IBM FlashCache Storage Accelerator 2.2.0

Administrator Guide for Virtual

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Quick start

Below are a links to common tasks that can get you started configuring or managing FlashCache Storage Accelerator. By default the tasks are described using the graphical user interface (GUI). However, in some cases, a command line interface (CLI) link in parenthesis has been provided that takes you to a procedure that allows you to accomplish the same task using the CLI.

Configuration tasks

- Configuring host-based caching on your ESXi host (CLI)
- Configuring guest-based caching on your ESXi host (CLI)

Host-based caching tasks

- Licensing the IBM FlashCache Storage Accelerator software
- Managing caching on the host and VMs
  - Setting cache devices
  - Changing caching method for all VMs
  - Setting caching method for a specific VM
  - Setting caching selection on a specific VM
- Starting or stopping caching on the host
- Updating host caching software
- Viewing Live performance graphs
- Updating firmware on IBM High IOPS Adapter devices
- Performing low-level format on IBM High IOPS Adapter devices

Guest-based caching tasks

- Viewing Live performance graphs
- Starting or stopping caching on a VM using guest-based caching
- Changing caching priority
- Changing caching selection
- Updating guest caching software

Maintenance and support tasks

- Collecting log bundles for support

Overview

IBM FlashCache Storage Accelerator 2.2.0 provides write-through caching software for ESXi hosts, or virtual machines running on those hosts, that takes advantage of IBM High IOPS Adapters, Enterprise Value Flash Adapters, or SSDs installed on the host. IBM FlashCache Storage Accelerator 2.2.0 consists of three main components:

- Flash Management Console—which is a specialized VM that manages FlashCache Storage Accelerator caching software on hosts or VMs. The IBM Flash Management Console provides a GUI management interface as well as a command line interface (CLI).
- FlashCache Storage Accelerator Host Software—which consists of drivers and caching software that allow the ESXi host to cache to IBM High IOPS Adapter devices or other SSDs in the host.
- FlashCache Storage Accelerator Guest Software—which consists of caching software that allows the operating system of a VM to cache to supported devices running on the ESXi host.

With IBM FlashCache Storage Accelerator 2.2.0, there are two primary methods or modes in which data can be cached:

- Host-based or host mode (sometimes referred to as hypervisor caching mode)
- Guest-based or guest mode

Host-based caching

Host-based caching, or host mode caching, caches the VMDK files of virtual machines. As VMDKs are the logical equivalent of disks for guest operating systems in the VMware virtual environment, caching at the host level means no additional software needs to be installed on the virtual machines. From the virtual machine's perspective, host-based caching just looks like the disk drives are incredibly responsive.

FlashCache Storage Accelerator host-based caching can be configured to "Cache All" the VMDKs (or drives) for a virtual machine or only specified VMDKs.

Attention!

Host-based caching on shared VMDKs is not supported.

Guest-based caching

Optionally, IBM FlashCache Storage Accelerator can be configured for guest-based caching (or guest mode caching). For guest-based caching, FlashCache Storage Accelerator software is installed on the virtual machine, which allows you to cache block devices on the virtual machine. On Windows virtual machines, you can also cache on the disk, volume, or file level.

Guest-based caching requires that guest caching software be installed on the VM, and after installation of the guest caching software, the virtual machine will need to be rebooted.

Attention!

VMs that will be configured with guest-based caching need to have their internal clocks set to approximately the same time as the management server.

Deciding whether to cache at the host or guest level

When deciding whether to use host-based or guest-based caching, consider the following points:

Host-based caching

- Host-based caching does not require additional software to be installed on your VMs.
- Host-based caching does not require administrative login credentials for the VM.

Guest-based caching

- On Windows, guest-based caching provides greater granularity in what you choose to cache. For example, on Windows VMs you can cache specific files or specific volumes. With Linux guest-based caching, you can only specify caching at the volume level.
- As a general rule, guest-based caching performance will be better than host-based caching performance.

Considerations

- VMs that are configured to use FlashCache Storage Accelerator caching will be in either host-based or guest-based caching mode. If a VM is caching in guest-based mode, and then you configure one of its VMDKs to be cached in host-based mode, then guest-based caching will be disabled on the VM and it will switch to host-based caching.
- FlashCache Storage Accelerator software does not cache data on network file systems (such as CIFS, NFS) inside the VMs.
- FlashCache Storage Accelerator software only caches the data located within the size limit of the respective layer. For example, if a Windows VM is configured to cache with both the volume and file filters, volume caching will be limited to a portion of the total available size of the cache device. The amount of space available for each filter is set using either the Guest Caching Priority settings in the GUI (see Changing guest-based caching priority) or one of the set shares commands in the the CLI (e.g. iot provision --vmguest --setallshares).
- FlashCache Storage Accelerator File Level Caching (available only on Windows VMs that are using guest-based caching)
    - FlashCache Storage Accelerator File Level caching only caches data on NTFS file systems.
    - FlashCache Storage Accelerator File Level caching doesn't cache sparse files.
    - FlashCache Storage Accelerator File Level caching doesn't cache files with NTFS transactional feature enabled.
    - FlashCache Storage Accelerator File Level caching doesn't cache non-cached/direct I/Os. If an application does non-cached/direct I/O, we recommend the use of FlashCache Storage Accelerator host-based caching.
    - FlashCache Storage Accelerator File Level caching supports only one paging file (for example, "pagefile.sys") per guest OS. If there is more than one paging file in the guest OS, FlashCache Storage Accelerator File Level caching caches the one opened first.
    - FlashCache Storage Accelerator File Level caching requires a VM reboot in order to add a paging file to file level caching.

Cache invalidation

To recognize the benefits of caching, the cache first needs to be "warmed." As you use your virtual machines, data will be written to the cache and eventually the resulting increase in cache hits will improve the performance of your VM. However, the following operations will result in invalidating the cache for a VM. After a cache has been invalidated, it will need to be "re-warmed."

The following actions will invalidate a VM's cache:

- Host-based and Guest-based Caching
  - Migrating a VM (vMotion).
  - Stopping and then restarting caching.
  - Changing advanced options such as IOT_CACHEPAGESIZE or IOT_ MAXCACHEREADIOSIZE.
- Guest-based Caching Only
  - Changing shares or caching priority to different caching levels on disk, volume, or file-level caching. (Windows VMs only.)
  - Reassigning caching shares.

Attention!

Cache invalidation in one VM doesn't affect the caches on other VMs running on the host

Configuration

The IBM FlashCache Storage Accelerator Installation Guide provided instructions on deploying and licensing the FlashCache Storage Accelerator software on your ESXi host. This manual provides instructions on configuring caching devices, configuring VMs for host-based or guest-based caching, and for performing maintenance on your system. You can perform these activities using either the GUI interface or the command-line interface (CLI), both of which are provided by the IBM Flash Management Console.

For instructions on using the GUI interface see section Using the IBM Flash Management Console to Manage Caching.

For instruction on using the CLI interface see the iot Command Reference.

Prerequisites

- To perform host-based caching, it is recommended that you have VMware tools installed on each VM you want to cache. However, if you configure host-based caching without VMware tools installed on the VMs, you will be required to manually shutdown and restart the VMs as directed in task failure error messages.
- Any VMs where you want to install or configure guest-based caching must be powered on and have VMware Tools installed and running.
- The configuration examples below assume that you completed the installation procedures for installing IBM FlashCache Storage Accelerator in the IBM FlashCache Storage Accelerator 2.2.0 Installation and Upgrade Guide (including registration with vCenter).

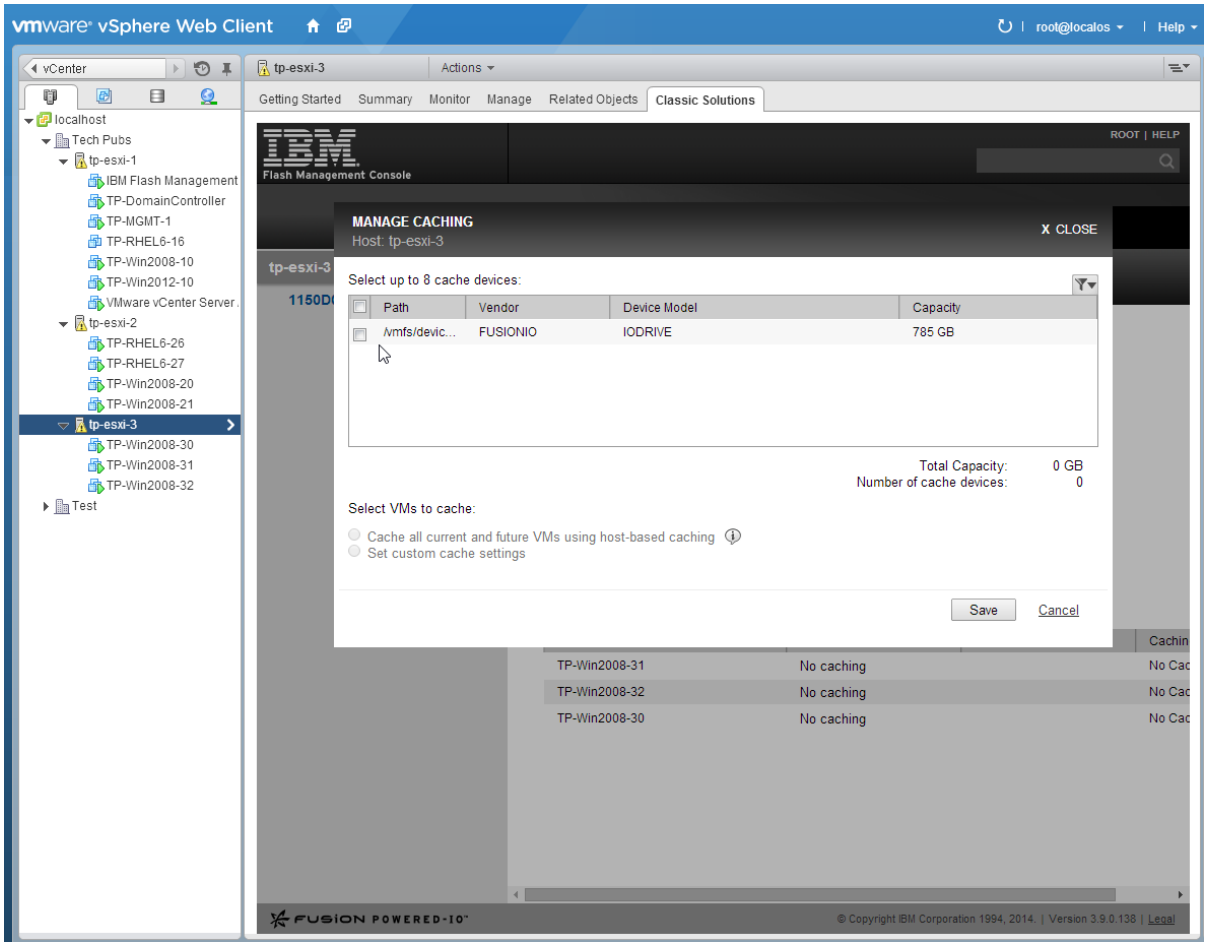
Host-based cache configuration example with IBM Flash Management Console

Attention!

Before performing this procedure, verify that you have addressed the prerequisites.

1. Start a vSphere client and login to the vCenter as a user who has sufficient privileges to manage the IBM Flash Management Console. (For more details on the privileges required see "Appendix B" in the *IBM FlashCache Storage Accelerator 2.2.0 Installation and Upgrade Guide*.)
2. In the vSphere inventory tree or object navigator on the left of the screen, click one of the ESXi hosts you have configured for caching and then click the IBM Flash Management Console tab.
3. Click **Manage Caching.**

   You should see the devices that the IBM Flash Management Console considers to be valid candidates for a cache device. To see all the devices in the system, click the filter icon in the upper-right corner of the cache devices grid  and select **All Candidates**.



4. Click the device you want to use for caching.

Attention!

If you are using a new IBM High IOPS Adapter or Enterprise Value Flash Adapter with factory formatting, FlashCache Storage Accelerator may re-format the device to an optimal caching capacity. It is strongly recommended that you let FlashCache Storage Accelerator re-format your IBM High IOPS Adapter.

If you are using an IBM High IOPS Adapter or Enterprise Value Flash Adapter that has been formatted to something other than factory size, FlashCache Storage Accelerator will not change the format. It is strongly recommended that the device not be formatted to its maximum size. Providing unused sapce on the device can improve the longevity and durability of the device.

If you are using an SSD that is not an IBM High IOPS Adapter or Enterprise Value Flash Adapter, follow the manufacturer's instructions for properly formatting the device.

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5. Click either **Cache all current and future VMs using host-based caching** or **Set custom cache settings**.
6. If you select custom cache settings, configure the VMs you want to cache.

Attention!

Host-based caching on shared VMDKs is not supported.

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7. Click **Save**.

   A confirmation warning displays telling you that all the data currently on the cache device will be permanently lost.

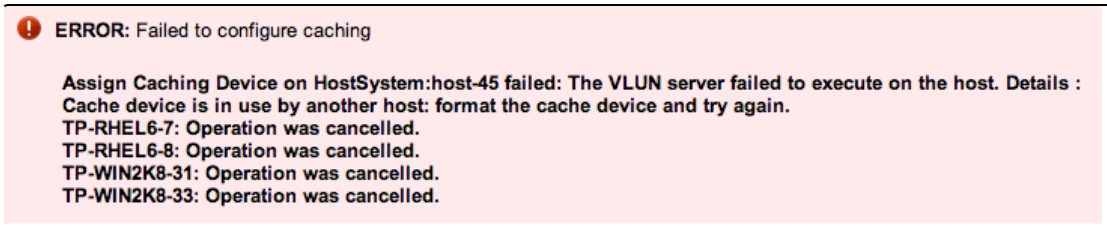
8. Click **Confirm.**
9. If you have selected guest-based caching for any VMs, you will need to supply an administrative User Name and Password for those VMs so the caching software can be installed on the guest.

Attention!

Do not leave the IBM Flash Management Console tab while the caching device and the VMs are being configured.

Attention!

If you get a "Failed to configure caching" error that says the "Cache device is in use by another host," you may need to reformat the device. **First verify that the device you selected really is the device you want to use for caching.** Then, on the Host Configure tab of the IBM Flash Management Console, click **More Actions > Low-Level format** and then format the device for "High Performance." After the format completes, try setting the cache device again.



The VMs on the host are displayed in a table, and the *Caching Method* Column shows which VMs are using host-based or guest-based caching.

Attention!

When selecting VM's with both shared and non-shared VMDKs for host-based caching, all non-shared VMDKs will be selected for caching, and you will need to manually power-off and then power-on the VM, or vMotion the VMs to start caching.

Host-based cache configuration example with CLI

Attention!

Before performing this procedure, verify that you have addressed the prerequisites.

1. Login to the IBM Flash Management Console.

   Username: `iotcli`
   Password: `iotcli`

2. From the IBM Flash Management Console command line, authenticate the IBM Flash Management Console with vCenter by typing the following command:

   `iot vmp --login --vmpaddress <vCenterAddress> --vmpuser <vCenterUsername> --vmppassword <vCenterPassword>`

   where

   vCenterAddress is the IP address or the fully qualified hostname of the IBM Flash Management Console Virtual Center server

   vCenterUsername is the name of a user who has sufficient rights to authenticate with the IBM Flash Management Console.

   vCenterPassword is the password for the user

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot vmp --login --vmpaddress tp-vcenter-1 --
vmpuser root --vmppassword vmware
Logged in to VMP : tp-vcenter-1
```

3. Verify the host-based (or hypervisor) cache status by typing the following command:

   `iot list --vmhost <host name>`

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-2
Host                        : tp-esxi-2
Hypervisor Caching Enabled  : false
Host License Enabled        : false
Host Autocache Enabled      : false
Read Update Enabled         : true
Host Monitoring Enabled     : true
```

```
ioTurbine Caching Version    : 2.2.0.7429
Management Software Version : 3.9.0.146
ioMemory Driver Version      : 3.2.6.1219
```

4. List the LUNs that are available to be used as caching devices by typing the following command:

   iot list --vmhost <host name> --listluns

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot list --listluns --vmhost tp-esxi-2
DeviceName     : Local FUSIONIO Disk
(eui.75bb6cb81b6046af00247160d3fafcc2)
Uuid           : 0100000000313232394436393733494f44524956
Type           : disk
Vendor         : FUSIONIO
CanonicalName  : eui.75bb6cb81b6046af00247160d3fafcc2
Capacity (GB)  : 964
DeviceModel    : IODRIVE
DevicePath     :
/vmfs/devices/disks/eui.75bb6cb81b6046af00247160d3fafcc2
LunCount       : 0
Percent        : 0
```

5. Provision one or more LUNs to be used as caching devices by typing the following command:

   iot provision --vmhost <host name> --assigndevice <DeviceName>

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server
   - *DeviceName* is the storage adapter identifier of the device you want to use for caching on the specified host

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot provision --assigndevice
eui.b8b149c335f440d900247197d2c55b34 --vmhost tp-esxi-3
The specified device(s) will be erased and used as a caching
device. All data on the device will be lost. Do you wish to
continue? [y/N]y
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34
was successfully submitted. This task may take several minutes
to complete.
Errorcode : 0
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34
successfully completed
```

6. Verify that host-based caching started by typing the following command:

   iot list --vmhost <host name> --hypercachestatus

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-
3

Caching Status   : Started
Caching Capacity : 0 GB
Health Status    : No primary device added for caching, No
caching capacity available
```

7. Configure host-based caching of VMDK files in one of two ways:

   - Cache all the VMDKs used by the guest virtual machine
   - Cache only specified VMDKs used by the guest virtual machine

      a. To cache a specific guest virtual machine with all its VMDK files, type the following command:

         iot provision --vmguest <guest name> --enablecachingmode <cachingMode>

         where

         - *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose VMDK files you want to cache. Guest name should be entered in uppercase.
         - *cachingMode* is either hypervisor or guest. For hypervisor mode all the VMDKs available on the guest virtual machine will be selected and caching will be started.

         In the example command below, the virtual machine named "TP-RHEL6-5" has two disks, and it is set to have all its VMDKs cached in host-based (or hypervisor) mode. Then a similar command is issued with the **--listconfiguredvmdks** option to show the results of that command.

```
iotcli@tp-vme-1:~> iot provision --
enablecachingmode hypervisor --vmguest TP-
RHEL6-26
This command may take long time to complete.
Do you wish to continue? [y/N]y
Add Primary VMDK Task on TP-RHEL6-26 was
successfully submitted. This task may take
several minutes to complete.
Errorcode : 0
Add Primary VMDK Task on TP-RHEL6-26
successfully completed
iotcli@tp-vme-1:~> iot list --vmguest TP-
RHEL6-26
Guest                    : TP-RHEL6-26
IotPackageVersion        : Unknown
Caching Device Assigned  : true
Auto cache new filter    : true
Guest Caching Mode       : HYPERVISOR_LEVEL
Capacity Shares          : 0
Caching Capacity (GB)    : 0

Filter Type              : VMDK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : true
Health  Status           : Working
Filter Shares            : 0
Configured               : [2-datastore1]
TP-RHEL6-26/TP-RHEL6-26.vmdk [2-datastore1]
TP-RHEL6-26/TP-RHEL6-26_1.vmdk [2-
datastore1] TP-RHEL6-26/TP-RHEL6-26_2.vmdk


All VMDKs on the Guest   :
VMDK Filename            : [2-datastore1]
TP-RHEL6-26/TP-RHEL6-26.vmdk
VMDK Label               : Hard disk 1
VMDK Capacity (GB)       : 40
-----------------------------------------
------------------------
All VMDKs on the Guest   :
VMDK Filename            : [2-datastore1]
TP-RHEL6-26/TP-RHEL6-26_1.vmdk
VMDK Label               : Hard disk 2
VMDK Capacity (GB)       : 8
-----------------------------------------
```

```
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All VMDKs on the Guest   :
VMDK Filename            : [2-datastore1]
TP-RHEL6-26/TP-RHEL6-26_2.vmdk
VMDK Label               : Hard disk 3
VMDK Capacity (GB)       : 10
-----------------------------------------
-----------------------------
```

b. To cache a specific guest virtual machine with specific VMDK files, type the following command:

iot provision --vmguest <guest name> --addvmdk <fully qualified vmdk name>

where

- *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose VMDK files you want to cache. Guest name should be entered in uppercase.
- *fully qualified vmdk name* is the full path to the VMDK file on the ESXi host (including the datastore)

In the example below a list command is used to list all the VMDKs available on the guest virtual machine TP-WIN2K8-5. The output of that command provides the fully qualified VMDK name that is then used in the **iot provision** command to set the second VMDK for caching. Afterwards, an **iot list** command is issued with the **--listconfiguredvmdks** option to show the results of the previous command.

```
iotcli@tp-vme-1:~> iot list --allvmdks --
vmguest tp-rhel6-27
VMDKs on the Guest : tp-rhel6-27 are :

VMDK Filename            : [2-datastore2]
TP-RHEL6-27/TP-RHEL6-27.vmdk
VMDK Label               : Hard disk 1
VMDK Capacity (GB)       : 40
-----------------------------------------
-----------------------------
VMDK Filename            : [2-datastore2]
TP-RHEL6-27/TP-RHEL6-27_1.vmdk
VMDK Label               : Hard disk 2
VMDK Capacity (GB)       : 8
-----------------------------------------
-----------------------------
```

```
VMDK Filename            : [2-datastore2]
TP-RHEL6-27/TP-RHEL6-27_2.vmdk
VMDK Label               : Hard disk 3
VMDK Capacity (GB)       : 10
-----------------------------------------
-----------------------------

iotcli@tp-vme-1:~> iot provision --addvmdk "
[2-datastore2] TP-RHEL6-27/TP-RHEL6-27_
1.vmdk" --vmguest tp-rhel6-27
This command may take long time to complete.
Do you wish to continue? [y/N]y
Add Primary VMDK Task on tp-rhel6-27 was
successfully submitted. This task may take
several minutes to complete.
Errorcode : 0
Add Primary VMDK Task on tp-rhel6-27
successfully completed

iotcli@tp-vme-1:~> iot list --
configuredvmdks --vmguest tp-rhel6-27
VMDKs configured on the Guest : tp-rhel6-27
are :

VMDK Filename            : [2-datastore2]
TP-RHEL6-27/TP-RHEL6-27_1.vmdk
VMDK Label               : Hard disk 2
VMDK Caching Running     : true
VMDK Capacity (GB)       : 8
-----------------------------------------
-----------------------------
```

8. Start caching on the host by typing the following command:

   iot provision --vmhost <host name> --startcache

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot provision --startcache --vmhost tp-esxi-3
Successfully started cache.
```

9. Display the caching status on the host by typing the following command:

   iot list --vmhost <host name> --hypercachestatus

   where

- *host name* is the IP address or fully qualified hostname of the target ESXi server

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-
3

Caching Status   : Started
Caching Capacity : 964 GB
Health Status    : Working
```

The disk, or disks, of the specified VM is now being cached.

Guest-based cache configuration example with IBM Flash Management Console

Attention!

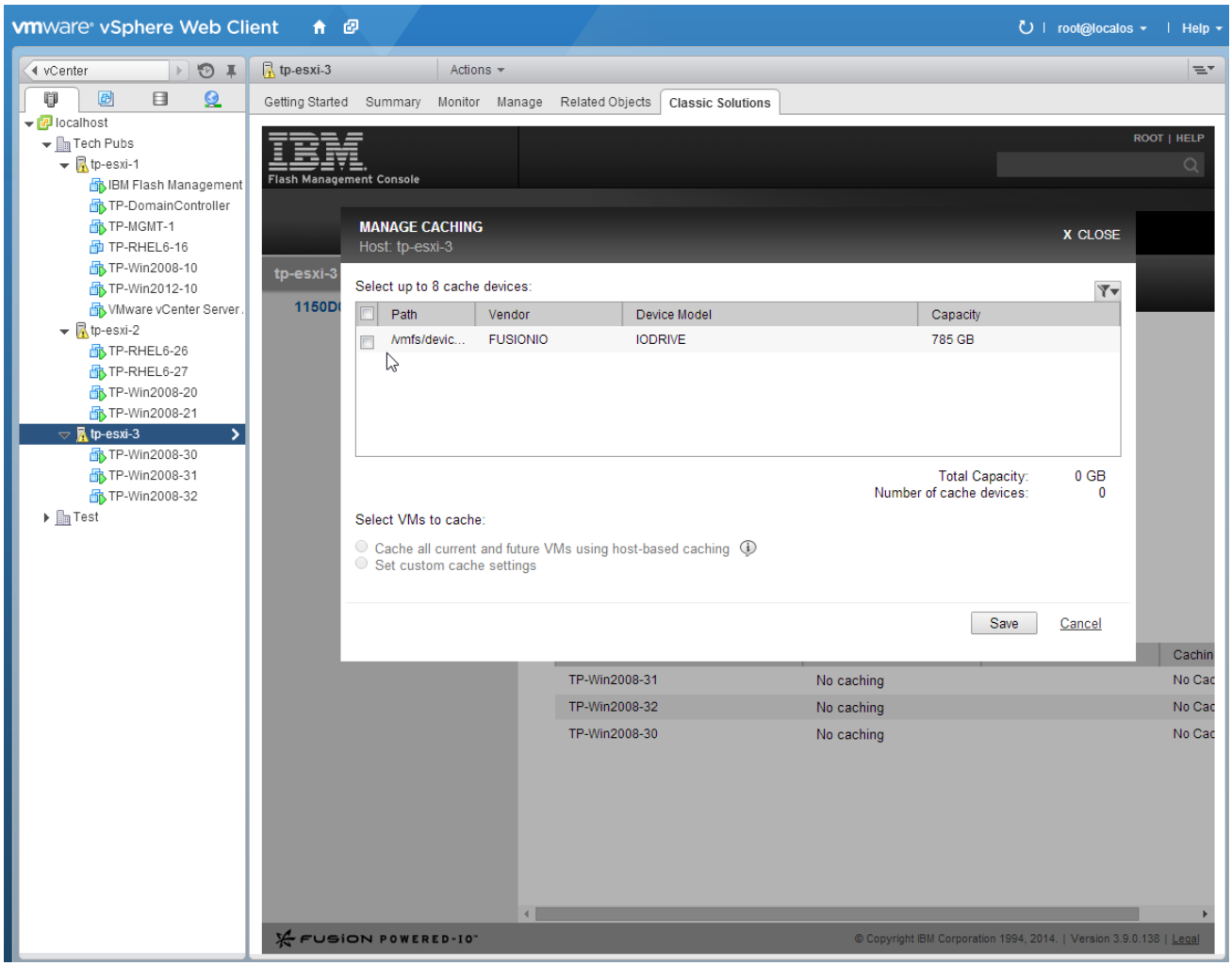
Before performing this procedure, verify that you have addressed the prerequisites.

Attention!

Be aware that configuring a VM for guest-based caching will install caching software on the VM and reboot it.

1. Start a vSphere client and login in to the vCenter as a user who has sufficient privileges to manage the IBM Flash Management Console. (For more details on the privileges required see "Appendix B" in the *IBM FlashCache Storage Accelerator 2.2.0 Installation and Upgrade Guide*.)
2. In the vSphere inventory tree or object navigator on the left of the screen, click one of the ESXi hosts you have configured for caching and then click either the IBM Flash Management Console tab.
3. Click **Manage Caching.**

   You should see the devices that the IBM Flash Management Console considers to be valid candidates for a cache device. To see all the devices in the system, click the filter icon in the upper-right corner of the cache devices grid  and select **All Candidates**.

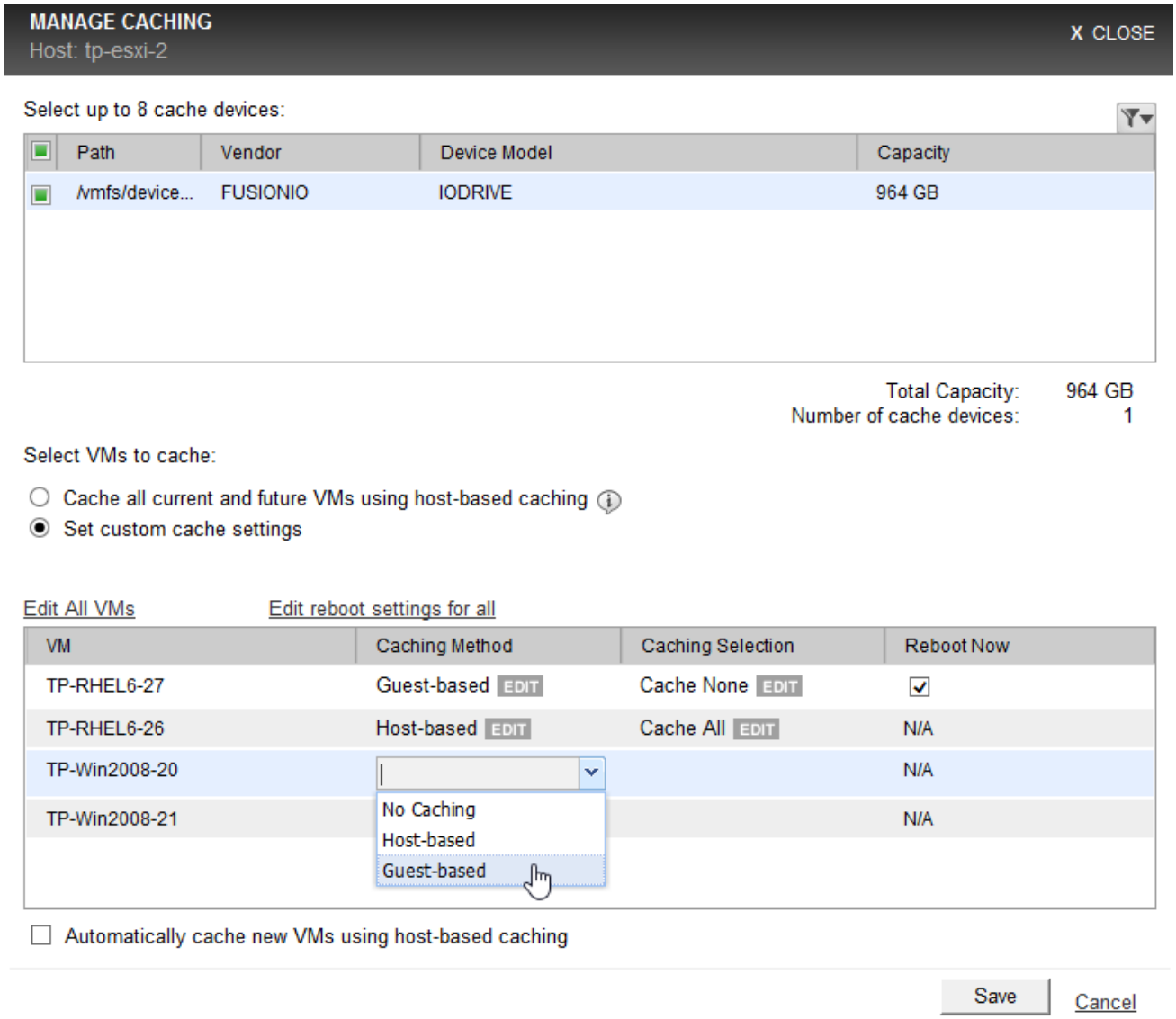


4. Click the device or devices you want to use for caching.

5. Click **Set custom cache settings.**

   The VMs on the host are displayed in a table, and the *Caching Method Column* shows that Host-based caching is configured by default for the VMs.

6. Click **Edit** in the *Caching Method* column for the VM you want to cache in Guest-based mode.
7. Click the drop-down arrow in the *Caching Method* column, and click Guest-based.



8. Repeat steps 6-7 for each VM that you want to use Guest-based caching.
9. Click **Save.**

   A confirmation warning displays telling you that all the data currently on the cache device will be permanently lost. It also tells you that VMs selected for Guest-based caching will be rebooted and that caching will begin immediately.

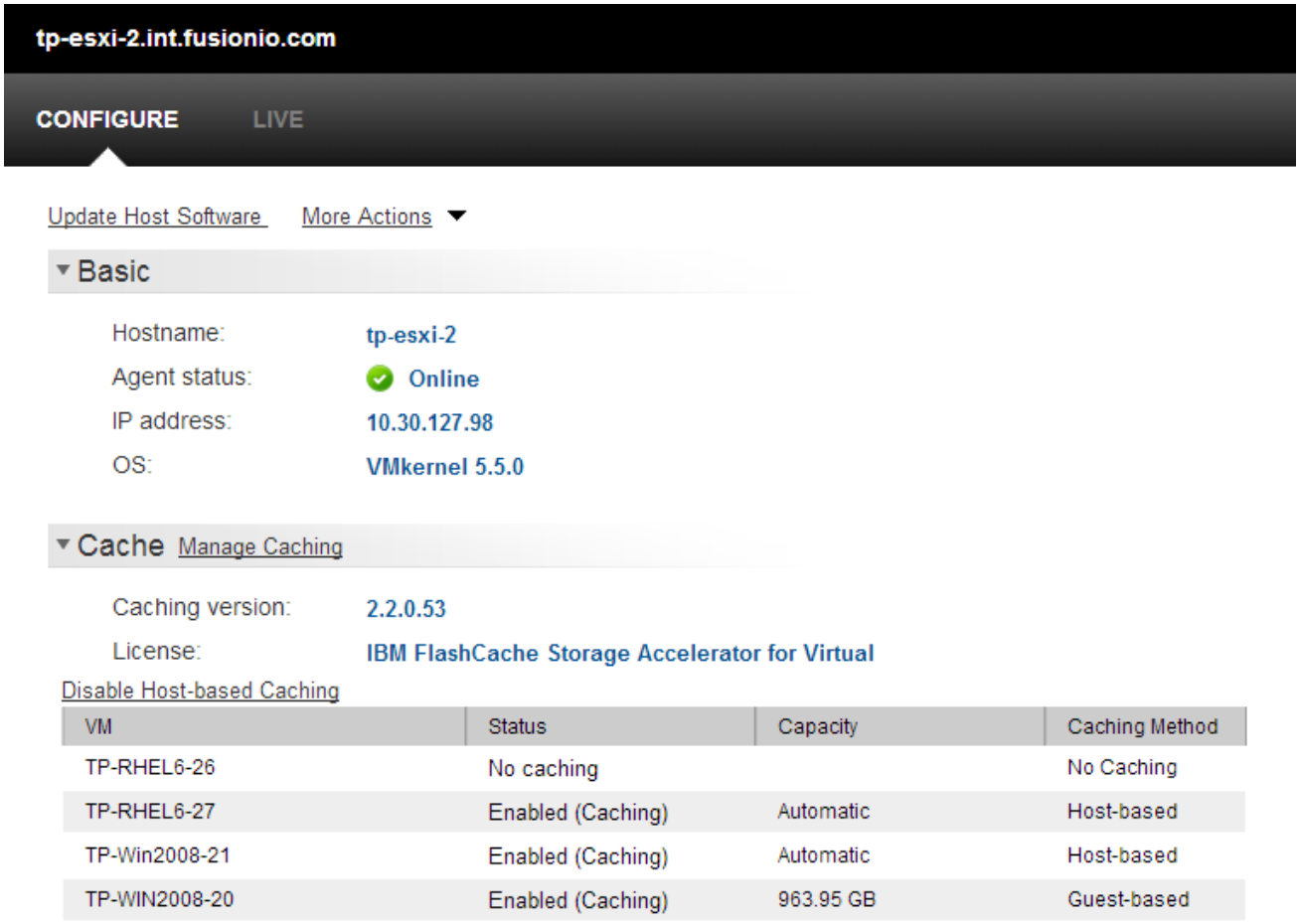
10. Click **Confirm.**
11. Enter User Names and Passwords for the VMs that you want to configure for Guest-based caching. The user names you provide should have sufficient privileges to install software on the VM.
12. Click **Done.**

    IBM Flash Management Console configures the caching device and pushes the IBM FlashCache Storage Accelerator guest-based caching software to the VM.

Attention!

Do not leave the IBM Flash Management Console tab while the caching device and the VMs are being configured.

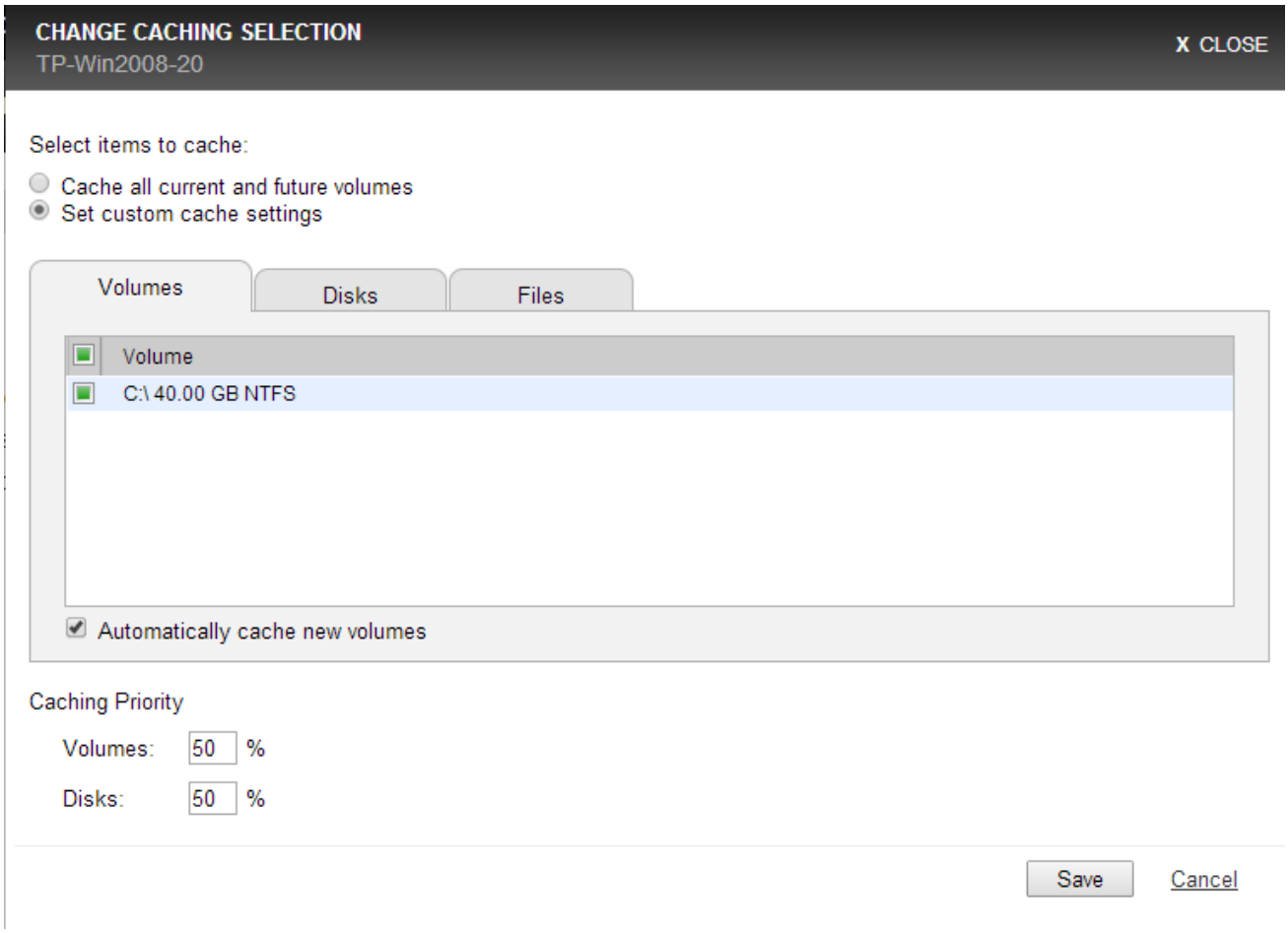
The VMs on the host are displayed in a table, and the *Caching Method* Column shows which VMs are configured for Guest-based caching.



By default, guest-based caching is configured to cache all volumes on the VM with the volumes filter. You can change the guest-based caching configuration by clicking on the VM that is configured for guest-based caching and then clicking the IBM Flash Management Console tab for that VM. Clicking the **Change** link next to Caching Selection, then selecting Custom from the Caching Selection drop down, and selecting the volumes you want to cache. On Windows VMs, you also have the option of caching disks or files.

Attention!

Care should be taken not overlap your selections. For example, do not specify a file to cache that is on a volume you have selected for caching.


CHANGE CACHING SELECTION
TP-Win2008-20
X CLOSE
Select items to cache:
Cache all current and future volumes
Set custom cache settings
Volumes
Disks
Files
Volume
C:\ 40.00 GB NTFS
Automatically cache new volumes
Caching Priority
Volumes: 50 %
Disks: 50 %
Save
Cancel

Guest-based cache configuration example with CLI

Attention!

Before performing this procedure, verify that you have addressed the prerequisites.

Attention!

Be aware that configuring a VM for guest-based caching will install caching software on the VM and reboot it.

1. Login to the IBM Flash Management Console.

   Username: iotcli
   Password: iotcli

2. From the IBM Flash Management Console command line, authenticate the IBM Flash Management Console with vCenter by typing the following command:

   iot vmp --login --vmpaddress <vCenterAddress> --vmpuser <vCenterUsername> --vmppassword <vCenterPassword>

   where

   - *vCenterAddress* is the IP address or the fully qualified hostname of the IBM Flash Management Console Virtual Center server
   - *vCenterUsername* is the name of a user who has sufficient rights to authenticate with the IBM Flash Management Console.
   - *vCenterPassword* is the password for the user

   For example, you might enter a command that looks something like this:

   ```
   iotcli@tp-vme-1:~> iot vmp --login --vmpaddress tp-vcenter-1 --
   vmpuser root --vmppassword vmware
   Logged in to VMP : tp-vcenter-1
   ```

3. List the LUNs that are available to be used as caching devices by typing the following command:

   iot list --vmhost <host name> --listluns

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter a command that looks something like this:

   ```
   iotcli@tp-vme-1:~> iot list --listluns --vmhost tp-esxi-3
   DeviceName    : Local FUSIONIO Disk
   (eui.b8b149c335f440d900247197d2c55b34)
   ```

