# DIVAR IP 7000 R2 Field Installation Guide

**Overview**
The purpose of this guide is to provide the step-by-step process for installing a DIVAR IP 7000 MARK II Recording Appliance in a field situation.

**Prior to Starting:**
Prior to starting the installation process, you should be aware of certain technical details and obtain the following:

- Consult your local IT Administrator to obtain a valid IP address range to be used with your DIVAR IP 7000 and associated devices
    - Determine if the initial installation is on a DHCP network. If not, then you will need to follow steps outlined in the document in order to assign valid IP addresses to your video devices.

- This guide is based on DIVAR IP 7000 MARK II recording appliances shipped with the BVMS 6.0 restoration DVD and Bosch IP video devices that are configured with firmware version 6.21 or lower. See the BVMS 6.0 technical release documentation to determine the recommended firmware version for the video devices that you are installing.

**What's in the box?**
There are several key items shipped with the DIVAR IP Recording Appliance that you will need in order to successfully install and deploy:

- Logitech keyboard and mouse
- Power cables
- Rack mounting rails
- Quick installation guide
- Two video adapter cables: (1) mini display port to VGA , and (1) mini display port to DVI



- Two restoration DVDs labeled DVD 1 and DVD 2
    - DVD 1 is the OS recovery DVD. This DVD is used to restore the appliance and the OS back to factory defaults
    - DVD 2 is the BVMS 6.0 Installation DVD. This DVD is used during the installation process

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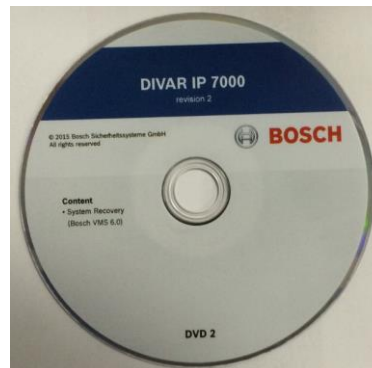
**Physical Installation and Connections**
When deploying the DIVAR IP 7000 MARK II for the first time there are certain physical connections on the back of the appliance that must be made for the deployment to be successful.


Rear view:
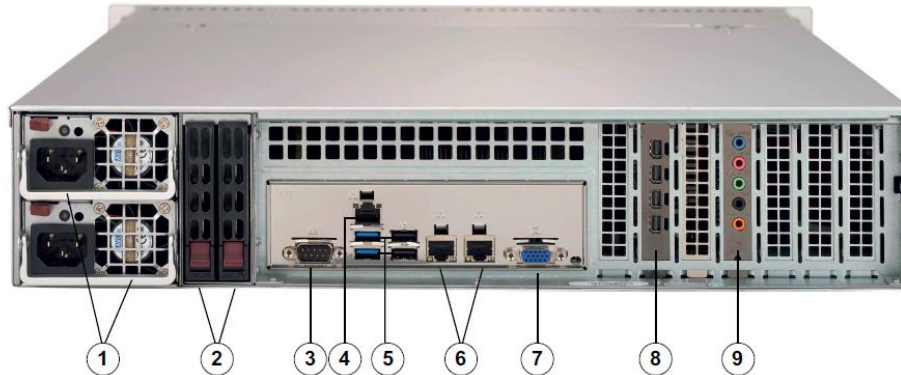
- Ethernet Connections (6): There are two Ethernet ports on the DIVAR IP 7000. These ports are *teamed* as a virtual NIC within Windows Server and must remain teamed to insure proper functionality of the recording appliance. By default, the recording appliance is configured for DHCP network communications. Configuring a static IP address via the *Configuration Wizard* will be covered later in the installation guide.
  - o *NOTE: The appliance must have an active network link during the installation process!*
  - o *NOTE: If no DHCP server is available the appliance will default to 192.168.0.200*

- Video Connections (7, 8): Viewing the back of the appliance, there are two video connections; a VGA adapter (7) and a four port Display adapter (8). The VGA adapter is disabled by default and is labeled as such. You must use one of the mini Display port adapters included with the appliance



- When connecting a monitor to the appliance, the top most mini Display port is used as shown here



*After the appliance has been physical installed, and all connections have been made, apply power.*

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# Deploying an Appliance with Drives Included

DIVAR IP Recording Appliances can be ordered with or without storage drives. This section of the field installation guide will cover the step-by-step process of deploying a recording appliance that is pre-populated with storage drives.

**Initial Boot Process:**
As an installation technician, there are certain things during the boot process that you need to be aware of from a functionality and troubleshooting standpoint.

On all DIVAR IP 7000 Recording Appliances, the RAID array and all associated storage drives are managed by an LSI Controller card. During the boot process, you should see the LSI Controller BIOS check and a full inventory of the installed storage drives.

- By default all installed drives should be seen as one RAID 5 Virtual Drive. In the example below, we see a fully populated 3U appliance with 16 drives.

```
ID  LUN VENDOR    PRODUCT              REVISION      CAPACITY
--  --- ------    -------              --------      --------
8   0   ATA       HGST HUS724040AL     AA70          3815447MB
9   0   ATA       HGST HUS724040AL     AA70          3815447MB
10  0   ATA       HGST HUS724040AL     AA70          3815447MB
11  0   ATA       HGST HUS724040AL     AA70          3815447MB
12  0   ATA       HGST HUS724040AL     AA70          3815447MB
13  0   ATA       HGST HUS724040AL     AA70          3815447MB
14  0   ATA       HGST HUS724040AL     AA70          3815447MB
15  0   ATA       HGST HUS724040AL     AA70          3815447MB
16  0   ATA       HGST HUS724040AL     AA70          3815447MB
    0   LSI       Virtual Drive        RAID5         57223680MB
1 Virtual Drive(s) found on the host adapter.
```

- After the LSI BIOS check, during the appliance's Power-On-Self-Test (POST), you should see two physical SSD Drives. These two drives are mirrored and contain the appliance's operating system, Windows Storage Server 2012.

```
Physical Devices:
ID   Device Model    Serial #                    Size Type/Status(Vol ID)
0    INTEL SSDSC2BB12 WL6074013S120LGN            111.7GB Member Disk(0)
1    INTEL SSDSC2BB12 WL60740134120LGN            111.7GB Member Disk(0)
Press <CTRL-I> to enter Configuration Utility...
```

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- After the appliance's boot process, you will receive a "BOSCH" splash screen. Below the splash screen are keystroke options that are used for diagnostic and troubleshooting purposes only.
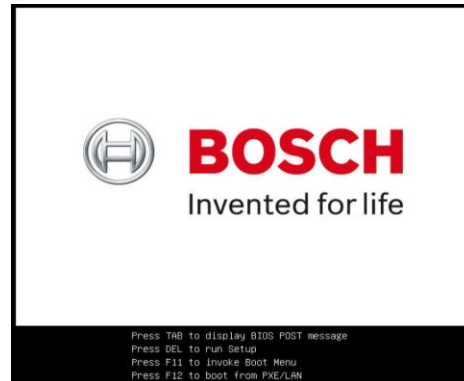


- After a few moments, Windows Storage Server 2012 will prepare to run for the first time. You should see the Server 2012 splash screen as shown here.
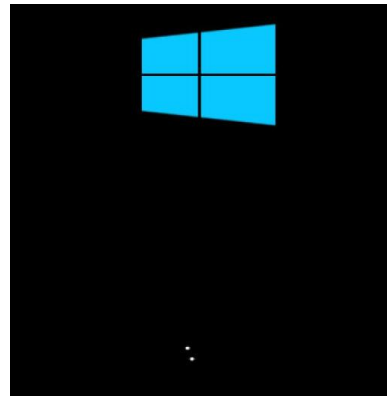


- The Windows splash screen will be followed by an *Initial Settings* page:
    - o Select the preferred language for the installation location
    - o Select "Next"
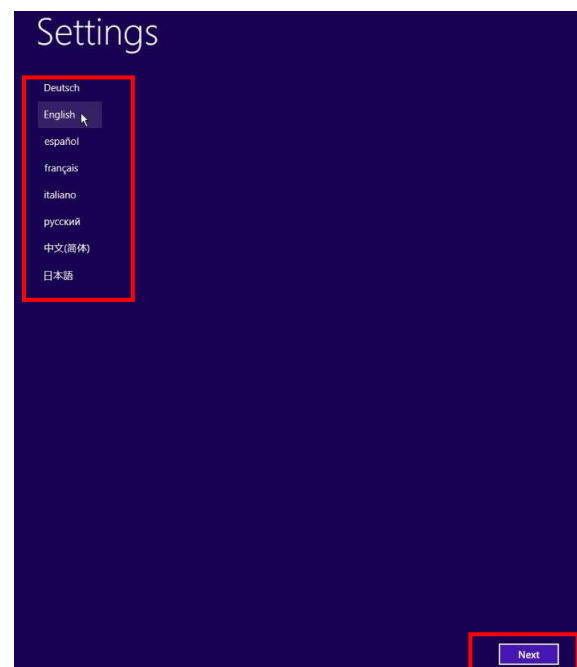
- After selecting the operating system's language, you will be prompted to select the following:
    - Country or region
    - App language
    - Keyboard layout

