



Dynamic Solutions

INTERNATIONAL

DSI Restore Virtualized Appliance Version 5

Installation and Best Practices Guide

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Introduction

This document contains information for the installation and configuration of the **DSI Restore Virtual Appliance Version 5**.

The targeted audience of this document is Field Engineers responsible for the installation and configuration of DSI Restore in an end user customer environment.

The installation and configuration procedures in the document assume that the field engineer possesses a working knowledge of DSI VTL products including installation, configuration, along with setup of network and storage for a VTL. In addition, knowledge of VMWare, networking, fibre channel and data storage arrays is required.

This installation and configuration guide is intended to be used in conjunction with the **DSI520 VTL User Guide** entitled **Dynamic Solutions International® Optimized Backup & Deduplication for VTL and NAS User Guide for the DSI520 Series**.

For additional information and assistance contact DSI Customer Support.

Before You Install

Prior to beginning the installation of DSI Restore verify that the target VM server meets the following requirements

VM System Hardware Requirements

For a DSI Restore virtual appliance with a 2TB capacity the minimum VM server requirements are as follows:

Component	Configuration
CPU	ESXi version 5.5 or higher compatible (Dual Core)
Memory	16GB memory
Disk	At least 3.54TB free space
Storage	Thick Provision Lazy Zeroed

The default OVF Template file that is used for installation consists of a default virtual machine configured as follows:

Component	Virtual Machine Configuration
CPU	4 CPU's 1 core per socket
Memory	16GB
Disk	Configuration repository and DB: 1 x 20GB Backup cache: 2 x 600GB Deduplication repository: 2 x 1TB Deduplication index: 2 x 100GB Boot LUN: 1 x 120GB
Network	One 1GbE port

Verifying VM System Configuration

To verify that the VM system meets minimum recommended requirements perform the following:

1. Run the VMware CPU Identification Utility to verify the processor capabilities, Virtual Technology (VT) support, and BIOS settings, and ensure that the following requirements have been met:
 - The CPU and BIOS of the ESXi server supports 64-bit operating systems.
 - Virtual Technology (VT) is enabled in the system BIOS.
 - To enable VT go to the motherboard's BIOS configuration, then select the CPU's advanced settings, and select Enable VT.
 - After enabling VT, you must power off (not reset) the ESXi server completely, power it back on, and reboot to ESXi.
2. Verify the VMware tools are up to date and update if required.
3. Verify that the date and time of the ESXi server is correct.

For additional information on how to run the VMware CPU Identification Utility or verification of VMware tools contact your VMware administrator or refer to the VMware support knowledge base at the following link:

<https://kb.vmware.com>

Memory and Storage Requirements

The Restore virtual appliance base system includes 2TB of repository capacity and is expandable, in 2TB increments which requires additional capacity license key(s).

For achieving usable storage capacity between 2 and 12 TB use the following guidelines:

Capacity	2TB	4TB	6TB	8TB	10TB	12TB
Usable space	2 Terabytes of Deduplicated Storage	4 Terabytes of Deduplicated Storage	6 Terabytes of Deduplicated Storage	8 Terabytes of Deduplicated Storage	10 Terabytes of Deduplicated Storage	12 Terabytes of Deduplicated
Minimum Required Storage	4TB	8TB	12TB	16TB	20TB	24TB
CPU's	4 Virtual CPU's 1 core per socket	4 Virtual CPU's 1 core per socket	4 Virtual CPU's 1 core per socket	4 Virtual CPU's 1 core per socket	4 Virtual CPU's 1 core per socket	4 Virtual CPU's 1 core per socket
Memory	16GB	16GB	16GB	32GB	32GB	32GB
Operating System	Oracle Enterprise Linux 7u4	Oracle Enterprise Linux 7u4	Oracle Enterprise Linux 7u4	Oracle Enterprise Linux 7u4	Oracle Enterprise Linux 7u4	Oracle Enterprise Linux 7u4
Network Interface Card	1Gb or 10Gb Ethernet	1Gb or 10Gb Ethernet	1Gb or 10Gb Ethernet	1Gb or 10Gb Ethernet	1Gb or 10Gb Ethernet	1Gb or 10Gb Ethernet
Fibre Cards (optional)	QLogic branded Dual Port FC HBA	QLogic branded Dual Port FC HBA	QLogic branded Dual Port FC HBA	QLogic branded Dual Port FC HBA	QLogic branded Dual Port FC HBA	QLogic branded Dual Port FC HBA

For storage capacity in excess of 12 TB memory and storage requirements can be estimated using the following formula:

Minimum Required Storage (TB) = (Capacity x 2)

Required Memory (GB) = (((Capacity - 5) + 7) / 8) x 16) + 16

Example:

For a target usable capacity of **20TB** the following formulas would apply:

Minimum Required Storage = (**20** x 2) = 40TB

Required Memory = (((**20** - 5) + 7)/8) x 16) + 16 = 48GB

****Note:** All values for Minimum Required Storage and Required Memory are estimates. Your particular environment may require more than is recommended.

Installation

The following instructions describes a typical installation and configuration of a DSI Restore appliance using VMware and vCenter version 6.5. Actual customer configurations may vary depending on the VM environment and the target usable capacity.

Import Restore using VMware vCenter Web Client

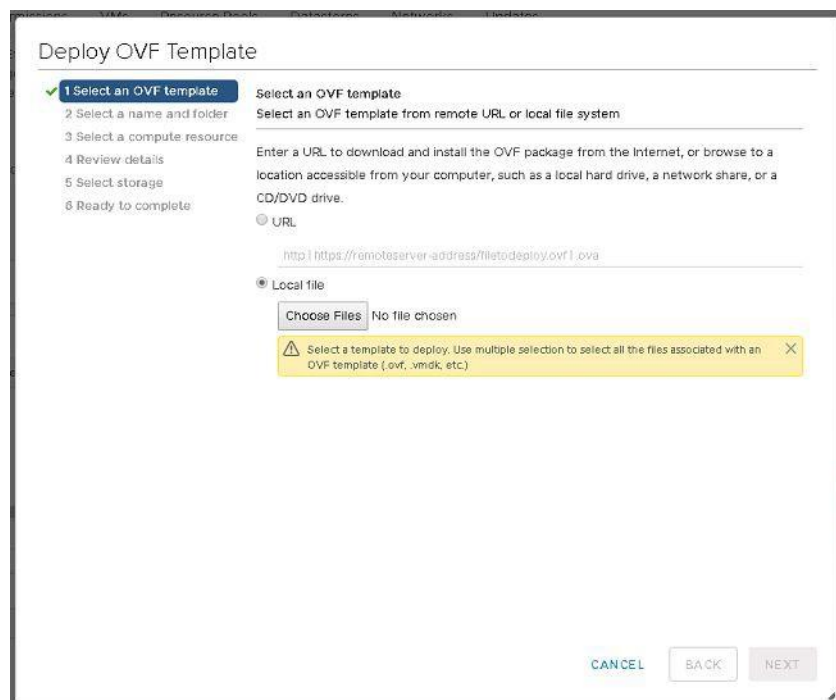
1. Launch the vCenter Web Client and connect to the ESXi server with *root* privileges.
2. Navigate to the directory containing the zip file DSI-RESTORE-V5-10520-2T-OEL.zip
3. Unzip the file:

unzip DSI-RESTORE-V5-10520-2T-OEL.zip

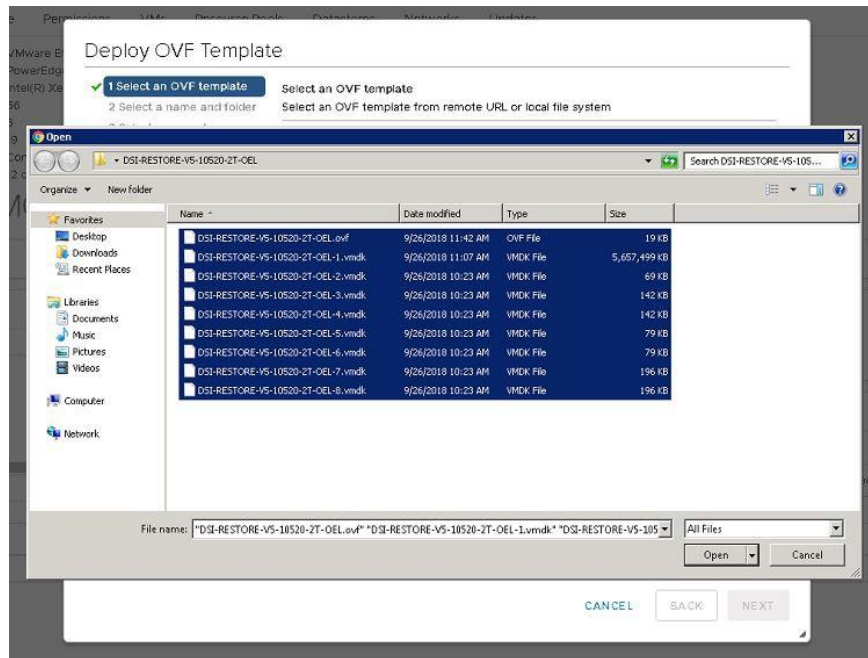
The files will be automatically extracted to the following directory:

../DSI-RESTORE- V5-10520-2T-OEL/

4. Select the VM server where Restore is to be installed by right clicking and select **Deploy OVF Template** to run the deployment wizard.
5. The first step of the deployment wizard requires that you choose an OVF Template. Select **Local File**, then click on the **Choose Files** option to browse to the folder into which the zip file was extracted.



6. Expand the folder and select **all files within the folder** and click **Open** to continue.



7. Once the OVF template files have been selected then continue onto the next step of the deployment wizard by clicking **NEXT** to **Select a name and folder**. Enter a unique name for the new VM instance and select the location folder from the list of directories provided.

NOTE: The name that you specify for the new Virtual machine will not be reflected in the actual host name of VTL appliance which is displayed by the operating system when using the Linux **hostname** command.

The screenshot shows a deployment wizard window titled "Deploy OVF Template". On the left, a vertical list of steps is shown: 1. Select an OVF template (checked), 2. Select a name and folder (highlighted), 3. Select a compute resource, 4. Review details, 5. Select storage, and 6. Ready to complete. The main area of the wizard is titled "Select a name and folder" and "Specify a unique name and target location". It contains a text field for "Virtual machine name:" with the value "DSI-RESTORE-V5-DEMO" entered. Below this is a section titled "Select a location for the virtual machine:" which contains a tree view. The tree view shows a folder "DSivCenter.dsldom.local" expanded, with a sub-item "DSI HQ" selected. At the bottom right of the wizard are three buttons: "CANCEL", "BACK", and "NEXT".

8. Continue with the next deployment wizard steps in order to **Select a compute resource** and accept the **End User License Agreement**.

Then click **NEXT** in order to **Select storage** for the new Virtual machine.

Choose a data store from the available list of **VM Storage Policies** and select **Thick Provision Lazy Zeroed** for the virtual disk format.

NOTE: It is important that the amount of available free space for the selected VM Storage Policy be sufficiently large for the OVF template being deployed.

For example, a 2TB OVF template requires 3.55TB or more.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- 6 Select storage**
- 7 Select networks
- 8 Ready to complete

Select storage

Select the datastore in which to store the configuration and disk files

☐ Encrypt this virtual machine (Requires Key Management Server)

Select virtual disk format: Thick Provision Lazy Zeroed

VM Storage Policy: Datastore Default

Name	Capacity	Provisioned	Free	Type
datastore1	1.08 TB	23.65 GB	1.06 TB	VM
MD1400	54.57 TB	43.96 TB	14.87 TB	VM

Compatibility

✓ Compatibility checks succeeded.

CANCEL BACK NEXT

9. Continue with the deployment wizard to the **Select networks** option to verify that the selected source and destination network are set properly for your particular network infrastructure. Additional setup of the network will be performed after the OVF deployment is complete. See

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Select storage
- 7 Select networks**
- 8 Ready to complete

Select networks

Select a destination network for each source network.

Source Network	Destination Network
VM Network	VM Network

1 items

IP Allocation Settings

IP allocation: Static - Manual

IP protocol: IPv4

CANCEL BACK NEXT

10. On the **Ready to Complete** screen review all settings and click **FINISH** to start the virtual appliance import process.

The import status window displays the completion percentage. Import should complete within several minutes depending on the particular VM environment and other activity on the VM server.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Select storage
- ✓ 7 Select networks
- 8 Ready to complete**

Ready to complete
Click Finish to start creation.

Provisioning type	Deploy from template
Name	DSI-RESTORE-V5-DEMO
Template name	DSI-RESTORE-V5-10520-2T-CEL
Download size	Unknown
Size on disk	3.5 TB
Folder	DSI HQ
Resource	10.0.100.15
Storage mapping	1
All disks	Datastore: MD1400, Format: Thick provision lazy zeroed
Network mapping	1
VM Network	VM Network
IP allocation settings	
IP protocol	IPv4
IP allocation	Static - Manual

CANCEL BACK FINISH

Start the Virtual Appliance

Once deployment of the Restore OVF template is complete do the following to start the virtual appliance for the *first time*:

1. Ensure that the browser being used has the pop up blocker disabled.
2. Launch the VMware vCenter Web Client and connect to the ESXi server with an account that has *root* privileges.
3. Power on the virtual machine.

