HVRemote Documentation

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Hyper-V Remote Management Configuration Script

Contents

Introduction

HVRemote was developed by [John Howard](#), Senior Program Manager in the Hyper-V team at Microsoft Corporation, November 2008. To contact me, follow the blog hyperlink above and use the email option. If you find a bug or want to suggest an improvement, please drop me an email or add a comment to the blog post announcing this tool. Of course, I'd love to hear from you if you find it useful.

HVRemote was developed to avoid the manual steps required for remote configuration as I documented in March 2008 on my blog, in these five parts: [1](#), [2](#), [3](#), [4](#) and [5](#). The official Microsoft documentation is at http://technet.microsoft.com/en-us/library/cc794756.aspx, which, at the time of writing, covers the domain joined scenario only.

Typically, without remote management configuration, you will get the error "*You do not have the required permission to complete this task. Contact the administrator of the authorization policy for the computer 'COMPUTERNAME'.*".

Version	Date	Change History
0.1	10th November 2008	First draft
0.2	14th November 2008	Explaining additional capabilities added since 0.1
0.3	19th November 2008	Clarifications, typo corrections and additional capabilities, largely based on feedback from *lots* of people. Thank you! Script changes: - Check for elevation if needed - Corrected error message if not elevated - Outputs currently logged on user - Checks for System Center Virtual Machine Manager - Outputs Machine access permissions (client) - Outputs Machine launch and activation perms (server) - Graceful error handling if firewall disabled or not running - Latest version check
0.4	7th January 2009	More clarifications based on your feedback. Again, thank you! Script changes: - Checks for problem (eg disabled) accounts on server side - Displays a summary of warnings/errors at end - Fixed a bug where hvremote on its own had no output - Outputs IP Configuration (saves me keep asking) - Outputs list of stored credentials in cmdkey - Vista check for known unsupported SKUs - Vista check for KB952627 being installed - Fixed a problem a couple of users hit with ADs reference - Fixed silly capitalization mistake - Some really minor other fixes not worth enumerating.
0.7	5th August 2009	(Note – No functional changes in 0.5 and 0.6) 0.7 contains many changes, in particular full support of Windows 7 as a client, and Windows Server 2008 R2 (and Microsoft Hyper-V Server 2008 R2) as a server, plus verification of the remote client

		or server for common configuration issues.

		Script changes:
		- Outputs build number during /show
		- Detect Windows 7/Server 2008 R2 pre-release builds
		- Warns if v1 client targeting an R2 server
		- Looks for Windows Vista SP2 hotfix
		- Can turn client tracing on/off, plus query current status
		- Test mode, server side
		    o Ping and DNS check
		- Test mode, client side
		    o Ping and DNS check
		    o Connect attempt cimv2 and virtualization namespaces
		    o Instance Creation Event check
		- Changes when client and server are in the same domain
		- Checks for RSAT installation and windows feature enablement on Windows 7 client
		- Better warnings about when anonymous DCOM is required
		- Timeout mechanism introduced
		- Modified netsh commands for Windows 7/R2
		- A few other minor alterations and code cleanup

1.06	28th March 2013	Script changes: - Checks for the use of local groups in a domain joined server configuration, as these do not work - Detect if using an IPv4 address on /target option - Dumps the product SKU for diagnosability - Added some more common reasons why async callback fails on client tests - New option /DA:enable|disable to make inbound client firewall rules compatible with Direct Access - Showing client firewall rules indicates if not DA compatible - Output draining in cmdkey, and consolidated with ipconfig - Added IPv6 pings - Added IPv4 and IPv6 tracerts to see what routers may be blocking traffic in case need to diagnose - Fixed typo where incorrectly said use /anondcom:enable rather than :grant - Support for 2008 R2 SP1 - Refactoring for multiple operating system support - Now works on Windows 7 Professional (No-one noticed this before!) - Support for Windows 8 and Windows Server 2012 using simple authorization (local/domain accounts) Better testing all round, especially client side, plus querying of remote machine - - Removed the redundant MMC and WMI firewalll configuration - - Detect SCVMM 2012 - - Added the /explicit option for force downlevel behaviour