- After making the appropriate selections, select the "Next" tab
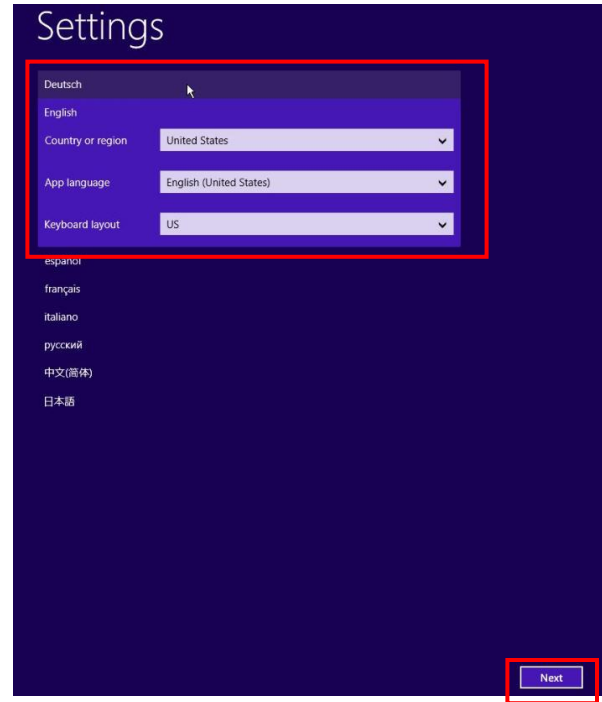
- After selecting the "Next" tab, you will be presented with a "License Agreement" page. Select the "Accept" tab in the lower right hand corner of the screen.
    - This will be followed by an "Administrator: Windows Power Shell" window.
    - Automatic scripting will run for several seconds, do not interrupt the process
    - After the scripting process has finished, the appliance will reboot

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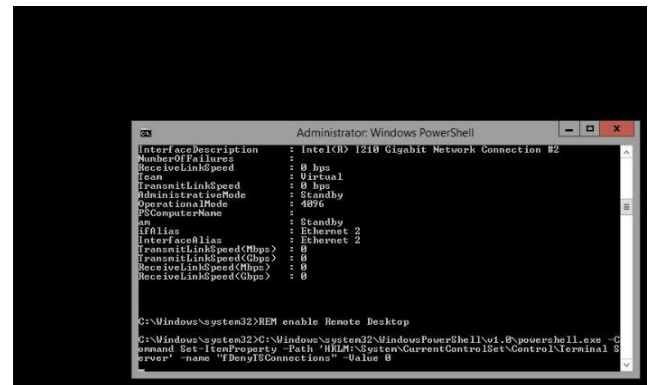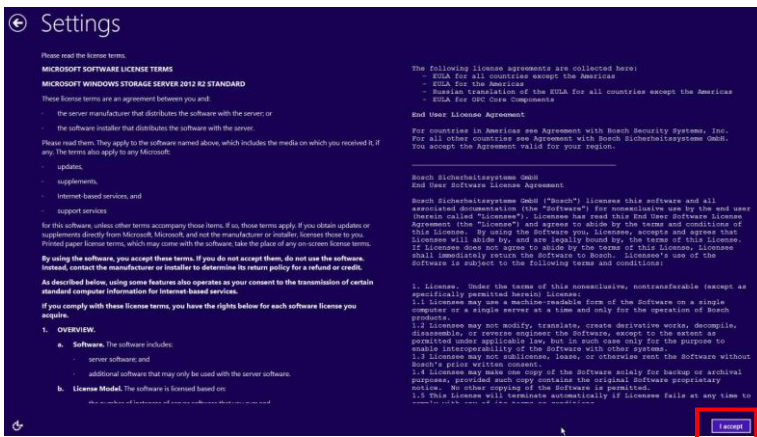
- *After the appliance reboots,* you will be presented with a standard log-in screen. To start the log-in process, utilize "CTRL+ALT+DEL"
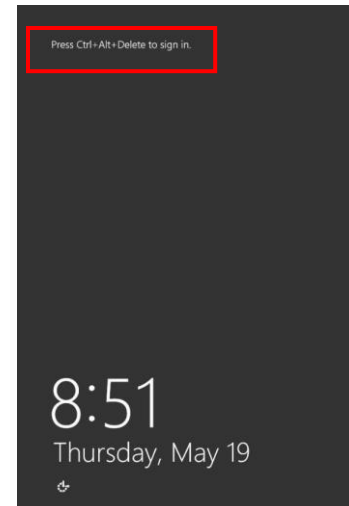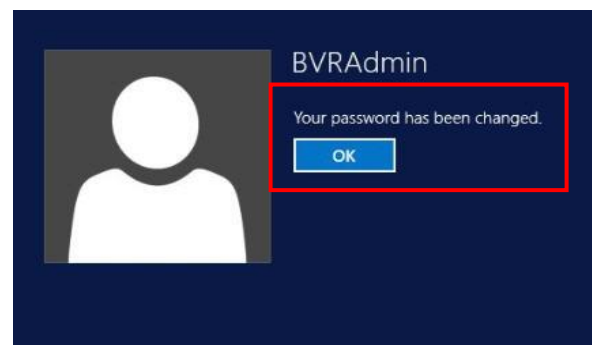


- You will be prompted to log into the appliance's built-in administrator account "BVRAdmin"
  - o The default password for this account is *WSS4Bosch*. This is case sensitive
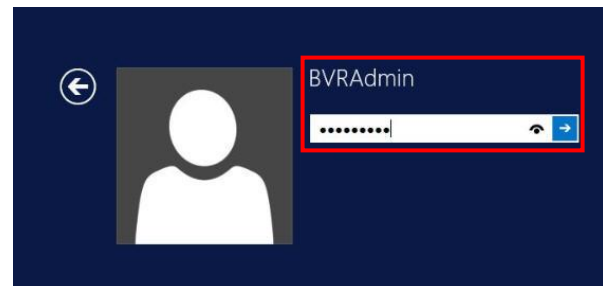


- You will receive a message that *"The user's password must be changed before signing in"*
  - o Select "OK"
  - o When prompted, enter the default password (WSS4Bosch) as the "old" password
  - o Enter a new password for the BVRAdmin administrative account
  - o Select OK
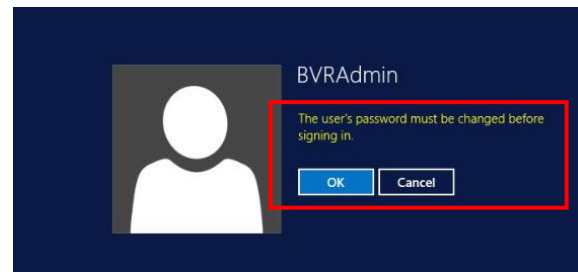


- You should receive a message that "Your password has been changed"
  - o Select "OK"

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- After selecting "OK", you will be prompted to insert either DVD #2, the BVMS 6.0 Installation DVD, or a USB containing the BVMS 6.0 "Appliance" installation package. If DVD #2 is not available, the appliance installation package can be downloaded from the web.
  - If installing from a USB Device, you may have to navigate to the location of the installation package



- After inserting DVD #2, the installation interface should auto detect the installation package, and the installation process will begin
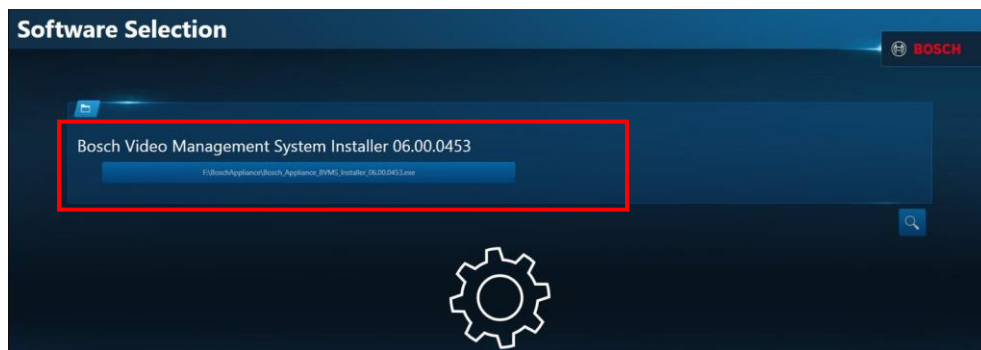