Setting the initial IP address

The first task should be to set a static IP Address for management of Restore appliance. This is required in order to obtain access to the DSI Management Console which will be used to perform the configuration of virtual tape libraries and devices for Restore:

1. Verify that the VM for the Restore Appliance is in a **power on** state.
2. From the **Summary** tab click on **Launch Web Console** and log into the VTL server with the default user name **root** and password (case-sensitive) **DSI500**.
3. Temporarily configure the initial IP address using the following command in order to set the IP address for network device ETH0 to a previously defined and tested IP address:

```
# ifconfig eth0 <ipaddress> netmask <netmask>
```

Example:

```
# ifconfig eth0 192.168.0.100 netmask 255.255.0.0
```

4. Temporarily set the default gateway using the following command:

```
# ip route add default via <gateway IP>
```

Example:

```
# ip route add default via 192.168.0.1
```

5. Using the DSI Management Console, log in to the VTL via the temporary IP address previously set.

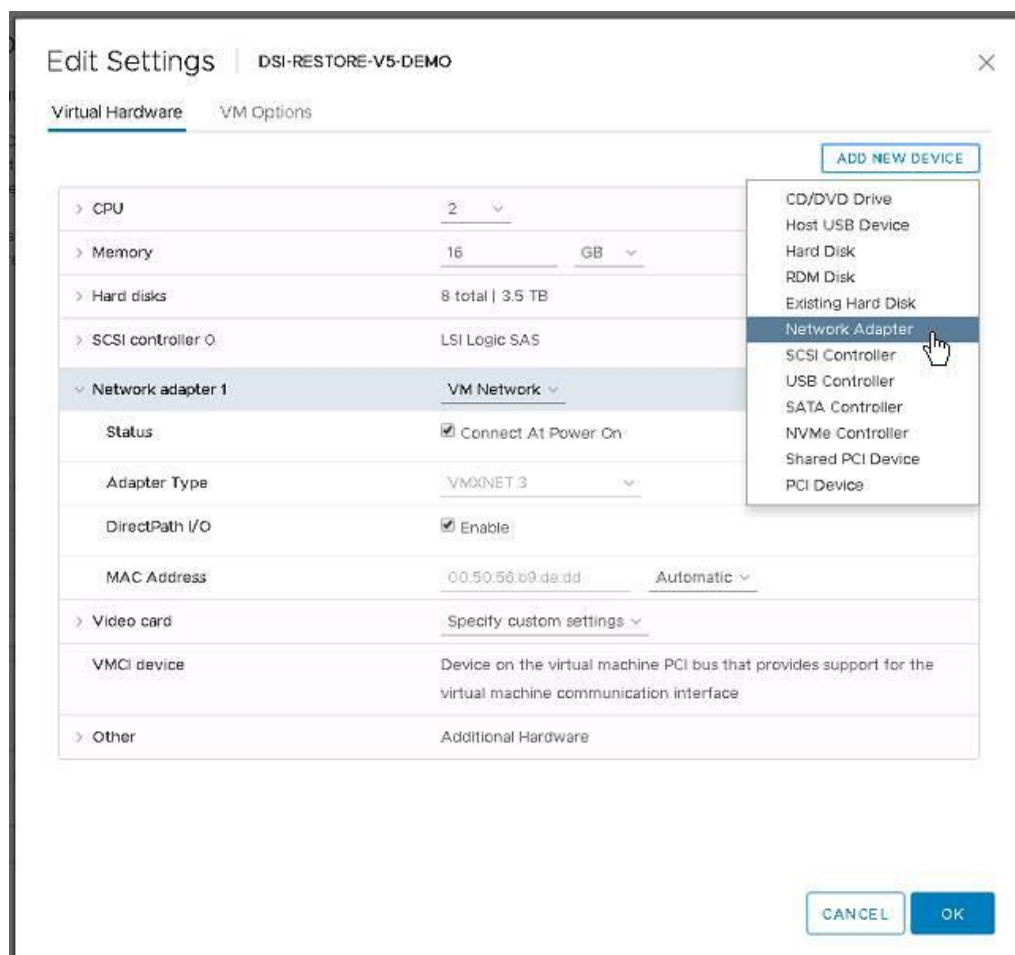
Once logged in, right click on the VTL server, select **System Maintenance**, then select **Network Configuration** to permanently configure the VTL network settings.

Additional information can be found in the **DSI520 VTL User Guide** under the **Setup network** section.

Adding Additional Virtual Network Adapters

The DSI VTL virtual appliance is pre-configured with one virtual network adapter. Do the following to add additional network adapters for replication or dedicated iSCSI communication if required:

1. In the VMware vCenter Client, right-click the installed Restore and then click **Edit Settings**.
2. Select **ADD NEW DEVICE**, then select **Network Adapter**



Fill in the appropriate options and then click **OK**.

Refer to the **Best Practices - Adjusting MTU Settings** section for additional information on setting up network interfaces for Restore.

Configuring the VM Server to use Fibre Channel Connectivity

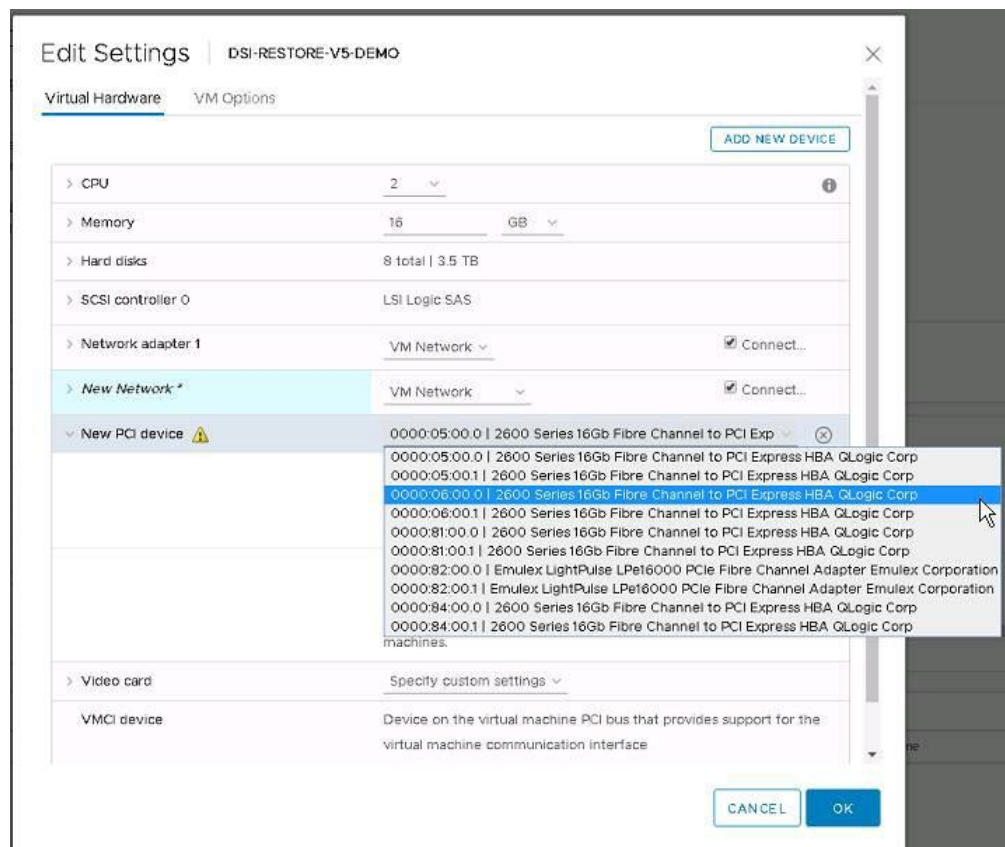
Note: This section is only applicable if fibre is to be used to access the virtual library or drives otherwise skip to the next section.

Also be aware that some virtual machine operations are unavailable when PCI/PCIe passthrough devices are present. You cannot suspend, migrate with vMotion or take or restore snapshots of the virtual machine, for example.

Consult DSI and with your VMware administrator prior to making the decision to configure fibre channel connectivity for the Restore appliance.

Do the following on the ESXi server to configure Fibre Channel connectivity to VTL clients:

1. In the VMware vCenter Client, right-click the installed Restore and then click **Edit Settings** select the **Virtual Hardware** tab and then select the **Network adapter** option.
2. Select **ADD NEW DEVICE**, then select **PCI Device**.
3. Select the desired PCI device from the available list and click **OK**.



For additional information on setting up Fibre Channel access refer to the VMware knowledge base article [Configuring VMDirectPath I/O pass-through devices on a VMware ESX or VMware ESXi host \(1010789\)](#).

4. To configure the Restore appliance to use the newly attached HBA type the following at the command line to select the correct type of HBA you are using:

vtl configtgt

5. From the DSI Management Console, enable FC Target Mode, create an FC client, and assign a tape library to the client.

These steps can be performed in the configuration wizard and are described in the ***VTL Tape Configuration*** chapter in the ***DSI520 VTL User Guide***.

Expanding Repository Capacity

This section describes how to expand the repository for the Restore appliance.

The default OVF Template for Restore includes 2TB of repository capacity and is expandable by purchasing additional capacity licenses in 2TB increments.

Each 2 TB increase in repository capacity also requires an additional 50 GB x2 Index and Folder disks as well as 300 GB x2 Tape Cache disks.

Expanding the Restore system requires the following steps:

- Add RAM to the VMWare server.
- Add license keycodes for the expansion capacity.
- If necessary, increase memory allocated for the VM Restore appliance.
- Add disks to the VM Restore appliance.
- Adding disks to VTL via the DSI Management Console. Refer to **Add Data Disks** in the **DSI520 VTL User Guide** for more information.

Adding License Keycode(s) for the expansion capacity

Add the keycode(s) for the additional capacity via the DSI Management Console. Whether your expansion capacity license includes one or several keycodes, you can add all keycodes at this time.

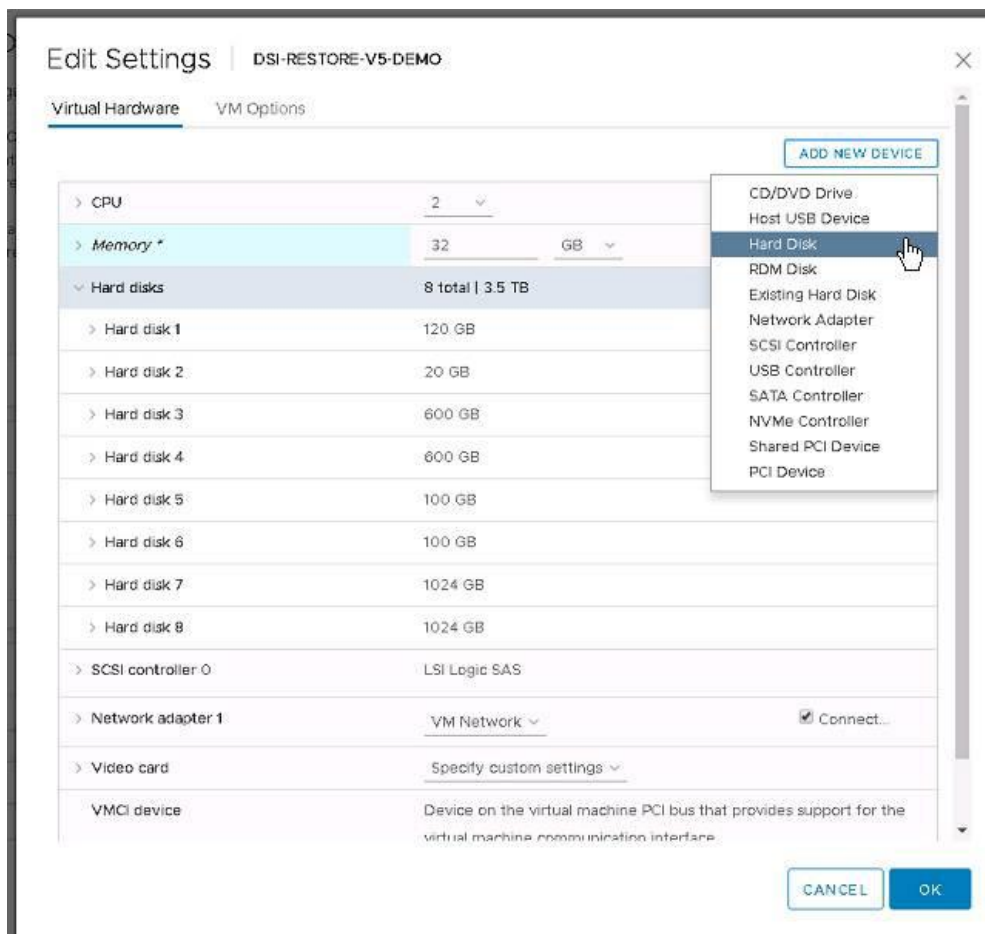
Adding Additional Disks to the Restore Appliance

Each 2TB increase in capacity requires that additional disk storage be available within the VM that contains the Restore appliance.

