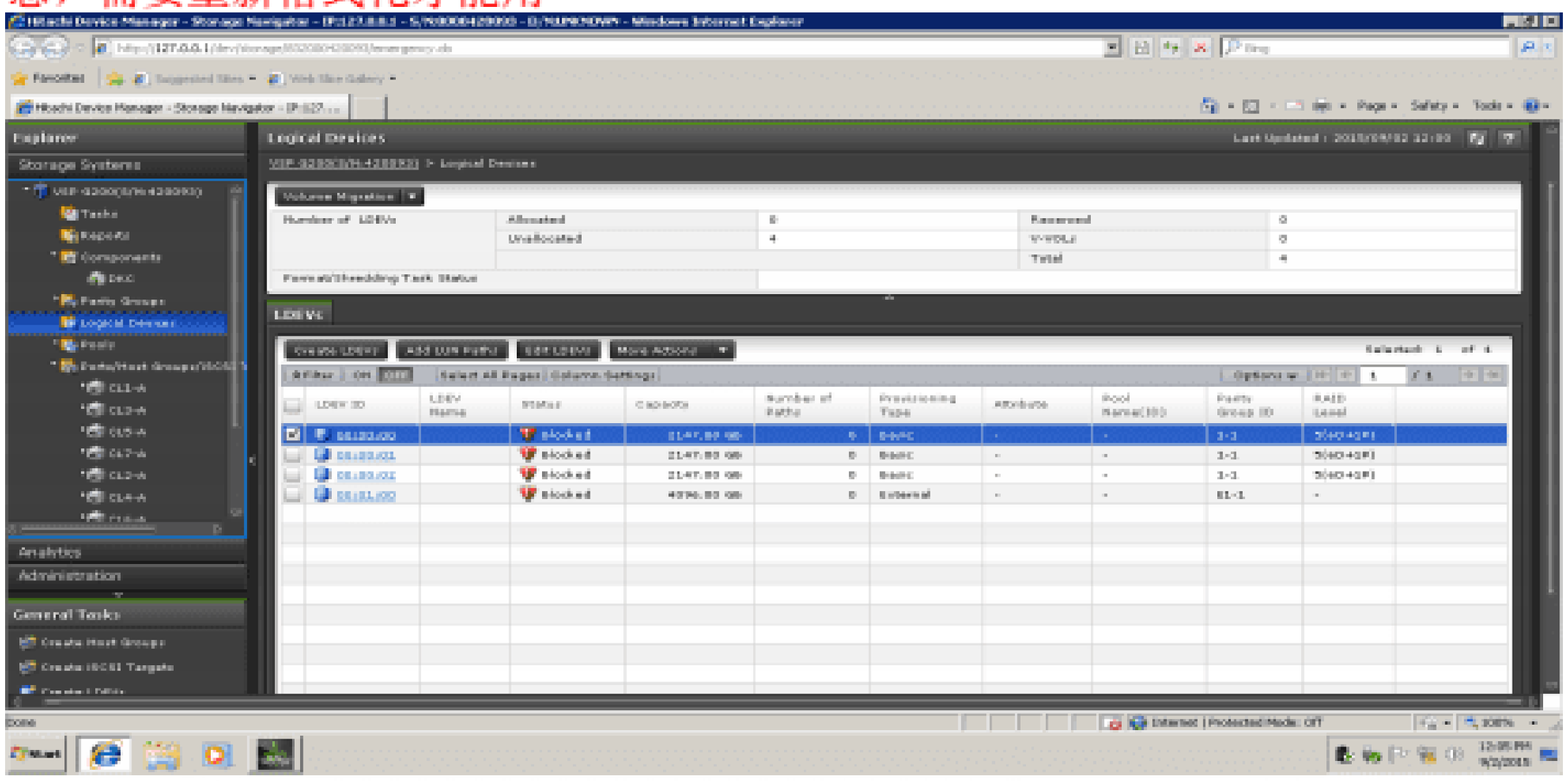

Delete Pools
Selected Pools
Warning
Do you want to apply?