- Depending on the state of appliance's storage, the installation process may take some time. If installing the software on to an appliance with a newly created RAID array, this install process will configure and format the appliance's storage array. **DO NOT** stop or exit the installation process.
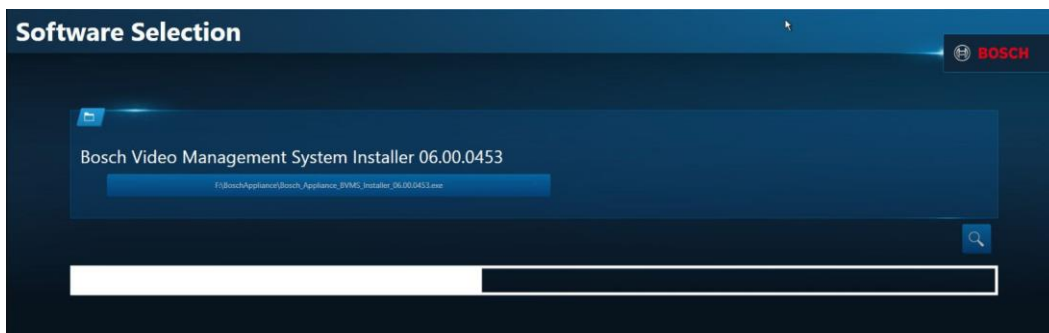
- After BVMS has been installed, and all storage has been configured, the appliance will reboot, and you will be presented with a "Kiosk" screen. This is the default boot screen for all recording appliances and supplies three options for interaction:
    - o *Configuration Wizard*: This option will allow quick configuration of a new system
    - o *Operator Client*: This option opens BVMS operator Client and provides live and recorded video, as well as alarm monitoring
    - o *Configuration Client*: This application allows for more detailed configuration that is not possible via the "Wizard."
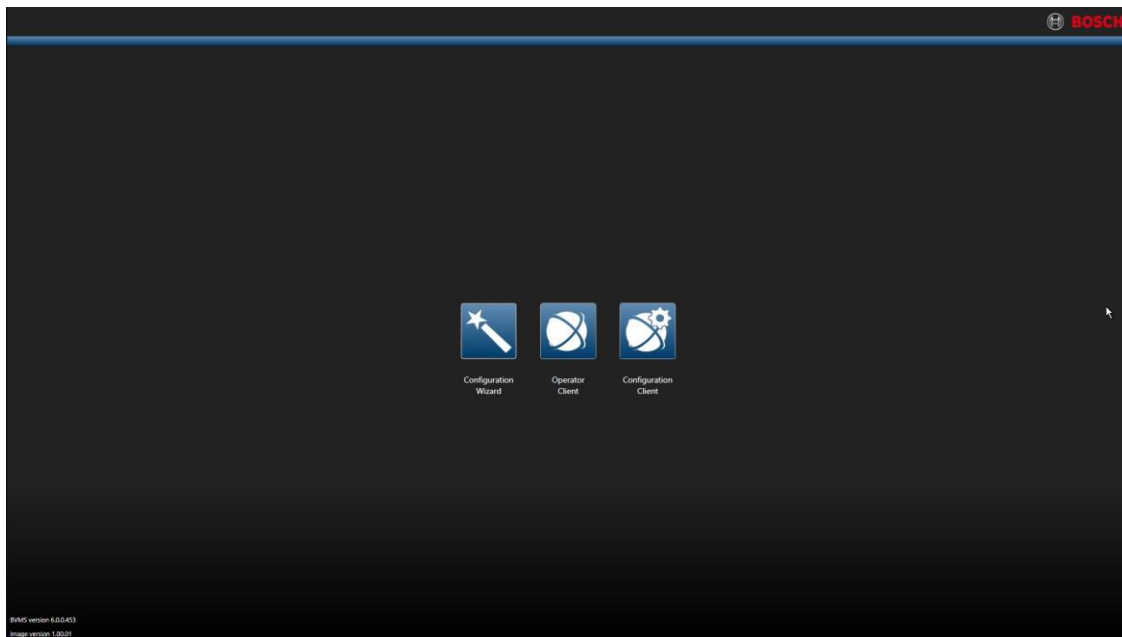


*Note: This installation guide covers only the Configuration Wizard.*

**BVMS Configuration Wizard Welcome Page:**

The Configuration Wizard consists of a 10-step process that must be completed in sequential order working left to right. Once the "*Configuration Wizard*" icon has been selected, the Wizard will open to the "Welcome" page:
   • The welcome message outlines prerequisites prior to starting the wizard
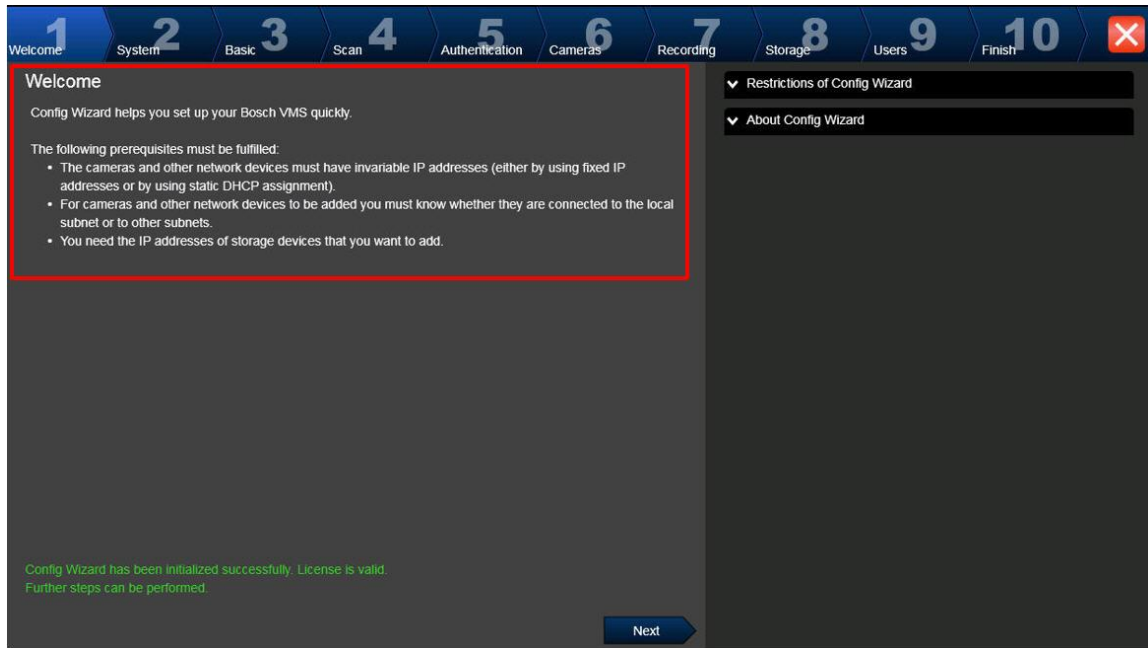


Located on the right hand side of the "Welcome" page is the Config Wizard restrictions. Specific items that need to be taken into consideration are as follows:

   • Wizard creates or edits users for existing local user groups
   • All encoders are automatically added to the local configured VRM
   • All encoders are placed under root node in Logical Tree
   • Wizard can be run multiple times, and the changes are additive

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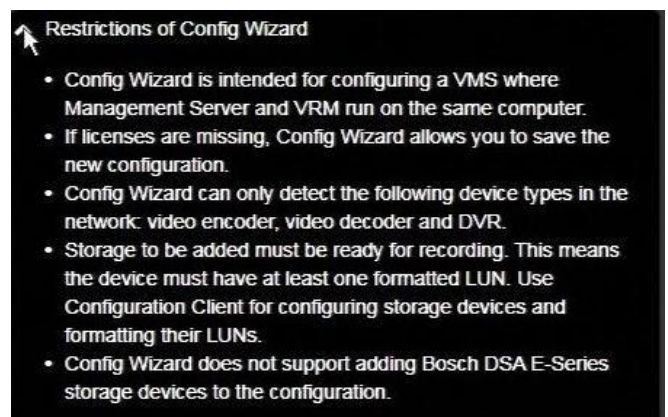
**Step 2 System:**

The second step of the Configuration Wizard is the "System" page. This step provides the capability to change the following:
- Computer name
- Network adapter
- IP settings

*If the default settings are changed in this step, a reboot of the appliance is required prior to proceeding.*



Located at the bottom of this page is "Time Settings." This menu provides the capability to change the appliance's time and date settings to include:
- Time Zone
- Daylight Savings Time
- Time Server



If there is no time server available in the local area network, the "Time server" setting should be left set to: time.windows.com

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**Step 3 Basic:**

The "Basic" page provides the following:
- All information on any existing BVMS configuration
- Status of the appliance's Video Recording Manager (VRM)
- The ability to select a local area network adapter. On appliances, this should be left default as the NICs are teamed together by default

The right hand portion of the page provides two menus, the "Import configuration" menu and the "Port Mapping" menu.

- If working with a factory defaulted appliance, or you want to apply an existing configuration to a new machine, select the "import configuration" drop down menu, then select the "import configuration" tab. This will allow you to navigate to and import a previously exported BVMS configuration

- If you are configuring your appliance to communicate over wide area networks, select the "Port Mapping" dropdown. Select the "Enable PortMapping" checkbox. Enter the public IP address of the router which the appliance will reside behind
- The wizard will automatically create a port mapping table for all devices added after this point.
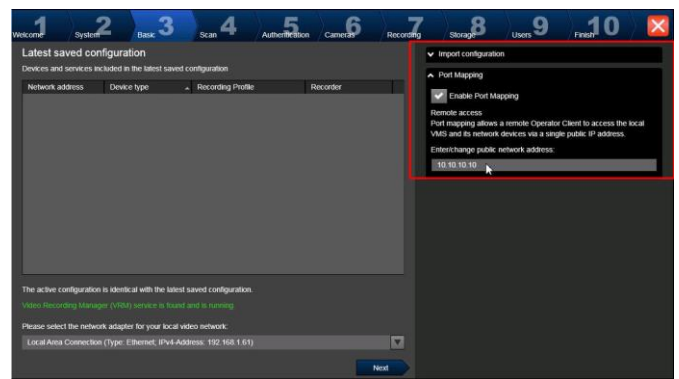


**Step 4 SCAN:**

The "Scan" menu provides a list of Bosch video devices that have been scanned in the local area network. This menu allows you to:
- Select or unselect the devices that will be added to your BVMS system
- Change your device "Scan options"
- Change the IP addresses of all the current devices that have been scanned