Also remember that the amount of disk resources you create must be consistent with the capacity key codes added to the Restore appliance.

In order to add additional disks to Restore perform the following:

1. Launch the VMware vCenter Client and connect to the ESXi server as a user with **root** privileges.
2. Power off the Restore appliance.
3. Right-click the Restore appliance and select **Edit Settings**
4. Select **ADD NEW DEVICE**, then select **Hard Disk**.



5. Enter the configuration information for the new Hard Disk.

Specify a size that increases the capacity in accordance with the [Memory and Storage Requirements](#) for Restore.

For **Location**, select **Store with the virtual machine**.

For **Disk Provisioning**, select **Thick Provision Lazy Zeroed**.

Then click **OK** to create the new additional disk.

The screenshot shows the 'Edit Settings' dialog for a virtual machine named 'DSI-RESTORE-V5-DEMO'. The dialog is divided into two main sections: a list of existing hard disks and a configuration section for a new hard disk.

Hard disk	Size
> Hard disk 3	600 GB
> Hard disk 4	800 GB
> Hard disk 5	100 GB
> Hard disk 6	100 GB
> Hard disk 7	1024 GB
> Hard disk 8	1024 GB
▼ New Hard disk *	1024 GB

Below the disk list, the configuration for the 'New Hard disk' is shown:

- Maximum Size: 11.36 TB
- VM storage policy: Datastore Default
- Location: Store with the virtual machine
- Disk Provisioning: Thick Provision Lazy Zeroed
- Sharing: Unspecified
- Shares: Normal, 1000
- Limit - IOPs: Unlimited
- Virtual flash read cache: 0 MB
- Disk Mode: Dependent
- Virtual Device Node: SCSI controller 0, SCSI(0:0) New Hard disk

At the bottom, there is a 'SCSI controller 0' section showing 'LSI Logic SAS'.

Buttons: CANCEL, OK

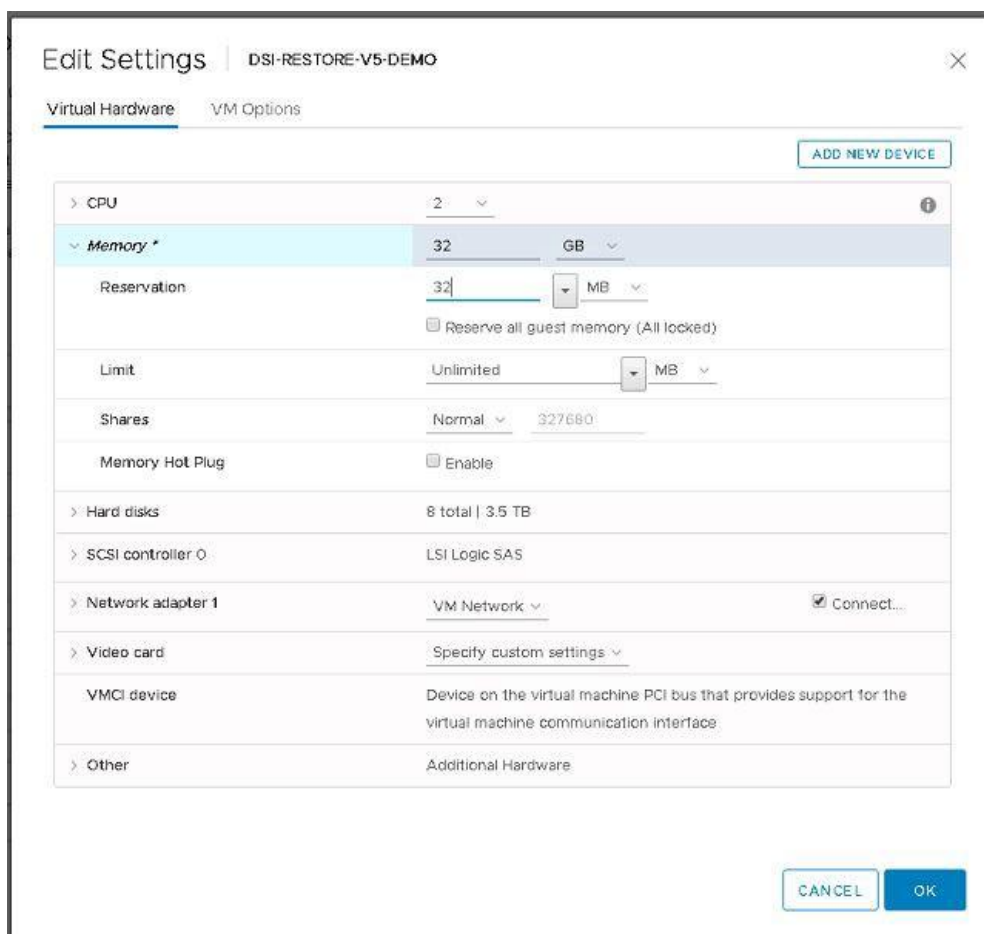
Increase Allocated Memory

Depending upon your expansion, you may also need to increase the memory allocated to the VTL virtual appliance.

Refer to [Memory and Storage requirements](#) for additional information on minimum memory to support the increased storage capacity.

To increase allocated memory:

1. Launch the VMware vCenter Client and connect to the ESXi server as a user with **root** privileges.
2. Power off the Restore appliance.
3. Right-click the VTL virtual appliance and select **Edit Settings**.
4. Complete the appropriate Reservation and Limit information and click **OK** to apply any changes made.



Ensure that the Restore appliance has sufficient memory resource reservations for its targeted capacity. Refer to [Memory and Storage Requirements](#) for additional information.

Additional Configuration

Once the VM for the Restore appliance has been successfully created there are other configuration tasks that will need to be completed in order to make the Restore appliance a functional VTL unit similar to configuration tasks that are required for physical VTL appliances. These tasks will vary depending upon your specific backup requirements. This includes the setup of virtual tape libraries and drives.

Refer to the ***DSI520 VTL User Guide*** for information on configuring virtual tape libraries.

Best Practices

Hardware Requirements

Specific hardware requirements are dependent upon customer requirements for volume and performance. For general hardware requirements refer to the [VM System Hardware Requirements](#). In addition, the following requirements should be given careful consideration.

CPU

When determining what type and how many CPUs to utilize consideration should be given to how many virtual tapes will be in use simultaneously at any given time. Each tape process uses a CPU process. When you add Inline dedupe, then you add an additional CPU process for each drive that has a tape in the dedupe policy and is actively being used (doing I/O). Performance will degrade when the number of CPUs is less than the number of tasks (tape I/O and Inline Dedupe) the VTL is performing.

