Infinova® SS200T3R Embedded VMS Box

Embedded VMS Advanced Maintenance Guide

WARNING – Embedded VMS advanced maintenance is special activity and it is highly recommended that only trained engineers operate the maintenance procedures. Incorrect configuration during the advanced maintenance may result in the Embedded VMS device becoming non-functional.

WARNING – Embedded VMS functions in 2 modes – (a) Operation mode which is normal working mode and (b) Maintenance mode – which is expected to be used only by trained engineers. This document includes description on switching to 'maintenance mode' and configurations possible in maintenance mode.
Any changes done to the embedded VMS device in the 'Maintenance mode' cannot be un-done, even by 'reset to factory default' operation. Hence it is highly recommended to be extra cautious while doing any changes in the maintenance mode. It is highly recommended not trying any configuration changes to the embedded VMS device in the maintenance mode, apart from the points described in this document.

Switching to 'Advanced Maintenance' Mode

1. When rebooted, the Embedded VMS device starts in 'Operation mode'.

2. To switch to the 'Advanced Maintenance' mode, please click on the 'time and device information text' on the bottom task bar, 5 times successively using mouse left click button.

3. This will pop up the warning message box. Click on the 'Yes' button to accept the warning and to move ahead
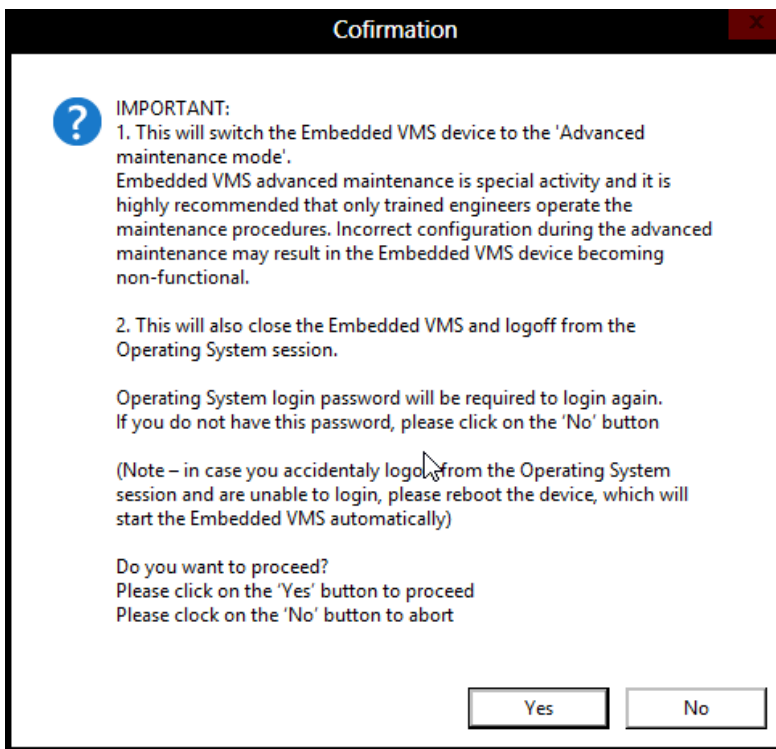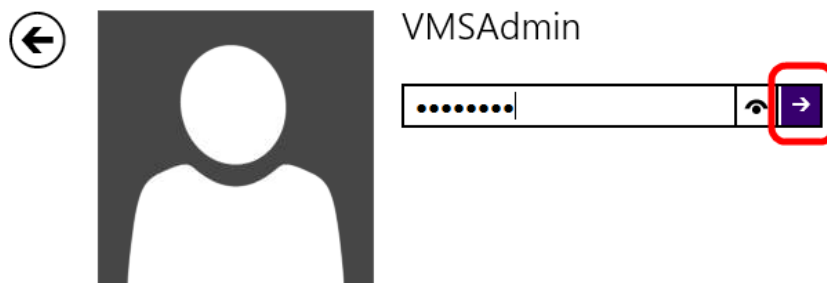

4. This will pop up the password box. Type the password as 'em8SMS' (without single quote characters) and click on the 'OKay' button
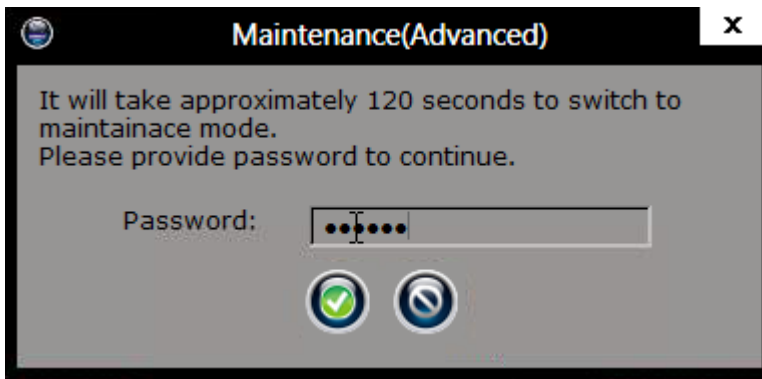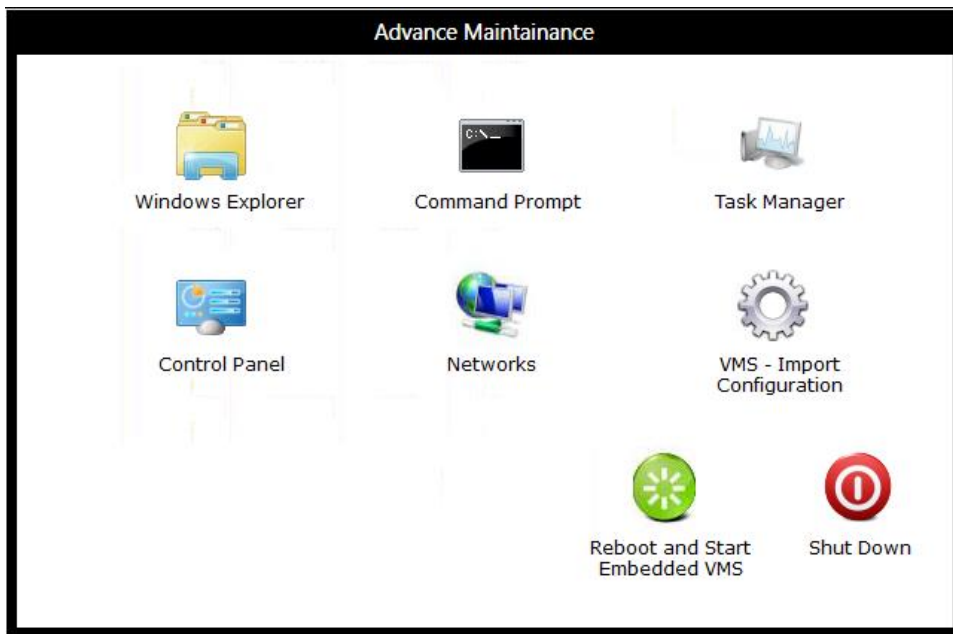
5. The device will now log off and will display list of users.