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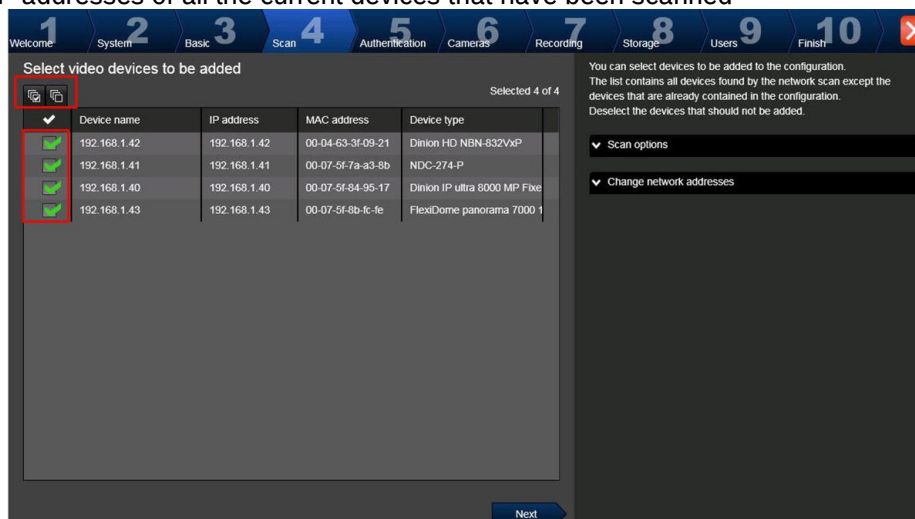
To the right of the page, there are two menus, the first of which is "Scan Options". The "Scan options" menu provides two options:
- Local subnet only
- Across subnets: Across subnets provides a multicast scan across all subnets located on the same "physical" network

The second menu option on this page is "Change network addresses." This menu allows you to change the network addresses of all "selected" devices in the scan area
- Enter a base IP address as a starting point
- Select "Change IP addresses"
- All devices will be assigned a dynamic IP Address based on the starting point IP address
- Once IP addresses have been assigned the Wizard will rescan all devices
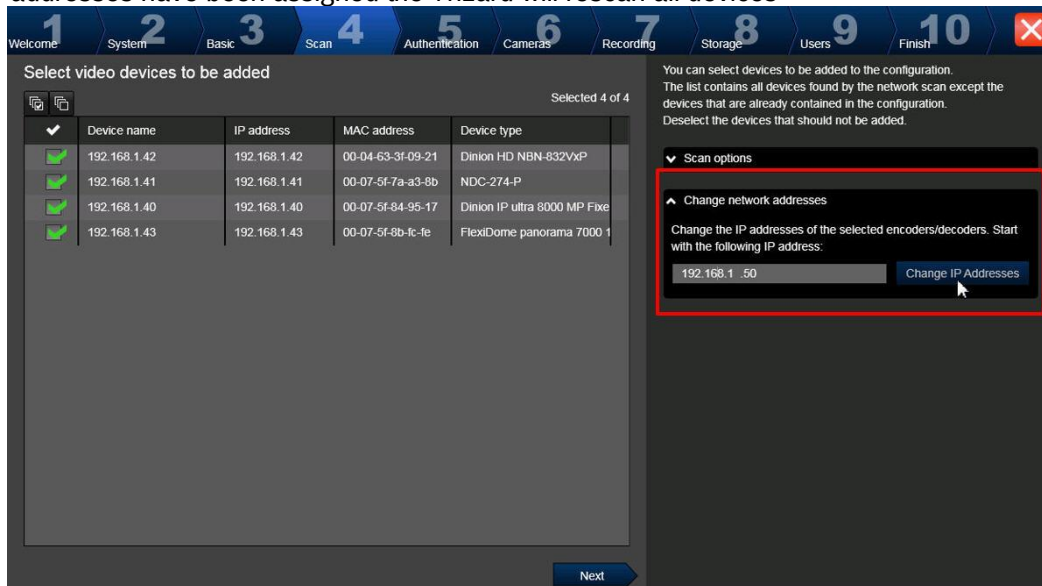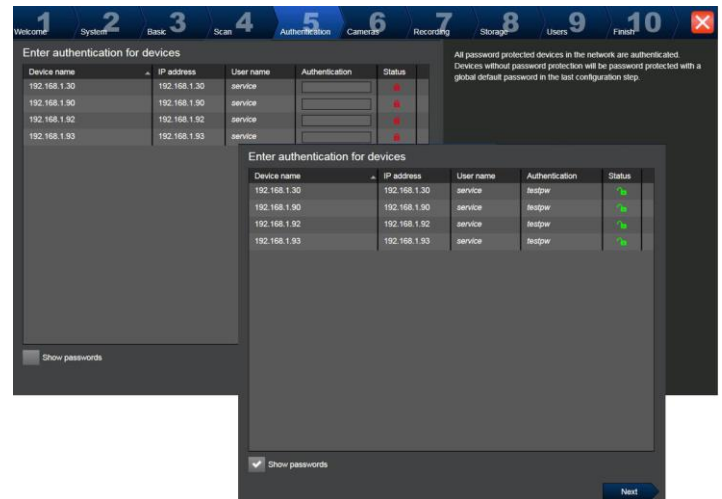


**Technical Note:**
By default, all currently released Bosch video devices are factory defaulted for DHCP communications. If no DHCP server is available, all devices will fall back to a default IP address of 192.168.0.1

**Step 5 Authentication:**

Step 5 of the Wizard is the Authentication page. On an initial run through of the Configuration Wizard, this page should appear blank as new added devices have not been assigned any password or account configurations.

If you are adding previously installed video devices that have been secured with passwords, the "Authentication" menu allows you to enter the proper credentials prior to adding them to the new BVMS system:

- Enter the proper account name

- Enter the current "password" in the "Authentication" column

**Technical Note:**
If working with BVMS 6.5, the "Authentication" page will have a "Change Default password menu", and is now optional. In previous BVMS versions, this menu option was located in Step 10 "Finish" and was a mandatory setting.

**STEP 6 Cameras:**

The "Cameras" menu allows you to rename cameras, select the Recording Quality for Stream 1, and provides a preview of your video devices.

To change the name of a camera:
- Highlight the device
- Select the "pencil" icon
- Enter the desired name
- **DO NOT USE SPECIAL CHARACTERS WHEN NAMING CAMERAS**
- **!@#$%^&*()<>?= NO**
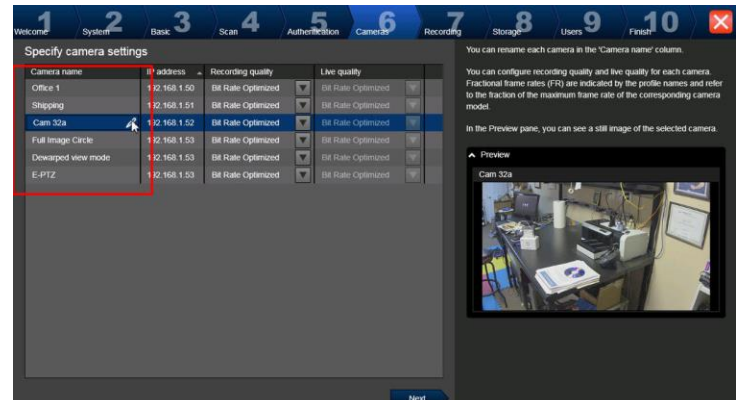
The "Recording Quality" column allows you to change the quality settings of stream 1
- Stream 1 is the default recording stream for BVMS
- Stream 2 is the default viewing stream. Currently all adjustments to stream 2 must be performed with Configuration Client
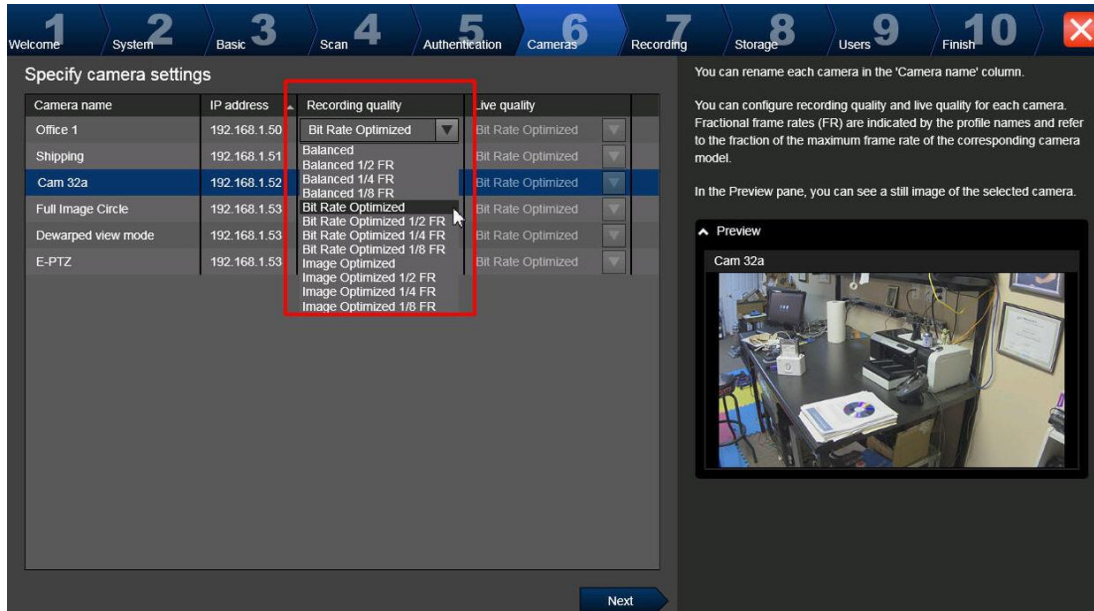


This menu provides three general options to choose from:

- **Image Optimized:** This setting is optimized for image quality. This can burden the network

- **Bit Rate Optimized:** This setting is optimized for low bandwidth. This can reduce the image quality

