

Tuesday, April 19, 2022

Dear ***** and ***:

Thank you for taking time with me yesterday to look over the ***** VMware vSphere configuration. What we found was an excellent solid configuration, with some room for improvement and just a few problems.

First and foremost, your ESXi Hosts are BL460 G9 blade servers with Intel(R) Xeon(R) CPU E5-2697 processors. These servers are on the [VMware compatibility list](#) for the latest version of vSphere available at this time (7.0.2 as of 4/19/2022), which means that they will be “in support” until at least October 2025. I recommend upgrading to the latest supported vSphere version at your earliest opportunity.

One item of concern that I was able to identify from the provided data is that the most of blades are running in “balanced” power mode with a “dynamic” power policy. This significantly impacts performance in VMware vSphere (especially with HPE servers) and I recommend switching to Static High-performance mode. It will use a bit more power, but be immediately rewarding in terms of overall performance. This is a change which needs to be applied through Onboard Administrator/iLO, however, the power policy change is applied immediately, without the need to reboot the server.

Another issue is that not all vSwitch1 and NFS VMkernel adapters are set to Jumbo Frames (MTU 9000). The MTU policy should be applied evenly to all hosts. Before changing MTU, be sure to place a host into Maintenance Mode.

It is notable that vSphere HA is not configured in the environment. HA is very effective and should be configured ASAP. It is not normally problematic, and if there are problems they are usually related to DNS. This might be related to the ESXi hosts being joined to the vCenter by IP. I would recommend: checking the DNS and Hostname for each ESXi Host, placing the Host into Maintenance Mode, removing it from the Cluster, then re-adding it using FQDN.

Time configuration is another area of possible improvement. I recommend using three external NTP servers on your vSphere environment. This is because the DCs are themselves part of the environment, and in the event of a network disruption, DCs W32TM could end up getting its time from the ESXi Hosts, which are in turn are getting their time from the DCs W32TM – a loop that results in very wild time shifts backwards. A good choice for NTP servers for vSphere is: 0.us.pool.ntp.org, 1.us.pool.ntp.org, 2.us.pool.ntp.org

There are several persistent snapshots on VMs, some of which have grown quite large. I recommend removing persistent snapshots for powered-on VMs ASAP. Some of these may be user-created snapshots and some may be Veeam orphans. If the VM is running and you choose “delete all,” the present running state of the VM will be used as a continuum moving forward.

On the SQL Servers in particular, we noticed a mix of SCSI controllers (LSI and pvscsi), pvscsi is the recommended adapter, however changing from LSI to pvscsi must be done with care: [Configuring disks to use VMware Paravirtual SCSI \(PVSCSI\) controllers](#). Also, we noticed that the virtual disks were not evenly-balanced across controllers. A VM with 9 disks and 4 SCSI controllers should have 3 disks on SCSI 0 (0:0, 0:1, 0:2) and 2 disks on each other controller (1:0, 1:1, 2:0, 2:1, 3:0, 3:1). To make this change the VM needs to be powered-off and a backup should be taken in advance.

The biggest area for improvement is clearly networking. The current configuration divides the 2 available 10GbE NICs across two vSwitches and uses NIC failover order policy to prioritize the 10GbE NICs. This is awkward and inefficient.

It would be far better to set-aside vSwitch0 as the Management Network only, with 2 1GbE NICs. Management Network does not generate much traffic and is well-served at 1GbE.

Then, for vSwitch1, assign both 10GbE NICs as active and divide traffic with VLANs (including NFS). This will allow load balancing among the 10GbE NICs to use the bandwidth better and both network performance AND availability will improve.

Furthermore, by separating traffic with VLANs, it will become possible to create internal virtual firewalls to further protect secure networks, creating a layered network configuration, sometimes referred to as "O-P-C".

I hope these suggestions are useful. If you would like to engage VMSources to assist with any of these issues, we would be pleased to provide a quote. Overall, I feel as if this environment is solid and can be viable for at least the next three years, based on the VMware product lifecycle matrix.

Sincerely,

John Borhek

John Borhek,
Lead Solutions Architect

Mobile: +1 928.606.0483
Office: +1 215.764.6442 X1001
Conference Bridge: +1 866.510.9775 (conference password: 456)
View my calendar: [<Web Page>](#) [<ICS>](#)

Email: john@vmsources.com
Personal Meeting: <https://meet.goto.com/JohnBorhek>
Website: <https://vmsources.com>
Support Portal: <https://support.vmsources.com>