```
Uuid          : 0100000000313135304430343533494f44524956
Type          : disk
Vendor        : FUSIONIO
CanonicalName : eui.b8b149c335f440d900247197d2c55b34
Capacity (GB) : 785
DeviceModel   : IODRIVE
DevicePath    :
/vmfs/devices/disks/eui.b8b149c335f440d900247197d2c55b34
LunCount      : 0
Percent       : 0
```

4. Provision one or more LUNs to be used as caching devices by typing the following command:

   iot provision --vmhost <host name> --assigndevice <DeviceName>

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server
   - *DeviceName* is the storage adapter identifier of the device you want to use for caching on the specified host

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot provision --assigndevice
eui.b8b149c335f440d900247197d2c55b34 --vmhost tp-esxi-3
The specified device(s) will be erased and used as a caching
device. All data on the device will be lost. Do you wish to
continue? [y/N]y
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34
was successfully submitted. This task may take several minutes
to complete.
Errorcode : 0
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34
successfully completed
```

5. Push FlashCache Storage Accelerator guest-based caching software to the VMs you want to use guest-based caching by typing the following command:

   iot package --vmguest <guest name> --install --guestuser <username> --guestpassword <password>

   where

   - *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose VMDK files you want to cache.
   - *username* is the name of a user who has rights to install software on the guest virtual machine.
   - *password* is the password for the user.

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot package --install --vmguest tp-win2008-30
--guestuser administrator --guestpassword Atest12345
This command may require an automatic reboot of the virtual
machines. Do you wish to continue? [y/N]y
Install guest package on tp-win2008-30 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Install guest package on tp-win2008-30 successfully completed
```

6. List the volumes that are configured for caching on the guest VM by typing

   iot list --vmguest <guest name> --guestuser <username> --guestpassword <password>

   where

   - *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose VMDK files you want to cache.
   - *username* is the name of a user who has rights to install software on the guest virtual machine.
   - *password* is the password for the user.

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-30 --guestuser
administrator --guestpassword Atest12345
Guest                     : tp-win2008-30
IotPackageVersion         : 2.2.0.7368
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 785

Filter Type               : FILE
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : false
Health  Status            : Working
Filter Shares             : 0

Filter Type               : VOLUME
Cache Size in Use         : 784905273344
Cache Size in Chunks      : 2924
Caching Status            : true
Health  Status            : Working
Filter Shares             : 4000
Configured                : C:\
```

```
Filter Type              : DISK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Health  Status           : Working
Filter Shares            : 0

All Volumes              : C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

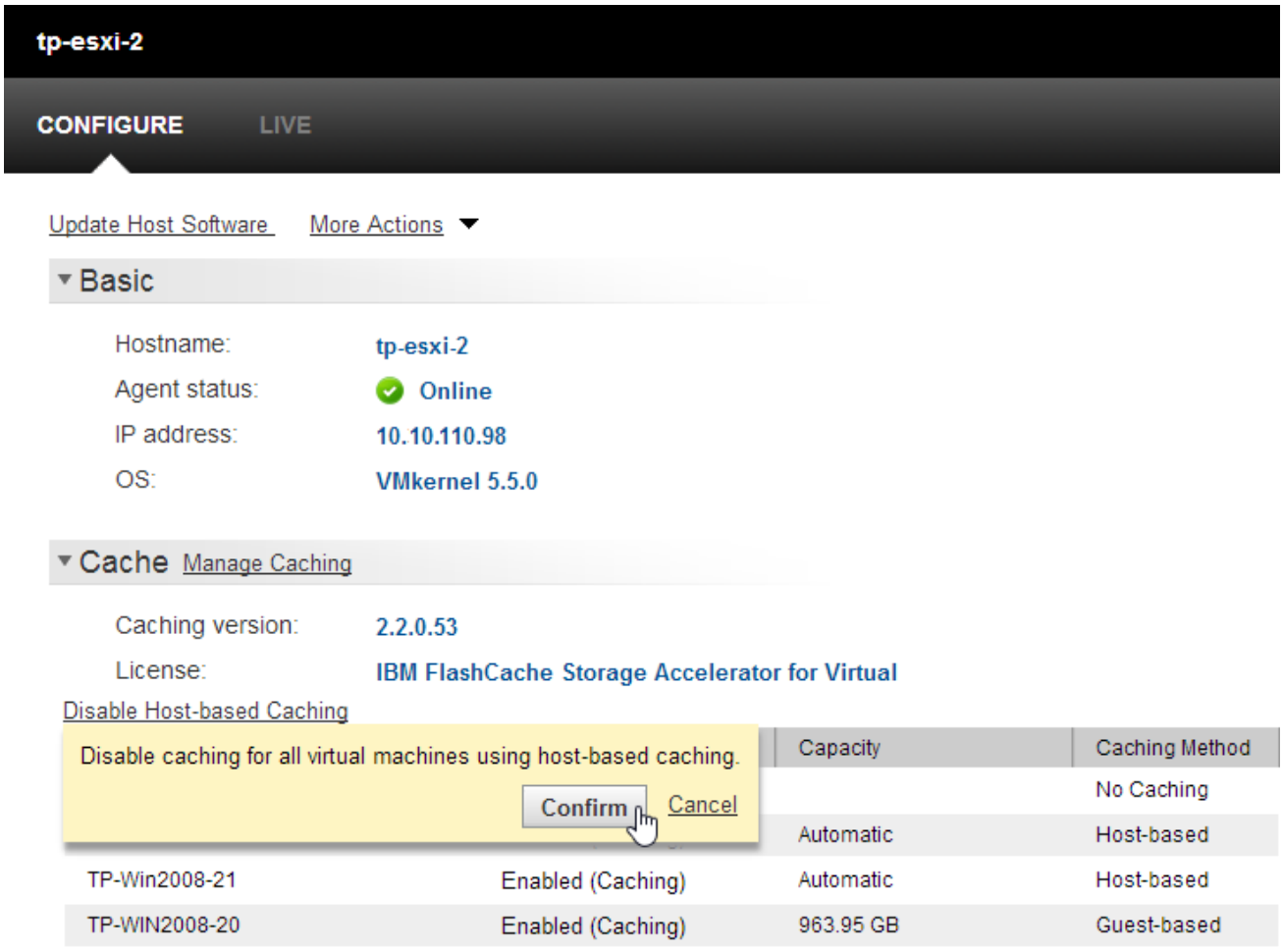
The volume, or volumes, of the specified VM is now being cached.

Stopping all host-based caching with the IBM Flash Management Console

1. Start a vSphere client and login in to the vCenter as a user who has sufficient privileges to manage the IBM Flash Management Console. (For more details on the privileges required see "Appendix B" in the *IBM FlashCache Storage Accelerator 2.2.0 Installation and Upgrade Guide*.)
2. In the vSphere inventory tree or object navigator on the left of the screen, click one of the ESXi hosts you have configured for caching and then click either the IBM Flash Management Console tab.
3. Ensure that the disclosure arrow next to the Cache label has been clicked to display the VMs table.
4. Above the VMs table, click **Disable Host-based Caching**.

> **Attention!**
>
> The "Disable Host-based Caching" link only appears if there is a least one VM configured with host-based caching.

5. Click **Confirm** to disable caching for all virtual machines that are using host-based caching.



All caching on VMs that were using host-based caching stops. To enable caching click **Enable Host-based Caching**.

Stopping host-based caching example with CLI

1. Login to the IBM Flash Management Console.

   Username: iotcli
   Password: iotcli

2. From the IBM Flash Management Console command line, authenticate the IBM Flash Management Console with vCenter by typing the following command:

   iot vmp --login --vmpaddress <vCenterAddress> --vmpuser <vCenterUsername> --vmppassword <vCenterPassword>

   where

   - *vCenterAddress* is the IP address or the fully qualified hostname of the IBM Flash Management Console Virtual Center server
   - *vCenterUsername* is the name of a user who has sufficient rights to authenticate with the IBM Flash Management Console.
   - *vCenterPassword* is the password for the user

   For example, you might enter a command that looks something like this:

   ```
   iotcli@tp-vme-1:~> iot vmp --login --vmpaddress tp-vcenter-1 --
   vmpuser root --vmppassword vmware
   Logged in to VMP : tp-vcenter-1
   ```

3. Verify the host-based cache status by typing the following command two commands:

   iot list --vmhost <host name>

   iot list --vmhost <host name> --hypercachestatus

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter the following two commands:

   ```
   iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-2
   Host                        : tp-esxi-2
   Hypervisor Caching Enabled  : true
   Host License Enabled        : true
   Host Autocache Enabled      : false
   Read Update Enabled         : true
   Host Monitoring Enabled     : true
   ioTurbine Caching Version   : 2.2.0.7368
   ```

```
Management Software Version : 3.9.0.130
ioMemory Driver Version     : 3.2.6.1219

iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-
2

Caching Status   : Started
Caching Capacity : 964 GB
Health Status    : Working
```

4. Stop host-based caching on the host by typing the following command:

   iot provision --vmhost <host name> --stopcache

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot provision --vmhost tp-esxi-2 --stopcache
Successfully completed stop cache operation
```

5. Verify that host-based caching stopped by typing the following command two commands:

   iot list --vmhost <host name>

   iot list --vmhost <host name> --hypercachestatus

   where

   - *host name* is the IP address or fully qualified hostname of the target ESXi server

   For example, you might enter the following two commands:

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-2
Host                         : tp-esxi-2
Hypervisor Caching Enabled   : false
Host License Enabled         : true
Host Autocache Enabled       : false
Read Update Enabled          : true
Host Monitoring Enabled      : true
ioTurbine Caching Version    : 2.2.0.7368
Management Software Version : 3.9.0.130
ioMemory Driver Version      : 3.2.6.1219

iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-
2

Caching Status   : Not Started
```

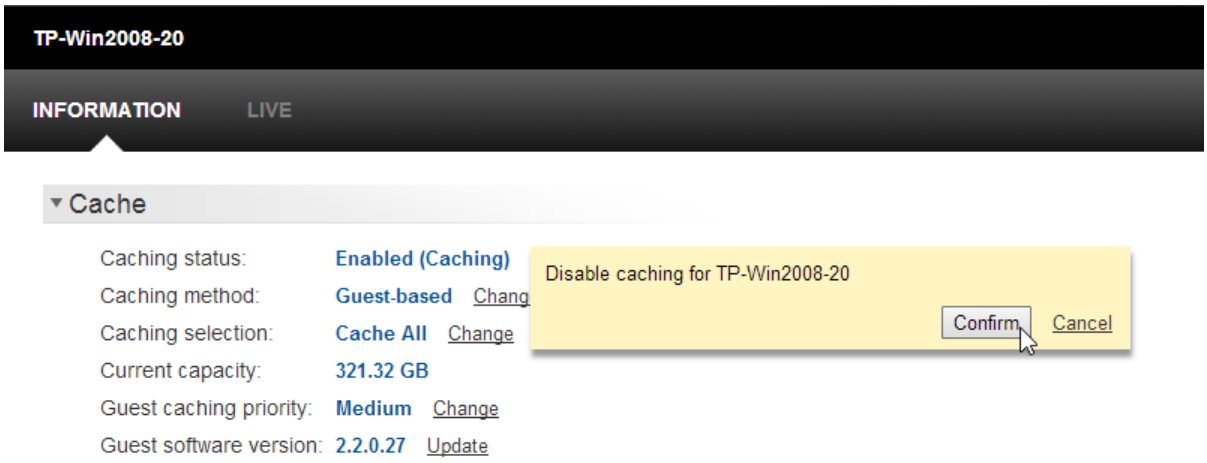
```
Caching Capacity : 964 GB
Health Status    : Caching disabled
```

Host-based caching (or hypervisor caching) on the specified host is stopped.

Stopping or Starting guest-based caching on a VM

1. In the vSphere inventory tree or object navigator, click on the VM where you want to enable or disable guest-based caching.
2. Click on the **IBM Flash Management Console** tab.
3. On the VM Information page, click **Disable** or **Enable** to the right of *Caching Status*.
4. Click **Confirm**.

Caching is enabled or disabled on that VM.



Stopping guest-based caching example with CLI

The following example describes how to stop caching on a virtual machine that is utilizing guest-based caching.

1. Login to the IBM Flash Management Console.

   Username: iotcli
   Password: iotcli

2. From the IBM Flash Management Console command line, authenticate the IBM Flash Management Console with vCenter by typing the following command:

   iot vmp --login --vmpaddress <vCenterAddress> --vmpuser <vCenterUsername> --vmppassword <vCenterPassword>

   where

- *vCenterAddress* is the IP address or the fully qualified hostname of the IBM Flash Management Console Virtual Center server
- *vCenterUsername* is the name of a user who has sufficient rights to authenticate with the IBM Flash Management Console.
- *vCenterPassword* is the password for the user

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot vmp --login --vmpaddress tp-vcenter-1 --
vmpuser root --vmppassword vmware
Logged in to VMP : tp-vcenter-1
```

3. Verify the guest-based cache status by typing the following command:

   iot list --vmguest <guest name> --guestuser <username> --guestpassword <password>

   where

   - *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine where you want to stop caching.
   - *username* is the name of a user who has rights to install software on the guest virtual machine.
   - *password* is the password for the user.

   For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-30 --guestuser
administrator --guestpassword Atest12345
Guest                     : tp-win2008-30
IotPackageVersion         : 2.2.0.7368
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 785

Filter Type               : FILE
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : false
Health  Status            : Working
Filter Shares             : 0

Filter Type               : VOLUME
Cache Size in Use         : 784905273344
Cache Size in Chunks      : 2924
Caching Status            : true
Health  Status            : Working
```

```
Filter Shares            : 4000
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Health  Status           : Working
Filter Shares            : 0

All Volumes              : C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

4. Stop guest-based caching on the virtual machine typing the following command:

   iot provision --vmguest <guest name> --guestuser <username> --guestpassword <password> --stopvolumecache

   where

   - *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose VMDK files you want to cache.
   - *username* is the name of a user who has rights to install software on the guest virtual machine.
   - *password* is the password for the user.

Attention!

By default, Windows VMs are caching with volume-level caching.

