

STORAGECRAFT.
SHADOWPROTECT 4

BEST PRACTICES GUIDE

Shadow Protect ImageManager Server Tuning

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BEST PRACTICES GUIDE

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Audience

This document is intended for the administrator responsible for the ShadowProtect implementation of which ShadowProtect ImageManager (ImageManager) is a vital sub-component.

Scope

The scope of this document is designed to supply specific server configuration tuning information to allow ImageManager to perform optimally. This is to the exclusion of other applications that may be installed on the host concerned.

Discussion

The content of this document will be broken down into its discrete sections targeting specific aspect of a server.

Platforms

Refer to the *ShadowProtect ImageManager Supported Platforms Matrix* always for the platforms that are supported.

In brief the following are not recommended as platforms for ImageManager except for single server environments.

- Windows Small Business Server 2011
- Windows Small Business Server 2008
- Windows Small Business Server 2003
- Windows 7 (64-bit)

32-bit (x86) platforms should have the maximum of 4 GB of memory installed.

It is not recommended that ImageManager is run on a virtualised guest.

Paging file

When the server is running low on memory and more is required immediately, the operating system will use hard drive space to simulate system RAM by swapping out memory pages not currently required. This is known as virtual memory and is often called the paging file.

For the best performance of Windows follow these simple rules:

- Create a fixed size paging file that is twice the size of physical memory. Fixed size means the initial size and the maximum sizes have the same value.
- Try to avoid a paging file on the operating system drive.
- Try to avoid a paging file on a fault tolerant drive especially a mirrored (RAID-1) volume. Paging files do not need fault tolerance – they need speed.
- Do not place paging files on separate partitions that are on the same physical disk.

Network Tuning

Offloading tasks can help lower CPU usage on the server, improving overall system performance. The Microsoft TCP/IP transport can offload one or more of the following tasks to the network adapter(s).

On the properties of the network adapter, select the **Advanced** tab.

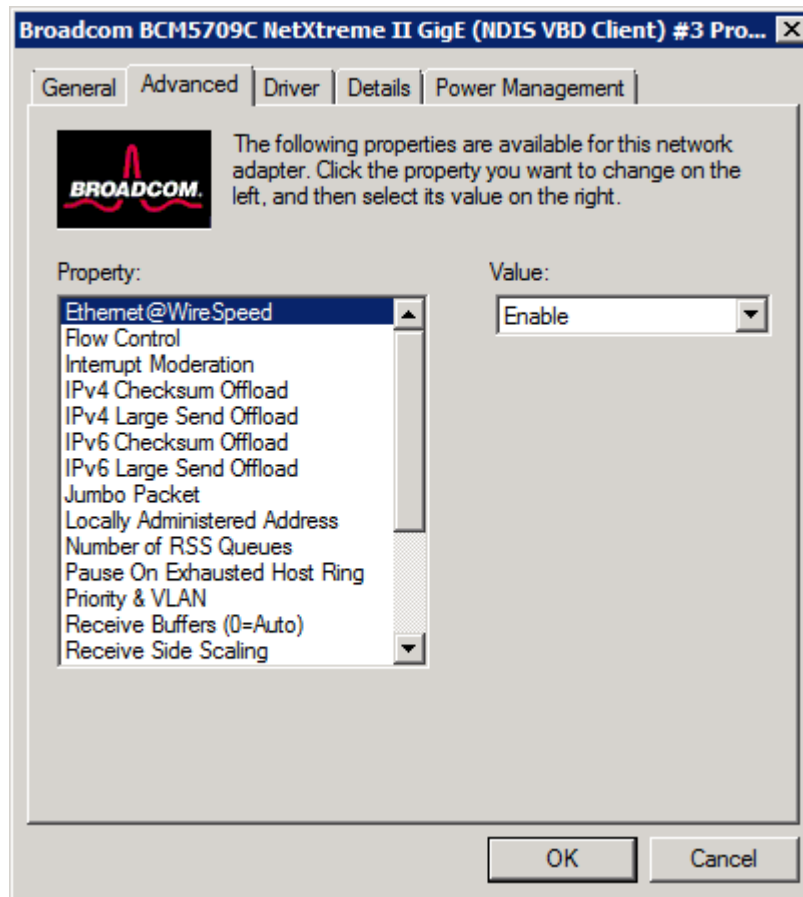


Figure 1: Advanced network adapter properties



Note: Not all the following may be present for your adapter. Names may vary between manufacturers and there may be multiple items per group.