6. Click on the 'VMSAdmin' user to login as 'VMSAdmin' user. Type the password as 'vm8@dm1n' (without single quote characters) and click on the 'Go' button.

7. The device will switch to the 'Advanced Maintenance' mode and will display the advanced maintenance configuration console.

Advance Maintainance

8. The advanced maintenance configuration console has a list of buttons which can be clicked to access specific configuration feature
   (a) Windows Explorer – opens standard Windows explorer, for browsing through the file system on the embedded VMS device
   (b) Command Prompt – launches the Windows command prompt
   (c) Task Manager – launches standard Windows task manager
   (d) Control Panel – launches standard Windows control panel
   (e) Networks – launches standard Windows 'Network Connections' console
   (f) VMS - Import Configuration – launches VMS user interface for importing previously backed up VMS configuration
   (g) Reboot and Start Embedded VMS – reboots the embedded VMS device and starts it in 'Operation mode'
   (h) Shut Down – shuts down the embedded VMS device

9. To switch back to the 'Operation mode', please click on the 'Reboot and Start Embedded VMS' button.

Remote Desktop Connection

The Embedded VMS device supports remote desktop connection. The remote desktop connection allows accessing the display of the embedded VMS device from any computer in the network and also allows using the mouse and the keyboard to perform operations on the embedded VMS user interface; as if the remote user is sitting in front of the embedded VMS device and controlling it.

Following are the steps to use the remote desktop feature available in the embedded VMS device –

1. Arrange a normal Windows computer in the same network as embedded VMS.

2. Using standard 'ping' command from command prompt of the normal Windows computer, please ensure that embedded VMS device is accessible to the normal Windows computer through network. If 'ping' does not work, please locate and rectify the network connectivity issue

3. Install 'TightVNC Viewer' software on the normal Windows computer. TightVNC is a free 3rd party software and can be download from internet. (Note – TightVNC is a 3rd party tool. Please refer to the license agreement from the manufacturer, and confirm, before using this tool.)

4. Launch the 'TightVNC Viewer' software.

5. Type the IP address of the embedded VMS device and click on the 'Connect' button
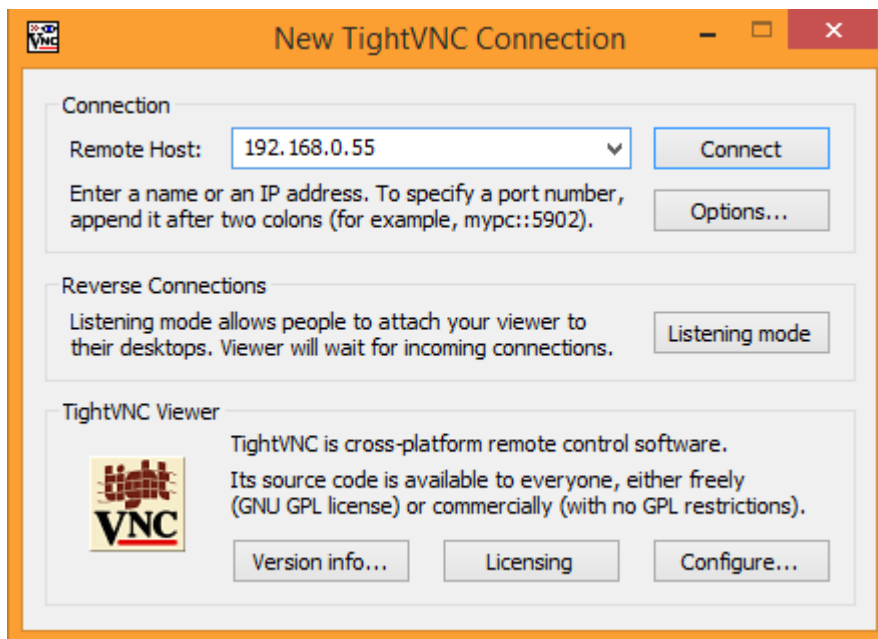
6. This will pop up the password dialog box. Type the password as 'Em8Rem0t' (without single quote characters) and click on the 'OK' button.

7. TightVNC will connect to the embedded VMS device and will show its user interface.

The remote desktop connection is used primarily in 2 cases –

(a) If monitor is not connected to the Embedded VMS device, and some configuration needs to be updated

(b) For providing remote access of the embedded VMS to the technical support team. In this case, a normal Windows computer is made available in the same network as the embedded VMS device. The technical support team members connect to the normal Windows computer through applications like Ammyy Admin. Once access to the Windows computer is available, the technical support team can access the embedded VMS device through remote desktop feature.

VMS Configuration Backup and Recovery

Embedded VMS allows backing up the VMS configuration (which includes list of cameras being monitored, recording settings, user configurations etc. all settings which are configured from embedded VMS user interface), as a single file with 'serverconfig' extension. Embedded VMS also supports recovering / switching back to the backed up VMS configuration.

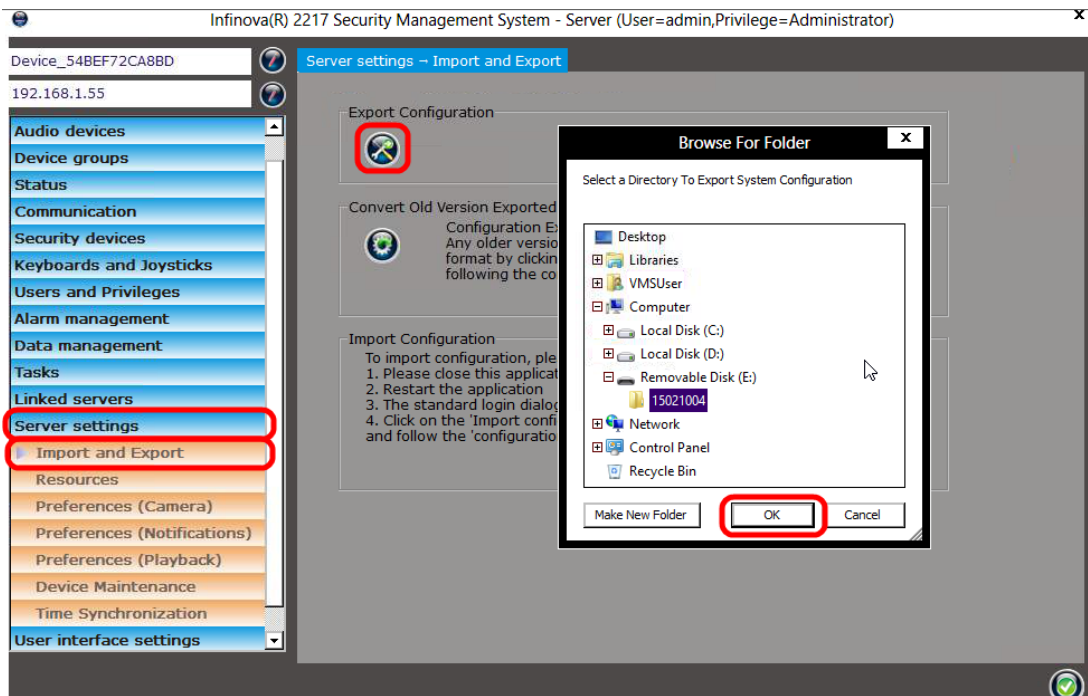The VMS configuration is backed up in 2 ways –