192.168.1.103 - 远程桌面连接
Explorer
Tasks

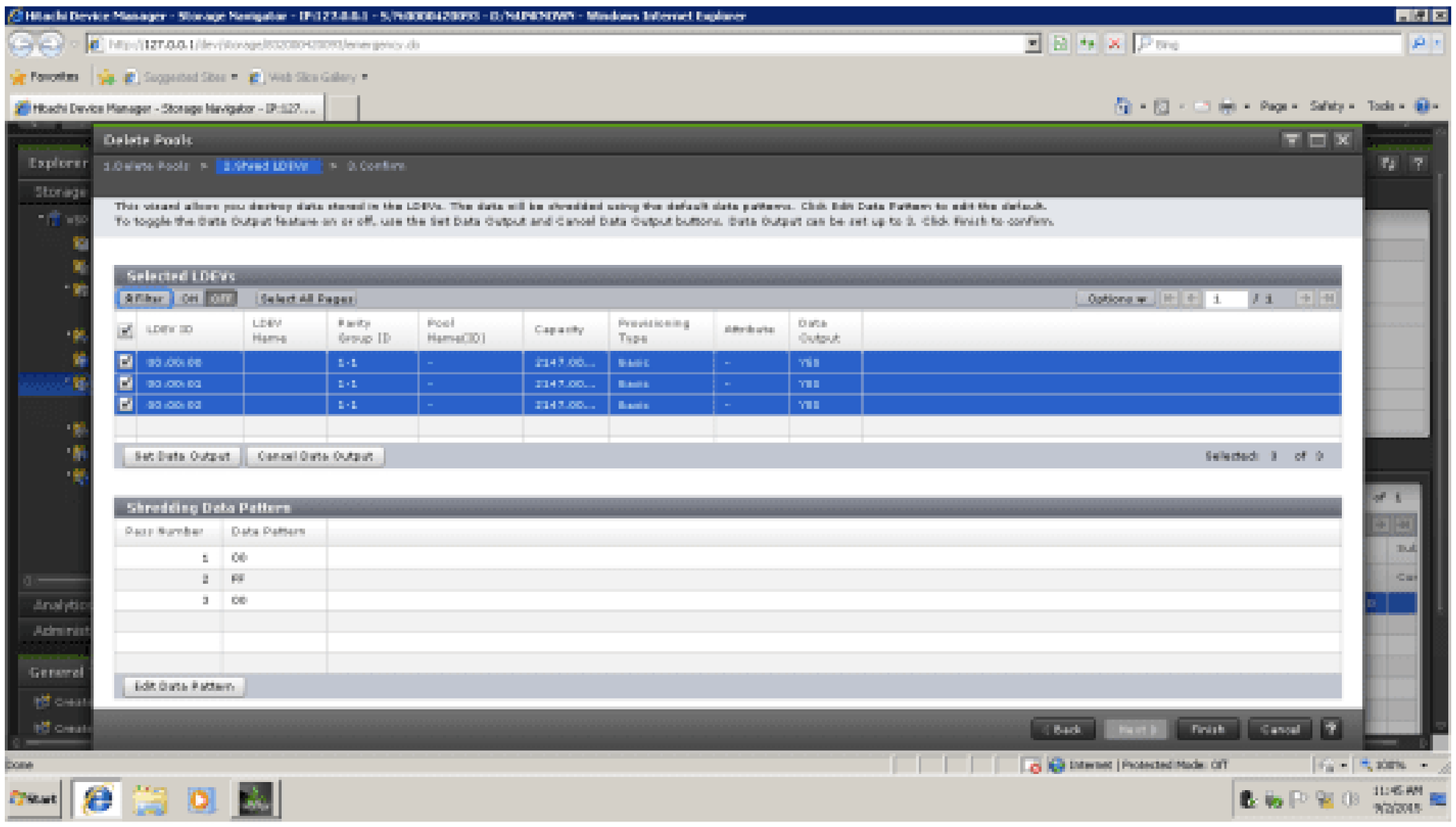


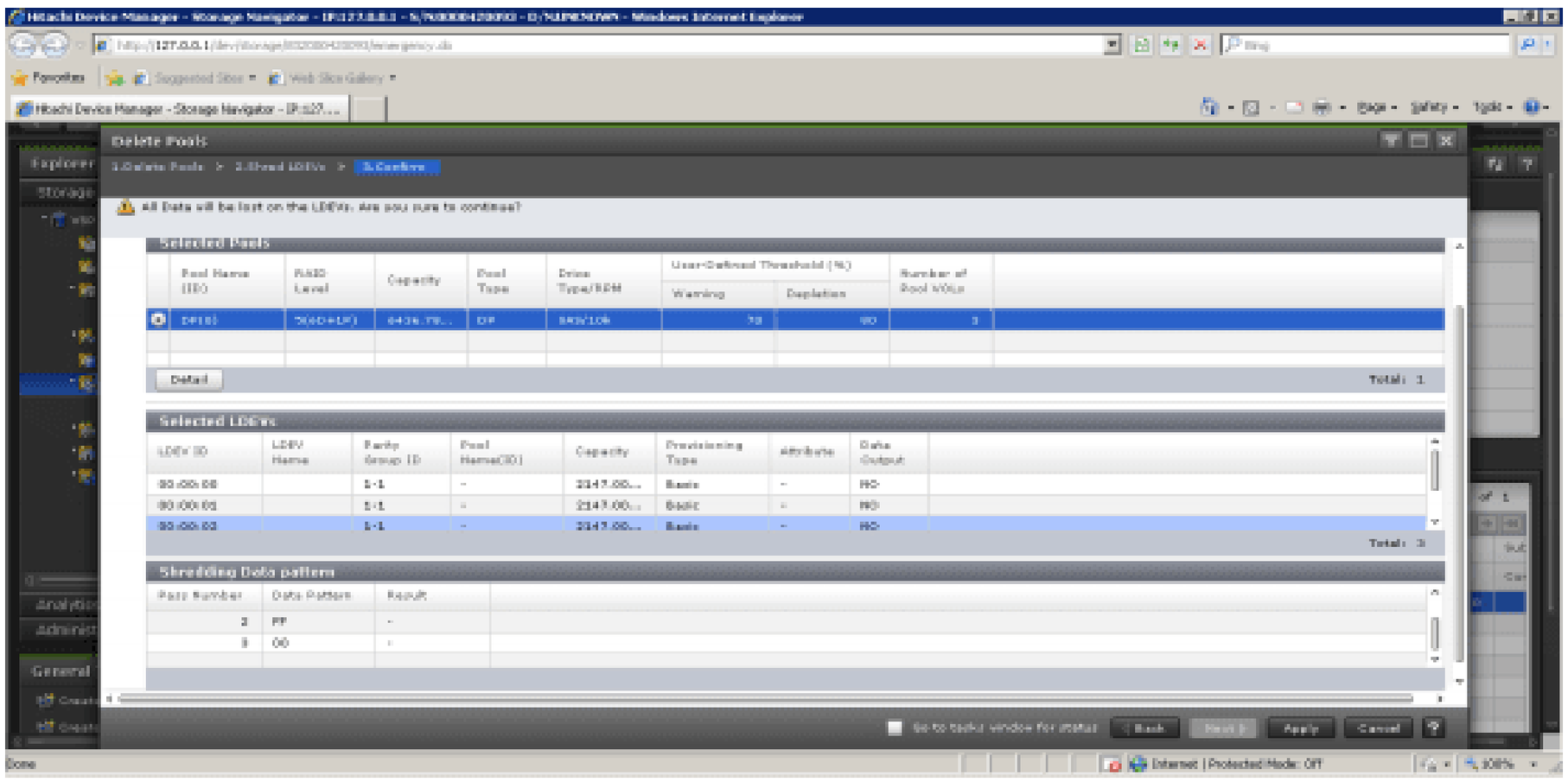




在删除 Pool 之前没有移除 LDEVS，在删除 Pool 后所有的 LDEVS 都是 BLOCK 状态，需要重新格式化才能用

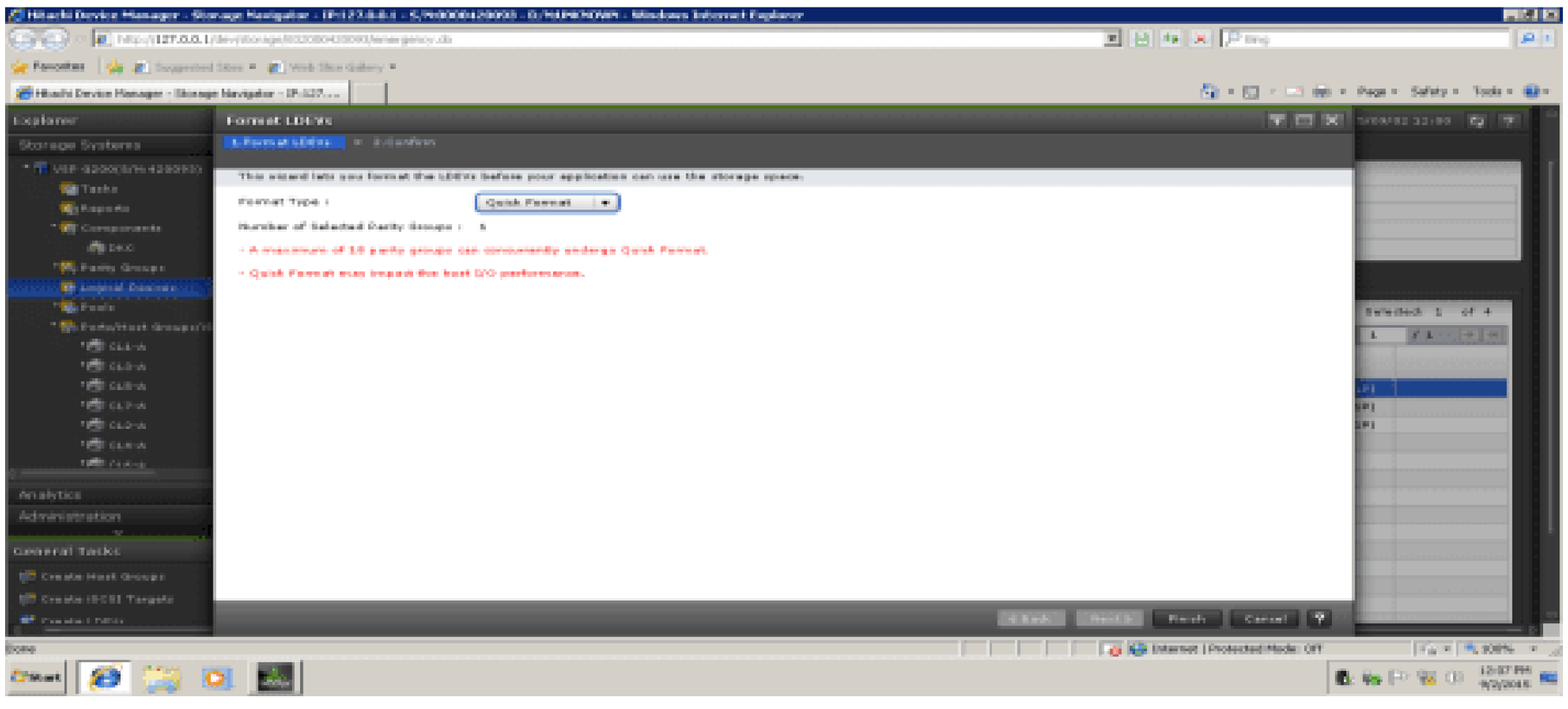



选 Next 直接进入 share Ldevs 界面 进入毁坏 LDEVS 界面

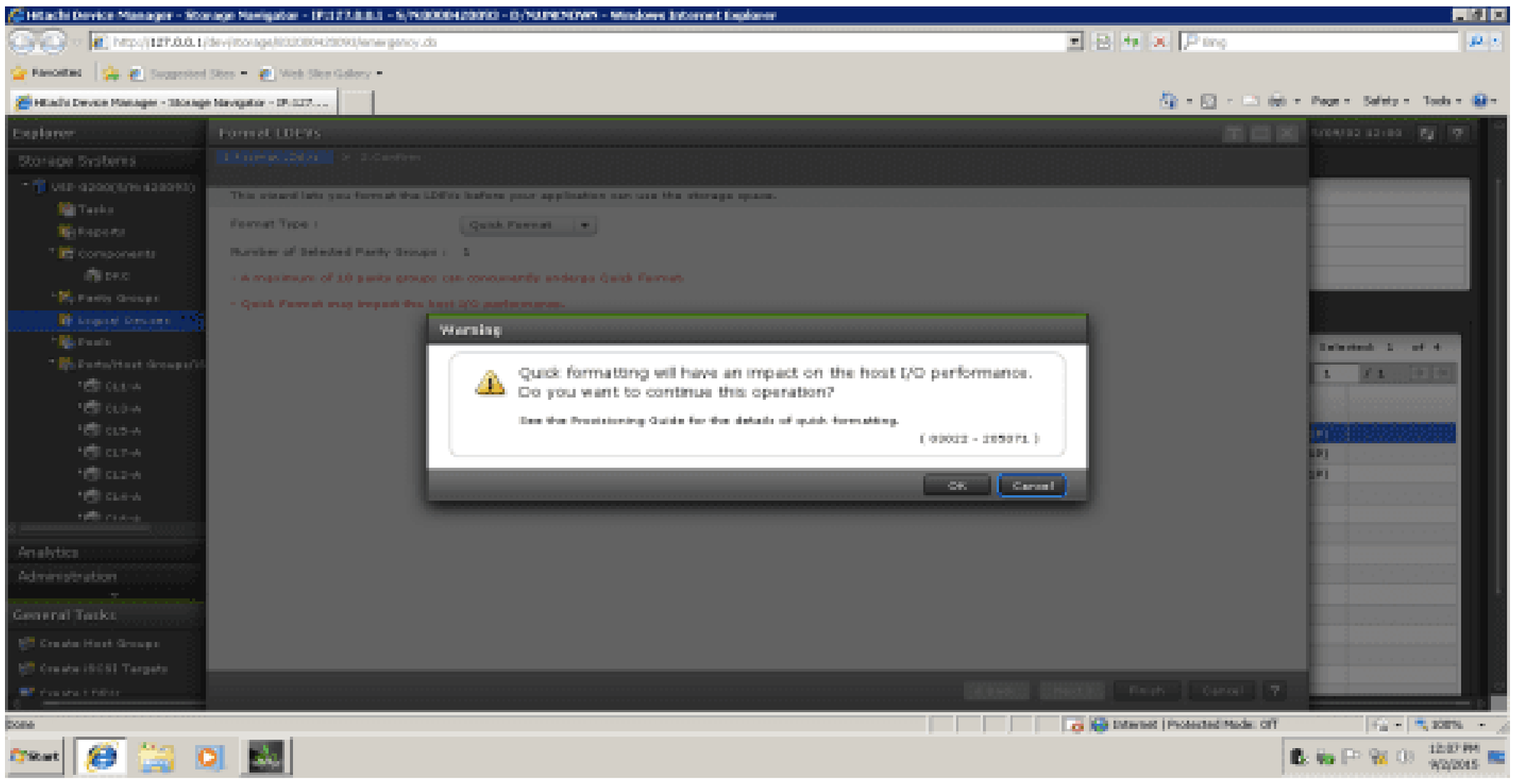


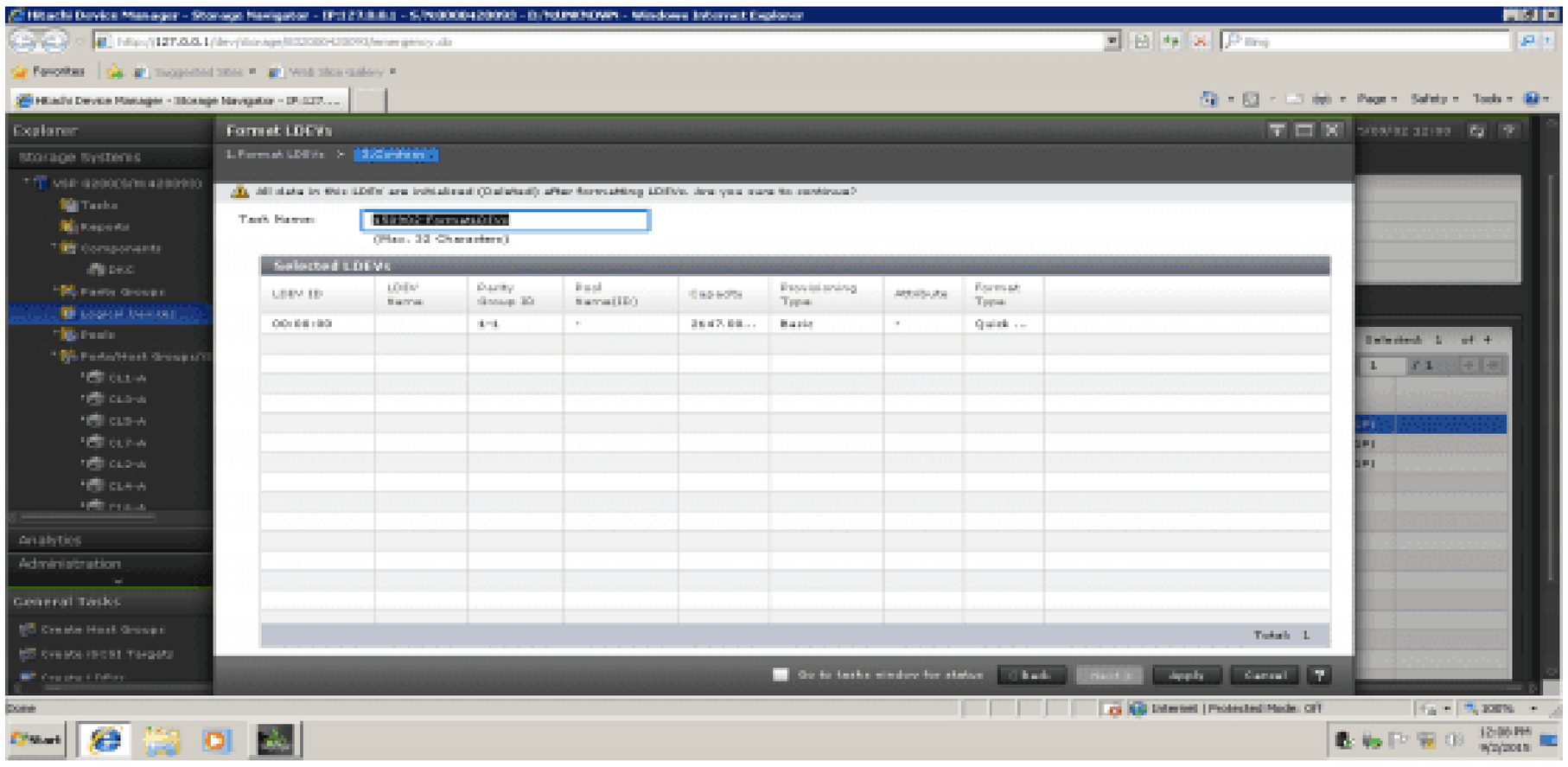




# 4.15 格式化 LEDVS

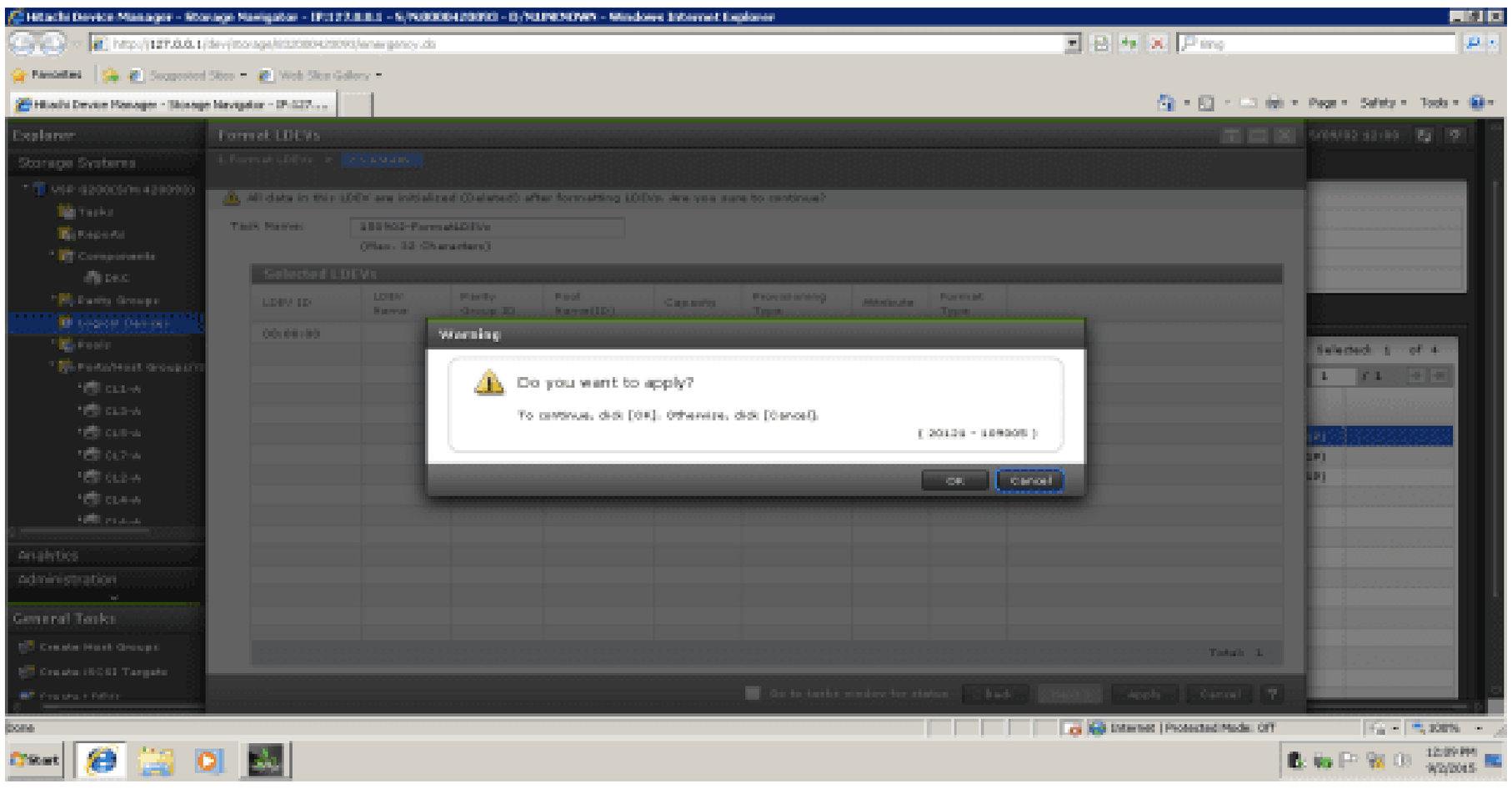


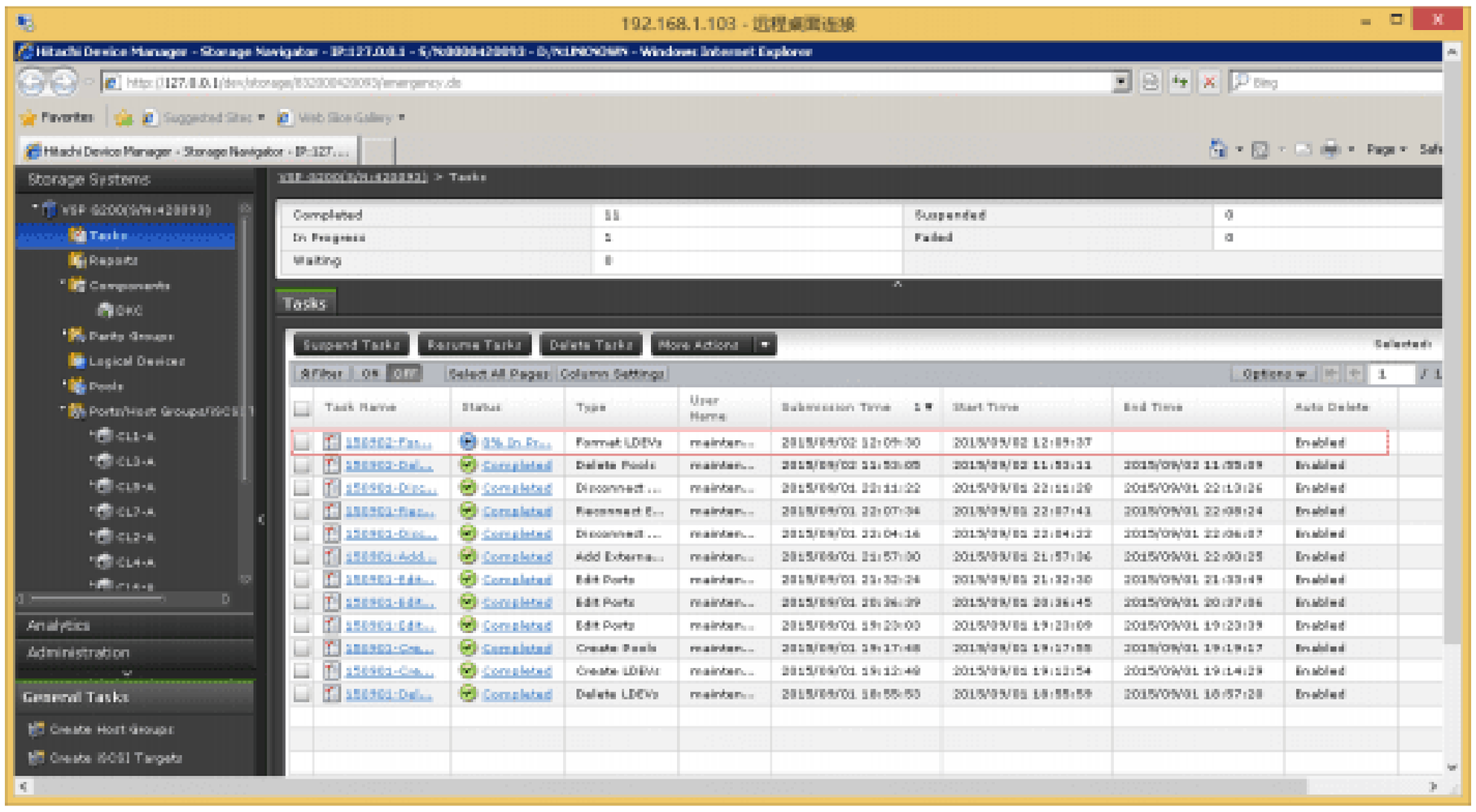
点击 Finish

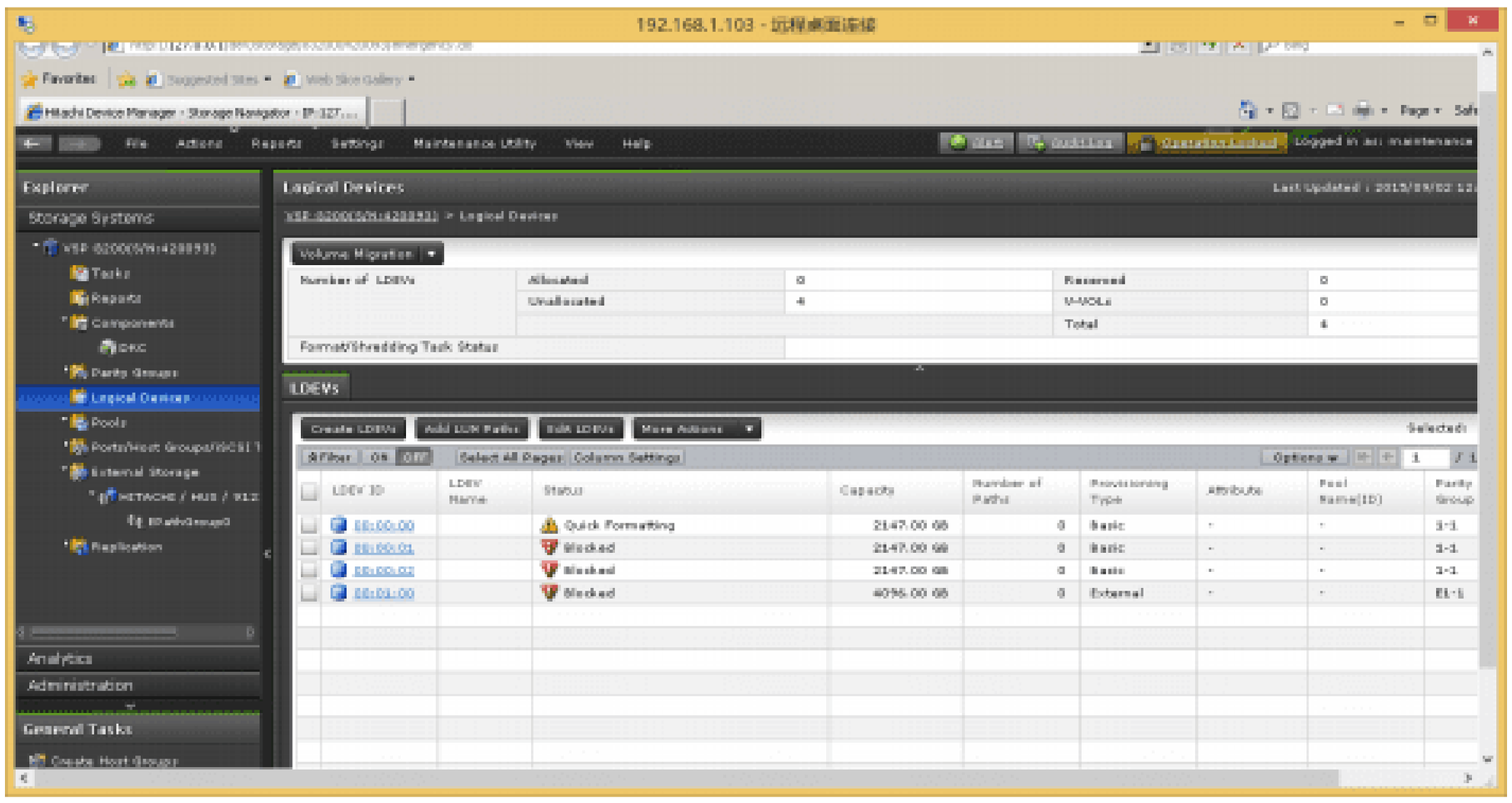


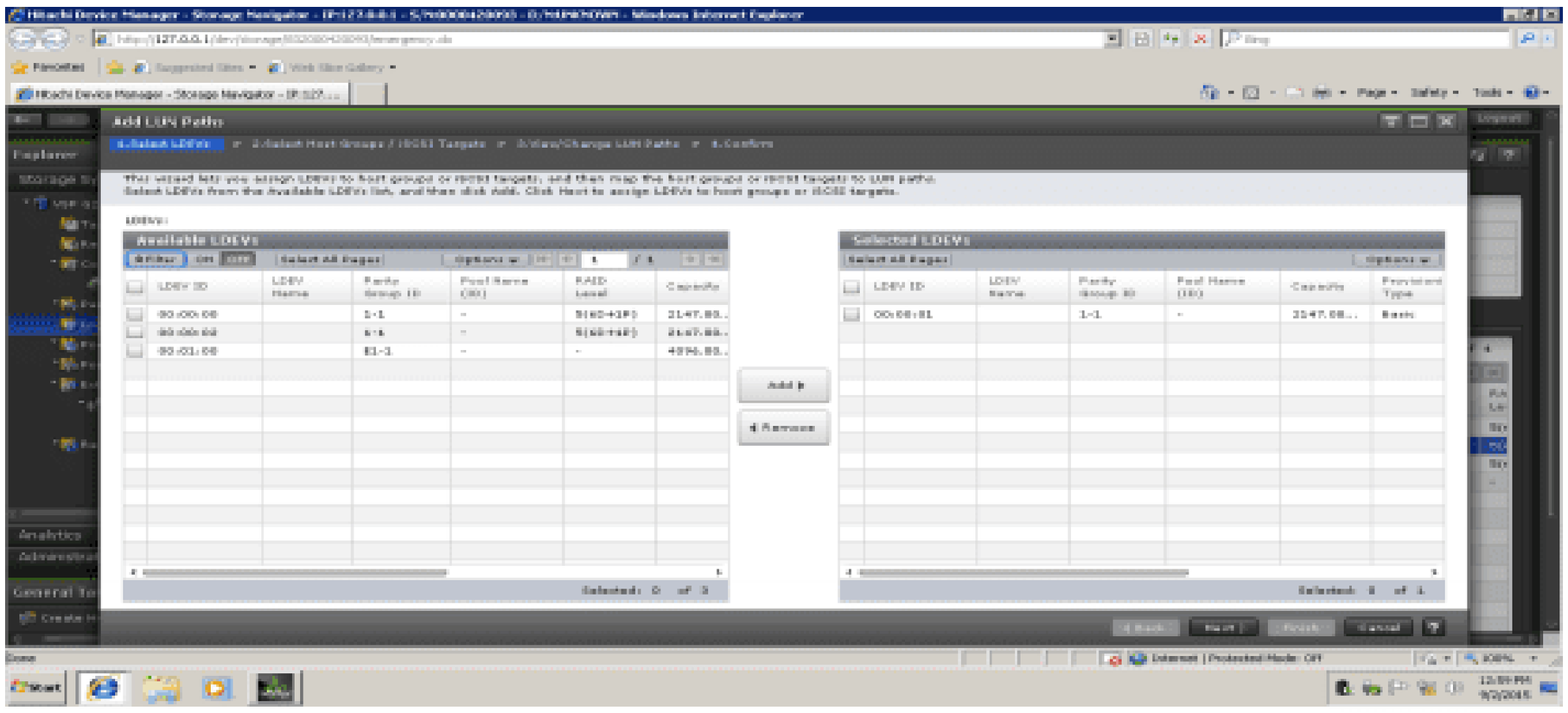
点击 APPLY

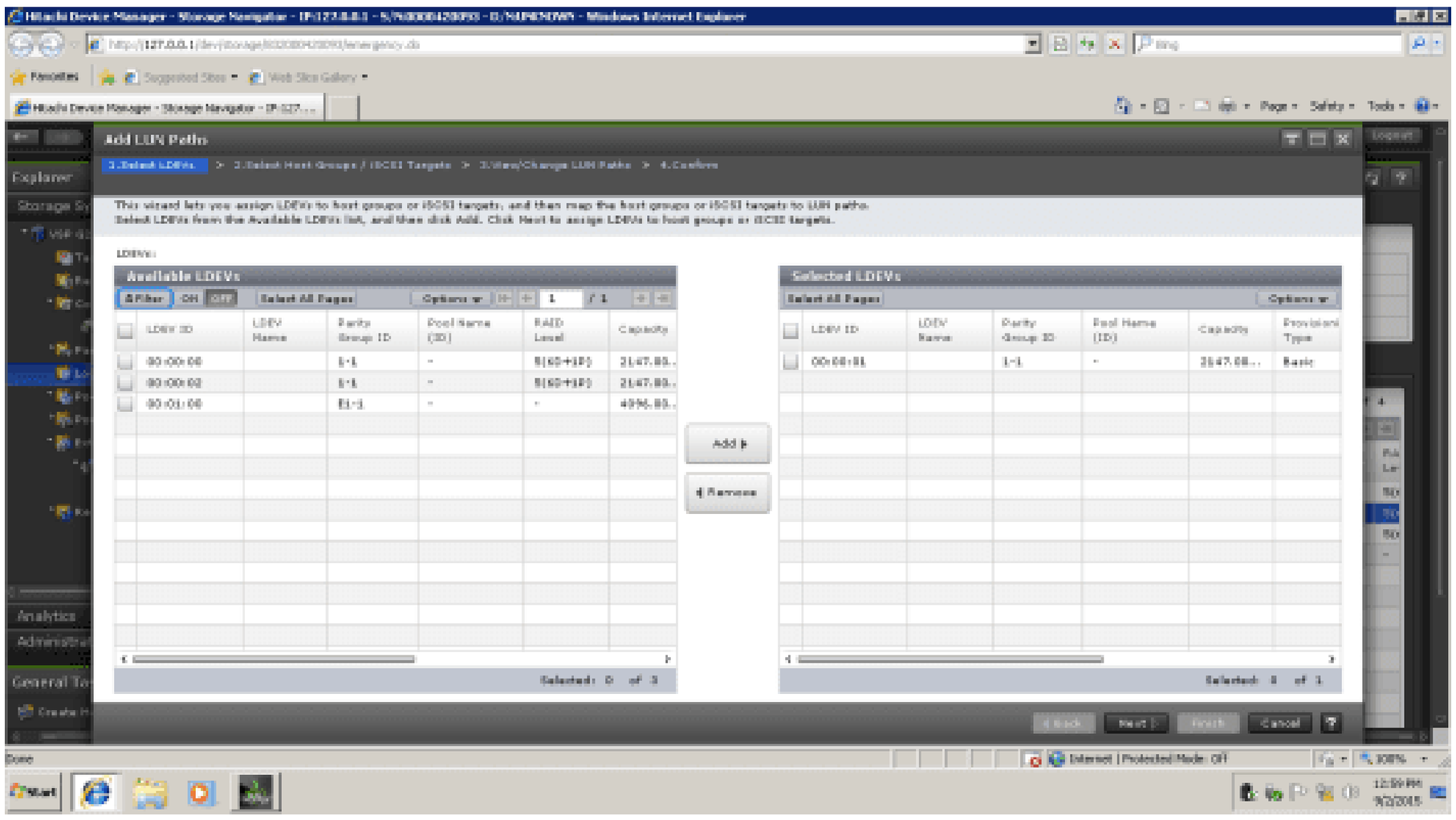


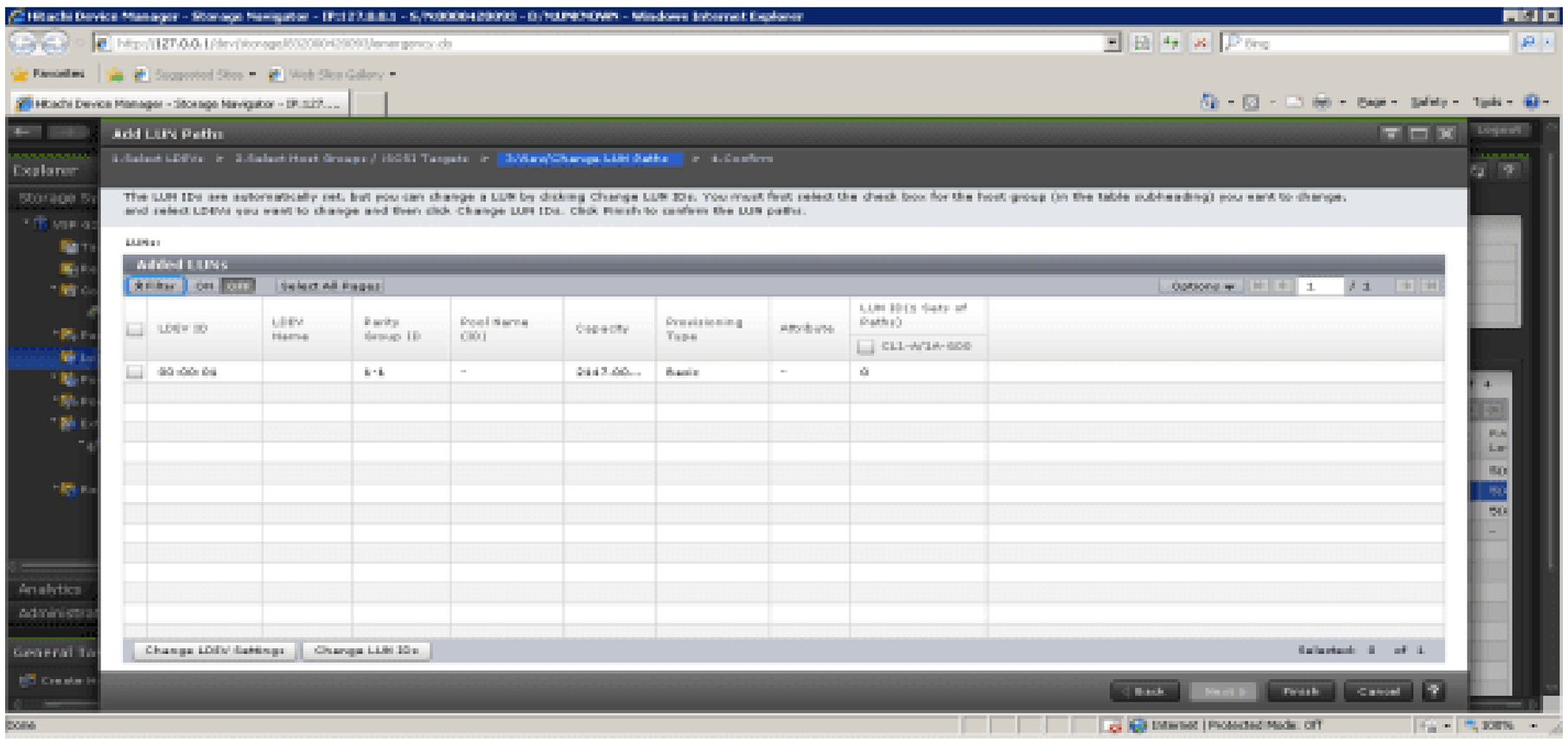


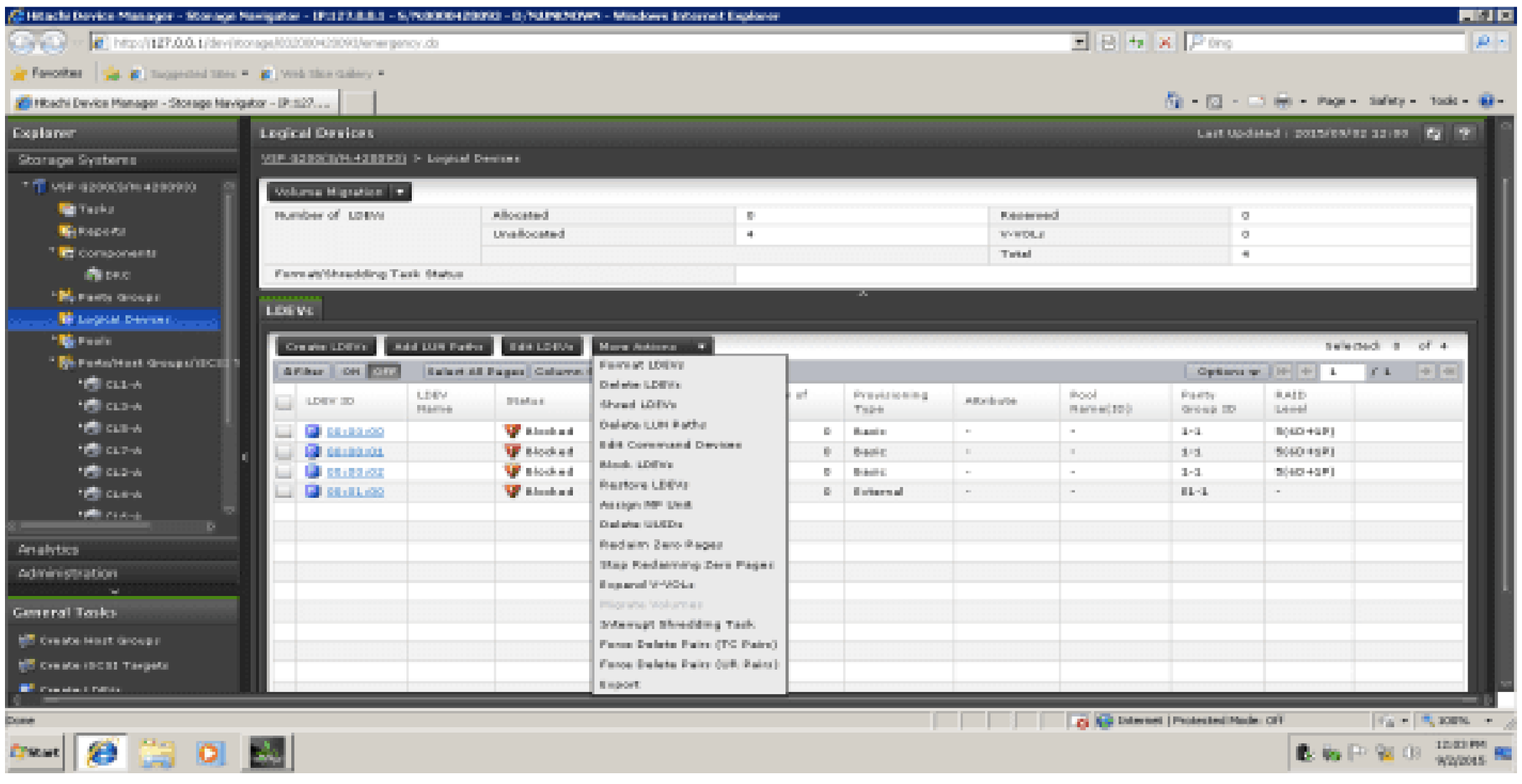

# 4.16 ADD 1UN PATHS 就是映射卷到主机

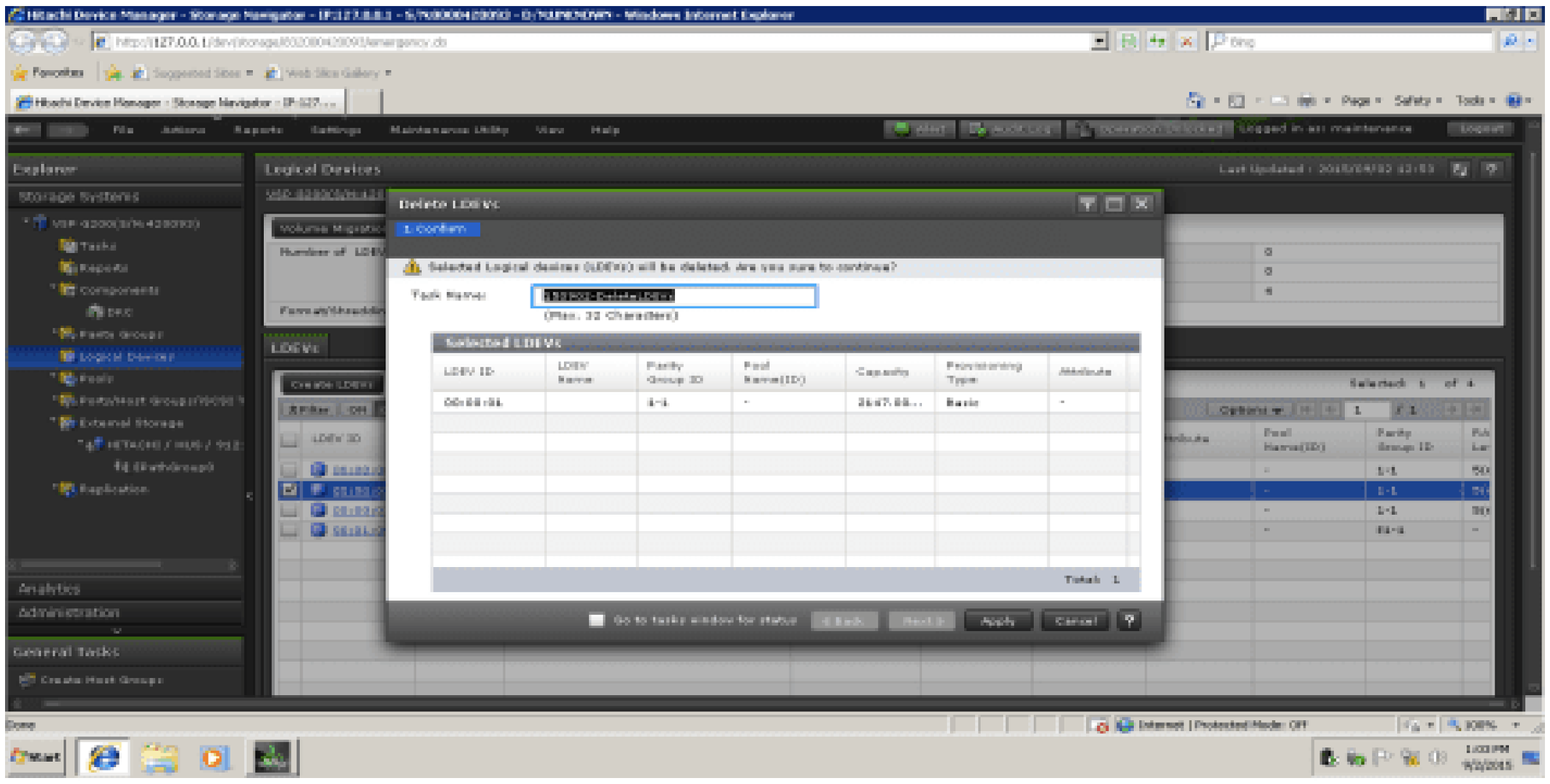


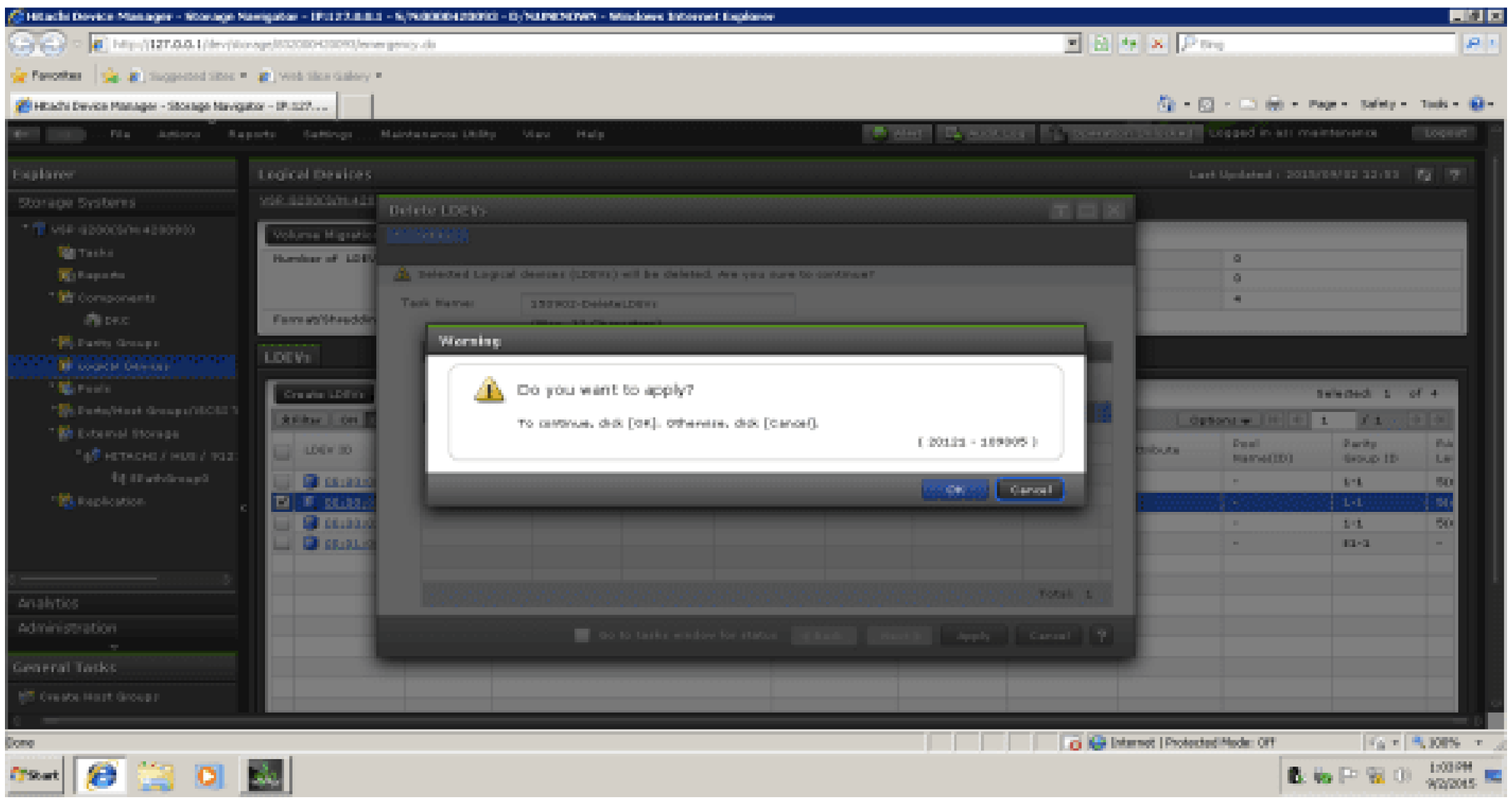

Add LUN Paths
Available LDEVs
Selected LDEVs
Add
Remove


Add LUN Paths
Added LUNs

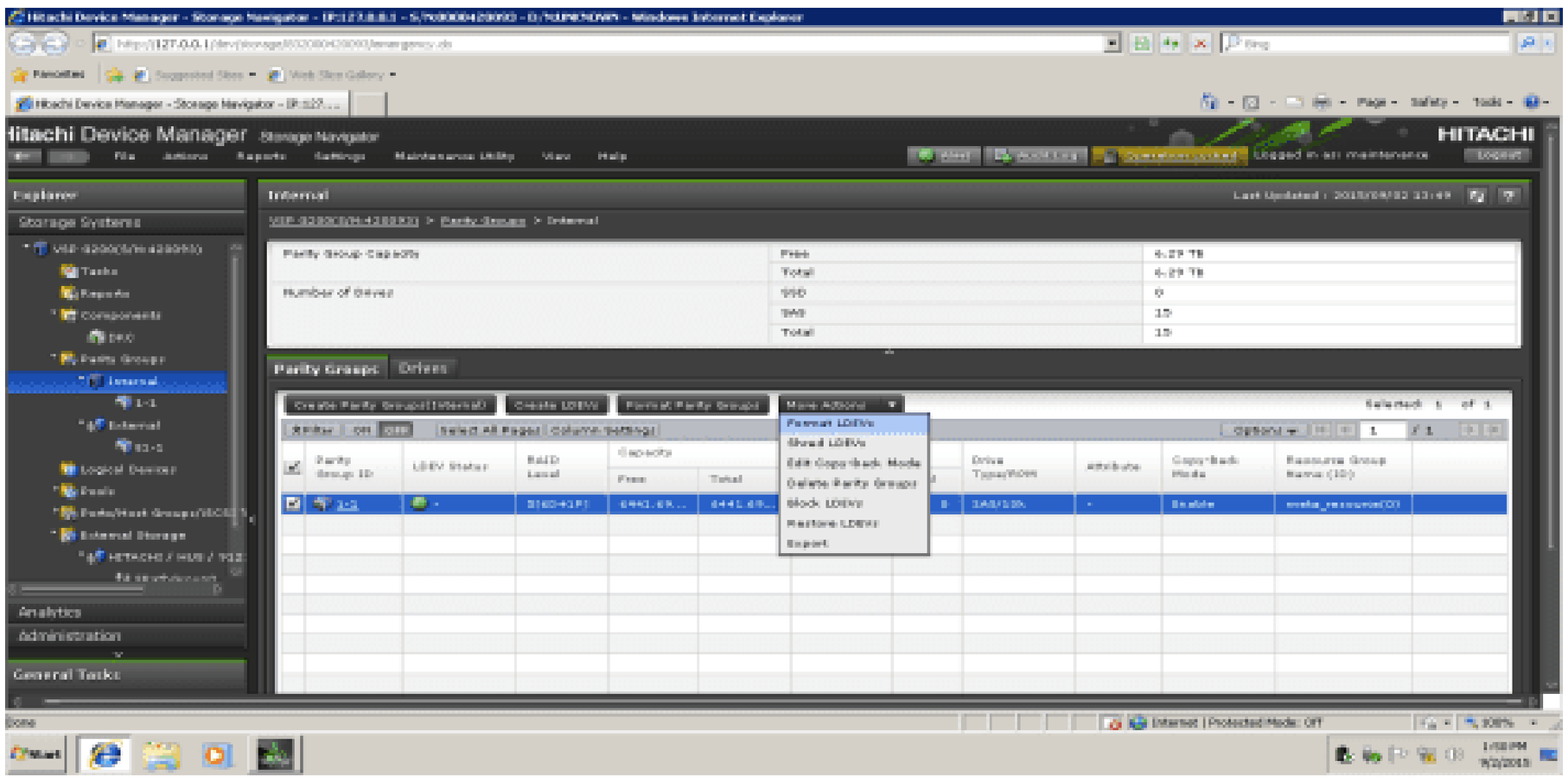
# 4.17 删除 LEDVs

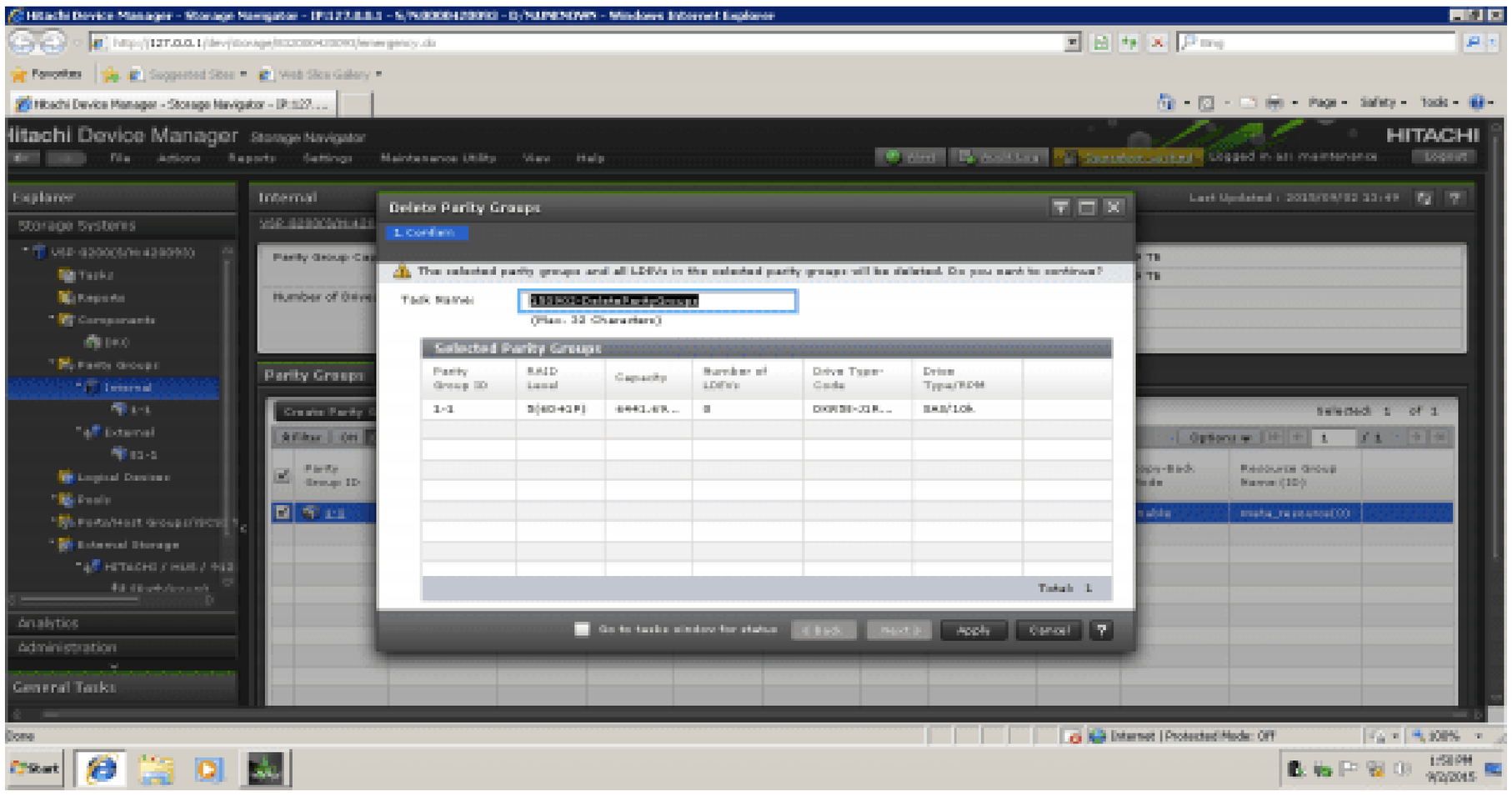

Logical Devices
LDEVs
Create LDEVs
Add LUN Paths
Edit LDEVs
More Actions

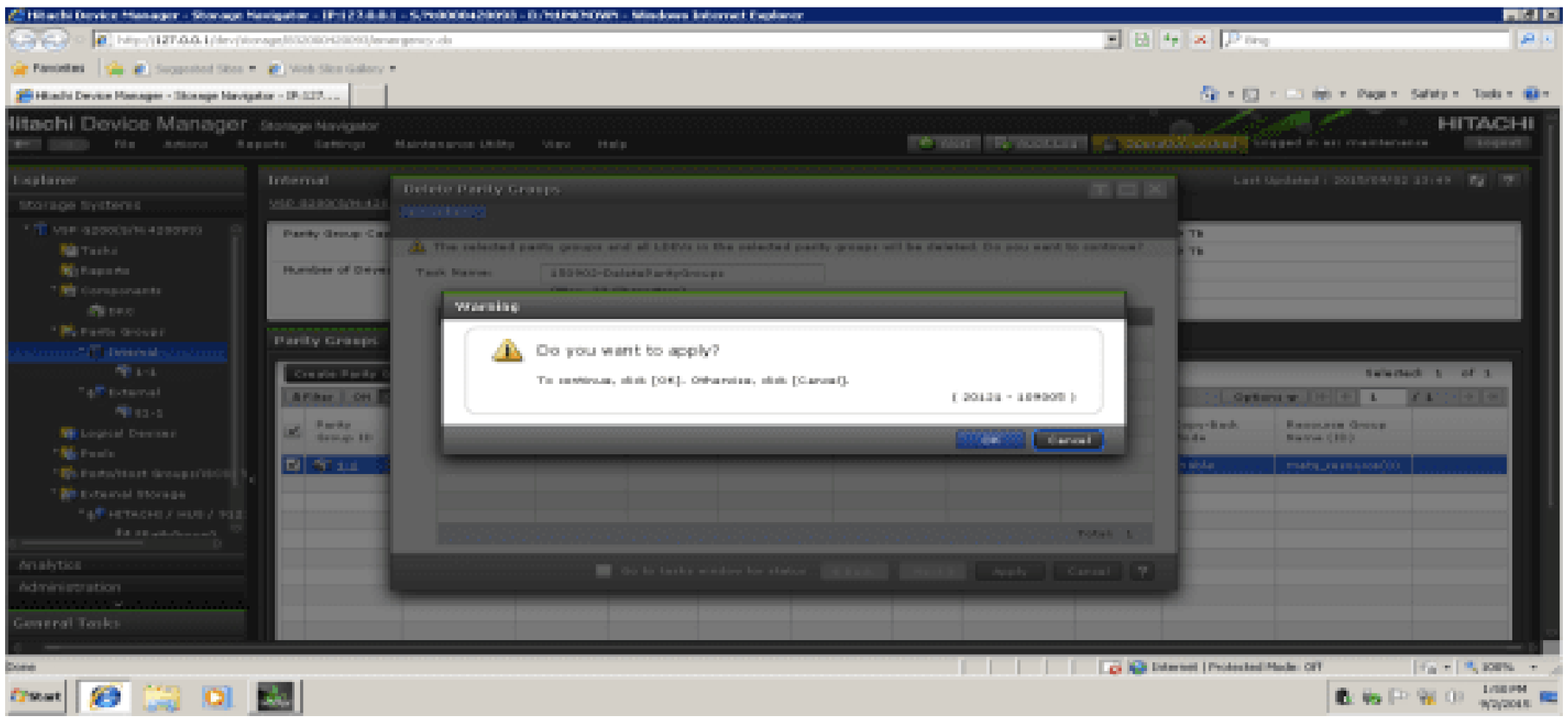