- **Balanced:** This setting offers a balance between optimal image quality and optimal bandwidth usage

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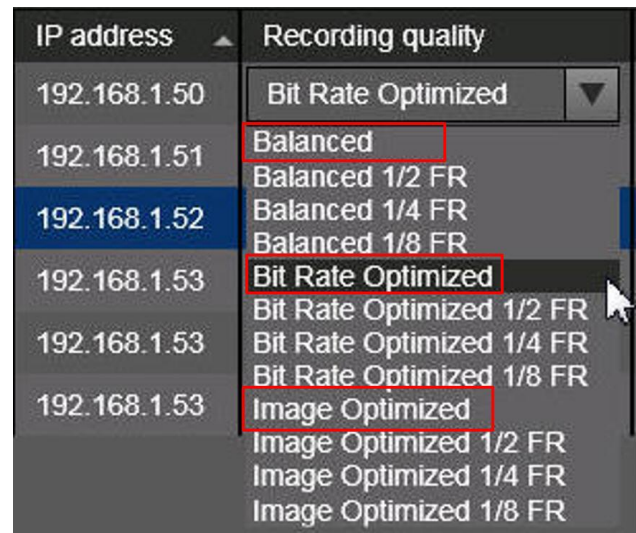
Each of these options provides 4 base frame rates to choose from:

**Option one (example "Balanced") = 30 FPS**
- **1/2 FR**= 15 FPS
- **1/4 FR** = 7.5 FPS
- **1/8 FR** = 3.75 FPS
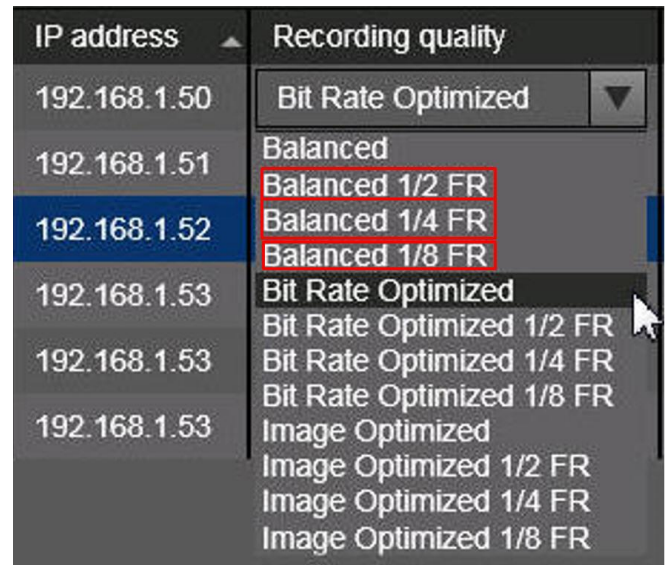


**STEP 7 Recording:**

The "Recording" menu allows you to select the following on a per camera basis:
- Recording profile
- Minimum Retention Time "Storage: Min Time (days)"
- Maximum Retention Time "Storage: Max Time (days)

*Note: selecting the "unlimited" option places the appliance in a FIFO recording mode.*

- When working with the wizard, only the default recording profiles are available. Up to 50 unique recording profiles can be created in BVMS Configuration Client
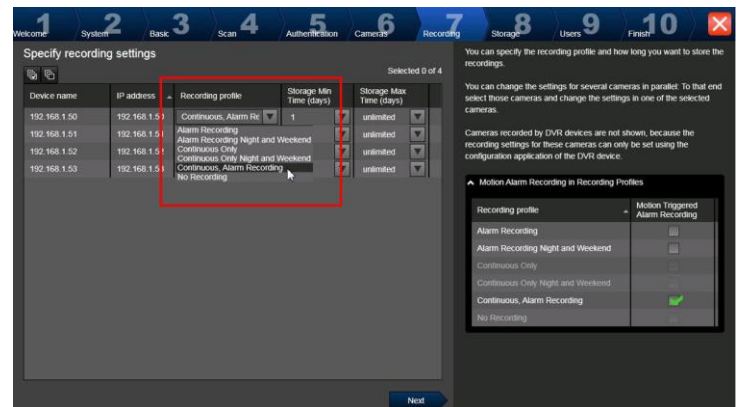
*The Minimum Retention Time "Storage*: Min Time (days)" drop down menu allows you to select how long video is held on a mandatory basis.
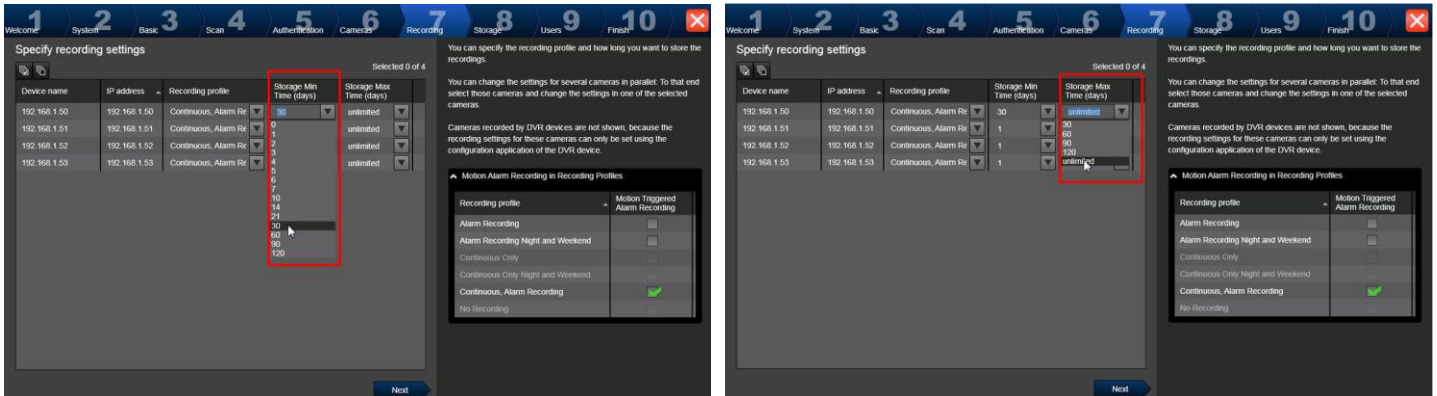- Once video is recorded, it cannot be overwritten until the time specified by this setting has expired

*The Maximum Retention Time* "Storage: Max Time (days)" specifies when the video is automatically overwritten

*The "Motion Alarm Recording"* drop down menu allows you to select which recording profile is subject to motion alarm triggers.



### STEP 8 Storage:

By default, when working with DIVAR IP Recording Appliances, the internal storage target should be automatically detected by the "Wizard." Up to 4 additional storage targets can be added to a recording appliance:
- Select the "+" button
- Enter the targets IP address
- Select the type in the "Storage type" drop down menu



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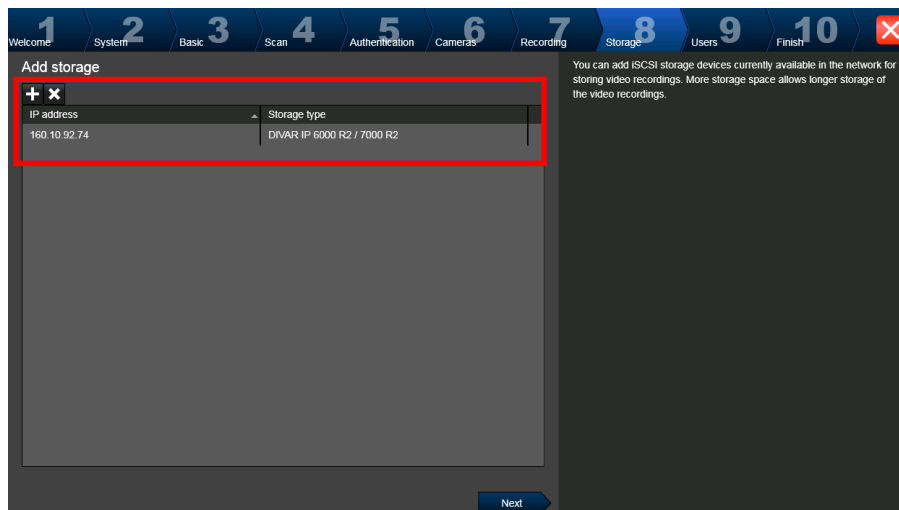
**STEP 9 Users:**

By default, BVMS contains two user groups; the "Operator Group" and the "Admin Group." New groups can only be added within BVMS Configuration Client. To add a new user, *highlight* the target user group that the user will be added to, and select the "+" button. The "Add user" pop-up menu should appear. Add the following: Logon name, Full name, and Description. Once a new user has been added, the user's password can be configured, and strong password policies can be enforced.
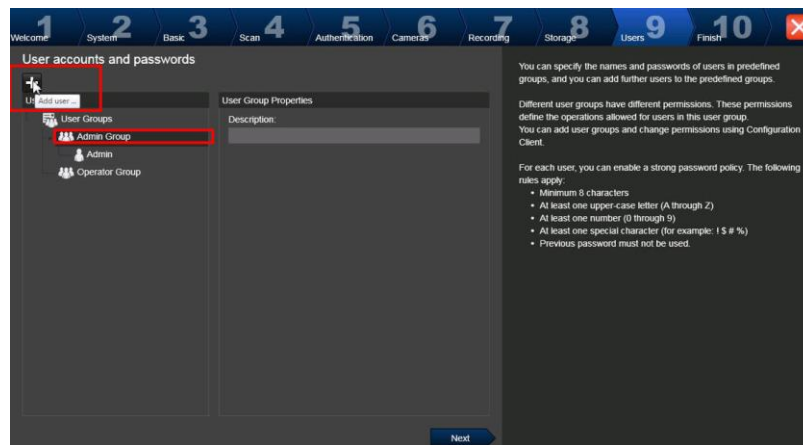


