![NDG NETLAB+]

Remote PC Guide Series - Volume 2c

Dell R630 BIOS and RAID Configuration

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This guide provides hardware model-specific guidance in server configuration, with BIOS and RAID configuration instructions for the **Dell R630**.

This guide is part of a multi-volume series, designed to provide you with the guidance needed to implement remote PCs on your NETLAB+ system. Learn more about the Remote PC Guide Series. See the Documentation Library for a list of all NETLAB+ guides.

This guide should be followed in conjunction with *Remote PC Guide Series - Volume 2, Installation*.

1   Background

This guide is designed to assist an administrator with setting up and configuring the NDG Supported **Dell R630**.

> If you are using a Dell R720, please see *Remote PC Guide Series - Volume 2b - Dell R720 BIOS and RAID Configuration*

Before proceeding with the setup and configuration process described in this guide, please review the current recommended specifications for ESXi host servers used to host virtual machines in NETLAB+ pods. The latest information is available on the NDG Website:
http://www.netdevgroup.com/support/remote_pc.html#vm_host_server_specifications

2   DELL R630 BIOS System changes

> Please verify that your system has the latest BIOS installed. You may obtain the latest drivers and downloads for the Dell R630 from Dell's website.

Please use the instructions at the following link to setup the BIOS:
 http://topics-cdn.dell.com/pdf/poweredge-r630_owner's%20manual_en-us.pdf

Special Instructions for changing BIOS settings:

1. Open the link above and click on **Pre-operating system management applications** in the Table of Contents.
2. Click on **System Setup** in the Table of Contents and follow the instructions under **Viewing System Setup** to enter the System setup menu on the server.
3. Click on **System BIOS** under the **System Setup** heading in the Table of Contents.
4. Please verify the following settings have been set in the appropriate menu option areas on the server:
   a. Memory Settings – System Memory Testing – Enabled
   b. Memory Settings – Memory Operating Mode – Optimizer Mode
   c. Processor Settings – Execute Disable – Enabled
   d. System Profile Settings – System Profile – Performance
   e. Miscellaneous Settings – Report Keyboard Errors – Do Not Report
   f. Miscellaneous Settings – F1/F2 Prompt on Error – Disabled
5. Make sure to save settings and exit.

3   DELL R630 RAID Configuration

Redundant Array of Independent Disks (RAID) is designed to give the server redundancy and increased performance depending on the RAID type selected. The recommended and tested configuration for an eight-drive setup is RAID 5. If you wish to teach courses that need high IOPS (Input/Output Operations per Second) such as VMware View, then you will need to consider the eight-drive configuration to maximize writes speeds and pod count per host. The H730P RAID controller with 2GB cache is recommended and supported.

RAID 5 arrays may take several hours to initialize as the controller creates parity on the drives. The 8x2TB drive configuration will take approximately **4** hours.

RAID 5 is known as striping with parity. RAID 5, when leveraged on proper RAID controllers, combine performance characteristics of a striped array with fault tolerance and maximizing drive space.

RAID 5 requires a minimum of 3 drives and distributes parity across all drives. If a drive fails, the array performance will be impacted as the reads for the failed drive is reconstructed from parity striped across the other disks. RAID 5 can only tolerate one disk failure. A two disk failure will cause the array to fail.

Until recent years, the performance of RAID 5 was limited and not as robust as other RAID solutions. This was due to parity algorithms and limited processing resources on the controllers. High-end controllers with faster processors and larger cache can perform at levels where they no longer are the bottle-neck to storage, allowing us to leverage additional storage space and spindle count for increased IO operations.

Please verify that your system has the latest H730P RAID Controller Firmware installed. You may obtain the latest drivers and downloads for the Dell R630 from Dell's website.

Please use the following document to setup the RAID on your host server:
http://topics-cdn.dell.com/pdf/poweredge-rc-h730p_User's%20Guide_en-us.pdf

Special Instructions for the RAID setup:

1. Open the link above and click on **BIOS Configuration Utility Menu Options** in the Table of Contents.
2. Click on **Virtual Disk Actions** in the Table of Contents.
3. Scroll down to **Virtual Disk Management** (pg. 63) and follow the instructions to configure the virtual disk.
4. You should start with a clean configuration. If not, you will need to clear any existing configuration.
5. At Step 6 in the linked document, select RAID 5.
6. At Step 9, highlight all of the physical disks.
7. Skip Step 15 and click OK.

8. If you aren't prompted to initialize the new virtual disk, you can scroll to Initializing virtual disks (pg. 65) and follow the instructions for the virtual disk you created.

9. You can press **Enter** on the Virtual Disk to see the estimated time remaining.

10. When initialization is completed, select **OK** to confirm.

11. Press **ESC** to close out of the RAID Configuration Utility. Select **OK** to confirm exiting. You will be prompted to reboot your system.