# 4.18 删除PG（Raid）组

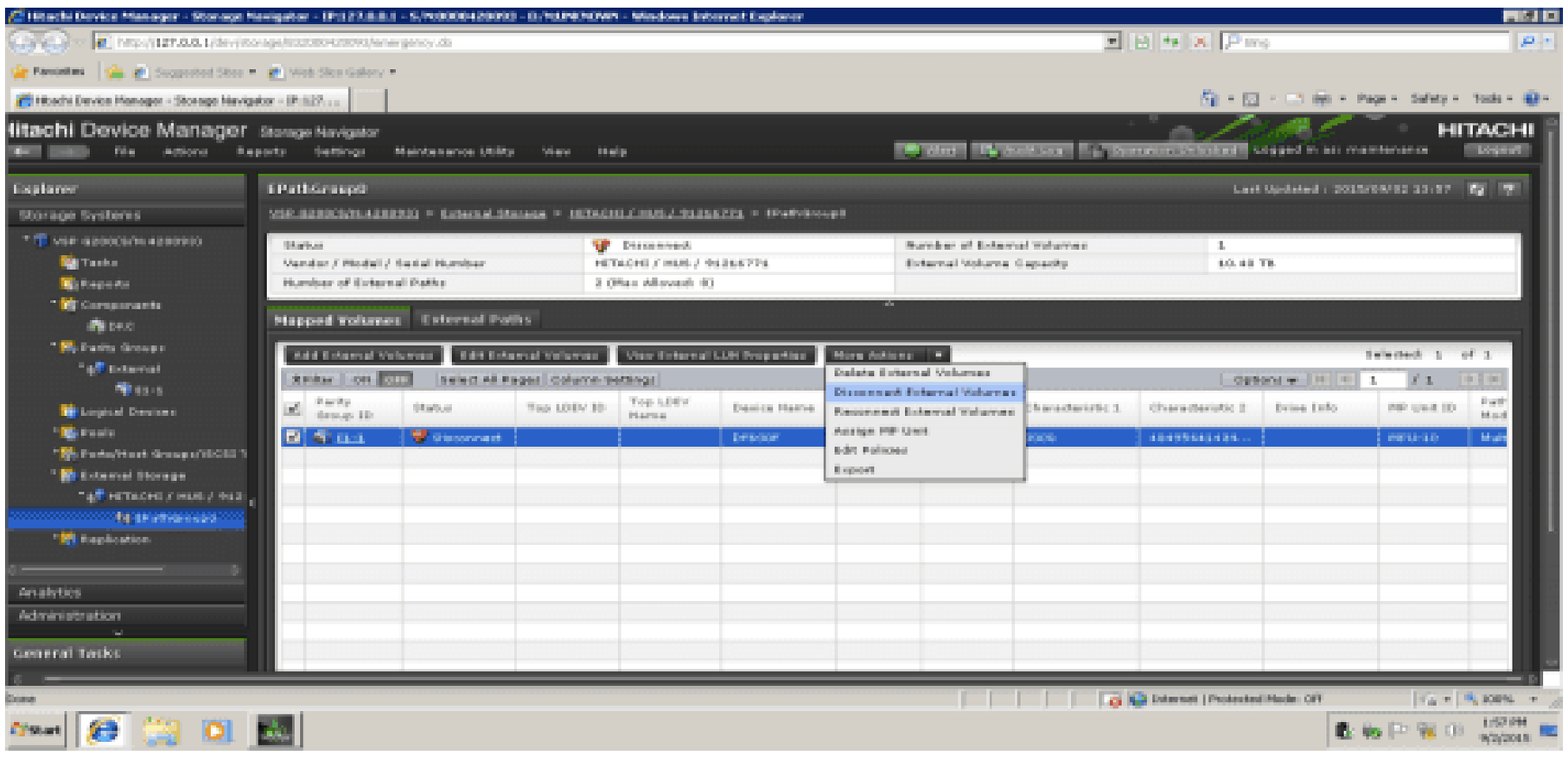


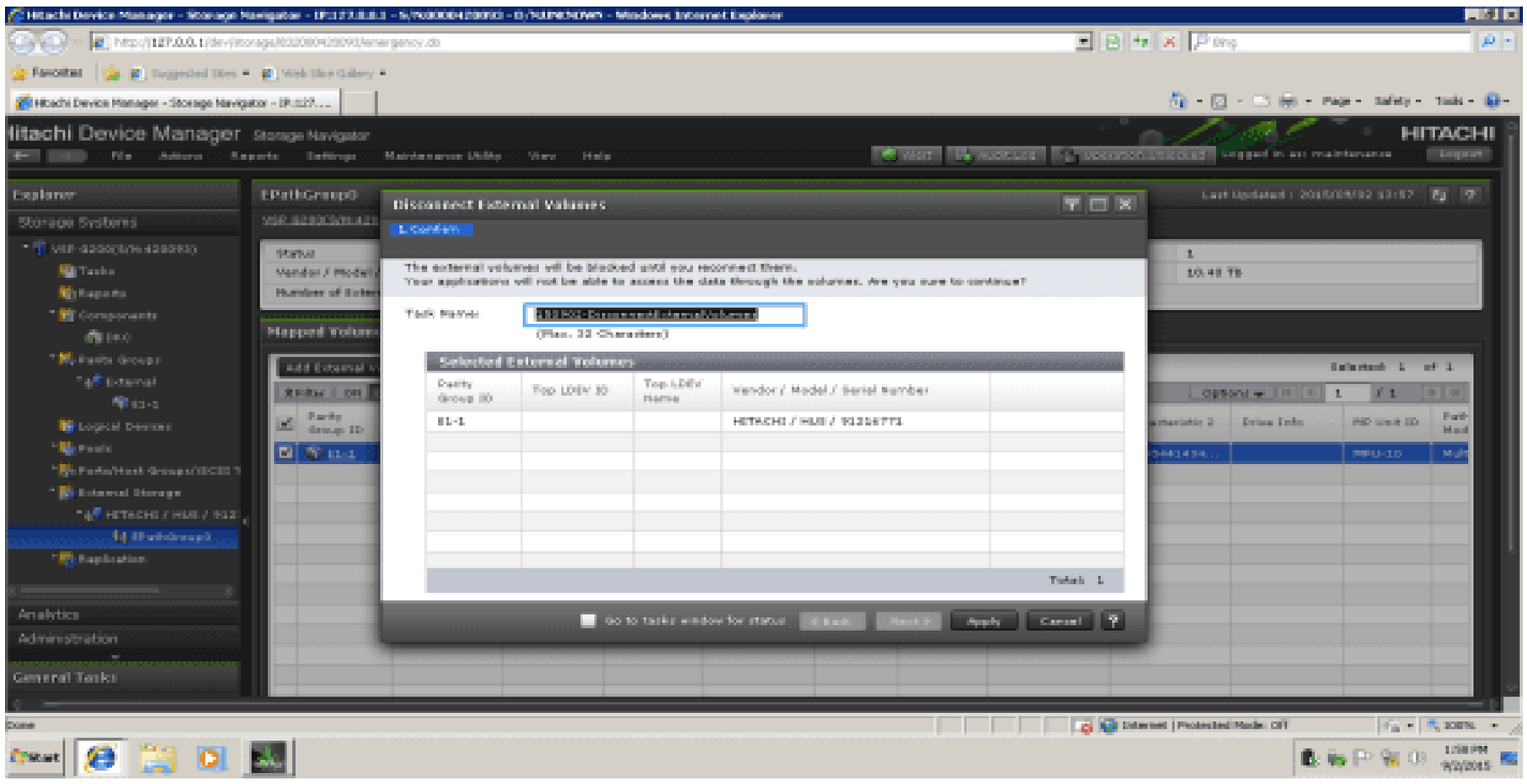


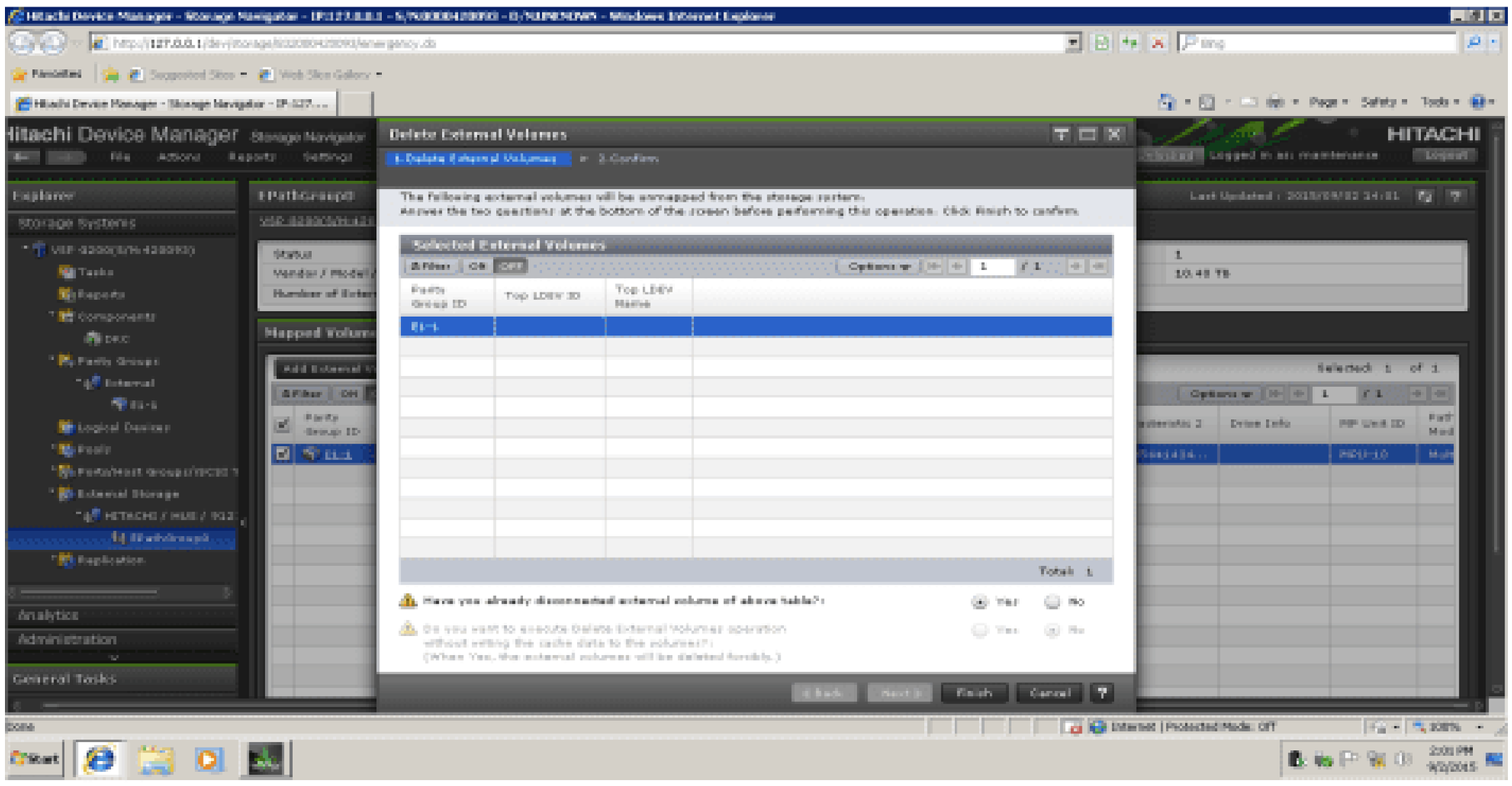



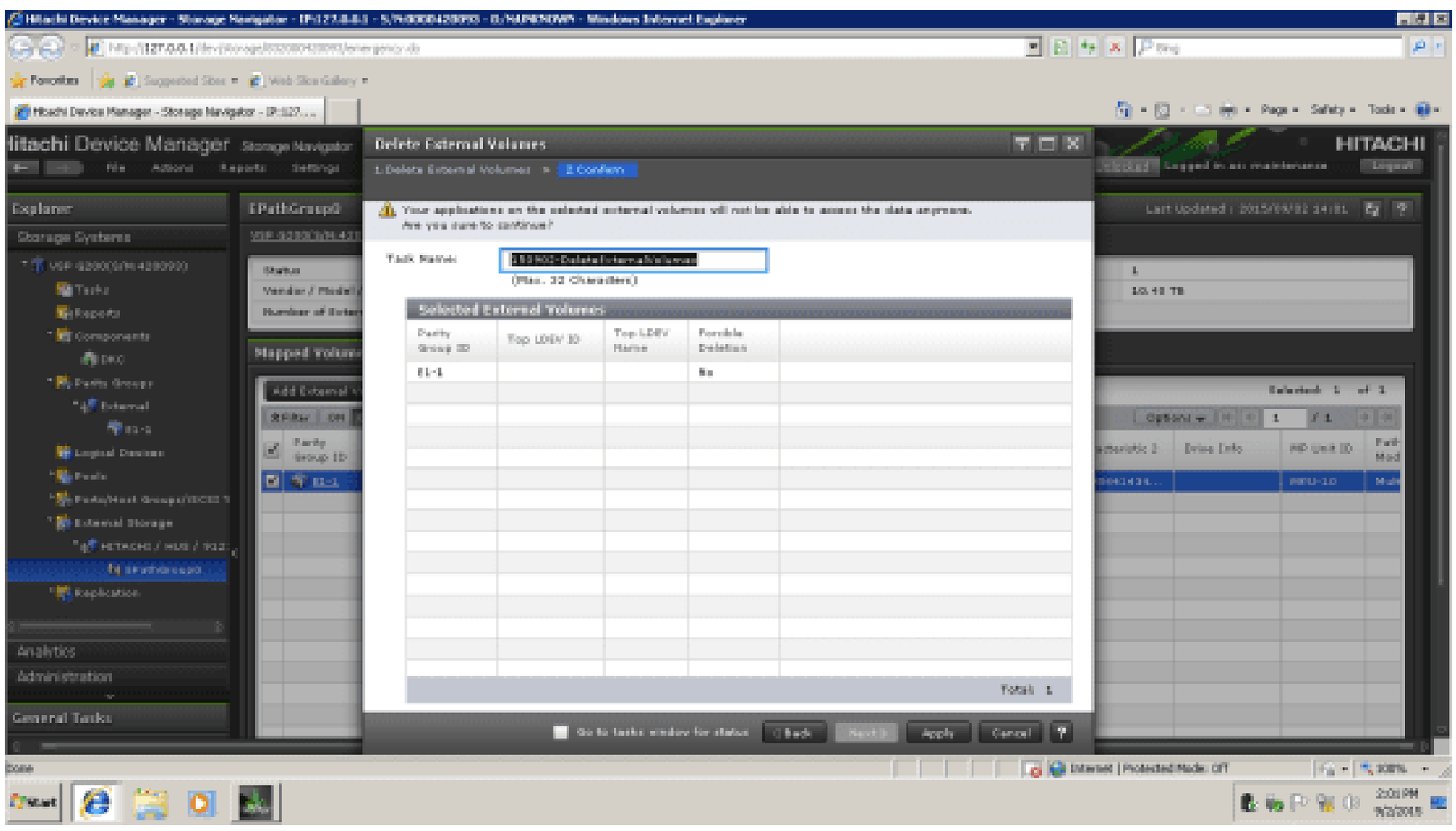

## 4.19 删除外部卷

在删除外部卷之前，先要 Disconnect External Volumes 卷，在 Delete External Volumes



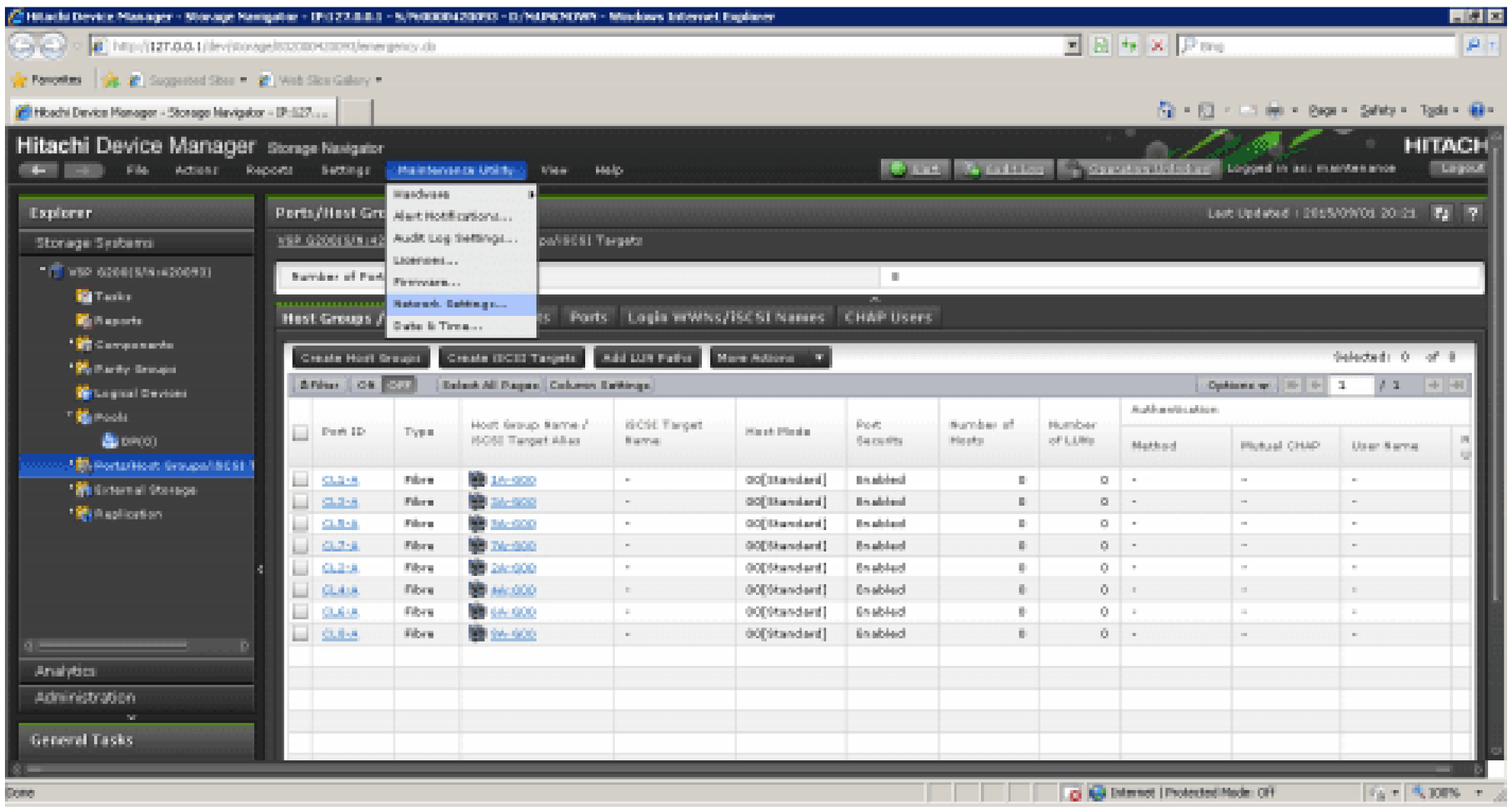

Hitachi Device Manager
Storage Navigator
HITACHI
Disconnect External Volumes
Selected External Volumes
Apply
Cancel

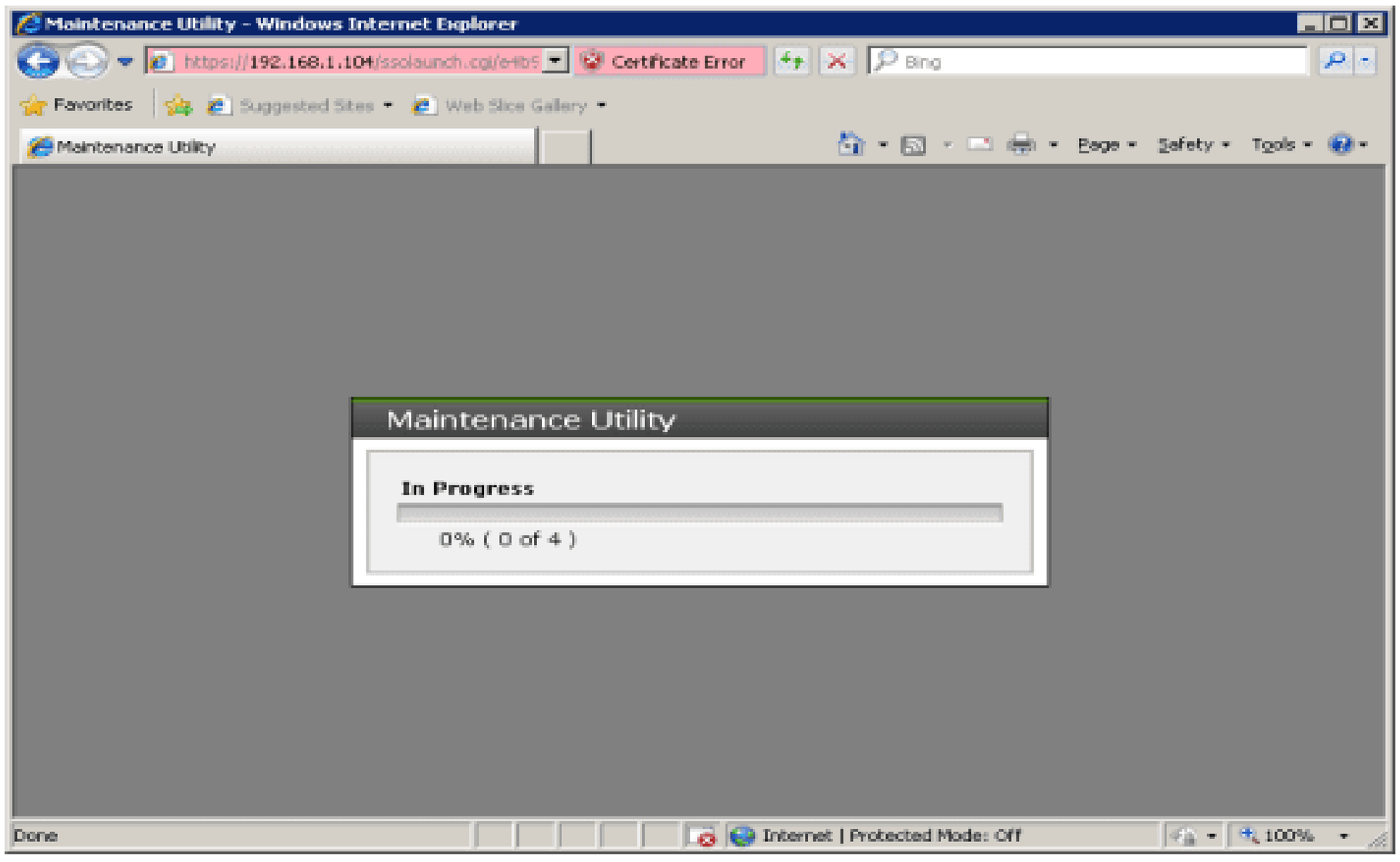

Hitachi Device Manager
Storage Navigator
HITACHI
Delete External Volumes
Selected External Volumes
Finish
Cancel

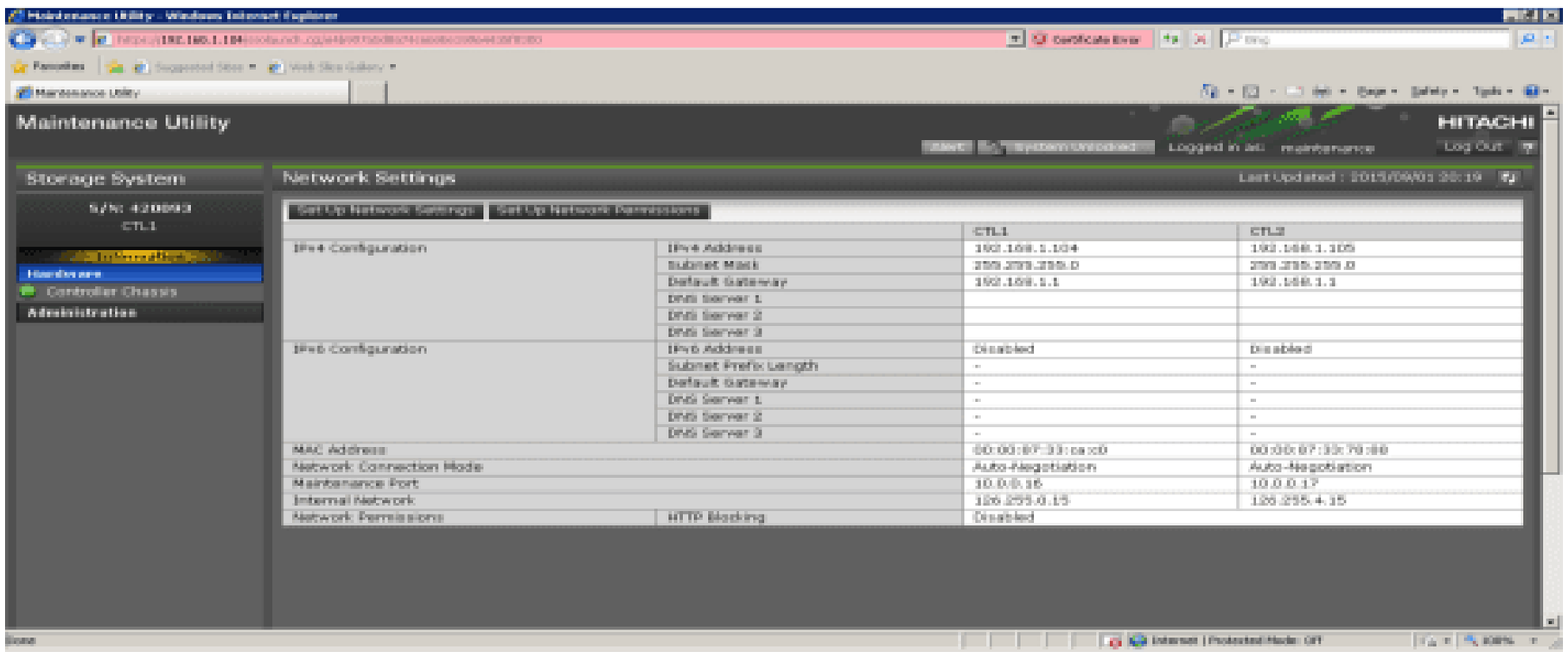

Hitachi Device Manager
Storage Navigator
HITACHI
Delete External Volumes
Selected External Volumes
Apply
Cancel

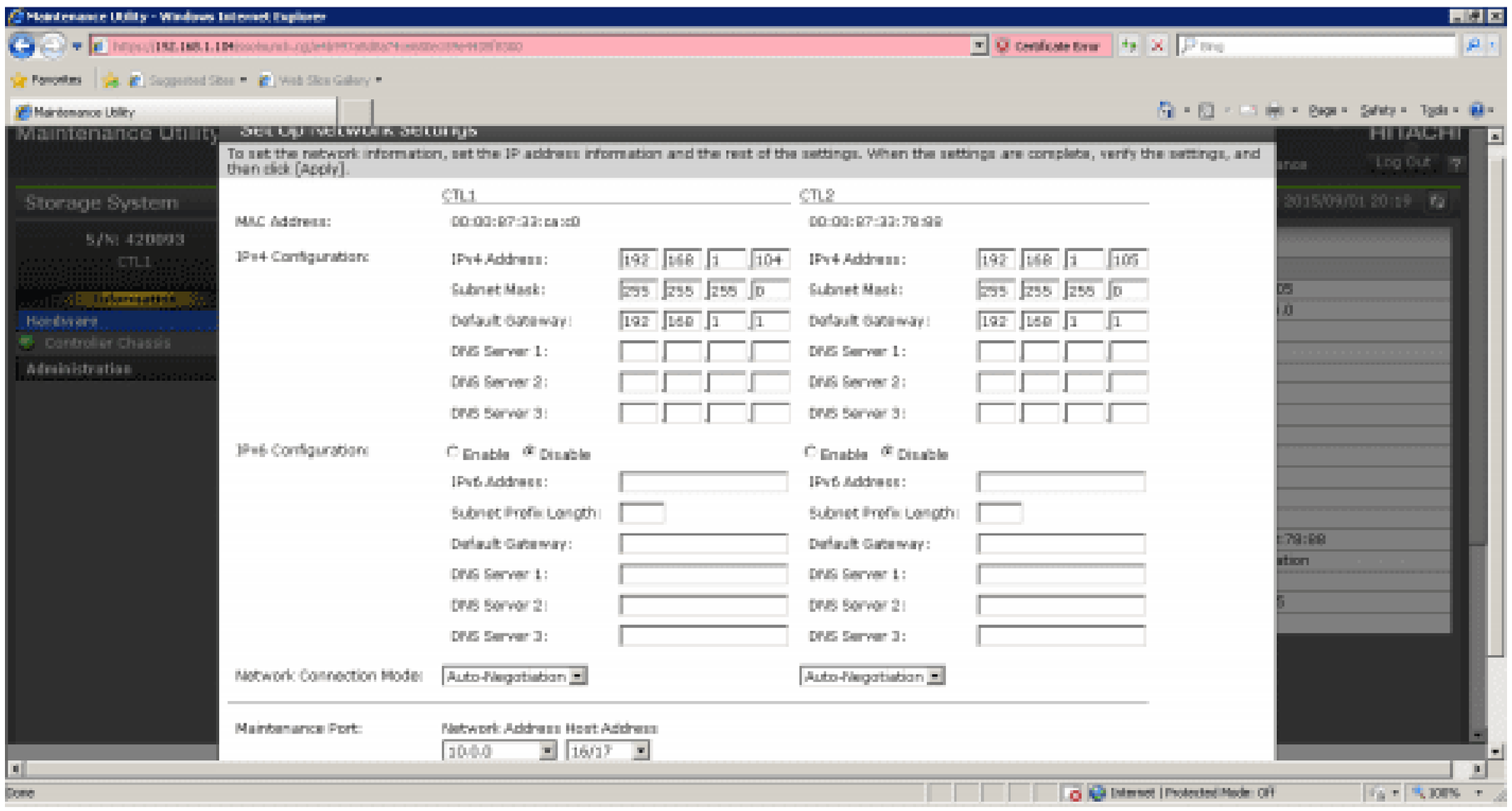
## 4.20 修改网络端口参数

1.在 Open StorageDeviceList 里，编辑 取消启动 SVP 时自动启动服务
2.通过直连存储 10.0.0.16/17，编辑存储网络端口地址
3.在 SVP 的服务里，停止 IIS 服务，并把它的启动方式改为手动
4.通过直连 SVP10.0.0.100，编辑 SVP 网路端口地址，默认是的 192.168.0.15
5.重启 SVP，因为已经取消服务随 SVP 启动，所以重启后可以在 Open StorageDeviceList 里删除现有 Storage
6.添加 Storage，把微码光盘 copy 到 SVP 上，需要/software/productname 文件
7.成功启动 Storage Navigator 管理界面
其中步骤 2 的截图