**STEP 10 Finish:**
When using the "Wizard" with BVMS version 6.0 or lower, to finalize your configuration, you MUST add a "Global default password." If one is not added, you will not be able to "Save and Activate" your work. This password sets the following:
- The VRM admin account password
- The live, user, and service accounts on all video devices

*Note: Global passwords can be only disabled using "Configuration Client" in BVMS version 6.0 and lower. As stated earlier, this is an optional feature when working with BVMS 6.5 and higher.*

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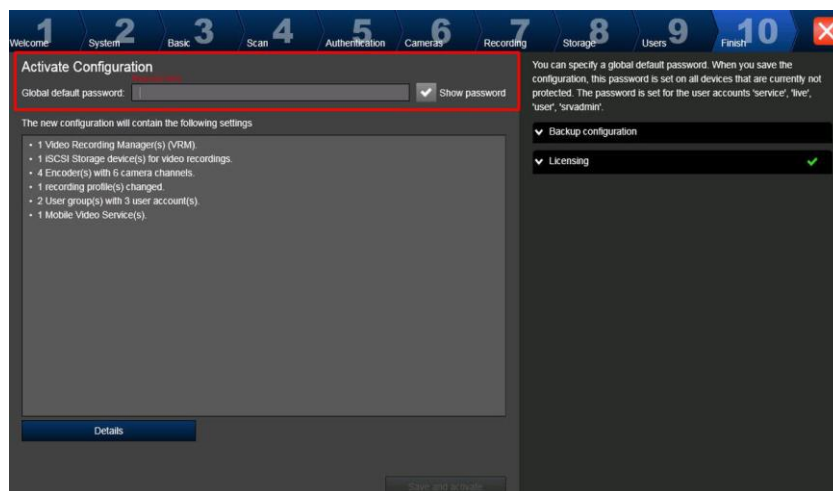
After entering a Global Password, you will be able to "Save and Activate" your work. Once your configuration has been activated, all devices should be recording to their allocated storage target.

Additionally, the "Finish" page offers several sub menu tools that are important to installation and recovery.

- The "Details" menu gives you access to Overview and Export menus. The Export menu allows you to export the current confirmation into a WordPad document that includes port mapping tables if configured.
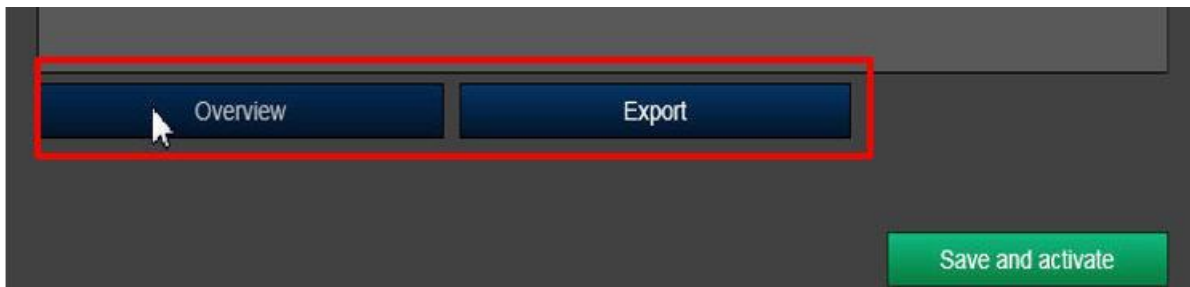


- The "Backup Configuration" menu allows you to save a backup copy of the current working configuration. This backup copy can be used in case of system restoration or appliance rebuild.

  o After creating a backup, save a copy off of the appliance
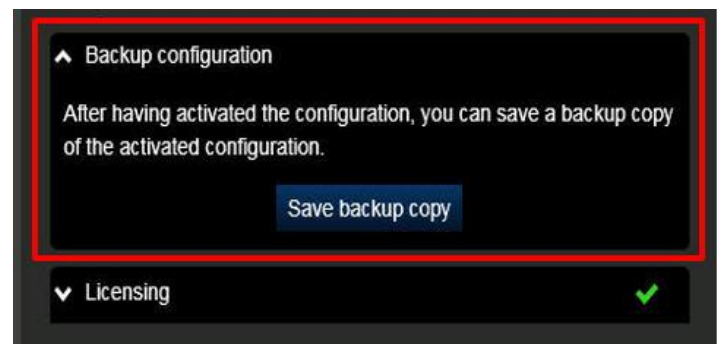


- The "Licensing" menu allows expansion licenses to be applied on to an appliance. Selecting the "License Wizard" tab will open an easy to follow interface.



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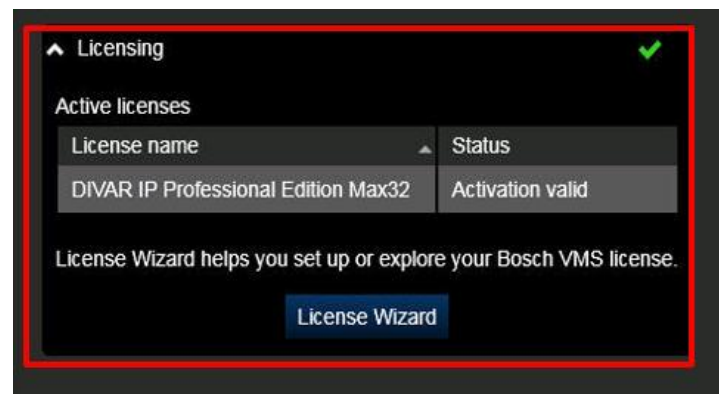
**Access the Operating System:**
As discussed earlier, the default boot environment of a recording appliance is known as the "KIOSK" screen. There may be times when you are directe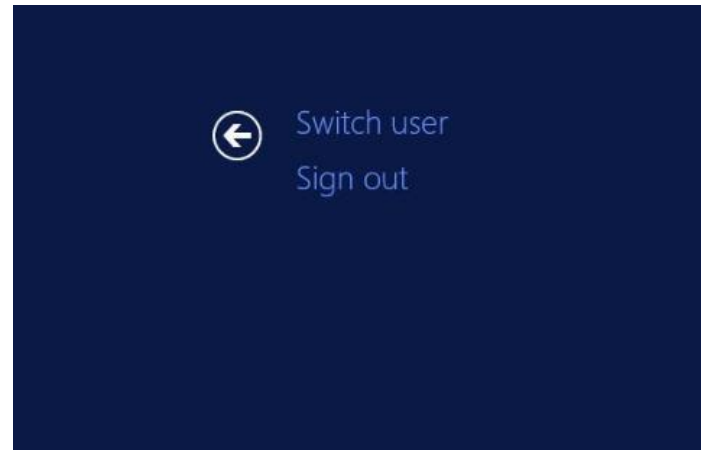d by Technical Support to access the Windows Server 2012 Operating System interface. To access the Windows interface from the KIOSK screen:

- Select the "CTRL+ ALT+DEL" key stroke
- You will receive a "Switch user" option
- *Hold down the "Shift" key* and select the "Switch" user



- You will be presented with a Windows Server 2012 log in screen
- Select the "CTRL+ ALT+DEL" key stroke
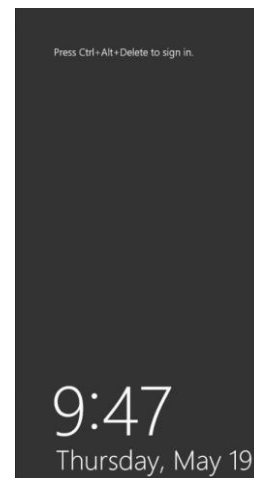


- You will be presented with a user selection screen
- Select the "BVRAdmin" option
- Log in utilizing the BVRAdmin account password

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**Restoration Process:**

Unlike earlier versions of the DIVAR IP Recording Appliance, the Mark II is not equipped with Disk-On-Memory module (DOM) for system restoration. Appliance restoration has been simplified by utilizing the two DVD sets that came in the packing material.

