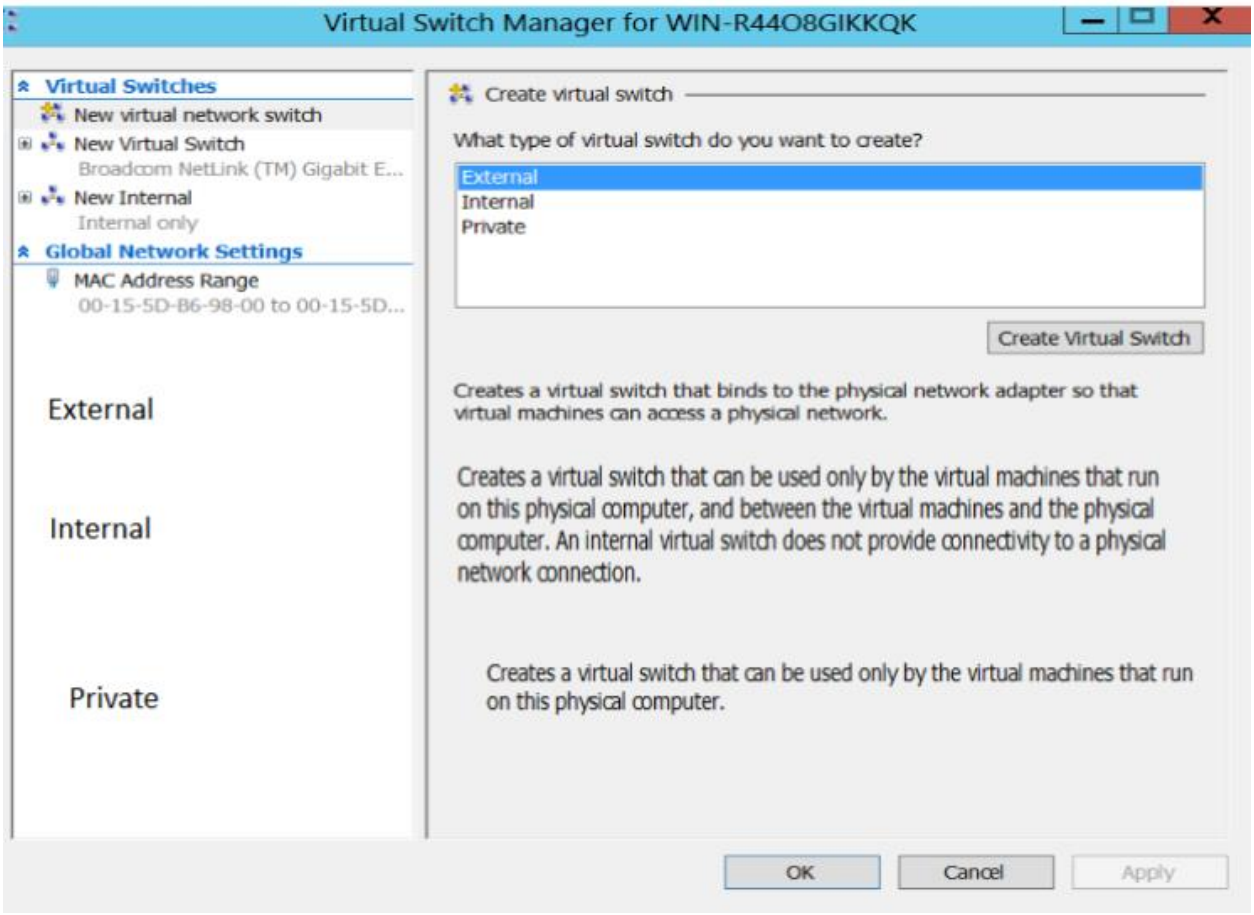
Hyper-V Switch Modes



Generation 1 and 2 Virtual Machines

In previous versions of Hyper-V, there was only one generation of virtual machine. In Windows Server 2012 R2 there are two generations of virtual machines to choose from when you create a new virtual machine:

 Generation 1 Provides the same virtual hardware to the virtual machine as in previous versions of Hyper-V.

 Generation 2 Provides the following new functionality on a virtual machine:

- PXE boot by using a standard network adapter
- Boot from a SCSI virtual hard disk
- Boot from a SCSI virtual DVD

- Secure Boot (enabled by default)

- UEFI firmware support

Note
IDE drives and legacy network adapter support has been removed.

