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## vSphere Host NIC Design - 10 NICs

Blog - Tech Blog

Tuesday, 20 October 2009 22:32

EDIT: Updated 2/05/2010 - with new pictures of vSphere vSwitch and vDS

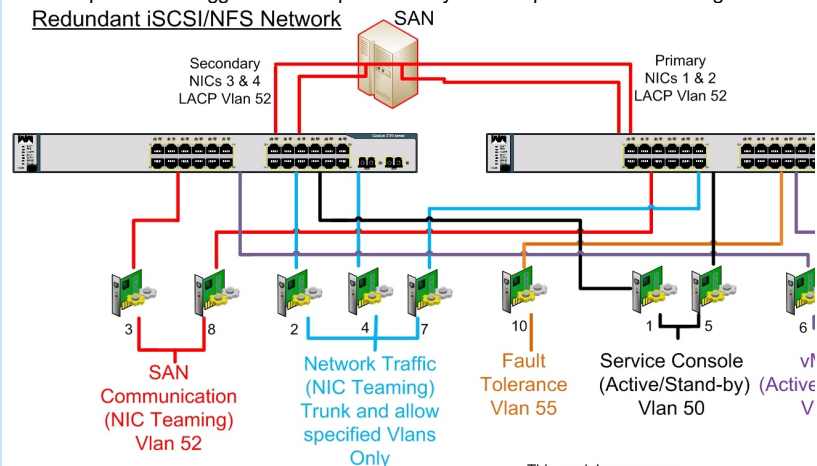
**\*\*One thing that I completely forgot to mention is that in my diagrams, I have 2 stacked Cisco 3750 switches. I forgot to put the stacking cable in the diagram. But just know that every configuration should be up to you of stacked switching\*\***

There was some talk going on the past 2 days about Host NIC configurations. @Kiwi\_Si is host site, [TechHead.co.uk](http://TechHead.co.uk), to see the most common configuration among our peers. Which inspired me to post.

This is what I like to do on my configurations. Use the 2 on-board NICs with 2x4Gb Expansion NICs for a grand total of 10 NICs to play around with. Here is a diagram of how I plan to design my vSphere Host NIC configurations. I still haven't fully configured Fault Tolerance on a set of physical servers, so let me know if you see anything amiss.

Thanks to a pointer from @darylhunter, be careful mixing the On-Board Broadcom NICs w/ the Intel NICs. There can be issues such as flow control.

Click the picture for a bigger shot. This picture as my 1st attempt and was later changed to below



ESX Host:

On-Board 1Gb NICs: 1 & 2

4 Port 1Gb NIC Expansion: 3, 4, 5, & 6

4 Port 1Gb NIC Expansion: 7, 8, 9, & 10

This model overcomes:

- Single NIC Failure, except for Fault Tolerance
- Complete On-Board or Expansion NIC Failure
- Single Switch Port Failure
- Complete Switch Failure, or a Switch Blade Failure
- SAN Controller Failure

By: Kendrick  
<http://www.kendrickcoleman.com>  
 Twitter @K4

**Here is my current setup for each host.** After chatting with @gabvirtualworld in a google wave, I point about using Service Console and VMotion on one port group for 2 NICs instead of 4 because Service Console only have traffic when you remote into the host or are moving virtual machines. The ability to use the other 2 NICs for complete Fault Tolerance and add another NIC to the network. For each host you add, be sure to not put all the Actives on one switch and all the Stand-bys on a different switch. Mix it up a bit so if you have a switch failure all your hosts won't be going through the same change.