		on 8/2012 - - Refactored lots of functionality to remove a lot of redundant code - - Checking of DA compatibility (but not perfect for Win7) - - Fixes Client Hyper-V setup (8) where ACLs missing to permit remote management - - Fixes Server Hyper-V setup (2012) ACL for CIMv2 namespace - - Made it much easier if I need to add Windows 8 "next" support in the future. - - Many, many other smaller changes, typos, better formatting and so on. Windiff is very colourful :)
1.07	May 2013	- Support for Windows 8.1 and Windows Server 2012 R2 (experimental) - Deprecation of virtualization namespace and azman operations for above OS's - Fixed bug where connecting to the wrong server namespace - Fixed bug during test phase looking at local OS, not the remote OS. Thanks Chris D for reporting. - Checks for non-FQDN in /add and /remove in the domain case. Thanks Christophe P for reporting. - Finally brought the server validation to client up to scratch. - Bit of rework on the client validation to server.
1.08	September 2013	- Support for Windows 8.1 and Windows Server 2012 R2 RTM

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📝 **Note**

If your server is being managed by System Center Virtual Machine Manager 2008, you should not use this script. As of version 0.3 of the script, a check is made by the script.

Quick start

1. Add a user rights to remotely access Hyper-V.

   On the server, from an elevated command prompt, run:

   `cscript hvremote.wsf /add:domain\user` (if machine is in a domain)   **or**
   `cscript hvremote.wsf /add:user`   (if machine is in a workgroup)

2. Allow anonymous DCOM access on the client if the client and server are both in workgroups, or the client and server are in *untrusted* domains (this is not needed for trusted domains or the same domain).

   On the client, from an elevated command prompt, run:

   `cscript hvremote.wsf /anondcom:grant`

3. Reboot server *and* client if this is the first time some reconfiguration has been done. (This should not be necessary for Windows 8/Windows Server 2012 and later).

4. Display current configuration and verify common configuration problems

   On the client, from an elevated command prompt, run:

   `cscript hvremote.wsf /show /target:servercomputername`

   On the server, from an elevated command prompt, run:

   `cscript hvremote.wsf /show /target:clientcomputername`

About

HVRemote can configure both server and client remote management settings for Hyper-V. It is written in VBScript as this is a common scripting platform available on all SKUs where this script can run.

Server support

- Windows Server 2008 with the Hyper-V role enabled (core and full installations), SP1 & SP2
- Microsoft Hyper-V Server 2008 SP1 & SP2
- Windows Server 2008 R2 with the Hyper-V role enabled (core and full installations)
- Microsoft Hyper-V Server 2008 R2
- Windows Server 2012 with the Hyper-V role enabled
- Microsoft Hyper-V Server 2012
- Windows 8 Client Hyper-V (Pro and Enterprise SKUs)
- Windows Server 2012 R2 with the Hyper-V role enabled
- Microsoft Hyper-V Server 2012 R2
- Windows 8.1 Client Hyper-V (Pro and Enterprise SKUs)

Client support

- Windows Server 2008 x86 Full installations
- Windows Server 2008 x64 Full installations (both with and without the Hyper-V role enabled)
- Windows Vista SP1 Business, Enterprise and Ultimate SKUs
- Windows 7 Professional, Enterprise and Ultimate SKUs
- Windows 8 Pro and Enterprise SKUs
- Windows 8.1 Pro and Enterprise SKUs

   Note that not all SKUs support Hyper-V or the Hyper-V Remote Management tools. In particular, server SKUs "without Hyper-V" and web edition cannot run Hyper-V or the Hyper-V remote management tools.

The script is designed to be locale neutral, meaning that it will configure any language operating system instance. However, all text output is English only.

The script is designed to cover configuration of all combinations of workgroup and domain joined server and client. (Note that if client and server are in untrusted domains, from a configuration perspective, it is the same as workgroup to workgroup)

Installation & Removal

Copy HVRemote.wsf to a location on the target machine. It is recommended to create a new sub-directly such as C:\HVRemote in which to store the script. There is no install program, and HVRemote does not appear listed as an installed program. To remove HVRemote, delete HVRemote.wsf.

