Jumbo Frames in VMware

SUPPORT

	ESX3i	ESX3.5	ESX4i	ESX4
Supported	YES	YES	YES	YES
ISCSI Traffic	NO	Experimental	YES	YES
v-Motion	Experimental	YES	YES	YES
NAS (NFS)	NO	Experimental	YES	YES
Adapter Type in Guest	Enhanced VMXNET	Enhanced VMXNET	Enhanced VMXNET/VMXNET3	Enhanced VMXNET/VMXNET3
NIC Card Driver	BNX2 Driver	BNX2 Driver	BNX2 Driver	BNX2 Driver

The following vendors carry VMware certification for jumbo frames

- **Intel (82546, 82571)**
- **Broadcom (5708, 5706, 5709, 57710, 57711)**
- **Netxen (NXB-10GXxR, NXB-10GCX4)**
- **Neterion (Xframe, Xframe II, Xframe E)**

Filters to check:

1. **Initially check with NIC and Physical Switch vendors that they support Jumbo Frames.**
2. **If you have more than one physical switch configured on your environment, make sure each physical switch is enabled with Jumbo Frame (refer vendor documentation to enable it).**
3. **Don't get confused with ISCSI, NFS and vmotion with Jumbo Frames…End of day, your vmkernel port group (TCP/IP stack) should support it. Check above table for same.**
4. **Although it is said from vSphere4 onwards you can update MTU value on fly..But don't go with this word. Re-create the vSwitch and vmkernel port group with MTU value 9000.**

CONFIGURATION

To setup Jumbo Frames on vSwitch:

1. Add a new virtual switch with the command:

   esxcfg-vswitch -a vSwitch2

2. Set an uplink to vswitch with the command:

   esxcfg-vswitch -L vmnic1 vSwitch2

3. Set MTU for the vswitch with the command:

   esxcfg-vswitch -m 9000 vSwitch2

4. View Your Settings. List your newly created vSwitch with the command:

   esxcfg-vswitch –l(L as in Lima)

   Output should be something similar to this….

Switch Name	Num Ports	Used Ports	Configured Ports	MTU	Uplinks
vSwitch2	64	1	64	9000	vmnic1

To setup Jumbo Frames on VMKernel port group:

1. Add a new port group with the command:

   esxcfg-vswitch -A <portgroup name> vSwitch2, lets says port group name is <vmkernel1> for now.

2. Assign IP, Netmask and MTU value:
   esxcfg-vmknic -a -i x.x.x.x -n 255.255.255.0 -m 9000 vmkernel1

3. To view you settings, run:
   Esxcfg-vmknic –l (L as in Lima)

Setup DVSwitch with Jumbo Frames **(go ahead with this only if you have DVSwitch configured)**

To configure Jumbo Frames:

1. Click **Host > Configuration > Networking**.
2. Right-click on the desired dvSwitch and click **Edit Settings**.
3. Click **Advanced** and specify the maximum value for Maximum Transmission Unit (MTU) size

   Note: Normal MTU size 1500.

Setup your VM to start sending/receiving Jumbo Frames:

1. Ensure that your virtual machine is using the 'enhanced vmxnet/VMXnet3' driver.
2. Mount the VMware tools, select interactive mode for tools installation.
3. As tools has been already installed, select modify and click next.
4. Ensure VMXNET/VMXNET3 driver is enabled and installed. If not installed, install it now.
5. Browse to Device Manager, right click the NIC adapter, select properties.
6. Make sure the MTU value set to 9000 in Advanced section of adapter properties.

Test Jumbo Frames:

Make sure source and destination both are setup in same way (Source and Destination here means two VMs).

1. Test ping to your neighbour's virtual machine interface with the command:

   ping -f -l 8972 <x.x.x.x>

2. The output appears similar to:

   PING x.x.x.x (x.x.x.x) 8972(9000) bytes of data.
   8980 bytes from x.x.x.x: icmp_seq=1 ttl=128 time=3.36 ms

NOTE: Any packet larger than 1500 MTU is a jumbo frame. ESX 3.5 supports frames up to 9kB (9000 Bytes).

KB Articles to refer

Enabling Jumbo Frames: http://kb.vmware.com/kb/1003712

Supported Networking features in ESX3i and 3.5: http://kb.vmware.com/kb/1003345

Configuring Jumbo Frames on DVSwitch: http://kb.vmware.com/kb/1010711

Only BNX2 driver is supported: http://kb.vmware.com/kb/1009473