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot provision --stopvolumecache --vmguest tp-
win2008-30 --guestuser administrator --guestpassword Atest12345
Stop Caching Task on tp-win2008-30 was successfully submitted.
This task may take several minutes to complete.
Errorcode : 0
Stop Caching Task on tp-win2008-30 successfully completed
```

5. Verify that guest-based caching stopped by typing the following command:

   iot list --vmguest <guest name> --guestuser <username> --guestpassword <password>

   where

   - *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine where you want to stop caching.
   - *username* is the name of a user who has rights to install software on the guest virtual machine.
   - *password* is the password for the user.

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-30 --guestuser
administrator --guestpassword Atest12345
Guest                     : tp-win2008-30
IotPackageVersion         : 2.2.0.7368
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 785

Filter Type               : FILE
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : false
Health  Status            : Working
Filter Shares             : 0

Filter Type               : VOLUME
Cache Size in Use         : 784905273344
Cache Size in Chunks      : 2924
Caching Status            : false
Health  Status            : Working
Filter Shares             : 4000
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : false
Health  Status            : Working
Filter Shares             : 0

All Volumes               : C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

Using the IBM Flash Management Console to manage caching

The IBM Flash Management Console is a graphical user interface (GUI) that provides access to FlashCache Storage Accelerator functionality. All the GUI functionality is available through CLI commands; however, some CLI commands do not have equivalent GUI access.

The IBM Flash Management Console is integrated into the vSphere client user interface, and you can configure FlashCache Storage Accelerator by clicking on the **IBM Flash Management Console** tab in the vSphere Client. That is, if you click on a host icon or a VM icon in the inventory tree or object navigator, a **IBM Flash Management Console** tab will be displayed for that object, and clicking on that tab displays the IBM Flash Management Console in the main page of the vSphere client.

All of the functionality and commands of IBM FlashCache Storage Accelerator can be accessed using the command line interface. Alternately, you can use the GUI interface which is accessed either through the tab in the vSphere client (also known as the "plug-in" or through the more comprehensive interface of the full IBM Flash Management Console).

The following sections describe the functionality available in the tabs:

- About the IBM Flash Management Console Tab for a Host Object
- About the IBM Flash Management Console Tab for a VM Object

About Licensing IBM FlashCache Storage Accelerator

IBM FlashCache Storage Accelerator has three types of licenses:

- Built in Evaluation License
- Extended Evaluation License (short term, timed)
- Production License (timed or permanent)

Initially, you can use the built-in evaluation license which is valid for 120 days from the date of install. A warning alert will be generated two weeks, and then again one week, before licensing becomes out of compliance. After licensing is out of compliance, an error alert will be generated. After the evaluation period you will need to upload enough licenses to cover each caching host.

If an "extended evaluation" or production license is removed, the host can continue to run under the built-in trial license for the remainder of the 120 days from the date when the first license was installed on the host.

The IBM Flash Management Console maintains a count of all licenses uploaded through the license page, and, when any host managed by the vCenter sets a cache device, the total license count is reduced. As long as the total license count in the IBM Flash Management Console is positive, a host can license a cache device. If the count is 0 or negative, the license request will fail.

A single virtual license file can have multiple license “counts.”

IBM FlashCache Storage Accelerator 2.1.3 and 2.2.0 licenses are identical. They can be used interchangeably.

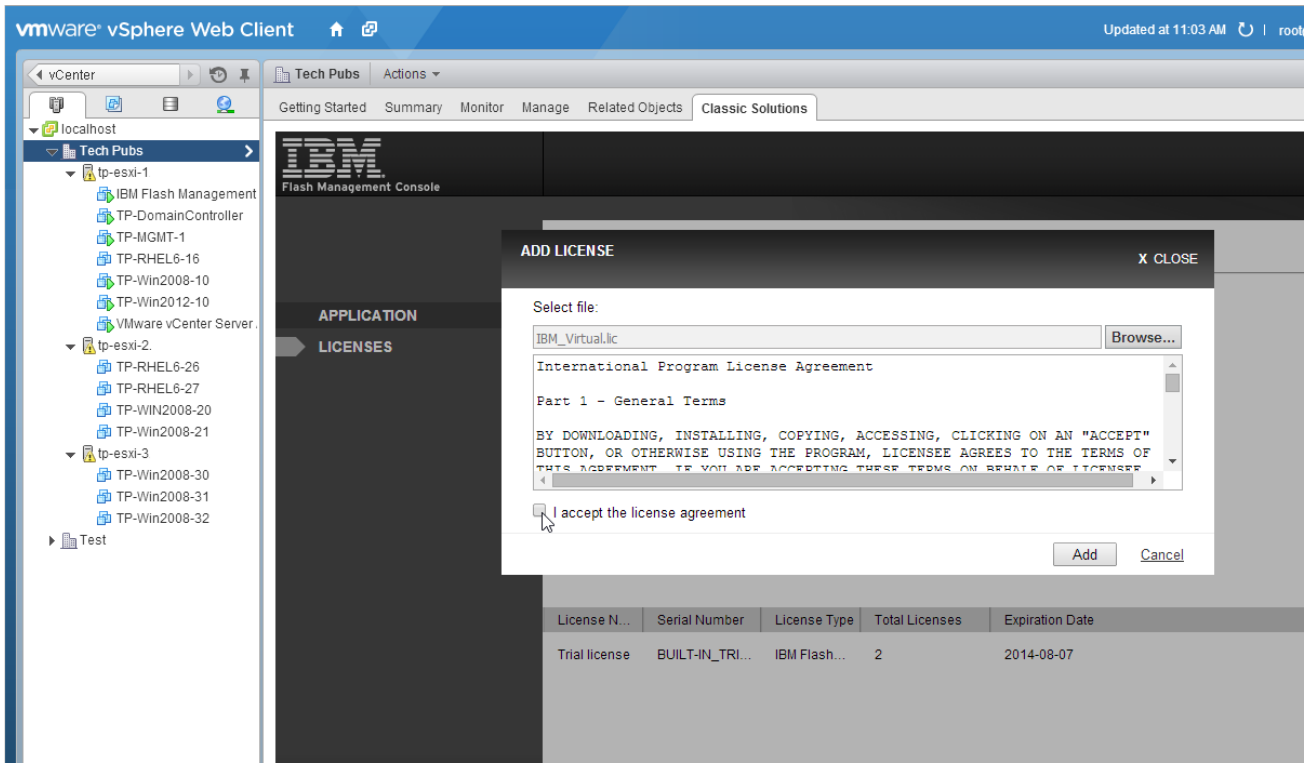
Licensing with IBM Flash Management Console

Use either the **IBM Flash Management Console** tab in the vSphere client interface, or the **Classic Solutions** tab in the vSphere Web Client, to license IBM FlashCache Storage Accelerator. All licenses added to the virtual center will be automatically distributed across caching ESXi hosts.

1. If you haven't already done so, log in to your vCenter using a vSphere client.
2. In the inventory tree, or in the Object Navigator, on the left of the screen, click one of data centers managed by your vCenter. Then click either the **IBM Flash Management Console** tab or the **Classic Solutions** tab.

   The Licenses screen displays.

3. In the Licenses windows, click **Add a License**.
4. Click Browse and navigate to the location of the license file.
5. Accept the license agreement.
6. Click **Add**.



The licenses in your license file are added to the IBM Flash Management Console. You can repeat the steps above to add as many licenses to the vCenter as required. Licenses will be consumed by any caching ESXi hosts that is managed by the vCenter when cache devices are selected. Additionally, if a host is added to the vCenter, and the host has FlashCache Storage Accelerator installed and caching devices selected, licenses will be consumed.

About License Expiration

The following alerts are generated with regard to expiring licenses:

- A warning two weeks before licensing goes out of compliance
- A different warning one week before licensing goes out of compliance
- An “out of compliance” warning when licensing goes out of compliance

License-specific warnings are also displayed in the license grid next to the license that is about to expire.

If you are using an evaluation license and the license expires, FlashCache Storage Accelerator generates an alert telling you that your host is out of compliance. However, your host will continue to cache.

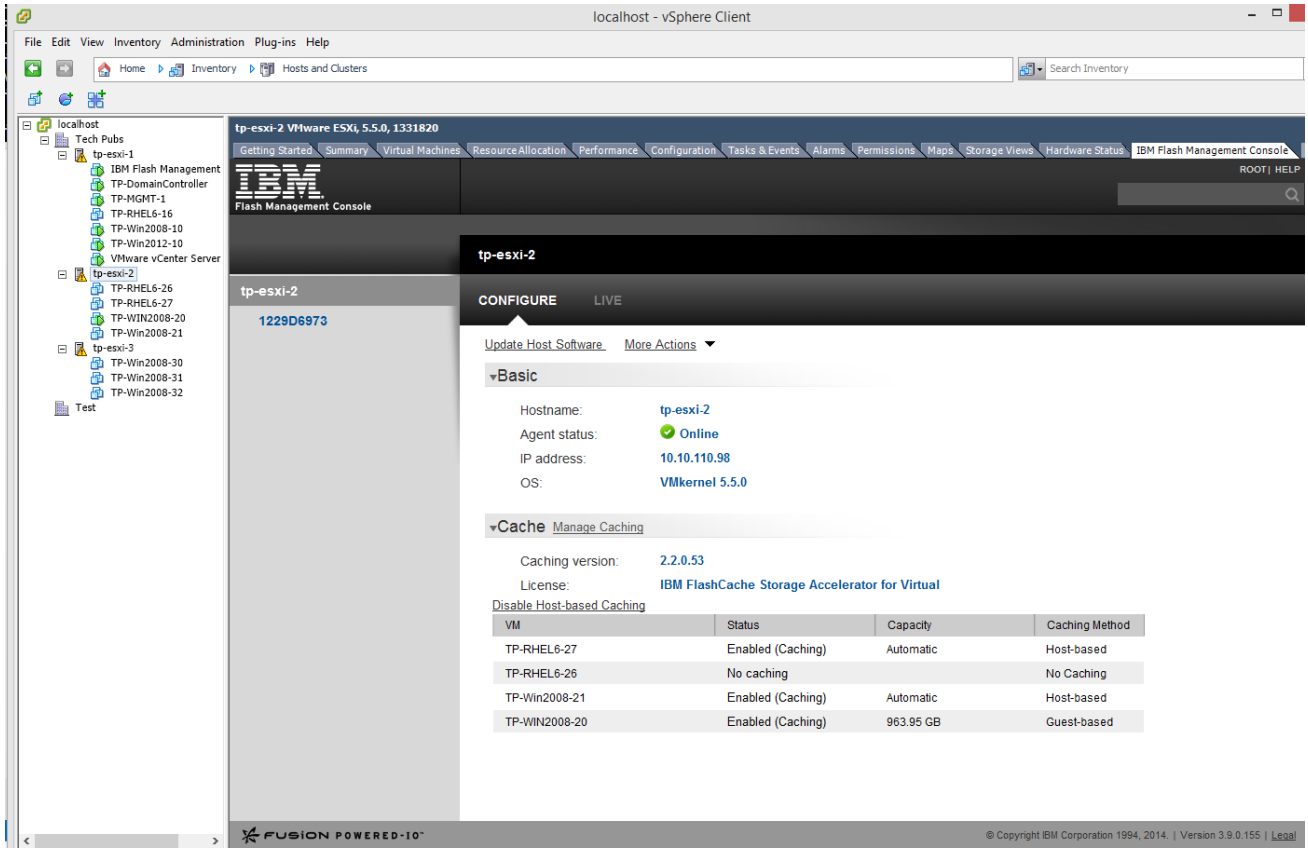
After you remove the last cache device on your host, whatever license the host is using will be released. You will not be able to set a cache device on the host again unless a valid license is available.

About the IBM Flash Management Console tab for a host object

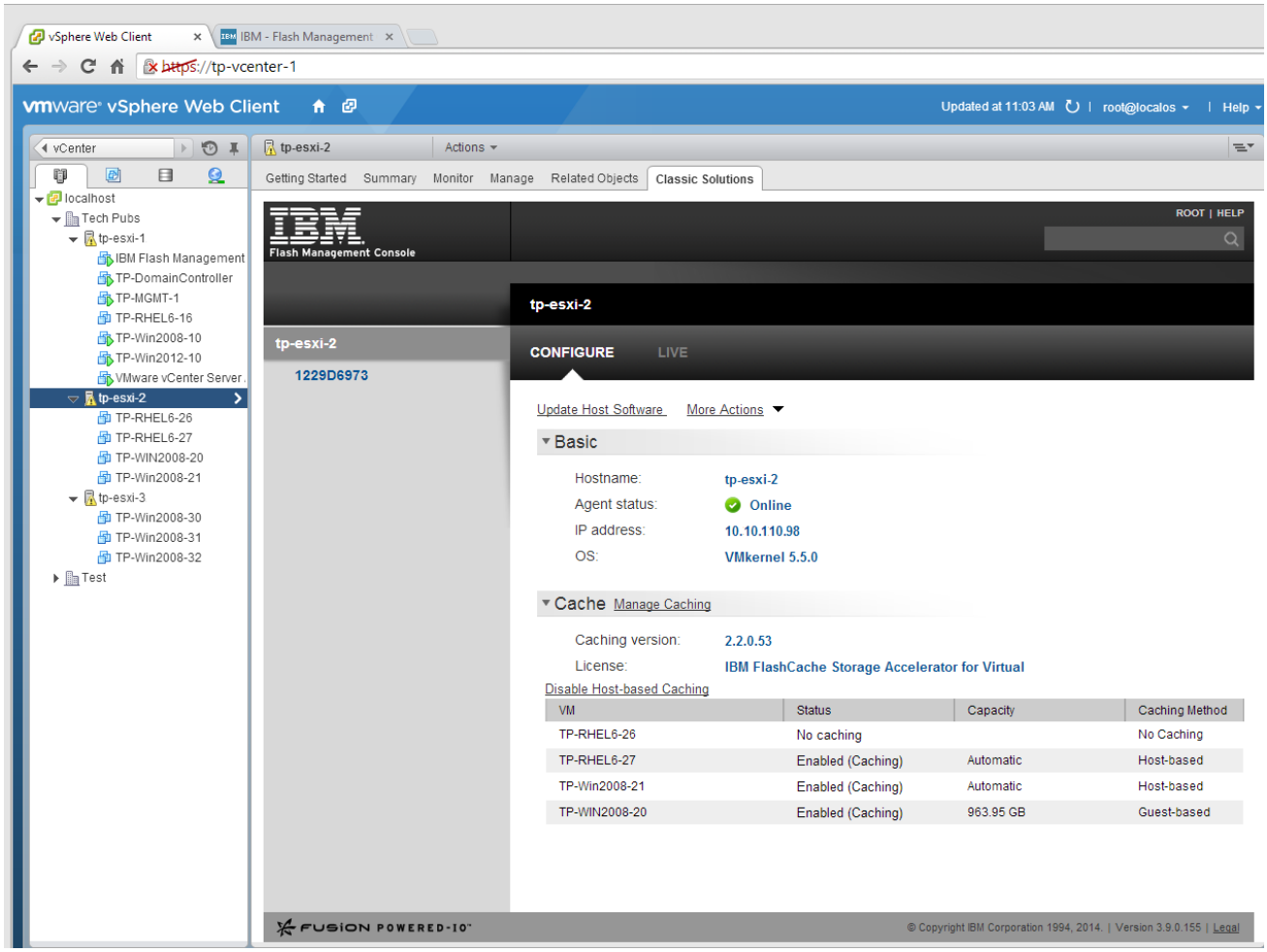
If you click on an ESXi host object in the vCenter inventory tree or object navigator which has FlashCache Storage Accelerator installed on it, a IBM Flash Management Console tab displays on the main screen. From this screen you can perform the following operations:

- Manage caching on the host and VMs
- Enable or disable caching on the host
- View Live performance graphs
- Update host caching software
- Perform low-level format on IBM High IOPS Adapter devices
- Update firmware on IBM High IOPS Adapter device

Legacy vSphere Client



vSphere Web Client



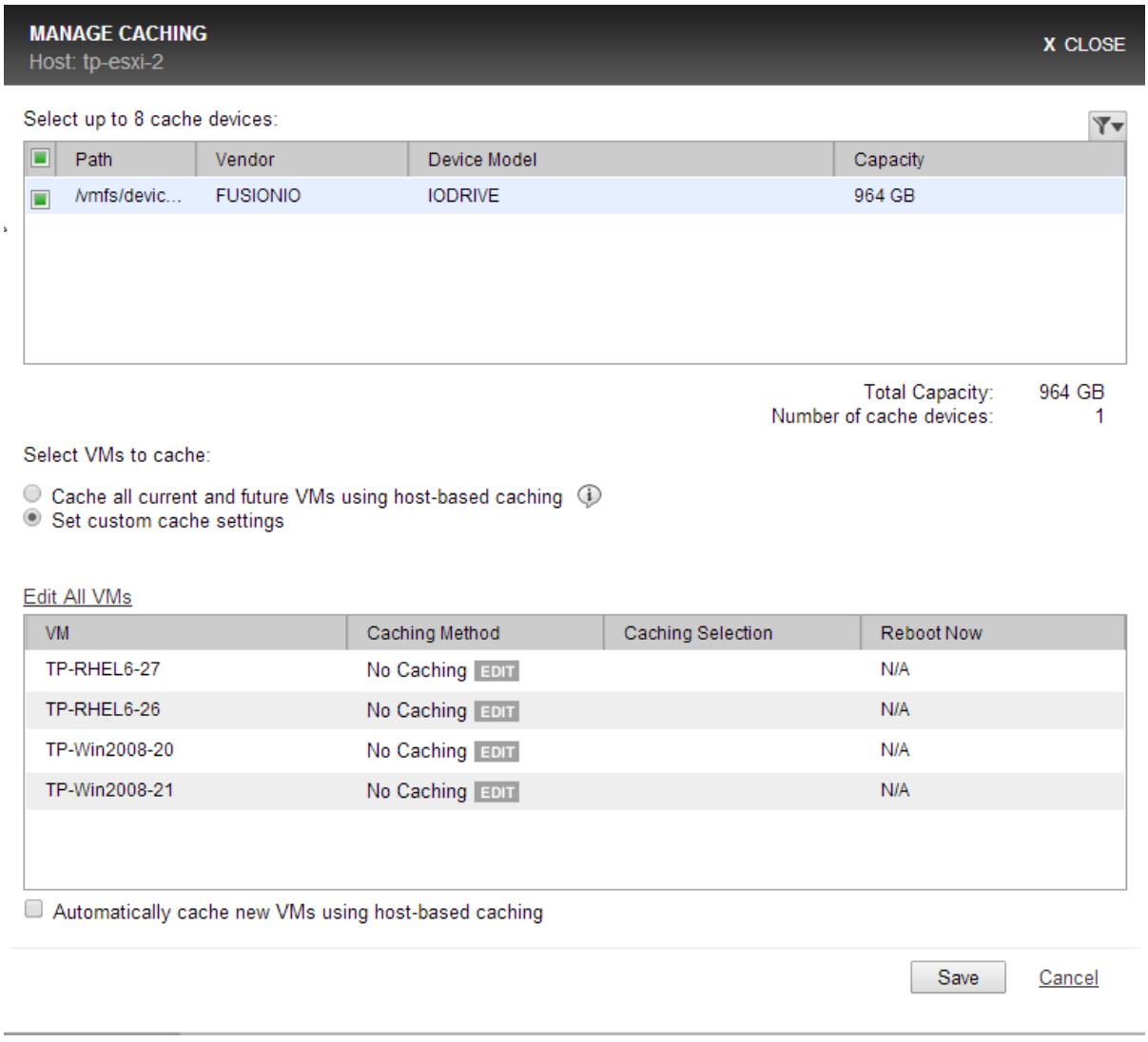
Manage caching

The Manage Caching screen allows the user to manage the caching settings for the host. The user may use this dialog to edit the existing cache settings. Selecting one or more cache devices and then clicking **Cache all current and future VMs using host-based caching** is the minimum necessary user action to enable caching on the host. However, more granular caching options are available by clicking **Set custom cache settings**.

From the Manage Caching screen you can perform the following operations:

- Setting cache devices
- Editing caching method for all VMs
- Setting caching method for specific VM
- Setting caching selection on a specific VM

Rows in the cache devices table can be sorted by clicking on column headings. Scroll through this table to view all available cache devices for the host.



Setting a cache device

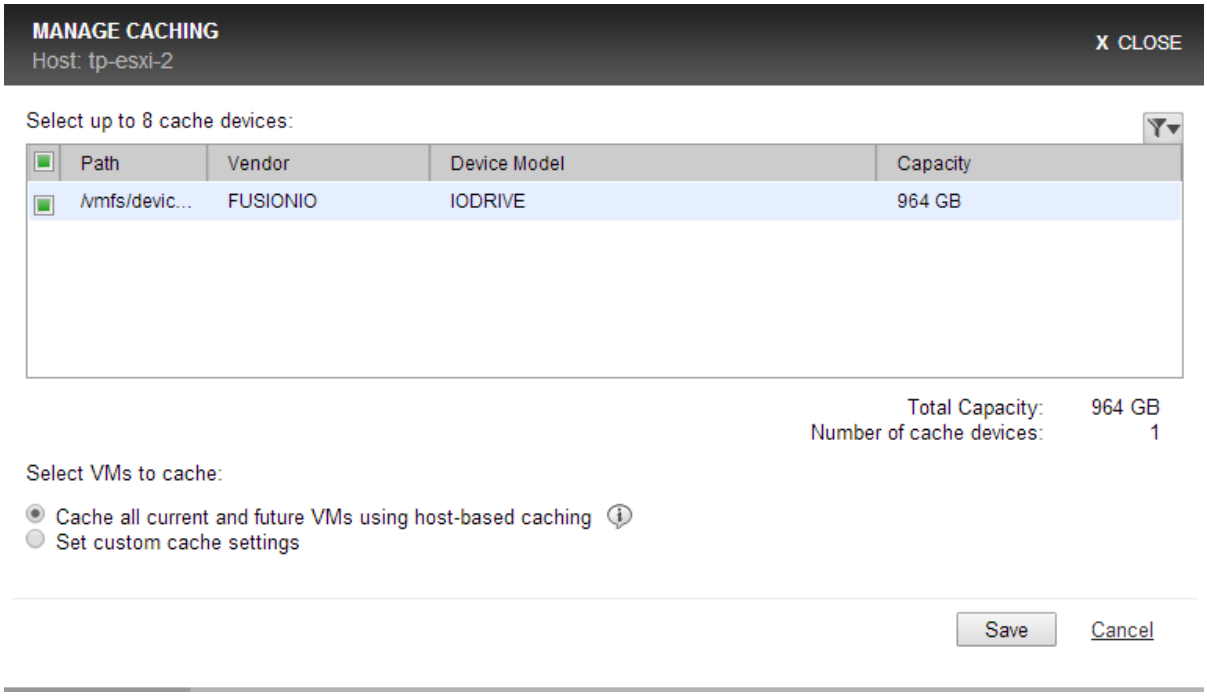
To set a cache device:

1. From the Configure tab of the IBM Flash Management Console tab, click **Manage Caching**.
2. From the manage caching dialog click on one or more devices listed in the cache device table. You can select up to eight cache devices per host.
3. Click either **Cache all current and future VMs using host-based caching** or **Set custom cache settings**.
4. If you select custom cache settings, configure the VMs you want to cache.
5. Click **Save**.

   A confirmation warning displays telling you that all the data currently on the cache device will be permanently lost.

6. Click **Confirm**.

The selected devices are set as cache devices.



Editing caching for all VMs

There are three caching methods you can set for VMs on the ESXi host:

- Host-based
- Guest-based
- No Caching

If you want all the VMs on the host to cache using the same method, you can use the "Edit caching for all" link on the Manage Caching dialog.

To set the caching method for all VMs on the ESXi host:

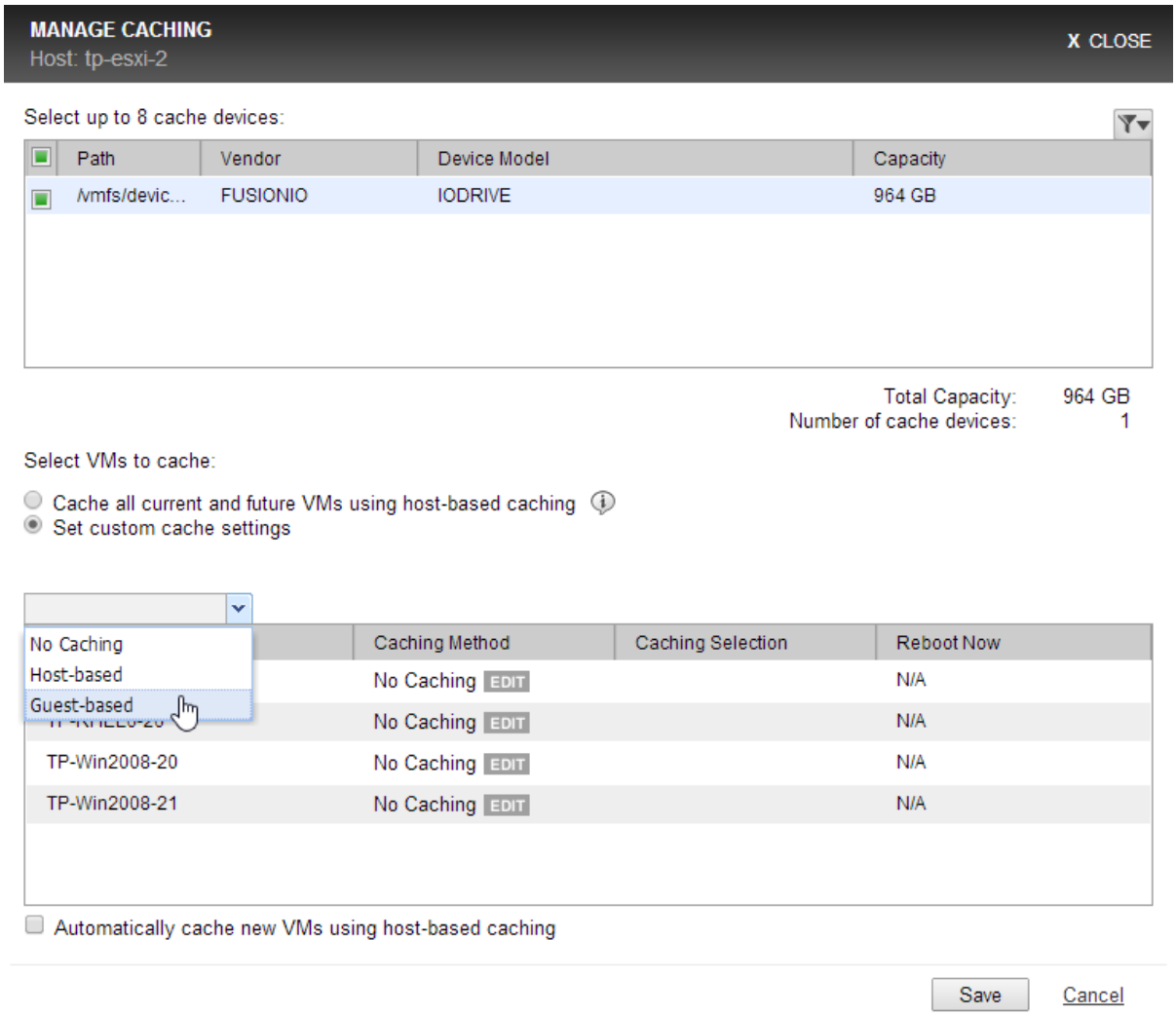
1. From the Configure tab of the IBM Flash Management Console tab, click **Manage Caching**.
2. From the manage caching dialog click **Set custom cache settings**.
3. Click **Edit All VMs**.
4. From the drop down click either **No Caching**, **Host-based**, or **Guest-based**.
5. Click **Save**.
6. Click **Confirm**.

The caching method you selected is set on all VMs on the ESXi host.

Attention!

The cache all setting only applies to VMs that currently exist on the host. If additional VMs are added to the host afterwards they will not automatically be cached. You will need to re-perform the procedure above to include them in caching.

However, you can click the "Automatically cache new VMs using host-based caching" check box in order to have VMs added to the host automatically start caching in host-based mode.



Editing caching method for specific VMs

There are three caching methods you can set for specific VMs:

- Host-based
- Guest-based
- No Caching

Guest-based caching cannot be installed or configured if the VM is not powered on. However, host-based caching can be configured with the VM in a powered on or powered off state.

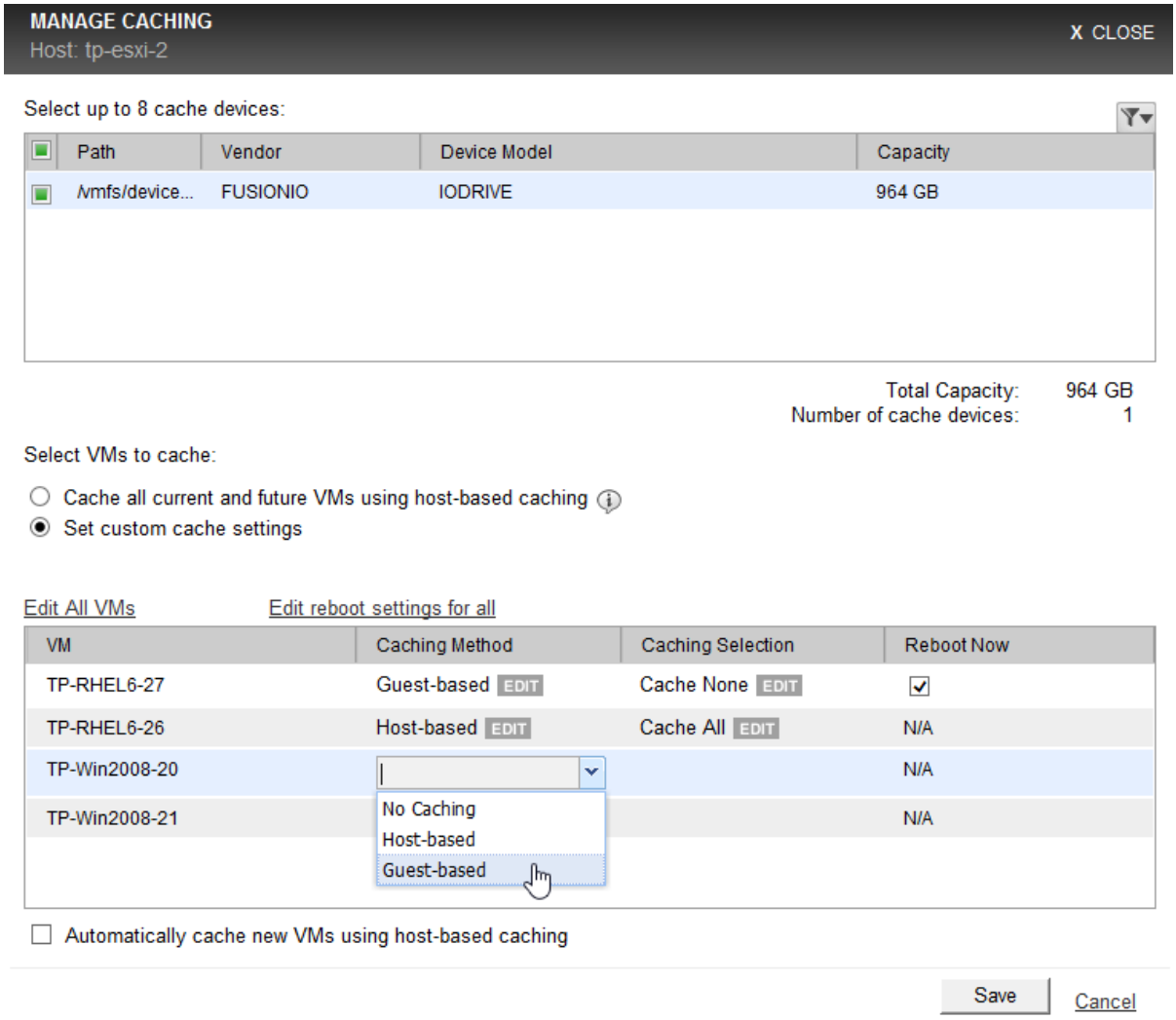
To set caching method on a specific VM:

1. From the Configure tab of the IBM Flash Management Console tab, click **Manage Caching**.
2. From the manage caching dialog click **Set custom cache settings**.
3. In the VM table, in the Caching Method column, click **Edit** next to the VM you want to configure.
4. From the drop down click either **No Caching**, **Host-based**, **Guest-based**.

5. Click **Save**.
6. Click **Confirm**.

The caching method you selected is set on the VM you selected.

Repeat the steps above for each VM whose caching method you want to set.



Attention!

When selecting VM's with both shared and non-shared VMDKs for host-based caching, all non-shared VMDKs will be selected for caching, and you will need to manually power-off and then power-on the VM, or vMotion the VMs to start caching.

Editing caching selection for VMs using host-based caching

For VMs that are using host-based caching, you can change the VMDKs that are being cached. (To change the caching selection on VMs that are using guest-based caching see Editing Caching Selection for VMs Using Guest-Based Caching.)

To change the caching selection on a VM:

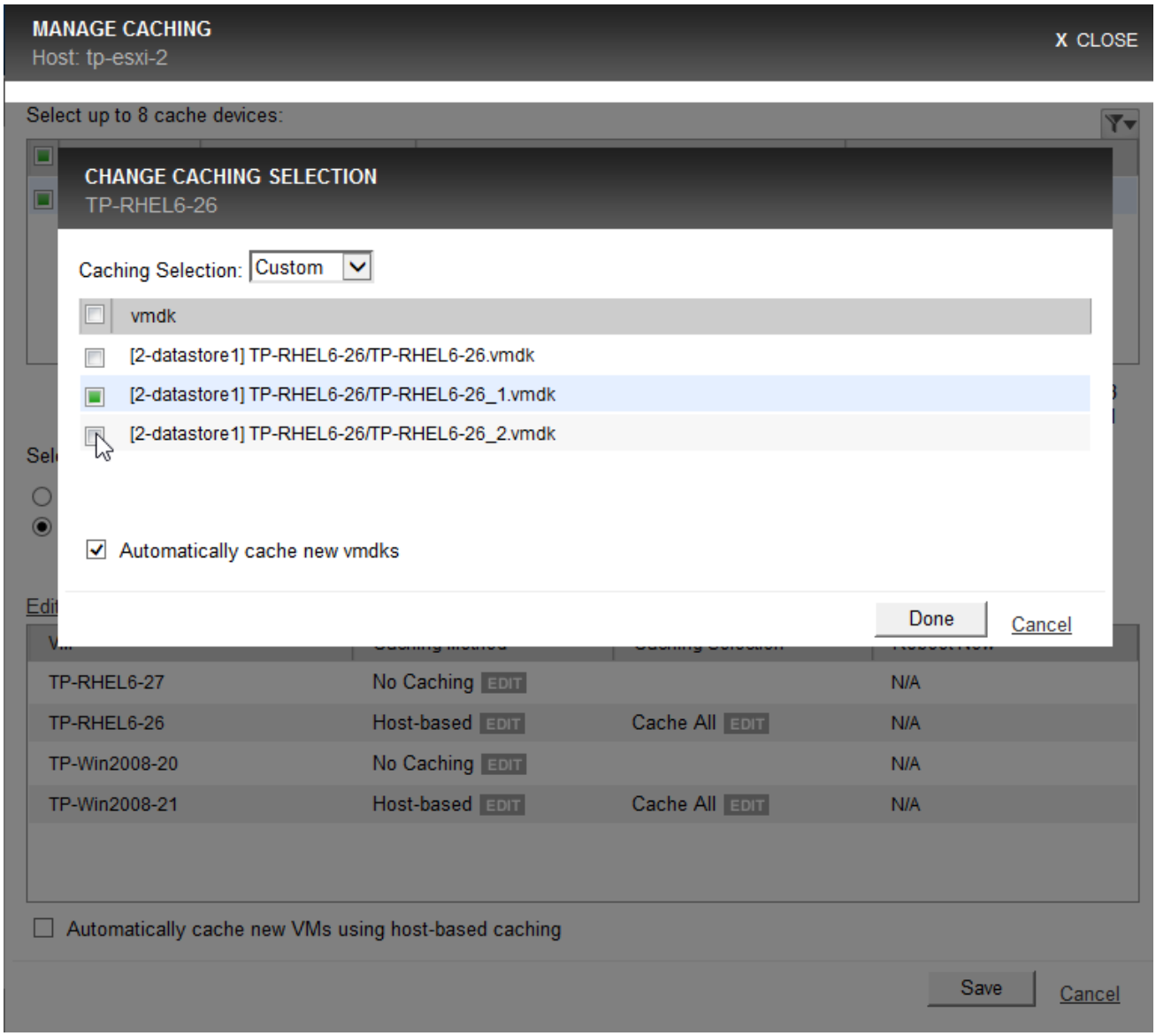
1. From the Configure tab of the IBM Flash Management Console tab, click **Manage Caching**.
2. From the manage caching dialog click **Set custom cache settings**.
3. In the VM table, in the Caching Selection column, click the **Edit** button next to the VM you want to configure.
4. From the drop down click **Custom**.
5. From the VMDK table, click the VMDK files that you want to cache.

> **Attention!**
>
> Host-based caching on shared VMDKs is not supported.

1. Click **Done**.
2. Click **Save**.
3. Click **Confirm**.

The caching selection is set for that VM.

Repeat the steps above for each VM whose caching selections you want to set.


MANAGE CACHING
Host: tp-esxi-2
X CLOSE
Select up to 8 cache devices:
CHANGE CACHING SELECTION
TP-RHEL6-26
Caching Selection: Custom
vmdk
[2-datastore1] TP-RHEL6-26/TP-RHEL6-26.vmdk
[2-datastore1] TP-RHEL6-26/TP-RHEL6-26_1.vmdk
[2-datastore1] TP-RHEL6-26/TP-RHEL6-26_2.vmdk
Automatically cache new vmdks
Done
Cancel
TP-RHEL6-27 No Caching EDIT N/A
TP-RHEL6-26 Host-based EDIT Cache All EDIT N/A
TP-Win2008-20 No Caching EDIT N/A
TP-Win2008-21 Host-based EDIT Cache All EDIT N/A
Automatically cache new VMs using host-based caching
Save
Cancel

Enabling or disabling host-based caching

Attention!

Disabling caching does not change the caching configuration on the host. If you disable caching and then re-enable it, the same configuration will exist on VMs that were using host-based caching.

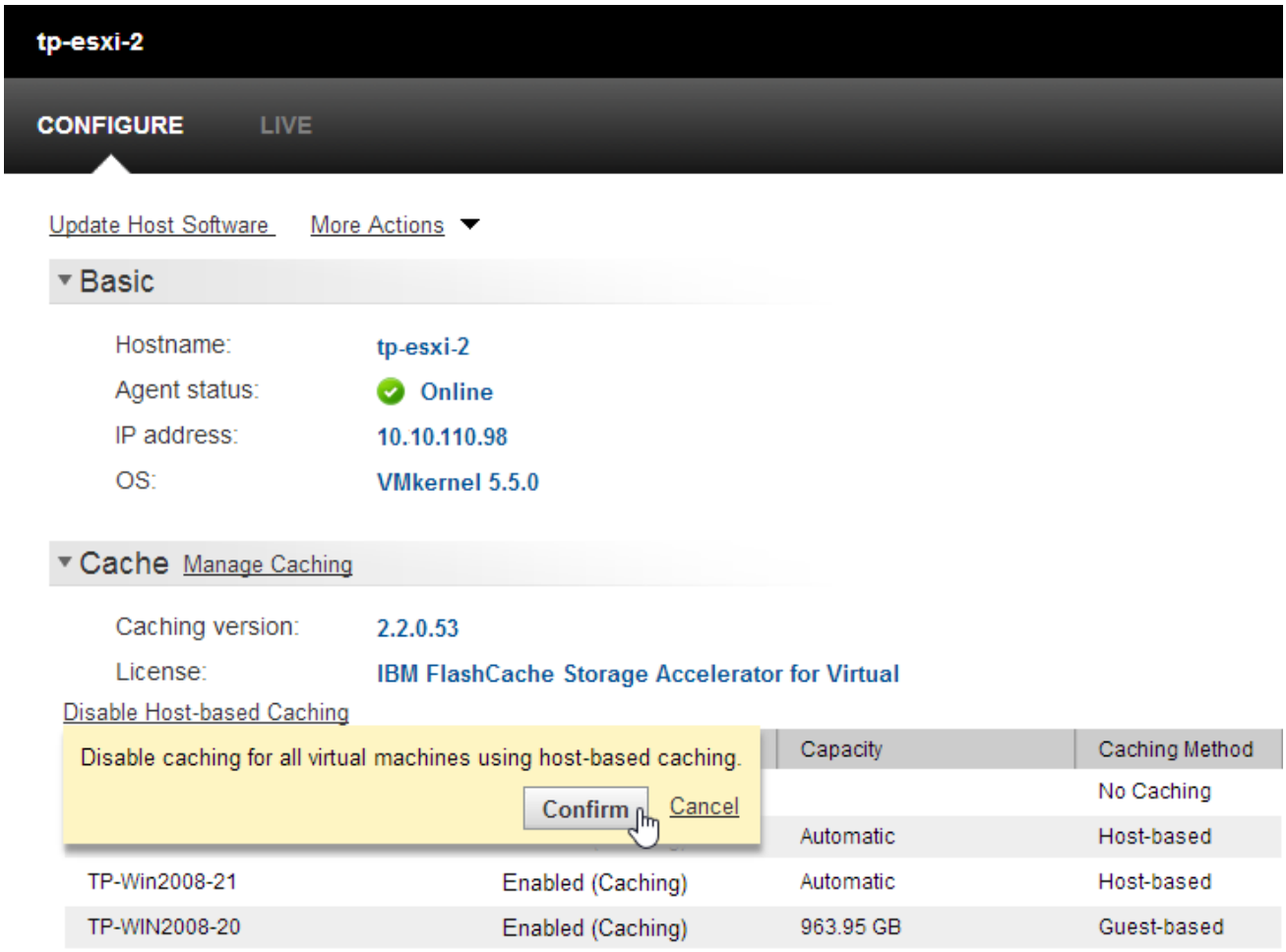
To enable or disable caching on all host-based caching VMs on the host:

1. On the host Configure tab, with the disclosure arrow by the title *Cache* selected, click **Disable Host-based Caching** or **Enable Host-based Caching**.
2. Click **Confirm**.

Caching is disabled or enabled on all VMs on the ESXi host that were configured for host-based caching.

To disable caching on a single VM, use the Editing Caching Method for Specific VMs procedure and select "No Caching" for the specific VM you do not want to cache.

To disable guest-based caching on a VM, use the Disabling Guest-Based Caching procedure.


tp-esxi-2
CONFIGURE
LIVE
Update Host Software
More Actions
Basic
Hostname:
tp-esxi-2
Agent status:
Online
IP address:
10.10.110.98
OS:
VMkernel 5.5.0
Cache
Manage Caching
Caching version:
2.2.0.53
License:
IBM FlashCache Storage Accelerator for Virtual
Disable Host-based Caching
Disable caching for all virtual machines using host-based caching.
Confirm
Cancel
Capacity
Caching Method
No Caching
Automatic
Host-based
TP-Win2008-21
Enabled (Caching)
Automatic
Host-based
TP-WIN2008-20
Enabled (Caching)
963.95 GB
Guest-based

Updating host caching software

To update the caching software installed on the ESXi host:

1. On the host Configure tab, click **Update Host Software**.

   The Update Host Software dialog displays. This dialog shows the current version of caching software installed and any new versions that may be available on the ESXi host.

   > **Attention!**
   > The Update Host Software dialog only shows software updates that are contained in the management server. If newer software versions are available, you will need to upgrade the Flash Management Console to the newer version before the new host software is available for installation using the Update Host Software dialog.

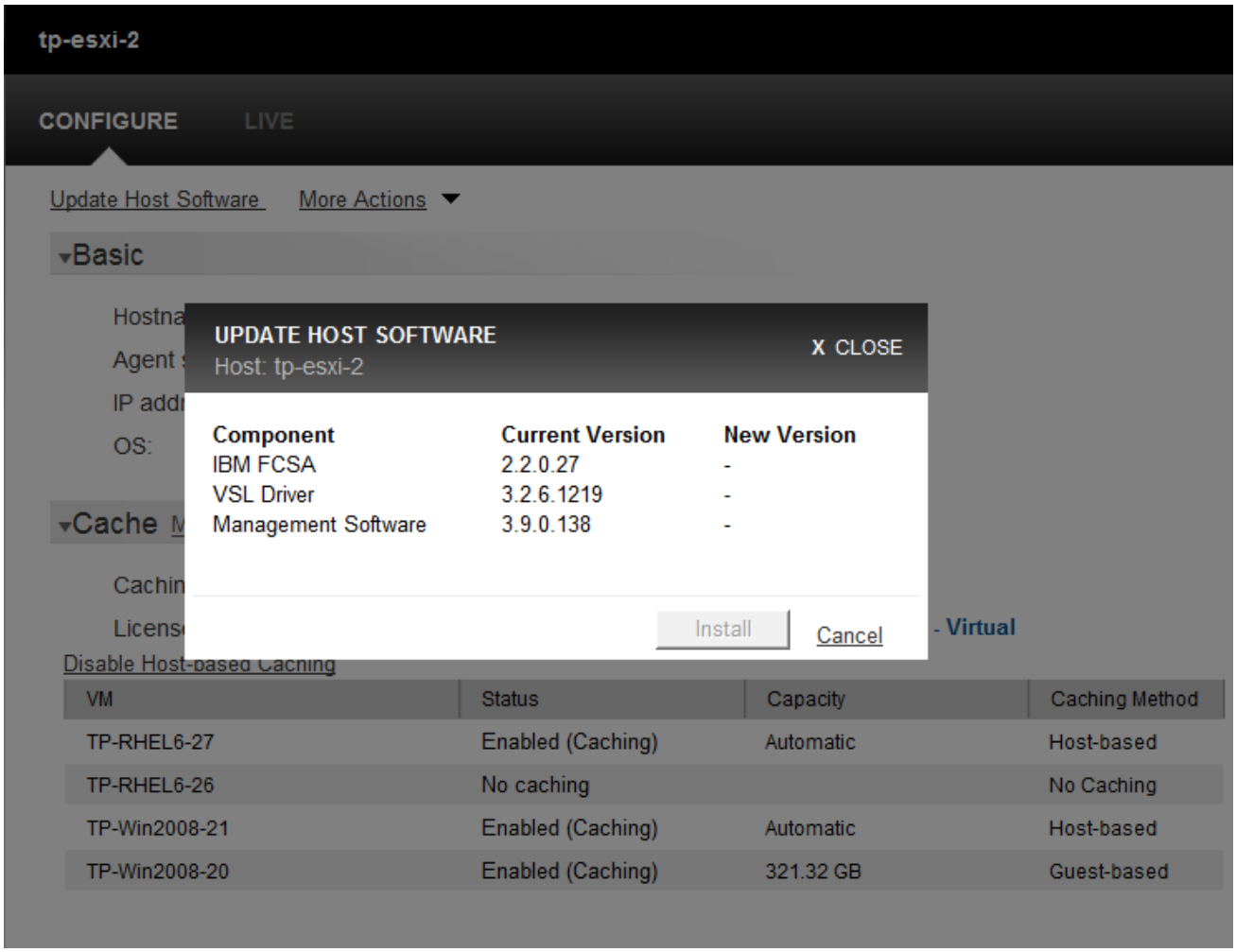
2. If you want to update your host caching software with the new versions that are displayed, click **Install**.

3. Click **Confirm**.

The host caching software is updated. This action requires a reboot of the ESXi host.

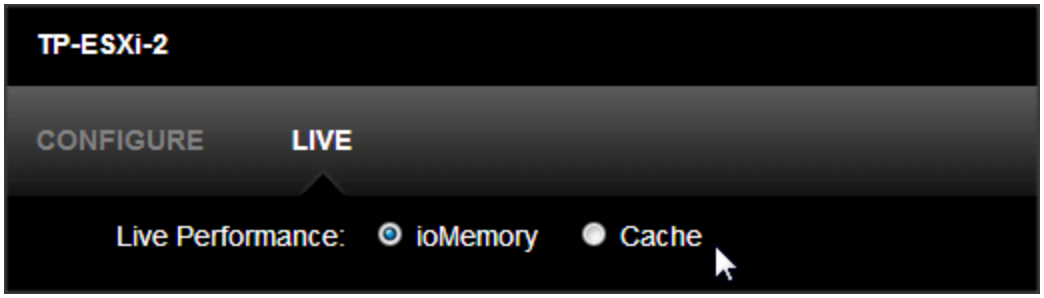
If your host is part of a VMware cluster, you have the option of installing host software on other hosts in the cluster. In the Update Host Software dialog, click the other hosts in the cluster that you want to install the caching software on.

For information on upgrading to a newer version of IBM FlashCache Storage Accelerator, see the "Upgrading IBM FlashCache Storage Accelerator to a Newer Version" section of the *IBM FlashCache Storage Accelerator Installation Guide*.


tp-esxi-2
CONFIGURE
LIVE
Update Host Software
More Actions
Basic
Hostna
Agent
IP addi
OS:
Cache
Cachin
Licens
UPDATE HOST SOFTWARE
Host: tp-esxi-2
X CLOSE
Component
Current Version
New Version
IBM FCSA
2.2.0.27
-
VSL Driver
3.2.6.1219
-
Management Software
3.9.0.138
-
Install
Cancel
- Virtual
Disable Host-based Caching
VM
Status
Capacity
Caching Method
TP-RHEL6-27
Enabled (Caching)
Automatic
Host-based
TP-RHEL6-26
No caching
No Caching
TP-Win2008-21
Enabled (Caching)
Automatic
Host-based
TP-Win2008-20
Enabled (Caching)
321.32 GB
Guest-based

About Live performance graphs for hosts

Clicking on the **Live** tab gives you the option to view performance graphs for either IBM High IOPS Adapter devices or caches on the host.

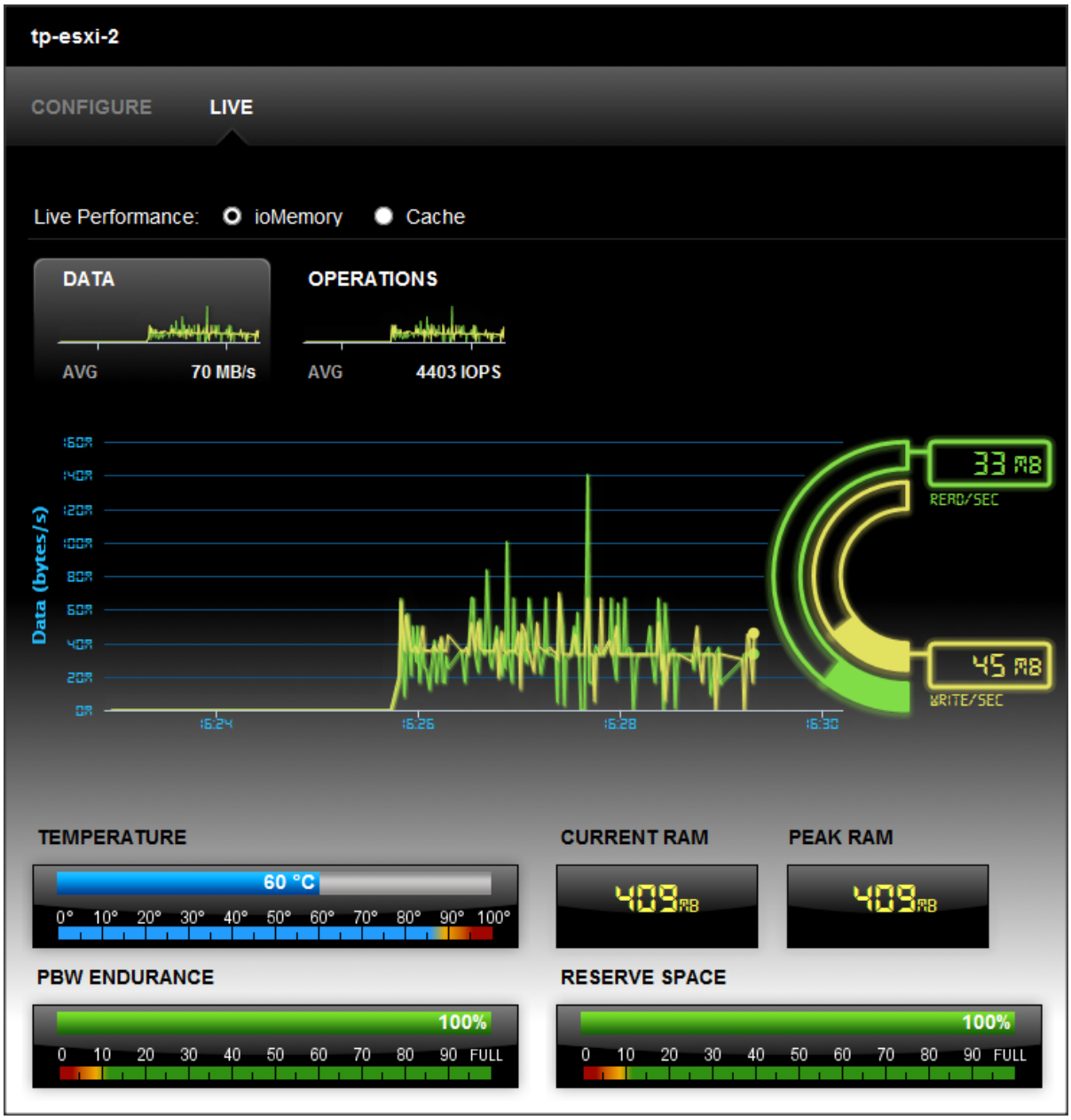


IBM High IOPS Adapter Live performance graphs

By default the graphs on this pane show the aggregate performance across all the IBM High IOPS Adapter devices on the host. If desired, click the **IBM High IOPS Adapter** drop-down arrow to select the devices you want to include in the graphical display.

The following histograms and bar charts are displayed on the screen:

Item	Description
Data	A histogram of average megabytes per second being read or written to the Cache devices.
Operations	A histogram of average operations per second (shown in KIOPS) being performed on the Cache devices.
Combined Read/Write	Overlapping histograms of actual reads and writes to the Cache devices. The histogram is updated every second.
Temperature	The temperature of the FPGA on the IBM High IOPS Adapter device. Operating temperatures of devices vary, but throttling on older devices may occur after 78° C.
Current RAM	The current RAM being consumed on the host by the VSL driver.
Peak RAM	The peak amount of RAM that has been consumed since power on by the VSL driver.
PBW Performance	This value reflects the amount of wear experienced by the IBM High IOPS Adapter device. Values of 100% represent no wear on the device, or, that the device has 100% of its endurance left.
Reserve Space	As the IBM High IOPS Adapter device retires bad memory locations it moves the data at those bad locations to reserved space. This value reflects the amount of reserve space still available.

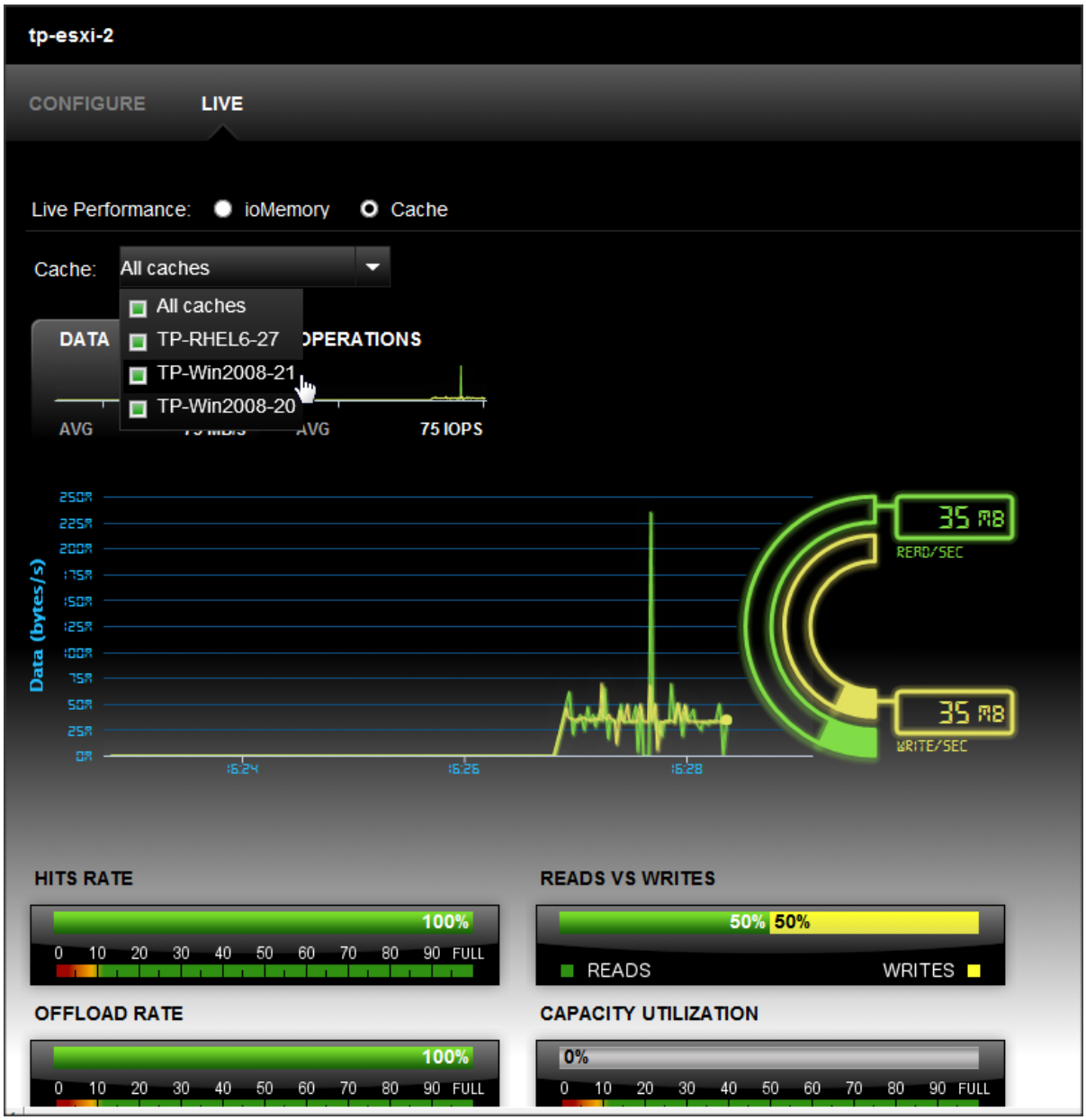

tp-esxi-2
CONFIGURE
LIVE
Live Performance:
ioMemory
Cache
DATA
AVG
70 MB/s
OPERATIONS
AVG
4403 IOPS
Data (bytes/s)
160M
140M
120M
100M
80M
60M
40M
20M
0M
16:24
16:26
16:28
16:30
33 MB
READ/SEC
45 MB
WRITE/SEC
TEMPERATURE
60 °C
0° 10° 20° 30° 40° 50° 60° 70° 80° 90° 100°
CURRENT RAM
409MB
PEAK RAM
409MB
PBW ENDURANCE
100%
0 10 20 30 40 50 60 70 80 90 FULL
RESERVE SPACE
100%
0 10 20 30 40 50 60 70 80 90 FULL

Cache Live performance graphs

By default the graphs on this pane show the aggregate performance across all the caches on the the host. If desired, click the **Cache** drop-down arrow to select the caches you want to include in the graphical display.

The following histograms and bar charts are displayed on the screen:

Item	Description
Data	A histogram of average megabytes per second being read or written to the Cache devices.
Operations	A histogram of average operations per second (shown in KIOPS) being performed on the Cache devices.
Combined Read/Write	Overlapping histograms of actual reads and writes to the Cache devices. The histogram is updated every second.
Hits Rate	A bar chart showing a percentage of file IO on the host that hits the Cache devices.
Reads versus Writes	A bar chart showing the percentage of reads to writes on the Cache devices. The two percentages equal 100%.
Offload Rate	A bar chart showing the offload rate. Offload rate can be calculated as: hits / (number of reads + number of writes)
Capacity Utilization	A bar chart showing how much of the Cache capacity is in use.


tp-esxi-2
CONFIGURE
LIVE
Live Performance:
ioMemory
Cache
Cache:
All caches
All caches
TP-RHEL6-27
TP-Win2008-21
TP-Win2008-20
DATA
OPERATIONS
AVG
AVG
75 IOPS
Data (bytes/s)
35 MB
READ/SEC
35 MB
WRITE/SEC
HITS RATE
100%
0 10 20 30 40 50 60 70 80 90 FULL
READS VS WRITES
50% 50%
READS
WRITES
OFFLOAD RATE
100%
0 10 20 30 40 50 60 70 80 90 FULL
CAPACITY UTILIZATION
0%
0 10 20 30 40 50 60 70 80 90 FULL

About "More Actions"

The **More Actions** drop down provides links to the following functions:

- Low-level format
- Update firmware

Performing low-level format on IBM High IOPS Adapter or Enterprise Value Flash Adapater

Attention!

Formatting a device will destroy any data still remaining on it. Please be sure to back up your data before proceeding.

Attention!

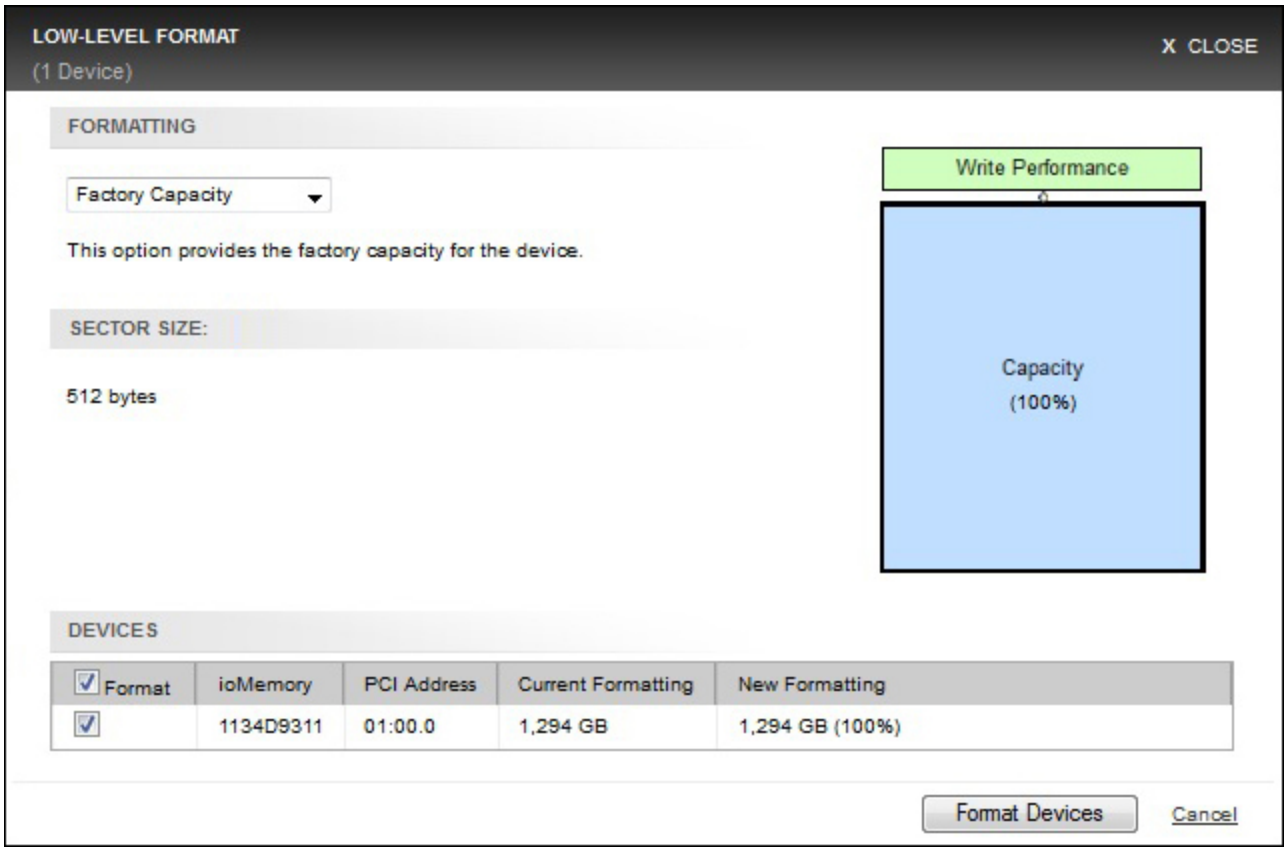
Attempting to format an IBM High IOPS Adapter that is being used as a cache device can cause the ESXi host to enter an inconsistent state that cannot be resolved without rebooting the host. If you need to reformat the device you are using for caching, de-select it as a caching device first.

Your IBM High IOPS Adapter device comes pre-formatted to factory capacity. Generally, it is not necessary to use this option. However, you would use it if any of these situations arise:

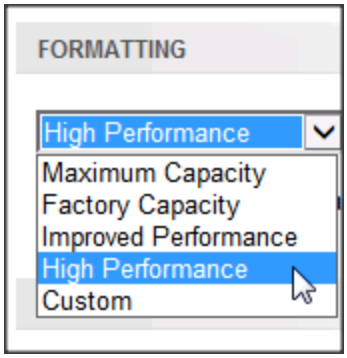
- You need to re-format the drive to change its logical size or modify write performance.
- You are instructed to do so by IBM Customer Support.

IBM FlashCache Storage Accelerator performs a low-level format that is different from a format performed by an operating system using standard disk management utilities. You do not need to perform a low-level format to create an operating system-specific volume on the device.

When you click the **Format** button, the **Low-Level Format** dialog appears.



Here you can set the ratio of **Write Performance to Capacity.** You can increase Write Performance by decreasing the IBM High IOPS Adapter's capacity--the reverse is also true. You can select from a drop-down list of preset ratios (**Maximum Capacity, Factory Capacity, Improved Performance, High Performance**, or **Custom).**

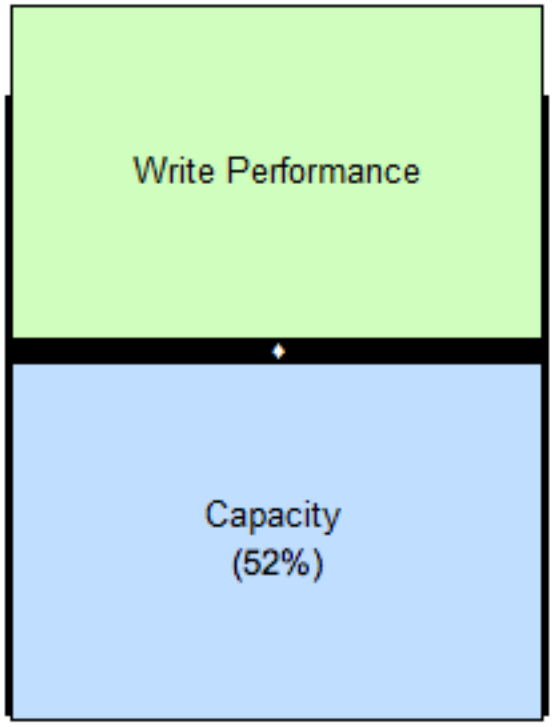


Attention!

For FlashCache Storage Accelerator select "High Performance."

You can customize the Write ratio with the **Custom** selection (from the drop-down menu) or by dragging the line between **Write Performance and Capacity** in the graphic.

You can also change the sector size by dragging the sizing bar in the **Write Performance** box.



The selected IBM High IOPS Adapter device appears below the Write Performance/Capacity graphic. Check the corresponding checkbox to perform the desired action on the selected device or devices.

NOTE-

If an IBM High IOPS Adapter is unable to format (that is, it is busy or the formatting is not valid for that particular device), you will not be able to select it for formatting.

When you are ready to format the selected IBM High IOPS Adapter device, click the **Format Devices** button.

To exit the Low-Level Format dialog without formatting any devices, click, the **Cancel** link.

Updating firmware on IBM High IOPS Adapter or Enterprise Value Flash Adapater

Updating IBM High IOPS Adapter involves two procedures: updating the IBM High IOPS Adapter VSL (driver) on the host machine, and updating the firmware on the IBM High IOPS Adapter device.

Attention!

Before using the IBM Flash Management Console to update firmware, you must place the new firmware packages in the /scratch directory of the ESXi server.

The **Update Firmware** operation lets you upgrade the IBM High IOPS Adapter's firmware. You should upgrade the firmware if:

- IBM FlashCache Storage Accelerator presents a warning icon stating that the firmware is out of date.
- The IBM High IOPS Adapter stops working.
- You are instructed to do so by IBM Customer Support.

NOTE-

In most cases, if you upgrade the IBM High IOPS Adapter firmware, you must also upgrade the IBM High IOPS Adapter driver. Most support issues arise from mismatched firmware and drivers.

Upgrading the firmware may take some time. Monitor the progress using IBM FlashCache Storage Accelerator.

Attention!

Back up the data on your IBM High IOPS Adapter device prior to performing the upgrade.

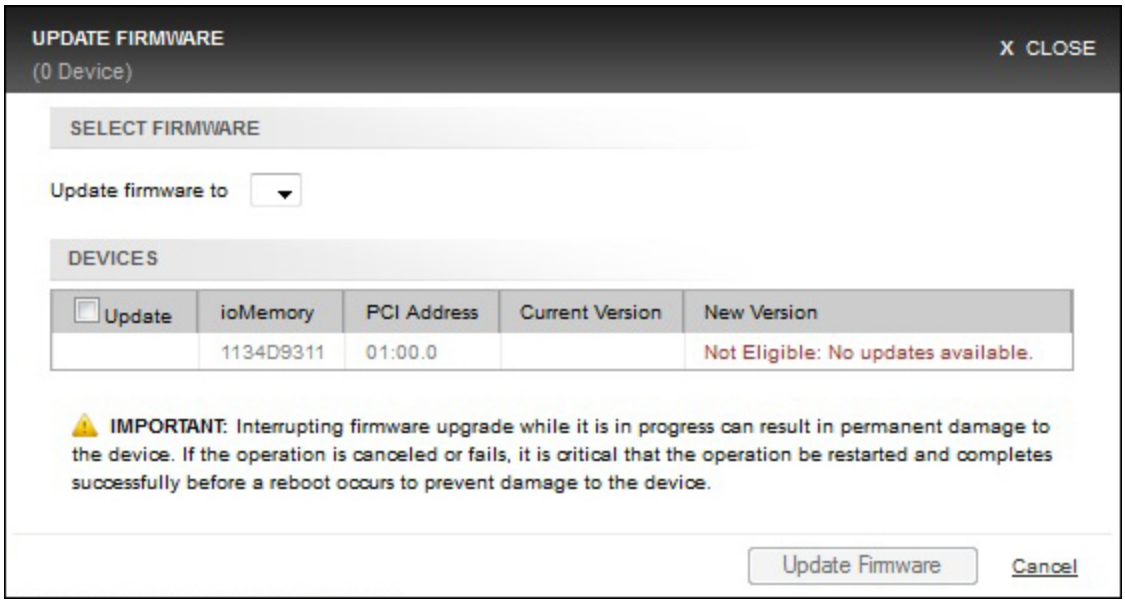
Attention!

It is extremely important that the power not be turned off during a firmware upgrade, as this could cause device failure. If a UPS is not already in place, consider adding one to the system prior to performing a firmware upgrade.

Attention!

Interrupting an update while it is in progress can result in permanent damage to the device. Never kill the process. (For this same reason, the Agent process ignores all termination requests.) If the operation fails, it is critical that you restart this operation and complete it successfully before restarting the computer to prevent damage to the device.

When you click the **Update Firmware** button, the **Update Firmware** dialog appears. Here you can select from the drop-down menu the version of the firmware you would like to install.



The selected IBM High IOPS Adapter device appears below the Update firmware drop-down menu. Check the corresponding checkbox to perform the desired action on the selected device or devices.

NOTE-

If an IBM High IOPS Adapter is unable to update (that is, it is busy or updates are not available for that particular device), the message "Not Eligible" displays in the New Version column of the Devices table.

When you are ready to upgrade the selected IBM High IOPS Adapter's firmware, click the **Update Firmware** button. Or, to exit the **Update Firmware** dialog without updating any devices, click the **Cancel** link.

When the firmware update process begins, the **Config History** bar appears at the bottom of the screen.

About the IBM Flash Management Console tab for a VM object

If you click on a VM object in the vCenter inventory tree or object navigator which resides on a host where FlashCache Storage Accelerator is installed, a IBM Flash Management Console tab displays on the main screen. From this screen you can perform the following operations:

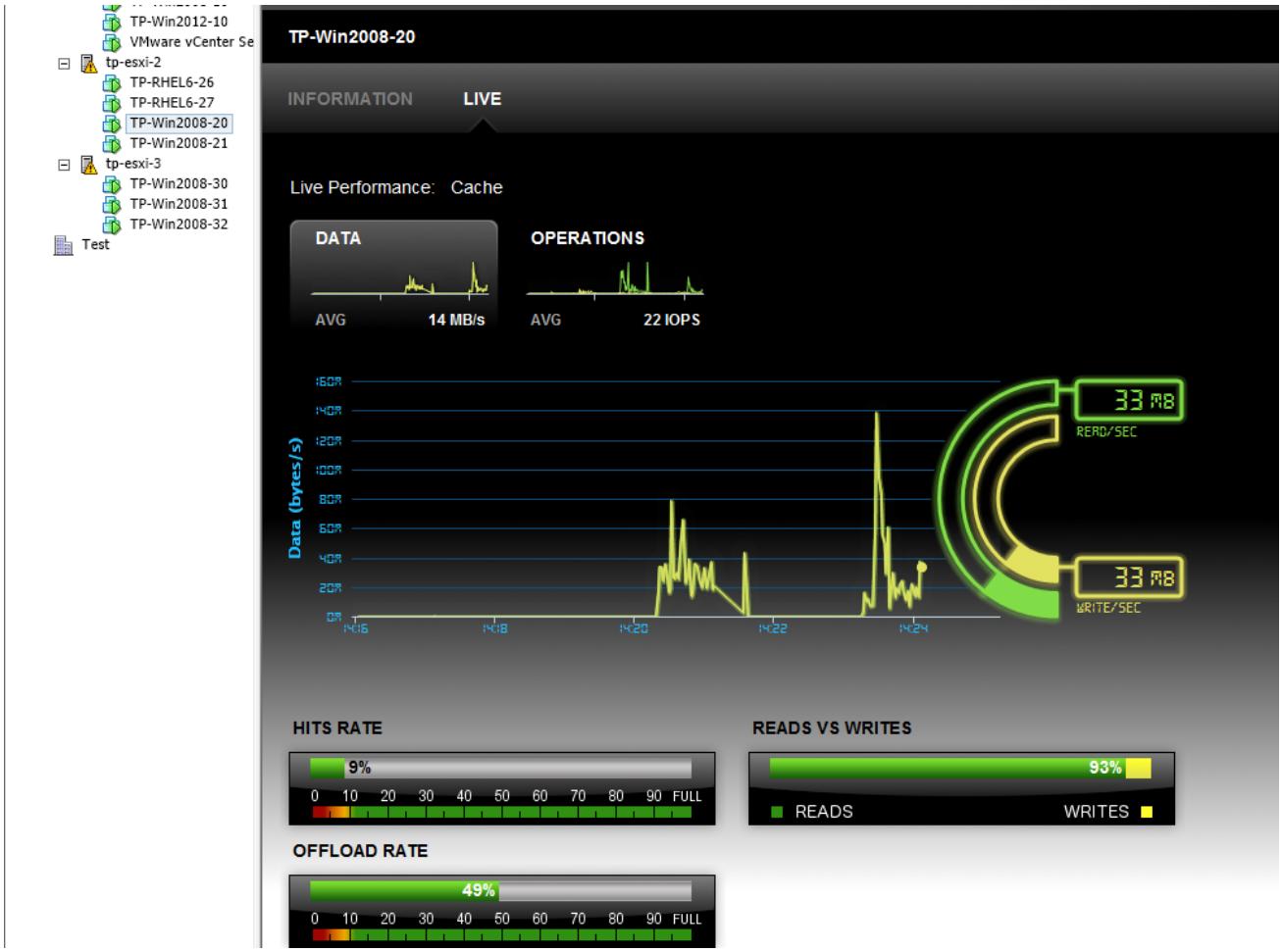
- View Live performance graphs
- Enable or disable caching (guest-based only)
- Changing caching method for VM
- Change caching selection
- Change caching priority (Windows guest-based only)
- Update guest caching software (guest-based only)

About Live performance graphs for VMs

To view Live Performance graphs, click a VM that is using guest-based caching in the vSphere inventory tree or object navigator, click the **IBM Flash Management Console** tab, and then click **Live**.

The following histograms and bar charts are displayed on the screen:

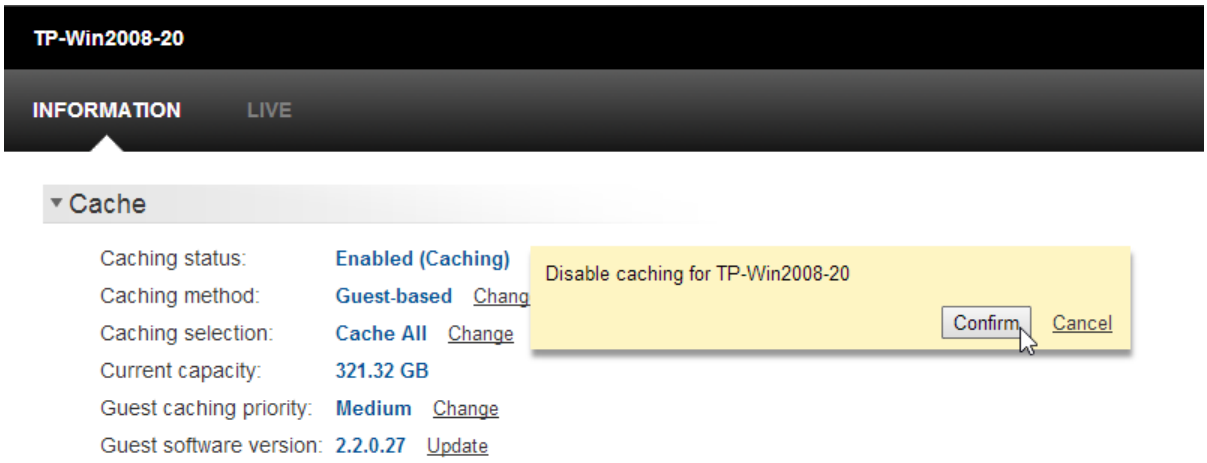
Item	Description
Data	A histogram of average megabytes per second being read or written to the Cache device.
Operations	A histogram of average operations per second (shown in KIOPS) being performed on the Cache device.
Combined Read/Write	Overlapping histograms of actual reads and writes to the Cache device. The histogram is updated every second.
Hits Rate	A bar chart showing a percentage of file IO on the VM that hits the Cache device.
Reads versus Writes	A bar chart showing the percentage of reads to writes on the Cache device. The two percentages equal 100%.
Offload Rate	A bar chart showing the offload rate. Offload rate can be calculated as: hits / (number of reads + number of writes)



Stopping or Starting guest-based caching on a VM

1. In the vSphere inventory tree or object navigator, click on the VM where you want to enable or disable guest-based caching.
2. Click on the **IBM Flash Management Console** tab.
3. On the VM Information page, click **Disable** or **Enable** to the right of *Caching Status*.
4. Click **Confirm**.

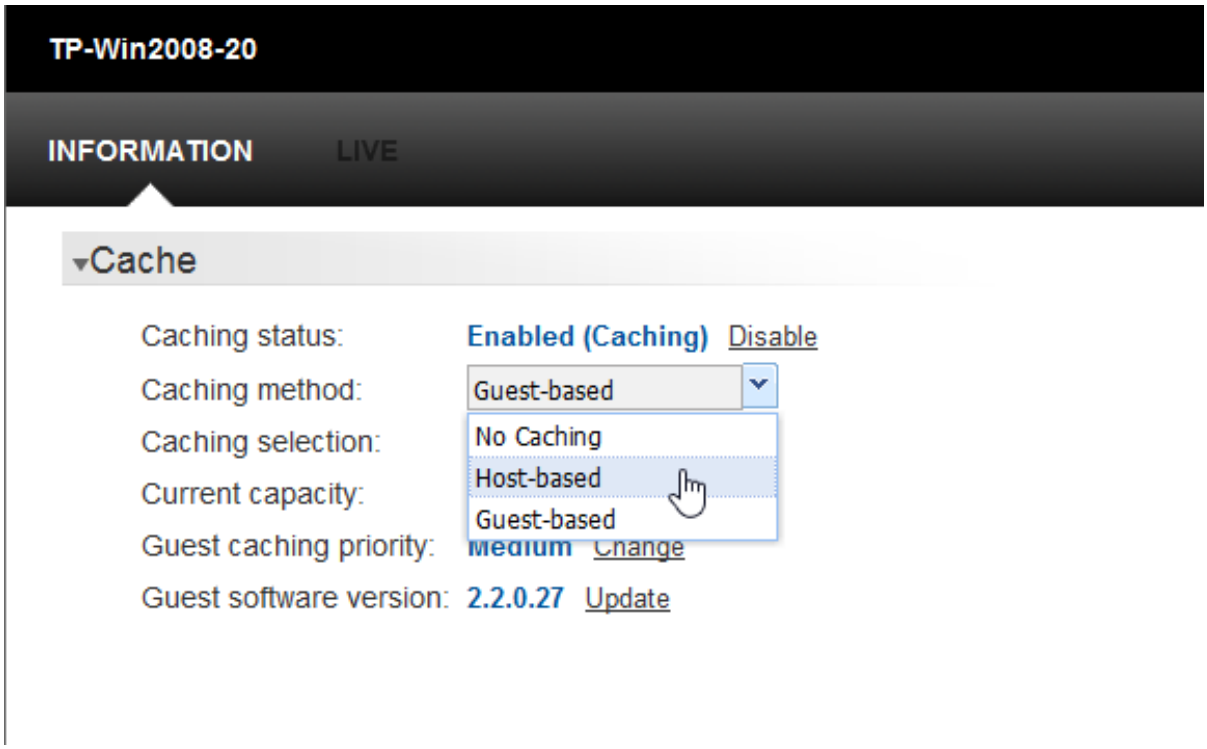
Caching is enabled or disabled on that VM.


TP-Win2008-20
INFORMATION
LIVE
Cache
Caching status:
Enabled (Caching)
Caching method:
Guest-based
Chang
Caching selection:
Cache All
Change
Current capacity:
321.32 GB
Guest caching priority:
Medium
Change
Guest software version:
2.2.0.27
Update
Disable caching for TP-Win2008-20
Confirm
Cancel

Changing caching method for VM

1. In the vSphere inventory tree or object navigator, click on the VM where you want to change the caching method.
2. Click on the **IBM Flash Management Console** tab.
3. On the VM Information page, click **Change** to the right of *Caching Method*.
4. From the drop down, choose **No Caching**, **Guest-based**, or **Host-based**.
5. Click **Confirm**.

Caching method is changed.



Changing caching selection for VMs

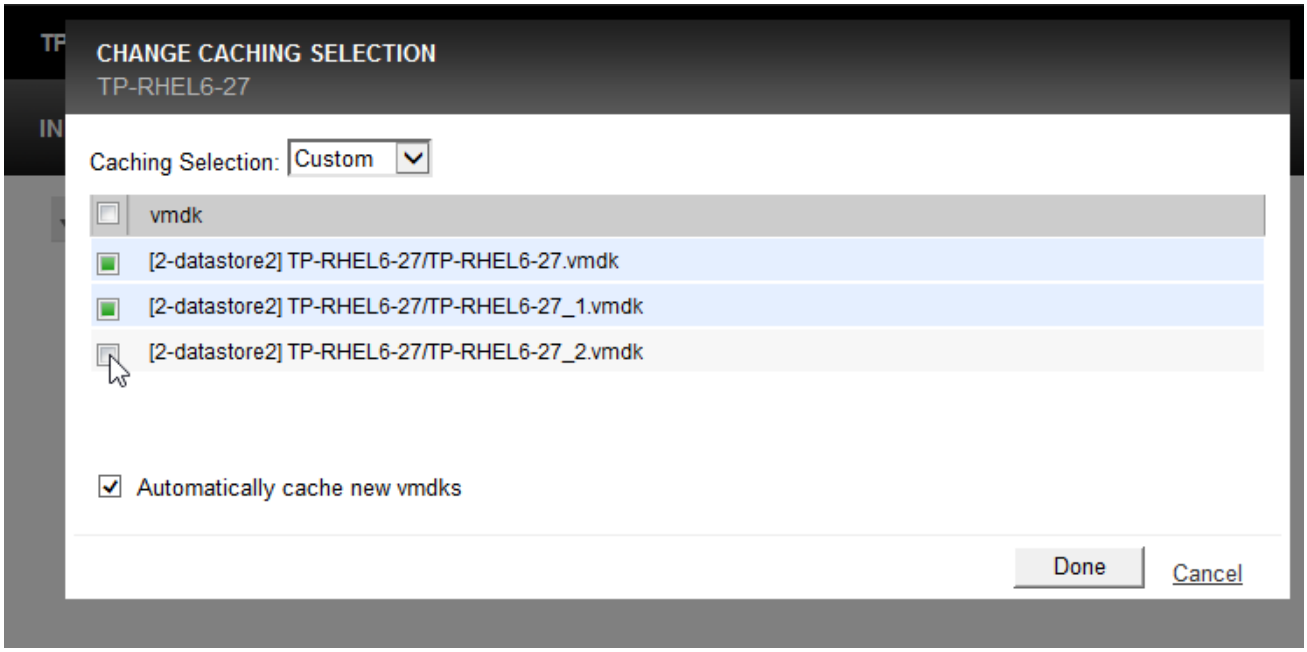
To change the caching selection on a VM:

1. In the vSphere inventory tree or object navigator click on the VM where you want to change caching priority.
2. Click on the IBM Flash Management Console tab.
3. On the VM Information page, click **Change** to the to the right of *Caching Selection*.
4. Click **Set custom cache settings** or choose **`Custom`** from the Caching Selection drop down menu.
5. From the table, click your new caching selections.
6. Click **Save** or **Done.**
7. If asked, click **Confirm**.

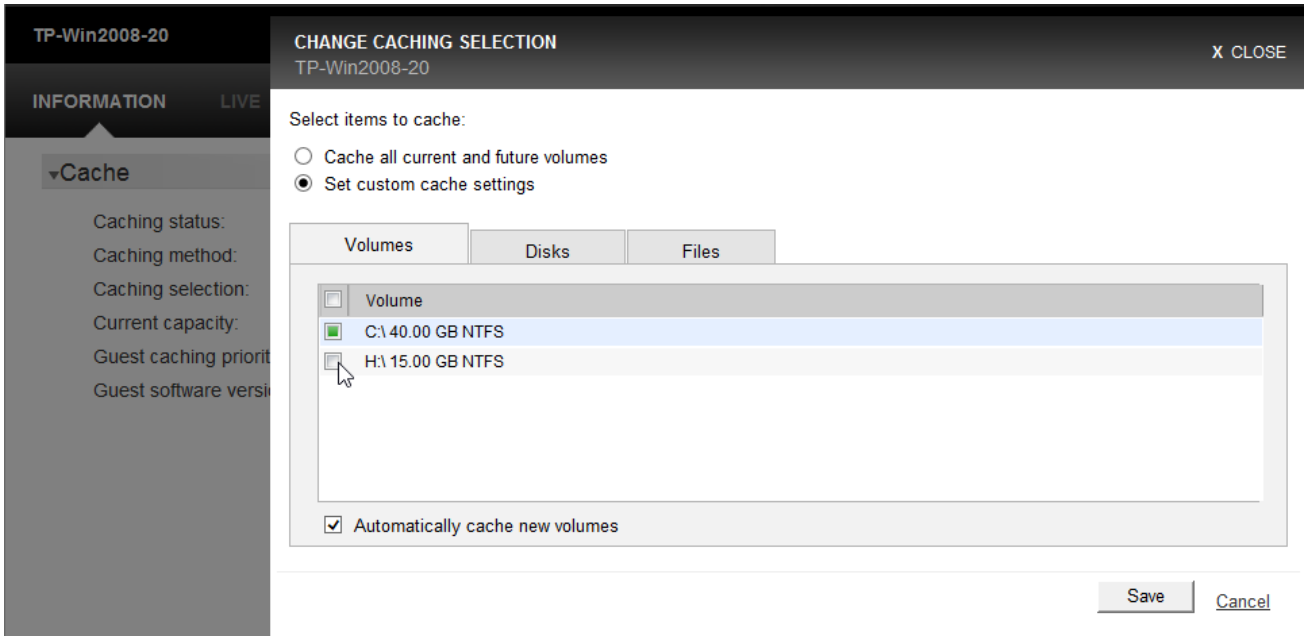
The caching selection is set for that VM.

Repeat the steps above for each VM whose caching selections you want to set.

Linux VM Change Caching Selection Dialog



Windows VM Change Caching Selection Dialog



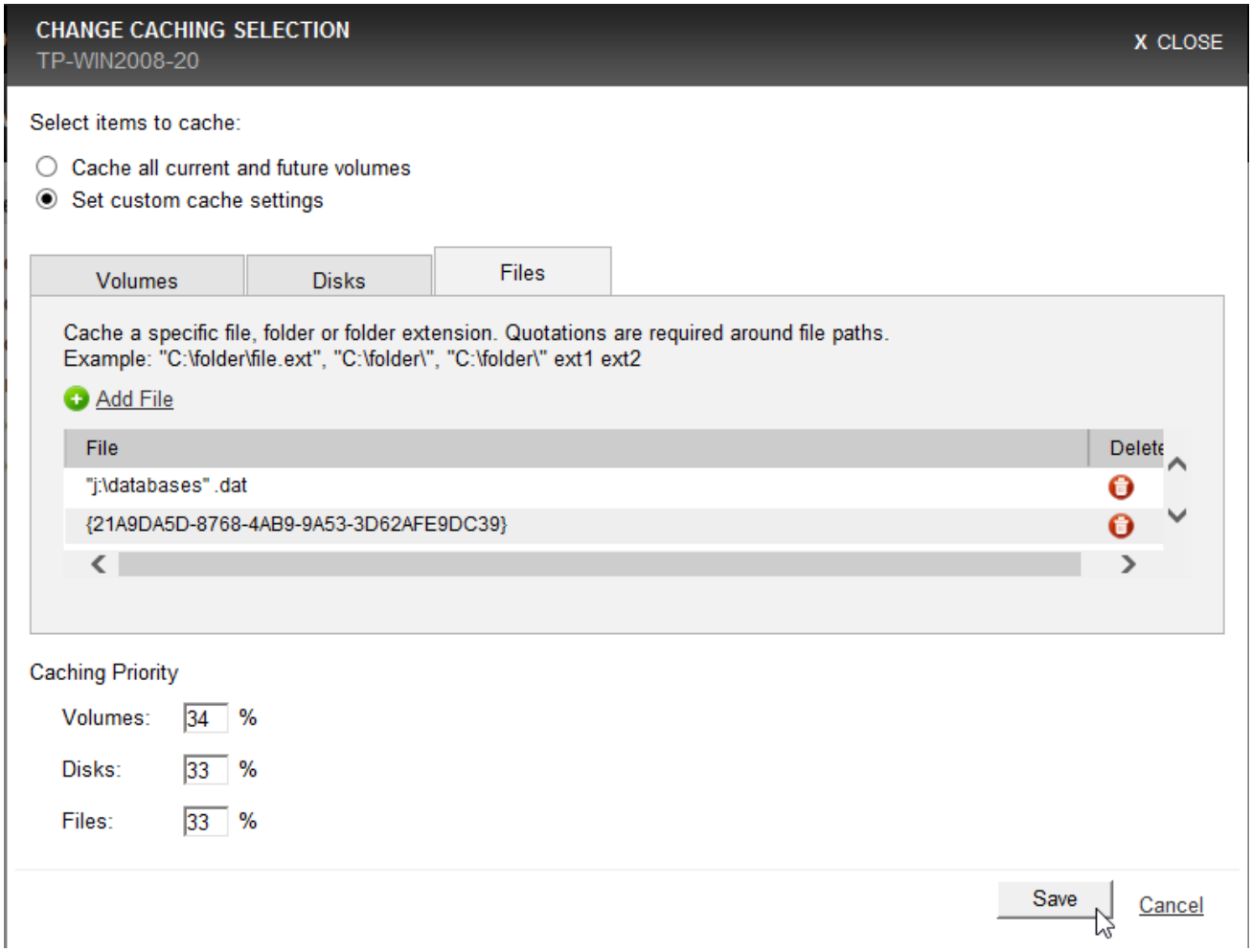
About file caching on Windows Guests

On Windows VMs, IBM FlashCache Storage Accelerator has the ability to cache individual files on a volume. To designate the files you want cached, click the **Files** tab in the Change Caching Selection dialog, and click the **Add File** link. You can enter specific files, a folder, or a folder with specific extensions.

Attention!

When adding a specific file, be sure to enclose the full path and file name in quotation marks. For example, type "j:\databases\db.dat". When specifying a folder or a folder with file extensions enclose the folder path in quotation marks. For example, type

- "j:\databases"
- "j:\databases" .dat



Changing guest-based caching priority on a Windows VM

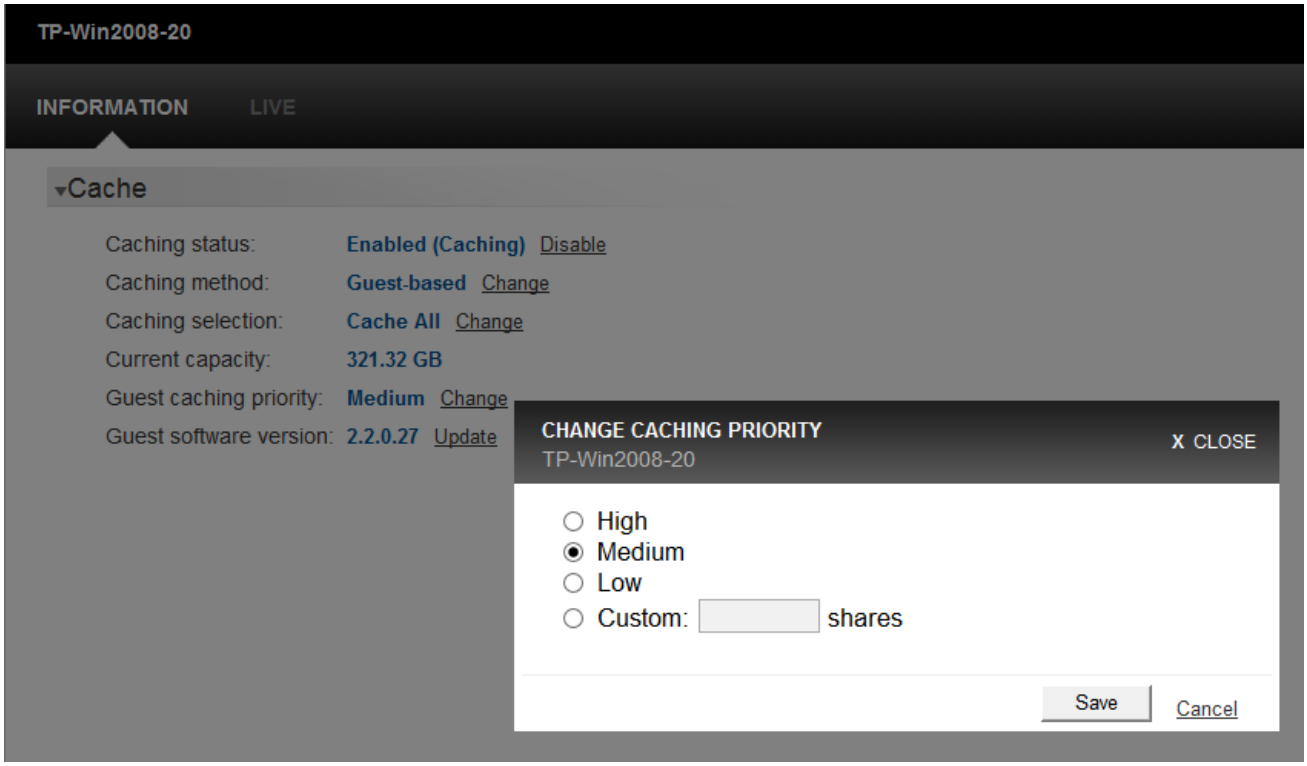
Caching priority reflects the capacity of the cache available to the selected VM. By default, VMs are set to Medium caching priority, and changing the priority to High will increase the capacity of the VM's cache. Likewise, setting priority to low, reduces the capacity of the VM's cache.

1. In the vSphere inventory tree or object navigator, click on the VM where you want change caching priority.
2. Click on the IBM Flash Management Console tab.
3. On the VM Information page, click **Change** to the to the right of *Caching Priority*.

4. Click **High**, **Medium**, or **Low**.
5. Click **Save**.
6. Click **Confirm**.

Caching priority is changed for the VM.

You can enter a custom number of shares in the Change Caching Priority dialog, but this is not recommended unless you know the total number of shares allocated across all the VMs that are using Guest-based caching. By default, the IBM Flash Management Console assigns 4000 capacity shares when installing the guest-based caching package. So, for example, if there are three VMs using Guest-Based caching, then a total of 12,000 shares have been allocated (4000 shares--the default Medium setting--multiplied by three). By default your VM has 1/3 of the caching capacity. Entering a custom shares number of 12,000 would change the total number of shares to 24,000 and your VM would have 12,000, or 50% of those shares.



Updating Guest Caching Software

To update the caching software installed on the VM:

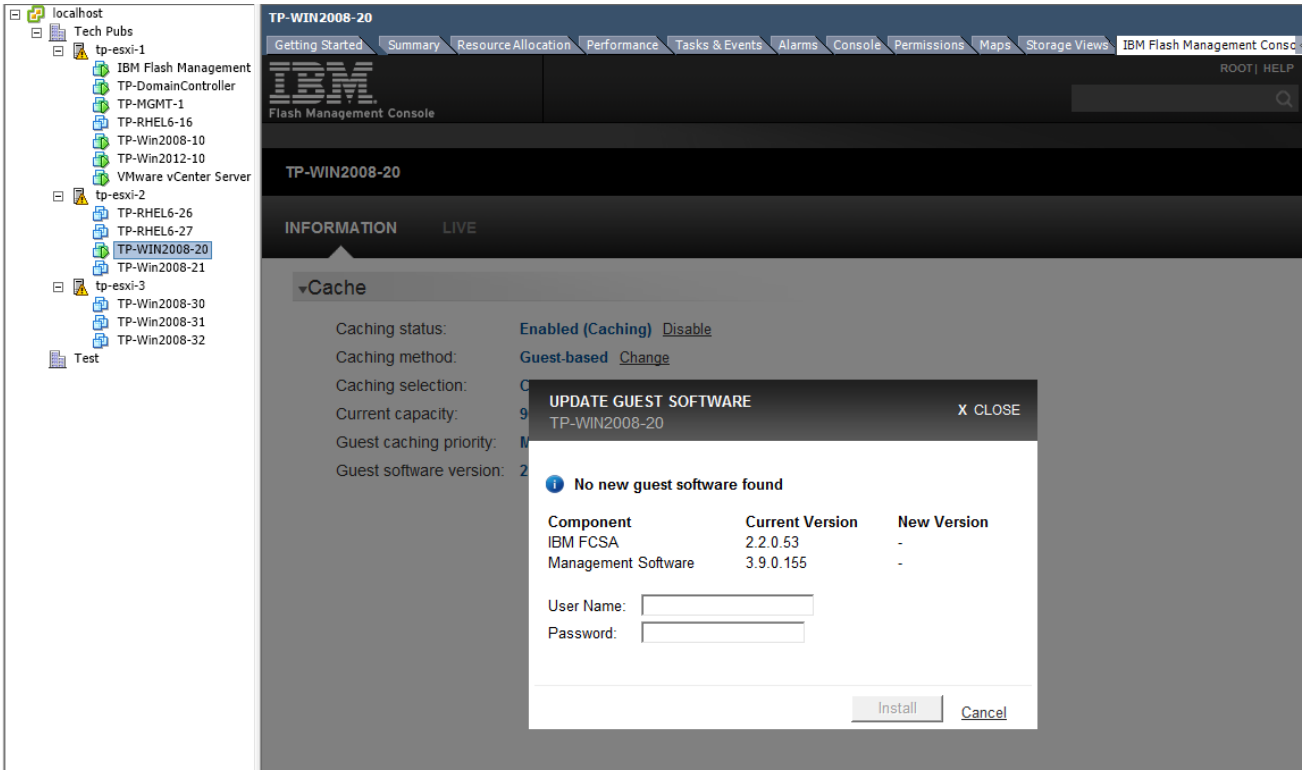
1. In the vSphere inventory tree or object navigator, click on the VM where you want update caching software.
2. Click on the IBM Flash Management Console tab.
3. On the VM Information page, click **Update** to the right of *Guest Software Version*.

The Update Guest Software dialog displays the current version of the Guest Caching software and the current version of the IBM Flash Management Console. It also displays any new versions of the software that are available on the ESXi host. If a new version of the software is not available, click **Cancel**.

If you want to put new software versions on the ESXi host, follow the instructions in the "Upgrading FlashCache Storage Accelerator" section of the FlashCache Storage Accelerator Installation Guide. After putting the new software on the ESXi host, go to Step 1.

4. Enter the User Name and Password for a user on the VM who has rights to update software.
5. Click **Install**.
6. Click **Confirm**.

The new version of software is installed on the VM, and the VM is rebooted.



Collecting log bundles for support

Log bundles can be assembled for the following IBM FlashCache Storage Accelerator components:

- Flash Management Console
- ESXi hosts which have FlashCache Storage Accelerator caching software installed
- VMs using guest-based caching

The commands for assembling IBM FlashCache Storage Accelerator log bundles are entered on the command line of the IBM Flash Management Console.

To collect log bundles for support:

1. Log in to the IBM Flash Management Console.

   Username: iotcli
   Password: iotcli

2. From the IBM Flash Management Console command line, authenticate to the IBM Flash Management Console with vCenter by typing the following command:

   iot vmp --login --vmpaddress <vCenterAddress> --vmpuser <vCenterUsername> --vmppassword <vCenterPassword>

   where

   vCenterAddress is the IP address or the fully qualified hostname of the IBM Flash Management Console Virtual Center server

   vCenterUsername is the name of a user who has sufficient rights to authenticate to the IBM Flash Management Console.

   vCenterPassword is the password for the user

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot vmp --login --vmpaddress tp-vcenter-1 --vmpuser
root --vmppassword vmware
Logged in to VMP : tp-vcenter-1
```