Hyper-V versions and updates

The Hyper-V role on the "Shiny Media" of Windows Server 2008 is beta code. Hyper-V RTM was released in June 2008 and is available for free download on both Windows Update and the Microsoft Download Centre. Note that remote management is not fully functional in Hyper-V Beta. Hence, you *must* install the Hyper-V RTM update, KB950050. For upgrade considerations from pre-release versions (Beta, RC0 and RC1) to RTM, see KB949222. Note that KB950050 is not required if you are using Windows Server 2008 SP2 or Windows Server 2008 R2 as these contains RTM versions of Hyper-V (including hotfixes where appropriate).

Note - The remote management components, Hyper-V Manager and Virtual Machine Connection on the shiny media of Windows Server 2008 are also beta components and must be updated, even if the Hyper-V role is not enabled, or the SKU is not capable of running the Hyper-V role.

No update is required for Microsoft Hyper-V Server 2008, Microsoft Hyper-V Server 2008 R2 or Windows Server 2008 R2 as all these contain "RTM" versions of Hyper-V.

The remote management components for Vista SP1 and SP2 are not present in-box and can be installed by downloading and installing KB952627. Once installed, Hyper-V Manager will be present under Control Panel, Administrative Tools.

The remote management components for Windows 7 are not present in-box and can be installed by downloading and installing RSAT (Remote Server Administration Tools), followed by enabling the Hyper-V tools Windows feature. Once installed and enabled, Hyper-V Manager will be present under Control Panel, Administrative Tools.

The remote management components for Windows Server 2008 and Windows Server 2008 R2 can be installed without the Hyper-V role. If the Hyper-V role is enabled (non server core installations), the Hyper-V management tools are automatically installed. To install the management tools without the Hyper-V server role, run "ocsetup Microsoft-Hyper-V-Management-Clients". Alternatively, they are available for installation under Remote System Administration Tools (RSAT) in Server Manager.

The remote management components for Windows 8 and 8.1 are present in-box for Pro and Enterprise SKUs. They can be enabled through "Turn Windows Features on or off" on the start menu under Settings. You should enable "Hyper-V Management Tools" under the Hyper-V node. It is not necessary to enable the Hyper-V Platform.

Hyper-V Remote Management Configuration Steps

Server side configuration (i.e. the machine running the Hyper-V role) consists of the following steps:

1) WMI Security permissions to the root\cimv2 namespace
2) WMI Security permissions to the root\virtualization namespace *
3) WMI Security permissions to the root\virtualization\v2 namespace **
4) Permission to the Authorisation policy store *
5) Windows Firewall configuration for Hyper-V rules
6) Distributed COM remote access permission
7) (Optional) Windows Firewall configuration for WMI administration rules
8) (Optional) Disable IPSec policy if connection from management clients would be blocked
9) (Optional) Membership of the Hyper-V Administrators group ***

*   These are deprecated as of Windows Server 2012 R2/Windows 8.1
**   For Windows Server 2012/Windows 8 and later operating systems
***   Introduced in Windows Server 2012/Windows 8. /explicit can also be used if desired.

Client side configuration (i.e. the machine running Hyper-V Manager and Virtual Machine Connection) consists of the following steps:

1) Windows Firewall configuration for Hyper-V Remote Management Client rules
2) (In some scenarios:) ANONYMOUS LOGON remote DCOM access ([1])
3) (In some scenarios:) cmdkey for credentials. ([2])
4) Windows firewall exceptions for management tools

---

[1] See section "Change ANONYMOUS LOGON remote access to Distributed COM setting" for a description of when this is needed

[2] This is needed if the client is in a domain but the server is in a workgroup. Note that hvremote does **NOT** have a capability to set this and it must be done manually from an **UNELEVATED** command line. See part 5 of the blog post series, or run hvremote /show from a domain joined client machine for more information. The syntax is "cmdkey /add:ServerComputerName /user:ServerComputerName\UserName /pass"

Server Usage

Note: "/mode:server" can be omitted if the Hyper-V role is detected as HVRemote will assume you are performing a server operation. The script must be run from an elevated command prompt for all server operations.

The basic server operations are to show the current settings, or to add or remove users or groups from Hyper-V remote access.