## My Tweets



about 3 hours ago

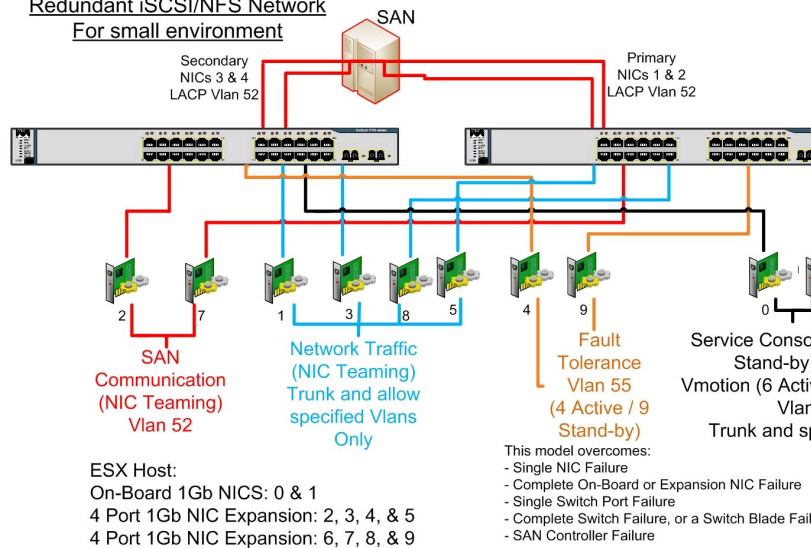
Hah RT @techmule: RT @ShitMyDevOpSays: you think doing it right is expensive? wait until you see what doing it wrong is going to cost...

about 23 hours ago

so much to get accomplished before VMworld. might have to take a day or two off work. maybe 4 days so i can study for VCAP

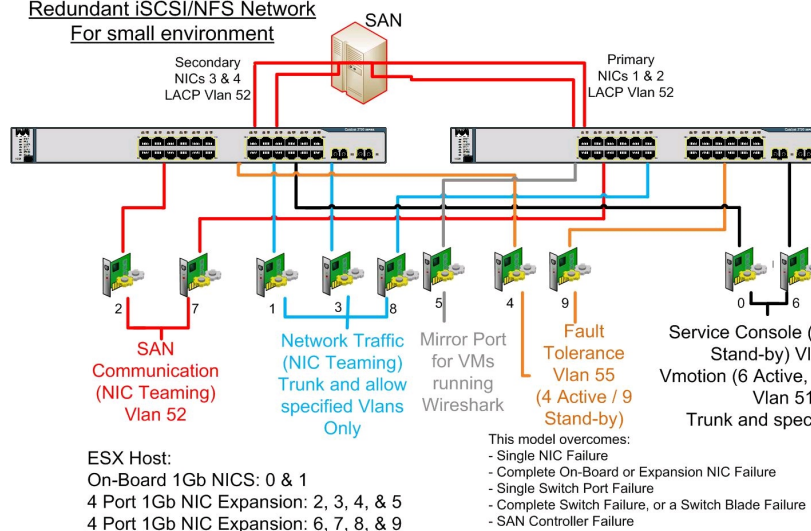
☐☐  
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## Redundant iSCSI/NFS Network For small environment



Another setup I contemplated using was using @darylhunter's idea and using 1 NIC as a mirror VMs that use Wireshark or some other packet sniffing software.

## Redundant iSCSI/NFS Network For small environment



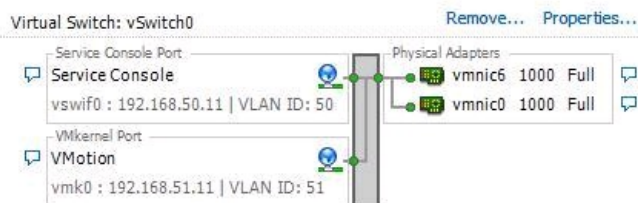
My original goal was to use Jumbo frames on the SAN ports on the switch. I found out that the Cisco doesn't support MTU changes on particular interfaces. Instead, you have to change the MTU size interfaces. Bummer. If you have a bigger environment, as a rule of thumb, you should have a separate traffic network with dedicated switches. If I had access to a Nexus or 4507-R I would be using the even 3750E for 10GigE support on the SAN, and enable jumbo frames.

