Single Root IO Virtualization (SR-IOV) Finally in vSphere 5.1

Back in late 2009 Scott Lowe wrote a nice article on SR-IOV and make us understand what it is and how we could get benefit out of it. After close to 3 years VMware brought it to the table. So, let's do a quick recap and see how it can benefit us.

Single Root IO Virtualization is a standard that allows one PCI express (PCIe) adapter to be presented as multiple separate logical devices to the VMs. The hypervisor manages the physical functions (PF) while the virtual functions (VFs) are exposed to the VMs.

While this is similar to the VM Direct Path IO functionality already there in the ESXi but the exception is that the pass through functionality can be provided from a single adapter to multiple VMs through VFs unlike the VM Direct Path which presents an entire PF to a single VM.

In an environment where we are concerned about the network latency might need this feature that offloads the processing on to hardware of the PICe adapter. However, customers can't make use of the vSphere vMotion, vSphere FT, and vSphere HA features while using this offload functionality.

VMware supports Intel and Emulex's adapters for SR_IOV allowing them to handle the network packet processing. Additional adapters will be supported through certification after the release.

It allows one PCI express (PCIe) adapter to be presented as multiple separate logical devices to Virtual Machines. Similar to the VM Direct Path (pass through) functionality already supported on the ESXi, but VM Direct Path could only present whole PCIe adapter to a single VM.

But then it prevents the use of the vSphere vMotion, vSphere FT, and vSphere HA features by VMs using this offload functionality.

The following guest OS are supported for virtual machines configured with SR-IOV:

1. SUSE Linux Enterprise Server 11 64-bit
2. Microsoft Windows 2008 64-bit

If you upgrade from vSphere 5.0 or earlier to vSphere 5.1 or later, SR-IOV support is not available until you update affected NIC drivers. NICs must have firmware and drivers that support SR-IOV enabled for SR-IOV functionality to operate.

The following NICs are supported for virtual machines configured with SR-IOV. All NICs must have drivers and firmware that support SR-IOV.

1. Intel 82576 (Kawela)
2. Intel 82599 (Niantic)
3. Emulex OneConnect (BE3)
4. Solarflare
5. Broadcom 57712