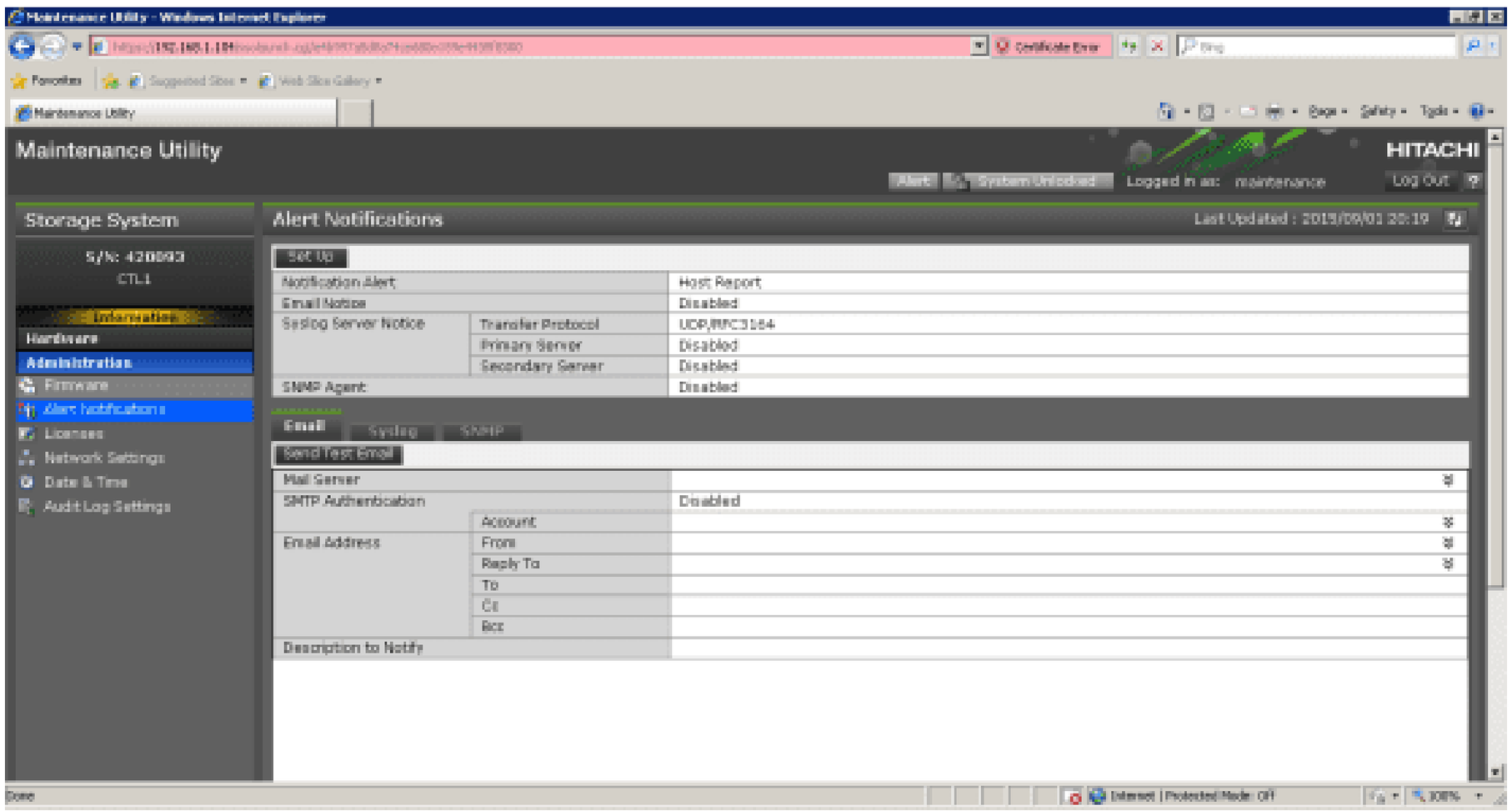





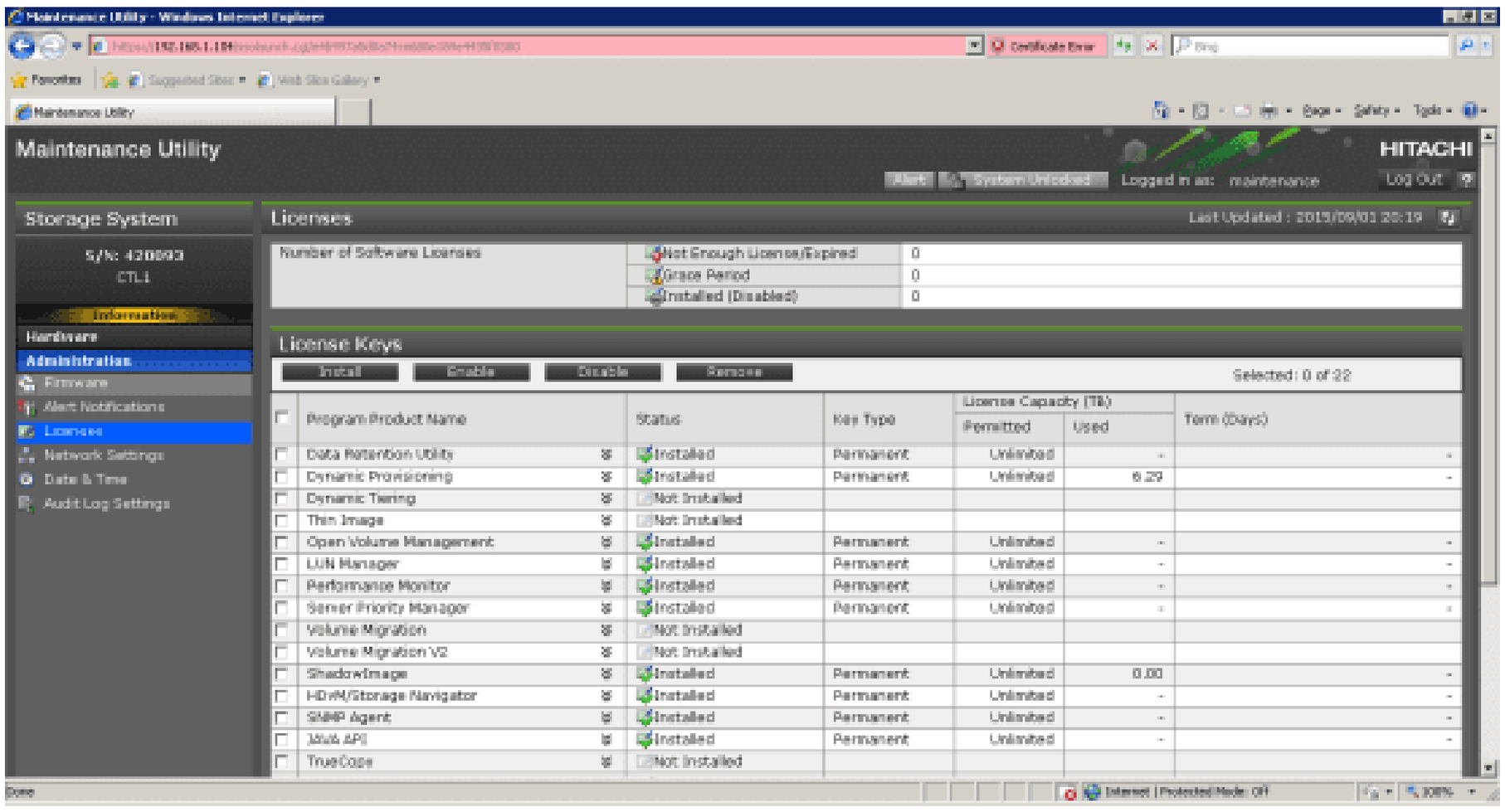



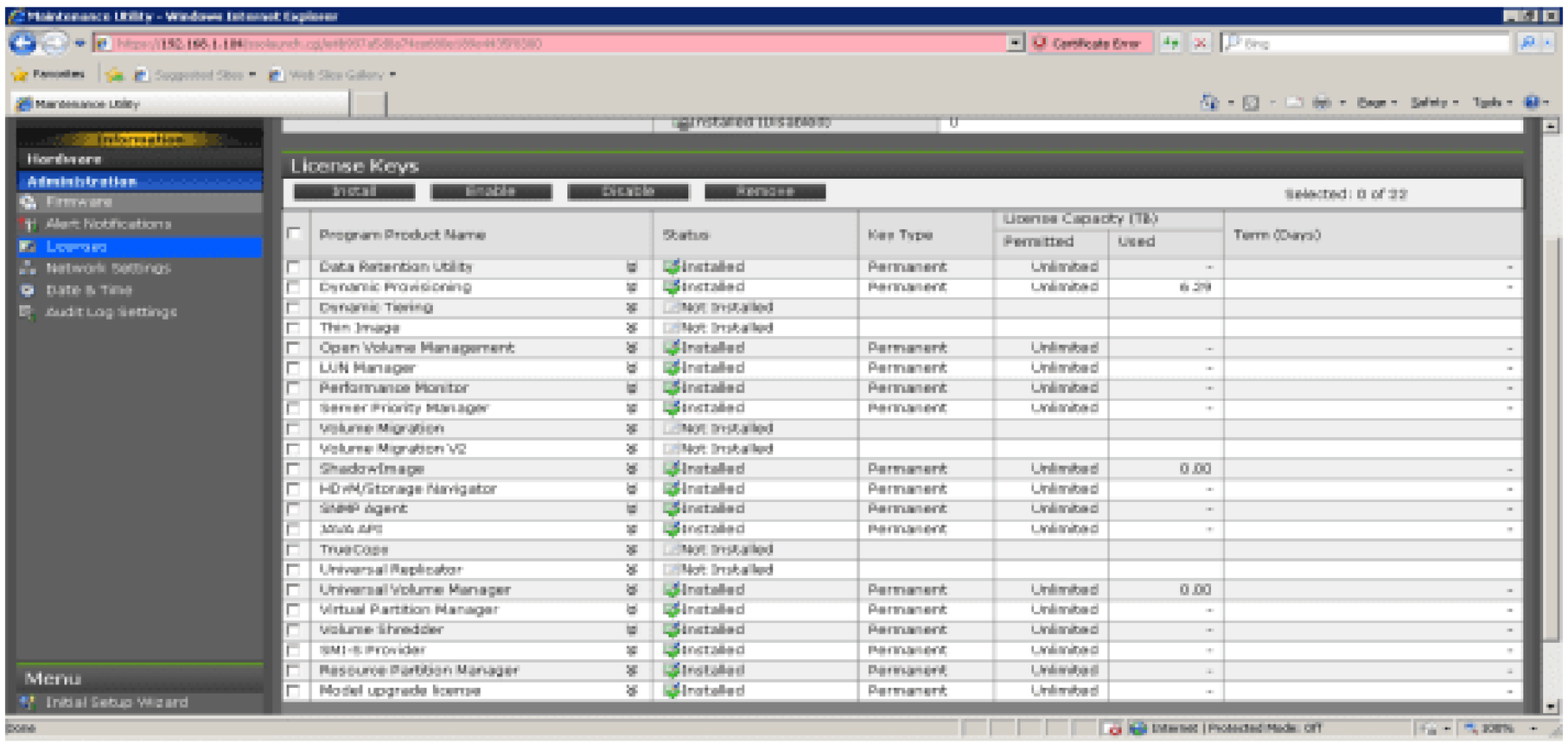

# 4.21 其他操作

Alert Notifications

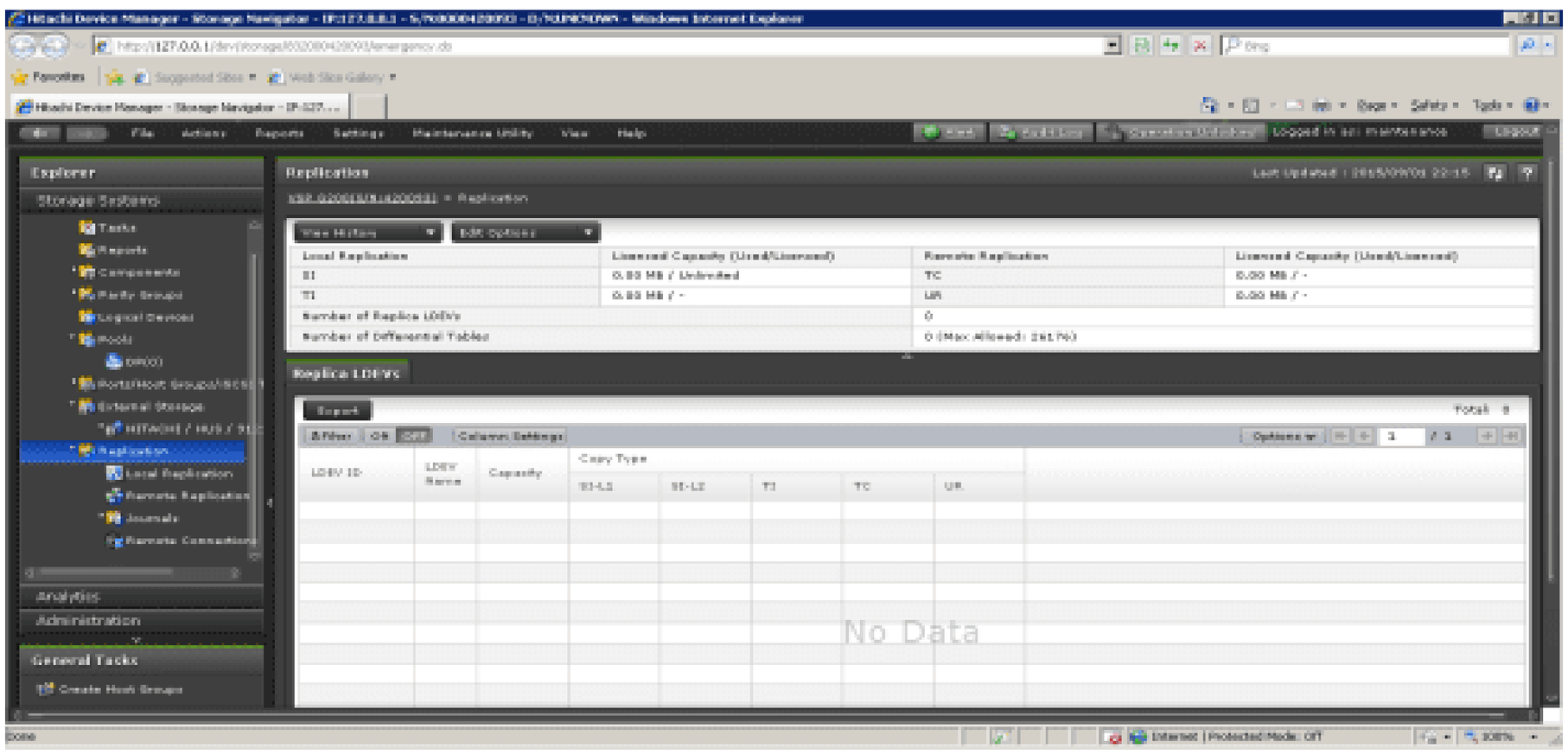


License

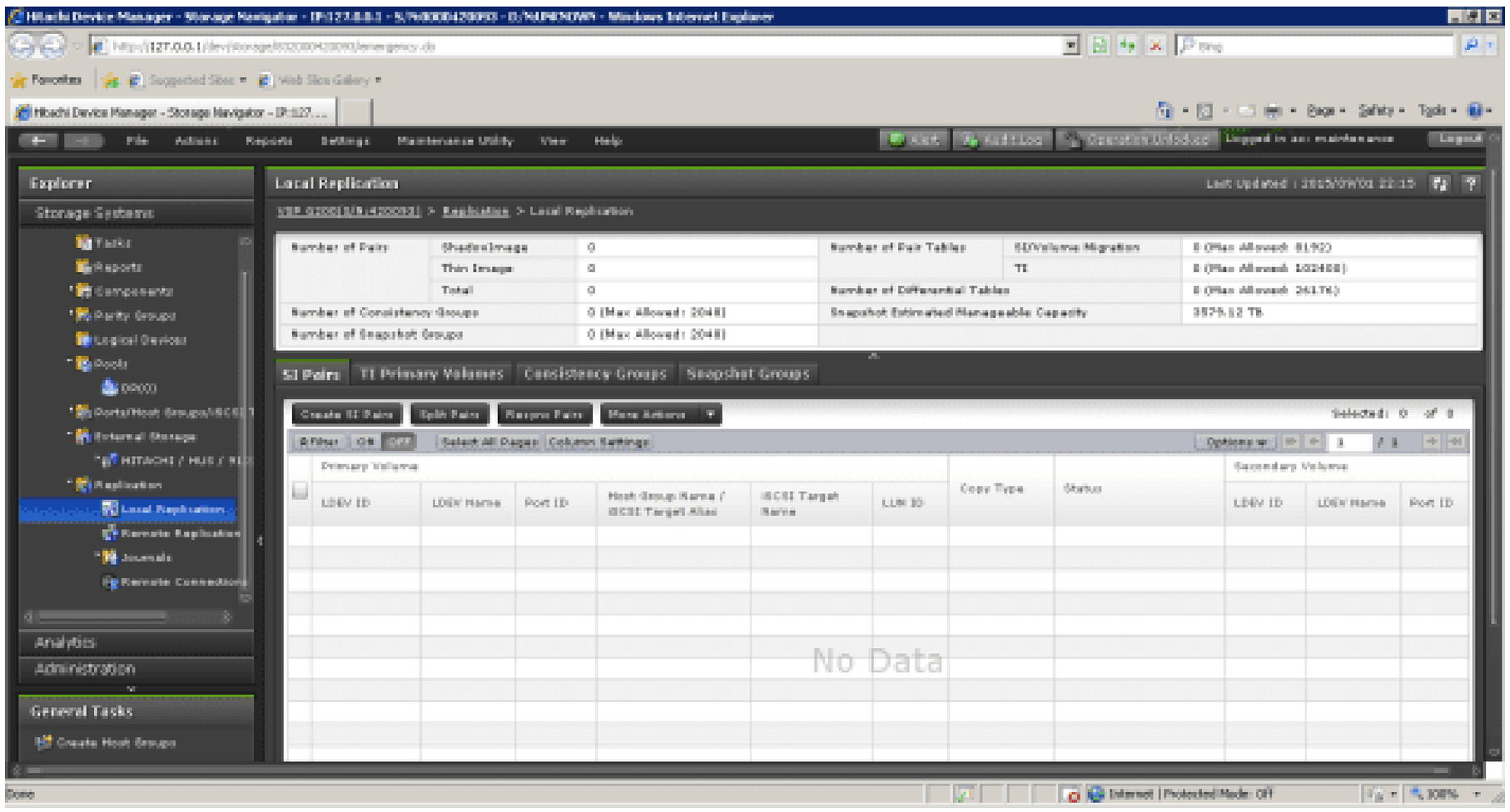


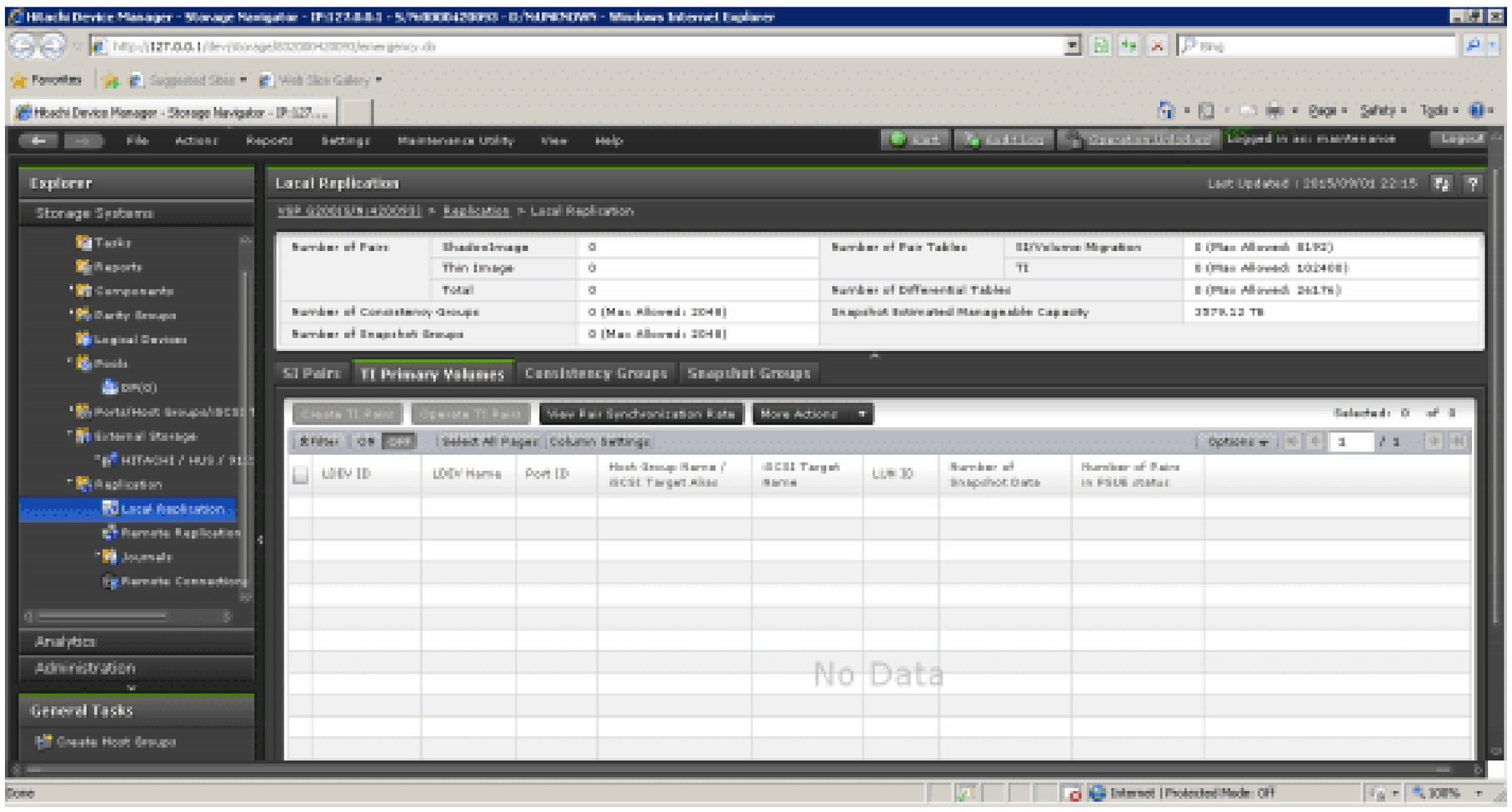



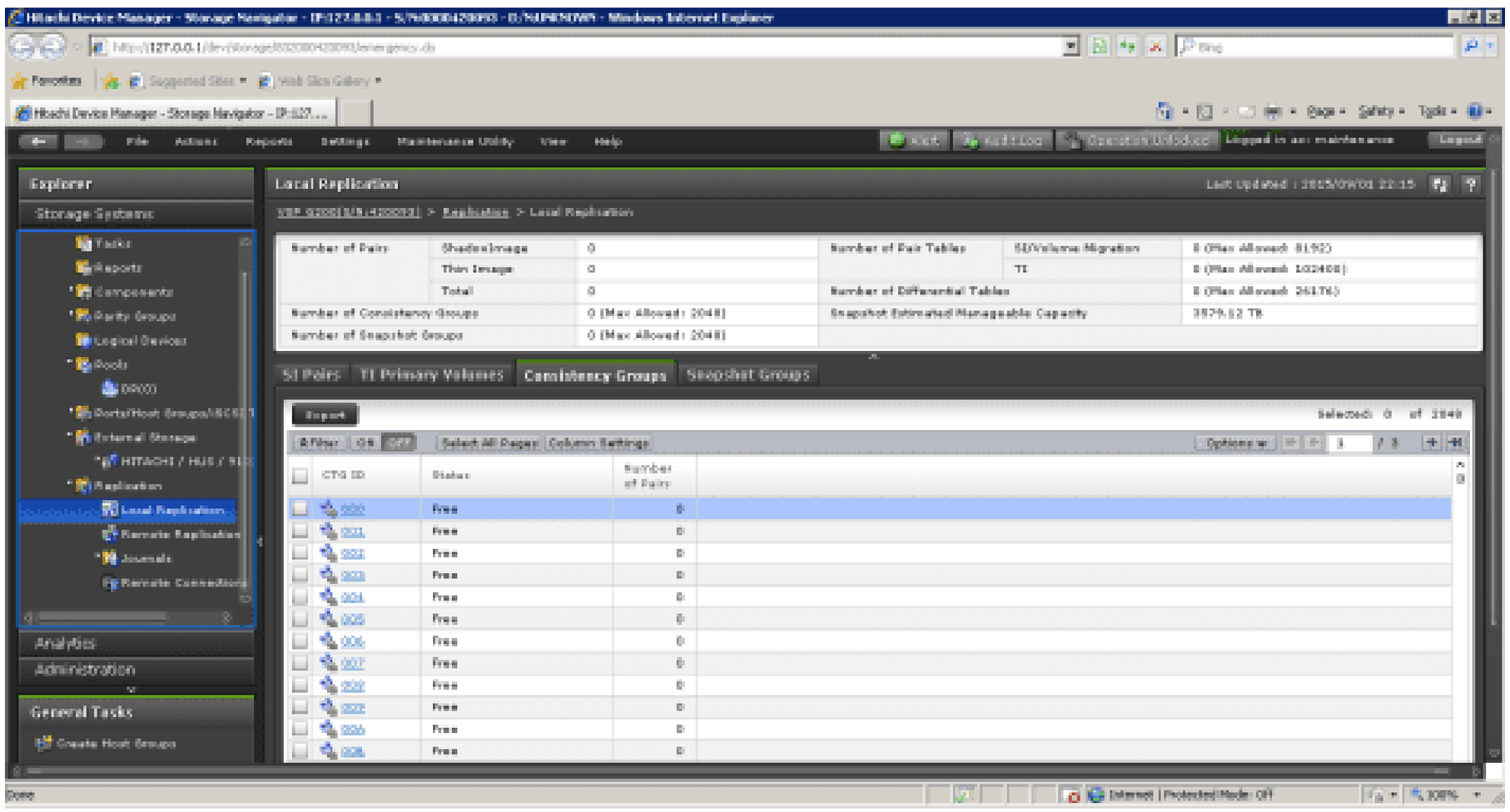

Replication

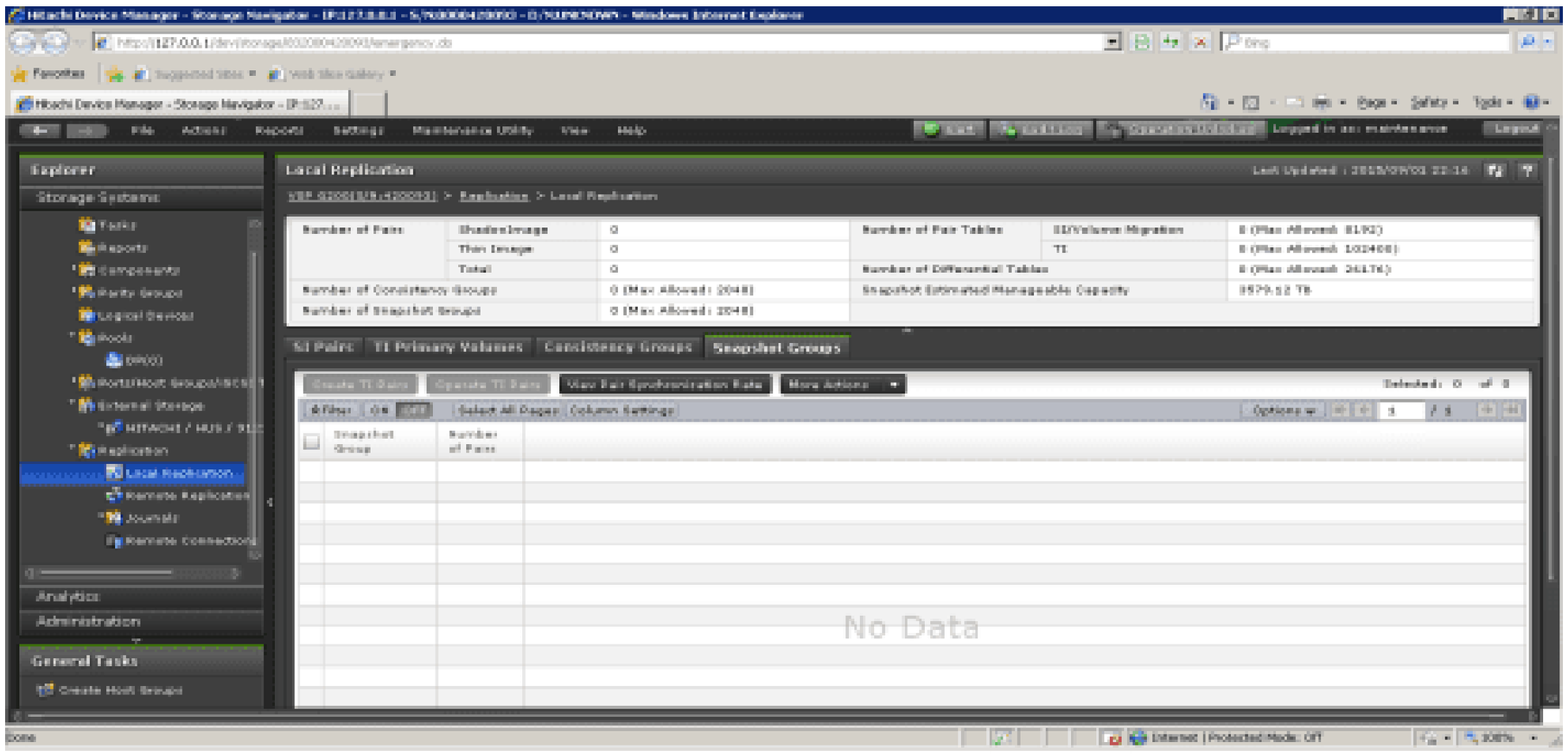



Local Replication

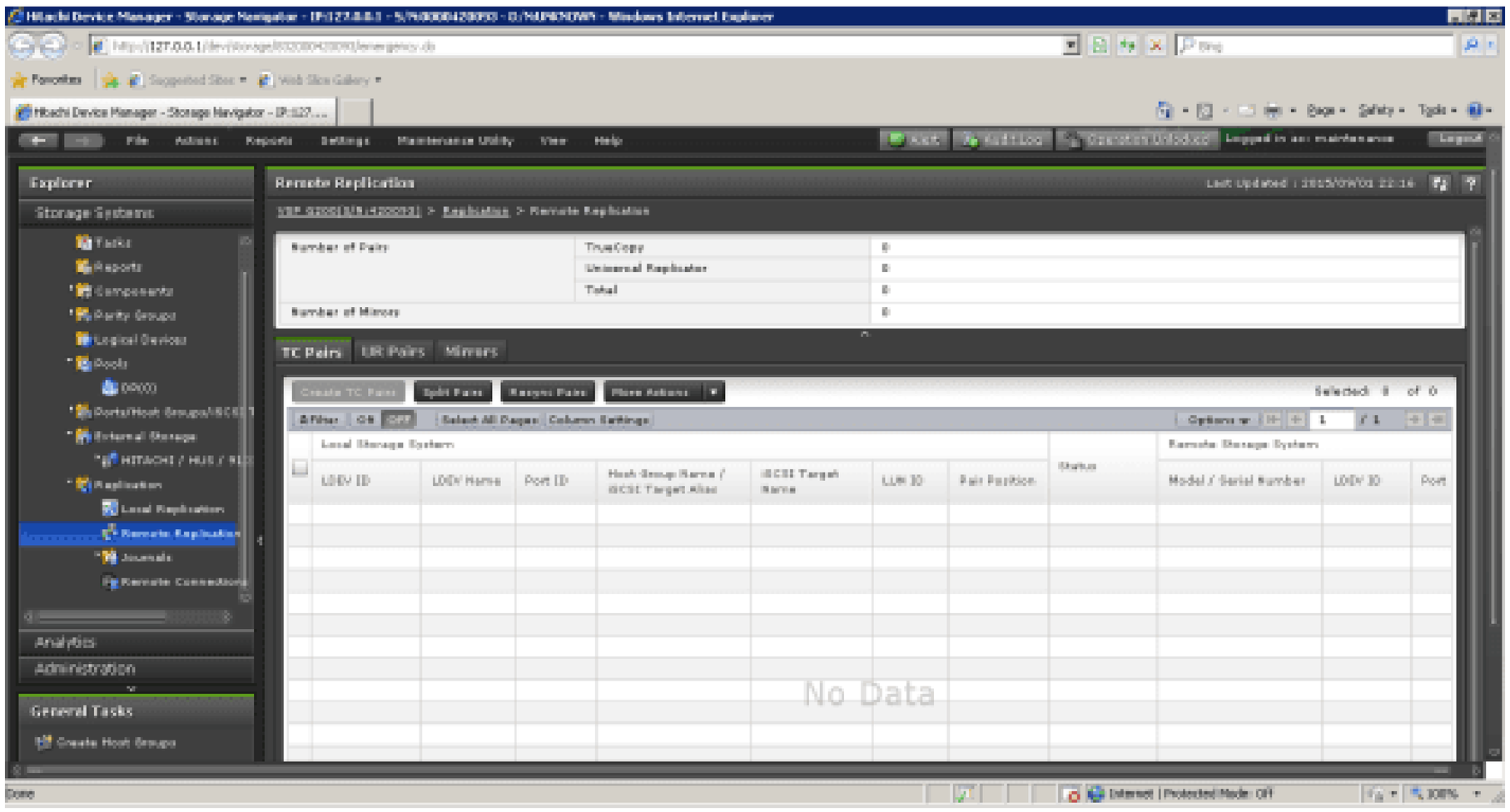

Explorer
Storage Systems
Local Replication
SI Pairs
TI Primary Volumes
Consistency Groups
Snapshot Groups
No Data
Analytics
Administration
General Tasks