To show the current settings: `hvremote [/mode:server] /show`

To show the current settings and   `hvremote [/mode:server] /show`   ↵
verify client connectivity: `/target:ClientComputerName`

To grant a user access: `hvremote [/mode:server] /add:domain\user`

To remove a user access: `hvremote [/mode:server] /remove:domain\user`

If the server is in a workgroup, you can use the alternate syntax for add and remove:

To grant a user access: `hvremote [/mode:server] /add:user`

To remove a user access: `hvremote [/mode:server] /remove:user`

Elevation requirements

All server operations must be run from an elevated command prompt. If you are running as a non-admin or from a "standard" command prompt, you will get the following message:

```
INFO: Computername is ADMINISTRATOR1
INFO: Computer is in workgroup WORKGROUP
INFO: Current user is ADMINISTRATOR1\user
INFO: Assuming /mode:server as the role is installed

*****
***** Must run from an elevated command prompt for all server operations
*****
```

Displaying the current server settings

`hvremote [/mode:server] /show [/target:clientcomputername]`

In /show mode, several sections of output are displayed. It may help to pipe the output to a text file and use notepad or another editor to examine the output.

💡 **Tip**

It is recommended that you use /show and save the output before any changes are made.

Server verification.

Basic verification is that the server is running Hyper-V (by detecting the VMMS service) and that it is not running pre-release software. (Example below if from a Windows Server 2008 R2 RTM build)

```
INFO: Computername is SERVER
INFO: Computer is in workgroup WG
INFO: Current user is SERVER\Administrator
INFO: Assuming /mode:server as the role is installed
INFO: Build 7600.16385.amd64fre.win7_rtm.090713-1255
INFO: Detected Windows 7/Windows Server 2008 R2 OS
```

WMI Security

This section is displayed once for the root\cimv2 namespace, and once for the root\virtualization namespace. If the server is either Windows 8 with the Hyper-V Platform enabled, or Windows Server 2012, in addition, the root\virtualization\v2 namespace is displayed.

The example below is for the root\cimv2 namespace after a local account 'SERVER\John' has been granted access through HVRemote.

```
DACL for WMI Namespace root\cimv2
Required for Hyper-V remote mangement: Allow, EnabAct, RemEnab, InheritAce
HVRemote also sets NoPropInheritAce and ValidInheritFlags
------------------------------------------------------------------------
SERVER\John      (S-1-5-21-2330618109-4272153407-3736384865-1000)
     Allow: EnabAct RemEnab (33)
     Flags: InheritAce NoPropInheritAce ValidInheritFlags  (6)

BUILTIN\Administrators      (S-1-5-32-544)
     Allow: Exec FullWrt PartWrt ProvWrt EnabAct RemEnab RdSec EdSec (393279)
     Flags: InheritAce InheritedAce ValidInheritFlags  (18)

NT AUTHORITY\NETWORK SERVICE      (S-1-5-20)
     Allow: Exec ProvWrt EnabAct (19)
     Flags: InheritAce InheritedAce ValidInheritFlags  (18)

NT AUTHORITY\LOCAL SERVICE      (S-1-5-19)
     Allow: Exec ProvWrt EnabAct (19)
     Flags: InheritAce InheritedAce ValidInheritFlags  (18)

NT AUTHORITY\Authenticated Users      (S-1-5-11)
     Allow: Exec ProvWrt EnabAct (19)
     Flags: InheritAce InheritedAce ValidInheritFlags  (18)
```

Each entry shows an ACE (Access Control Entry) for a user or group. To determine if a user has the minimum required access to the namespace for Hyper-V remote management, you are looking for the settings Allow, EnabAct, RemEnab and InheritAce. Note that HVRemote will automatically set NoPropInhertAce and ValidInheritFlags as in the example below.

```
SERVER\John      (S-1-5-21-2330618109-4272153407-3736384865-1000)
     Allow: EnabAct RemEnab (33)
     Flags: InheritAce NoPropInheritAce ValidInheritFlags  (6)
```