1. Manual back up / Export

    (a) Click on the 'Settings' button from the bottom task bar and click on the 'Settings…' menu
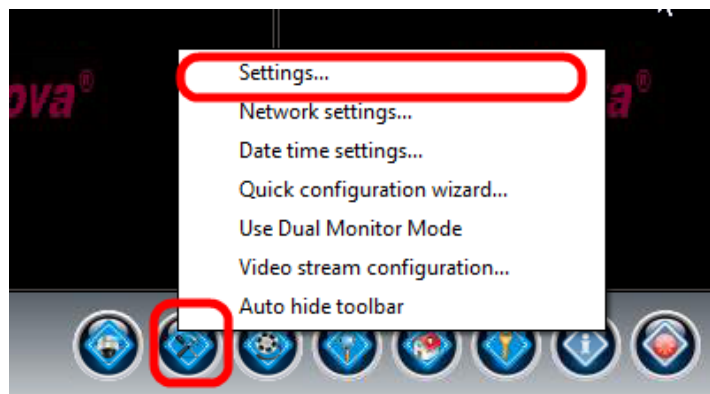
    (b) This will pop up the VMS settings dialog box

    (c) Navigate to the 'Server settings' menu and 'Import and Export' sub-menu, from the left hand side navigation control

(d) Click on the 'Export' button.

(e) This will pop up the 'folder selection' dialog box

(f) Select the folder where the VMS configuration backup is required to be saved.
Note – Only the folder path on removable devices like USB drives is acceptable. Selecting any other path will display error and backup will not be processed.

(g) Click on the 'OK' button, to complete the backup process. A success message box will be displayed at the end of the backup process.

2. Automatic back up / export

(a) Every day, between 11.00 PM to at 12.00 PM (midnight), embedded VMS backs up the VMS configuration on the first recording drive, in the folder [DRIVE:]\SMSRecording\ConfigExports.

(b) An automatically backed up VMS configuration file name format is 'YYYYMMDD*'. Where YYYY indicates year, MM indicates month and DD indicates day on which backup was processed. The * indicates additional letters in the file name.

Following are the steps to recover / switch to the previously backed up VMS configuration -

WARNING – During the VMS configuration import operation, the current VMS configuration is lost and cannot be recovered.
It is highly recommended to back up the current VMS configuration manually, by following the steps described above; before processing VMS configuration import operation.

1. Switch to the 'Advanced Maintenance' mode (Please refer to the 'Switching to 'Advanced Maintenance' Mode' section available in this document for details on switching to the 'Advanced Maintenance' mode)

2. Click on the 'VMS – Import Configuration' button

3. This will pop up the 'Import Configuration' dialog box.
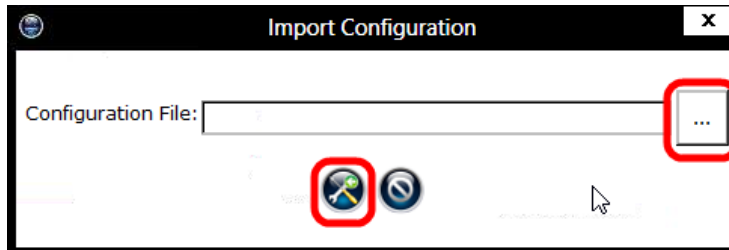
4. Click on the browse (…) button. This will pop up the file selection dialog box.

5. Select the VMS configuration backup file

6. Click on the 'Import configuration' button.

7. Now when the embedded VMS device is rebooted, it will start in 'Operation mode' with imported VMS configuration

Reset to Factory Default during Device Boot Up

Note – In normal conditions, please use the 'reset to factory default' menu available on the bottom task bar of the embedded VMS device. Only when there is any problem which restricts display of the embedded VMS user interface, reset to factory default during device boot up is required to be used.

1. Reboot the embedded VMS device

2. Keep the CTRL and R both keys on the connected keyboard pressed. Which will display the maintenance dialog box.
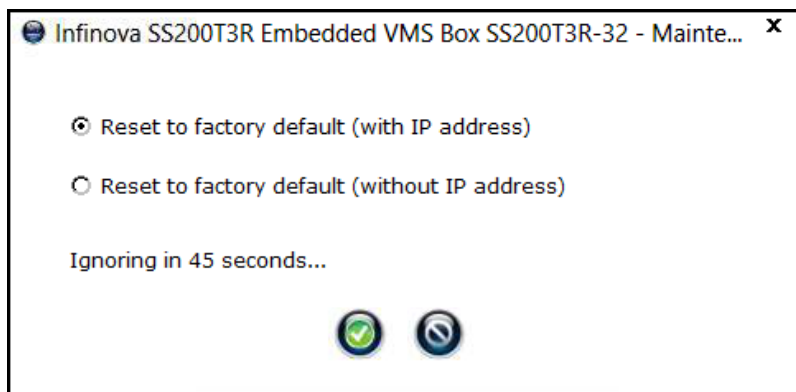
3. Select the option 'Reset to factory default (with IP address)' or 'Reset to factory default (without IP address)', as per the reset requirement

4. Click on the 'Ok' button.
   Note – if 'ok' or 'cancel' button is not clicked within 60 seconds, 'cancel' is assumed and the embedded VMS device will start without processing reset to factory default.

5. The embedded VMS device will get reset to factory default.

Switch to Advanced Maintenance Mode during Device Boot Up

Note – In normal conditions, please use the steps described in the 'Switching to 'Advanced Maintenance' Mode' section available in this document. Only when there is any problem which restricts display of the embedded VMS user interface, switch to advanced maintenance during device boot up is required to be used.

1. Reboot the embedded VMS device

2. Keep the CTRL and U both keys on the connected keyboard pressed.

3. The embedded VMS device will switch to the advanced maintenance mode, instead of proceeding with normal operation mode.

Fine Tuning Display Output

If any of the following problems related to display are observed, the display output needs to be fine-tuned.

(a) The display output is cropped and only partial output is displayed on the monitor

(b) Quality of the videos displayed on the monitor is inferior, as compared to quality of the video from same camera observed in VMS client software installed on any of the client workstation computers.
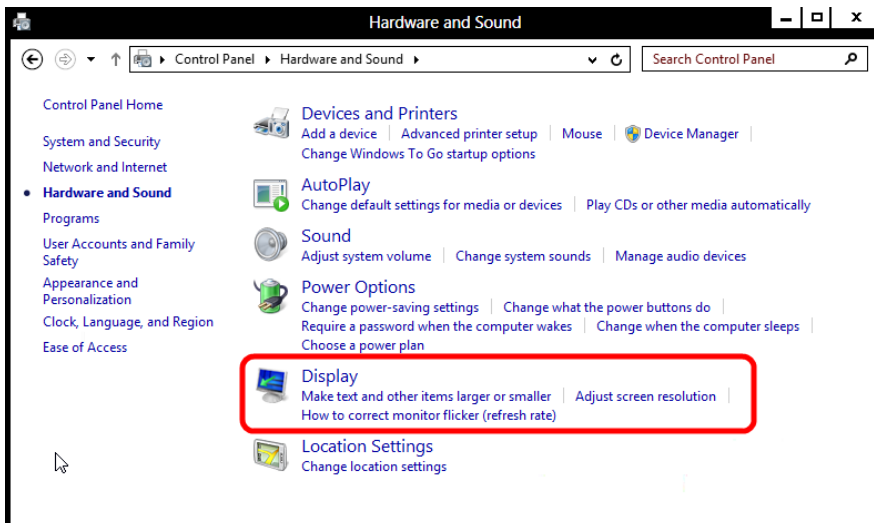
Following are the fine tuning steps –

1. Switch to the 'Advanced Maintenance' mode, as per the steps described in 'Switching to Advanced Maintenance Mode' section available in this document

2. Click on the 'Control Panel' button, to launch the control panel.
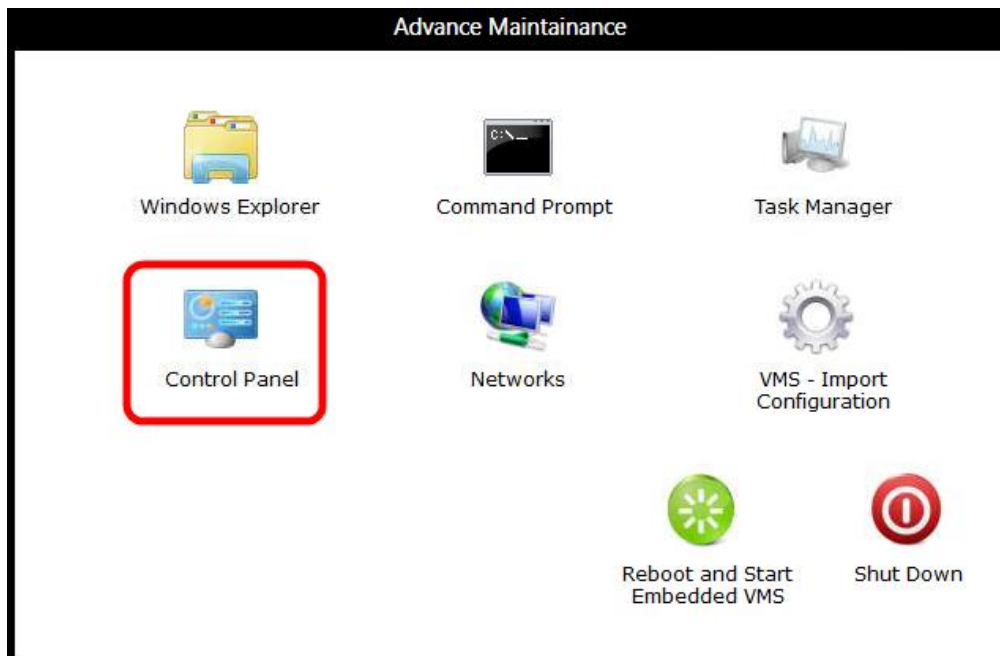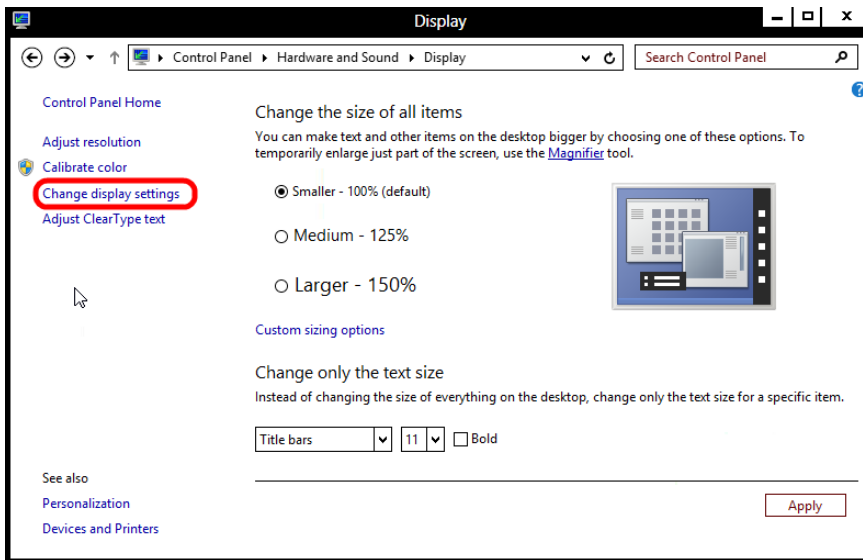

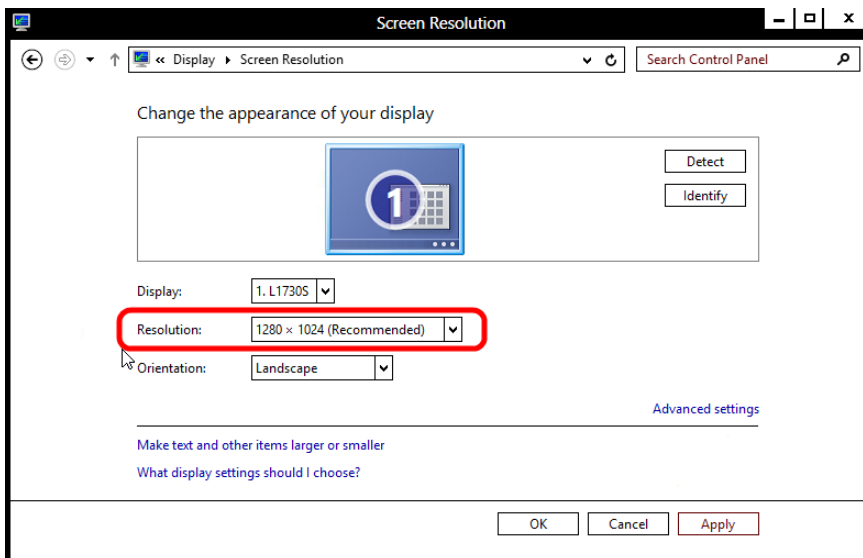
3. Click on the 'Hardware and Sound' link
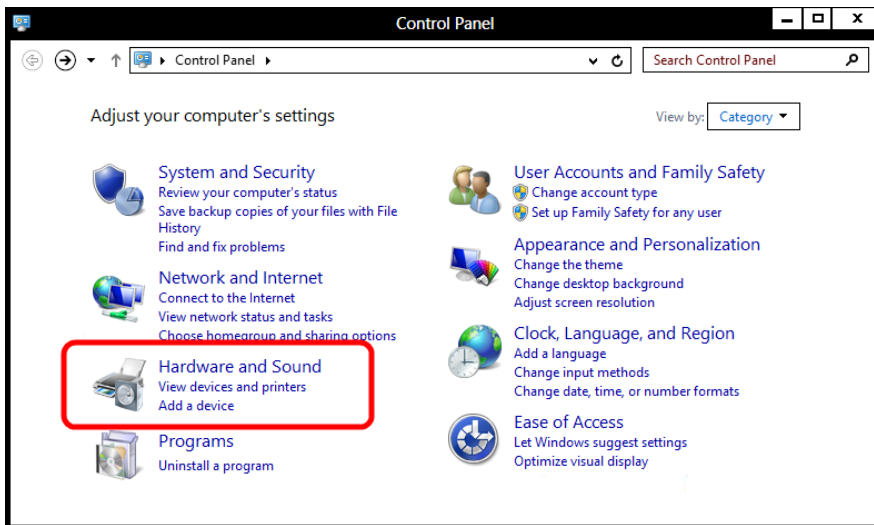
4. Click on the 'Display' link

5. Click on the 'Change display settings' link available on the left hand side.

6. Refer to the monitor hardware manual and check the resolutions supported by it. Select any of the resolutions supported by the monitor hardware, for the 'Resolution' setting.