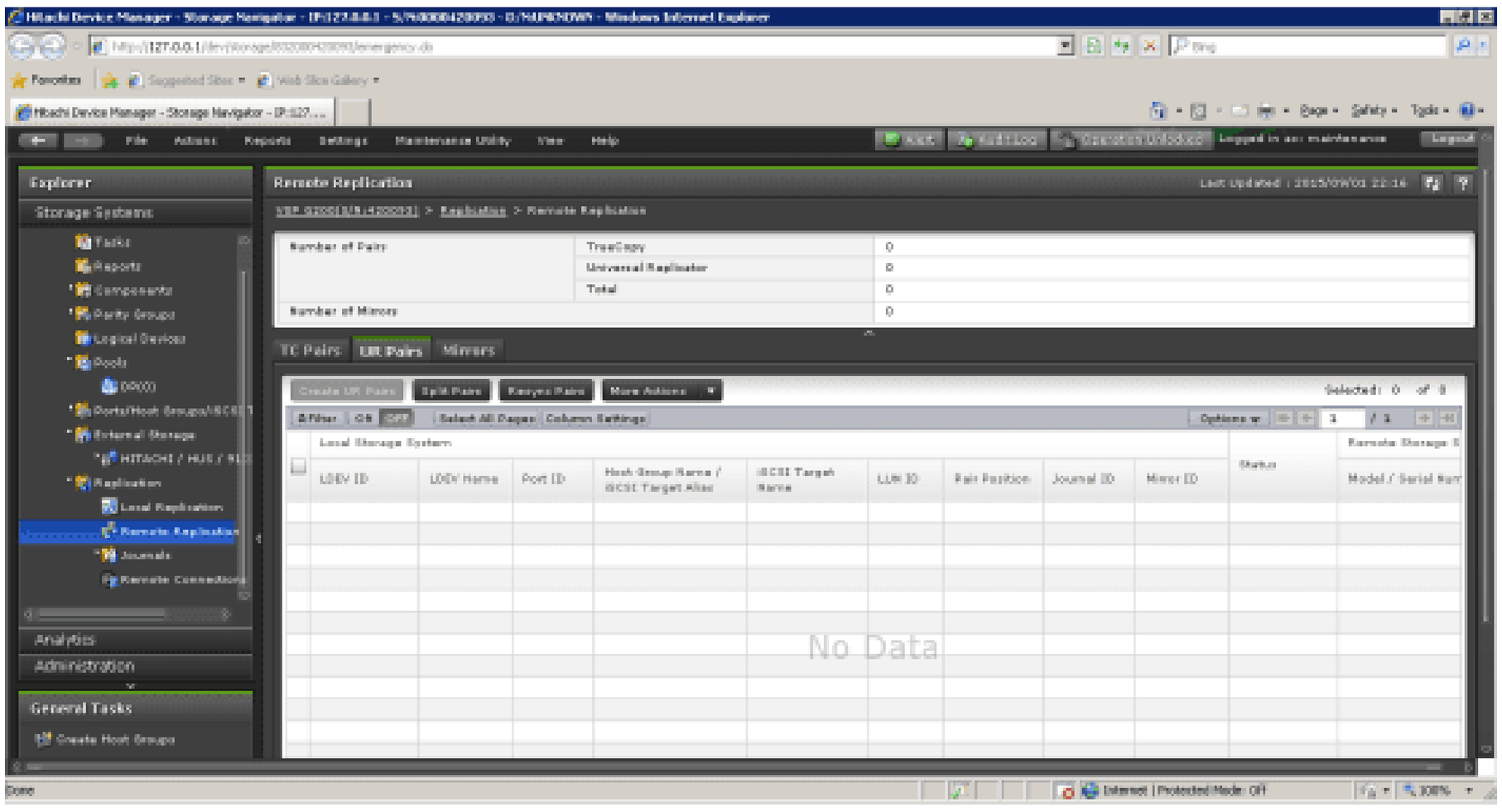

Explorer
Storage Systems
Local Replication
SI Pairs
TI Primary Volumes
Consistency Groups
Snapshot Groups
No Data
Analytics
Administration
General Tasks

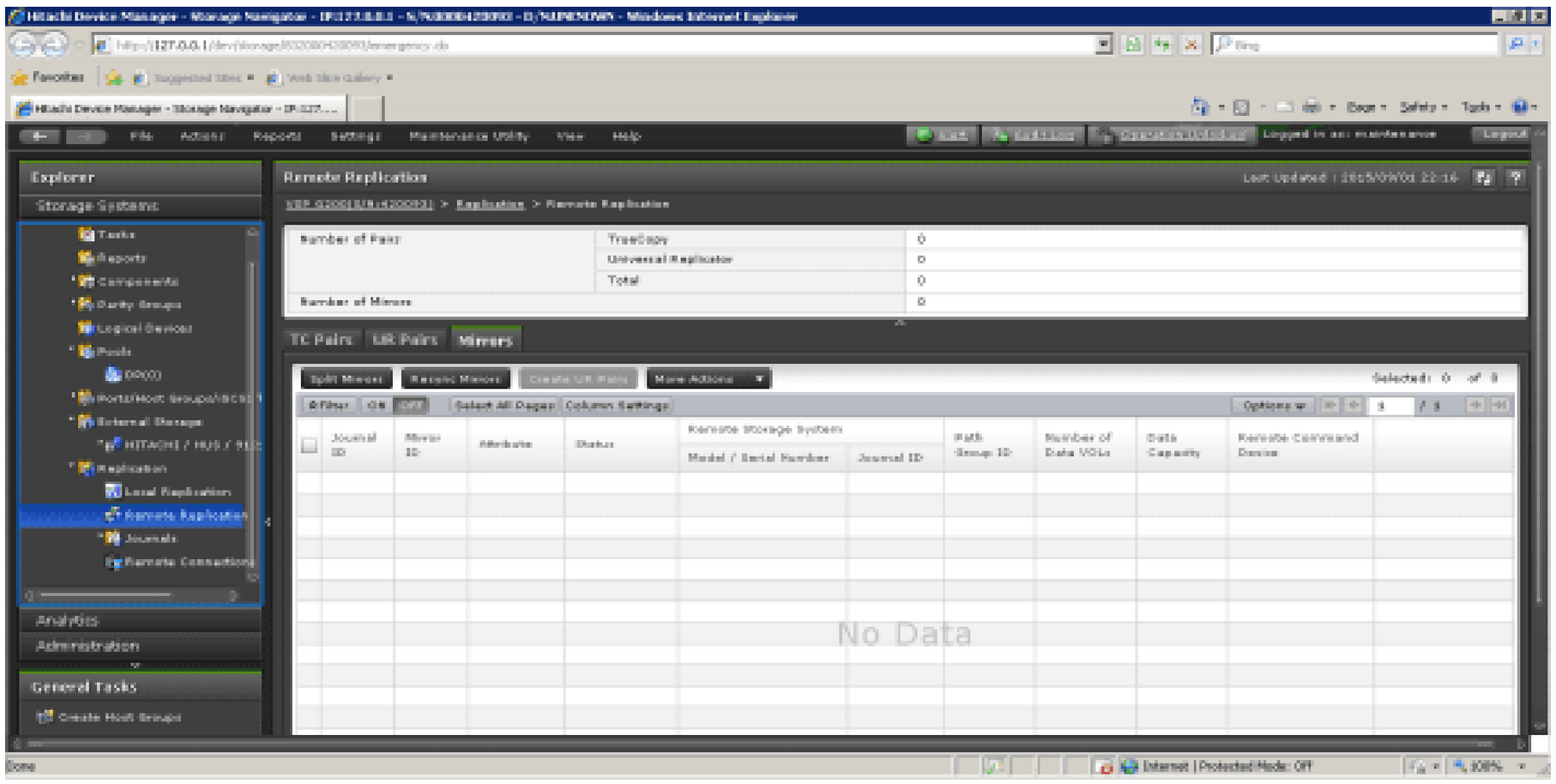

Explorer
Storage Systems
Local Replication
SI Pairs
TI Primary Volumes
Consistency Groups
Snapshot Groups
Analytics
Administration
General Tasks