3. On the command line type the following commands:

   iot support --ms
   iot support --vmhost <host name>
   iot support --vmguest <guest name> --guestuser <guest name> --guestpassword <password>

   where

- *host name* is the IP address or fully qualified hostname of the ESXi host guest virtual machine whose logs you want to collect.
- *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose logs you want to collect.
- *username* is the name of a user who has rights to read, create, and copy system files on the guest virtual machine.
- *password* is the password for the user.

Attention!

Multiple hosts or VMs separated by spaces can be supplied on the command line. See CLI command reference for support vmhost and support vmguest.

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot support --ms
Get Management Support task got successfully submitted, This may take
several minutes to complete.
Wrote /var/lib/vme2/sub/vme2_support_1398955054.tar.gz

Support log is available at location :
http://10.10.1.95/sub/vme2_support_1398955054.tar.gz


iotcli@tp-vme-1:~> iot support --vmhost tp-esxi-3
Getting Host Support on tp-esxi-3 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Getting Host Support on tp-esxi-3 successfully completed
http://10.10.1.95:80/sub/ESX_140501_144856_tp-esxi-3.zip


iotcli@tp-vme-1:~> iot support --vmguest TP-Win2008-20 --guestuser
administrator --guestpassword Atest12345
Getting Guest Support on TP-Win2008-20 was successfully submitted.
This task may take several minutes to complete.
Errorcode : 0
Getting Guest Support on TP-Win2008-20 successfully completed
http://10.10.1.95:80/sub/VM_140501_144750_TP-Win2008-20.cab
```

4. After the commands complete successfully, use your browser to retrieve the log bundles at the URLs specified.

Log bundles can be examined or sent to customer support.

iot command reference

The `iot` program is run on the console of the IBM Flash Management Console. In order to run the command you will need to SSH in to the IBM Flash Management Console as user `iotcli` with the password `iotcli` and then, in most cases, authenticate to the vCenter server using the `iot vmp --login` command.

The first argument passed to the `iot` program is one of the following commands:

- account
- help
- list
- package
- provision
- stats
- support
- system
- version
- vmp

The second argument of an iot command will often specify whether the command should operate on a guest or on an ESXi host. The --vmguest and --vmhost options are followed by options that name or provide the IP address of the guest or host. The --vmguest and --vmhost options are in most cases followed by a parameter that indicates the object or the action to query or manipulate on the guest or host. Below are two commands that illustrate the representative structure of many of the CLI commands:

```
iot list --vmguest TP-WIN2K8-4 --alldisks -gu administrator --gp
Guestadmin123
```

```
iot list --vmhost tp-exsi-2 --listluns
```

Not all the CLI commands use this structure. A high-level summary of the commands is provided (see See Appendix B: iotcli command summary on page 170) to help illustrate the structure of the other commands.

In the CLI parameters can either be entered in long form or short form. For example, you can enter

```
--vmhost or -vh, --vmguest or -vg
```

The command line help details the short forms of the commands. However, be aware that command-line help alphabetizes command set listings by short form, while this command reference alphabetizes parameters by long form.

In most cases, after logging in to the IBM Flash Management Console, you will need to authenticate the IBM Flash Management Console with the vCenter before running any iot commands. However, for scripting purposes, many iot commands support a `--sessionid` parameter which will authenticate with the vCenter without a user name and password. If you want to use the `--sessionid` parameter, use functions in the VMware SDK to retrieve session IDs.

account

The account command allows you to create and manage accounts that contain credentials for specified virtual machines.

For example, if you had multiple machines whose login credentials were "user = administrator" and "password = Guestadmin123", you could create an account called “win” and map those credentials to an account name. In that way, instead of entering --vmuser and --vmpassword parameters for CLI commands that require them, you would only need to enter the --account parameter.

For example, if you wanted to create an account named "win" using the credentials above, you would use the command:

```
iot account --save win --guestuser administrator --guestpassword
Guestadmin123
```

Afterwards, on CLI commands that require usernames and passwords, instead of typing something like this:

```
iot list --vmguest TP-WIN2K8-4 --version --guestuser
administrator --guestpassword Guestadmin123
```

You could type this:

```
iot list --vmguest TP-WIN2K8-4 --version --account win
```

Or, to reduce keyboard input, you could use the short form of the **--account command: -ac**

```
iot list --vmguest TP-WIN2K8-4 --version -ac win
```

User accounts persist on the IBM Flash Management Console until they are deleted.

delete

Deletes an account.

```
iotcli@tp-vme-1:~> iot account --list
Account  : win is mapped to Username: administrator
Account  : linux is mapped to Username: root

iotcli@tp-vme-1:~> iot account --delete linux
Successfully deleted account : linux

iotcli@tp-vme-1:~> iot account --list
Account  : win is mapped to Username: administrator
```

list

Lists the account names available in the IBM Flash Management Console

```
iotcli@tp-vme-1:~> iot account --save win --guestuser administrator --
guestpassword Atest12345
Successfully saved account : win

iotcli@tp-vme-1:~> iot account --list
Account  : win is mapped to Username: administrator
```

save

Maps the guest credentials with an account name. If an account already exists, it gets updated

```
iotcli@tp-iot-1:~> iot account --save win --guestuser administrator --
guestpassword Guestadmin123
Successfully saved account : win
```

help

The help command displays a brief description of the primary keywords of the iot command. Type help followed by a keyword displays more detailed command usage information.

```
iotcli@tp-vme-1:~> iot help

Documented commands (type 'iot command -h' or 'iot help <command-name>' ):

iot help - Describes the help options
iot list - List command set
iot package - Install/Uninstall/Upgrade command set
iot provision - Host and Guest provisioning/configuration command set
iot stats - Performance statistics collection command set
iot support - Support/AutoSupport command set
iot version - Displays software version information for this server
iot vmp - vCenter register/unregister/login command set
iot account - Guest Account mapping command set
iot system - System command set


iotcli@tp-vme-1:~> iot help package
usage: package [-ac <accountname> | -gu <username>] [-ca] [-f] [-ff] [-gp
<password>]  -h | -in |
       -ls | -un  [-io]  [-nr] [-si <sessionid>]  [-vg <guest> | -vh
<host>]  [-y]
 -ac,--account <accountname>        Provide the account name mapped to
this guest credentials.
 -ca,--cacheall                     This option allows user to install the
guest package and cache
                                    all volumes with default
configuration.
 -f,--force                         Force uninstall of all host software
packages including the VSL
                                    software.
 -ff,--forcemodifyfirewallsetting   Provide access to httpClient services
on host.
 -gp,--guestpassword <password>     Guest Password
 -gu,--guestuser <username>         Guest Username
 -h,--help                          Provides detailed help message for
this command
 -in,--install                      Package install command for specified
product type
 -io,--installonly                  This option allows user to install the
guest package without
                                    having any default configuration.
 -ls,--list                         Lists all available packages on the
```

```
ioSphere VM Edition
 -nr,--noreboot                        This command may require a reboot of
the virtual machines, but
                                       the system will not issue an automatic
reboot. User will need to
                                       issue a manual reboot.
 -si,--sessionid <sessionid>           VMP session Id
 -un,--uninstall                       Package uninstall command for
specified product type
 -vg,--vmguest <guest>                 IP Address or FQDN of the Guest
 -vh,--vmhost <host>                   IP Address or FQDN of the Host
 -y,--yes                              Forces non-interactive mode by
responding "Yes" to interactive
                                       questions.
```

list

The `iot list` command displays information about caching status on virtual machines and ESXi hosts. The functionality of the command is separated into two parts:

- Guest commands — **"`iot list --vmguest`"** commands query configuration on guest virtual machines
- Host commands — **"`iot list --vmhost`"** commands query configuration on ESXi hosts.

iot list --vmguest	iot list --vmhost
alldisks	hypercachestatus
allshares	hypercacheversion
allvmdks	listluns
allvolumes	listssds
configureddisks	
configuredfiles	
configuredvmdks	
configuredvolumes	
diskstatus	
filestatus	
getcachingshares	
version	
volumestatus	

All **--vmguest** commands require a corresponding **--guestuser** and **--guestpassword** parameters in order to allow FlashCache Storage Accelerator to log in to the guest virtual machine. Alternately, you can use **--account** instead of supplying user and password credentials.

Attention!

Commands can be issued for multiple VM guests by providing space delimited VM guest names after the **--vmguest** option. For example to list VMDKs configured for host-based caching on VMs TP-RHEL6-4 and TP-RHEL6-5, you could enter:

```
iot list --vmguest TP-RHEL6-4 TP-RHEL6-5 --listconfiguredvmdks --
guestuser root --guestpassword Atest12345
```

Additional **iot list** commands include:

- *license* — displays information about the FlashCache Storage Accelerator license
- *vmp* — displays the registered vCenter Server.

license

Use the **--license** parameter to display information about the FlashCache Storage Accelerator license running on the IBM Flash Management Console.

```
iotcli@tp-vme-1:~> iot list --license
License Expiration             : 2-aug-2014
License Capacity Tier per host : Enterprise
Total Licenses                 : 20
Licenses in-use(checked-out)   : 0
Licenses remaining             : 20
```

vmp

Lists the registered vCenter Server. If no vmpid is specified, all the registered vCenter Servers are returned.

