Subject : Intel Virtual RAID on CPU	
FAQ Document No: S21023	**Date: 2021/05/27**
Model Name: HPM-621DE	**Rev. 1.0**
Category: ☐General ☐H/W ■S/W ☐Others,	
Purpose: Intel VROC introduction, requirements and restrictions.	

1. Introduction

The Intel VROC family of products provide enterprise solutions for both NVMe SSD and SATA devices for enterprise servers and workstations. The product family includes the following three products:

I. Intel VROC (VMD NVMe RAID) – This product provides an enterprise RAID solution on platforms that support the Intel VMD technology.

II. Intel VROC (SATA RAID) – This product provides an enterprise RAID solution for SATA devices connected to SATA/sSATA via the Intel Platform Control Hub (PCH) configured for RAID mode.

III. Intel VROC (NonVMD NVMe RAID) – This product provides an enterprise RAID solution for Intel NVMe SSDs attached to PCIe slots managed by the Platform CPU.
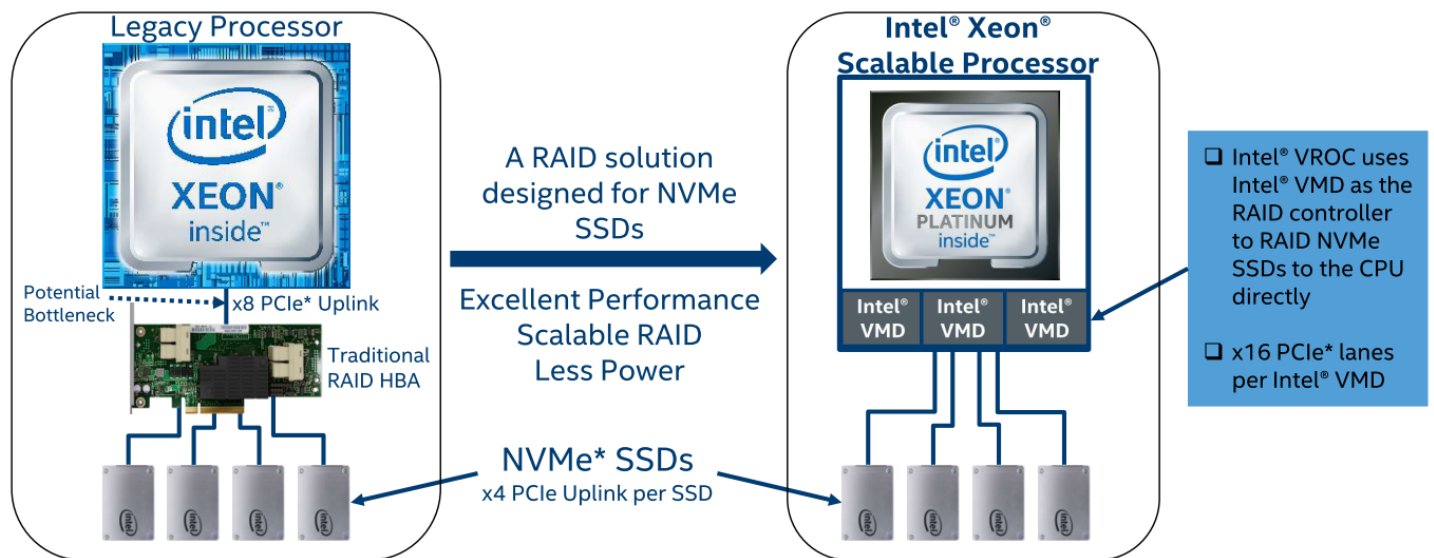
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2. Requirements and Restrictions

- Intel VROC is only available when the system is configured for UEFI boot mode.
- To enable Intel VMD VROC, a hardware key must be inserted on the motherboard, and the appropriate processor's Virtual Management Devices must be enabled in the BIOS setup.
- It is possible to enable Intel VMD VROC without a hardware key installed, but only RAID0 will be enabled.
- Supported SSDs and Operating Sytems
  To see the supported configurations: https://www.intel.com/content/www/us/en/support/articles/000030310/memory-and-storage/ssd-software.html

3. Hardware Key

The key Intel VROC features are activated based on four different configurations that can be used. Standard and Premium Upgrade Keys enable the use of Intel VROC features on Intel and approved 3 rd party NVMe drives. Intel VROC Pass-thru is the default state, where no upgrade key has been plugged into the system, and can be upgraded based on the features desired. These features are also restricted to approved operating systems for proper operational functionality.