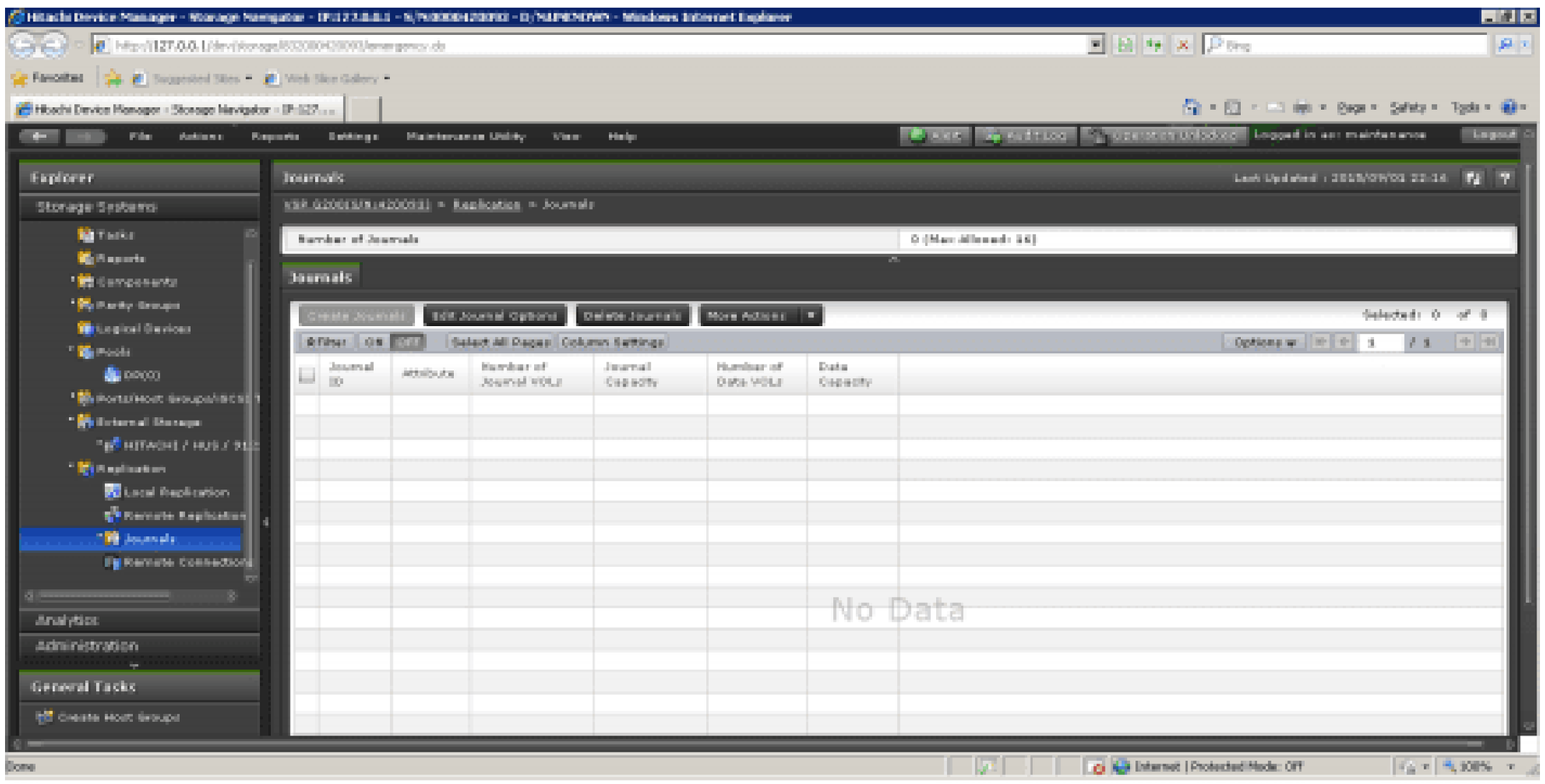

Remote Replication



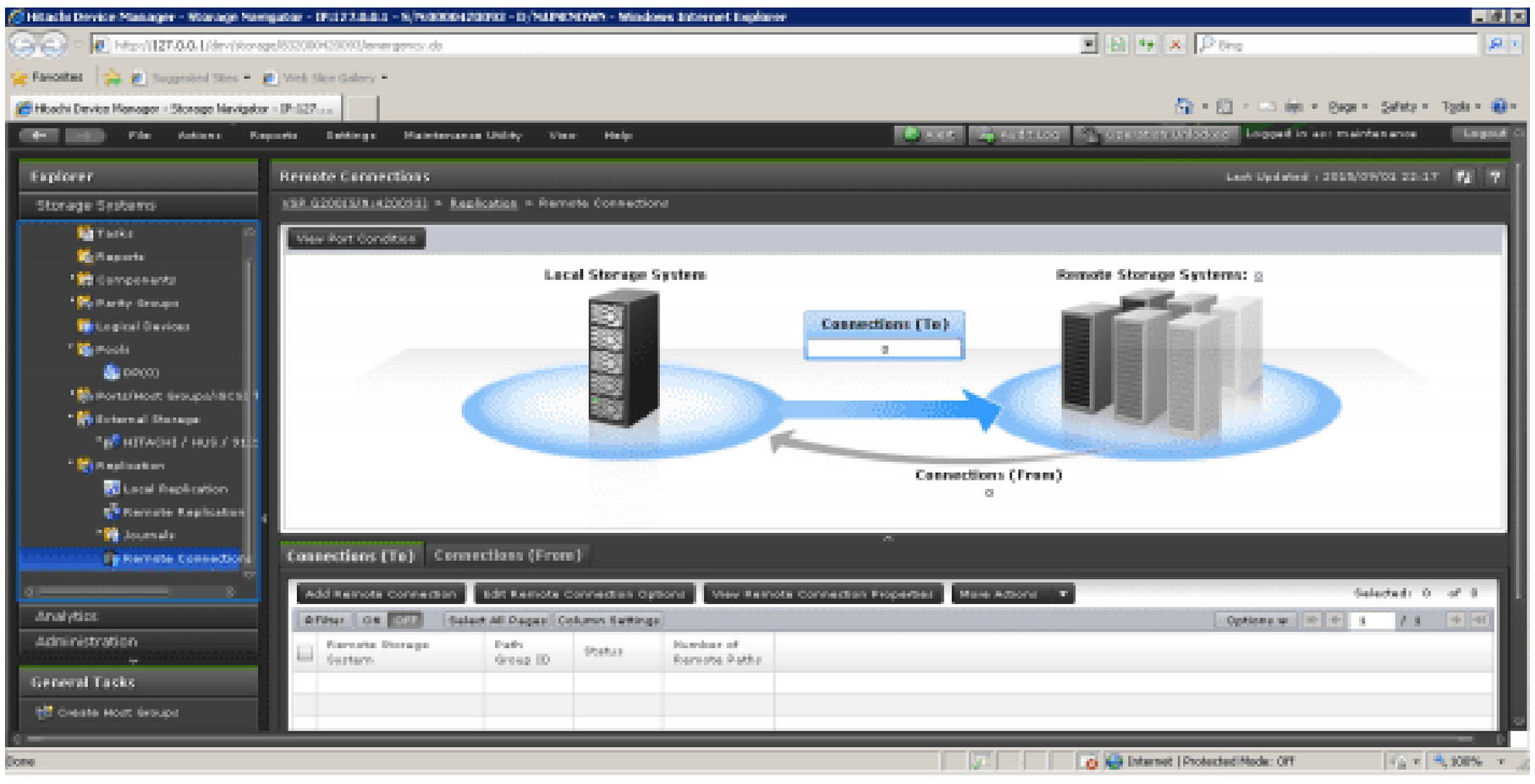





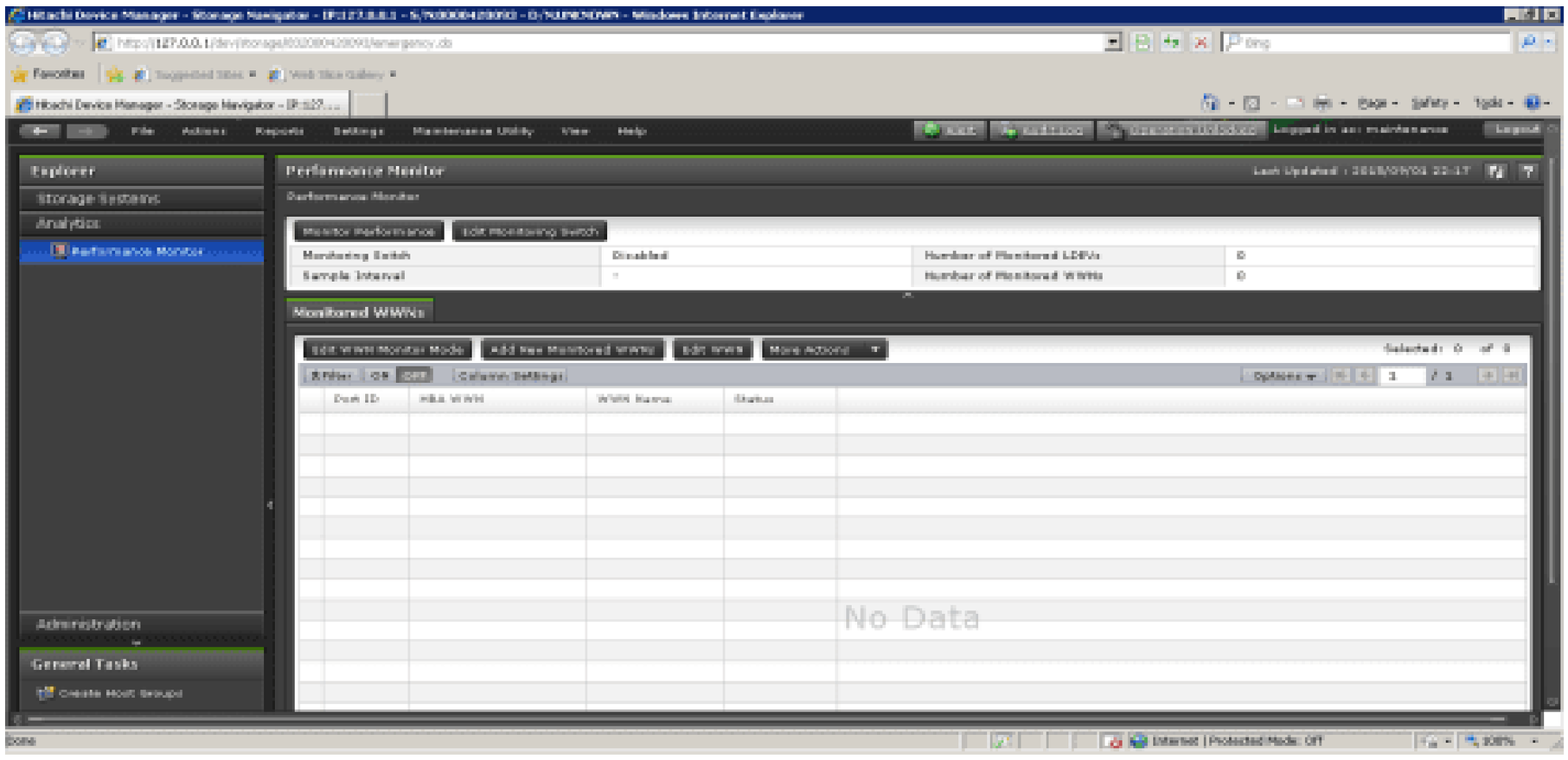

Journal

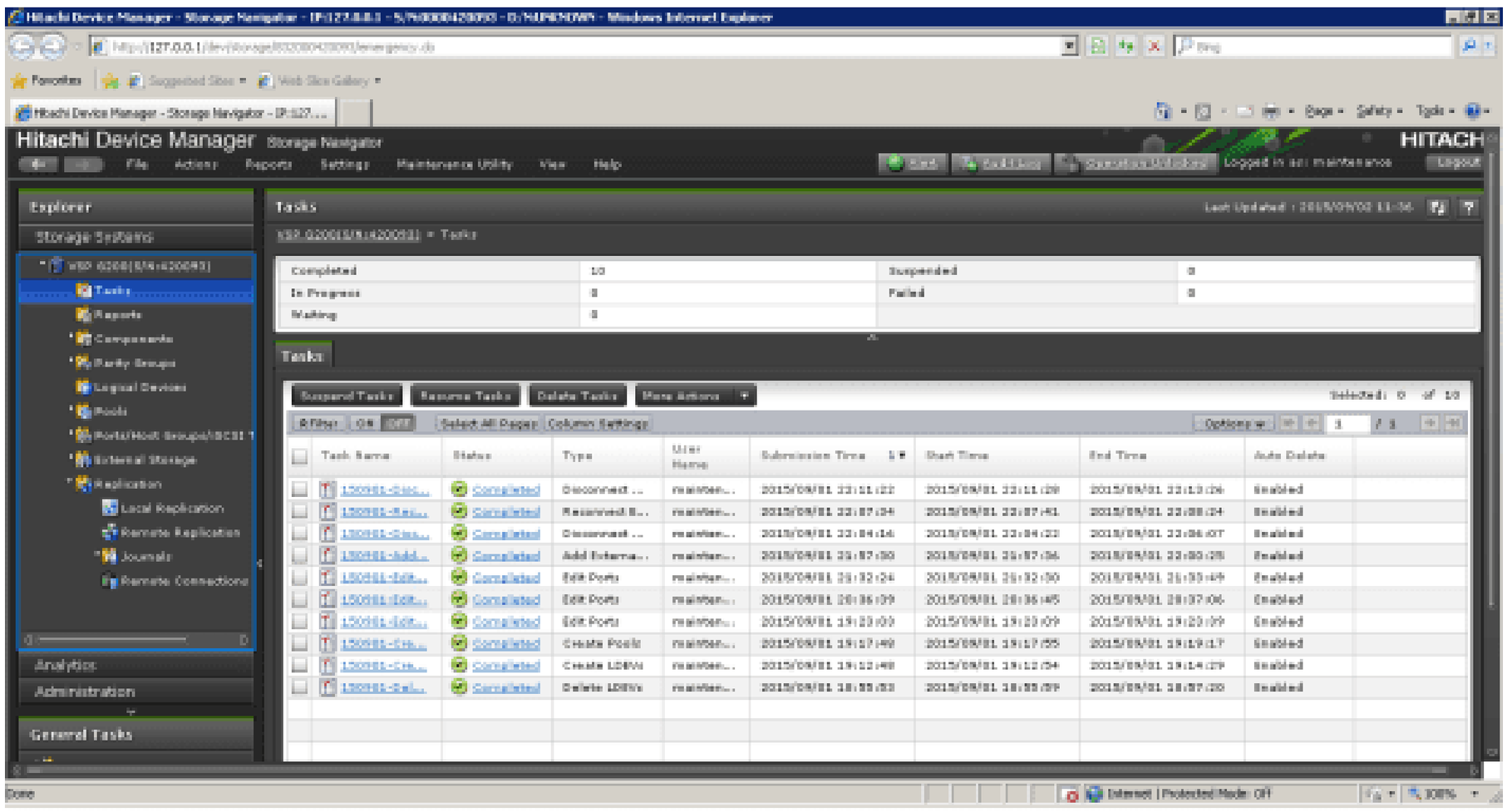


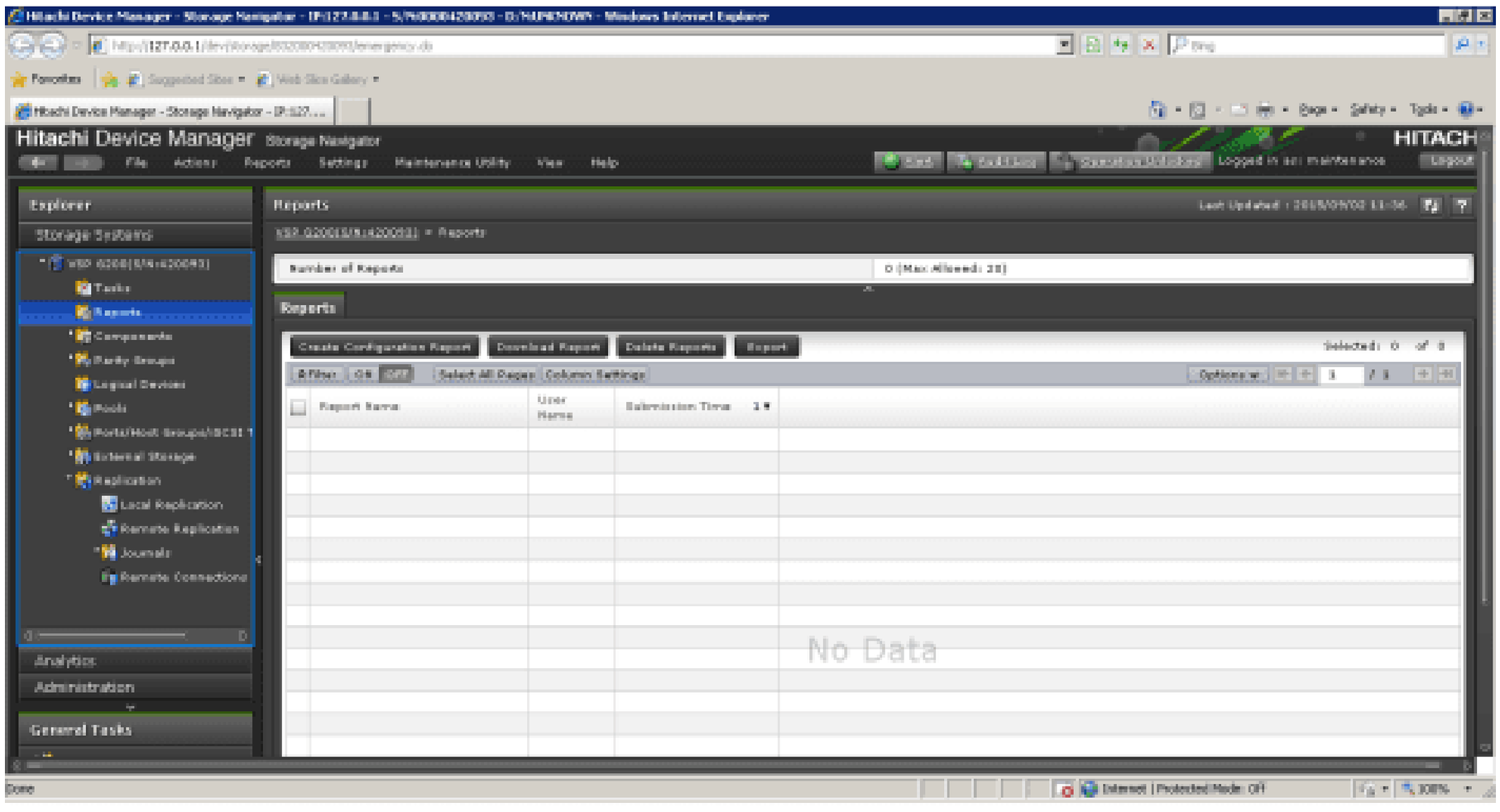

Remote Connection

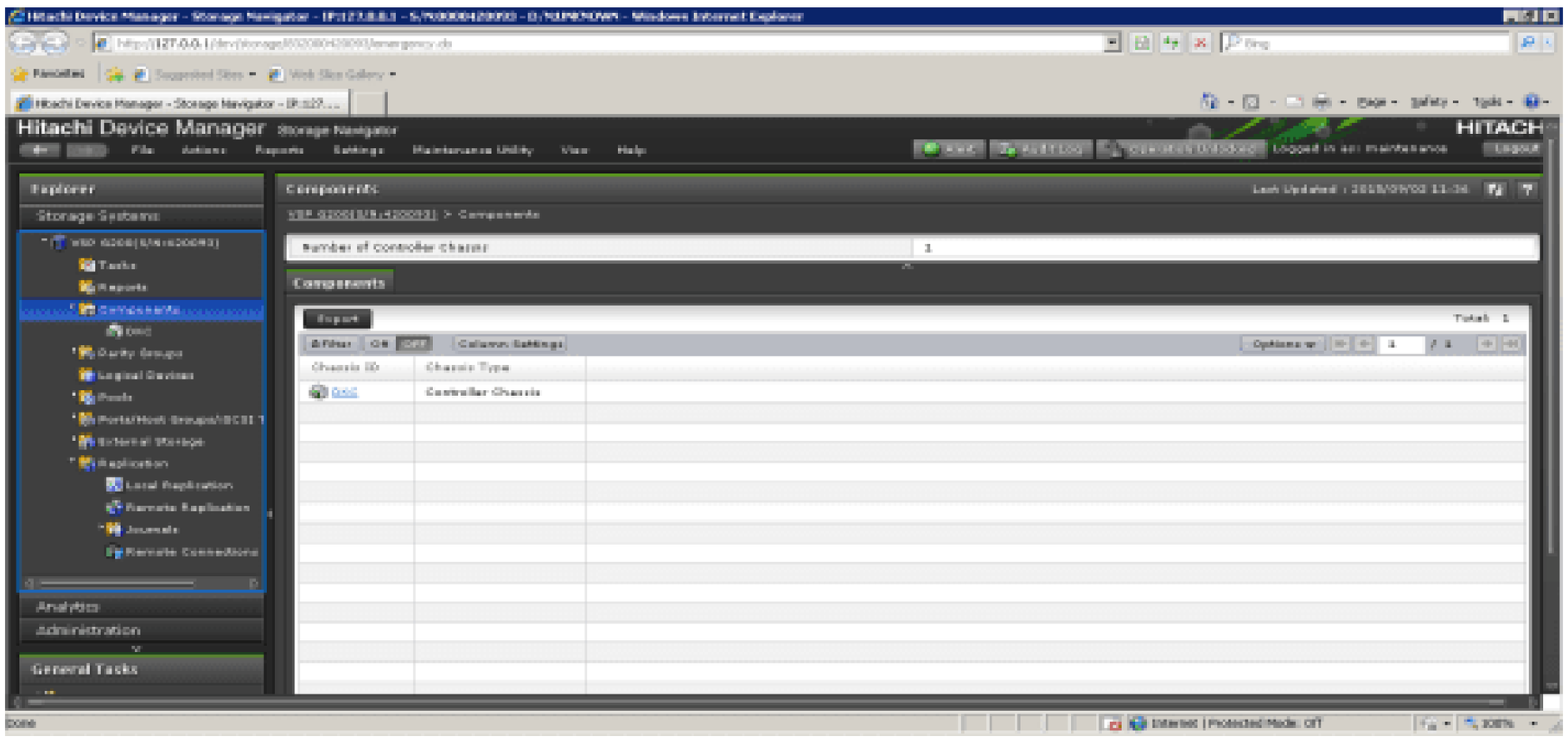


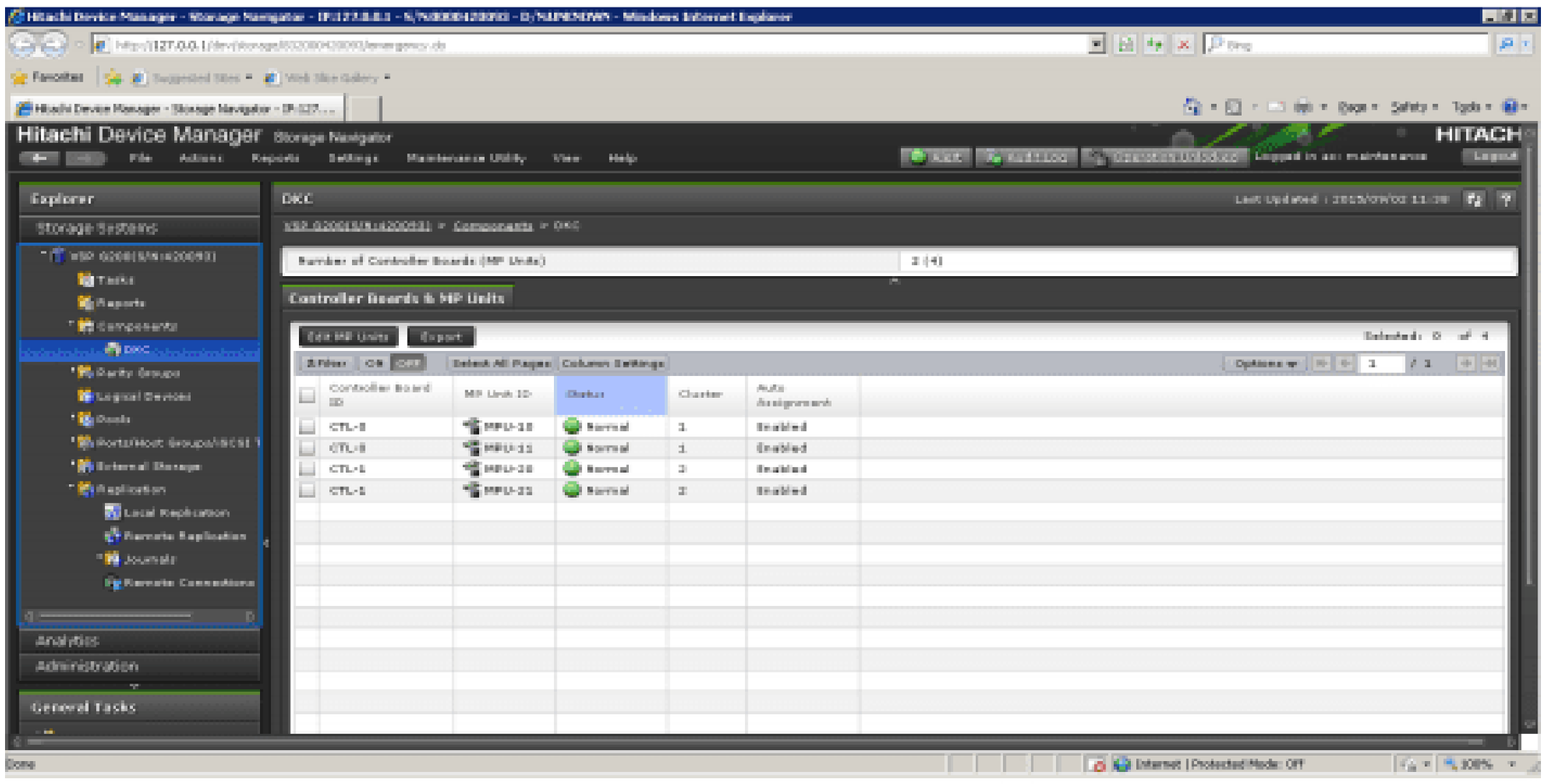
Performance Monitor



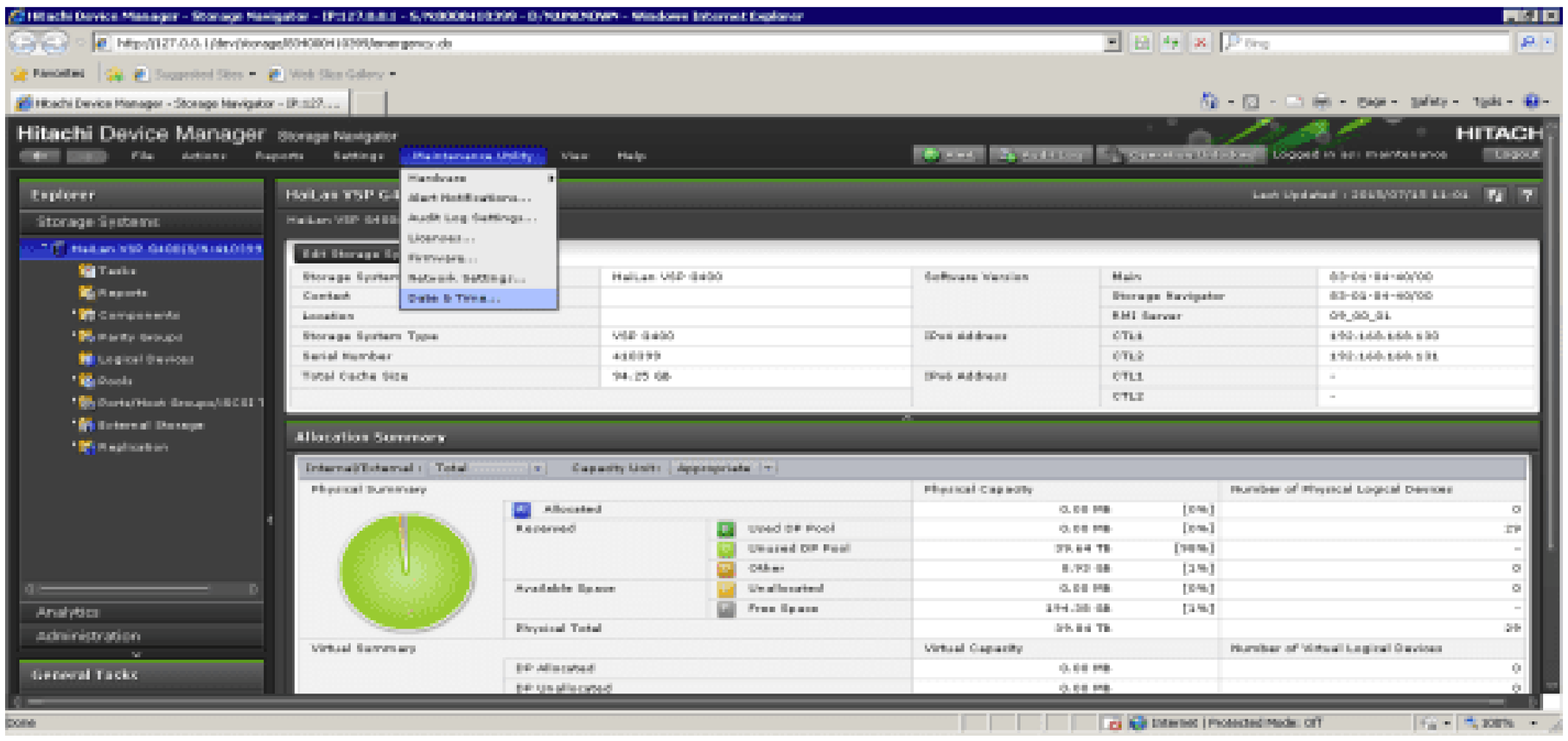





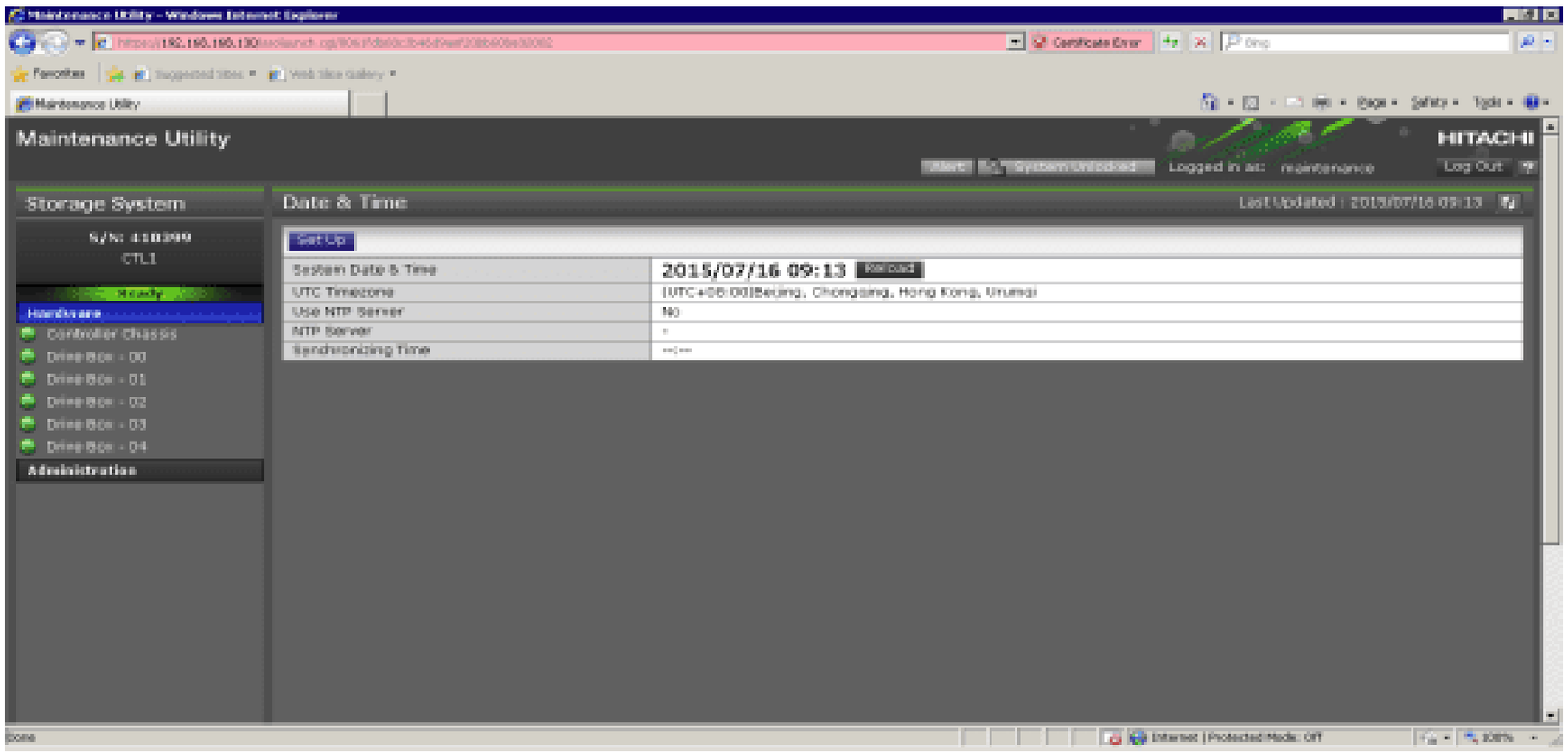



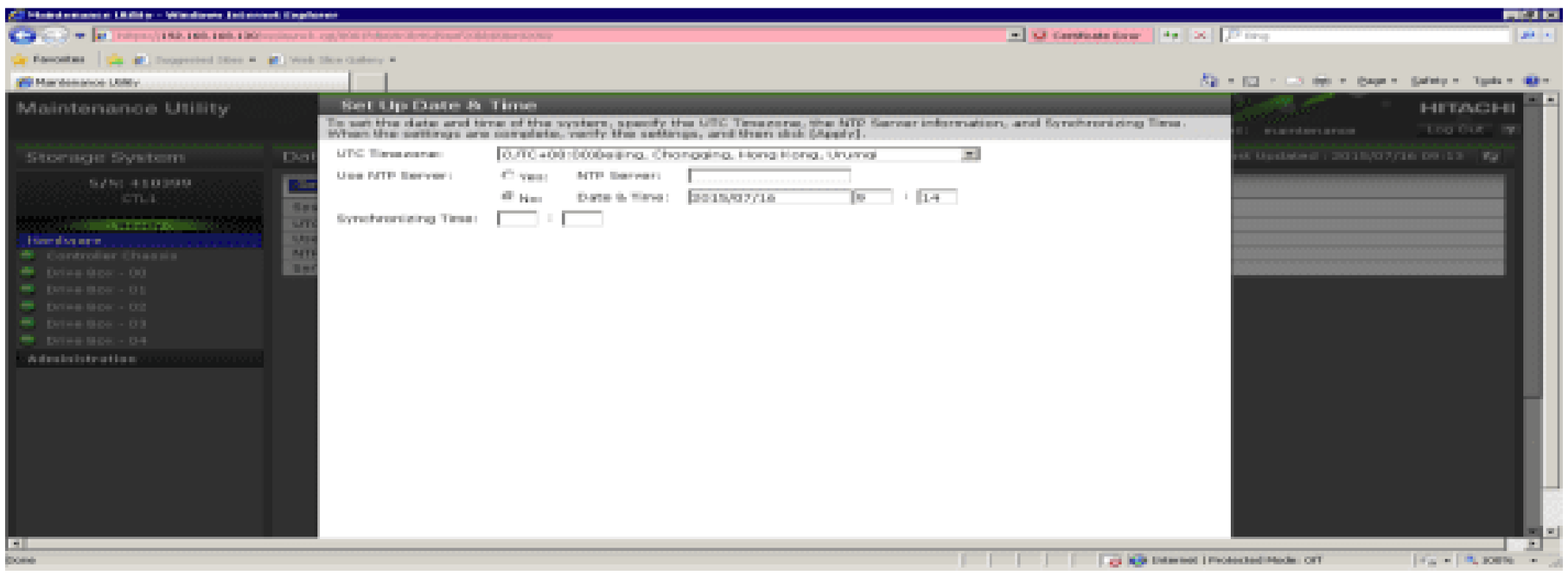

# 4.22 修改时间

Maintenance utility- Date & Time




点击 Set up

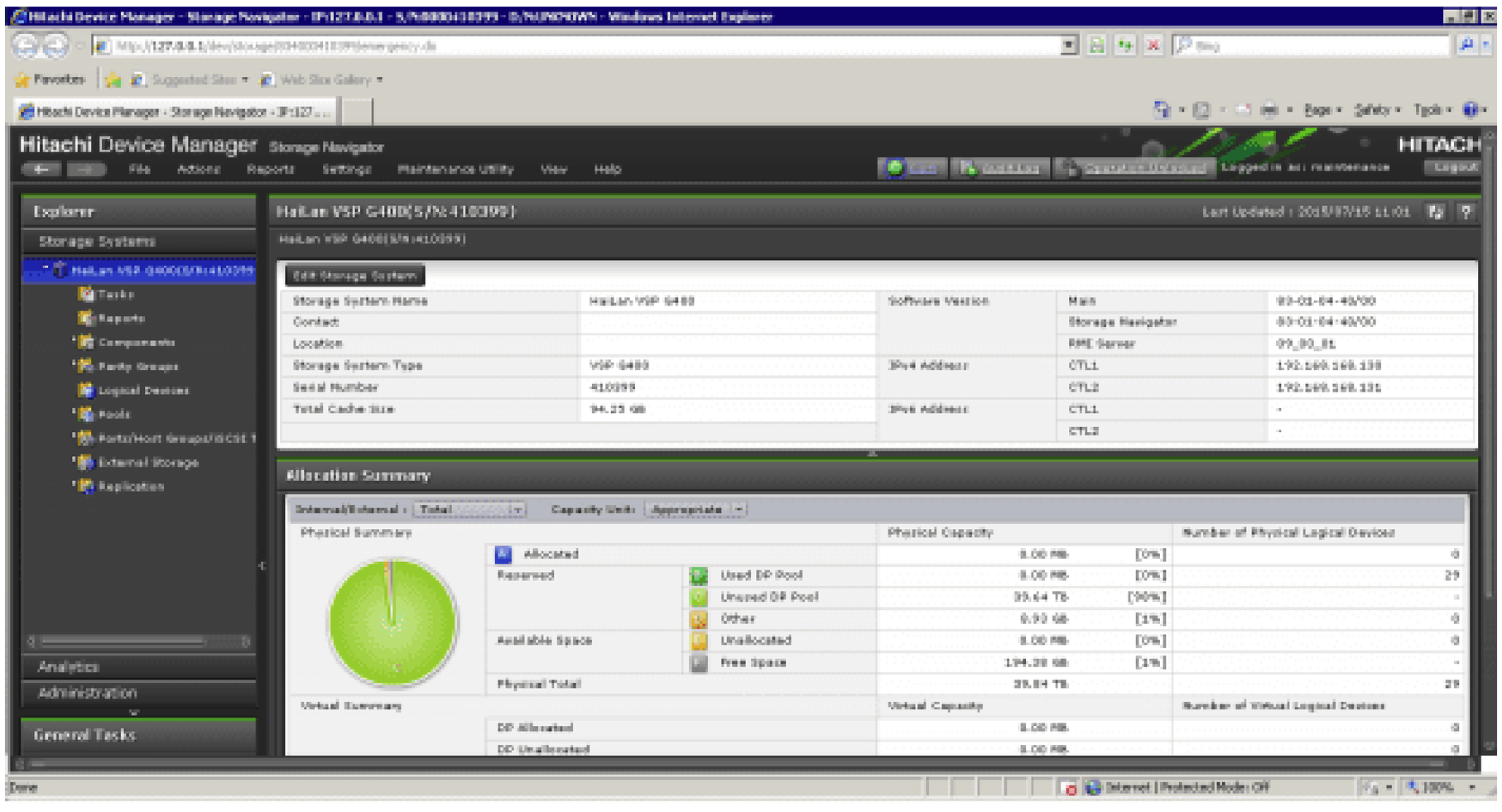


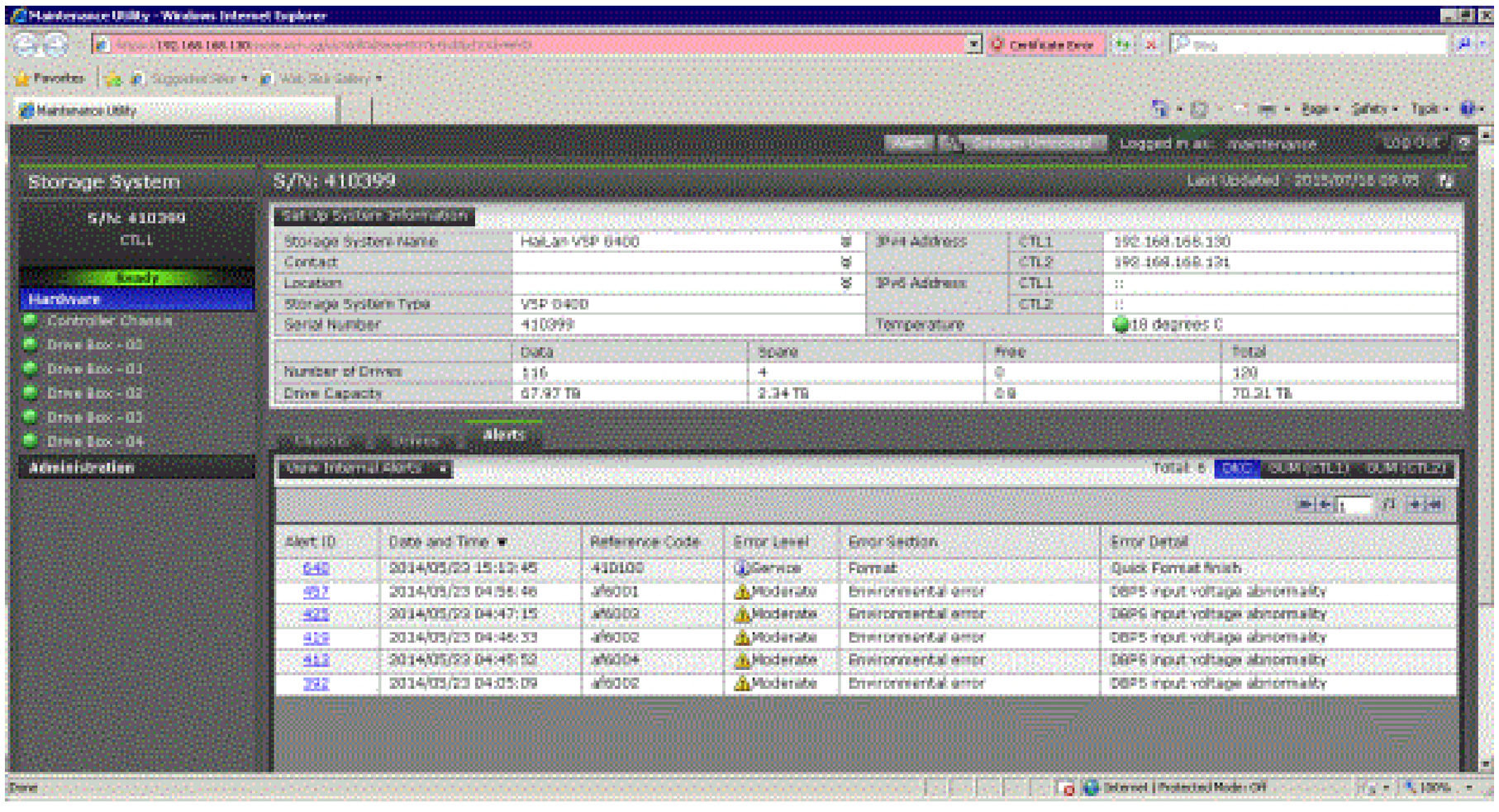




## 4.23 Warning 告警灯消除

当设备出现故障时，前面板warning 告警灯会亮起。
目前看到消除告警灯的方式有二种

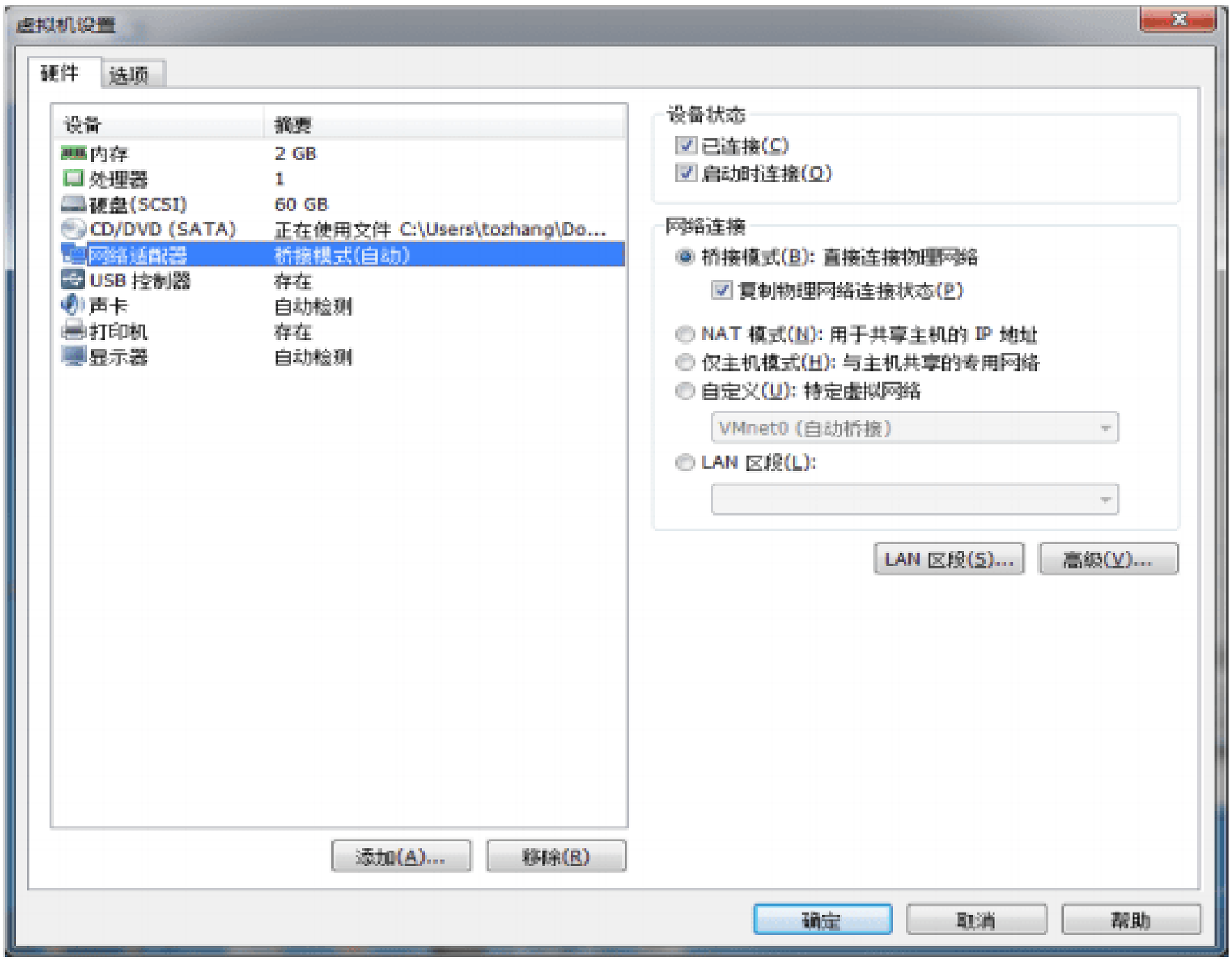
1. 通过MPC SVP 将SIM complete
2. 在device manager 中，点击Alert，导向到GUM Alerts后，告警灯也会熄灭



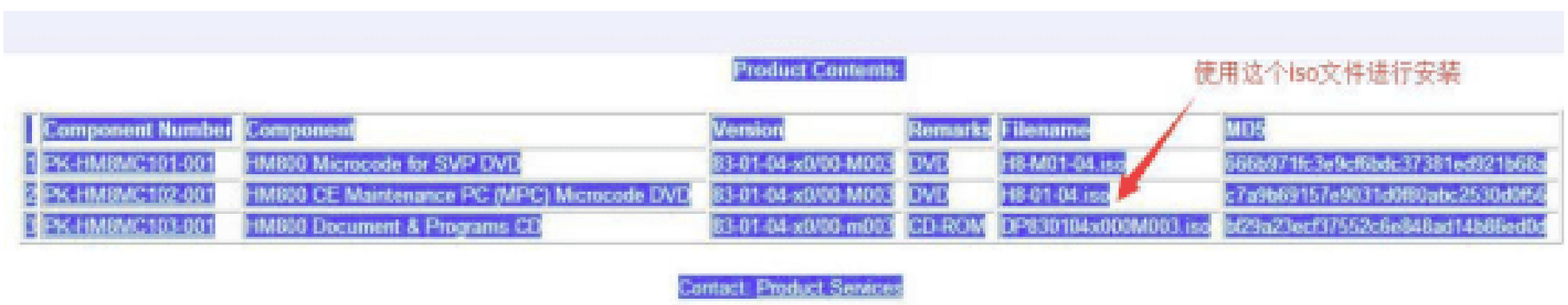

Storage System
S/N: 410399
Hardware
Administration
Storage System Name
HuLan VSP G400
Contact
Location
Storage System Type
VSP G400
Serial Number
410399
IPv4 Address
CTL1
192.168.168.130
CTL2
192.168.168.131
IPv6 Address
Temperature
18 degrees C
Number of Drives
116
4
120
Drive Capacity
67.97 TB
2.34 TB
70.31 TB
Alerts
Alert ID
Date and Time
Reference Code
Error Level
Error Section
Error Detail
Service
Format
Quick Format finish
Moderate
Environmental error
DBP5 input voltage abnormality

# 第五章 MPC 的安装

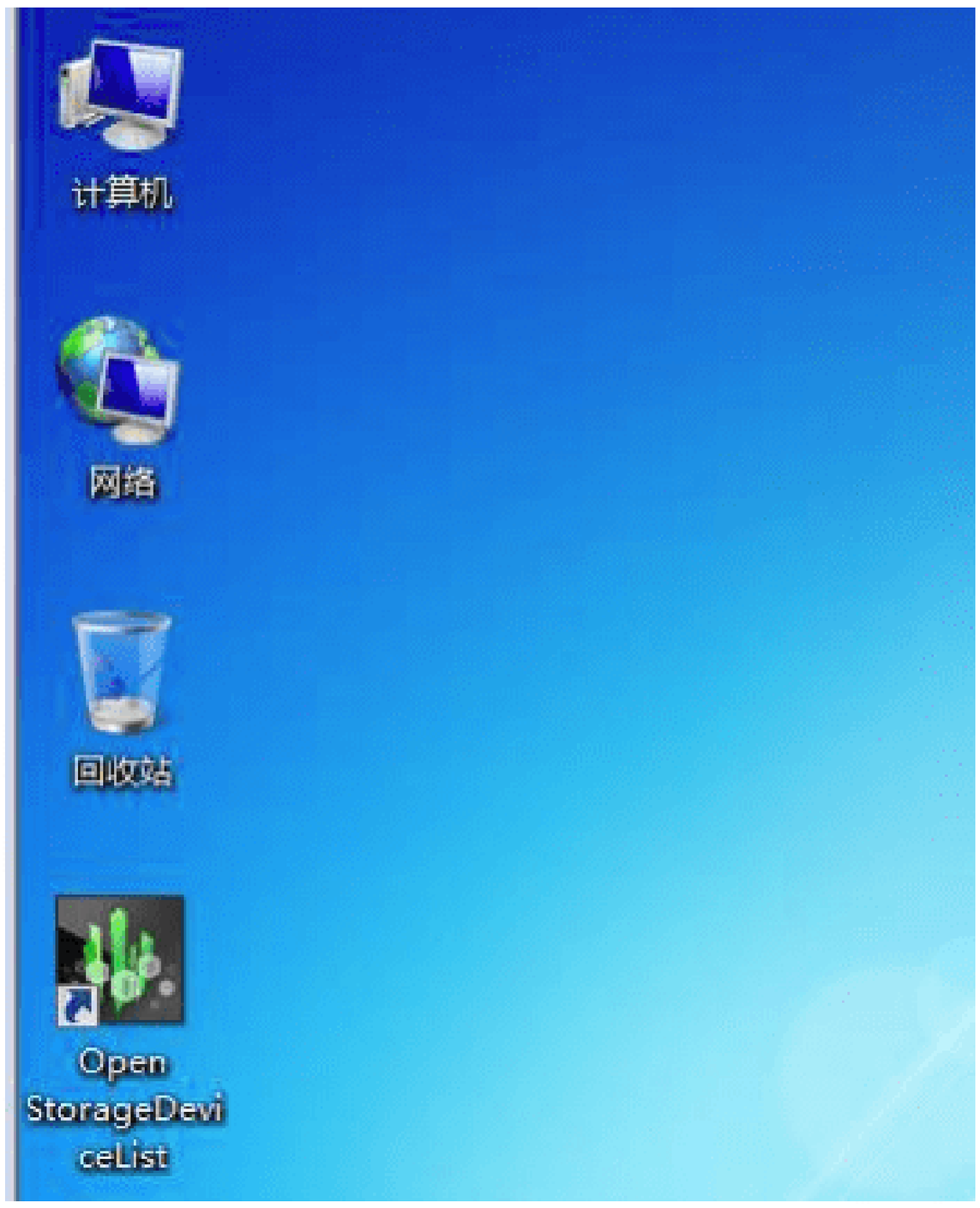
通过实践对比，发现通过虚拟机来安装 MPC 的效果更好，运行速度更快。我安装使用的环境：vmware workstation 安装 win7 x64 的操作系统。笔记本地址使用 10.0.0.x（netmask 255.0.0.0）地址，用网线与 CTL 1 的 maintenance 口（10.0.0.16）直连。Win 7 虚拟机配置 10.0.0.y（netmask 255.0.0.0）地址，同时网络适配器采用桥接模式，这样虚拟机就可以与 10.0.0.16 地址连通。