```
iotcli@tp-vme-1:~> iot list --vmp 1
VMP Address: tp-vcenter-1 VMP Id: 1
```

vmguest

The **--vmguest** option provides a number of commands for listing the configuration, attributes, or status of guest virtual machines. These sub-commands are listed below.

Using the **--vmguest** without a sub-command displays the following output:

Attention!

For VMs configured for guest-based caching, you will need to supply a username and password.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.27
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 0

Filter Type               : VOLUME
Cache Size in Use         : 240786604032
Cache Size in Chunks      : 897
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 4000
Configured                : C:\  H:\

Filter Type               : DISK
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 0

All Volumes               : C:\  H:\
All Disks                 : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-21
Guest                     : tp-win2008-21
IotPackageVersion         : Unknown
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : HYPERVISOR_LEVEL
```

```
Capacity Shares          : 0
Caching Capacity (GB)    : 0

Filter Type              : VMDK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 0
Configured               : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
[2-datastore1] TP-Win2008-21/TP-Win2008-21_20.vmdk [2-datastore1] TP-
Win2008-21/TP-Win2008-21_1.vmdk [2-datastore1] TP-Win2008-21/TP-Win2008-
21_2.vmdk


All VMDKs on the Guest   :
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
Label                    : Hard disk 1
Capacity (GB)            : 40
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
20.vmdk
Label                    : Hard disk 2
Capacity (GB)            : 10
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                    : Hard disk 3
Capacity (GB)            : 15
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
2.vmdk
Label                    : Hard disk 4
Capacity (GB)            : 20
--------------------------------------------------------------------------

**************************************************************************

iotcli@tp-vme-1:~> iot list --vmguest tp-rhel6-27 --guestuser root --
guestpassword Atest12345
Guest                    : tp-rhel6-27
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
```

```
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : VOLUME
Cache Size in Use        : 240786604032
Cache Size in Chunks     : 897
Caching Status           : true
Read Update Enabled      : true
Health  Status           : No primary device added for caching

All Volumes              : /dev/sdb  /dev/sdc

iotcli@tp-vme-1:~> iot list --vmguest tp-rhel6-26
Guest                    : tp-rhel6-26
IotPackageVersion        : Unknown
Caching Device Assigned  : true
Auto cache new filter    : true
Guest Caching Mode       : HYPERVISOR_LEVEL
Capacity Shares          : 0
Caching Capacity (GB)    : 0

Filter Type              : VMDK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 0
Configured               : [2-datastore1] TP-RHEL6-26/TP-RHEL6-26.vmdk [2-
datastore1] TP-RHEL6-26/TP-RHEL6-26_1.vmdk [2-datastore1] TP-RHEL6-26/TP-
RHEL6-26_2.vmdk


All VMDKs on the Guest   :
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-RHEL6-26/TP-RHEL6-26.vmdk
Label                    : Hard disk 1
Capacity (GB)            : 40
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-RHEL6-26/TP-RHEL6-26_1.vmdk
Label                    : Hard disk 2
Capacity (GB)            : 8
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-RHEL6-26/TP-RHEL6-26_2.vmdk
Label                    : Hard disk 3
Capacity (GB)            : 10
--------------------------------------------------------------------------
```

alldisks

This command displays the list of all disks of the guest.

```
iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --alldisks --guestuser
administrator --guestpassword Guestadmin123
All Disk(s) for guest : TP-WIN2K8-4
disk3 disk0 disk1 disk2
```

allshares

This command displays shares allocated to file, volume and disk caching of the guest.

```
iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 1320 Chunks allocated: 266
 Filter type:      VOLUME
 Shares allocated: 1360 Chunks allocated: 335
 Filter type:      DISK
 Shares allocated: 1320 Chunks allocated: 296
```

allvmdks

Lists all the VMDK files on the Guest VM.

```
iotcli@tp-vme-1:~> iot list --allvmdks --vmguest TP-Win2008-32
VMDKs on the Guest : TP-Win2008-32 are :

VMDK Filename            : [3-datastore1] TP-Win2008-32/TP-WIN2K8-43-
000001.vmdk
VMDK Label               : Hard disk 1
VMDK Capacity (GB)       : 60
--------------------------------------------------------------------------
VMDK Filename            : [3-datastore1] TP-Win2008-32/TP-WIN2K8-43_
1.vmdk
VMDK Label               : Hard disk 2
VMDK Capacity (GB)       : 12
--------------------------------------------------------------------------
VMDK Filename            : [3-datastore1] TP-Win2008-32/TP-WIN2K8-43_
2.vmdk
VMDK Label               : Hard disk 3
VMDK Capacity (GB)       : 20
```

allvolumes

This command displays the list of all volumes of the guest.

```
iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --allvolumes --guestuser
administrator --guestpassword Guestadmin123
All Volume(s) for guest : TP-WIN2K8-4
H:\  C:\
```

configureddisks

This command displays the list of all configured disks of the guest.

```
iotcli@tp-vme-1:~> iot list --configureddisks --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
Guest                          : tp-win2008-20
Configured Disk(s)             : \Device\Harddisk1\DR1

iotcli@tp-vme-1:~> iot list --configureddisks --vmguest tp-rhel6-27 --
guestuser root --guestpassword Atest12345
Guest                          : tp-rhel6-27
Configured Disk(s)             : /dev/sdb ; /dev/ibcb /dev/sdc ; /dev/ibca
```

configuredfiles

This command displays the list of all configured files of the guest.

```
iotcli@tp-vme-1:~> iot list --configuredfiles --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
Guest                          : tp-win2008-20
Configured File(s)             : j:\database\db.dat Extension:
```

configuredvmdks

Lists all the configured VMDK files for the specified guest.

> **Attention!**
>
> In versions of ESXi that are earlier than 5.0.0 build 914586 or 5.1.0 build 1065491, the autocache feature may fail to start caching on new VMDKs added to VMs. In these situations, the output of this command may show "Caching Running" as "false," and you will need to reboot or vMotion the VM to get caching running.

```
iotcli@tp-vme-1:~> iot list --configuredvmdks --vmguest tp-win2008-21

VMDKs configured on the Guest : tp-win2008-21 are :

Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
Label                    : Hard disk 1
```

```
Caching Running          : true
Capacity (GB)            : 40
------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
20.vmdk
Label                    : Hard disk 2
Caching Running          : true
Capacity (GB)            : 10
------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                    : Hard disk 3
Caching Running          : true
Capacity (GB)            : 15
------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
2.vmdk
Label                    : Hard disk 4
Caching Running          : true
Capacity (GB)            : 20
------------------------------------------------------------------------
iotcli@tp-vme-1:~> iot list --configuredvmdks --vmguest tp-rhel6-26
VMDKs configured on the Guest : tp-rhel6-26 are :

Filename                 : [2-datastore1] TP-RHEL6-26/TP-RHEL6-26.vmdk
Label                    : Hard disk 1
Caching Running          : true
Capacity (GB)            : 40
------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-RHEL6-26/TP-RHEL6-26_1.vmdk
Label                    : Hard disk 2
Caching Running          : true
Capacity (GB)            : 8
------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-RHEL6-26/TP-RHEL6-26_2.vmdk
Label                    : Hard disk 3
Caching Running          : true
Capacity (GB)            : 10
------------------------------------------------------------------------
```

configuredvolumes

This command displays the list of all configured volumes of the guest.

```
iotcli@tp-vme-1:~> iot list --configuredvolumes --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
Guest                          : tp-win2008-20
Configured Volume(s)           : C:\
```

```
iotcli@tp-vme-1:~> iot list --configuredvolumes --vmguest tp-rhel6-27 --
guestuser root --guestpassword Atest12345
Guest                          : tp-rhel6-27
Configured Volume(s)           : /dev/sdb ; /dev/ibcb /dev/sdc ; /dev/ibca
```

diskstatus

This command displays the disk cache status of this guest.

```
iotcli@tp-vme-1:~> iot list --diskstatus --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
Disks Status for Guest : tp-win2008-20 is :
Filter Type              : DISK
Cache Size in Use        : 79456894976
Cache Size in Chunks     : 296
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : \Device\Harddisk1\DR1

iotcli@tp-vme-1:~> iot list --diskstatus --vmguest tp-rhel6-27 --guestuser
root --guestpassword Atest12345
Disks Status for Guest : tp-rhel6-27 is :
Filter Type              : VOLUME
Cache Size in Use        : 240786604032
Cache Size in Chunks     : 897
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Configured               : /dev/sdb ; /dev/ibcb /dev/sdc ; /dev/ibca
```

getcachingshares

This command displays the VM's share of the allocated cache pool.

```
iotcli@tp-vme-1:~> iot list --getcachingshares --vmguest tp-rhel6-27 --
guestuser root --guestpassword Atest12345
Capacity Shares for Guest : tp-rhel6-27 is :4000

iotcli@tp-vme-1:~> iot list --getcachingshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
Capacity Shares for Guest : tp-win2008-20 is :4000
```

version

This command displays the version information associated with this guest.

```
iotcli@tp-vme-1:~> iot list --version --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Package Version for Guest : tp-win2008-20 is :2.2.0.45

iotcli@tp-vme-1:~> iot list --version --vmguest tp-rhel6-27 --guestuser
root --guestpassword Atest12345
Package Version for Guest : tp-rhel6-27 is :2.2.0.45
```

volumestatus

This command displays the volume cache status of this guest.

```
iotcli@tp-vme-1:~> iot list --volumestatus --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
Volume Status for Guest : tp-win2008-20 is :
Filter Type              : VOLUME
Cache Size in Use        : 89925877760
Cache Size in Chunks     : 335
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1360
Configured               : C:\

iotcli@tp-vme-1:~> iot list --volumestatus --vmguest tp-rhel6-27 --
guestuser root --guestpassword Atest12345
Volume Status for Guest : tp-rhel6-27 is :
Filter Type              : VOLUME
Cache Size in Use        : 240786604032
Cache Size in Chunks     : 897
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Configured               : /dev/sdb ; /dev/ibcb /dev/sdc ; /dev/ibca
```

vmhost

The **--vmhost** option provides a number of commands for listing the configuration, attributes, or status of a caching host. These sub-commands are listed below.

Using the **--vmhost** without a sub-command displays the following output:

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-2
Host                         : tp-esxi-2
Hypervisor Caching Enabled   : true
Host License Enabled         : true
Host Autocache Enabled       : false
Read Update Enabled          : true
Host Monitoring Enabled      : true
ioTurbine Caching Version    : 2.2.0.45
Management Software Version : 3.9.0.148
ioMemory Driver Version      : 3.2.6.1219
```

hypercachestatus

Lists host hypercaching status.

```
iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-2

Caching Status   : Started
Caching Capacity : 482 GB
Health Status    : Working
```

hypercacheversion

Lists the version details of the hyper cache driver.

```
iotcli@tp-vme-1:~> iot list --hypercacheversion --vmhost tp-esxi-3
2.2.0.7347
```

listluns

This command displays the list of LUNsfor the specified host. The command lists the following devices:

- All IBM High IOPS Adapters or Enterprise Value Flash Adapters or SSDs that are not boot devices

To get an unfiltered list of devices use the `--all` option.

```
iotcli@tp-vme-1:~> iot list --listluns --vmhost tp-esxi-3
DeviceName    : Local FUSIONIO Disk (eui.b8b149c335f440d900247197d2c55b34)
Uuid          : 0100000000313135304430343533494f44524956
Type          : disk
Vendor        : FUSIONIO
CanonicalName : eui.b8b149c335f440d900247197d2c55b34
Capacity (GB) : 785
DeviceModel   : IODRIVE
DevicePath    : /vmfs/devices/disks/eui.b8b149c335f440d900247197d2c55b34
LunCount      : 0
Percent       : 0

---------------------------

iotcli@tp-vme-1:~> iot list --listluns --vmhost tp-esxi-3 -all
DeviceName    : Local ATA Disk (t10.ATA_____ST500DM0022D1BD142_____________
_____________________S2AKPNRT)
Uuid          :
0100000000202020202020202020202020205332414b504e5254535435303044
Type          : disk
Vendor        : ATA
CanonicalName : t10.ATA_____ST500DM0022D1BD142_____________________________
_______S2AKPNRT
```

```
Capacity (GB) : 500
DeviceModel   : ST500DM002-1BD14
DevicePath    : /vmfs/devices/disks/t10.ATA_____ST500DM0022D1BD142_________
_______________________________S2AKPNRT
LunCount      : 0
Percent       : 0

DeviceName    : Local FUSIONIO Disk (eui.b8b149c335f440d900247197d2c55b34)
Uuid          : 0100000000313135304430343533494f44524956
Type          : disk
Vendor        : FUSIONIO
CanonicalName : eui.b8b149c335f440d900247197d2c55b34
Capacity (GB) : 785
DeviceModel   : IODRIVE
DevicePath    : /vmfs/devices/disks/eui.b8b149c335f440d900247197d2c55b34
LunCount      : 0
Percent       : 0
```

listssds

Lists the assigned SSDs for the specified host.

```
iotcli@tp-vme-1:~> iot list --listssds --vmhost tp-esxi-2
DeviceName    : Local FUSIONIO Disk (eui.75bb6cb81b6046af00247160d3fafcc2)
Uuid          : 0100000000313232394436393733494f44524956
Type          : disk
Vendor        : FUSIONIO
CanonicalName : eui.75bb6cb81b6046af00247160d3fafcc2
Capacity (GB) : 964
DeviceModel   : IODRIVE
DevicePath    : /vmfs/devices/disks/eui.75bb6cb81b6046af00247160d3fafcc2
LunCount      : 0
Percent       : 99
```

package

The package commands are used for installing and uninstalling FlashCache Storage Accelerator virtual software on hosts and on virtual machines.

The functionality of the command is separated into two parts:

- Guest commands — **"iot package --vmguest"** commands query configuration on guest virtual machines
- Host commands — **"iot package --vmhost"** commands query configuration on ESXi hosts.

iot package --vmguest	iot package --vmguest iot package --vmhost
install	install
uninstall	uninstall

All **--vmguest** commands require a corresponding **--guestuser** and **--guestpassword** parameters in order to allow FlashCache Storage Accelerator to log in to the guest virtual machine. Alternately, you can use **--account** instead of supplying user and password credentials.

Attention!

Commands can be issued for multiple VM guests by providing space delimited VM guest names after the **-vmguest** option. For example to install guest caching packages on VMs TP-RHEL6-4 and TP-RHEL6-5, you could enter:

```
iot package --vmguest TP-RHEL6-4 TP-RHEL6-5 --install --guestuser
root --guestpassword Atest12345
```

An additional **iot** package command is

- *list* — which displays the packages available on the IBM Flash Management Console.

Optional Package Parameters

When installing and uninstalling with iot package there are some optional parameters that can be used:

- *installonly* — This option allows user to install the guest package without having any default configuration.
- *noreboot* — This command may require a reboot of the virtual machines, but the system will not issue an automatic reboot. User will need to issue a manual reboot.
- *yes* — Forces non-interactive mode by responding "Yes" to interactive questions.

install

This command can be used to install either the FlashCache Storage Accelerator host package on an ESXi host or the FlashCache Storage Accelerator guest-based package on a virtual machine.

package (host install)

You can push the FlashCache Storage Accelerator software to a target host ESXi host where you want to perform caching by typing

iot package --vmhost <host name> --install [--forcemodifyfirewallsetting] [--cacheall]

where

- *host name* is the IP address or fully qualified host name of the target ESXi server

---

Attention!

On new installs, the target ESXi host does not need to be in maintenance mode nor will it be required to reboot. However, if there is caching software on the host that needs to be updated or overwritten, then the host will need to be in maintenance mode and it will need to be rebooted.

Installation of the IBM FlashCache Storage Accelerator host package requires access to httpClient services on the ESXi server. If you have not made this modification on the target ESXi server with the vSphere client, you can use the `--forcemodifyfirewallsetting` option to temporarily provide access to these services during install. Or you can issue the `iot system --sethostfirewallsetting true` command first to open httpClient access on all ESXi servers managed by your vCenter. Note, however, that httpClient access will remain enabled on all ESXi hosts until you issue the `iot system --sethostfirewallsetting true` command to disable access.

If you want to automatically start caching all the VMs on the ESXi server in guest-based mode, use the `--cacheall` option.

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot package --vmhost tp-esxi-3 --install
If you are upgrading the Host, an automatic reboot of the Host will be
carried out. For fresh installation, Host reboot is not required. Do you
wish to continue? [y/N]y
Install Host package on tp-esxi-3 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Install Host package on tp-esxi-3 successfully completed



iotcli@tp-vme-1:~> iot package --vmhost tp-esxi-3 --install --
forcemodifyfirewallsetting
If you are upgrading the Host, an automatic reboot of the Host will be
carried out. For fresh installation, Host reboot is not required. Do you
wish to continue? [y/N]y
Install Host package on tp-esxi-3 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Install Host package on tp-esxi-3 successfully completed
```

package (guest install)

You can push the FlashCache Storage Accelerator guest-based caching software to the VMs that you want to use guest-based caching by typing the following command:

iot package --vmguest <guest name> --install --guestuser <username> --guestpassword <password> [--cacheall]

where

- *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose VMDK files you want to cache.
- *username* is the name of a user who has rights to install software on the guest virtual machine.
- *password* is the password for the user

If you want to automatically start caching all volumes on the VM after guest software installation, use the `--cacheall` option. Note, however, that `--cacheall` is not supported in upgrade scenarios. If you use this option during an upgrade, the installation will not be complete until you manually reboot the VM.

Attention!

Successfully entering this command will cause the target VM to reboot.

Attention!

A VM can only be cached in one mode. If you configure a VM for guest-based caching and then later configure on or more of its VMDKs to be cached in host-based mode, then guest-based caching will be disabled on the VM.

For example, you might enter a command that looks something like this:

```
iotcli@TP-IOT-1:~> iot package --vmguest TP-WIN2K8-4 --install --guestuser
administrator --guestpassword Guestadmin123
This command may require an automatic reboot of the virtual machines. Do
you wish to continue? [y/N]y
Install guest package on TP-WIN2K8-4 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Install guest package on TP-WIN2K8-4 successfully completed
```

list

Lists all available packages on the IBM Flash Management Console.

```
iotcli@tp-vme-1:~> iot package --list
VSL Version : None
MGMT Version : 3.9.0.124
IOT Version : 2.2.0.7347
```

uninstall

This command can be used to uninstall either the FlashCache Storage Accelerator host package on an ESXi host or the FlashCache Storage Accelerator guest-based package on a virtual machine.

By default, only the FlashCache Storage Accelerator software is removed. The VSL drivers for your IBM High IOPS Adapter device are left intact on the ESXi host. However, adding --force option onto the command will remove the VSL drivers form the host as well.

package (host uninstall)

Uninstall FlashCache Storage Accelerator from the desired host by typing the following command:

`iot package --vmhost <host name>  --uninstall`

where

- *host name* is the IP address or fully qualified hostname of the target ESXi server you want to remove the IBM FlashCache Storage Accelerator software from.

Attention!

The host needs to be in maintenance mode.

Use the `--force` option to remove both the IBM FlashCache Storage Accelerator and IBM High IOPS Adapter driver.

For example, you might enter a command that looks something like this:

```
iotcli@tp-vme-1:~> iot package --vmhost tp-esxi-2 --uninstall
If you are upgrading the Host, an automatic reboot of the Host will be
carried out. For fresh installation, Host reboot is not required. Do you
wish to continue? [y/N]y
Uninstall Host package on tp-esxi-2 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Uninstall Host package on tp-esxi-2 successfully completed
```

package (guest uninstall)

Uninstall the FlashCache Storage Accelerator guest-based caching software that you have been using to perform guest-based caching on a VM by typing the following command:

iot package --vmguest <guest name> --uninstall --guestuser <username> --guestpassword <password>

where

- *guest name* is the VM's display name in vSphere, the IP address, or the fully qualified hostname of the guest virtual machine whose VMDK files you want to cache.
- *username* is the name of a user who has rights to install software on the guest virtual machine.
- *password* is the password for the user.

Attention!

Successfully entering this command will cause the target VM to reboot.

For example, you might enter a command that looks something like this:

```
iotcli@tp-iot-1:~> iot package --vmguest TP-WIN2K8-4 --uninstall --
guestuser administrator --guestpassword Guestadmin123
This command may require an automatic reboot of the virtual machines. Do
you wish to continue? [y/N]y
Uninstall guest package on TP-WIN2K8-4 got successfully submitted, This
may take several minutes to complete.
Errorcode : 0
Uninstall guest package on TP-WIN2K8-4 successfully completed
```

provision

The `iot provision` allows you to configure and manage caching for guest-based and host-based caching. The functionality of the command is separated into two parts:

- Guest commands — **"`iot provision --vmguest`"** commands operate on guest virtual machines
- Host commands — **"`iot provision --vmhost`"** commands operate on ESXi hosts.

iot provision --vmguest	iot provision --vmhost
adddisk	
addfile	assigndevice
addrule	checkoutlicense
addvmdk	disableautocache
addvolume	enableautocache
assigncachingshares	releaselicense
deleteallfilerules	startcache
deletedisk	startmonitor
deletevolume	stopcache
disableautocache	stopmonitor
disablecachingmode	unassigndevice
enableautocache	
enablecachingmode	
removevmdk	
setallshares	
setdiskshares	
setfileshares	
setvolumeshares	
startdiskcache	
startfilecache	
startvolumecache	

iot provision --vmguest	iot provision --vmhost
stopdiskcache	
stopfilecache	
stopvolumecache	
unassigncachingshares	

All **--vmguest** commands require a corresponding **--guestuser** and **--guestpassword** parameters in order to allow FlashCache Storage Accelerator to log in to the guest virtual machine. Alternately, you can use --account instead of supplying user and password credentials.

Attention!

Commands can be issued for multiple VM guests by providing space-delimited VM guest names after the **--vmguest** option. For example to enable host-based caching on the VMs TP-RHEL6-4 and TP-RHEL6-5, you could enter:

```
iot provision --vmguest TP-RHEL6-4 TP-RHEL6-5 --enablecachingmode
hypervisor
```

Optional Provision Parameters

When installing and uninstalling with *iot provision* there are some optional parameters that can be used:

- *noreboot* — For commands that require a reboot of a virtual machine, this option will direct the system not to issue an automatic reboot. The user will need to issue a manual reboot.
- *yes* — This option forces non-interactive mode by responding "Yes" to interactive questions.

vmguest

The **--vmguest** option provides a number of commands for configuring and managing guest-based caching. These sub-commands are listed below.

adddisk

Provision a primary disk device on the guest.

```
iotcli@tp-vme-1:~> iot list --alldisks --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
All Disk(s) for guest : tp-win2008-20
disk3 disk0 disk1 disk2 disk4

iotcli@tp-vme-1:~> iot provision --adddisk disk4 --vmguest tp-win2008-20 -
-guestuser Administrator --guestpassword Atest12345
Ensure that Cluster Shared Volumes is not selected for caching. Do you
wish to continue? [y/N]y
Add Guest Disk Filter Task on tp-win2008-20 was successfully submitted.
```

```
This task may take several minutes to complete.
Errorcode : 0
Add Guest Disk Filter Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 89925877760
Cache Size in Chunks     : 335
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1360
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 79456894976
Cache Size in Chunks     : 296
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : \Device\Harddisk1\DR1 \Device\Harddisk4\DR4

All Volumes              : J:\  C:\
All Disks                : disk3 disk0 disk1 disk2 disk4
```

addfile

Provisions the a file on a specific drive on the guest. Backslashes need to be escaped: e.g. `c:\\temp\\pdh.exe`

```
iotcli@tp-vme-1:~> iot list --filestatus --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
File Status for Guest : tp-win2008-20 is :
Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : j:\database\db.dat Extension:

iotcli@tp-vme-1:~> iot provision --addfile j:\\database\\data.db --vmguest
tp-win2008-20 --guestuser Administrator --guestpassword Atest12345
Ensure that Cluster Shared Volumes is not selected for caching. Do you
wish to continue? [y/N]y
Add Guest File Filter Task on tp-win2008-20 was successfully submitted.
This task may take several minutes to complete.
Errorcode : 0
Add Guest File Filter Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --filestatus --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
File Status for Guest : tp-win2008-20 is :
Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : j:\database\db.dat Extension:
j:\database\data.db Extension:
```

```
iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --filestatus --guestuser
administrator --guestpassword Guestadmin123
File Status for Guest : TP-WIN2K8-4 is :
Filter Type              : FILE
Mode                     : Caching
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Health  Status           : Caching disabled, No primary device defined, No
caching share defined, No caching capacity available
Filter Shares            : 0

iotcli@tp-iot-1:~> iot provision --vmguest TP-WIN2K8-4 --addfile
f:\\repository.dat f:\\accounts.dat --guestuser administrator --
guestpassword Guestadmin123
Add Guest File Filter Task on TP-WIN2K8-4 got successfully submitted, This
```

```
may take several minutes to complete.
Errorcode : 0
Add Guest File Filter Task on TP-WIN2K8-4 successfully completed
Add Guest File Filter Task on TP-WIN2K8-4 got successfully submitted, This
may take several minutes to complete.
Errorcode : 0
Add Guest File Filter Task on TP-WIN2K8-4 successfully completed

iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --filestatus --guestuser
administrator --guestpassword Guestadmin123
File Status for Guest : TP-WIN2K8-4 is :
Filter Type              : FILE
Mode                     : Caching
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Health  Status           : Caching disabled, No caching share defined, No
caching capacity available
Filter Shares            : 0
Configured               : f:\repository.dat Extension:  f:\accounts.dat
Extension:
```

addrule

This command provisions filenames, directories and extensions to be cached on Windows guest VMs.

The command has the following syntax:

iot provison --addrule <primary rule>

where

- *primary rule* — is a filename, a directory name, or a folder name with extensions. Or, by using the @ character, you can also re-direct the contents of a file to the addrule command. Some examples of primary rules are:
    - “f:\\databases” which configures the files in the f:\databases directory for caching
    - “D:\SQL\Data\transaction.log” which configures the file transaction.log for caching.
    - “"f:\\ DAT" which configures the files with a .dat extension that are at the root of drive F for caching.
    - “C:*.sys” which configures all .sys files at the root drive C for caching.
    - @\var\lib\allrules.txt which redirects the contents of the allrules.txt file to the add rules command.command.

This command will override any existing rule.

Attention!

Maximum file size is 8 GB.

```
iotcli@tp-vme-1:~> iot list --filestatus --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
File Status for Guest : tp-win2008-20 is :
Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : j:\database\db.dat Extension:
j:\database\data.db Extension:

iotcli@tp-vme-1:~> iot provision --addrule j:\\databases --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Apply Guest File Rule Filter Task on tp-win2008-20 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Apply Guest File Rule Filter Task on tp-win2008-20 successfully completed
iotcli@tp-vme-1:~> iot list --filestatus --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
File Status for Guest : tp-win2008-20 is :
Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : j:\databases\ Extension:

iotcli@tp-vme-1:~> iot provision --addrule "J:\\ dat"  --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Apply Guest File Rule Filter Task on tp-win2008-20 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Apply Guest File Rule Filter Task on tp-win2008-20 successfully completed
iotcli@tp-vme-1:~> iot list --filestatus --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
File Status for Guest : tp-win2008-20 is :
Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : J:\ Extension: dat
```

addvmdk

Adds a VMDK file for caching on a VM that is configured for host-based caching. Provide the fully qualified VMDK file name or multiple VMDK files separated by commas.

```
iotcli@tp-vme-1:~> iot list --allvmdks --vmguest tp-win2008-21
VMDKs on the Guest : tp-win2008-21 are :

Filename                : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
Label                   : Hard disk 1
Capacity (GB)           : 40
------------------------------------------------------------------------
Filename                : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
20.vmdk
Label                   : Hard disk 2
Capacity (GB)           : 10
------------------------------------------------------------------------
Filename                : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                   : Hard disk 3
Capacity (GB)           : 15
------------------------------------------------------------------------
Filename                : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
2.vmdk
Label                   : Hard disk 4
Capacity (GB)           : 20
------------------------------------------------------------------------

iotcli@tp-vme-1:~> iot provision --addvmdk "[2-datastore1] TP-Win2008-
21/TP-Win2008-21_2.vmdk" --vmguest tp-win2008-21
This command may take long time to complete. Do you wish to continue?
[y/N]y
Add Primary VMDK Task on tp-win2008-21 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Add Primary VMDK Task on tp-win2008-21 successfully completed

iotcli@tp-vme-1:~> iot list --configuredvmdks --vmguest tp-win2008-21
VMDKs configured on the Guest : tp-win2008-21 are :

Filename                : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
Label                   : Hard disk 1
Caching Running         : true
Capacity (GB)           : 40
------------------------------------------------------------------------
Filename                : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                   : Hard disk 3
Caching Running         : true
Capacity (GB)           : 15
```

```
-------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
2.vmdk
Label                     : Hard disk 4
Caching Running           : true
Capacity (GB)             : 20
-------------------------------------------------------------------------
```

addvolume

Provisions the primary volume device of the guest.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 71403831296
Cache Size in Chunks      : 266
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1320
Configured                : J:\ Extension: dat

Filter Type               : VOLUME
Cache Size in Use         : 89925877760
Cache Size in Chunks      : 335
Caching Status            : true
Read Update Enabled       : true
Health  Status            : No primary device added for caching
Filter Shares             : 1360

Filter Type               : DISK
Cache Size in Use         : 79456894976
Cache Size in Chunks      : 296
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1320
Configured                : \Device\Harddisk1\DR1 \Device\Harddisk4\DR4

All Volumes               : J:\  C:\
```

```
All Disks                : disk3 disk0 disk1 disk2 disk4

iotcli@tp-vme-1:~> iot provision --addvolume  c: --vmguest tp-win2008-20 -
-guestuser Administrator --guestpassword Atest12345
Ensure that Cluster Shared Volumes is not selected for caching. Do you
wish to continue? [y/N]y
Add Guest Volume Filter Task on tp-win2008-20 was successfully submitted.
This task may take several minutes to complete.
Errorcode : 0
Add Guest Volume Filter Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : J:\ Extension: dat

Filter Type              : VOLUME
Cache Size in Use        : 89925877760
Cache Size in Chunks     : 335
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1360
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 79456894976
Cache Size in Chunks     : 296
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : \Device\Harddisk1\DR1 \Device\Harddisk4\DR4

All Volumes              : J:\  C:\
All Disks                : disk3 disk0 disk1 disk2 disk4
```

assigncachingshares

Provisions the Caching Shares for the VM Guest.

By default, the IBM Flash Management Console assigns 4000 capacity shares when installing the guest-based caching package. However, to know the total number of shares you need to know how many VMs are using guest-based caching. For example, if there are three VMs using Guest-Based caching, then a total of 12,000 shares have been allocated (4000 shares X 3). By default, then, the VM has 1/3 of the caching capacity. Entering a custom shares number of 12,000 would change the total number of shares to 24,000 and your VM would have 12,000, or 50% of those shares

Use this command to change the assigned shares.

```
iotcli@tp-iot-1:~> iot provision -vmguest TP-WIN2K8-4 -assigncachingshares
10000
This command may require an automatic reboot of the virtual machines. Do
you wish to continue? [y/N]y
Assign Caching Shares on TP-WIN2K8-4 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Assign Caching Shares on TP-WIN2K8-4 successfully completed

iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --getcachingshares --
guestuser administrator --guestpassword Guestadmin123
Capacity Shares for Guest : TP-WIN2K8-4 is :10000
```

deleteallfilerules

Deletes all file rules that are in effect on the guest.

```
iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --filestatus --guestuser
administrator --guestpassword Guestadmin123
File Status for Guest : TP-WIN2K8-4 is :
Filter Type              : FILE
Mode                     : Caching
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Health  Status           : Caching disabled, No caching share defined, No
caching capacity available
Filter Shares            : 0
Configured               : f:\repository.dat Extension:

iotcli@tp-iot-1:~> iot provision --vmguest TP-WIN2K8-4 --
deleteallfilerules --guestuser administrator --guestpassword Guestadmin123
Delete Guest File Filter Task on TP-WIN2K8-4 got successfully submitted,
This may take several minutes to complete.
Errorcode : 0
Delete Guest File Filter Task on TP-WIN2K8-4 successfully completed

iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --filestatus --guestuser
```

```
administrator --guestpassword Guestadmin123
File Status for Guest : TP-WIN2K8-4 is :
Filter Type              : FILE
Mode                     : Caching
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Health  Status           : Caching disabled, No primary device defined, No
caching share defined, No caching capacity available
Filter Shares            : 0
```

deletedisk

Deletes the provisioned primary disk device of the guest.

```
iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --configureddisks --
guestuser administrator --guestpassword Guestadmin123
Guest                          : TP-WIN2K8-4
Configured Disk(s)             : \Device\Harddisk1\DR1

iotcli@tp-iot-1:~> iot provision --vmguest TP-WIN2K8-4 --deletedisk disk1
--guestuser administrator --guestpassword Guestadmin123
Delete Guest Disk Filter Task on TP-WIN2K8-4 got successfully submitted,
This may take several minutes to complete.
Errorcode : 0
Delete Guest Disk Filter Task on TP-WIN2K8-4 successfully completed

iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --configureddisks --
guestuser administrator --guestpassword Guestadmin123
No Disks configured for guest : TP-WIN2K8-4
```

deletevolume

Deletes the provisioned primary volume device of the guest.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 71403831296
```

```
Cache Size in Chunks     : 266
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : J:\ Extension: dat

Filter Type              : VOLUME
Cache Size in Use        : 89925877760
Cache Size in Chunks     : 335
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1360
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 79456894976
Cache Size in Chunks     : 296
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : \Device\Harddisk1\DR1 \Device\Harddisk4\DR4

All Volumes              : J:\  C:\
All Disks                : disk3 disk0 disk1 disk2 disk4

iotcli@tp-vme-1:~> iot provision --deletevolume c: --vmguest tp-win2008-20
--guestuser Administrator --guestpassword Atest12345
Delete Guest Volume Filter Task on tp-win2008-20 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Delete Guest Volume Filter Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 71403831296
Cache Size in Chunks     : 266
```

```
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : J:\ Extension: dat

Filter Type              : VOLUME
Cache Size in Use        : 89925877760
Cache Size in Chunks     : 335
Caching Status           : true
Read Update Enabled      : true
Health  Status           : No primary device added for caching
Filter Shares            : 1360

Filter Type              : DISK
Cache Size in Use        : 79456894976
Cache Size in Chunks     : 296
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1320
Configured               : \Device\Harddisk1\DR1 \Device\Harddisk4\DR4

All Volumes              : J:\  C:\
All Disks                : disk3 disk0 disk1 disk2 disk4
```

disableautocache (guest)

This command disables auto cache on the VM. VMDKs that are currently configured for host-based caching will continue to cache; however, new VMDKs created on the VM will not have host-based caching automatically enabled.

