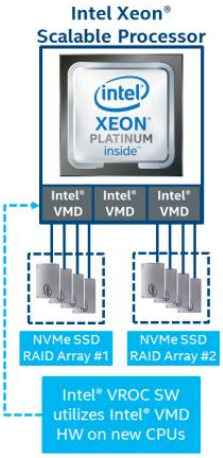
Advantech AE Technical Share Document

Date	2018 / 07 / 16	**Release Note**	□Internal■ External
Category	□FAQ■SOP	**Related OS**	Microsoft OS
Abstract	VROC setup on Intel Purley platform.		
Keyword	VROC, Purley, RAID		
Related Product	ASMB-815, ASMB-825, ASMB-925, ASMB-975 NOTE: Intel Purley platform.		

■ **Intel VROC overview:**

Intel® Virtual RAID on CPU (Intel® VROC) is a new software package for RAID volume management launched with the new Skylake CPU and Purley Platform. These CPUs have a new hardware architecture. It allows NVMe SSDs to connect via PCIe connections and directly manage on the CPU. Intel VROC leverages this architecture to enable NVMe RAID.



Picture1: Purley architecture to support VROC.

To use VROC function, a hardware VROC key and compatible SSD is required. Intel provide below three kinds of keys. And support below SSDs. (Table 1-2)

Key	RAID Support	SSD support
No key	0	Intel SSD
Intel® VROC Standard	0/1/10	3rd Party SSD Support
Intel® VROC Premium	0/1/5/10	3rd Party SSD Support
Intel® VROC Intel® SSD Only	0/1/5/10	Intel SSD

Table 1: VROC Keys.

Intel SSD	All Intel® SSDs for Data Center and Professional, with NVMe (Non-Volatile Memory Express)
3rd Party SSD	• Samsung* SM951, SM961, PM953, PM961, PM963 • Toshiba* XG3, PX04PMB • Micron* 9100 • Lenovo* Atsani • Huawei* ES3600P

Table 2:Support SSDs.

■ **Step by step setup**:

Below is the BIOS setup to build VROC. Note that if the NVMe SSDs are connected to different VMD (Volume Management Device), the VROC volume can only be used as data disk. (Can't be used as boot disk.)

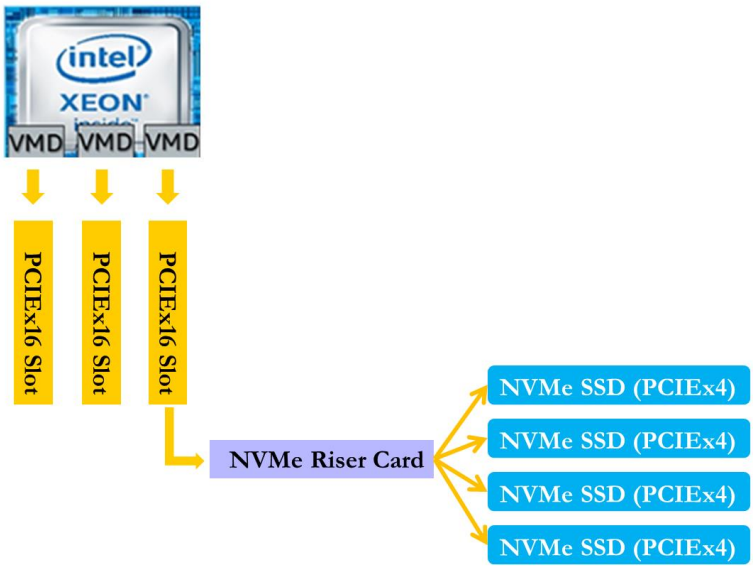
Step 1. If connect one PCIE slot to multiple SSD through riser card. Go to Socket Configuration->IIO Configuration->Socket Configuration to configure slot as x4x4x4x4. (Picture 2-3)

Step 2. Go to Socket Configuration->IIO Configuration->Intel VMD technology->Intel VMD Volume Management Device on Socket 0/1->enable related VMD volume management and ports. (Picture 4) Than user can choose to build RAID under BIOS (Step 3) or OS (Step 4).