The following Windows guest operating systems are supported as generation 2 virtual machines:
- Windows Server 2012 R2

- Windows Server 2012

- 64-bit versions of Windows 8.1

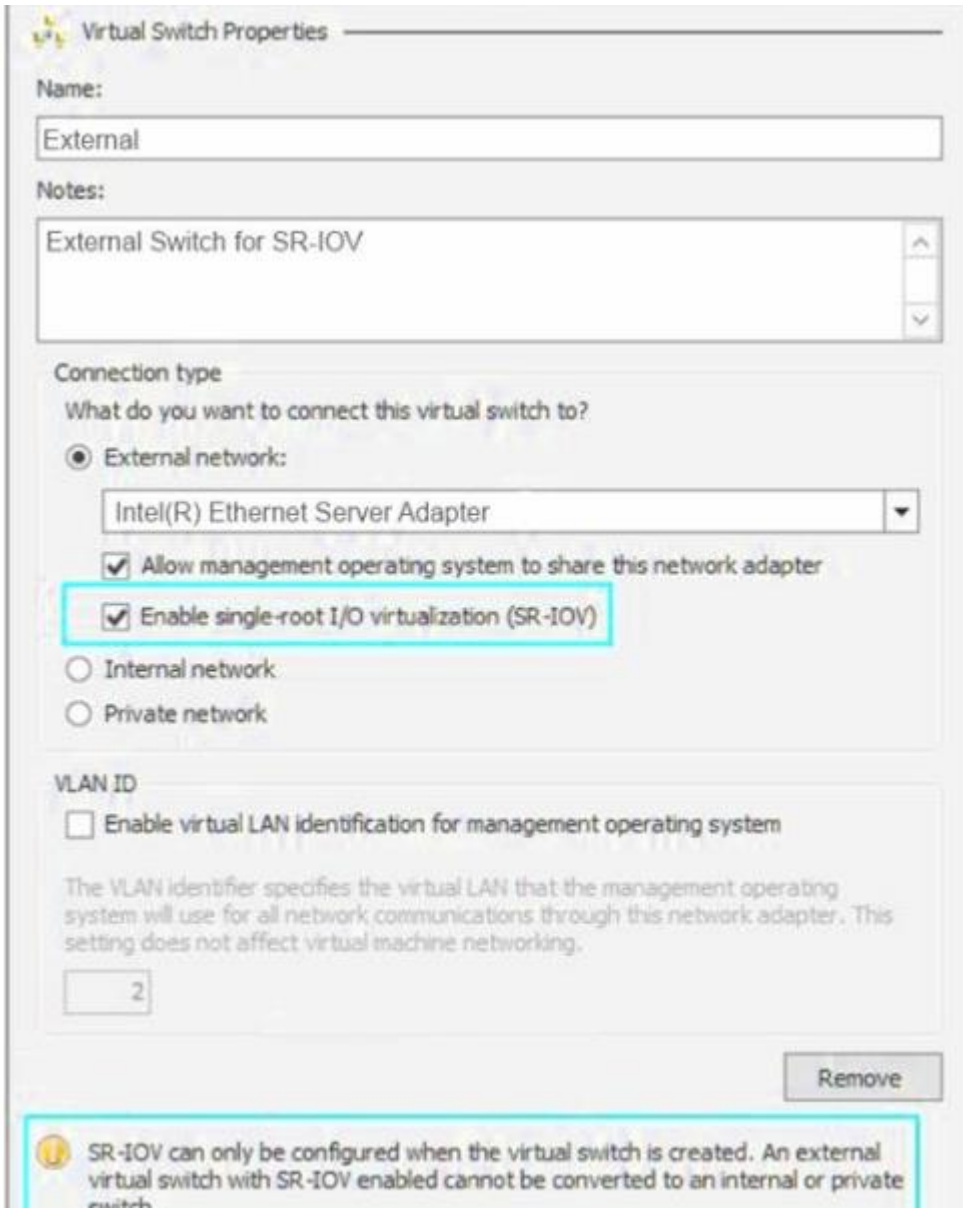
- 64-bit versions of Windows 8

SR-IOV

Enabling SR-IOV

The *Holy Grail* of performance with virtualization is for virtual machines to perform as if they were running on stand-alone physical machines. For networking this goal means reducing CPU utilization, reducing latency and jitter, and achieving native I/O throughput as if the VM was talking directly to the physical network adapter.
Single Root I/O Virtualization (SR-IOV) in Windows Server 2012 realizes this goal by enabling virtual machines to perform I/O directly to the physical network adapter, bypassing the root partition. SR-IOV is ideal for high I/O workloads that do not require port policies, QoS, or network virtualization enforced at the end host virtual switch. In Windows Server 2012, SR-IOV can be deployed in conjunction with key capabilities such as Live Migration. In addition, SR-IOV can be deployed on existing servers, because it is compatible with most current-generation 10 Gbps NICS, and several SR-IOV drivers come inbox with the operating system.

A screenshot showing how to enable SR-IOV for a virtual switch on the host


Virtual Switch Properties
Name:
External
Notes:
External Switch for SR-IOV
Connection type
What do you want to connect this virtual switch to?
External network:
Intel(R) Ethernet Server Adapter
Allow management operating system to share this network adapter
Enable single-root I/O virtualization (SR-IOV)
Internal network
Private network
VLAN ID
Enable virtual LAN identification for management operating system
The VLAN identifier specifies the virtual LAN that the management operating system will use for all network communications through this network adapter. This setting does not affect virtual machine networking.
2
Remove
SR-IOV can only be configured when the virtual switch is created. An external virtual switch with SR-IOV enabled cannot be converted to an internal or private