		Pass-thru SKU	Standard SKU	Premium SKU	Intel® SSD SKU
	MM#	**NA**	**951605**	**951606**	**956822**
NVMe* RAID	CPU attached NVMe	√	√	√	√
	3rd party SSD support	√	√	√	-
	Hot-Plug/ Surprise Removal	√	√	√	√
	LED management	√	√	√	√
	Web UI management	√	√	√	√
	Bootable RAID	-	√	√	√
	RAID 0/1/10	-	√	√	√
	RAID 5	-	-	√	√
	RAID Write Hole closed (BBU replacement)	-	NA	√	√
SATA RAID	Bootable RAID Volume	√	√	√	√
	RAID 0/1/5/10	√	√	√	√

VROC_HW_KEY

PIN 1

GND KEY1 GND KEY2

4. Create NVMe RAID

4.1 Power on the system and press [DEL] to enter BIOS

4.2 Navigate to **Advanced > Intel(R) Virtual RAID on CPU > All Intel VMD Controllers > Create RAID Volume.**
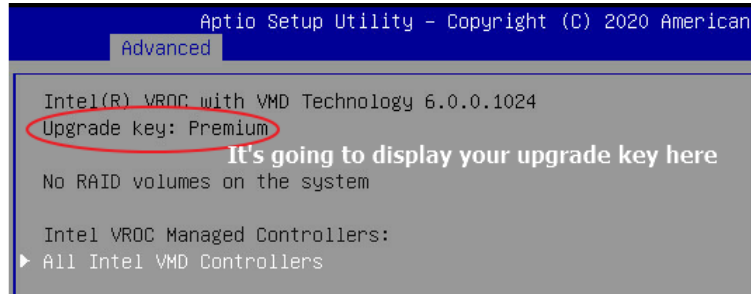
4.3 Type in a volume **Name** and select **RAID Level**.

4.4 To enable **RAID spanned over VMD**, use the arrow key to highlight the < > bracket and press <Enter>. This will open a small selection menu. Navigate the cursor to the X and press the <Enter> to enable volume spanning.
   Only data volumes are supported in this configuration, boot volumes that are spanned are not supported.

4.5 Select specific disks for RAID with an [X].
   Select **Strip Size**.
   Select **Create Volume**.
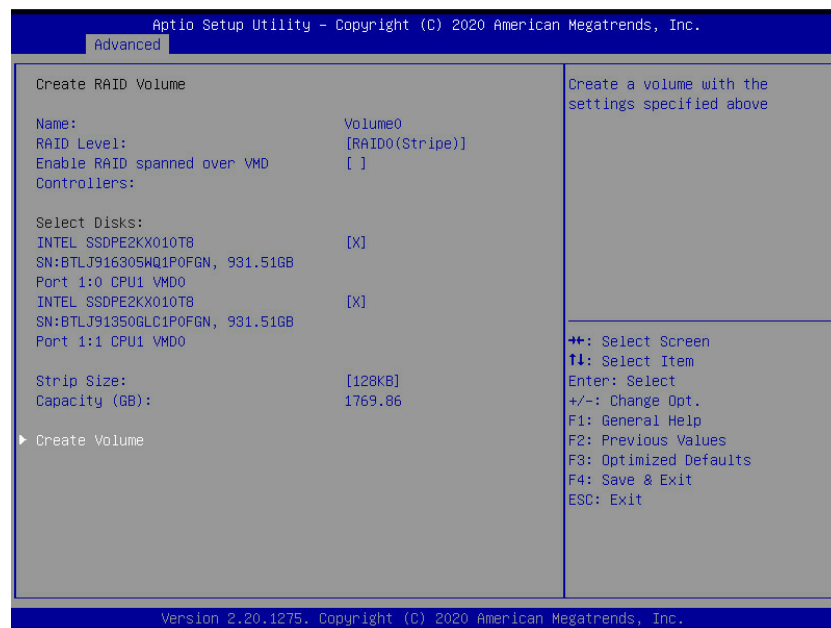
4.6 Press [F4] to save and reboot.