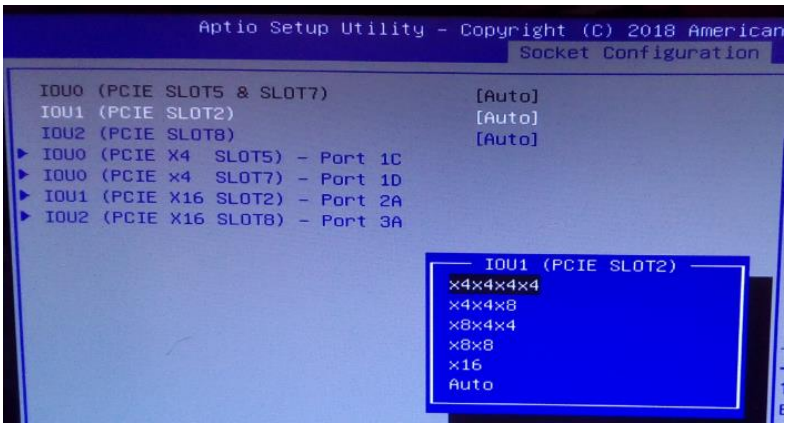
Step 3. Save the BIOS setting and install NVMe drive. Go to Advanced->Intel Virtual RAID on CPU to configure RAID. (Picture 5)

Step 4. If the OS support Intel RST. Save the BIOS setting in Step 1-2 and enter OS.

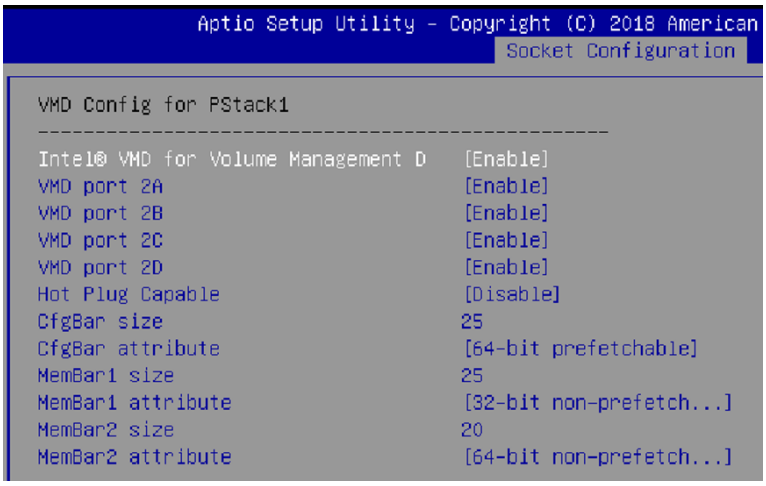
Step 5. Open Intel RST to create RAID volume. (Picture 6-9) Building VROC by Intel RST or BIOS has the same effect. Means that if build VROC by intel RST, the VROC volume will also show up under BIOS, vice versa.



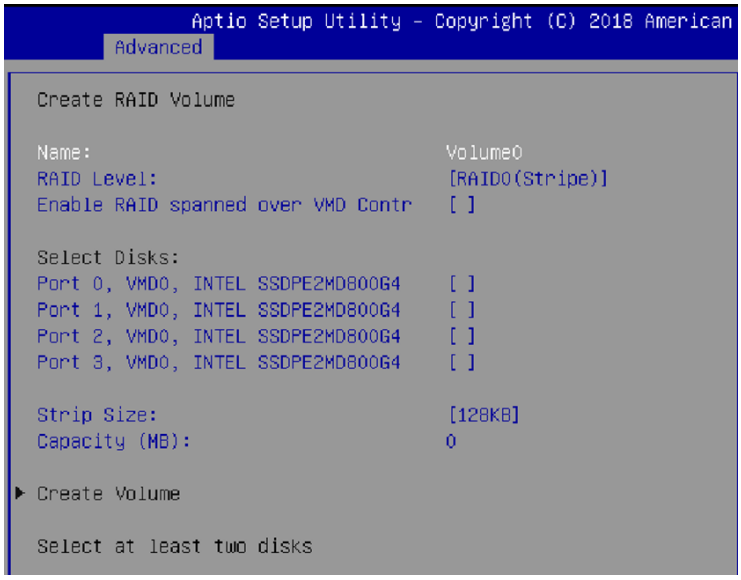
Picture2: Connect one PCIE slot to multiple SSD through expansion board.