7. Click on the 'OK' button

Installing New Hard Disk Drives

The embedded VMS device includes 2 types of storage space –

(a) Built-in storage space – the hard disk drives associated with built-in storage space are included in the embedded VMS device, when it is shipped for the factory

(b) Storage space extension – it is possible to add more hard disk drives to the embedded VMS device, later, to get additional storage space.

Hard disk drives management

(a) For every embedded VMS device 'built-in storage space' and 'storage space extension capacity' may be different.
(b) It is possible that an embedded VMS device may have 0 TB built-in storage space. In such case, one or more hard disk drives are required to be added to get the recording support from the embedded VMS device.
(c) For every embedded VMS device, number of hard disk drive slots available may be different.
(d) One of the available hard disk drive slot is used by the 'primary hard disk drive' used for embedded VMS operation.
(e) Some of the other available hard disk drive slots are used by the hard disk drives used for providing 'built-in storage space'
(f) Hence only specific number of hard disk drive slots are available for 'storage space extension'
(g) Depending on the hard disk slots available for 'storage space extension' and the 'storage space extension' required; specific capacity hard disk drives (500 GB or 1 TB or 2 TB or 4TB) are required to be calculated and used for providing expected storage space extension.

Please refer to the shipment documents for details of hard disk drive slots, built-in storage space and storage space extension available in your embedded VMS device.

WARNING – Embedded VMS device includes one 'primary hard disk drive' used for embedded VMS operation and zero or more hard disk drives used for providing built-in storage space. It is highly recommended not changing any hardware connections (data ports connection and power ports connection) for any of these hard disk drives. The new hard disk drives should use the free ports available for data connection and power connections.
It is highly recommended to not remove any of the hard disk drives which are installed in the embedded VMS device during shipment. Any changes to the hard disk drive configurations should be restricted only to the hard disk drives added later for providing storage space extension.

Supported Hard Disk Drives

The new hard disk drives used for storage space extension, should comply to following requirements –

(a) Form factor – 3.5 inch

(b) Interface – SATA

(c) Data transfer rate (buffer to host) – minimum 3 Gb/s (Recommendation – 6 Gb/s)

(d) Data transfer rate (host to/from drive - sustained) – minimum 110 MB/s

(e) Capacity – 500GB or 1TB or 2TB or 3TB or 4TB (depending on the free hard disk drive slots available in the embedded VMS device and the expected storage space extension)

(f) Recommendation – please select the HDDs marked as 'AV drives (Audio-video drives)'. This is not part of any standard, but the HDD manufacturers offer a few models specifically for video surveillance and mark them as 'AV drives'.

We do not recommend any specific brand of hard disk drives. Any hard disk drive which complies with the above mentioned requirements and which is available locally in the deployment location with support from the HDD manufacturer can be used.

Adding a New Hard Disk drive

Adding a new hard disk drive to the embedded VMS device is similar to adding a new hard disk drive to a desktop computer. It is recommended that steps to add a new hard disk to the embedded VMS device are followed by an engineer who has previous experience in managing hard disk drives on a normal desktop computer.

1. Shut down the embedded VMS device

2. Unplug the power cable

3. Remove the screws from the cabinet cover and open the cover.

4. Locate the free hard disk drive clamp / container

5. Remove the hard disk drive clamp / container.

6. Fit the new hard disk drive in the clamp / container

7. Mount the clamp / container with the hard disk drive

8. Connect data cable to the new hard disk. A data cable is connected between a hard disk and SATA port on the motherboard.

   Note – in some embedded VMS device models, the motherboard has 4 SATA ports, out of which one is used for 'primary hard disk'. If such embedded VMS devices are designed for 16 TB storage space, 4 X 4TB hard disk drives are required to be used. These embedded VMS devices have 'SATA extension PCIe Card' installed in them. Please use 3 motherboard SATA ports and

one SATA port from the SATA extension PCIe Card; while using 4 data hard disk drives on these embedded VMS devices.

9. Connect power cable to the new hard disk. A power cable is connected between a hard disk and SMPS (Switch mode power supply).

10. Please make sure that the new cables do not interfere with any fans. Position the new cable securely.

11. Mount the cabinet cover and fix the screws.

12. Connect power cable and power on the embedded VMS device

13. Switch to the 'Advance maintenance' mode, by following the steps described in the 'Switching to Advanced Maintenance Mode' section available in this document.

