

Disabling the VAAI functionality in ESXi/ESX (1033665)

Purpose

This article provides steps to disable the vStorage APIs for Array Integration (VAAI) functionality in ESXi/ESX. You may want to disable VAAI if the storage array devices in the environment do not support the hardware acceleration functionality or are not responding correctly to VAAI primitives.

For information on VAAI support in a given storage array or required firmware levels, contact the storage array vendor.

Resolution

To disable VAAI in ESXi/ESX, you must modify these advanced configuration settings:

- `HardwareAcceleratedMove`
- `HardwareAcceleratedInit`
- `HardwareAcceleratedLocking`

You can modify these settings using the vSphere Client, vSphere CLI, or a console connection to the ESXi/ESX host.

Note: You cannot disable or re-enable ATS-only on a VMFS-5 datastore which has been upgraded from VMFS-3.

When a VMFS-5 volume is formatted on a VAAI capable device, it uses ATS locking, which is termed as `ATS-only`. To check if a VMFS volume has been configured with VAAI `ATS-only`, use this command:

```
# vmkfstools -Ph -v1 /vmfs/volumes/VMFS-volume-name
```

The output appears similar to:

```
VMFS-5.54 file system spanning 1 partitions.  
File system label (if any): ats-test-1  
Mode: public ATS-only
```

Note: To disable VAAI ATS, the LUN must be offline. It must be unmounted and then re-mounted after disabling VAAI using any of the methods below.

Disabling VAAI using the vSphere Client

To disable VAAI using the vSphere Client:

1. Open the VMware vSphere Client.
2. In the Inventory pane, select the ESXi/ESX host.
3. Click the **Configuration** tab.
4. Under Software, click **Advanced Settings**.
5. Click **DataMover**.
6. Change the `DataMover.HardwareAcceleratedMove` setting to 0.

7. Change the `DataMover.HardwareAcceleratedInit` setting to 0.
8. Click **VMFS3**.
9. Change the `VMFS3.HardwareAcceleratedLocking` setting to 0.
10. Click **OK** to save your changes.
11. Repeat this process for the all ESXi/ESX hosts connected to the storage.

Disabling VAAI using vSphere CLI or PowerCLI

To disable VAAI using the vSphere CLI:

Note: Ensure that the vSphere CLI (vCLI) is installed and is able to connect to the ESXi/ESX hosts. For more information, see the [vSphere Command-Line Interface Installation and Scripting Guide](http://www.vmware.com/pdf/vsphere4/r41/vsp4_41_vcli_inst_script.pdf) (http://www.vmware.com/pdf/vsphere4/r41/vsp4_41_vcli_inst_script.pdf).

1. Run these `vicfg-advcfg` commands to change the three settings:

```
vicfg-advcfg connection_options -s 0 /DataMover/HardwareAcceleratedMove
vicfg-advcfg connection_options -s 0 /DataMover/HardwareAcceleratedInit
vicfg-advcfg connection_options -s 0 /VMFS3/HardwareAcceleratedLocking
```

Note: For more information and examples on using vCLI connection options, see the *Common Options for vCLI Execution* section of the [vSphere Command-Line Interface Installation and Scripting Guide](http://www.vmware.com/pdf/vsphere4/r41/vsp4_41_vcli_inst_script.pdf) (http://www.vmware.com/pdf/vsphere4/r41/vsp4_41_vcli_inst_script.pdf).

2. Repeat this process for all the ESXi/ESX hosts connected to the storage as no reboot is required. For a production environment, ensure that you plan accordingly.

To disable VAAI using the PowerCLI:

- Run the command:

```
Set-VMHostAdvancedConfiguration -VMHost $hostname -Name $optionName -Value 0
```

Where `$optionName` is one of:

- `DataMover.HardwareAcceleratedMove`
- `DataMover.HardwareAcceleratedInit`
- `VMFS3.HardwareAcceleratedLocking`

For example:

```
Set-VMHostAdvancedConfiguration -VMHost (Get-VMHost ($Hosts.SelectedItem)) -Name
DataMover.HardwareAcceleratedMove -Value 0
```

```
Set-VMHostAdvancedConfiguration -VMHost (Get-VMHost ($Hosts.SelectedItem)) -Name
DataMover.HardwareAcceleratedInit -Value 0
```

```
Set-VMHostAdvancedConfiguration -VMHost (Get-VMHost ($Hosts.SelectedItem)) -Name
VMFS3.HardwareAcceleratedLocking -Value 0
```

Disabling VAAI using an ESXi/ESX console connection

To disable VAAI using an ESXi/ESX console connection:

1. Open a console to the ESXi/ESX host. For more information, see:

- [Unable to connect to an ESX host using Secure Shell \(SSH\) \(1003807\)](#) (search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=1003807)
- [Using Tech Support Mode in ESXi 4.1 and ESXi 5.x \(1017910\)](#) (search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=1017910)
- [Using ESXi Shell in ESXi 5.x \(2004746\)](#) (search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=2004746)
- [Disabling the VAAI Thin Provisioning UNMAP in ESXi 5.x \(KB 2007427\)](#)

(search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=2007427). **Note:** ESXi 5.0 issues UNMAP commands for Space Reclamation in critical regions during several operations with the expectation that the operation will complete quickly. Due to varied response times from the storage devices, the UNMAP command can result in poor performance of the system and should be disabled on the ESXi 5.0 host. For more information, see [Disabling VAAI Thin Provisioning Block Space Reclamation \(UNMAP\) in ESXi 5.0 \(2007427\)](#) (search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=2007427).

2. Log in as root.

3. On ESXi 5.x hosts, run these `esxcli` commands to change the three settings:

```
# esxcli system settings advanced set --int-value 0
--option /DataMover/HardwareAcceleratedMove
# esxcli system settings advanced set --int-value 0
--option /DataMover/HardwareAcceleratedInit
# esxcli system settings advanced set --int-value 0
--option /VMFS3/HardwareAcceleratedLocking
```

On ESXi/ESX 4.1 hosts, run these `esxcfg-advcfg` commands to change the three settings:

```
# esxcfg-advcfg -s 0 /DataMover/HardwareAcceleratedMove
# esxcfg-advcfg -s 0 /DataMover/HardwareAcceleratedInit
# esxcfg-advcfg -s 0 /VMFS3/HardwareAcceleratedLocking
```

4. Repeat this process for all the ESXi/ESX hosts connected to the storage.

Note: The changes will be active after running the above commands; a reboot of the host is not required.

5. If you must disable VAAI for a specific storage type, use the `esxcli` command to delete the existing hardware acceleration claim rules as documented on pages 176-177 of the [vSphere 5 Storage guide](#) (<http://pubs.vmware.com/vsphere-50/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-501-storage-guide.pdf>).

Verifying the current configuration values

To check the current value of the configuration settings:

- HardwareAcceleratedMove
- HardwareAcceleratedInit
- HardwareAcceleratedLocking

Note: Replace *OptionName* with one of the configuration setting names.

- Using the vSphere CLI:

```
vicfg-advcfg connection_options -get OptionName
```

- Using the PowerCLI:

```
Get-VMHostAdvancedConfiguration -VMHost Hostname -Name OptionName
```

- Using SSH/DCUI:

```
# esxcfg-advcfg --get OptionName
```

or

```
# esxcli system settings advanced list --option OptionName
```

Additional Information

For more information, see the *Turn off Hardware Acceleration* section of the [ESX Configuration Guide](http://www.vmware.com/pdf/vsphere4/r41/vsp_41_esx_server_config.pdf) (http://www.vmware.com/pdf/vsphere4/r41/vsp_41_esx_server_config.pdf).

To revert this configuration and to enable vStorage APIs for Array Integration functionality, change each of these settings from 0 to 1.

Tags

disable-vaai

See Also

- [Unable to connect to an ESX host using Secure Shell \(SSH\)](#) ([javascript:openDocumentLink\('1003807;'\)](#))
- [Using Tech Support Mode in ESXi 4.1 and ESXi 5.X](#) ([javascript:openDocumentLink\('1017910;'\)](#))
- [vStorage APIs for Array Integration FAQ](#) ([javascript:openDocumentLink\('1021976;'\)](#))
- [Using ESXi Shell in ESXi 5.X](#) ([javascript:openDocumentLink\('2004746;'\)](#))
- [Disabling VAAI Thin Provisioning Block Space Reclamation \(UNMAP\) in ESXi 5.0](#) ([javascript:openDocumentLink\('2007427;'\)](#))

This Article Replaces

2012967

Update History

01/13/2012 - Added ESXi 5.0 commands in the Disabling VAAI using an ESX/ESXi console connection section
07/25/2012 - Updated HardwareAcceleratedLocking PowerCLI command

Request a Product Feature

To request a new product feature or to provide feedback on a VMware product, please visit the [Request a Product Feature](#) (http://www.vmware.com/contact/contactus.html?department=prod_request) page.

Permalink to: [Disabling the VAAI functionality in ESXi/ESX](#) (<http://kb.vmware.com/kb/1033665>)

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[1 \(javascript:void\(rate\(1,this\)\)\)](#)

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Categories:

How to

Languages:

English

Product(s):

VMware ESX

VMware ESXi

Product Version(s):

VMware ESX 4.1.x

VMware ESXi 4.1.x Embedded

VMware ESXi 4.1.x Installable

VMware ESXi 5.0.x

VMware ESXi 5.1.x