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5 Installing Windows on a NVME RAID Volume

With RAID boot volumes through Intel VROC available, additional drivers are required in order to properly install a Windows operating system. This is a brief guide to show you the slight difference in order to introduce the F6 Drivers appropriate to utilize your BIOS created RAID volume as a system disk.
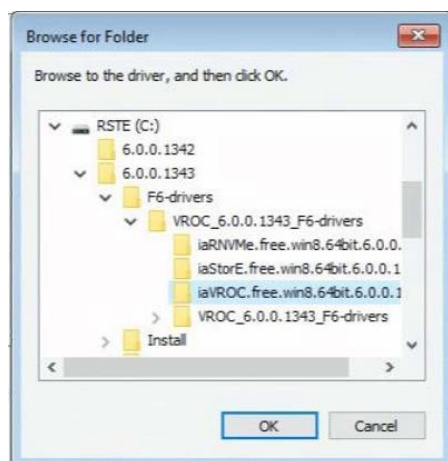
5.1 Installation Destination Selection

Click **Load driver**.

Click **Browse**.
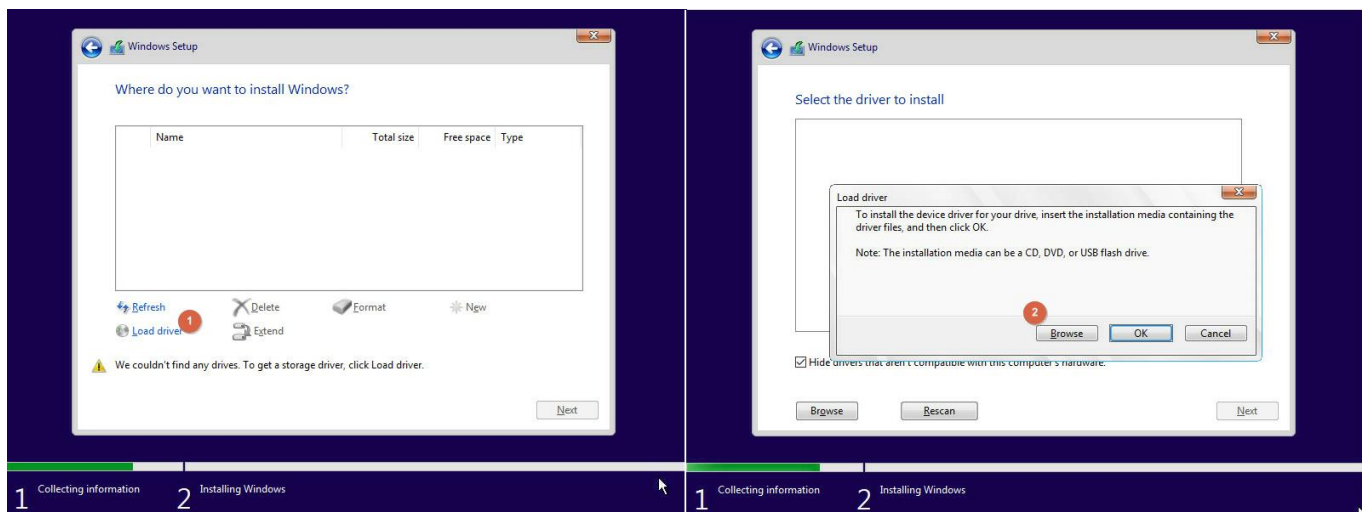
5.2 Navigate to where you have the correct F6 driver stored. iaStorE drivers are for SATA and sSATA drives, iaVROC will be for NVMe drives (when attached to the Intel VMD controller).