Speed

The speed or performance of the tasks being performed is greatly affected by the interface and configurations of that interface. A fibre channel interface is usually faster than an iSCSI interface. Within the iSCSI interface, there are many ways to configure the many pieces and parts and some of these will be addressed later in this document. Please be advised that if performance is the ultimate goal, there could be lots of little changes that need to be performed. Please see Network Considerations.

Memory

We have not done any testing or measurements that give an account for what happens when not enough memory is given to the Restore VM during performance benchmarks. The only thing we know is that throwing more memory at the VM does not change the performance of the iSCSI throughput.

Disk/storage Performance Considerations

Disk I/O performance will only be as fast as the slowest connection. For example, if iSCSI speeds above 8Gb/s are required then all storage components including drives, cables, controllers and switches must all be capable of transfer rates above 8Gb/s. This is particularly true when attempting to use 12 Gb/s SAS storage subsystems. Make sure the correct cables and disk controllers (12 Gb/s vs 6 Gb/s) are used. There can also be periods of slow down while pending commands in the storage subsystem get queued. When the pending commands are no longer in a wait state, the performance goes back up. This has the effect that performance is undulating.

Network Considerations

Speed/Performance

To achieve the best possible performance in this configuration, having a 1:1 Target Mapping is desired. For Unisys MCP implementations this will require that additional lines be placed in the PCD, however the added benefit is that the targets buffer does not need to be shared among other drives. When tested, a 2:1 Target Mapping was not as noticeable a step down but more than two drives on a Target started to result a performance drop.

Contention (other traffic)

To guarantee that the data traffic between the host and the VTL instance is unencumbered, it is recommended that dedicated TCP/IP connections be established. In other words, if other entities are using the same network as the data moving from the host to the declared tape drives, the performance of those drives could be severely affected. To ensure no other interference on the network, it is best to dedicate a NIC port between the host and the VTL instance. Remember that iSCSI is using the TCP/IP protocols over your network. That means that any network traffic that uses the same NIC, switch, or route/line will affect the performance of your iSCSI tapes. With all the protocols passing data, the iSCSI packets are just another part of everything going across the network. We have observed that on dedicated networks between the host and VTL that the highest throughput has been reached compared to a network that is shared.

iSCSI Initiator/Target Mapping/IP Aliasing

While most configurations for fibre tapes configure a Target with several LUNs underneath it, this kind of configuration means that the more LUNs you declare behind the iSCSI Target the more devices that are sharing the buffer for that Target (which Microsoft does not manage well). An alternative configuration would be to make each device its own Target (1:1 Target mapping). This can further be broken up with multiple IP addresses in the iSCSI Initiator (but we have not found significant performance measurements that determine if IP Aliasing is necessary or not). We have seen the Target mapping change increase the amount of throughput when multiple drives are configured.

When configuring 1:1 Target mapping, be advised that this might look a bit strange in the PCD. With a 1:1 Target mapping, each drive gets its own Channel (the association to the Target). If the drives are sequentially numbered then they will still show up the same in the PER MT display (they will just look very different in the SC+ display). It has been tested with 2:1 mapping where two LUNs are assigned to one Target that the performance degradation is negligible.

The iSCSI protocol is packet based with acknowledgments that have to be made between the initiator and target. With a single drive, there are delays built into the protocol as these iSCSI packets are inserted into the TCP/IP traffic. With more devices configured on the line, more devices can queue up their packets allowing

for higher throughput. While one device might be filling its buffer after a transfer acknowledgement, another device could already be sending data. **It is up to the user to find the optimal number of drives on their network that allows for the most amount of data yet doesn't overburden the line.** Keep in mind that it might be necessary to dedicate more than one IP address within the iSCSI Initiator (IP Aliasing) for doing the workload.

Security

When involved in the world of data being passed over a network, there are several kinds of security precautions that can be taken including implementation of iSCSI CHAP authentication or Internet Protocol Security (IPSec) which has several protocols within IPSec . At this time, it is unknown how much of an effect any of these security protocols may have on overall performance of the Restore system.

Additional Unisys MCP ClearPath iSCSI Requirements

In order to utilize iSCSI with MCP ClearPath system, the following requirements are necessary:

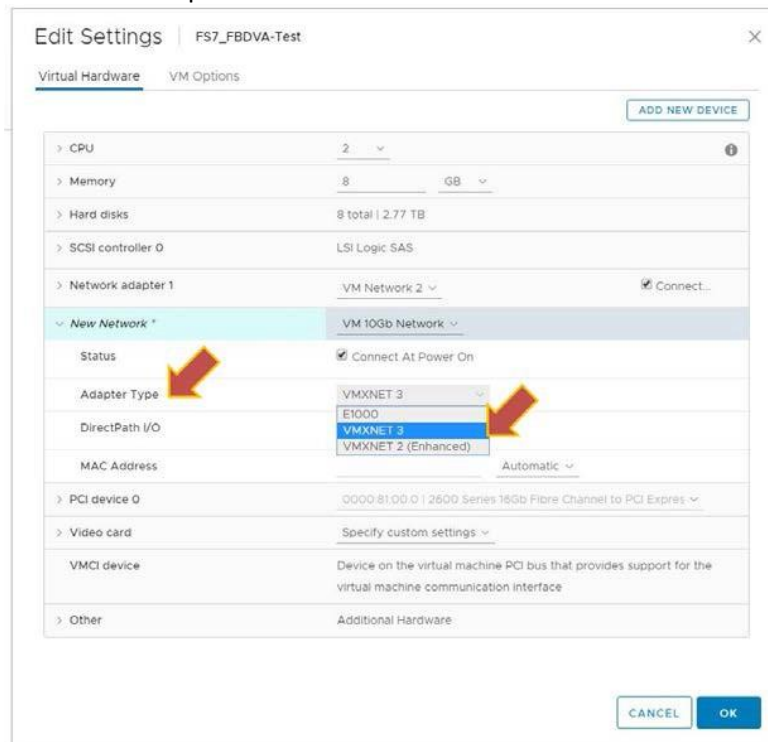
- MCP version 18.0
- CSS 2.1
- Windows Server 2012 R2 or Windows Server 2016

