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# DYNAMIC VIRTUAL MACHINE QUEUE

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Operating Systems



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## Introduction

Dynamic Virtual Machine Queue (D-VMQ) - essentially allows the host's single network adapter to appear as multiple network adapters to the virtual machines, allowing each virtual machine its own dedicated network adapter, resulting in less data in the host's buffers and an overall performance improvement to I/O operations.

It dynamically distributes incoming network traffic processing to host processors, based on processor use and network load. If network load is heavy, D-VMQ automatically uses more processors - with light network load, Dynamic VMQ uses fewer CPUs.

## Dynamic VMQ for A Better Future

Now bring on Dynamic VMQ (DVMQ). All I know about this is from the Build sessions and I'll revisit this once I get to test it for real with the beta or release candidate. I really hope this is better documented and doesn't come associated with the issues we've had with VMQ Coalescing. It brings the promise of easy and trouble free VMQ where the load is evenly balanced among the cores and avoids to the burden of too many interrupts. A sort of auto scaling if you like that optimizes queue handling & interrupts.

## Benefits

The real benefit of VMQ is realized when it comes time for the vSwitch to do the routing of the packets. When incoming packets are indicated from a queue on the NIC that has a VMQ associated with it, the vSwitch is able to use the direct hardware link to forward the packet to the right VM very very quickly - by passing the switches routing code. This reduces the CPU cost of the routing functionality and causes a measurable decrease in latency.

## Conclusion

VMQ is the "virtualized" equivalent of RSS - its purpose is to load-balance compute resources across VMs and NICs, to increase the effective capability of a server's physical hardware. In some cases, VMQ may reduce the available bandwidth to a particular vmNIC.

## References

<http://charbelnemnom.com/2014/07/how-to-enable-configure-vmq-dvmq-on-windows-server-2012-r2-with-below-ten-gig-network-adapters-hyperv-vmq-vrss/>

<http://blogs.technet.com/b/networking/archive/2013/09/10/vmq-deep-dive-1-of-3.aspx>