- To restore a device to factory default, insert DVD #1 into the DVD ROM of the appliance and apply power to the unit
- During the boot process you will receive the following message: "Select any key to boot from CD....."
- Select any key to start the boot process from the DVD

- After selecting to boot from the DVD, you will see a "Windows" loading screen
- After a few moments you will see the image restoration menu screen
- Depending on the rebuild situation, select the appropriate menu option.
- For the example in this guide, the "Initial Factory Setup" option was chosen
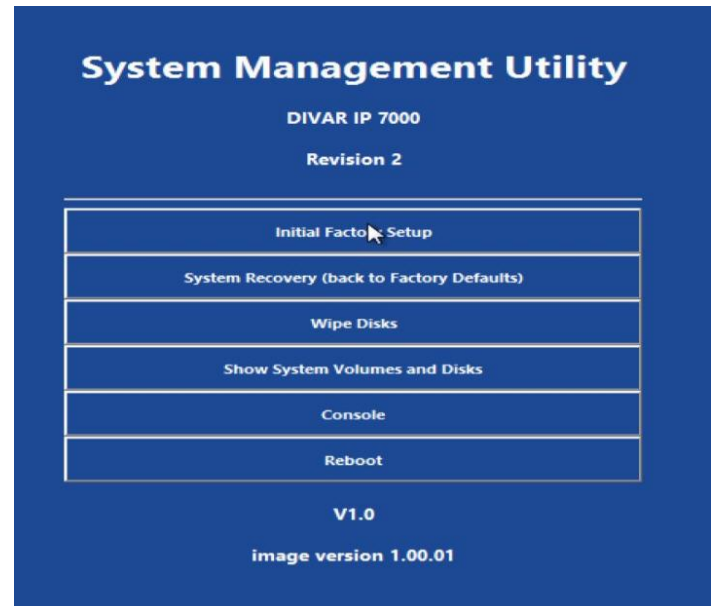
- After selecting the "Initial Factory Setup" option, you will receive a "warning" pop-up menu
- Select the "OK" tab to start the restoration process
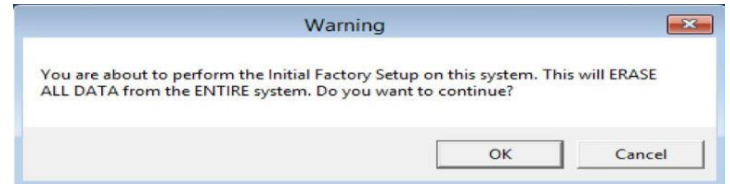


- Once the restoration process starts, a series of processes will run in a cmd.exe window
- Allow the procedure to continue until finished
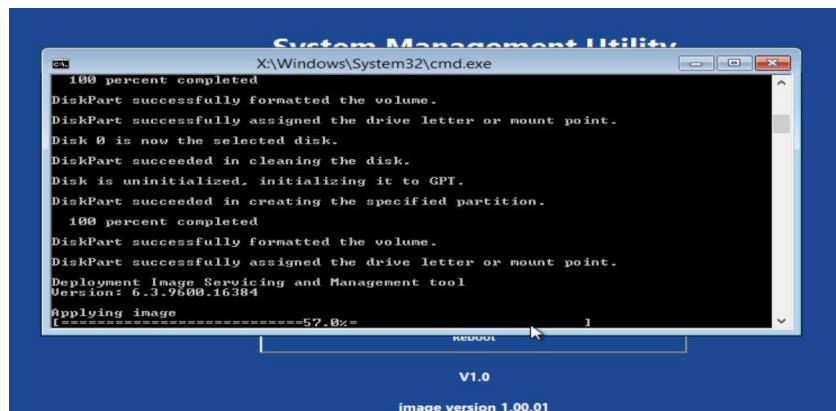


- At the end of the restoration process, you will be prompted to reboot the unit. Select "OK"
- Once the unit reboots, you will be back at the "Initial Boot Process" as outlined earlier in this guide
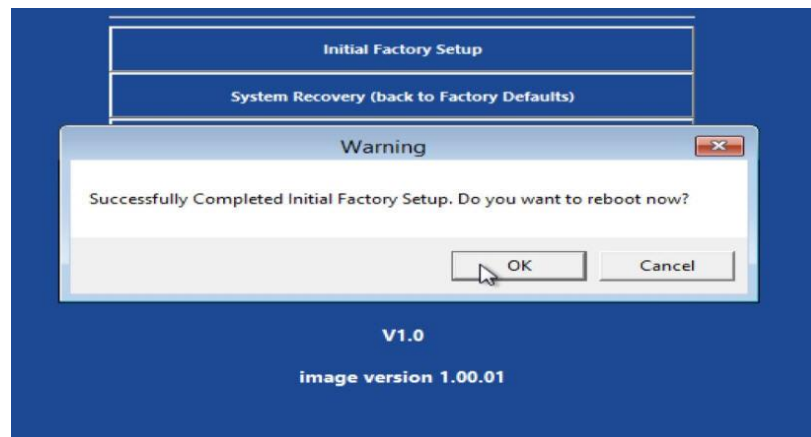
**LSI Configuration:**

**Overview**
The purpose of this section is to provide a general step-by-step process for performing a pre-installation configuration of a DIVAR IP Recording Appliance's storage.

By default, all appliances come with their storage preconfigured for RAID 5. This guide is applicable for configuring appliances purchased with no storage or appliances that need to be configured to perform RAID 5 + HS or RAID 6.

**Accessing the LSI BIOS:**
During the boot process, the LSI controller card will perform a Power-On-Self-Test (POST). After this process, you will receive a prompt informing you that the "MegaRAID Configuration Utility" can be accessed by selecting CTRL+R.
- Select CTRL+R
- NOTE: While in the MegaRAID Configuration Utility there is NO MOUSE Support. All items must be selected via KBD key strokes

```
1 Virtual Drive(s) handled by BIOS
Press <Ctrl><R> to Run MegaRAID Configuration Utility
```

- The MegaRAID Configuration Utility should open. If working with a preconfigured RAID 5 array, you will see an existing Virtual Drive and associated disks
- If the chassis is unpopulated, there will be no existing Virtual Drive
  - Select the "F2" key to open up the "Operations" menu

```
              LSI 3108 MegaRAID BIOS Configuration Utility 5.08-0006
 VD Mgmt   PD Mgmt   Ctrl Mgmt     Properties
 ─────────────────────── Virtual Drive Management ───────────────────
 [-] LSI 3108 MegaRAID(Bus 0x02, Dev 0x00)
   └[-] Drive Group: 0, RAID 5                     Virtual Drive 0:
     ├[-] Virtual Drives                           State: Optimal
     │  └  ID: 0, 54.57 TB                         RAID Level: 5
     ├[+] Drives                                   Operation: Back Init.
     ├[+] Available size: 0.00 KB                  Progress:  /    6%
     └── Hot spare drives
                                                   ──────────────────────

                                                   Drive Group 0:
                                                   Virtual Drives: 1
                                                   Drives: 16
                                                   Free Cap.: 0.00 KB
                                                   Free Areas: 0



 F1-Help  F2-Operations  F5-Refresh  Ctrl-N-Next Page  Ctrl-P-Prev Page  F12-Ctlr
```

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**Operations Menu:**
Selecting the "Operations" option will open a side menu with several menu options. Menu selection will vary based on the state of the appliance you are working with.

- **Customer populated chassis:** If working with an appliance that has been populated by customer purchased hard drives, select "*Create Virtual Drive*"

- **Changing Default Configurations:** If changing an appliance from the default configuration of RAID 5 to either RAID 5 +HS or RAID 6
  - Select "*Clear Configuration*"
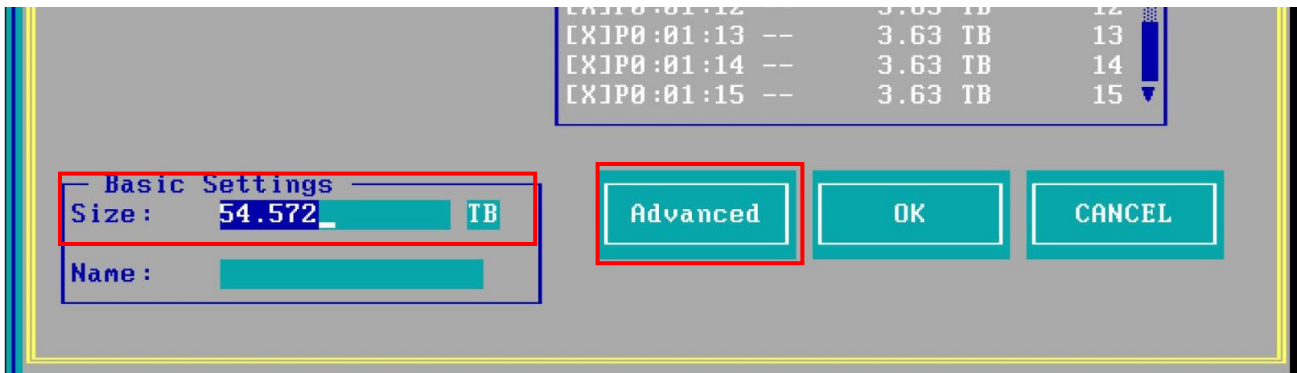  - Select  "*Create Virtual Drive*"
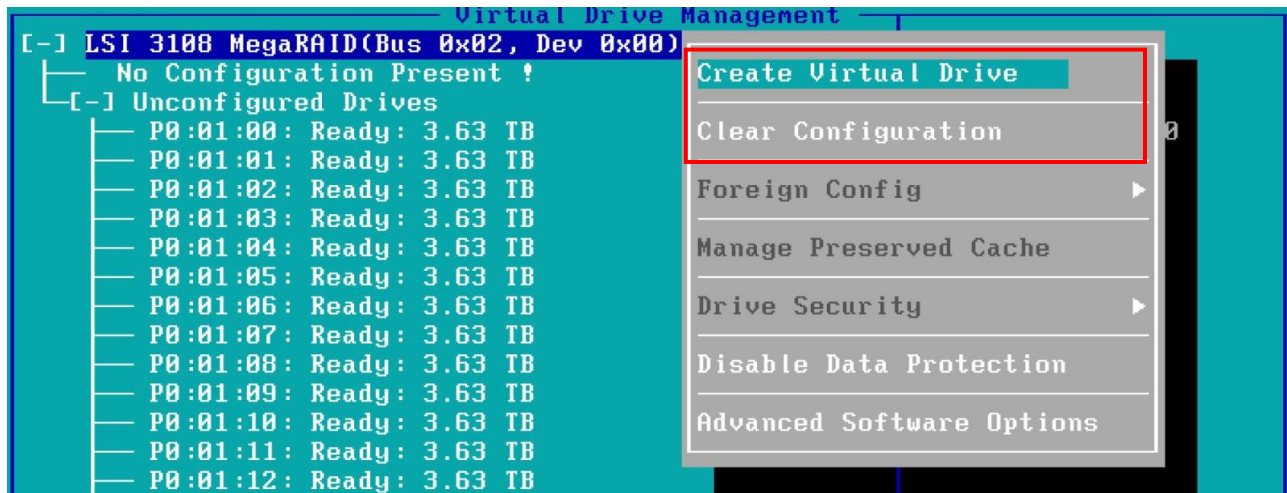