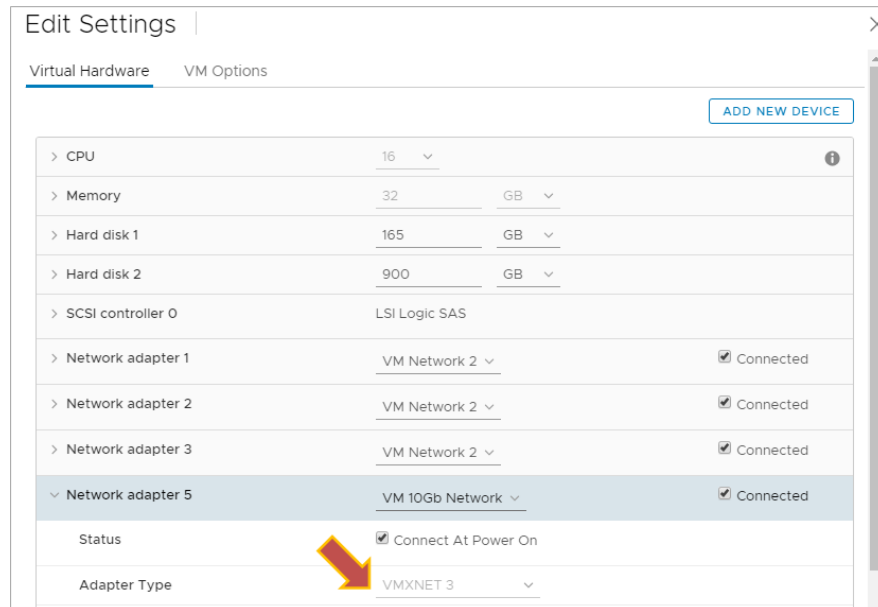
Adjusting MTU Settings

The use of iSCSI within any environment (including the DSI Restore) involves MTU settings. While some articles recommend Jumbo Frames be set, we have discovered through testing that there are no significant performance differences with Jumbo Frames set. Along those same lines, we did not see any performance degradation either with Jumbo Frames set. Should you choose to set Jumbo Frames, keep in mind that this requires changing the default MTU settings from 1500 to 9000. Such a change needs to be set at the virtual switch in VMware, the VM kernel adapter (if using a vSphere standard switch), as well as at the OS level of the VTL and whatever system it is communicating with (which includes the VTL) – Setting it within VMware alone isn't enough. Also, for each host to pass Jumbo Frame traffic between systems, the network must support Jumbo Frames end-to-end including the virtual switch(es), physical switch (if present) and adapters for each VMware host. Should you choose to set Jumbo Frames, please be sure that every step along the path is set that way. **Side note:** For a 10Gb network environment, the use of the VMXNET3 adapter for the VMware host is required instead of the default E1000E adapter (which is not available for Linux partitions). DSI recommends that this be the default adapter for all Restore installations moving forward regardless of the type of physical switch that may be present. The adapter type is selected when adding a new device.

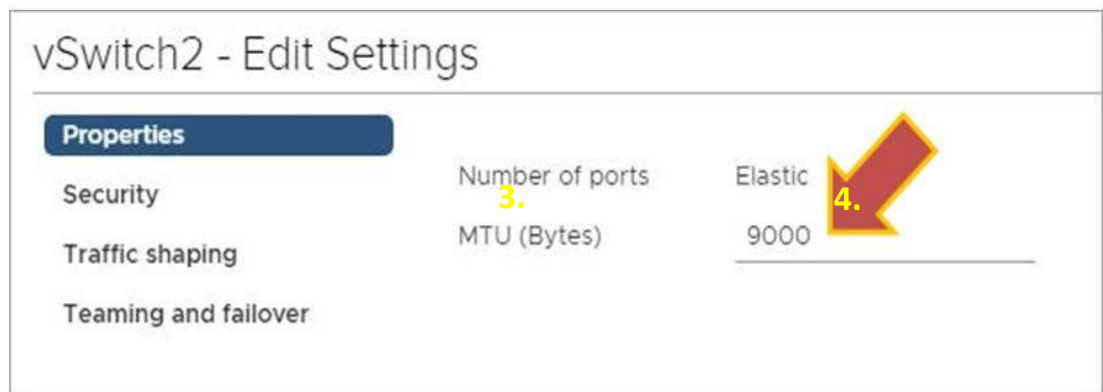
The following example shows how to set the adapter and also shows what is needed for setting Jumbo Frames (MTU 9000).

> Network Adapter to the host:

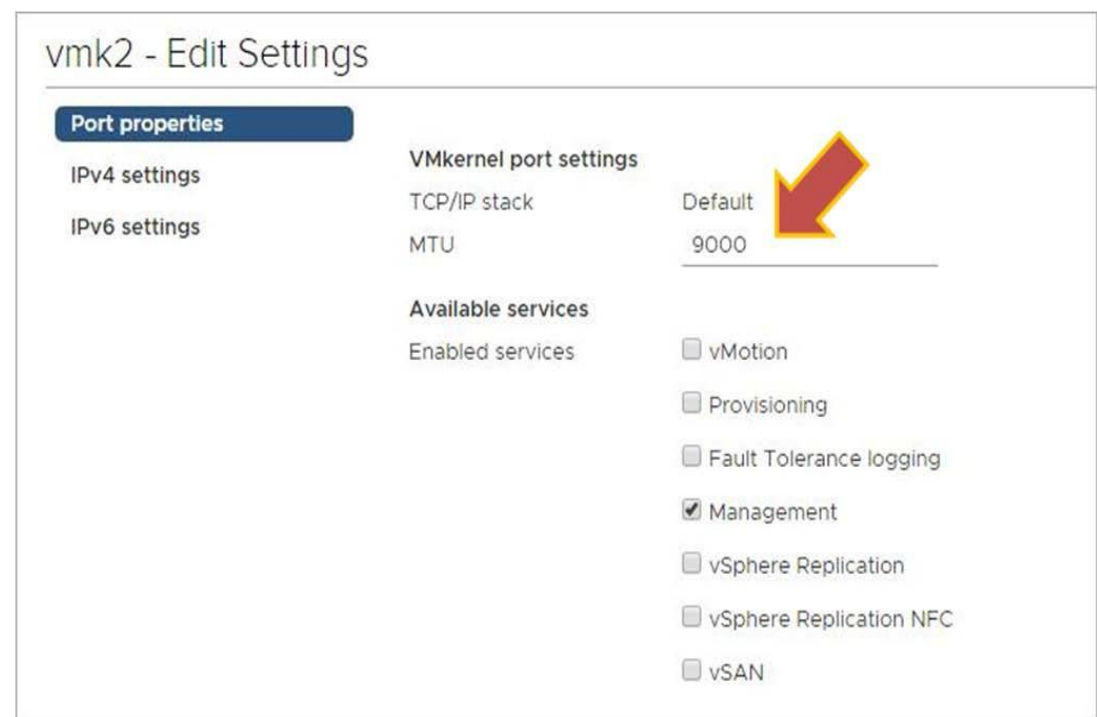
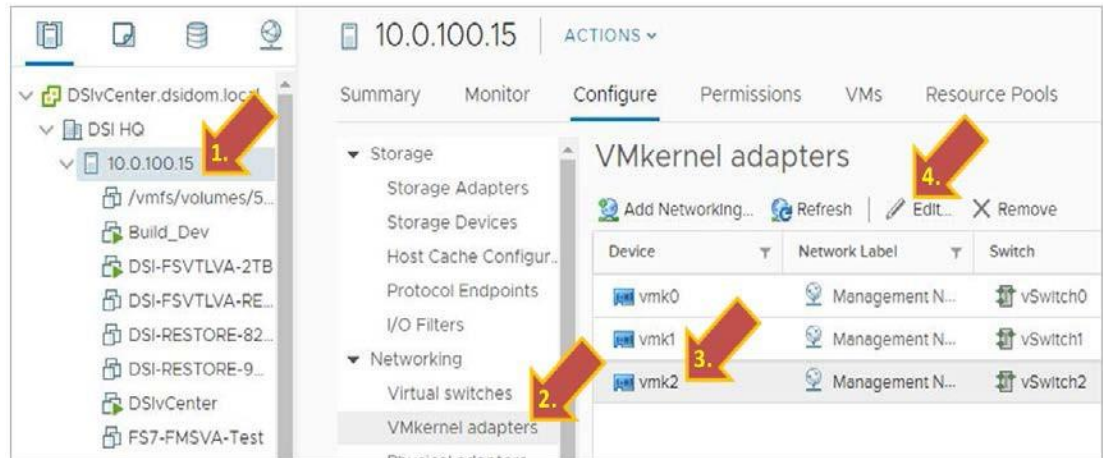