Checksum tasks

The TCP/IP transport can offload the calculation and validation of TCP and IP checks for sends and receives. Set to on or enabled.

IP Security tasks

The TCP/IP transport can offload the calculation and validation of encrypted checksums for authentication headers (AH) and encapsulating security payloads (ESP). Set to on or enabled.

The TCP/IP transport can also offload the encryption and decryption of ESP payloads.

Segmentation of large TCP packets

The TCP/IP transport supports large send offload (LSO). With LSO, the TCP/IP transport can offload the segmentation of large TCP packets. Set to on or enabled.

Stack offloading

The entire network stack can be offloaded to a network adapter that has the appropriate capabilities. Set to on or enabled.

Hardware RAID



Note: *Only perform this section if you have hardware RAID – that is the RAID controller has its own CPU. DO NOT use on host RAID based controllers.*

NumberOfRequests

The `NumberOfRequests` DWORD allows you to specify the number of send / receive buffers (SRB) created for a given adapter, which improves performance and allows the operating system to give more disk requests to a logical disk. This is most useful for hardware RAID controllers that have concurrency capabilities, since each logical disk consists of multiple physical disks.

The default setting is usually conservative and often less than optimal for many high speed hardware RAID disk arrays. Overall array performance can be improved by setting `NumberOfRequests` to a value in the range 32 to 96 (decimal).



Note: *Newer hardware running under Windows Server 2008 R2 may have a larger value set than this range. If that is the case, do not modify it.*

Run `regedit` and locate the registry key:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\{adapter_name}\Parameters\Device{n}
```

You will need to substitute `{adapter_name}` with the specific adapter name (check the driver name) for the controller concerned. An entry is required for each device, so replace `Device{n}` with `Device0`, `Device1` etc.

As an example, for two Emulex LP9000 miniport adapters whose driver name is `lp6nds35`, you would create two DWORD values under these keys:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lp6nds35\Parameters\Device0
```

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lp6nds35\Parameters\Device1
```

A reboot is required for these changes to take effect.

Memory Management

We need to create / modify registry keys. Run `regedit` and locate the registry key:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory  
Management
```

PagedPoolSize

Typically a DWORD value for `PagedPoolSize` will exist. If it does not exist, then create a new DWORD value called `PagedPoolSize`. Modify the value and enter a value of `fffffff` (hexadecimal) – that is eight 'f's.

PoolUsageMaximum

Create a new DWORD value called `PoolUsageMaximum` and specify a value of 60 (decimal).

SessionPoolSize

Typically a DWORD value for `SessionPoolSize` will exist. If it does not exist, then create a new DWORD value called `SessionPoolSize`. Modify the value and enter a value of 48 (decimal).

SessionViewSize

Typically a DWORD value for `SessionViewSize` will exist. If it does not exist, then create a new DWORD value called `SessionViewSize`. Modify the value and enter a value of 68 (decimal).

The default value for `SessionViewSize` is 20 (MB). Increase this value by multiples of 16 (MB) as needed.

Lanman Server

We need to create / modify registry keys. Run `regedit` and locate the registry key:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\LanmanServer\Parameters
```

Size

A DWORD value for `Size` will exist with a value of 1. Modify the value and enter a value of 3 (decimal).

IRPStackSize

The IRP Stack Size specifies the number of stack locations in I/O request packets (IRP) that are used by the operating system. This value may need to be increased for certain transports such as Media Access Control (MAC) drivers and file system drivers. Each stack uses 36 bytes of kernel memory for each receive buffer. The default value is 15. Valid range of values are 11 (0x0b hexadecimal) to 50 (0x32 hexadecimal).

Typically a DWORD value for `IRPStackSize` will not exist. This indicates that the default value of 15 is in effect. If it does not exist, create a new DWORD value called `IRPStackSize`. Modify the value and enter a value of 24 (decimal).

If the problem with resources still persists after completing this procedure, increase the value by small increments.

References

Products affected

- ShadowProtect ImageManager

Platforms affected

- Windows Small Business Server 2011
- Windows Server 2008 R2
- Windows Small Business Server 2008
- Windows Server 2008
- Windows Server 2003 R2
- Windows Small Business Server 2003
- Windows Server 2003
- Windows 7

Replaces article

Supplemental articles

ShadowProtect ImageManager Supported Platforms Matrix

NOTES:

