INTEL® VIRTUAL RAID ON CPU (INTEL® VROC) SUPPORT ON X299 REACTIVE Q&A

Updated: September 25, 2017

Q1: What is Intel® VROC?

A1: Intel VROC stands for Intel® Virtual RAID on CPU. It is a bootable RAID solution specifically designed for NVMe*-based Solid State Drives (SSDs) connected to the PCIe* 3.0 lanes off of Intel processors.

Q2: We saw Intel VROC on an Intel X-series processor and X299 chipset -based high-end desktop motherboard shown back in June at Computex 2017. Will Intel VROC be supported on X299 platforms? If so, when?

A2: Intel VROC is primarily targeted for professional workstations and server platforms, but can be enabled on any platform with processors that support the Intel Volume Management Device (Intel VMD) feature. It is currently Plan of Record that Intel VROC will be supported on X299 platforms starting on Sept. 25th. Please check with your HEDT marketing team for specific details regarding Intel VROC support on X299 platforms.

Q3: What is the biggest advantage of Intel VROC?

A3: The biggest advantage of Intel VROC is to be able to directly connect NVMe-based SSDs to the new Intel X-series processor family PCIe* 3.0 lanes. This provides the ability to manage bootable RAID volumes with NVMe-based SSDs directly connected to CPU PCIe* 3.0 lanes.

Q4: Is Intel VROC software or hardware RAID?

A4: Intel VROC is a hybrid RAID solution.

It has attributes like hardware RAID because of the key silicon feature called Intel Volume Management Device (Intel VMD) which is offered with the new Intel X-series processors. Intel Virtual RAID on CPU (VROC) utilizes Intel VMD to aggregate NVMe SSDs allowing bootable RAID. Intel VROC also has attributes like software RAID. For instance: it uses some of the CPU cores to calculate the RAID logic. Because of this combination of software and silicon, Intel VROC is called a hybrid RAID solution.

Q5: Does Intel VROC support 3rd party SSDs on the X299 platform?

A5: No. Intel VROC on X299 platforms supports Intel® SSDs only.

Q6: What is Intel VROC hardware key?

A6: Intel VROC is a licensed product for sale through the OEMs or ODMs with a support service level agreement. The Intel VROC hardware key is the mechanism to obtain a license to the Intel VROC software. Certain OEMs/ODM have platforms that support Intel VROC by adding a HW Key header to their motherboards. The Intel VROC hardware key is required to be inserted into that motherboard to enable the RAID license. Only one key is needed per system.

Q7: Where can I get an Intel VROC hardware key?

A7: End users can expect the hardware keys to be installed by their OEMs and/or system integrators in their platforms if the feature is requested. OEMs and/or system integrators obtain the keys from Intel or Intel's distributors.

Q8: Which OEM or ODM has designed in Intel VROC?

A8: Several OEMs and ODMs have designed in Intel VROC into their X299 platforms. Please query OEM or ODM platform provider directly.

Q9: What is the Intel VROC SKU supported on X299?

A9: The Intel VROC SKU supported on X299 is:

- **Intel VROC (Intel SSD only SKU):** RAID 0/1/5/10 support on Intel SSDs only.

Q10: How is Intel VROC different from Intel® RSTe?

A10: Intel VROC is under the umbrella of the Intel Rapid Storage Technology Enterprise storage driver family. The SATA RAID portion of Intel RSTe remains the same. For NVMe RAID, Intel VROC is architected to use Intel VMD to provide the following new features that Intel RSTe legacy NVMe RAID does not have:

- Bootable RAID 0/1/10/5 arrays from CPU PCIe* lanes directly

Q11: How can I try Intel VROC?

A11: Intel VROC support is specific to certain X299 platform providers. Please work with your provider and/or Intel representative for additional enabling support.

Q12: I found RAID0 works without Intel VROC HW key. But the product brief saying I need VROC HW key for RAID0. What should I do?

A12: An Intel VROC HW Key is required to use RAID 0/1/5/10 for most SSDs. However, Intel VROC is also designed to provide RAID0 for Intel x8 SSDs without requiring HW key. For instance: Intel DC P3708. For any other regular x4 SSDs, without HW key, RAID0 MAY work. In short, an Intel VROC HW Key is required for official support for RAID0 with regular x4 SSDs.

Cost reduction scenarios described are intended as examples of how a given Intel- based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.