安装镜像使用采用 MPC microcode DVD ，按提示安装即可。

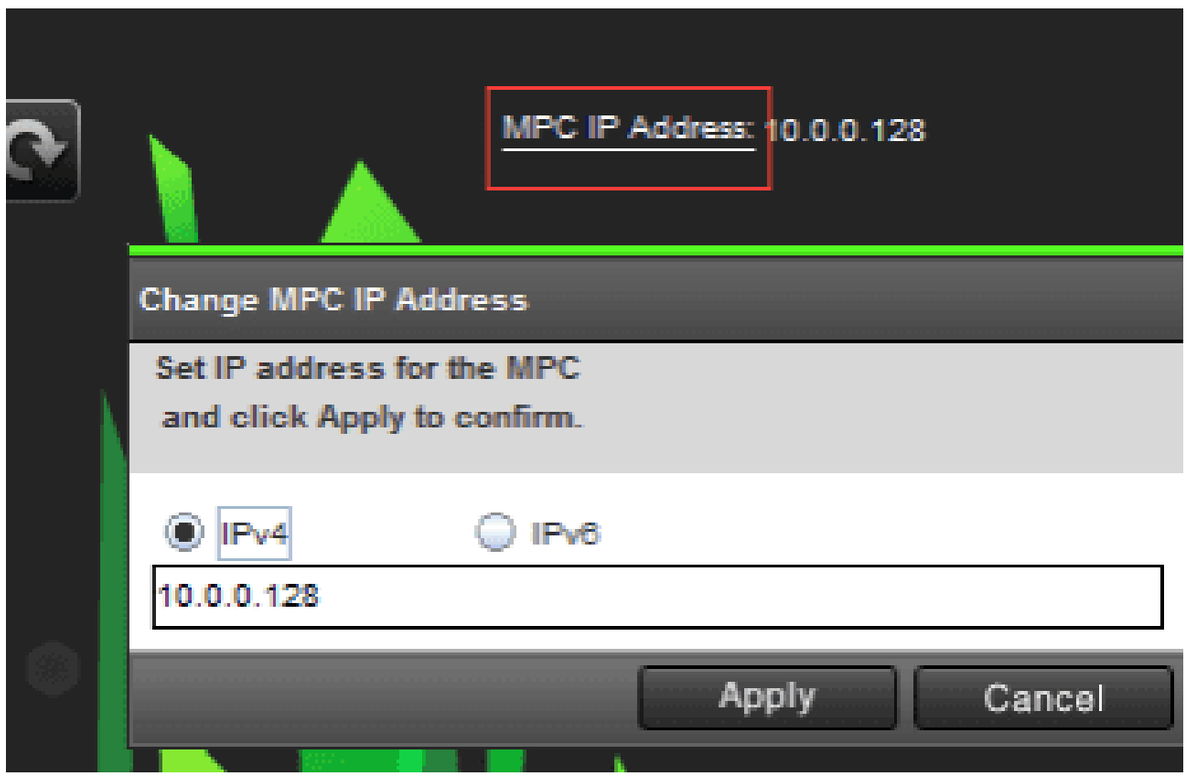



安装完成后，桌面生成 Open StorageDeviceList 图标

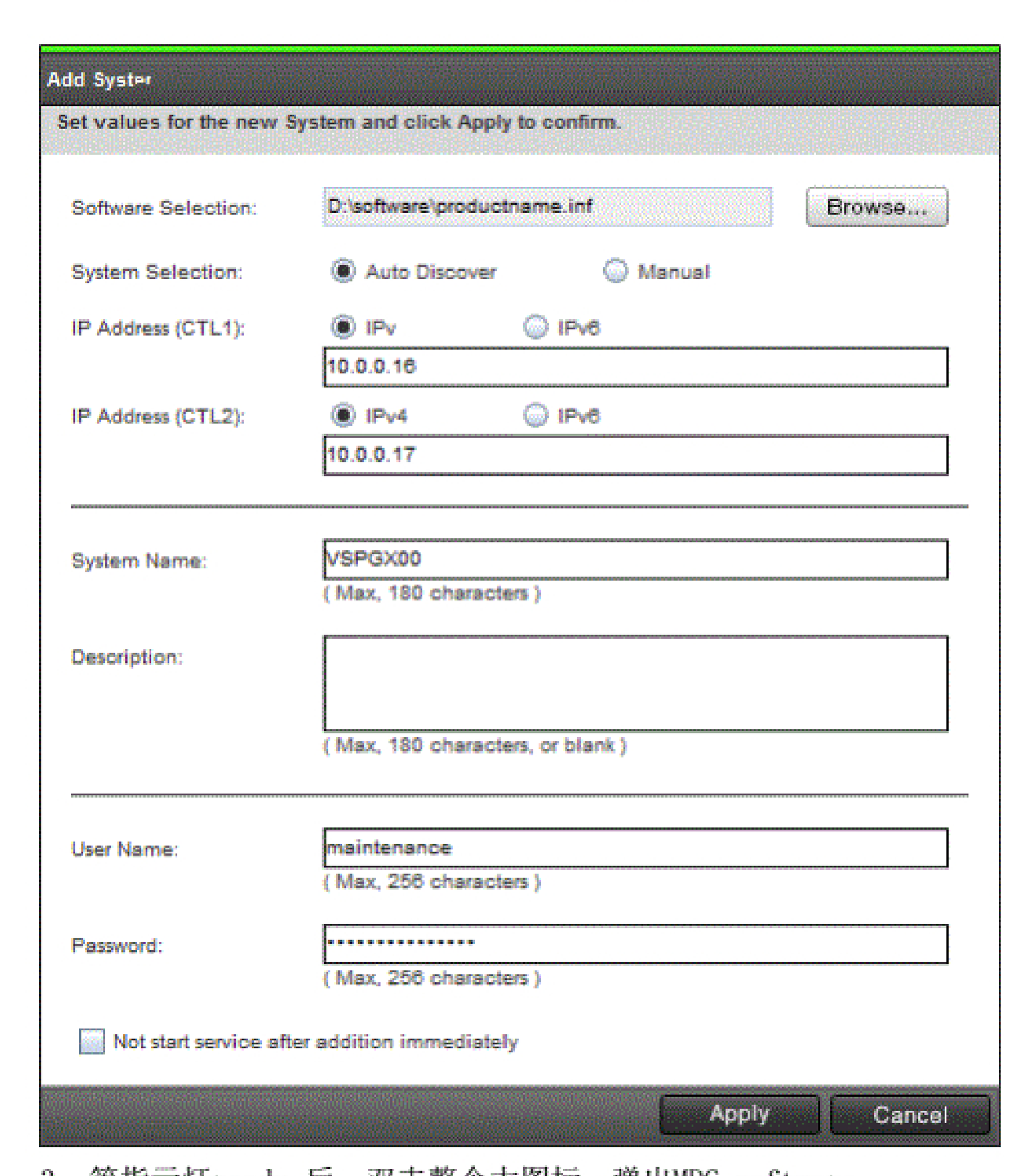



双击Open StorageDeviceList,

1. 修改MPC IP address : 10.0.0.y

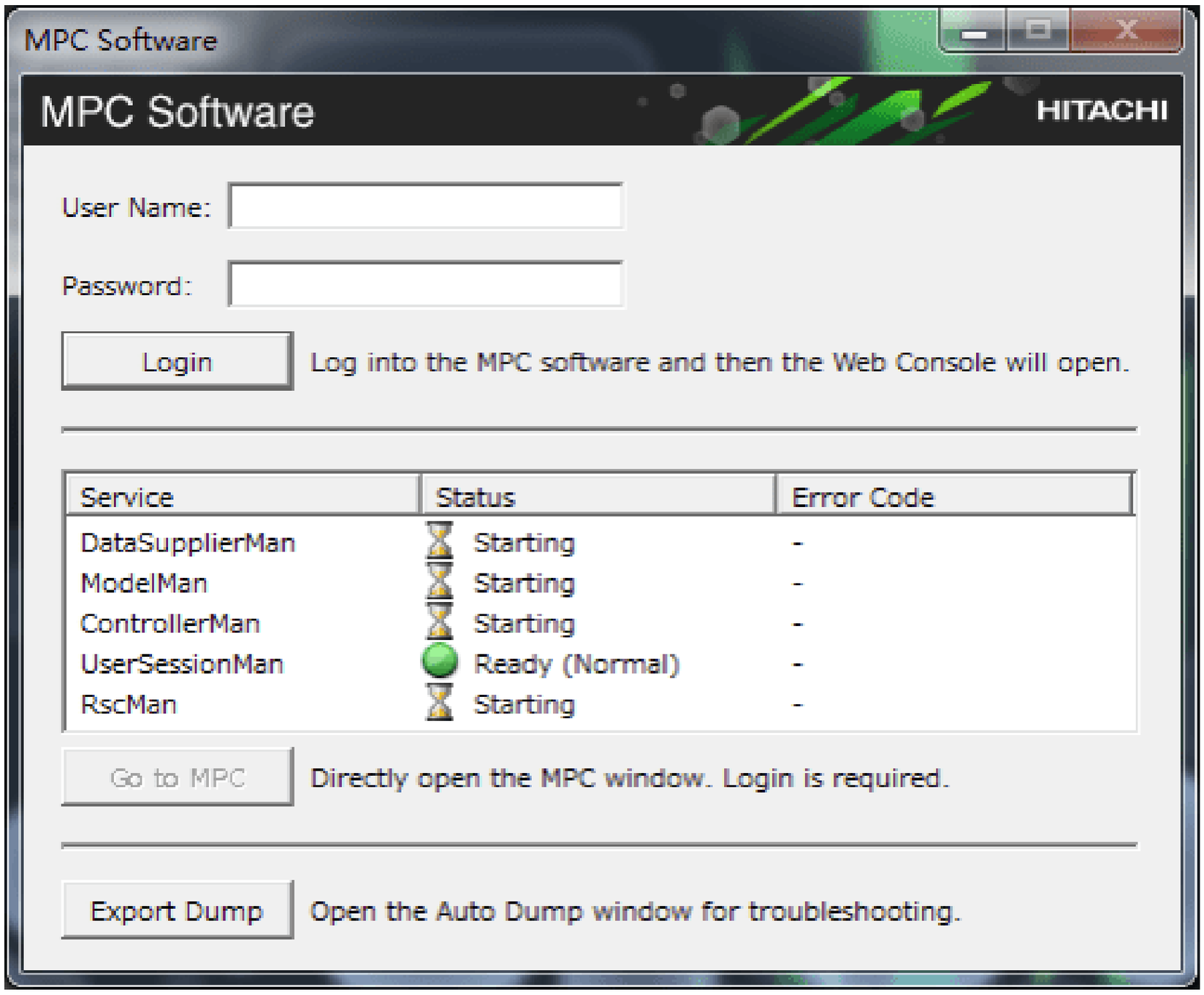



2. 添加存储并启动service

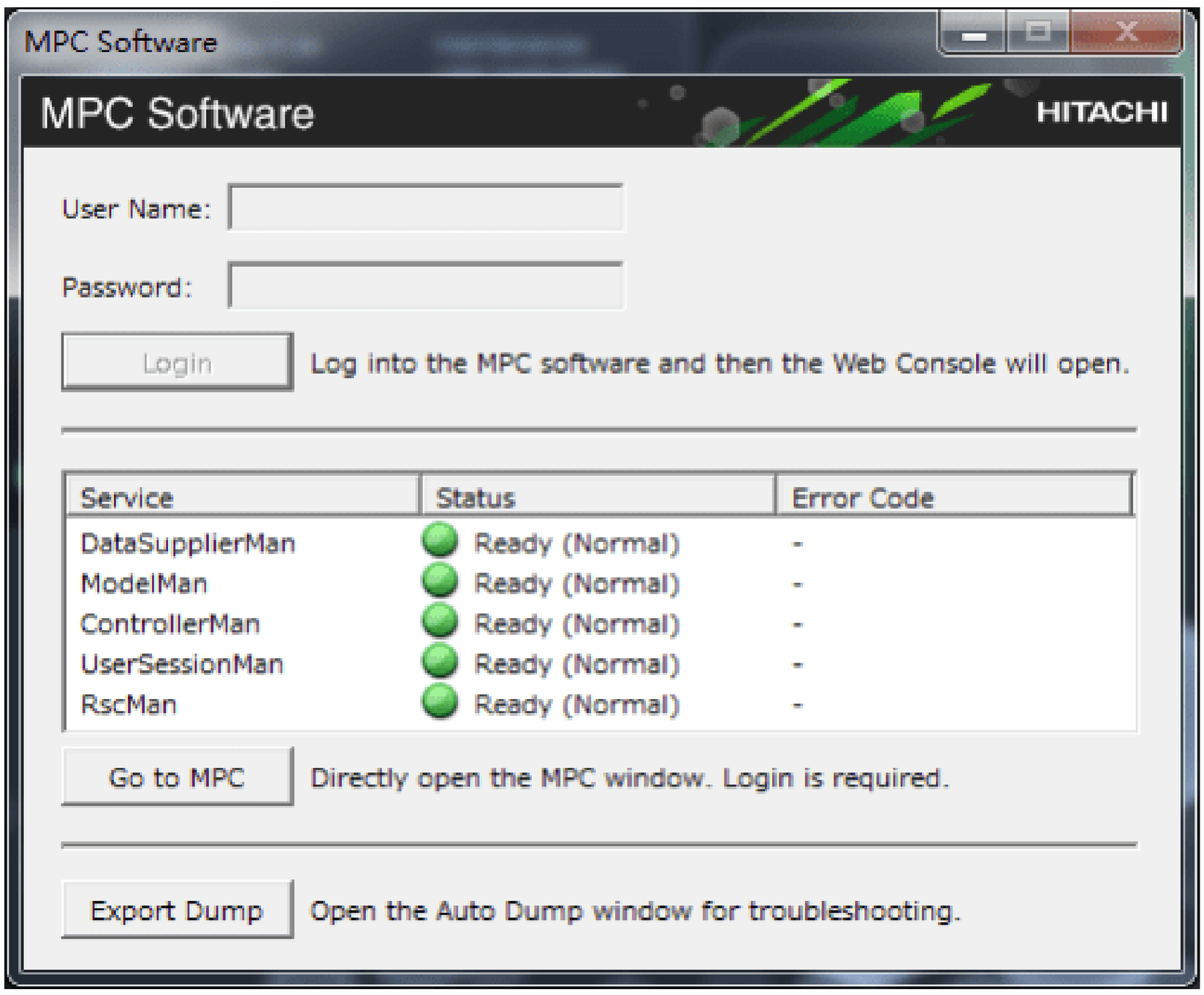



3. 等指示灯ready 后，双击整个大图标，弹出MPC software

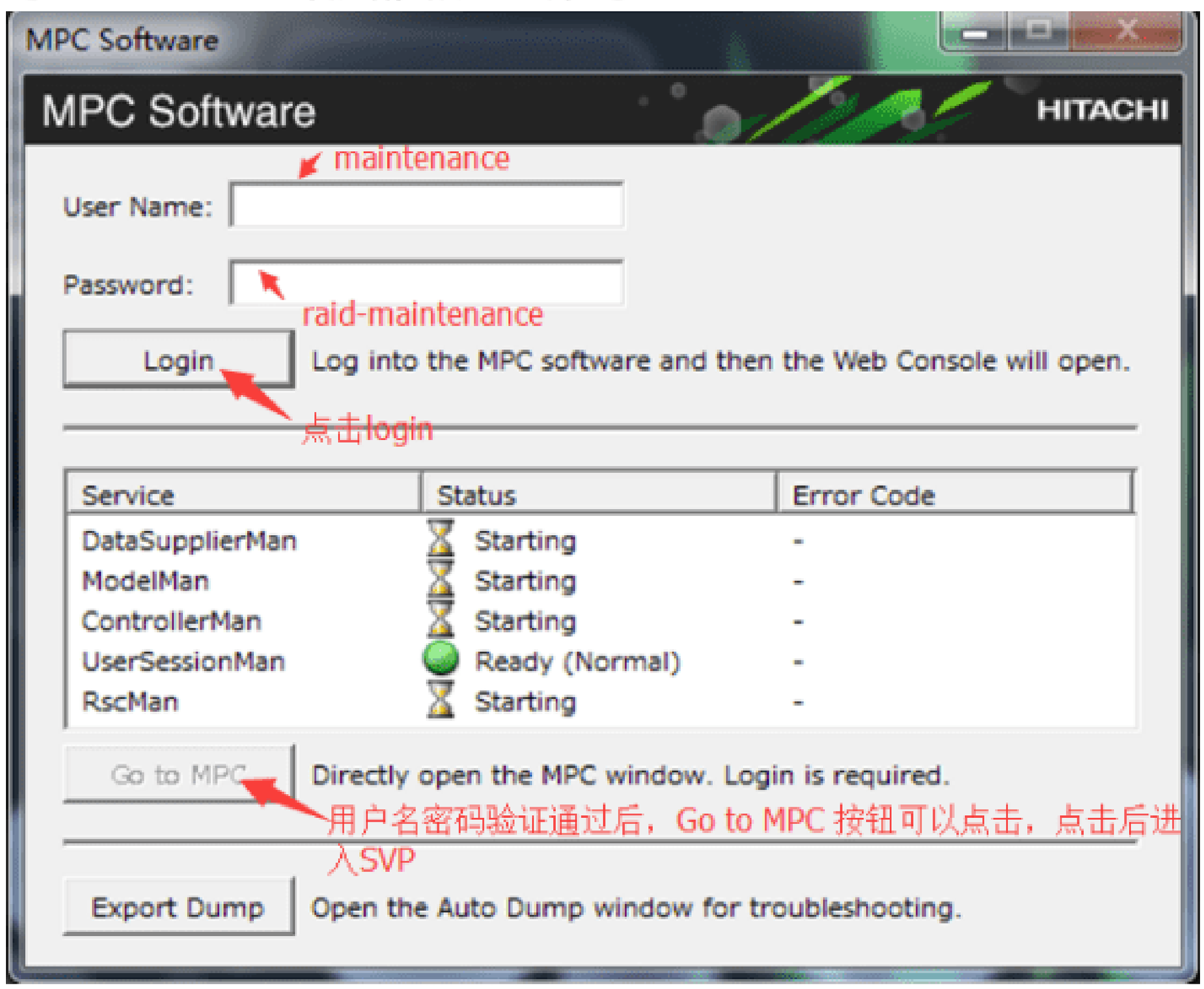
MPC software 界面显示 service 的启动进度，

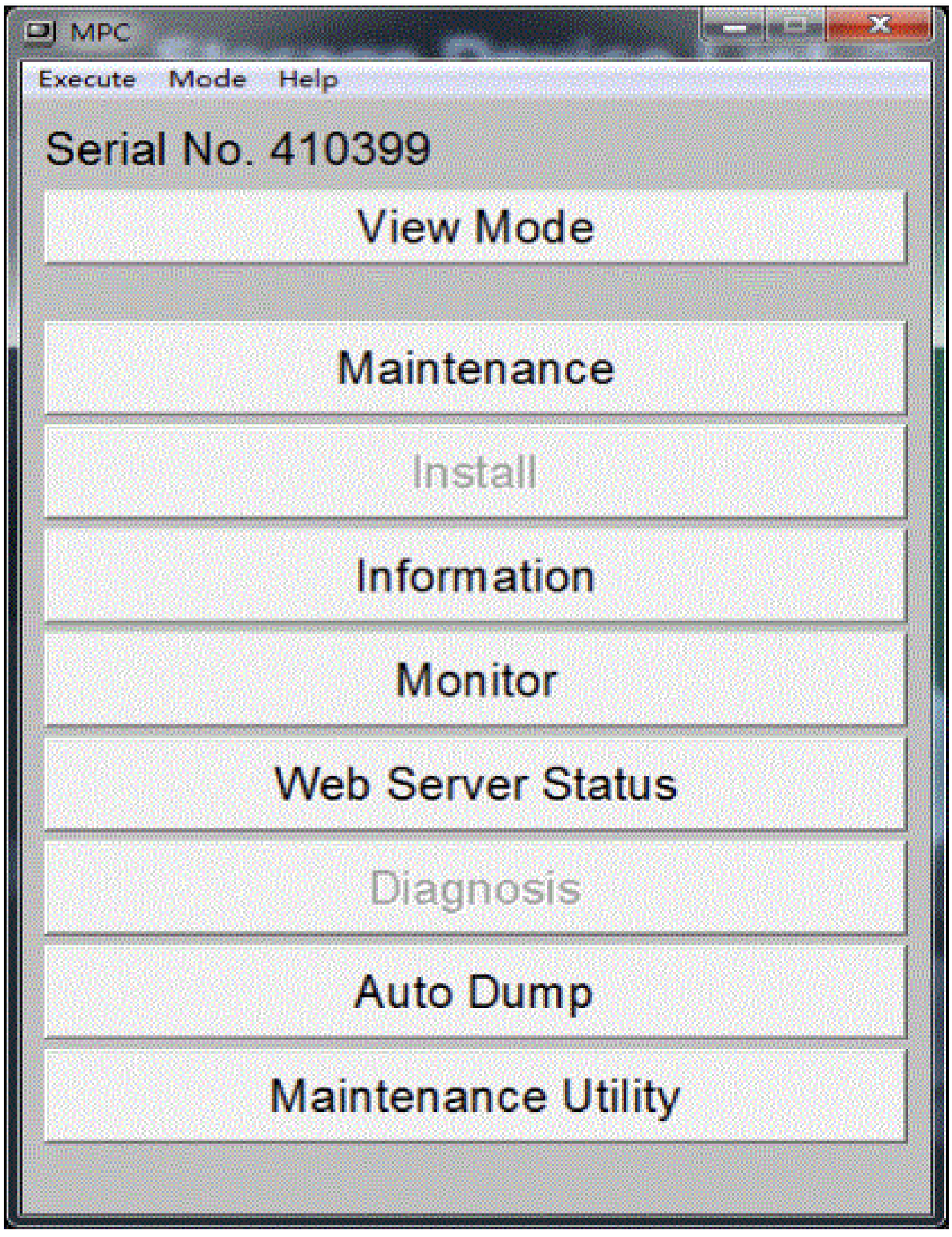



等所有服务 ready 后，即可进入 web console



进入 SVP（service 未启动完成，也可以进入 SVP）

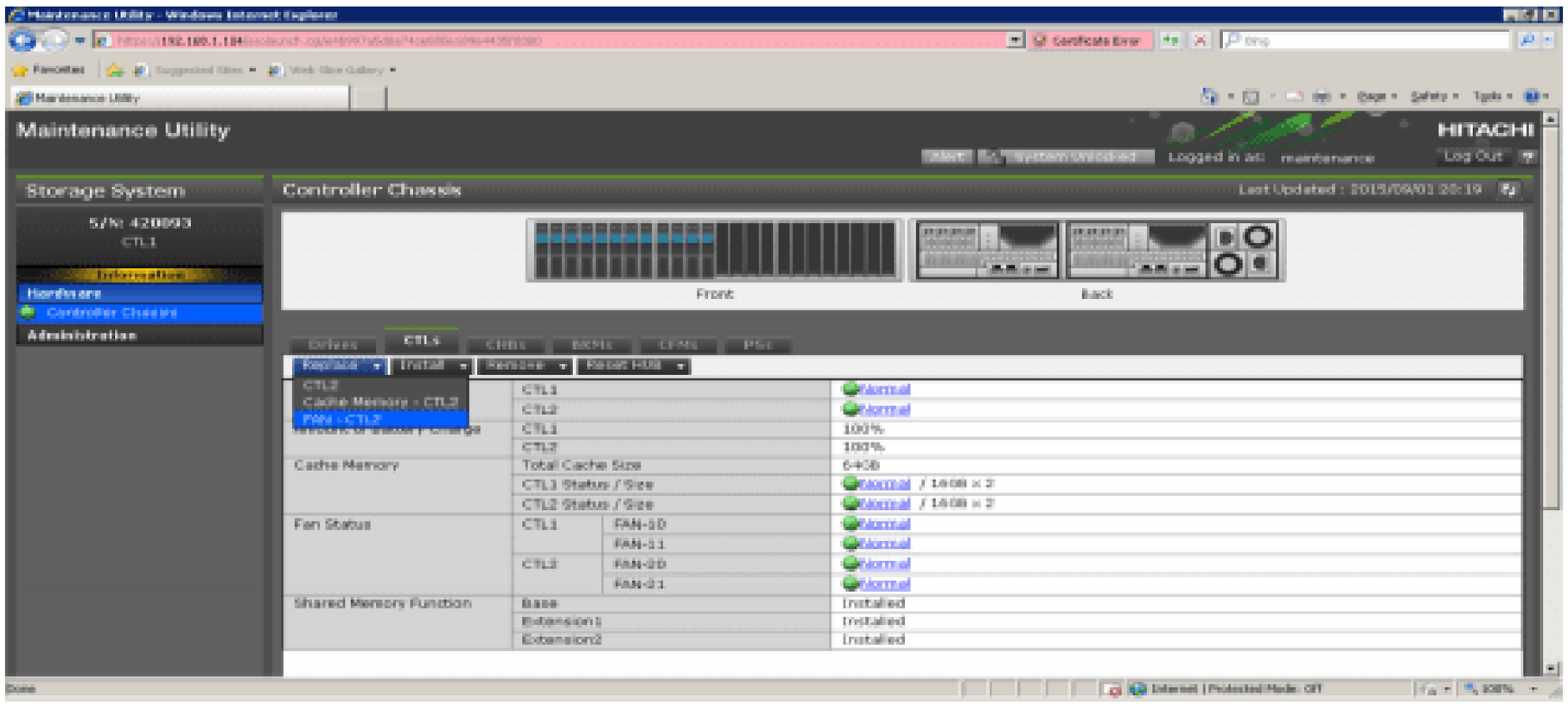



MPC
Execute
Mode
Help
Serial No. 410399
View Mode
Maintenance
Install
Information
Monitor
Web Server Status
Diagnosis
Auto Dump
Maintenance Utility

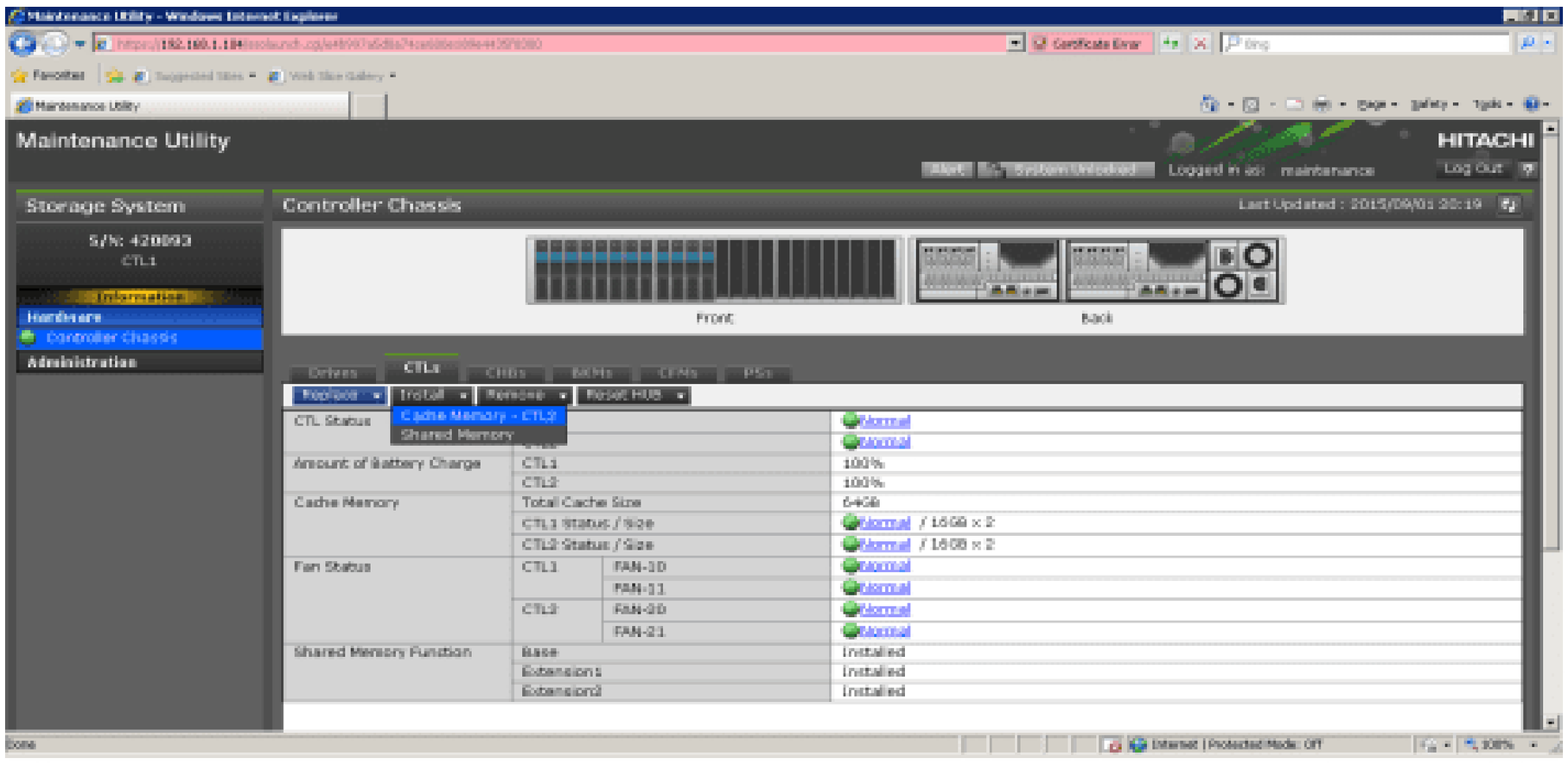
# 第六章 硬件更换

任何部件的更换都必须在十分钟内完成。

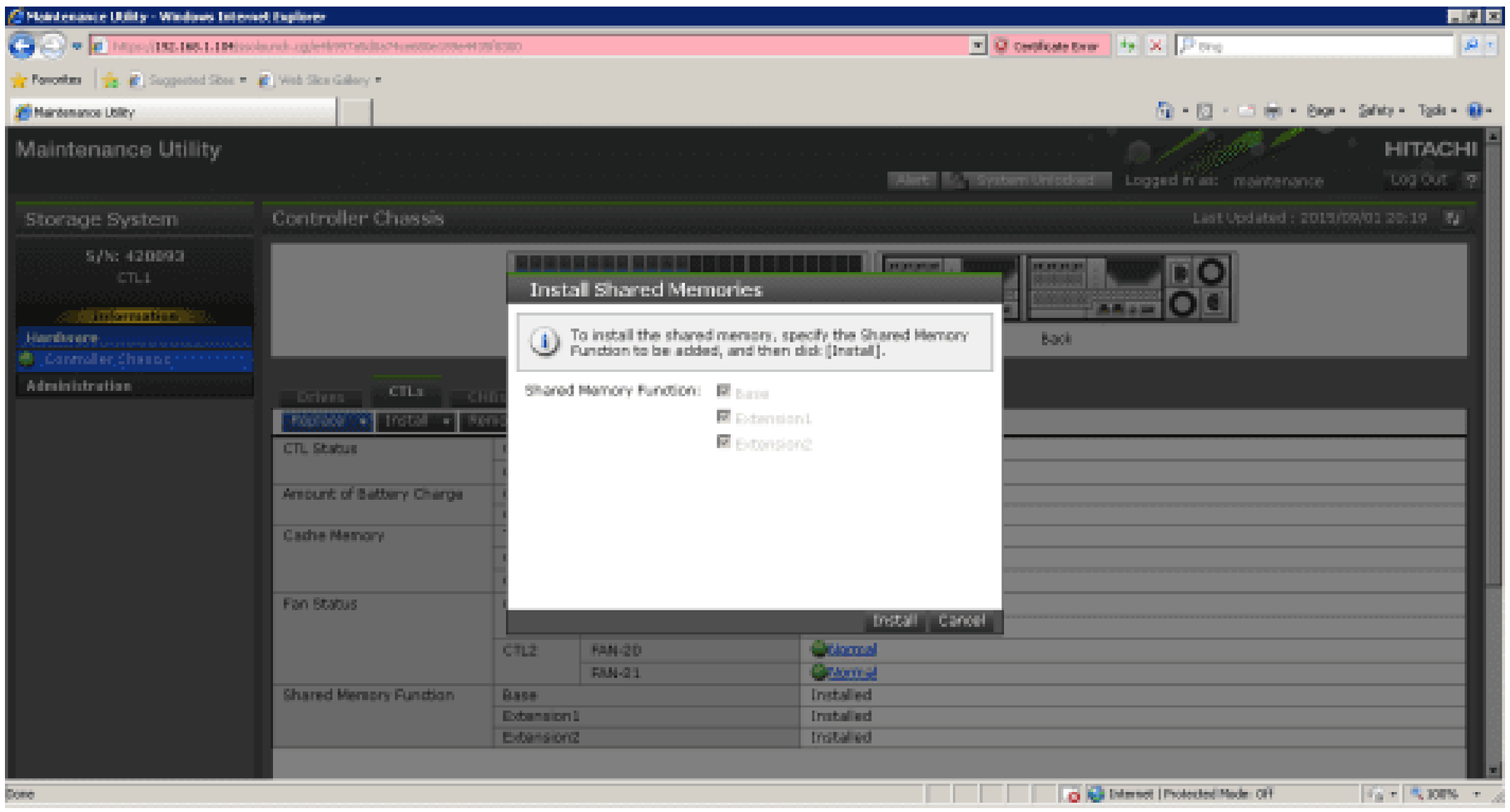
控制器 Replace，更换 CTL，Cache Memory，FAN



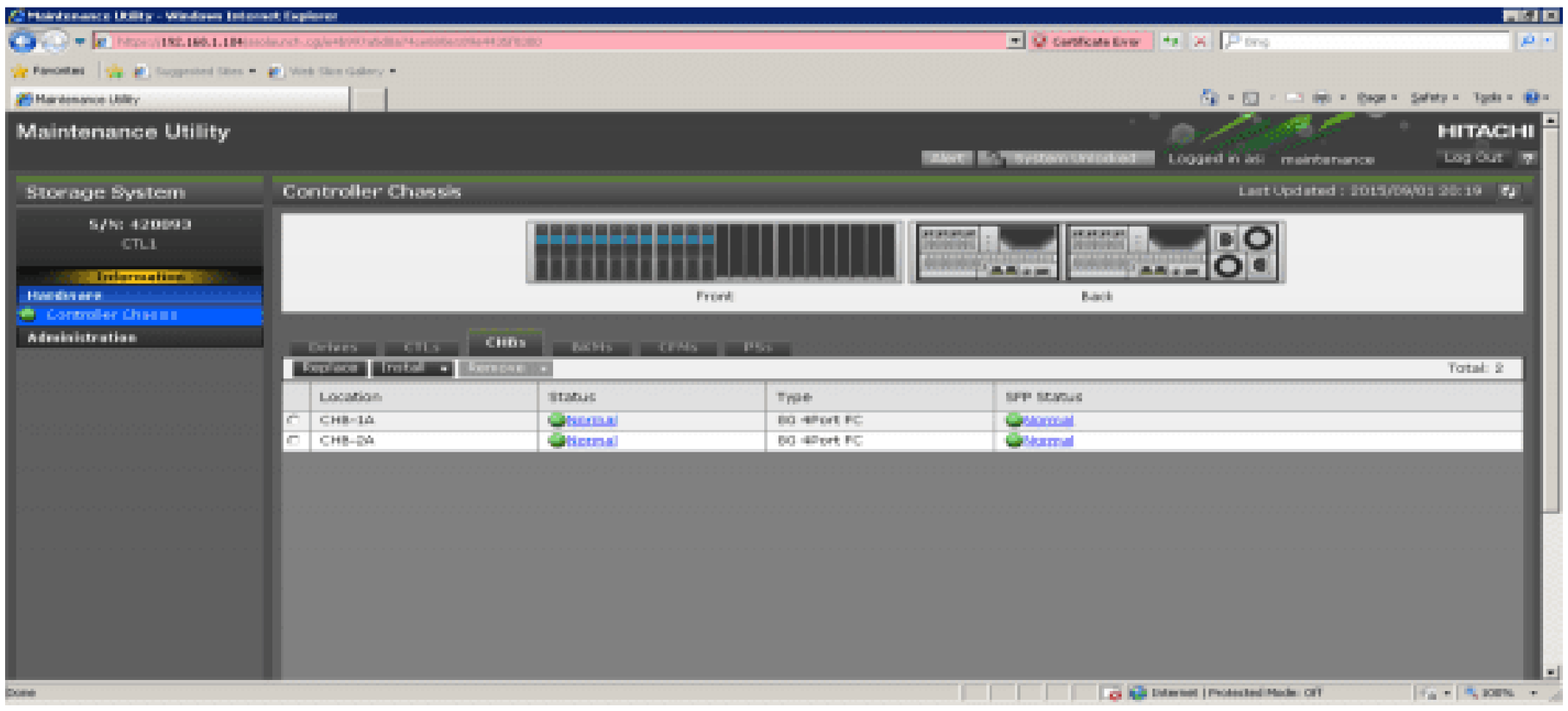

安装 Cache Memory



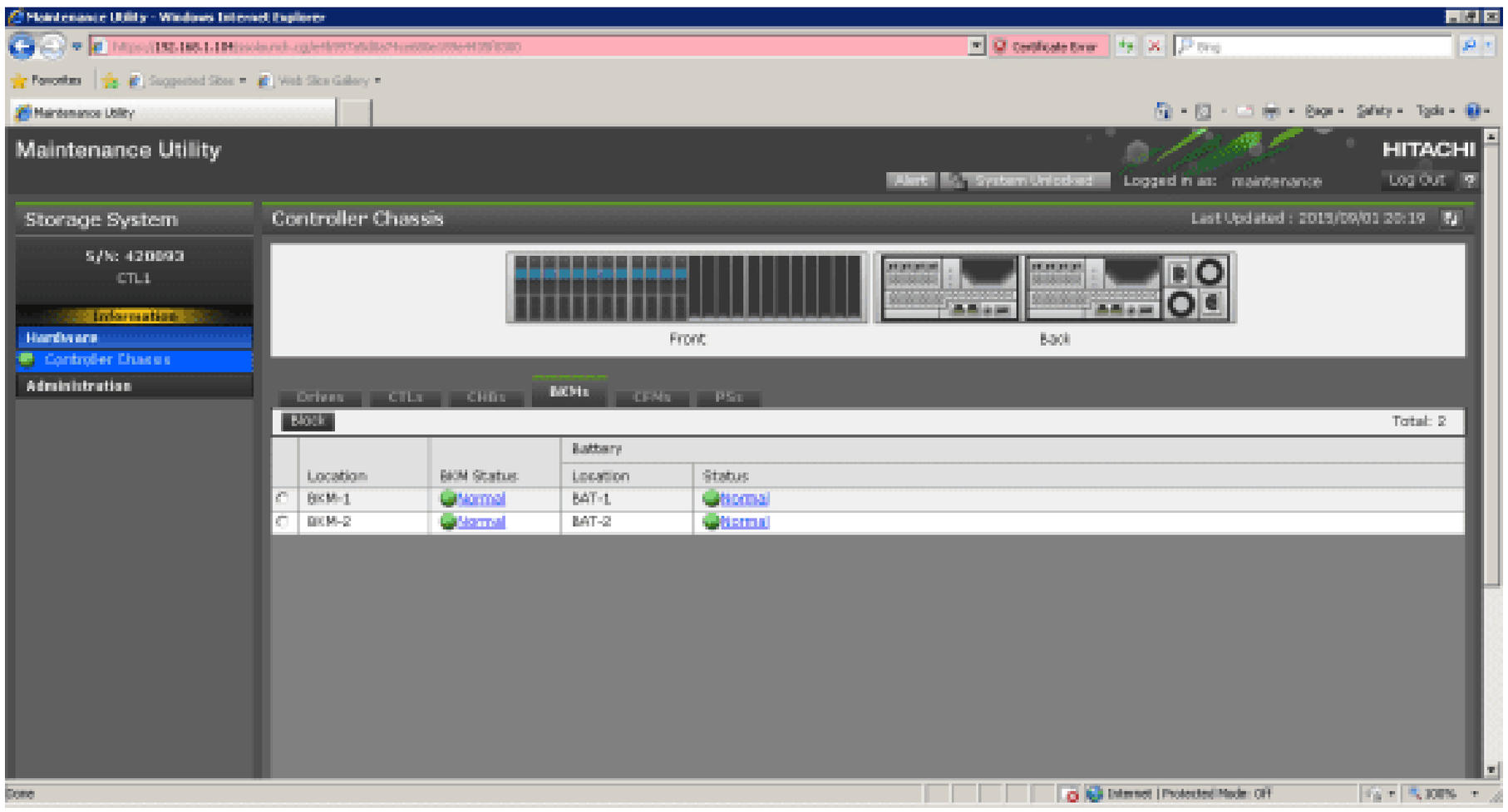

配置 Shared Memory


Maintenance Utility
HITACHI
Storage System
Controller Chassis
Install Shared Memories
To install the shared memory, specify the Shared Memory Function to be added, and then click [Install].
Shared Memory Function:
Install
Cancel
Shared Memory Function
Base
Extension1
Extension2
Installed