14. Click on the 'Control Panel' button, to launch the control panel.
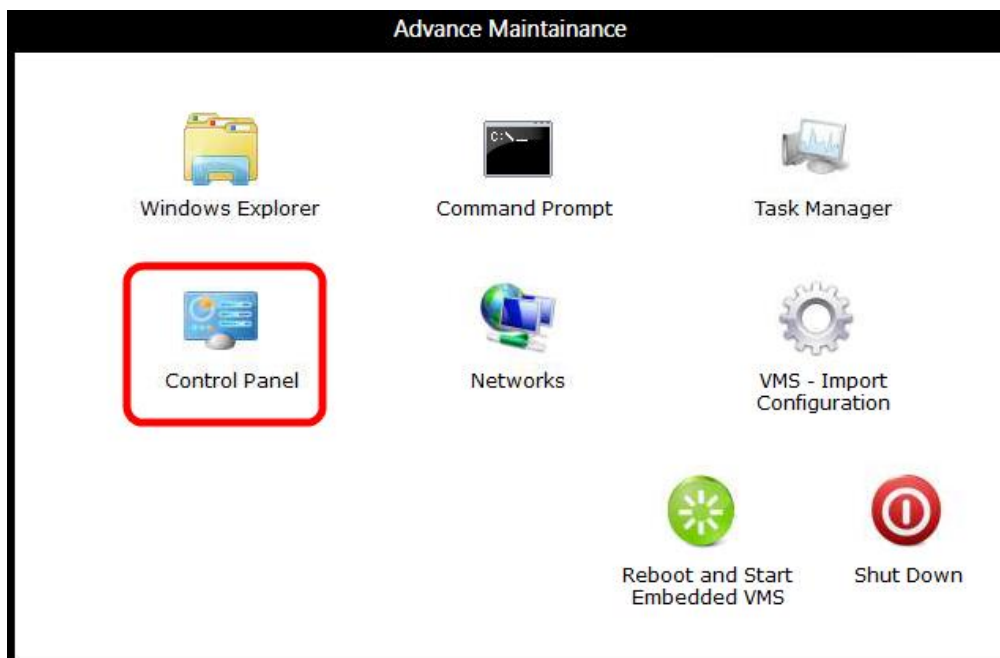
15. Open the 'Disk Management' console by navigating through 'Control Panel -> System and Security -> Administrative Tools -> Computer Management -> Storage -> Disk Management'
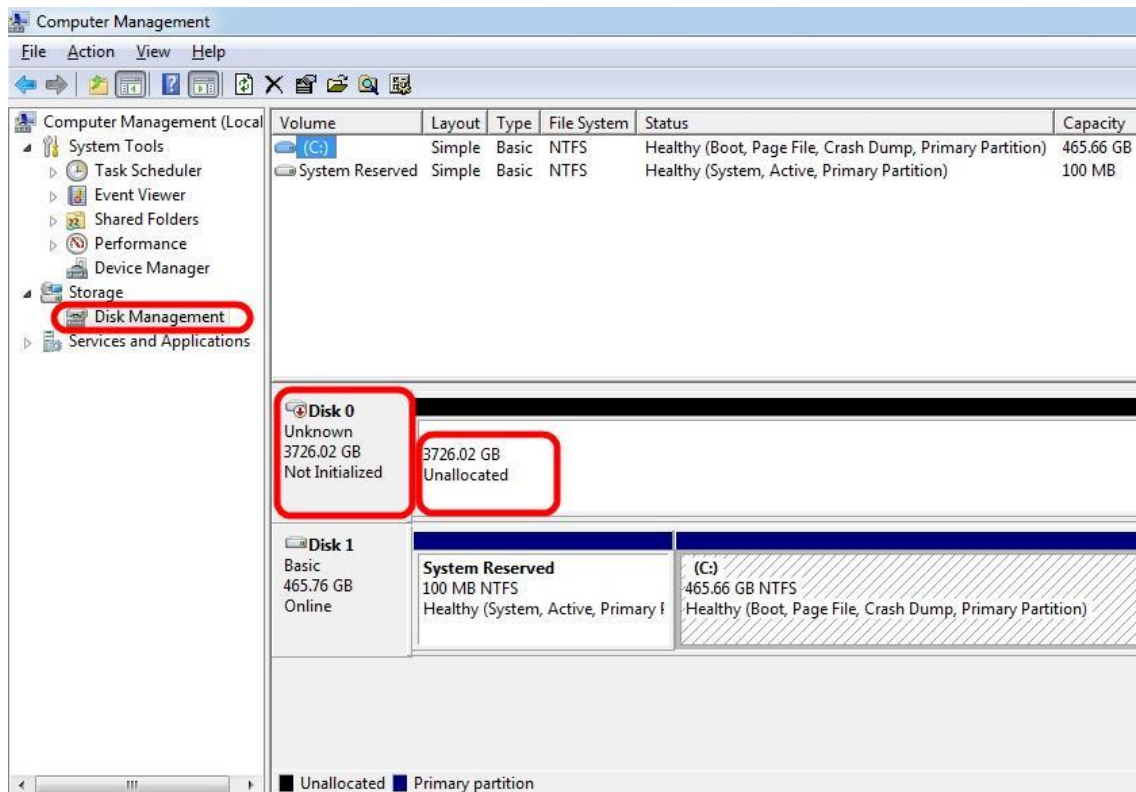
16. The top-right pane displays all available volumes / drives and drive letters assigned to each of them. Please note down the used drive letters, later in the configuration steps, we need to assign a drive letter for volume / drive created on the newly added hard disk drive; where we need to specify un-used drive letter.

17. The bottom pane displays all the available disk drives. The newly added drive will display 'Not initialized' status and all 'Unallocated' space.

18. Right click on the icon showing the newly added hard disk drive and click on the 'Initialize Disk' menu.
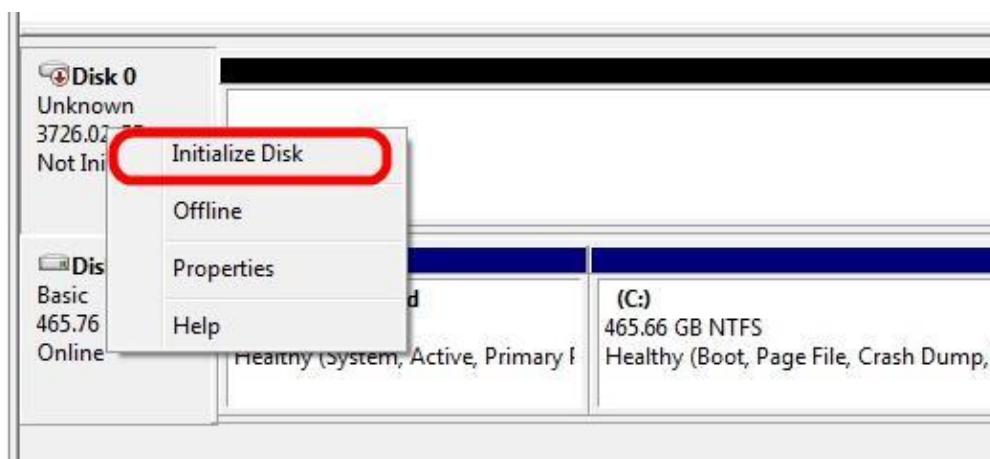
19. This will display the 'Initialize Disk' dialog box
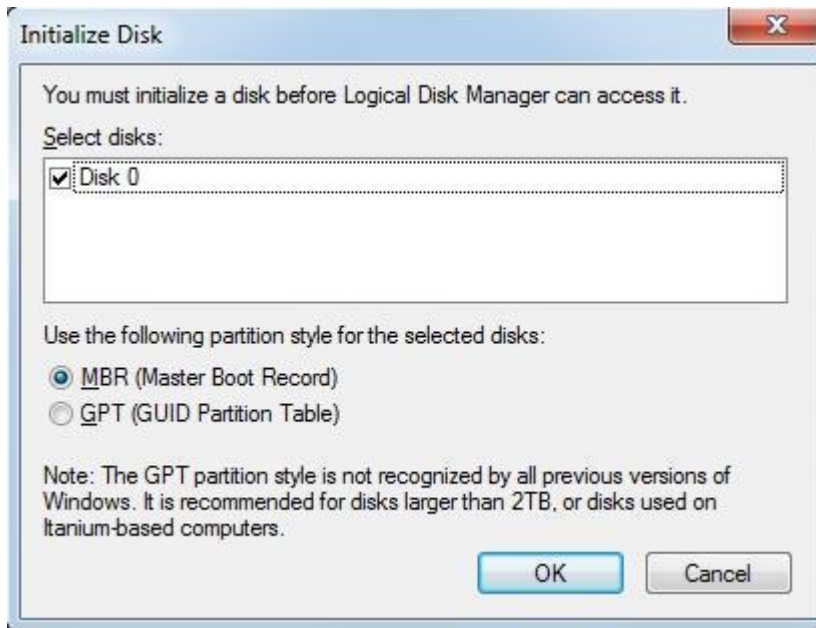
20. If the new hard disk drive has 2 TB or less storage space capacity, please select 'MBR (Master Boot Record' partition style.
    If the new hard disk drive has more than 2 TB storage space capacity, please select GPT (GUID Partition Table) partition style.