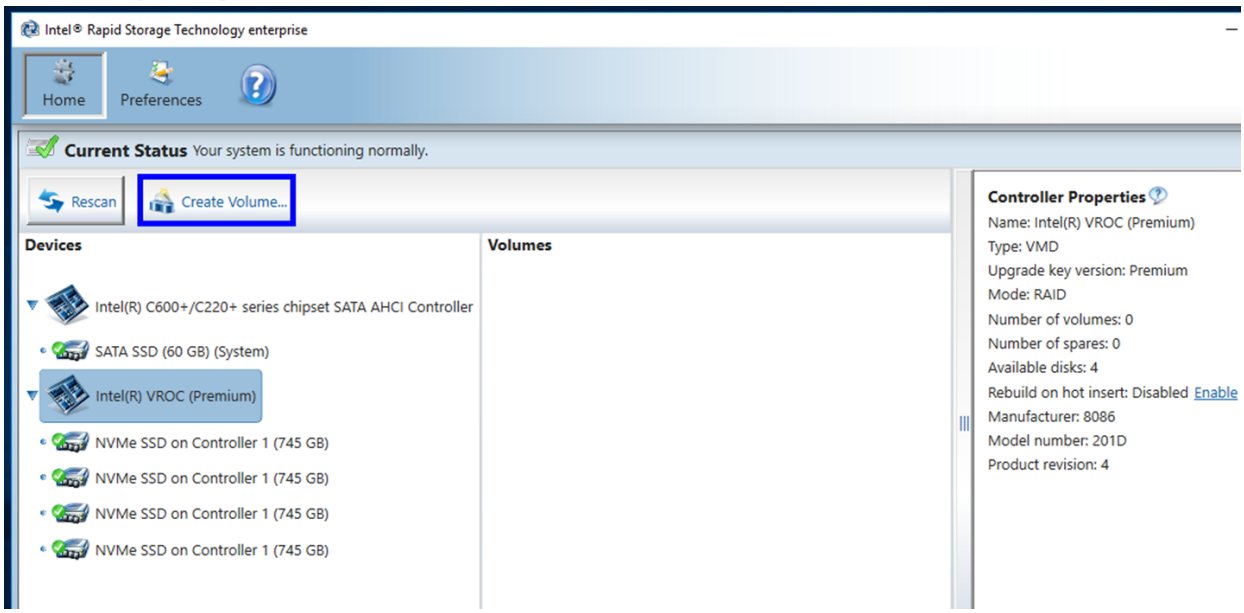
Picture3: Use slot 2 as example.



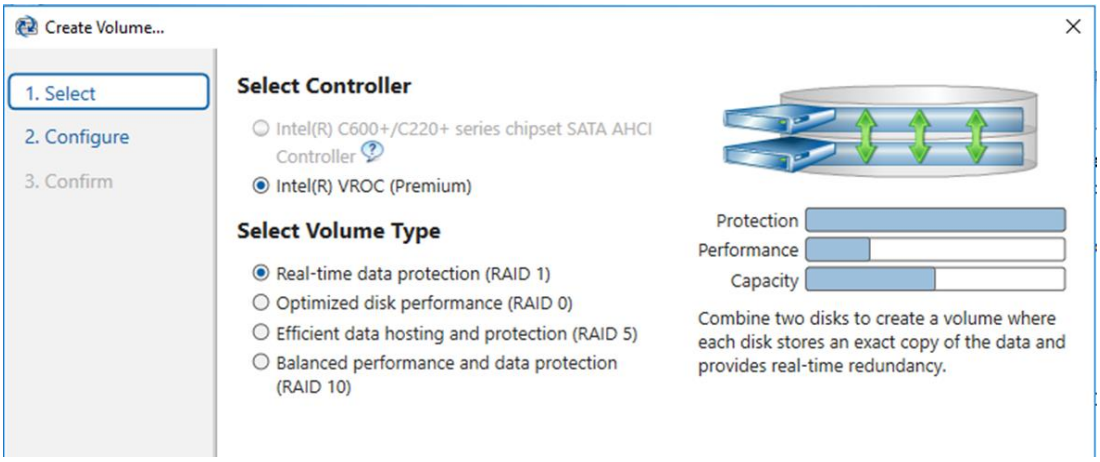
Picture4: Enable Volume management and ports.