- Selecting the "*Create Virtual Drive*" option will open the Virtual Drive Management menu
  - In the "RAID Level" menu, select the level of RAID protection that is required (RAID 5 or 6)

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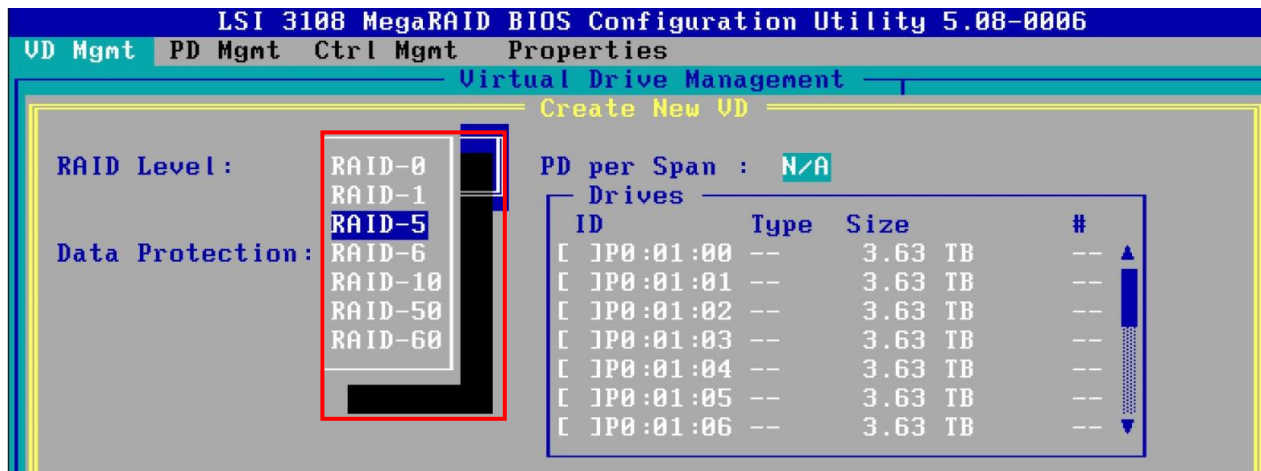
- • After the RAID level has been selected, all drives that will be part of the virtual drive must be selected
  - ○ Drives are selected by highlighting and selecting the "Enter" key
  - ○ Not all drives will be visible at once in the drives window. If the unit has 16 drives, ensure all drives have been selected by using the "arrow" keys
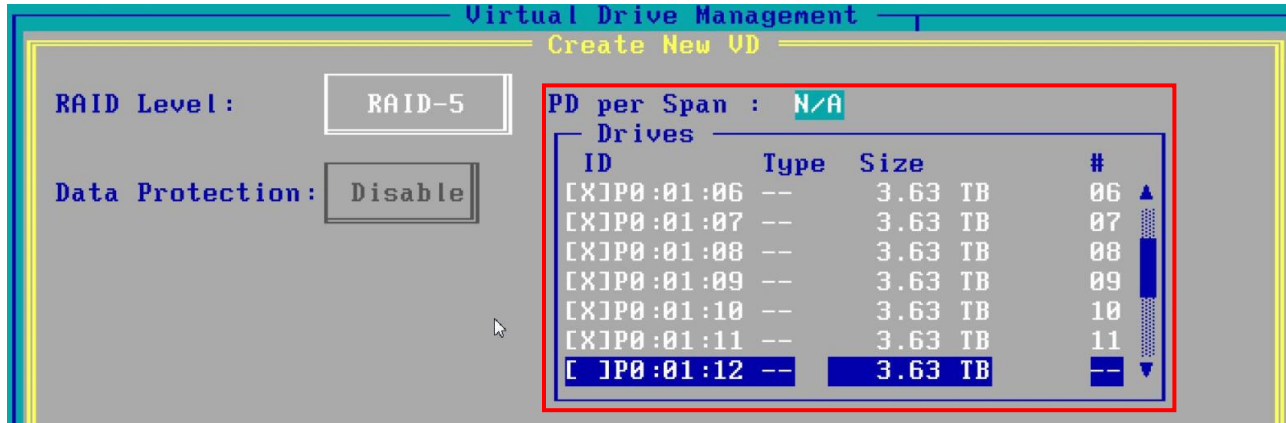


- • After all the drives have been selected, you should see the total size of the Virtual Drive you are creating in the lower left hand corner of the menu under "Basic Settings"
  - ○ Select the "Advanced" menu option

The "*Create Virtual Drive-Advanced*" menu should appear. The following settings must be configured:
- Strip Size: 64KB
- Read Policy: Ahead
- Write Policy: Write Back
- I/O Policy: Direct
- Disk Cache Policy: Enable
- Emulation: Default
- If a hot spare is needed, it is configured with the [ ] Configure HotSpare selection
- Select "OK." This will bring you back to the "Virtual Drive Management" menu
- Select OK to exit to the main menu
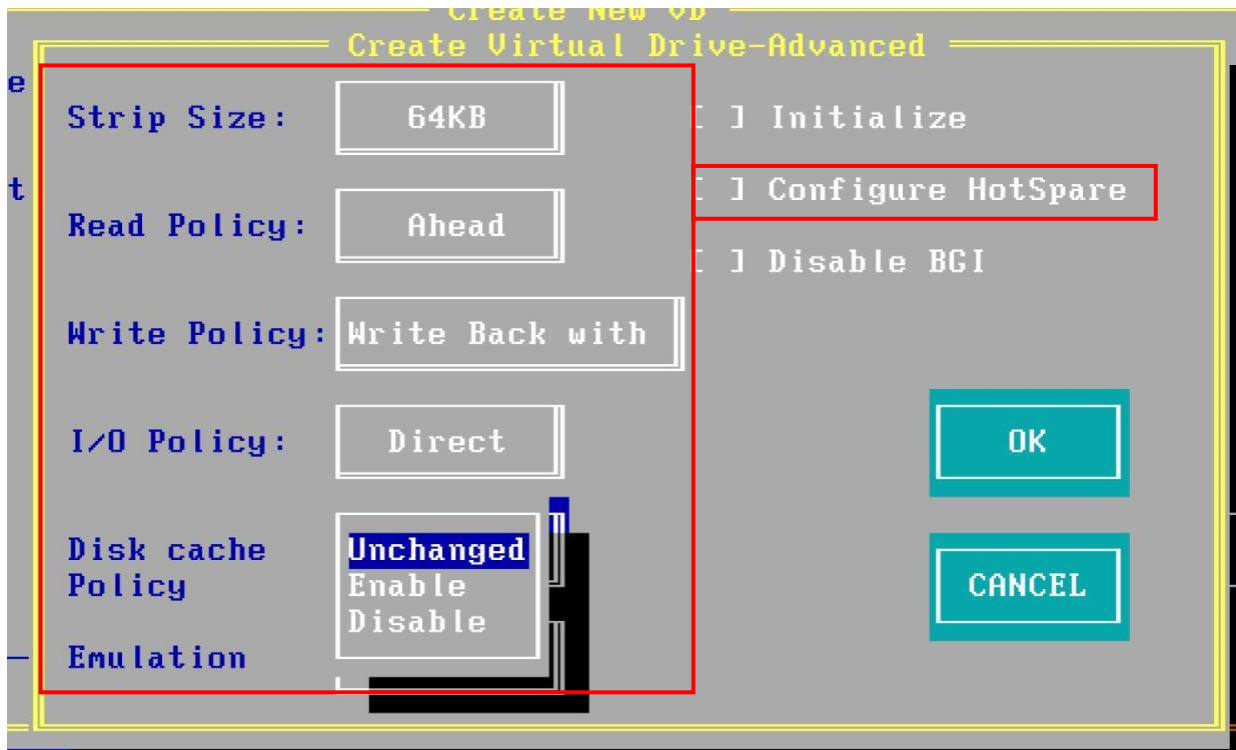
From the main BIOS configuration Utility menu, you should see the newly created virtual drive
- Exit the utility and reboot the appliance

```
        LSI 3108 MegaRAID BIOS Configuration Utility 5.08-0006
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                      Virtual Drive Management
 [-] LSI 3108 MegaRAID(Bus 0x02, Dev 0x00)
  └─[-] Drive Group: 0, RAID 5                Virtual Drive 0:
    ├─[-] Virtual Drives                      State: Optimal
    │  └── ID: 0, 54.57 TB                    RAID Level: 5
    ├─[+] Drives                              ─────────────────
    ├─[+] Available size: 0.00 KB             Drive Group 0:
    └── Hot spare drives                      Virtual Drives: 1
                                              Drives: 16
                                              Free Cap.: 0.00 KB
                                              Free Areas: 0
```

After reboot, the installation process outlined in the beginning of this guide should be followed.
- When applying the BVMS 6.0 Restoration DVD, your newly created Virtual Drive will be formatted and configured for use with Bosch Video Recording Manager.
- Depending on the size of the Virtual Drive, this process takes a long time. Be patient and do not disrupt the configuration process

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