The default setting on VMs is auto cache disabled.

```
iotcli@tp-vme-1:~> iot list -vmguest tp-win2k8-33
Guest                    : tp-win2k8-33
IotPackageVersion        : Unknown
Caching Device Assigned  : false
Auto cache new filter    : true
Guest Caching Mode       : HYPERVISOR_LEVEL
Capacity Shares          : 0
Caching Capacity (GB)    : 0

Filter Type              : VMDK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : true
```

```
Health  Status           : No primary device added for caching
Filter Shares            : 0


All VMDKs on the Guest   :
VMDK Filename            : [2-datastore1] TP-WIN2K8-33/TP-WIN2K8-33-
000001.vmdk
VMDK Label               : Hard disk 1
VMDK Capacity (GB)       : 60
--------------------------------------------------------------------------

iotcli@tp-vme-1:~> iot provision --vmguest tp-win2k8-33 --disableautocache
Successfully disabled auto cache on virtual machine : tp-win2k8-33

iotcli@tp-vme-1:~> iot list -vmguest tp-win2k8-33
Guest                    : tp-win2k8-33
IotPackageVersion        : Unknown
Caching Device Assigned  : false
Auto cache new filter    : false
Guest Caching Mode       : HYPERVISOR_LEVEL
Capacity Shares          : 0
Caching Capacity (GB)    : 0

Filter Type              : VMDK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : true
Health  Status           : No primary device added for caching
Filter Shares            : 0

All VMDKs on the Guest   :
VMDK Filename            : [2-datastore1] TP-WIN2K8-33/TP-WIN2K8-33-
000001.vmdk
VMDK Label               : Hard disk 1
VMDK Capacity (GB)       : 60
--------------------------------------------------------------------------
```

disablecachingmode

Disables the caching method, or caching mode, on the specified VM. You can specify the method as either hypervisor or guest:

- Hypervisor -- will remove all the VMDKs belonging to the guest VM from host-based caching and caching will be stopped on that VM.
- Guest -- will stop caching on the guest VM and remove the guest caching software.

For example, to disable host-based caching on a guest, type something like this:

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-21
Guest                     : tp-win2008-21
IotPackageVersion         : Unknown
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : HYPERVISOR_LEVEL
Capacity Shares           : 0
Caching Capacity (GB)     : 0

Filter Type               : VMDK
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 0
Configured                : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
[2-datastore1] TP-Win2008-21/TP-Win2008-21_1.vmdk [2-datastore1] TP-
Win2008-21/TP-Win2008-21_2.vmdk


All VMDKs on the Guest    :
--------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
Label                     : Hard disk 1
Capacity (GB)             : 40
--------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
20.vmdk
Label                     : Hard disk 2
Capacity (GB)             : 10
--------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                     : Hard disk 3
Capacity (GB)             : 15
--------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
2.vmdk
Label                     : Hard disk 4
Capacity (GB)             : 20
--------------------------------------------------------------------------

iotcli@tp-vme-1:~> iot provision --disablecachingmode hypervisor --vmguest
tp-win2008-21
This command may take long time to complete. Do you wish to continue?
[y/N]y
Delete Primary VMDK Task on tp-win2008-21 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
```

```
Delete Primary VMDK Task on tp-win2008-21 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-21
Guest                     : tp-win2008-21
IotPackageVersion         : Unknown
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : NONE
Capacity Shares           : 0
Caching Capacity (GB)     : 0
```

To disable guest-based caching on a VM, type something like this:

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 71403831296
Cache Size in Chunks      : 266
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1320
Configured                : J:\ Extension: dat

Filter Type               : VOLUME
Cache Size in Use         : 89925877760
Cache Size in Chunks      : 335
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1360
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 79456894976
Cache Size in Chunks      : 296
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1320
Configured                : \Device\Harddisk1\DR1 \Device\Harddisk4\DR4
```

```
All Volumes              : J:\  C:\
All Disks                : disk3 disk0 disk1 disk2 disk4

iotcli@tp-vme-1:~> iot provision --disablecachingmode guest --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
This command may require an automatic reboot of the virtual machines. Do
you wish to continue? [y/N]y
Uninstall guest package on tp-win2008-20 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Uninstall guest package on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : None
Caching Device Assigned  : true
Auto cache new filter    : true
Guest Caching Mode       : NONE
Capacity Shares          : 0
Caching Capacity (GB)    : 0
```

disablediskreadupdate

This command allows you to disable read updates to a the disk layer of a VM's read cache without invalidating the existing read cache.

For example, you might to disable read updates on your VM before performing a backup to prevent infrequently accessed files from filling up your read cache.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
Cache Size in Chunks     : 342
Caching Status           : true
```

```
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --disablediskreadupdate --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Disable Read Update Task for Disk filter on tp-win2008-20 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Disable Read Update Task for Disk filter on tp-win2008-20 successfully
completed
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : false
```

```
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : false
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : false
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

disablefilereadupdate

This command allows you to disable read updates to a the file layer of a VM's read cache without invalidating the existing read cache.

For example, you might to disable read updates on your VM before performing a backup to prevent infrequently accessed files from filling up your read cache.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
```

```
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --disablefilereadupdate --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Disable Read Update Task for File filter on tp-win2008-20 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Disable Read Update Task for File filter on tp-win2008-20 successfully
completed
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
Cache Size in Chunks     : 342
```

```
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

disablevolumereadupdate

This command allows you to disable read updates to a the volume layer of a VM's read cache without invalidating the existing read cache.

For example, you might to disable read updates on your VM before performing a backup to prevent infrequently accessed files from filling up your read cache.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
```

```
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --disablevolumereadupdate --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Disable Read Update Task for Volume filter on tp-win2008-20 was
successfully submitted. This task may take several minutes to complete.
Errorcode : 0
Disable Read Update Task for Volume filter on tp-win2008-20 successfully
completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
```

```
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

enableautocache (guest)

This command enables autocache on the VM, which will automatically enable host-based caching on any new VMDKs created on the VM. The caching configuration of VMDKs currently running on the VM will not be affected by this command.

If a VM with auto-cached VMDKs is moved to a different host, it will keep its caching configuration and continue to cache VMDKs if IBM FlashCache Storage Accelerator is installed on the destination host. (During the move, the cache for the VM will be invalidated, and it will need to be re-warmed.)

```
iotcli@tp-vme-1:~> iot list -vmguest tp-win2k8-33
Guest                    : tp-win2k8-33
IotPackageVersion        : Unknown
Caching Device Assigned  : false
Auto cache new filter    : false
Guest Caching Mode       : HYPERVISOR_LEVEL
Capacity Shares          : 0
Caching Capacity (GB)    : 0
```

```
Filter Type              : VMDK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : true
Health  Status           : No primary device added for caching
Filter Shares            : 0


All VMDKs on the Guest   :
VMDK Filename            : [2-datastore1] TP-WIN2K8-33/TP-WIN2K8-33-
000001.vmdk
VMDK Label               : Hard disk 1
VMDK Capacity (GB)       : 60
--------------------------------------------------------------------------

iotcli@tp-vme-1:~> iot provision --vmguest tp-win2k8-33 --enableautocache
Successfully enabled auto cache on virtual machine : tp-win2k8-33

iotcli@tp-vme-1:~> iot list -vmguest tp-win2k8-33
Guest                    : tp-win2k8-33
IotPackageVersion        : Unknown
Caching Device Assigned  : false
Auto cache new filter    : true
Guest Caching Mode       : HYPERVISOR_LEVEL
Capacity Shares          : 0
Caching Capacity (GB)    : 0

Filter Type              : VMDK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : true
Health  Status           : No primary device added for caching
Filter Shares            : 0


All VMDKs on the Guest   :
VMDK Filename            : [2-datastore1] TP-WIN2K8-33/TP-WIN2K8-33-
000001.vmdk
VMDK Label               : Hard disk 1
VMDK Capacity (GB)       : 60
--------------------------------------------------------------------------
```

enablecachingmode

This command enables the caching method on the specified VM. You can specify mode as either hypervisor or guest:

- Hypervisor -- will enable caching on all the VMDKs belonging to the guest VM.
- Guest -- will push the guest-based IBM FlashCache Storage Accelerator software to the guest VM, set all the volumes on the guest as primaries, and enable caching on the guest.

Attention!

Host can not be in maintenance mode.

For example, to enable host-based (or hypervisor) caching on a guest, type something like this:

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-21
Guest                     : tp-win2008-21
IotPackageVersion         : Unknown
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : NONE
Capacity Shares           : 0
Caching Capacity (GB)     : 0

iotcli@tp-vme-1:~> iot provision --enablecachingmode hypervisor --vmguest
tp-win2008-21
This command may take long time to complete. Do you wish to continue?
[y/N]y
Add Primary VMDK Task on tp-win2008-21 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Add Primary VMDK Task on tp-win2008-21 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-21
Guest                     : tp-win2008-21
IotPackageVersion         : Unknown
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : HYPERVISOR_LEVEL
Capacity Shares           : 0
Caching Capacity (GB)     : 0

Filter Type               : VMDK
Cache Size in Use         : 0
Cache Size in Chunks      : 0
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 0
Configured                : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
[2-datastore1] TP-Win2008-21/TP-Win2008-21_20.vmdk [2-datastore1] TP-
Win2008-21/TP-Win2008-21_1.vmdk [2-datastore1] TP-Win2008-21/TP-Win2008-
21_2.vmdk


All VMDKs on the Guest    :
--------------------------------------------------------------------------
```

```
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
Label                     : Hard disk 1
Capacity (GB)             : 40
--------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
20.vmdk
Label                     : Hard disk 2
Capacity (GB)             : 10
--------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                     : Hard disk 3
Capacity (GB)             : 15
--------------------------------------------------------------------------
Filename                  : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
2.vmdk
Label                     : Hard disk 4
Capacity (GB)             : 20
--------------------------------------------------------------------------
```

For example, to enabling guest caching on a VM, type something like this:

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : None
Caching Device Assigned   : true
Auto cache new filter     : true
Guest Caching Mode        : NONE
Capacity Shares           : 0
Caching Capacity (GB)     : 0

iotcli@tp-vme-1:~> iot provision --enablecachingmode guest --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
This command may require an automatic reboot of the virtual machines. Do
you wish to continue? [y/N]y
Install guest package on tp-win2008-20 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Install guest package on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
```

```
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Read Update Enabled      : true
Health  Status           : Caching disabled, No primary device added for
caching, No caching shares allocated, No caching capacity available
Filter Shares            : 0

Filter Type              : VOLUME
Cache Size in Use        : 240786604032
Cache Size in Chunks     : 897
Caching Status           : true
Read Update Enabled      : true
Health  Status           : No primary device added for caching
Filter Shares            : 4000

Filter Type              : DISK
Cache Size in Use        : 0
Cache Size in Chunks     : 0
Caching Status           : false
Read Update Enabled      : true
Health  Status           : Caching disabled, No primary device added for
caching, No caching shares allocated, No caching capacity available
Filter Shares            : 0

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

enablediskreadupdate

This command allows you to enable read updates to a the disk layer of a VM's read cache without invalidating the existing read cache.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
```

```
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --enablediskreadupdate --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Enable Read Update Task for Disk filter on tp-win2008-20 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Enable Read Update Task for Disk filter on tp-win2008-20 successfully
completed
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345               Guest
     : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
```

```
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

enablefilereadupdate

This command allows you to enable read updates to a the file layer of a VM's read cache without invalidating the existing read cache.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241
```

```
Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : true
Read Update Enabled       : false
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : false
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --enablefilereadupdate --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Enable Read Update Task for File filter on tp-win2008-20 was successfully
submitted. This task may take several minutes to complete.
Errorcode : 0
Enable Read Update Task for File filter on tp-win2008-20 successfully
completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241
```

```
Filter Type              : FILE
Cache Size in Use        : 91804925952
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

enablevolumereadupdate

This command allows you to enable read updates to a the volume layer of a VM's read cache without invalidating the existing read cache.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
```

```
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : false
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --enablevolumereadupdate --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Enable Read Update Task for Volume filter on tp-win2008-20 was
successfully submitted. This task may take several minutes to complete.
Errorcode : 0
Enable Read Update Task for Volume filter on tp-win2008-20 successfully
completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                    : tp-win2008-20
IotPackageVersion        : 2.2.0.45
Caching Device Assigned  : true
Auto cache new filter    : false
Guest Caching Mode       : GUEST_LEVEL
Capacity Shares          : 4000
Caching Capacity (GB)    : 241

Filter Type              : FILE
Cache Size in Use        : 91804925952
```

```
Cache Size in Chunks     : 342
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 5000
Configured               : j:\database\db.dat Extension:

Filter Type              : VOLUME
Cache Size in Use        : 139049566208
Cache Size in Chunks     : 518
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 7500
Configured               : C:\

Filter Type              : DISK
Cache Size in Use        : 9932111872
Cache Size in Chunks     : 37
Caching Status           : true
Read Update Enabled      : true
Health  Status           : Working
Filter Shares            : 1000
Configured               : \Device\Harddisk3\DR3

All Volumes              : J:\  C:\
All Disks                : disk4 disk0 disk1 disk2 disk3
```

removevmdk

This command deletes a VMDK file from caching. With this command you must provide the fully qualified VMDK file name. You can also provide multiple VMDK files separated by a comma.

```
iotcli@tp-vme-1:~> iot list --configuredvmdks --vmguest tp-win2008-21
            VMDKs configured on the Guest : tp-win2008-21 are :

Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21.vmdk
Label                    : Hard disk 1
Caching Running          : true
Capacity (GB)            : 40
--------------------------------------------------------------------------
Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                    : Hard disk 3
Caching Running          : true
Capacity (GB)            : 15
--------------------------------------------------------------------------

iotcli@tp-vme-1:~> iot provision --removevmdk "[2-datastore1] TP-Win2008-
```

```
21/TP-Win2008-21.vmdk" --vmguest tp-win2008-21
This command may take long time to complete. Do you wish to continue?
[y/N]y
Delete Primary VMDK Task on tp-win2008-21 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Delete Primary VMDK Task on tp-win2008-21 successfully completed

iotcli@tp-vme-1:~> iot list --configuredvmdks --vmguest tp-win2008-21
            VMDKs configured on the Guest : tp-win2008-21 are :

Filename                 : [2-datastore1] TP-Win2008-21/TP-Win2008-21_
1.vmdk
Label                    : Hard disk 3
Caching Running          : true
Capacity (GB)            : 15
--------------------------------------------------------------------------
```

setallshares

By default, all caching shares are assigned to the volume filter. However, if you want to allocate shares to the disk and file filters as well, you can use this command to set the shares at the same time. The **--setallshares** option takes three order-specific parameters for setting volume-, disk-, and file-level caching shares:

--setallshares <numberFileShares> <numberVolumeShares> <numberDiskShares>

For example you could set 1000 file-level caching shares, 2000 volume-level caching shares, and 3000 disk-level caching shares by typing something like this:

```
iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 1320 Chunks allocated: 266
 Filter type:      VOLUME
 Shares allocated: 1360 Chunks allocated: 335
 Filter type:      DISK
 Shares allocated: 1320 Chunks allocated: 296

iotcli@tp-vme-1:~> iot provision --setallshares 2000 3000 4000 --vmguest
tp-win2008-20 --guestuser Administrator --guestpassword Atest12345
Set All Guest shares Task on tp-win2008-20 was successfully submitted.
This task may take several minutes to complete.
Errorcode : 0
Set All Guest shares Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
```

```
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 2000 Chunks allocated: 200
 Filter type:      VOLUME
 Shares allocated: 3000 Chunks allocated: 300
 Filter type:      DISK
 Shares allocated: 4000 Chunks allocated: 397
```

setdiskshares

This command sets disk-level caching shares.

```
iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 2000 Chunks allocated: 200
 Filter type:      VOLUME
 Shares allocated: 3000 Chunks allocated: 300
 Filter type:      DISK
 Shares allocated: 4000 Chunks allocated: 397

iotcli@tp-vme-1:~> iot provision --setdiskshares 1000 --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Set Guest shares Task on tp-win2008-20 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Set Guest shares Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 2000 Chunks allocated: 300
 Filter type:      VOLUME
 Shares allocated: 3000 Chunks allocated: 448
 Filter type:      DISK
 Shares allocated: 1000 Chunks allocated: 149
```

setfileshares

This command sets file-level caching shares.

```
iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
```

```
 Shares allocated: 2000 Chunks allocated: 300
 Filter type:      VOLUME
 Shares allocated: 3000 Chunks allocated: 448
 Filter type:      DISK
 Shares allocated: 1000 Chunks allocated: 149

iotcli@tp-vme-1:~> iot provision --setfileshares 5000 --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Set Guest shares Task on tp-win2008-20 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Set Guest shares Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 5000 Chunks allocated: 500
 Filter type:      VOLUME
 Shares allocated: 3000 Chunks allocated: 298
 Filter type:      DISK
 Shares allocated: 1000 Chunks allocated: 99
```

setvolumeshares

This command sets volume-level caching shares.

```
iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 5000 Chunks allocated: 500
 Filter type:      VOLUME
 Shares allocated: 3000 Chunks allocated: 298
 Filter type:      DISK
 Shares allocated: 1000 Chunks allocated: 99

iotcli@tp-vme-1:~> iot provision --setvolumeshares 7500 --vmguest tp-
win2008-20 --guestuser Administrator --guestpassword Atest12345
Set Guest shares Task on tp-win2008-20 was successfully submitted. This
task may take several minutes to complete.
Errorcode : 0
Set Guest shares Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --allshares --vmguest tp-win2008-20 --
guestuser Administrator --guestpassword Atest12345
All Shares for Guest : tp-win2008-20 is :
 Filter type:      FILE
 Shares allocated: 5000 Chunks allocated: 342
```

```
 Filter type:      VOLUME
 Shares allocated: 7500 Chunks allocated: 518
 Filter type:      DISK
 Shares allocated: 1000 Chunks allocated: 37
```

startdiskcache

Starts disk caching for the guest.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

```
iotcli@tp-vme-1:~> iot provision --startdiskcache --vmguest tp-win2008-20
--guestuser Administrator --guestpassword Atest12345
Start Caching Task on tp-win2008-20 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Start Caching Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

startfilecache

Starts file caching for the guest.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --startfilecache --vmguest tp-win2008-20
--guestuser Administrator --guestpassword Atest12345
Start Caching Task on tp-win2008-20 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Start Caching Task on tp-win2008-20 successfully completed
```

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

startvolumecache

Starts volume caching for the guest.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
```

```
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --startvolumecache --vmguest tp-win2008-
20 --guestuser Administrator --guestpassword Atest12345
Start Caching Task on tp-win2008-20 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Start Caching Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
```

```
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

stopdiskcache

Stops disk caching for the guest.

> **Attention!**
>
> This command only stops, and invalidates, the disk filter portion of the cache. If you restart disk cache, this portion of the cache will need to re-warm.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --stopdiskcache --vmguest tp-win2008-20 -
-guestuser Administrator --guestpassword Atest12345
Stop Caching Task on tp-win2008-20 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Stop Caching Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
```

```
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

stopfilecache

Stops file caching for the guest.

Attention!

This command only stops, and invalidates, the file filter portion of the cache. If you restart file cache, this portion of the cache will need to re-warm.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --stopfilecache --vmguest tp-win2008-20 -
-guestuser Administrator --guestpassword Atest12345
Stop Caching Task on tp-win2008-20 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Stop Caching Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
```

```
Administrator --guestpassword Atest12345  Guest                    : tp-
win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

stopvolumecache

Stops volume caching for the guest.

Attention!

This command only stops, and invalidates, the volume filter portion of the cache. If you restart volume cache, this portion of the cache will need to re-warm.

```
iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : true
Read Update Enabled       : true
Health  Status            : Working
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3

iotcli@tp-vme-1:~> iot provision --stopvolumecache --vmguest tp-win2008-20
--guestuser Administrator --guestpassword Atest12345
Stop Caching Task on tp-win2008-20 was successfully submitted. This task
may take several minutes to complete.
Errorcode : 0
Stop Caching Task on tp-win2008-20 successfully completed

iotcli@tp-vme-1:~> iot list --vmguest tp-win2008-20 --guestuser
```

```
Administrator --guestpassword Atest12345
Guest                     : tp-win2008-20
IotPackageVersion         : 2.2.0.45
Caching Device Assigned   : true
Auto cache new filter     : false
Guest Caching Mode        : GUEST_LEVEL
Capacity Shares           : 4000
Caching Capacity (GB)     : 241

Filter Type               : FILE
Cache Size in Use         : 91804925952
Cache Size in Chunks      : 342
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 5000
Configured                : j:\database\db.dat Extension:

Filter Type               : VOLUME
Cache Size in Use         : 139049566208
Cache Size in Chunks      : 518
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 7500
Configured                : C:\

Filter Type               : DISK
Cache Size in Use         : 9932111872
Cache Size in Chunks      : 37
Caching Status            : false
Read Update Enabled       : true
Health  Status            : Caching disabled
Filter Shares             : 1000
Configured                : \Device\Harddisk3\DR3

All Volumes               : J:\  C:\
All Disks                 : disk4 disk0 disk1 disk2 disk3
```

unassigncachingshares

Deletes the provisioned Caching Shares for the VM guest.

```
iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --getcachingshares --
guestuser administrator --guestpassword Guestadmin123
Capacity Shares for Guest : TP-WIN2K8-4 is :10000

iotcli@tp-iot-1:~> iot provision -vmguest TP-WIN2K8-4 -
unassigncachingshares
UnAssign Caching Shares on TP-WIN2K8-4 got successfully submitted, This
```

```
may take several minutes to complete.
Errorcode : 0
UnAssign Caching Shares on TP-WIN2K8-4 successfully completed

iotcli@tp-iot-1:~> iot list --vmguest TP-WIN2K8-4 --getcachingshares --
guestuser administrator --guestpassword Guestadmin123
Capacity Shares for Guest : TP-WIN2K8-4 is :0
```

vmhost

The **--vmhost** option provides a number of commands for configuring and managing caching on an ESXi host. These sub-commands are listed below.

assigndevice

This command provisions the caching device identified by device identifier (canonical name) for the host. You could provide multiple device identifiers separated by a space in the same command.

In the example below `iot --list` commands are provided before and after the `iot provision --assigndevice` command to illustrate the effect of issuing the command.

You can use the `--percent` option to only use part of the cache device for caching.

Attention!

The first time you assign a device on a host it decrements the total number of IBM FlashCache Storage Accelerator host licenses. If you decommission a host, be sure to unassign all devices and then use the `iot provision --releaselicense` command to allow IBM FlashCache Storage Accelerator to reclaim the host license.

Attention!

A 3.2TB Enterprise Value Flash Adapter device needs to be down-formatted for use in a caching environment. If you set the cache device using the IBM Flash Management Console GUI, the Enterprise Value Flash Adapter device will automatically be formatted correctly. However, if you set the cache device using the CLI make sure you have formatted the Enterprise Value Flash Adapter device to 80% of factory capacity (which equates to the "high performance" option in the IBM Flash Management Console interface).

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : false
Host License Enabled          : false
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219

iotcli@tp-vme-1:~> iot list --listluns --vmhost tp-esxi-3
DeviceName     : Local FUSIONIO Disk (eui.b8b149c335f440d900247197d2c55b34)
Uuid           : 0100000000313135304430343533494f44524956
Type           : disk
Vendor         : FUSIONIO
CanonicalName : eui.b8b149c335f440d900247197d2c55b34
```

```
Capacity (GB) : 785
DeviceModel   : IODRIVE
DevicePath    : /vmfs/devices/disks/eui.b8b149c335f440d900247197d2c55b34
LunCount      : 0
Percent       : 0

iotcli@tp-vme-1:~> iot provision --assigndevice
eui.b8b149c335f440d900247197d2c55b34 --vmhost tp-esxi-3
The specified device(s) will be erased and used as a caching device. All
data on the device will be lost. Do you wish to continue? [y/N]y
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34 was
successfully submitted. This task may take several minutes to complete.
Errorcode : 0
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34 successfully
completed

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3                        Host
                     : tp-esxi-3
Hypervisor Caching Enabled  : true
Host License Enabled        : true
Host Autocache Enabled      : false
Read Update Enabled         : true
Host Monitoring Enabled     : true
ioTurbine Caching Version   : 2.2.0.45
Management Software Version : 3.9.0.148
ioMemory Driver Version     : 3.2.6.1219
```

```
iotcli@tp-vme-1:~> iot provision --assigndevice
eui.b8b149c335f440d900247197d2c55b34 --percent 50  --vmhost tp-esxi-3
The specified device(s) will be erased and used as a caching device. All
data on the device will be lost. Do you wish to continue? [y/N]y
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34 was
successfully submitted. This task may take several minutes to complete.
Errorcode : 0
Assign Caching Device on eui.b8b149c335f440d900247197d2c55b34 successfully
completed
iotcli@tp-vme-1:~> iot list --listssds --vmhost tp-esxi-3
DeviceName    : Local FUSIONIO Disk (eui.b8b149c335f440d900247197d2c55b34)
Uuid          : 0100000000313135304430343533494f44524956
Type          : disk
Vendor        : FUSIONIO
CanonicalName : eui.b8b149c335f440d900247197d2c55b34
Capacity (GB) : 785
DeviceModel   : IODRIVE
DevicePath    : /vmfs/devices/disks/eui.b8b149c335f440d900247197d2c55b34
LunCount      : 0
Percent       : 49
```

checkoutlicense

This command verifies that the FlashCache Storage Accelerator software running on the host is using an authentic license. If you have a host that is generating "license out of compliance" alerts, you can use this command to bring the host back into compliance.

```
iotcli@tp-vme-1:~> iot provision --checkoutlicense --vmhost tp-esxi-3
This operation is for manually checking out host license. If for whatever
reason, a host is running IOT caching software from Fusion-io without a
license, can be checked out to bring the host back to license compliance.
Do you wish to continue? [y/N]y
Successfully checked out license for the host : tp-esxi-3
```

disableautocache (host)

This command disables auto cache on the host. VMs that are currently caching in host-based mode will continue to cache; however, new VMs created on, or moved to, the host will not have host-based caching automatically enabled.

The default setting for caching hosts is auto cache disabled.

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : true
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219

iotcli@tp-vme-1:~> iot provision --disableautocache --vmhost tp-esxi-3
Successfully disabled auto cache on host : tp-esxi-3

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219
```

disablereadupdate (host)

This command allows you to disable read updates to a host cache without invalidating the existing read cache.

For example, you might to disable read updates on your host before performing a backup to prevent infrequently accessed files from filling up your read cache.

This command will affect all the VMs on your host that are configured for host-based caching.

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219

iotcli@tp-vme-1:~> iot provision --disablereadupdate  --vmhost tp-esxi-3
Successfully disabled Read updates for the cache on the host: tp-esxi-3

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : false
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219
```

enableautocache (host)

This command enables auto cache on the host, which will automatically enable host-based caching on any new VMs created on, or moved to, the host. The caching configuration of VMs currently running on the host will not be affected by this command. However, for VMs that are created, moved, or copied to the host after the command has been issued, caching of the VMs' VMDK files will begin as soon as the VM is created or as soon as the copy or vMotion is complete.

Attention!

In versions of ESXi that are earlier than 5.0.0 build 914586 or 5.1.0 build 1065491, the autocache feature may fail to start caching on new VMDKs added to VMs. In these situations, you will need to reboot or vMotion the VM to start caching on new VMDKs.

If auto-cached VMs are moved off this host, they will continue to cache in host-based mode if IBM FlashCache Storage Accelerator is installed on the destination host. (During the move, the cache for the VM will be invalidated, and it will need to be re-warmed.)

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219

iotcli@tp-vme-1:~> iot provision --enableautocache --vmhost tp-esxi-3
Successfully enabled auto cache on host : tp-esxi-3

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : true
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219
```

enablereadupdate (host)

This command allows you to enable read updates to cache without invalidating the existing read cache.

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : false
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219

iotcli@tp-vme-1:~> iot provision --enablereadupdate  --vmhost tp-esxi-3
Successfully enabled Read updates for the cache on the host: tp-esxi-3

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
```

```
Hypervisor Caching Enabled  : true
Host License Enabled        : true
Host Autocache Enabled      : false
Read Update Enabled         : true
Host Monitoring Enabled     : true
ioTurbine Caching Version   : 2.2.0.45
Management Software Version : 3.9.0.148
ioMemory Driver Version     : 3.2.6.1219
```

releaselicense

This command releases the host license. To perform this command the host must be powered on and all caching devices need to be unassigned.

Attention!

Be sure to issue the **iot provision unassigndevice** command before running **releaselicense**. If you issue the **releaselicense** command while a caching device is still assigned on the host, the command will fail.

```
iotcli@tp-vme-1:~> iot provision --releaselicense --vmhost tp-esxi-3  This
operation is for manually releasing Host license and should be used only
in a recover scenario. In normal operation , License management is done
automatically during Assign/Un-assign Caching Device. If for whatever
reason, a license cannot be reclaimed from a Host with assigned Caching
Device, it can be done by this operation. To manually release Host
license, the host must be in powered on state and must not have any
Caching Device assigned. Do you wish to continue? [y/N]y
ReleaseHostLicense on tp-esxi-3 was successfully submitted. This task may
take several minutes to complete.
Errorcode : 0
ReleaseHostLicense on tp-esxi-3 successfully completed
```

startcache

This command starts caching on the specified host.

```
iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-2

Caching Status   : Not Started
Caching Capacity : 964 GB
Health Status    : Caching disabled

iotcli@tp-vme-1:~> iot provision --startcache --vmhost tp-esxi-2
Successfully started cache.

iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-2
```

```
Caching Status   : Started
Caching Capacity : 964 GB
Health Status    : Working
```

startmonitor

This command tells the IBM Flash Management Console to monitor a host for software updates and configuraiton changes. It is typically use to include a host where IBM FlashCache Storage Accelerator was installed manually (or "out of band") and include it in cache management.

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : false
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219

iotcli@tp-vme-1:~> iot provision --startmonitor --vmhost tp-esxi-3
Successfully enabled monitoring on host : tp-esxi-3

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219
```

stopcache

This command stops caching on the specified host.

> **Attention!**
>
> Stopping the host cache will invalidate the cache. When you restart the host cache, the cache will need to re-warm.

```
iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-2

Caching Status   : Started
Caching Capacity : 964 GB
```

```
Health Status    : Working

iotcli@tp-vme-1:~> iot provision --stopcache --vmhost tp-esxi-2
Successfully stopped cache.

iotcli@tp-vme-1:~> iot list --hypercachestatus --vmhost tp-esxi-2

Caching Status   : Not Started
Caching Capacity : 964 GB
Health Status    : Caching disabled
```

stopmonitor

This command is used when the host does not need to be part of the IBM FlashCache Storage Accelerator monitoring.

```
iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : true
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219

iotcli@tp-vme-1:~> iot provision --stopmonitor --vmhost tp-esxi-3
Successfully disabled monitoring on host : tp-esxi-3

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                          : tp-esxi-3
Hypervisor Caching Enabled    : true
Host License Enabled          : true
Host Autocache Enabled        : false
Read Update Enabled           : true
Host Monitoring Enabled       : false
ioTurbine Caching Version     : 2.2.0.45
Management Software Version   : 3.9.0.148
ioMemory Driver Version       : 3.2.6.1219
```

unassigndevice

Unassigns the provisioned caching device identified by device identifier for the host.

`iot list --listssds` will provide a list of assigned devices.

```
iotcli@tp-vme-1:~> iot list --listssds --vmhost tp-esxi-3
```

```
DeviceName    : Local FUSIONIO Disk (eui.b8b149c335f440d900247197d2c55b34)
Uuid          : 0100000000313135304430343533494f44524956
Type          : disk
Vendor        : FUSIONIO
CanonicalName : eui.b8b149c335f440d900247197d2c55b34
Capacity (GB) : 785
DeviceModel   : IODRIVE
DevicePath    : /vmfs/devices/disks/eui.b8b149c335f440d900247197d2c55b34
LunCount      : 0
Percent       : 99

iotcli@tp-vme-1:~> iot provision --unassigndevice
eui.b8b149c335f440d900247197d2c55b34 --vmhost tp-esxi-3
Unassign Caching Device on eui.b8b149c335f440d900247197d2c55b34 was
successfully submitted. This task may take several minutes to complete.
Errorcode : 0
Unassign Caching Device on eui.b8b149c335f440d900247197d2c55b34
successfully completed

iotcli@tp-vme-1:~> iot list --vmhost tp-esxi-3
Host                        : tp-esxi-3
Hypervisor Caching Enabled  : false
Host License Enabled        : false
Host Autocache Enabled      : false
Read Update Enabled         : true
Host Monitoring Enabled     : true
ioTurbine Caching Version   : 2.2.0.45
Management Software Version : 3.9.0.148
ioMemory Driver Version     : 3.2.6.1219
```

stats

The `stats` command is performed on an ESXi host or a VM.

Provide a host name or IP address to get host stats.

hypercachestats (host)

This command displays the Hyper Cache stats information for the specified host.

The displayed stats are:

Real Time Stats

- Read IOPS — Number of application read IO per second
- Read bytes per second — Number of application bytes read per second
- Write IOPS — Number of application write IO per second
- Write bytes per second — Number of application bytes write per second.
- Hits Rate — percentage of file IO on the host that hits the Cache devices
- Read % — the percentage of total cache IO that is reads. The read and write percentages should equal 100%, but rounding can occur in the calculation so the sum may vary plus or minus 1 percent.
- Write % — the percentage of total cache IO that is writes. The read and write percentages should equal 100%, but rounding can occur in the calculation so the sum may vary plus or minus 1 percent.
- Cache Capacity — the combined size of all the cache devices in use on the host
- Used Cache Capacity — how much of the cache devices capacity is in use.
- Capacity Percent % — the percentage of the cache devices capacity in use.