Note: SATA RAID and NVMe RAID driver can been downloaded in avalue website.

5.3 Highlight the selected driver and click OK to install. It require several minutes to complete installation of the selected driver.
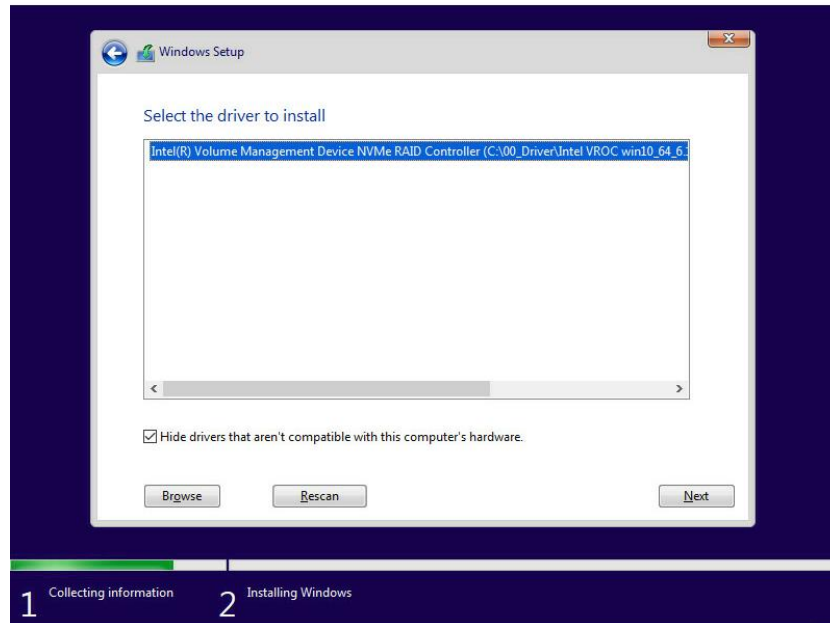
5.4 The RAID Volume should now appear once the driver has installed. Select the volume and proceed with your operating system installation for Windows as normal. If the drive does not immediately appear, use the Refresh tool to rescan the system for the RAID volume and proceed.
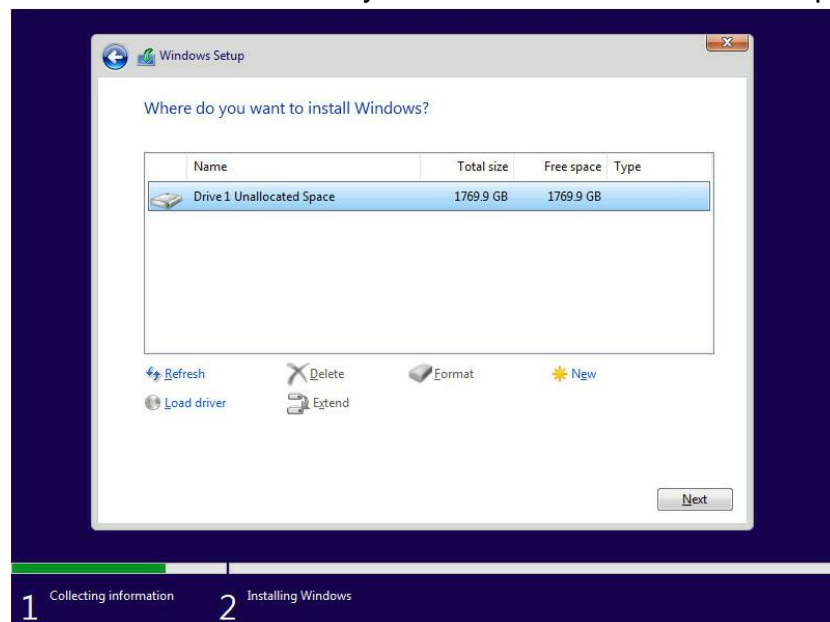