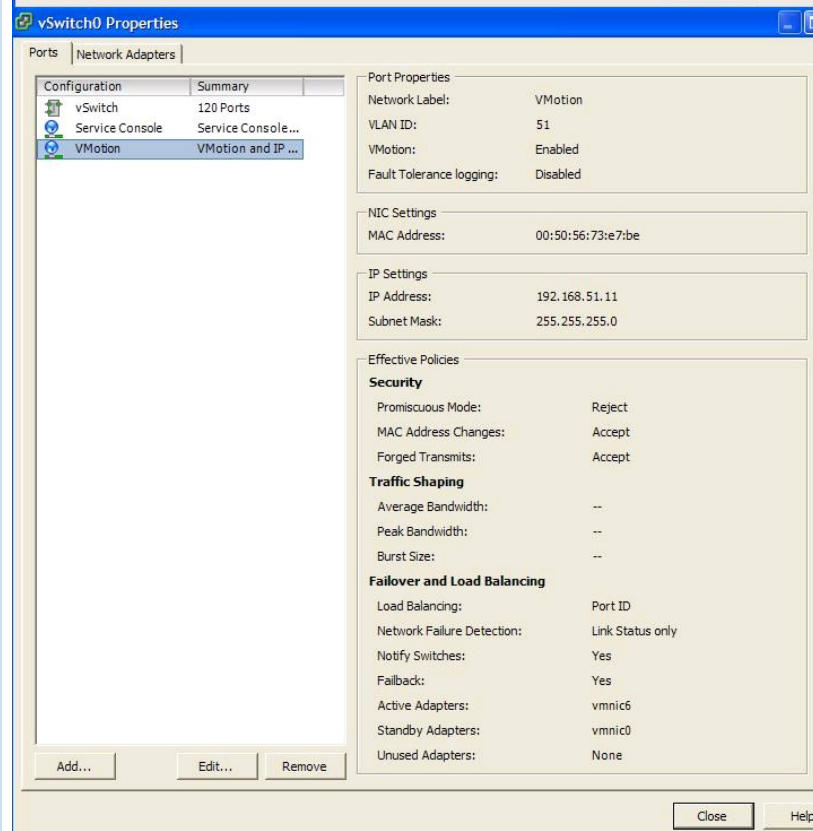
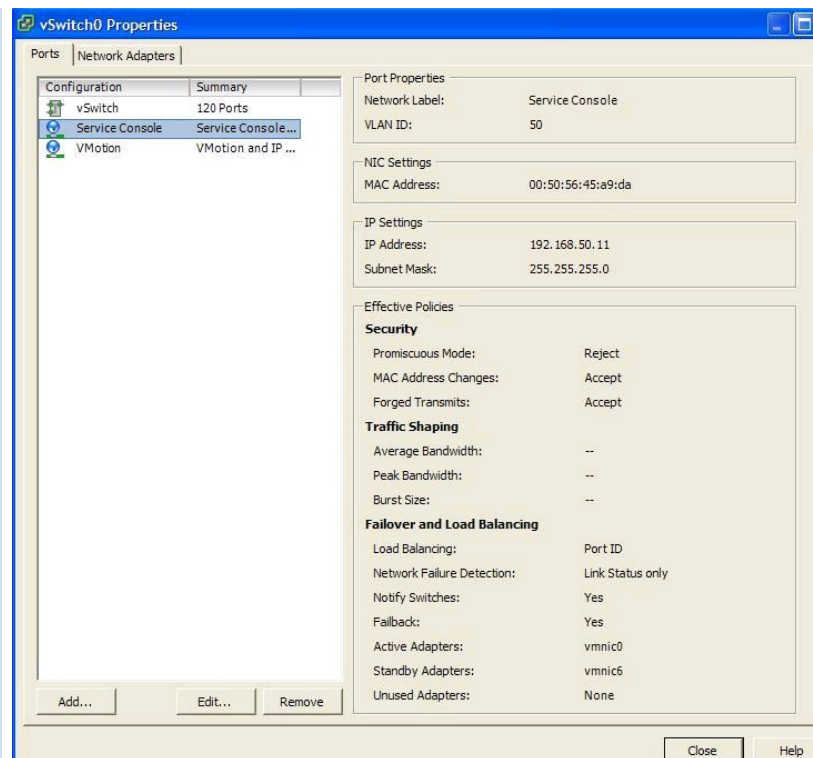
EDIT: 1/6/2009 - WE NOW HAVE JUMBO FRAMES!!! I found out that when you actually enable jumbo frames on 3750G, it enables it globally, but traffic will still flow. Jumbo frame traffic will only flow through it after you configure your end-to-end setup. So setup jumbo frames on your ESX NICs for SAN traffic, and service console frames on your SAN NICs. everything seems to be working smoothly and VMs are much faster. I was scared to enable jumbo frames globally.

EDIT: 2/5/2010 - Here is a picture of how I have everything setup inside of vSphere. I use 1 vSwitch of Service Console and vMotion and 3 Virtual Distributed Switches (vDS) to take care of Virtual Machine Fault Tolerance, and the Storage Network. Why do I not use Service Console and vMotion as a vSwitch have control over this type of traffic. By minimizing risks such as flow control, improper load balancers are better off telling your server where to send traffic during uptime (Active) and where to go if that fails (Stand-by). To achieve this type of configuration on the vSwitch you have to setup trunking on your physical and tag VLANs through vSphere. Just like you do with Virtual Machines on different VLANs.

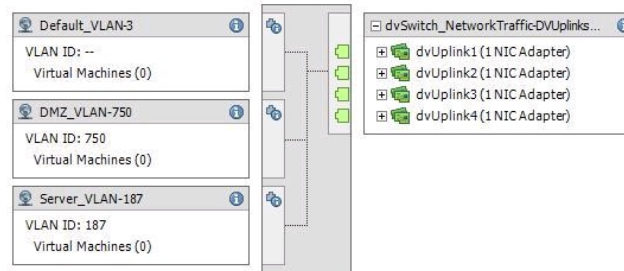
View: **Virtual Switch** Distributed Virtual Switch

### Networking

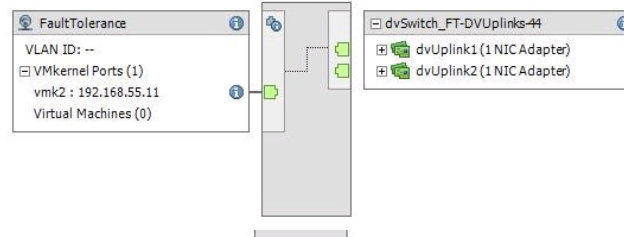




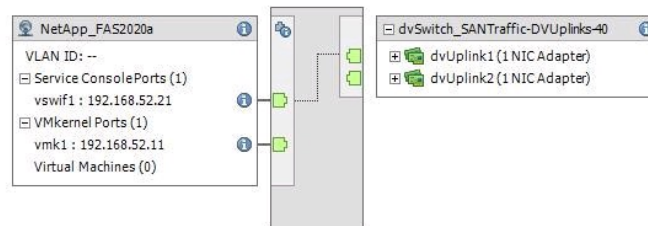
## dvSwitch\_NetworkTraffic



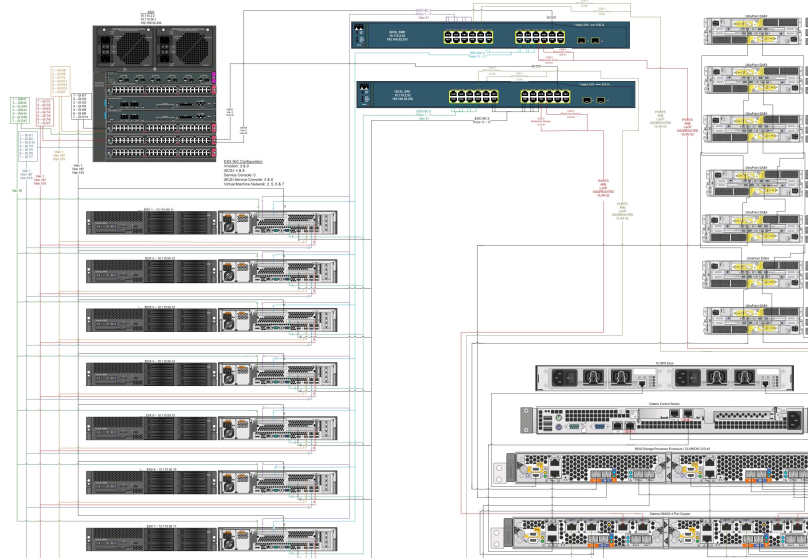
## dvSwitch\_FT



## dvSwitch\_SANTraffic



Here is a diagram of an older ESX3.5 environment with a separate storage network. I would upgrade switches and I would change the NIC configurations so the Service Console and VMotion NICs are on Nexus or 4507-E. This diagram has the VMotion NICs going to the SAN network, I wouldn't put it



Feel free to comment on how you would configure it differently or hit me back on twitter: @Kendrick

Please take a look at my other posts for more information and diagrams:

[vSphere Host NIC Design - 6 NICs](#)  
[vSphere Host NIC Design - 12 NICs](#)

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