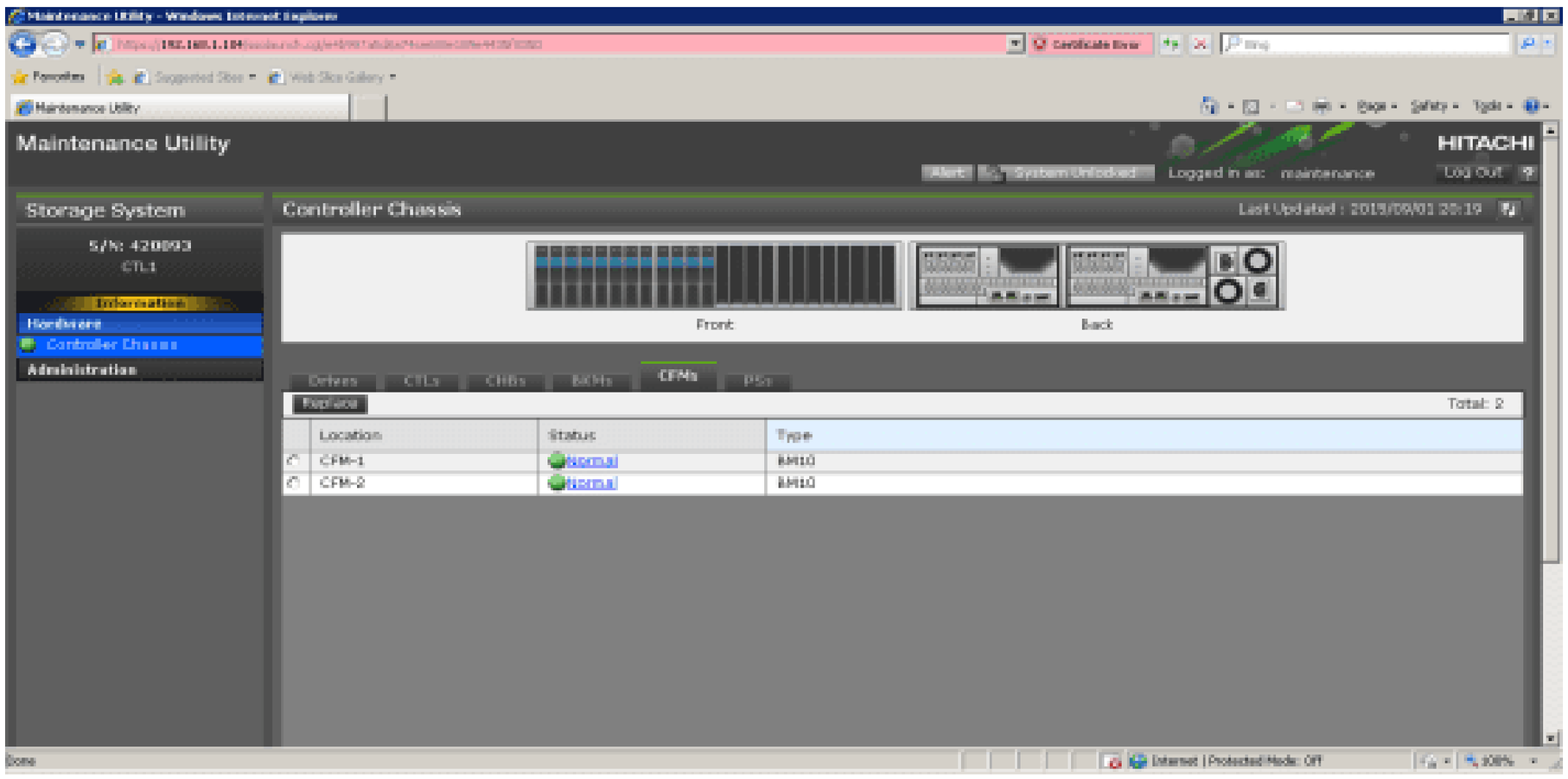
CHBs


Maintenance Utility
HITACHI
Storage System
Controller Chassis
Front
Back
CHBs
Location
Status
Type
SFP Status
CHB-1A
CHB-2A

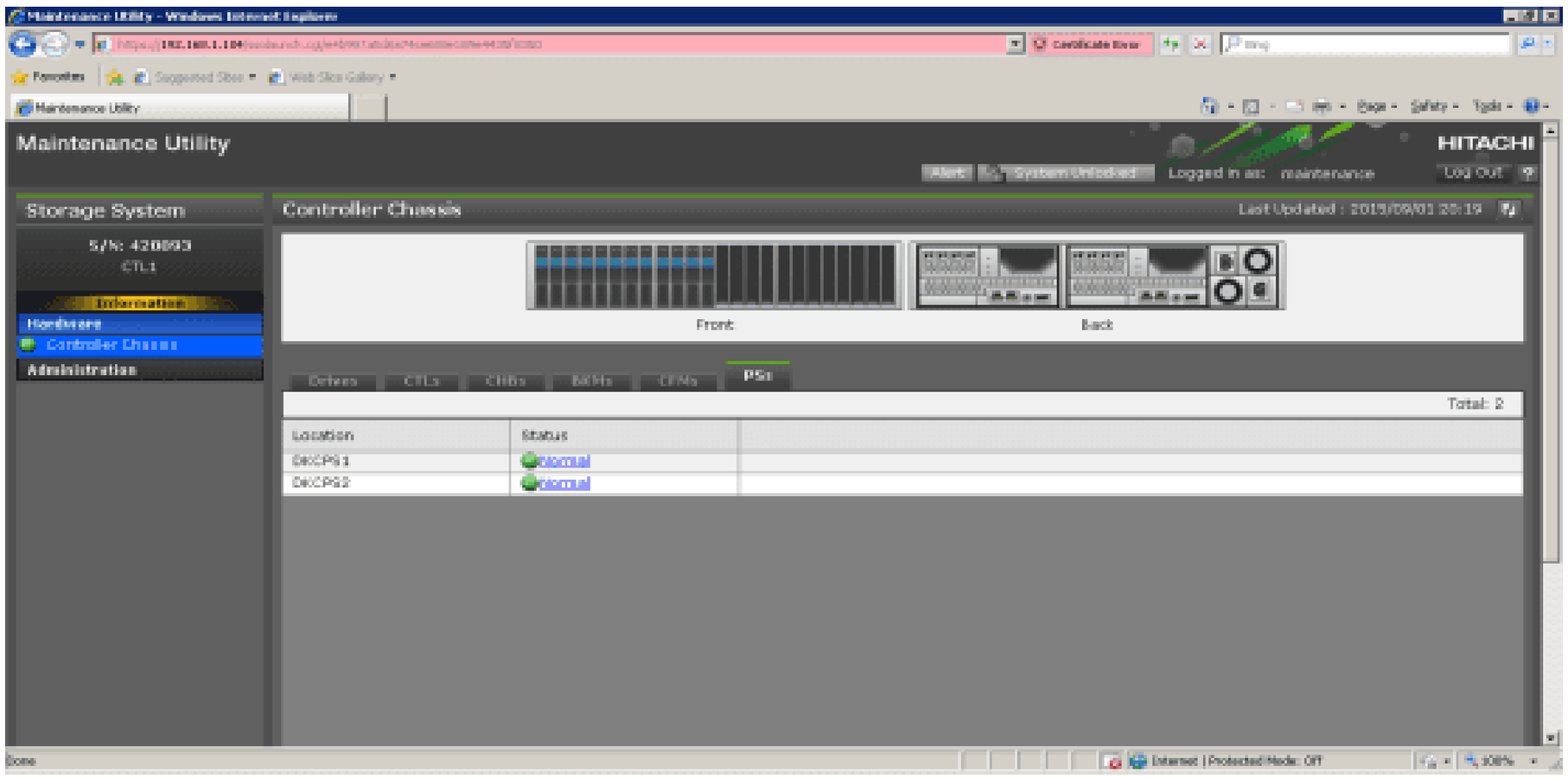
BKMs


Maintenance Utility
HITACHI
Storage System
Controller Chassis
Front
Back
BKMs
Location
BKM Status
Battery
Status
BKM-1
BKM-2
BAT-1
BAT-2

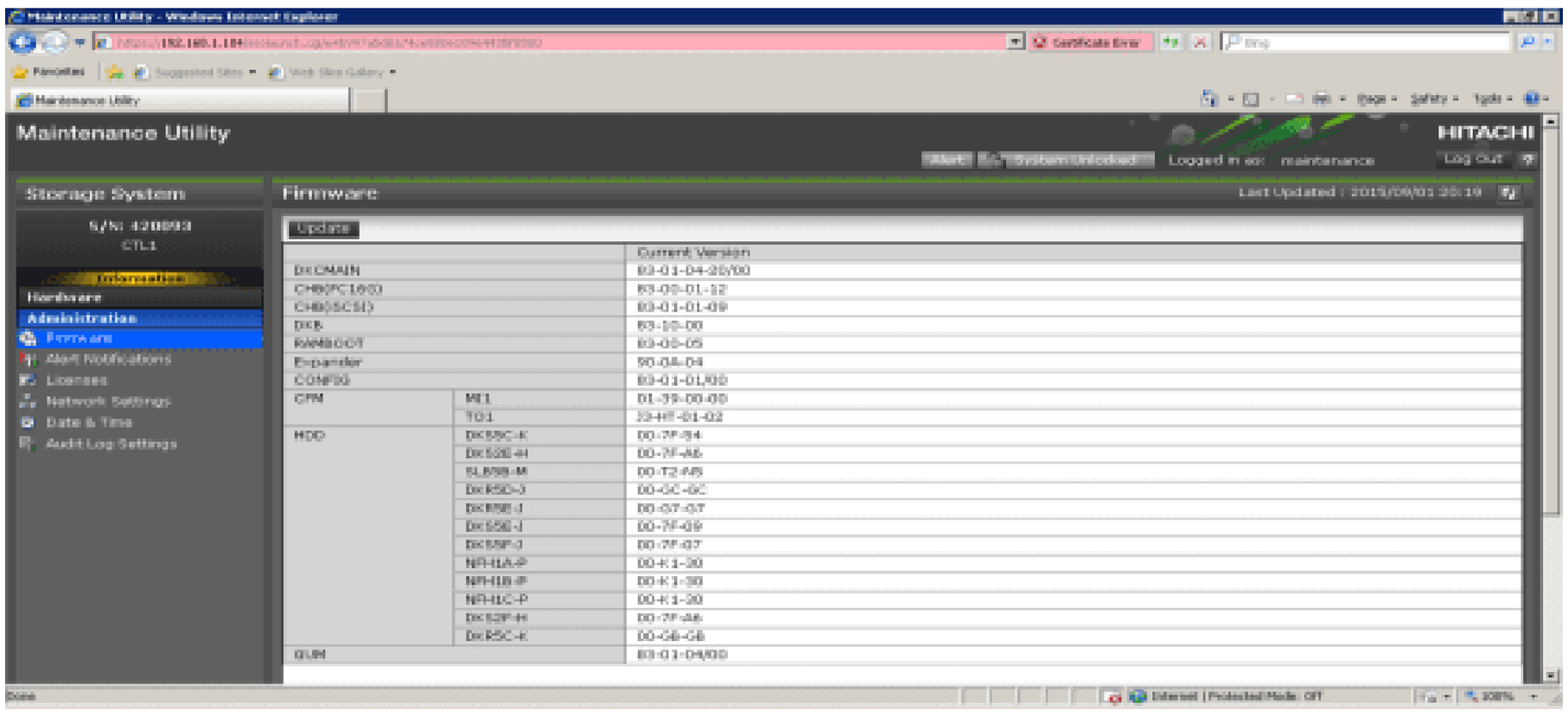
CFMs



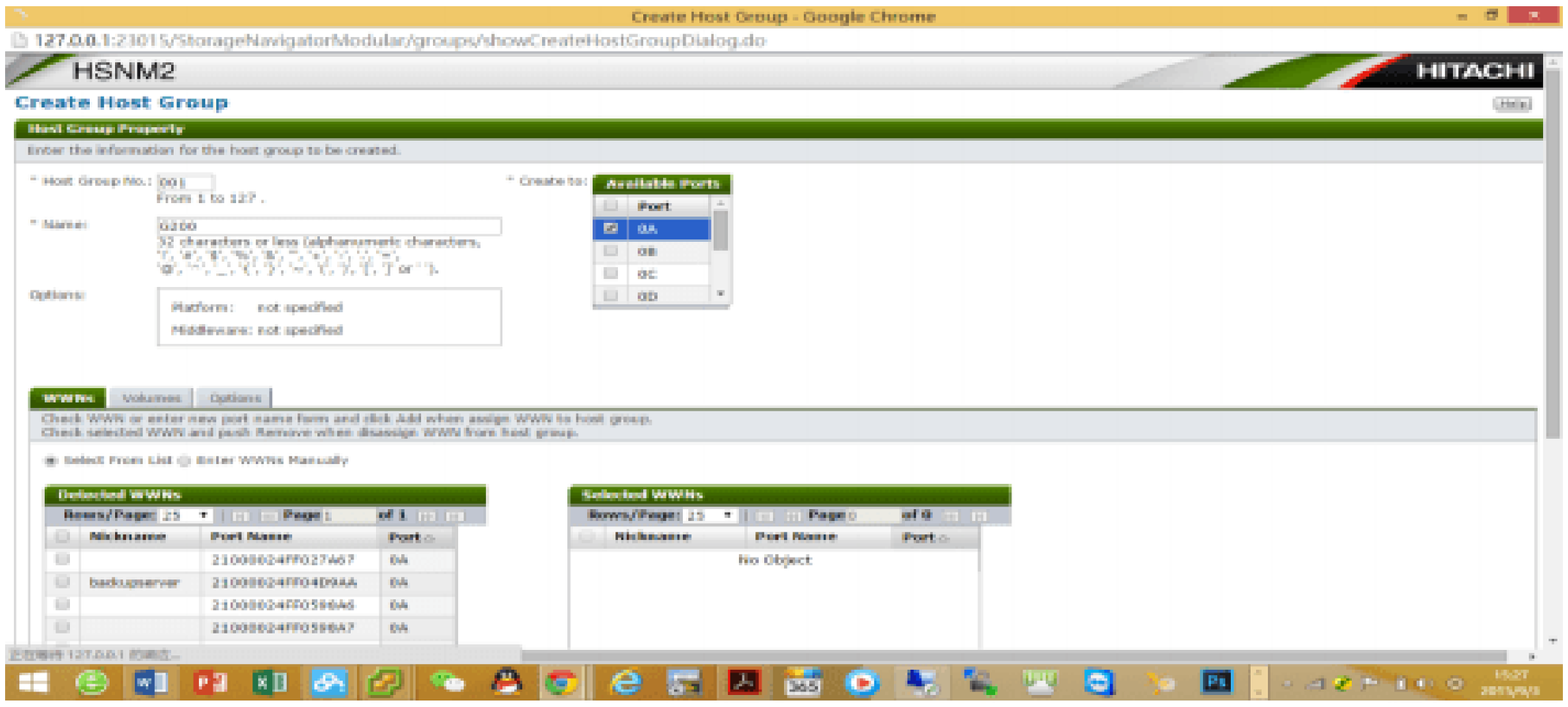

PSs

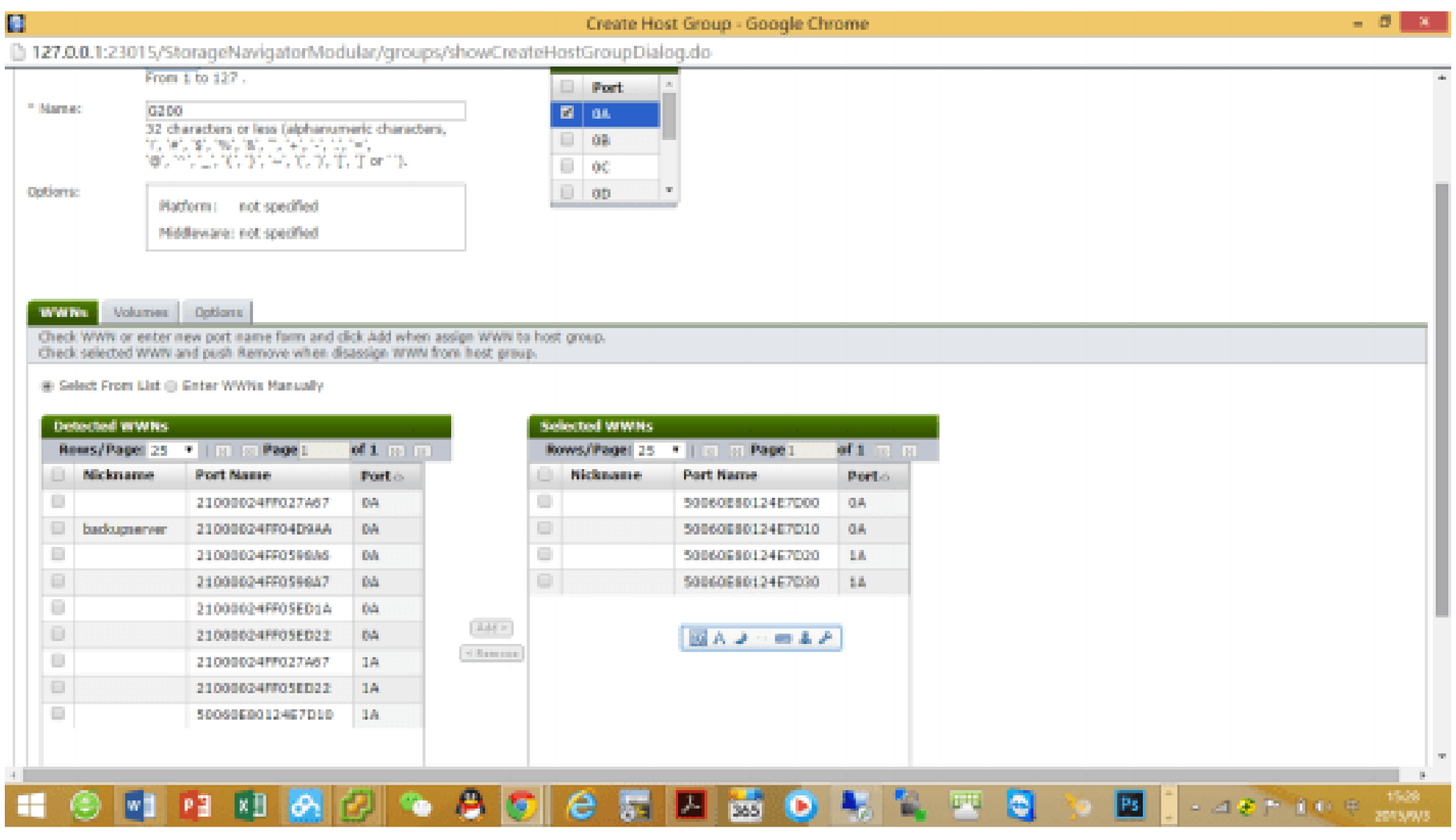


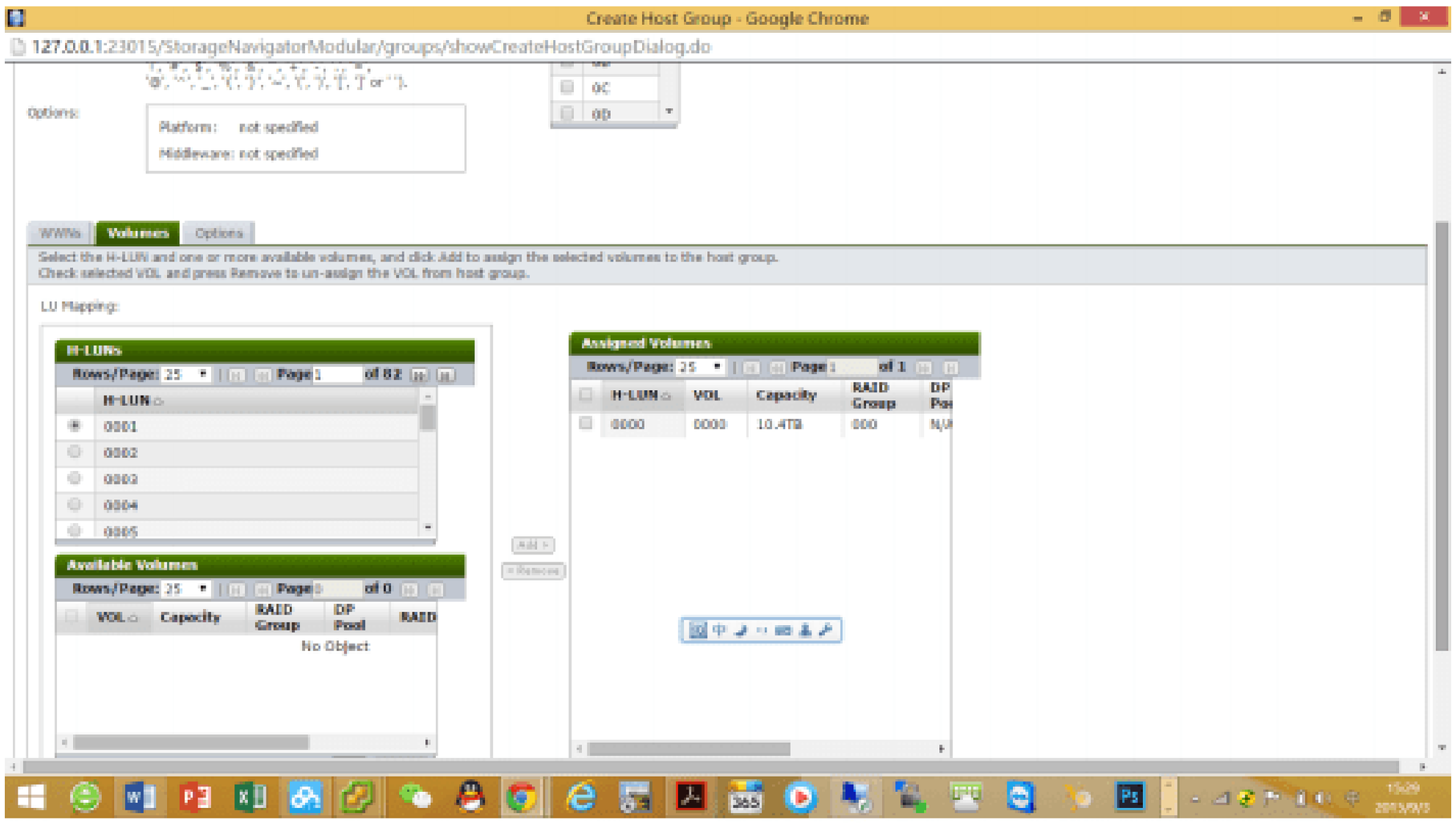

Firmware

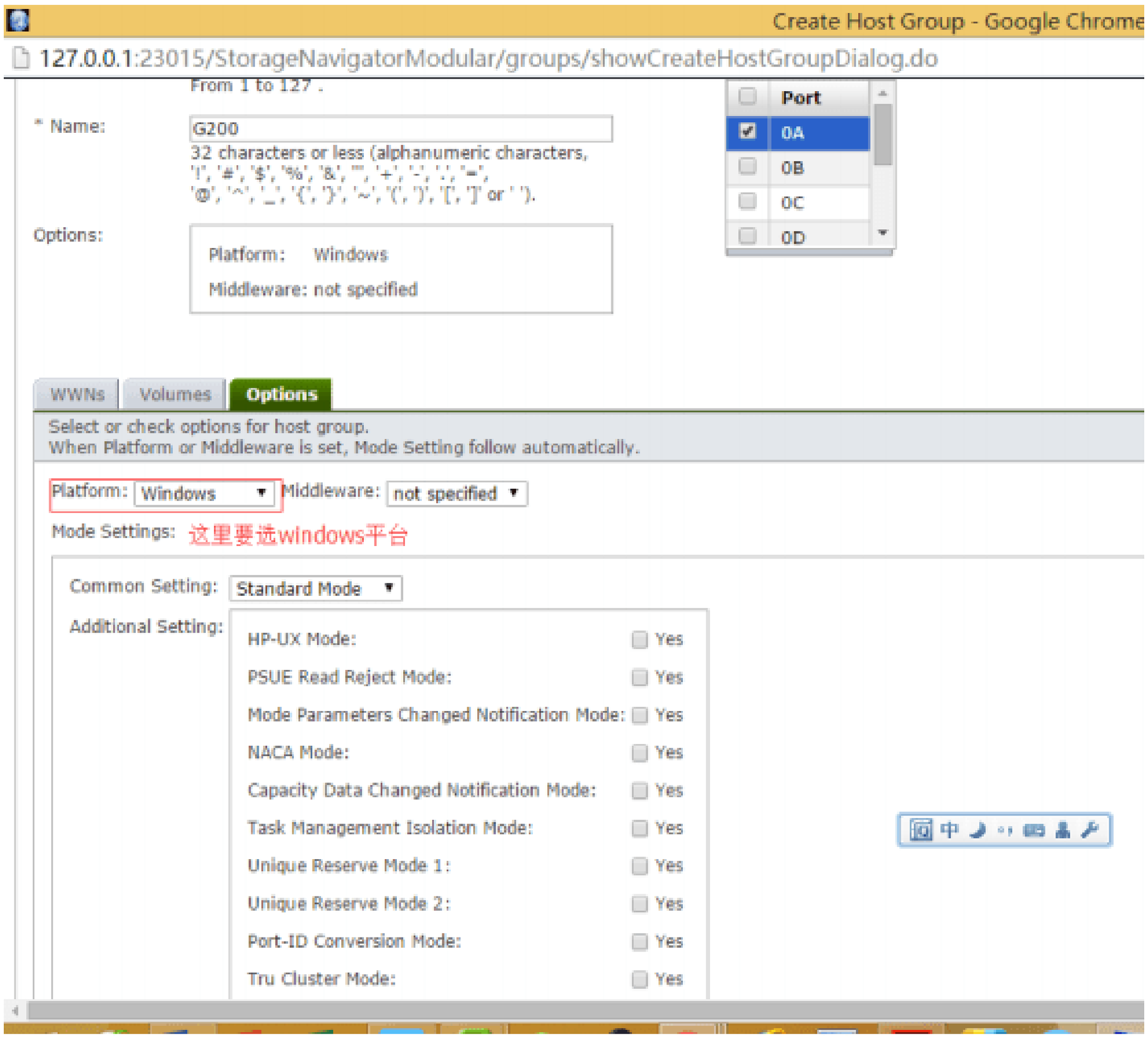


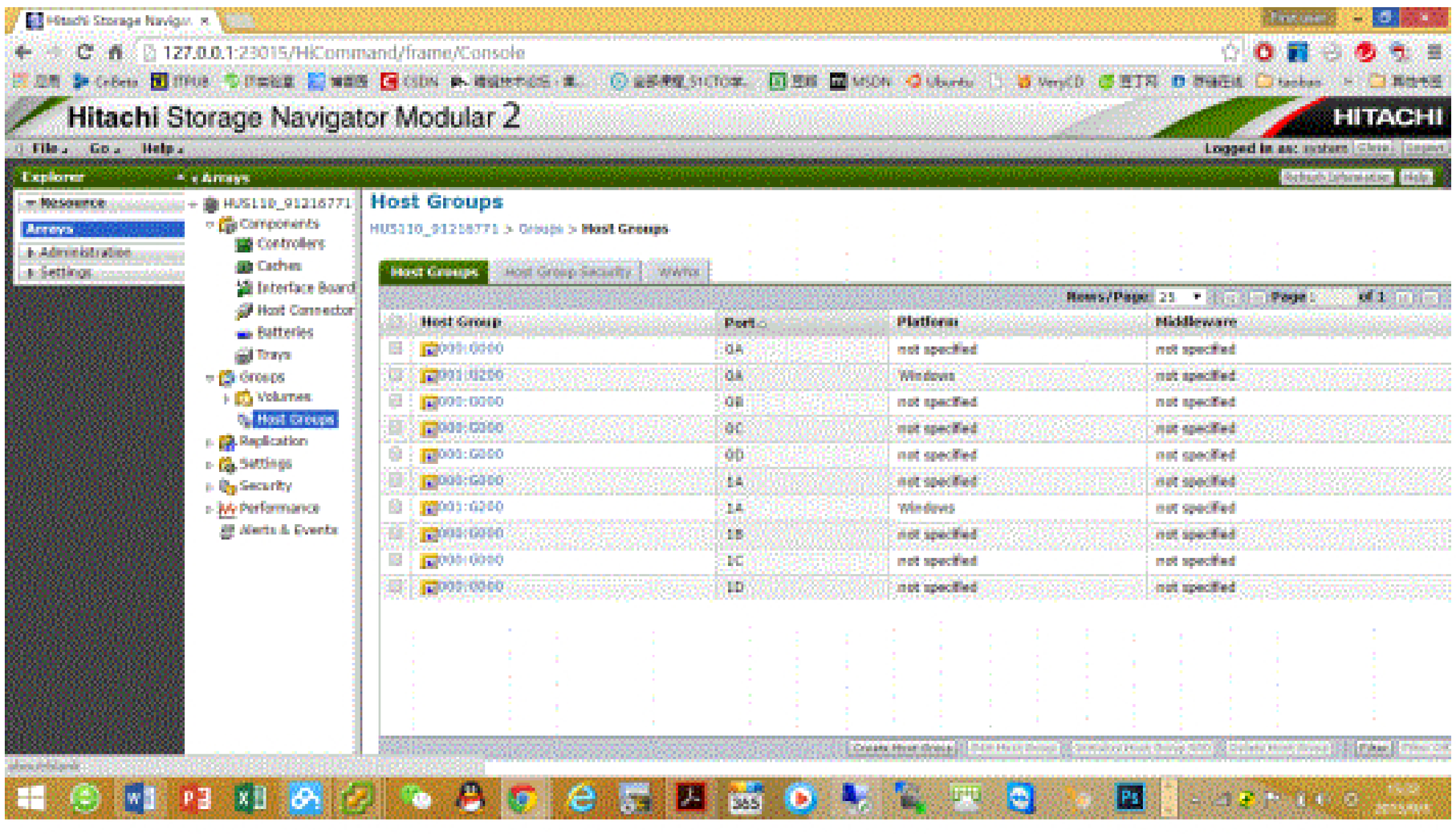
# 第七章 HUS 110 的卷映射给 G200




Create Host Group - Google Chrome
127.0.0.1:23015/StorageNavigatorModular/groups/showCreateHostGroupDialog.do
Options:
Platform: not specified
Middleware: not specified
WWNs
Volumes
Options
Select the H-LUN and one or more available volumes, and click Add to assign the selected volumes to the host group.
Check selected VOL and press Remove to un-assign the VOL from host group.
LU Mapping:
H-LUNs
Assigned Volumes
Available Volumes
No Object


Create Host Group - Google Chrome
127.0.0.1:23015/StorageNavigatorModular/groups/showCreateHostGroupDialog.do
From 1 to 127 .
* Name:
G200
32 characters or less (alphanumeric characters,
'!', '#', '$', '%', '&', '"', '+', '-', '.', '=',
'@', '^', '_', '{', '}', '~', '(', ')', '[', ']' or ' ').
Options:
Platform: Windows
Middleware: not specified
Port
0A
0B
0C
0D
WWNs
Volumes
Options
Select or check options for host group.
When Platform or Middleware is set, Mode Setting follow automatically.
Platform: Windows
Middleware: not specified
Mode Settings:
这里要选windows平台
Common Setting: Standard Mode
Additional Setting:
HP-UX Mode: Yes
PSUE Read Reject Mode: Yes
Mode Parameters Changed Notification Mode: Yes
NACA Mode: Yes
Capacity Data Changed Notification Mode: Yes
Task Management Isolation Mode: Yes
Unique Reserve Mode 1: Yes
Unique Reserve Mode 2: Yes
Port-ID Conversion Mode: Yes
Tru Cluster Mode: Yes


Hitachi Storage Navigator Modular 2
HITACHI
Host Groups
Host Group
Port
Platform
Middleware

学 海 无 涯