5.5 Select the desired volume and click Next to proceed with the installation of your Windows operating system.

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6 Install Intel® VROC GUI

The Intel VROC GUI allows for fully integrated management of the disks installed on your Windows system.
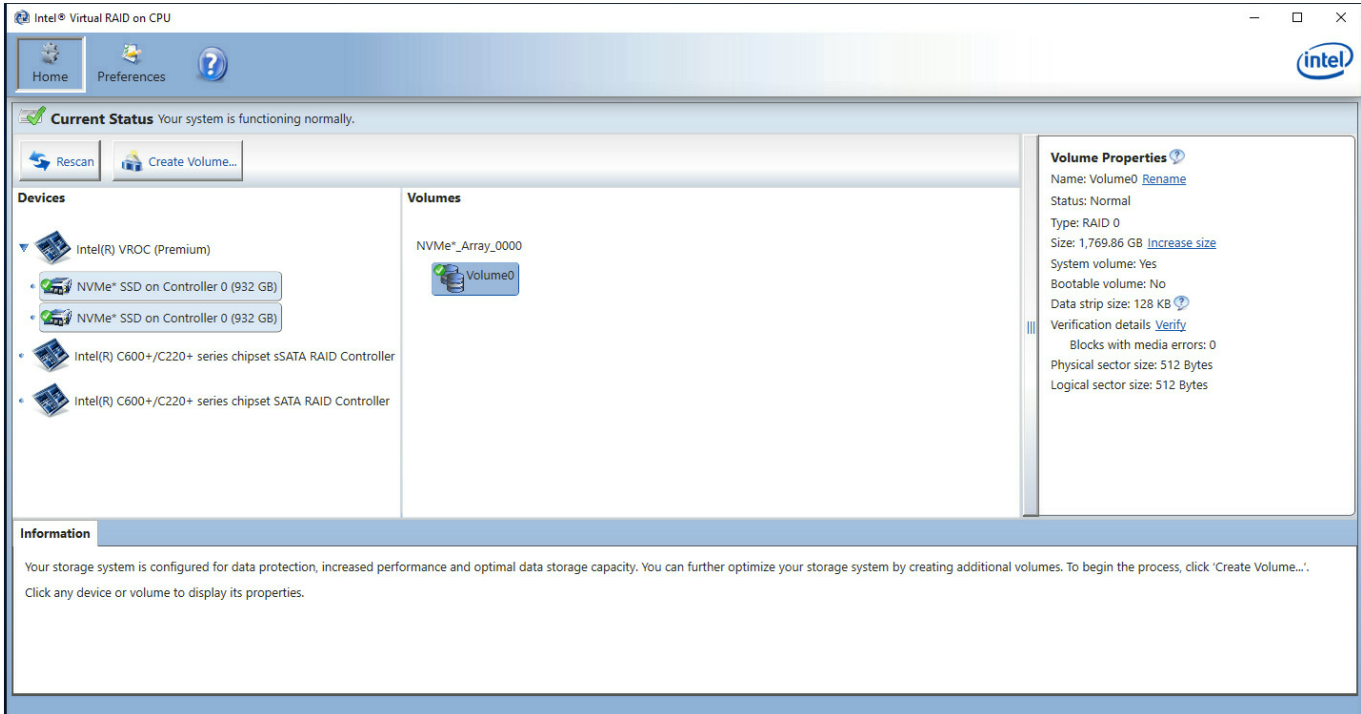
Note: The procedure to create a bootable RAID volume using the Intel VROC UEFI HII should only be used for a newly built system or for reinstallation of the operating system. It is advised to use the Intel VROC GUI within the Windows operating system for the creation of RAID volumes after the operating system is installed.

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