21. Click on the 'OK' button to complete the disk initialization. The new hard disk drive status will now change to 'Online'

22. Right click on the unallocated space indicator in the newly added hard disk drive row.
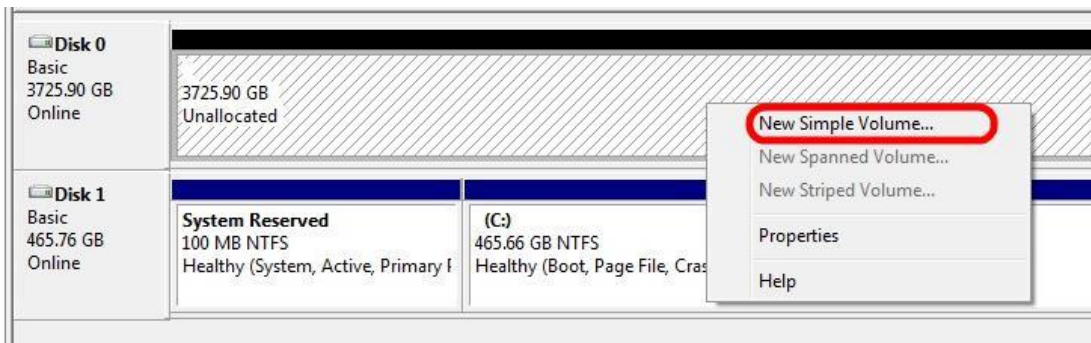
23. Click on the 'New Simple Volume…' menu

24. This will display the 'New Simple Volume Wizard'

25. Click on the 'Next' button. This will display the 'Specify Volume Size' page
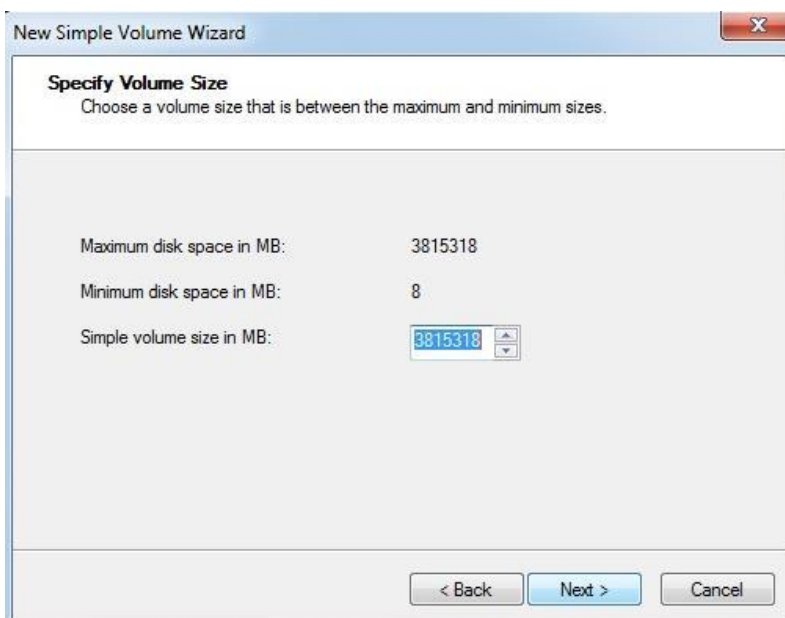
26. Specify 'Simple volume size in MB' as 'Maximum disk space in MB'. By default, it should have same value, but it is advised to check and reconfirm.

27. Click on the 'Next' Button. This will display the 'Assign Drive Letter or Path' page.

28. Make ensure that 'Assign the following drive letter' radio button is selected and a drive letter not in use currently is selected. By default, these settings should already be there, but it is advised to check and reconfirm. The drive letters currently in used have been listed in one of the steps mentioned above, the drive letter selection should exclude these already used drive letters.

29. Click on the 'Next' button. This will display the 'Format Partition' page.


30. Please select 'Format this volume with the following settings' radio button is selected.
Select 'File system' as 'NTFS'
Select 'Allocation unit size' as 'Default'
Type 'Volume label' text 'ExtXX', where XX is a number like 01, 02 etc. For first newly added hard disk drive it will be 01, second newly added hard disk drive it will be 02 and so on. This is not

mandatory, but the volume label will help in identifying whether the volume is on the extension hard disk drive or built in hard disk drive; and may be useful during configuration and analysis of the embedded VMS device
Select 'Perform a quick format'

31. Click on the 'Next' button. This will display the completion page.
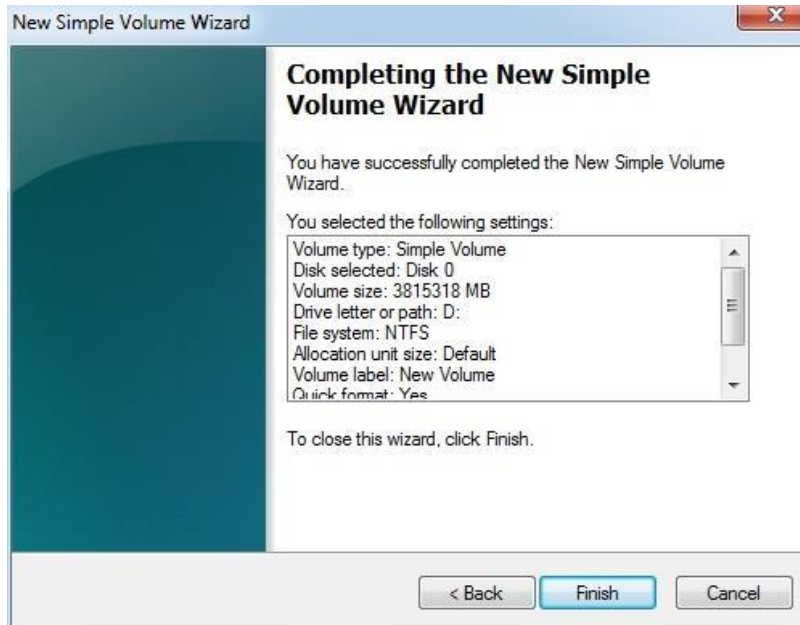

32. This will show the summary of selected settings. Please review the settings to confirm they are same as configured in above mentioned steps and there are no mistakes.