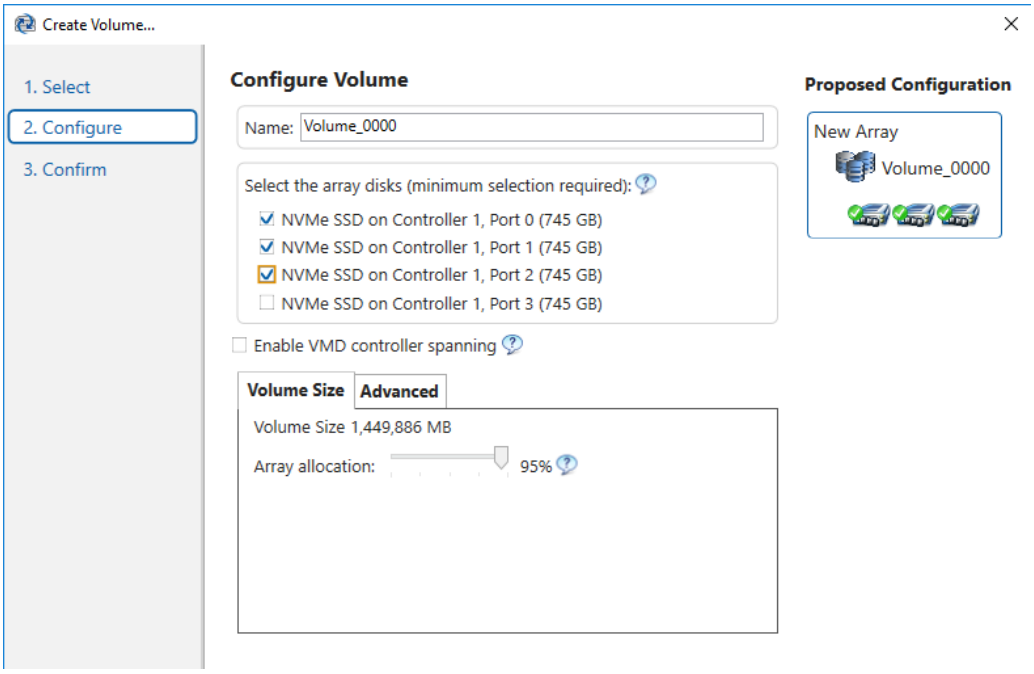
Picture5: Choose the NVMe drive and create volume.



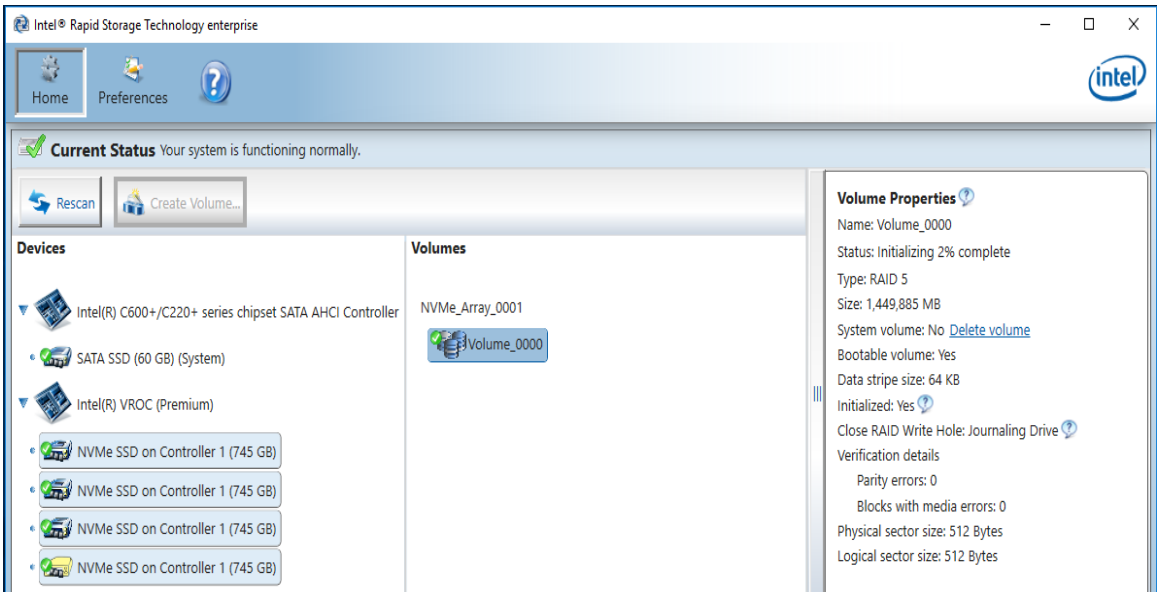
Picture6: Use Intel RST to create volume.



Picture7: Select RAID type.



Picture8: Select NVMe SSD.



Picture9: Volume is created.

- **Reference**:
  1. Intel VROC product brief
  2. Intel VROC FAQ