Enabling jumbo frame support at the virtual switch:

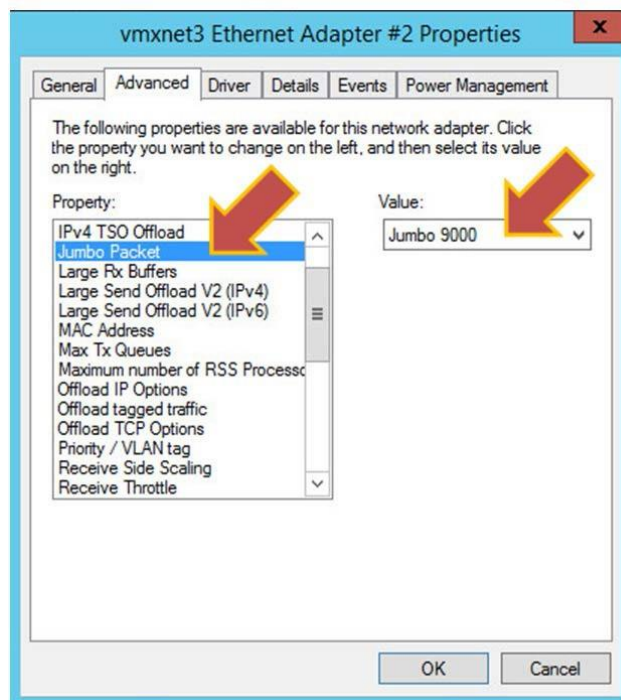
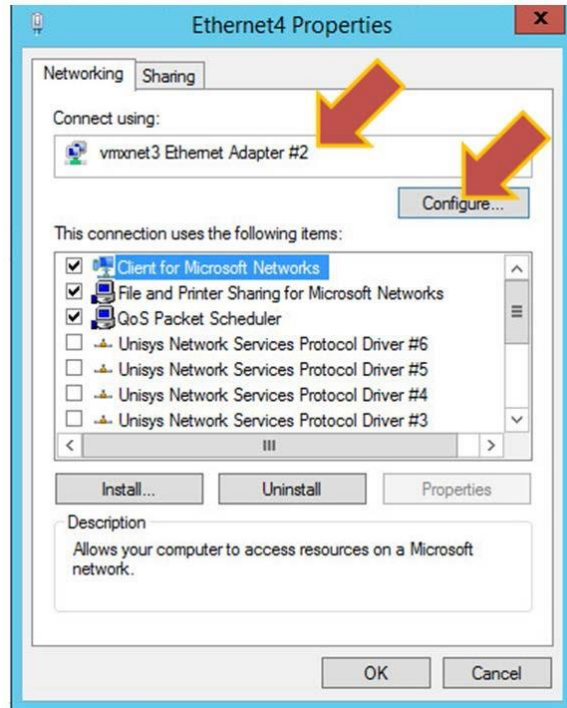


If you have two or more physical network adapters for iSCSI and you want to connect all of your NICs to a single vSphere standard switch, change the MTU setting at the VM Kernel adapter:



Adapter settings (again, VMXNET3 adapter needed for 10Gb speed)

For Windows:



NOTE: Reboot of the Windows server must be done before the MTU settings will become permanent, otherwise performance will be unpredictable and erratic.

For Linux:

```
[root@RESTORE-10520-2T ~]# ifconfig
```

```
eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 9000
    inet 192.168.10.2 netmask 255.255.255.0 broadcast 192.168.10.255
    ether 00:50:56:b9:a6:32 txqueuelen 1000 (Ethernet)
    RX packets 149883820 bytes 3279333009211 (2.9 TiB)
    RX errors 0 dropped 163 overruns 0 frame 0
    TX packets 103938432 bytes 8193032136 (7.6 GiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

To make the change permanent, edit the interface configuration file using WinSCP (example for ETH1):

[/etc/sysconfig/network-scripts/ifcfg-eth1](#)

add the following line

MTU=9000

Example:

```
# cat /etc/sysconfig/network-scripts/ifcfg-eth1
```

```
TYPE=Ethernet
```

```
BOOTPROTO=none
```

```
IPADDR=192.168.10.2
```

```
NETMASK=255.255.255.0
```

```
DEVICE="eth1"
```

```
ONBOOT=yes
```

```
MTU=9000
```

Reboot each host to confirm settings.

More information regarding iSCSI and Jumbo Frame support for VMware (including configuring it for vswitch and standard switch) can be found here:

<https://kb.vmware.com/s/article/1007654>

Getting Help

For additional information or assistance please contact DSI Support:

Support Website: <http://dynamicsolutions.com/support/>

- To submit or view a trouble ticket
- Access to the latest VTL Patches
- Access to the SFTP Site
- Sign up for the VTL Quarterly Newsletter
- Submit a New Feature Request

Email DSI Support: support@dynamicsolutions.com

Contact DSI Support by Phone:

1.800.332.9020 (US & Canada)

+ 1 303.754.2001 (International)