33. Click on the 'Finish' button to complete configuring the volume on the newly added hard disk drive.

34. Close all the open dialogs

35. On the 'Advanced Maintenance' console, click on the 'Windows Explorer' button.
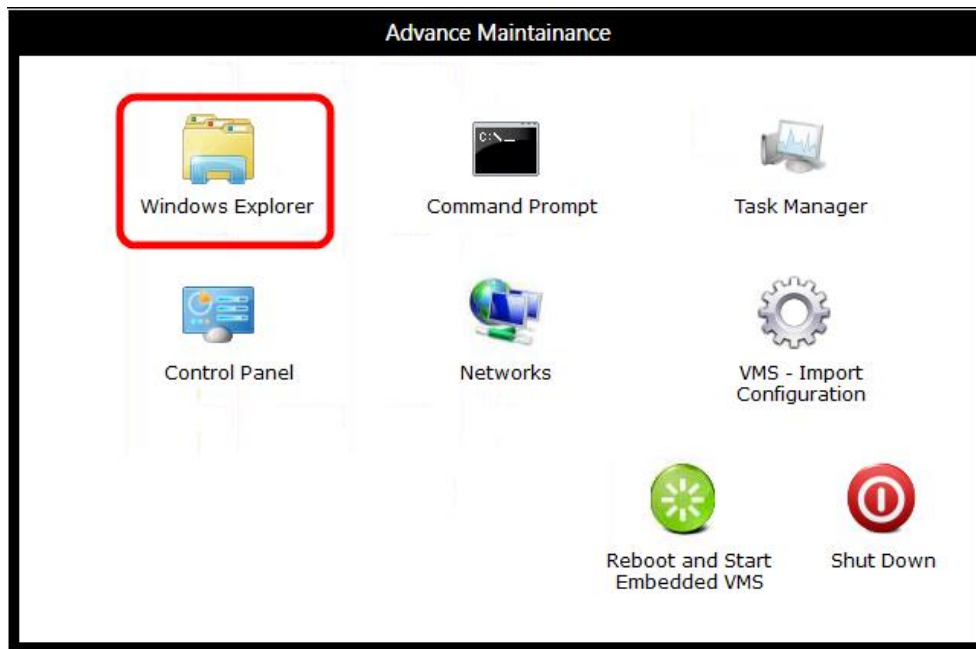
36. This will open the standard Windows Explorer.

37. Please make sure that newly configured volume is visible as new drive and is accessible. It is recommended to try and create a new TXT file, new folder on this drive and delete all newly created files. This will confirm that new drive is fully ready for use.

38. Close Windows Explorer

39. Click on the 'Reboot and Start Embedded VMS' button. The embedded VMS device will reboot and will start in operation mode.

40. Click on the 'Settings' button from the bottom task bar and click on the 'Settings…' menu
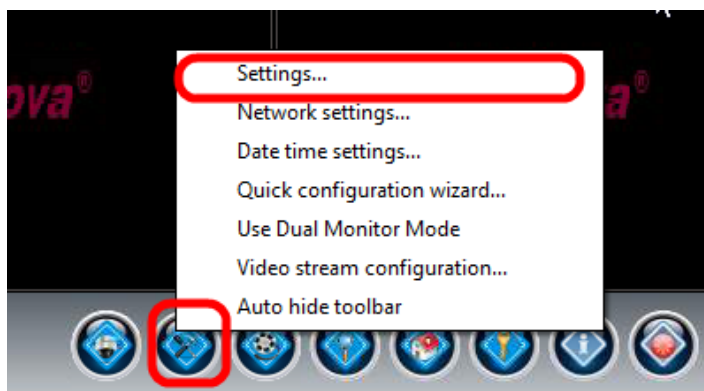
41. This will pop up the VMS settings dialog box

42. Navigate to the 'Data management' menu and 'Recording drives' sub-menu, from the left hand side navigation control.
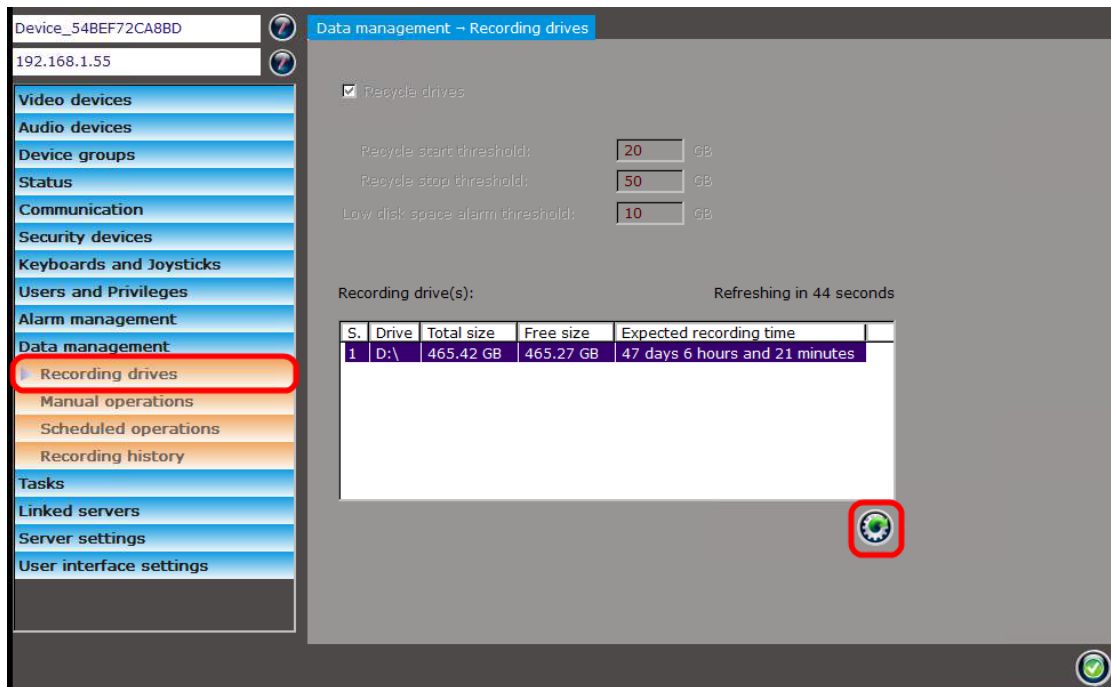
43. Click on the 'Re-assign recording drives for all cameras' button. This will pop up a warning message box. Click on the 'Yes' button to accept the warning and to proceed.

WARNING – After clicking on the 'Re-assign recording drives for all cameras' button, the recording drive allocation for all cameras is reset. This is required for distributing cameras across available drives for getting longest possible recording duration for all cameras and for balancing the disk read and disk write load.
After this, the old recorded data for the cameras for which recording drive gets re-assigned, is no longer available. Hence it is recommended to calculate the storage space requirements and to add all new hard disk drives as required, in single configuration step, before starting to use the embedded VMS device on the deployment site.

WARNING – Please do not click on the 'Re-assign recording drives for all cameras' button, unless required. It is required to click on this button only once after adding a new hard disk drive and configuring it as per above mentioned steps. If 'Re-assign recording drives for all cameras' button is clicked, when not required, it may re-assign recording drives for one or more cameras and old recordings for these cameras will be lost.

44. The new drives will be added to 'recording drives' list of the embedded VMS, and the cameras will be re-assigned across all available recording drives for longest possible recording duration for all cameras and for best possible distribution and load balancing.