Cumulative Stats

- Reads — the number of reads from the cache since caching started.
- Writes — the number of writes to the cache since caching started.
- Cache Read Bytes — total number of bytes read from the cache since caching started.
- Cache Writes Bytes — total number of bytes written to the cache since caching started
- Total Reads and Writes — the total number of reads and writes to the cache. (See Reads and Writes above.)
- Hit — the number of hits on the cache
- Misses — the number of misses on the cache

```
iotcli@tp-vme-1:~> iot stats --hypercachestats tp-esxi-2
Timestamp              : 2014-05-06 12:40:35
------------------------------------------------------------------------
REAL TIME STATS
Read IOPS              : 0
Read bytes per second  : 0
Write IOPS             : 0
Write bytes per second : 0
Hits Rate              : 0%
Read %                 : 0%
Write %                : 0%
```

```
Cache Capacity          : 481841643520
Used Cache Capacity     : 194748416
Capacity Percent %      : 0%
--------------------------------------------------------------------------------
CUMULATIVE STATS
Reads                   : 8217
Writes                  : 17021
Cache Read Bytes        : 238993408
Cache Writes Bytes      : 326549504
Total Reads and Writes  : 25238
Hit                     : 72
Misses                  : 14515
```

pervmdkstats (guest)

This command displays the caching stats of all the VMDK files that exist on a specific VM. The specified VM should be configured for host-based caching.

The displayed stats are:

- Hits — the number of hits on the cache
- Misses — the number of misses on the cache
- Reads — the number of reads from the cache since caching started.
- Writes — the number of writes to the cache since caching started.
- Used Sectors — the number of disk sectors in use in cache at any given time
- Total bytes read — total number of bytes read from the cache since caching started.
- Max read size — maximum size of a read request that will be serviced from the cache
- Min read size — minimum size of a read request that will be serviced from the cache
- Total bytes written — total number of bytes written to the cache since caching started
- Max write size — maximum size write request that will be written to the cache
- Min write size — minimum size write request that will be written to the cache

```
iotcli@tp-vme-1:~> iot stats --pervmdkstats TP-Win2008-21
VM name : TP-Win2008-21
--- Device stats ---
Disk name : scsi0:0
Hits            : 3470
Misses          : 213442
Reads           : 9870
Writes          : 2761
Used sectors    : 6469952
Total bytes read: 3453204480
Max read size   : 1052672
Min read size   : 512
Total bytes written: 21531648
Max write size : 1052672
Min write size : 512
```

```
Disk name : scsi0:1
Hits           : 4547
Misses         : 81
Reads          : 1169
Writes         : 4932
Used sectors   : 6864408
Total bytes read: 57253376
Max read size  : 327680
Min read size  : 512
Total bytes written: 4031245312
Max write size : 1052672
Min write size : 512
```

vmhypercachestats (guest)

This command displays the Hyper Cache stats information for the specified VM. The specified VM should be configured for host-based caching.

The displayed stats are:

Real Time Stats

- Read IOPS — Number of application read IO per second
- Read bytes per second — Number of application bytes read per second
- Write IOPS — Number of application write IO per second
- Write bytes per second — Number of application bytes write per second.
- Read % — the percentage of total cache IO that is reads. The read and write percentages should equal 100%, but rounding can occur in the calculation so the sum may vary plus or minus 1 percent.
- Write % — the percentage of total cache IO that is writes. The read and write percentages should equal 100%, but rounding can occur in the calculation so the sum may vary plus or minus 1 percent.
- Cache Capacity — the size of the VMs cache in bytes
- Used Cache Capacity — how much of the cache is in use.
- Capacity Percent % — the percentage of the cache capacity in use.

Cumulative Stats

- Reads — the number of reads from the cache since caching started.
- Writes — the number of writes to the cache since caching started.
- Cache Read Bytes — total number of bytes read from the cache since caching started.
- Cache Writes Bytes — total number of bytes written to the cache since caching started
- Total Reads and Writes — the total number of reads and writes to the cache. (See Reads and Writes above.)
- Hit — the number of hits on the cache
- Misses — the number of misses on the cache

```
iotcli@tp-vme-1:~> iot stats --vmhypercachestats tp-win2008-21
Timestamp              : 2014-05-06 12:54:11
```

```
--------------------------------------------------------------------------------
REAL TIME STATS
Read IOPS               : 0
Read bytes per second   : 0
Write IOPS              : 0
Write bytes per second  : 0
Read %                  : 0%
Write %                 : 0%
Cache Capacity          : 481841643520
Used Cache Capacity     : 0
Capacity Percent %      : 0%
--------------------------------------------------------------------------------
CUMULATIVE STATS
Reads                   : 0
Writes                  : 0
Cache Read Bytes        : 0
Cache Writes Bytes      : 0
Total Reads and Writes  : 0
Hit                     : 0
Misses                  : 0
```

support

The support command allows you to create Support Uploadable Bundles (SUB) that can be sent to support.

ms

This command can generate a support uploadable bundle for the IBM Flash Management Console.

```
iotcli@tp-iot-1:~> iot support --ms
Get Management Support task got successfully submitted, This may take
several minutes to complete.
Wrote /var/lib/vme2/sub/vme2_support_1366460020.tar.gz

Support log is available at location :
http://10.1.100.147/sub/vme2_support_1366460020.tar.gz
```

vmguest

Generates support log for specified geust VM. Multiple VMs separated by spaces can be supplied on the command line.

```
iotcli@iotmgmnt:~> iot support --vmguest TP-WIN2K8-4 --guestuser
administrator --guestpassword Guestadmin123
Getting Guest Support on TP-WIN2K8-4 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Getting Guest Support on TP-WIN2K8-4 successfully completed
http://10.1.100.147:80/sub/VM_130426_102339_TP-WIN2K8-4.cab
```

```
iotcli@tp-iot-1:~> iot support --vmguest TP-WIN2K8-30 TP-WIN2K8-32 --
guestuser administrator --guestpassword Atest12345
VM : TP-WIN2K8-30
Getting Guest Support on TP-WIN2K8-30 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Getting Guest Support on TP-WIN2K8-30 successfully completed
http://10.1.100.158:80/sub/VM_131017_170647_TP-WIN2K8-30.cab

VM : TP-WIN2K8-32
Getting Guest Support on TP-WIN2K8-32 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Getting Guest Support on TP-WIN2K8-32 successfully completed
http://10.1.100.158:80/sub/VM_131017_170718_TP-WIN2K8-32.cab
```

vmhost

Generates support log for a specified host. Multiple hosts separated by spaces can be supplied on the command line.

```
iotcli@iotmgmnt:~> iot support --vmhost 10.1.100.104
Getting Host Support on 10.1.100.104 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Getting Host Support on 10.1.100.104 successfully completed
http://10.1.100.147:80/sub/ESX_130426_102208_10.1.100.104.zip
```

```
iotcli@tp-iot-1:~> iot support -vmhost 10.1.100.120 10.1.100.146
Host : 10.1.100.120
Getting Host Support on 10.1.100.120 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Getting Host Support on 10.1.100.120 successfully completed
http://10.1.100.158:80/sub/ESX_131017_162544_10.1.100.120.zip

Host : 10.1.100.146
Getting Host Support on 10.1.100.146 got successfully submitted, This may
take several minutes to complete.
Errorcode : 0
Getting Host Support on 10.1.100.146 successfully completed
http://10.1.100.158:80/sub/ESX_131017_162710_10.1.100.146.zip
```

system

doctor

This test performs a system diagnostic test for common issues on the specified host. It will scan the vCenter host, any ESXi hosts managed by the vCenter, as well as any VMs on those ESXi hosts. You can pass multiple host names or IP addresses on the command line separated by spaces.

```
iotcli@tp-fcsa-1:~> iot system --doctor
[2014/05/06 13:34:11] IP Address 10.100.10.95
[2014/05/06 13:34:12] DNS entry for your host is tp-fcsa-1
[2014/05/06 13:34:12] Hostname tp-fcsa-1 matches DNS entry
[2014/05/06 13:34:12] DNS IP address matches yours
[2014/05/06 13:34:12] Pinging nameserver 10.100.10.74
[2014/05/06 13:34:14] Tomcat running as 3068
[2014/05/06 13:34:14] License manager running as 3036
[2014/05/06 13:34:14] Postgres seems to be running as 3044
[2014/05/06 13:34:14] Root disk has sufficient space. 43% left
[2014/05/06 13:34:14] OK

iotcli@tp-fcsa-1:~> iot system --doctor --tp-venter-1
[2014/05/06 13:34:35] IP Address 10.100.10.95
[2014/05/06 13:34:35] DNS entry for your host is tp-fcsa-1
[2014/05/06 13:34:35] Hostname tp-fcsa-1 matches DNS entry
[2014/05/06 13:34:35] DNS IP address matches yours
[2014/05/06 13:34:35] Pinging nameserver 10.100.10.74
[2014/05/06 13:34:37] Tomcat running as 3068
[2014/05/06 13:34:37] License manager running as 3036
[2014/05/06 13:34:37] Postgres seems to be running as 3044
[2014/05/06 13:34:37] Root disk has sufficient space. 43% left
[2014/05/06 13:34:37] Scanning --tp-venter-1
netcat: invalid option -- '-'
netcat -h for help
[2014/05/06 13:34:38]   CLOSED -> --tp-venter-1:80
netcat: invalid option -- '-'
netcat -h for help
[2014/05/06 13:34:39]   CLOSED -> --tp-venter-1:443
netcat: invalid option -- '-'
netcat -h for help
[2014/05/06 13:34:40]   CLOSED -> --tp-venter-1:5989
[2014/05/06 13:34:40] Please make sure all required server ports are open.
[2014/05/06 13:34:40] OK

iotcli@tp-fcsa-1:~> iot system --doctor tp-esxi-2
[2014/05/06 13:35:29] IP Address 10.100.10.95
[2014/05/06 13:35:29] DNS entry for your host is tp-fcsa-1
```

```
[2014/05/06 13:35:29] Hostname tp-fcsa-1 matches DNS entry
[2014/05/06 13:35:29] DNS IP address matches yours
[2014/05/06 13:35:29] Pinging nameserver 10.100.10.74
[2014/05/06 13:35:31] Tomcat running as 3068
[2014/05/06 13:35:31] License manager running as 3036
[2014/05/06 13:35:31] Postgres seems to be running as 3044
[2014/05/06 13:35:31] Root disk has sufficient space. 43% left
[2014/05/06 13:35:31] Scanning tp-esxi-2
[2014/05/06 13:35:31]   OK -> tp-esxi-2:80
[2014/05/06 13:35:31]   OK -> tp-esxi-2:443
[2014/05/06 13:35:31]   OK -> tp-esxi-2:5989
[2014/05/06 13:35:31] OK
```

Attention!

Tomcat might not be running if the registered vCenter is not reachable or is unavailable at the time of the IBM Flash Management Console restart.

getdomainname

This command retrieves the domain name for the IBM Flash Management Console.

```
iotcli@tp-iot-1:~> iot system --getdomainname
dev.local
```

gethostfirewallsetting

This command displays the global firewall setting for **all** ESXi hosts managed by your vCenter server. The setting can have two values:

- true (default)--the IBM FlashCache Storage Accelerator host installation package has access to httpClient services during host package installation.
- false--access to httpClient services needs to be set manually on any ESXi server where IBM FlashCache Storage Accelerator will be installed.

```
iotcli@tp-vme-1:~> iot system --gethostfirewallsetting
Get host firewall setting:  false
         false:  User need to manually enable httClient services before
installing the host package
                 and restore httClient services after host package
installation.

iotcli@tp-vme-1:~> iot system --sethostfirewallsetting true
Successfully set host firewall setting as true.

iotcli@tp-vme-1:~> iot system --gethostfirewallsetting
Get host firewall setting:  true
true (default):  Temporarily provide access to httpClient services during
host package installation.
```

gethostname

This command retrieves the host name for the IBM Flash Management Console.

```
iotcli@tp-iot-1:~> iot system --gethostname
TP-IOT-1.dev.local
```

getnameserver

This command retrieves the name servers that are being used by the IBM Flash Management Console.

```
iotcli@tp-iot-1:~> iot system --getnameserver
10.12.10.20 10.12.10.21 10.1.10.74
```

gettimezone

This command retrieves the time zone setting for the IBM Flash Management Console.

```
iotcli@tp-vme-1:~> iot system --gettimezone
America/Denver
```

reset

Returns the IBM Flash Management Console to factory settings. This command will remove any vCenter registrations and reset the IBM Flash Management Console password back to the default.

```
iotcli@tp-iot-1:~> iot system --reset
```

sethostfirewallsetting

This command sets the firewall setting on **all** ESXi hosts managed by your vCenter server to allow access to httpClient services during IBM FlashCache Storage Accelerator installation. The command takes one of the following parameters:

- true -- provides access to httpClient services during host package installation.
- false --the user needs to manually enable httpClient services before installing the host package and disable httpClient services after host package installation. By default, httpClient access is false (or disabled).

On an individual basis, it is also possible to temporarily override the httpClient services setting on a host by using the `--forcemodifyfirewallsetting` with the `iot package --install` command. See iot package --install.

```
iotcli@tp-vme-1:~> iot system --gethostfirewallsetting
Get host firewall setting:  false
         false:  User need to manually enable httClient services before
installing the host package
                 and restore httClient services after host package
```

```
installation.

iotcli@tp-vme-1:~> iot system --sethostfirewallsetting true
Successfully set host firewall setting as true.

iotcli@tp-vme-1:~> iot system --gethostfirewallsetting
Get host firewall setting:  true
true (default):  Temporarily provide access to httpClient services during
host package installation.
```

sethostname

This command sets the host name and the domain name of the IBM Flash Management Console. Changing the host name of the IBM Flash Management Console requires you to unregister and register the vCenter. You can verify that the sethostname operation succeeded by entering **fio-msrv -u** on the command line of the IBM Flash Management Console.

By default, the root password on the IBM Flash Management Console is “flashcache”.

```
iotcli@tp-iot-1:~> iot system --sethostname iotmgmnt.dev.local
root's password:
Host name has been set to iotmgmnt.dev.local

Network Configuration for eth0
IPv4 Address:   10.1.100.147
Netmask:        255.255.255.0

Global Configuration
IPv4 Gateway:   10.1.100.1
Hostname:       iotmgmnt.dev.local
DNS Servers:    10.12.10.20, 10.12.10.21
Proxy Server:

Optionally run '/etc/init.d/network restart'

iotcli@tp-iot-1:~> iot system --gethostname
iotmgmnt.dev.local
iotcli@tp-iot-1:~> iot system --getdomainname
dev.local

iotcli@tp-iot-1:~> fio-msrv -u
https://iotmgmnt.dev.local
```

setnameserver

This command sets the name servers that are used by the IBM Flash Management Console. You can pass more than one name server on the command line separated by spaces.

Attention!

What you enter on the command line will overwrite the entire contents of `resolv.conf`. So if you are using more than one name server, you will need to enter all the name servers with command.

By default, the root password on the FlashCache Storage Accelerator management appliance is “flashcache”.

```
iotcli@tp-iot-1:~> iot system --setnameserver 10.1.100.17
DNS server settings updated
```

settimezone

This command sets the host name and the domain name of the IBM Flash Management Console.

By default, the root password on the FlashCache Storage Accelerator management appliance is “flashcache”.

```
iotcli@tp-iot-1:~> iot system --settimezone
root's password:
Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
1) Africa
2) Americas
3) Antarctica
4) Arctic Ocean
5) Asia
6) Atlantic Ocean
7) Australia
8) Europe
9) Indian Ocean
10) Pacific Ocean
11) none - I want to specify the time zone using the Posix TZ format.
#? 2
Please select a country.
1) Anguilla                 27) Honduras
2) Antigua & Barbuda        28) Jamaica
3) Argentina                29) Martinique
4) Aruba                    30) Mexico
5) Bahamas                  31) Montserrat
6) Barbados                 32) Netherlands Antilles
7) Belize                   33) Nicaragua
8) Bolivia                  34) Panama
9) Brazil                   35) Paraguay
10) Canada                  36) Peru
11) Cayman Islands          37) Puerto Rico
12) Chile                   38) St Barthelemy
13) Colombia                39) St Kitts & Nevis
14) Costa Rica              40) St Lucia
15) Cuba                    41) St Martin (French part)
16) Dominica                42) St Pierre & Miquelon
```

```
17) Dominican Republic       43) St Vincent
18) Ecuador                  44) Suriname
19) El Salvador              45) Trinidad & Tobago
20) French Guiana            46) Turks & Caicos Is
21) Greenland                47) United States
22) Grenada                  48) Uruguay
23) Guadeloupe               49) Venezuela
24) Guatemala                50) Virgin Islands (UK)
25) Guyana                   51) Virgin Islands (US)
26) Haiti
#? 47
Please select one of the following time zone regions.
1) Eastern Time
2) Eastern Time - Michigan - most locations
3) Eastern Time - Kentucky - Louisville area
4) Eastern Time - Kentucky - Wayne County
5) Eastern Time - Indiana - most locations
6) Eastern Time - Indiana - Daviess, Dubois, Knox & Martin Counties
7) Eastern Time - Indiana - Pulaski County
8) Eastern Time - Indiana - Crawford County
9) Eastern Time - Indiana - Pike County
10) Eastern Time - Indiana - Switzerland County
11) Central Time
12) Central Time - Indiana - Perry County
13) Central Time - Indiana - Starke County
14) Central Time - Michigan - Dickinson, Gogebic, Iron & Menominee
Counties
15) Central Time - North Dakota - Oliver County
16) Central Time - North Dakota - Morton County (except Mandan area)
17) Mountain Time
18) Mountain Time - south Idaho & east Oregon
19) Mountain Time - Navajo
20) Mountain Standard Time - Arizona
21) Pacific Time
22) Alaska Time
23) Alaska Time - Alaska panhandle
24) Alaska Time - Alaska panhandle neck
25) Alaska Time - west Alaska
26) Aleutian Islands
27) Hawaii
#? 1

The following information has been given:

United States
Eastern Time

Therefore TZ='America/New_York' will be used.
Local time is now:      Mon Apr 22 09:45:31 EDT 2013.
Universal Time is now:  Mon Apr 22 13:45:31 UTC 2013.
Is the above information OK?
```

```
1) Yes
2) No
#? 1

You can make this change permanent for yourself by appending the line
 TZ='America/New_York'; export TZ
to the file '.profile' in your home directory; then log out and log in
again.

Here is that TZ value again, this time on standard output so that you
can use the /usr/bin/tzselect command in shell scripts:
Timezone settings updated
```

version

This command displays software version information for this server

```
iotcli@tp-vme-1:~> iot version
Copyright       = "Copyright (c) 2014 Fusion-io, Inc.  All Rights
Reserved."
Product Name    = "ioSphere"
Release Version = 2.2.0.7436
Build Date      = 2-May-2014:08:30:28 PM PDT
Build Number    = 7436
```

vmp

login

Authenticates the IBM Flash Management Console with vCenter. If you do not supply the `--vmppassword` option, the command will prompt for you to enter the password.

```
iotcli@tp-iot-1:~> iot vmp --login --vmpaddress 10.1.100.176 --vmpuser
root --vmppassword vmware
Logged in to VMP : 10.1.100.176


iotcli@tp-vme-1:~> iot vmp --login --vmpaddress tp-vcenter-1 --vmpuser
root
Enter the vCenter password:
Re-Enter the vCenter password:
Logged in to VMP : tp-vcenter-1
```

register

Registers the IBM Flash Management Console with the vCenter Server.

If you do not supply the `--vmppassword` option, the command will prompt for you to enter the password.

This command will optionally take the **--vmplogin** option that can be used as the final parameter to authenticate the IBM Flash Management Console at the same time it is registered.

```
iotcli@tp-iot-1:~> iot vmp --register --vmpaddress tp-vcenter-1 --vmpuser
root -vmppassword vmware
Successfully Registered vCenter Server : tp-vcenter-1

iotcli@tp-iot-1:~> iot vmp --register --vmpaddress tp-vcenter-1 --vmpuser
root --vmppassword vmware --vmplogin
Successfully Registered vCenter Server : tp-vcenter-1, Logged in to VMP
Id: 1
```

unregister

Unregisters vCenter Server. If you do not supply the `--vmppassword` option, the command will prompt for you to enter the password.

```
iotcli@tp-iot-1:~> iot vmp --unregister --vmpaddress tp-vcenter-1 --
vmpuser root -vmppassword vmware
Successfully Unregistered vCenter Server : tp-vcenter-1
```

Appendix A: Windows cluster configuration

You can use FlashCache Storage Accelerator with Windows clusters. The setup instructions are described below.

Attention!

Do not use IBM Flash Management Console to manage cluster volumes. Manage volumes with Microsoft Failover Cluster Manager. For adding and removing cached volumes in a cluster **do not** use the `iottool` interface.

Prerequisites

- The Failover Cluster Manager Feature has been installed, and a cluster is up and running.
- Shared storage exists and is accessible by every node in the cluster.
- Desktop Experience Feature has been installed (for (Windows 2008 SP2 only)
- For clustering in a virtual environment with Windows hosts running as VMs, the VMs must be configured with guest-based caching. (You can not cache Microsoft clusters with host-based caching.)

Actions to perform on each node in the cluster

- Install guest-based caching on each node in the cluster.

Actions to perform on one node in the cluster

- Run **`iot-resource.cmd`** after installing IBM FlashCache Storage Accelerator to register the cluster resource DLL. **`iotresource.cmd`** is in the installation directory, which by default is "C:\Program Files\IBM FlashCache Storage Accelerator" Installing the cluster resource DLL on one node will install it on every node. Execute this command to install the resource DLL:

  ```
  iot-resource.cmd -install
  ```

  Alternatively the following command can also be used to install the cluster resource DLL:

  ```
  cluster restype "ioturbine-resource" /create /dll:
  "C:\Program Files\IBM FlashCache Storage Accelerator"
  ```

Attention!

For Windows Server 2012, the command line tool `cluster.exe` is not added by default. You will need to add it as a feature before you run `iot-resource.cmd`. -To add this feature click the following from the Server Manager: **Local Server > Manage > Add Roles and Features Wizard > Features > Remote Server Administration Tools > Feature Administration Tools > Failover Clustering Tools > Failover Cluster Command Interface.**

- If you do not already have cluster group under Services and Applications for which you want to use caching, create one in the Failover Cluster Manager.

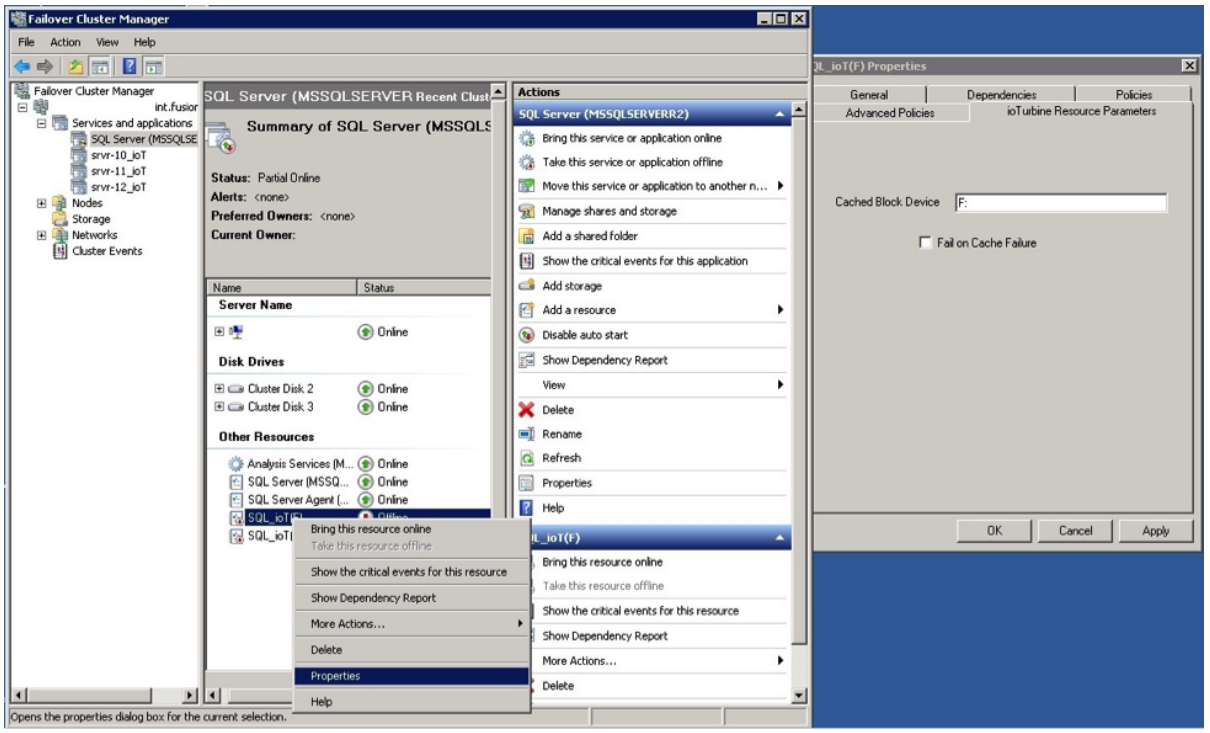
    - Open the Failover Cluster Manager:
    - Right-click **Services and Applications > More Actions > Create Empty Service or Application**.
    - Rename the Empty Service or Application to FlashCache Storage Accelerator.
    - Add storage resources to the service
        - Right-click the new FlashCache Storage Accelerator service and select **Add Storage**
        - Select the disk(s) to be cached from the Add Storage dialog box
        - Click **OK**

- Add the ioTurbine caching resources to the service

    - Right-click the FlashCache Storage Accelerator service and select **Add a resource**
    - Select **Add ioturbine-resource** from the More resources sub-menu

- In the middle pane, which is titled Summary of FlashCache Storage Accelerator, right-click the **New ioturbine-resource** in the Other Resources section, select **Properties** and perform the following steps:

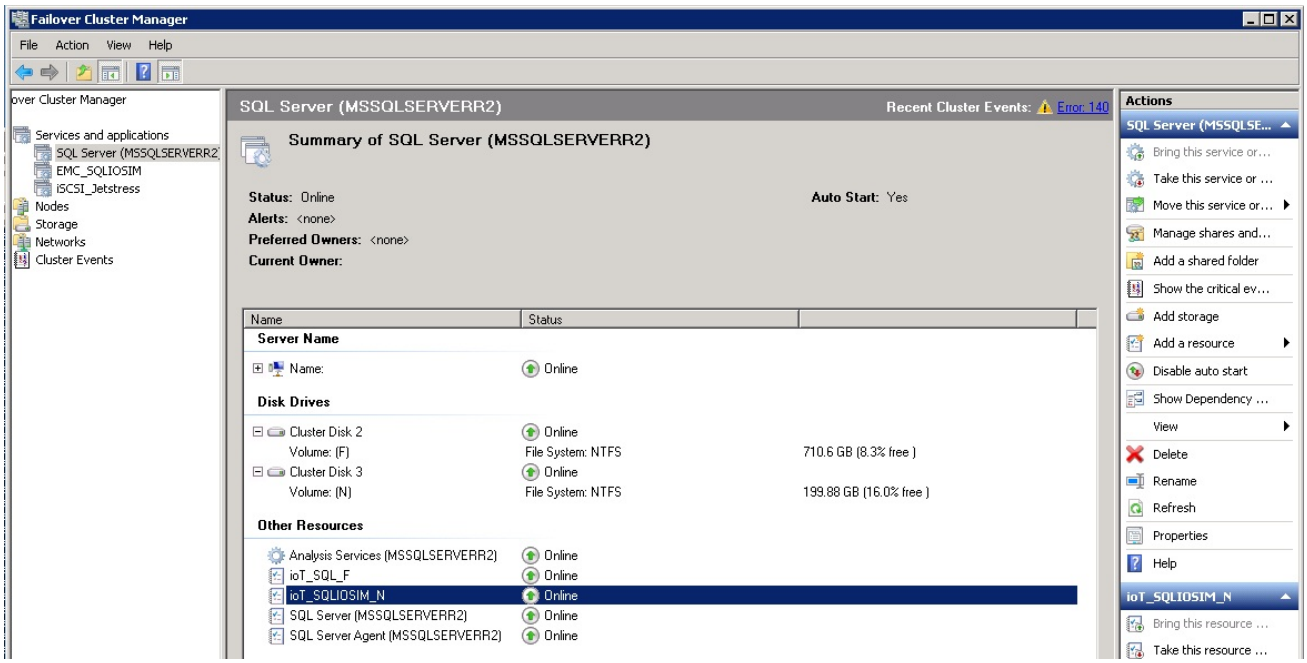
    - In the General tab rename the resource. Choose a name that refers to the resource you are caching. This will distinguish it from other FlashCache Storage Accelerator resources.
    - Set the Resource dependency in the Dependencies tab. Select the Disk Drive being cached. This prevents caching from starting until the Drive has been brought online.
    - In the Properties Tab set the device to be cached (Primary device) by entering the volume letter in ioT Cached Block Device Value field.



Note in this example that the cached primary device is referred to as a "Cluster Disk" in the Cluster Failover Manager. Without the dependencies set-up properly, failovers may cause the FlashCache Storage Accelerator resource to fail. Dependencies are necessary to ensure the Cluster Disk comes online before the FlashCache Storage Accelerator resource.

Additional notes

You can create multiple FlashCache Storage Accelerator resources in the same group (Service and Applications). The following illustrates two FlashCache Storage Accelerator cluster resources; 'ioT_SQL_F' and 'ioT_SQLIOSIM_N', for the Primary devices F and N respectively. Note that there is one resource for each Cluster Disk (Primary device). Also note that on a cluster node which is not currently active, the 'Cached Device' field in the output of the iottool CLI will be blank. The iot-resource.dll enables local caching when the cluster resource becomes active on the local node.


Failover Cluster Manager
File Action View Help
over Cluster Manager
Services and applications
SQL Server (MSSQLSERVERR2
EMC_SQLIOSIM
iSCSI_Jetstress
Nodes
Storage
Networks
Cluster Events
SQL Server (MSSQLSERVERR2)
Recent Cluster Events: Error: 140
Summary of SQL Server (MSSQLSERVERR2)
Status: Online
Auto Start: Yes
Alerts: <none>
Preferred Owners: <none>
Current Owner:
Name
Status
Server Name
Name:
Online
Disk Drives
Cluster Disk 2
Online
Volume: (F)
File System: NTFS
710.6 GB (8.3% free)
Cluster Disk 3
Online
Volume: (N)
File System: NTFS
199.88 GB (16.0% free)
Other Resources
Analysis Services (MSSQLSERVERR2)
Online
ioT_SQL_F
Online
ioT_SQLIOSIM_N
Online
SQL Server (MSSQLSERVERR2)
Online
SQL Server Agent (MSSQLSERVERR2)
Online
Actions
SQL Server (MSSQLSE...
Bring this service or...
Take this service or ...
Move this service or...
Manage shares and...
Add a shared folder
Show the critical ev...
Add storage
Add a resource
Disable auto start
Show Dependency ...
View
Delete
Rename
Refresh
Properties
Help
ioT_SQLIOSIM_N
Bring this resource ...
Take this resource ...

Appendix B: iotcli command summary

The table below outlines the structure of the iot CLI commands.

Command	Sub-Command	Sub-Sub-Command	Options
account			
	delete		guestpassword
	save		guestuser
	list		
help			
list			
	license		
	vmguest		
		alldisks	account
		allshares	guestpassword
		allvmdks	guestuser
		allvolumes	
		configureddisks	
		configuredfiles	
		configuredvmdks	
		configuredvolumes	
		diskstatus	
		filestatus	
		getcachingshares	
		version	
		volumestatus	
	vmhost		

Command	Sub-Command	Sub-Sub-Command	Options
		hypercachestatus	
		hypercacheversion	
		listluns	all
		listssds	
	vmp		
package			
	list		
	vmguest		
		install	account
		uninstall	cacheall
			guestpassword
			guestuser
			installonly
			noreboot
			yes
	vmhost		
		install	forcemodifyfirewallsetting
		uninstall	force
provision			
	vmguest		
		adddisk	account
		addfile	guestpassword
		addrule	guestuser
		addvmdk	noreboot
		addvolume	yes
		assigncachingshares	
		deleteallfilerules	

Command	Sub-Command	Sub-Sub-Command	Options
		deletedisk	
		deletevolume	
		disableautocache	
		disablecachingmode	
		disablediskreadupdate	
		disablefilereadupdate	
		disablevolumereadupdate	
		enableautocache	
		enablecachingmode	
		enablediskreadupdate	
		enablefilereadupdate	
		enablevolumereadupdate	
		removevmdk	
		setallshares	
		setdiskshares	
		setfileshares	
		setvolumeshares	
		startdiskcache	
		startfilecache	
		startvolumecache	
		stopdiskcache	
		stopfilecache	
		stopvolumecache	
		unassigncachingshares	
	vmhost		
		assigndevice	percent
		checkoutlicense	

Command	Sub-Command	Sub-Sub-Command	Options
		disableautocache	
		disablereadupdate	
		enableautocache	
		enablereadupdate	
		releaselicense	
		startcache	
		startmonitor	
		stopcache	
		stopmonitor	
		unassigndevice	
stats			
	hypercachestats		vmhost
	pervmdkstats		
	vmhypercachestats		
support			
	ms		guestpassword
	vmguest		ftpuser
	vmhost		guestuser
			username
			vmguest
			vmhost
system			
	doctor		
	getdomainname		
	gethostname		
	gethostfirewallsetting		
	getnameserver		

Command	Sub-Command	Sub-Sub-Command	Options
	gettimezone		
	import		
	reset		
	sethostname		
	sethostfirewallsetting		
	setnameserver		
	settimezone		
version			
vmp			
	login		vmpaddress
	register		vmppassword
	unregister		vmplogin
			vmpuser

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