Authorization Manager Policy Store

```
------------------------------------------------------------------------------------
Contents of Authorization Store Policy
------------------------------------------------------------------------------------

Hyper-V Registry configuration:
- Store: msxml://C:\ProgramData\Microsoft\Windows\Hyper-V\InitialStore.xml
- Service Application: Hyper-V services

Application Name: Hyper-V services
Operation Count: 34

    100 - Read Service Configuration
    105 - Reconfigure Service
    200 - Create Virtual Switch
    205 - Delete Virtual Switch
    210 - Create Virtual Switch Port
    215 - Delete Virtual Switch Port
    220 - Connect Virtual Switch Port
    225 - Disconnect Virtual Switch Port
    230 - Create Internal Ethernet Port
    235 - Delete Internal Ethernet Port
    240 - Bind External Ethernet Port
    245 - Unbind External Ethernet Port
    250 - Change VLAN Configuration on Port
    255 - Modify Switch Settings
    260 - Modify Switch Port Settings
    265 - View Switches
    270 - View Switch Ports
    275 - View External Ethernet Ports
    280 - View Internal Ethernet Ports
    285 - View VLAN Settings
    290 - View LAN Endpoints
    295 - View Virtual Switch Management Service
    300 - Create Virtual Machine
    305 - Delete Virtual Machine
    310 - Change Virtual Machine Authorization Scope
    315 - Start Virtual Machine
    320 - Stop Virtual Machine
    325 - Pause and Restart Virtual Machine
    330 - Reconfigure Virtual Machine
    335 - View Virtual Machine Configuration
    340 - Allow Input to Virtual Machine
    345 - Allow Output from Virtual Machine
    350 - Modify Internal Ethernet Port
    355 - Allow Virtual Machine Snapshot

1 role assignment(s) were located

Role Assignment 'Administrator' (Targetted Role Assignment)
    - All Hyper-V operations are selected
    - There are 2 member(s) for this role assignment

    - BUILTIN\Administrators (S-1-5-32-544)
    - SERVER\John (S-1-5-21-2330618109-4272153407-3736384865-1000)
```

Hyper-V includes an authorization store which, but default contains a single role assignment 'Administrator' which has access to all operations. HVRemote manipulates this role assignment when adding or removing users by default.

The screenshot above is from a Windows Server 2008 R2 installation. If using Windows Server 2008, you will see 33 operations instead (no operation 355 – Allow Virtual Machine Snapshot).

Distributed COM Users

```
-----------------------------------------------------------------------
Contents of Group Distributed COM Users
-----------------------------------------------------------------------

There are no members in Distributed COM Users
```

```
-----------------------------------------------------------------------
Contents of Group Distributed COM Users
-----------------------------------------------------------------------

2 member(s) are in Distributed COM Users

   - SERVER\John
   - SERVER\disabled
                ****WARN: This account is disabled
```

Each user who needs remote access must be a member of the Distributed COM Users, or granted explicit permission. HVRemote manipulates the Distributed COM Users group rather than granting explicit permission on a per-user or per-group basis. Note that during this check, each user account is verified to ensure it is not locked out or disabled.

COM Security for Launch and Activation Permissions

```
-----------------------------------------------------------------------
DACL for COM Security Launch and Activation Permissions
-----------------------------------------------------------------------

BUILTIN\Administrators     (S-1-5-32-544)
     Allow: LocalLaunch RemoteLaunch LocalActivation RemoteActivation (31)

\Everyone    (S-1-1-0)
     Allow: LocalLaunch LocalActivation (11)

BUILTIN\Distributed COM Users    (S-1-5-32-562)
     Allow: LocalLaunch RemoteLaunch LocalActivation RemoteActivation (31)

BUILTIN\Performance Log Users    (S-1-5-32-559)
     Allow: LocalLaunch RemoteLaunch LocalActivation RemoteActivation (31)
```

This section should be read in conjunction with the Distributed COM Users section above. Even if a user is not a member of Distributed COM Users, other groups such as "Performance Log Users" and "Administrators" have RemoteLaunch permissions in a default configuration. (This section is mostly for diagnosis information and to help me investigate when you report problems ☺)

Firewall Settings (Hyper-V server rules)

If the Windows Firewall service has been stopped, or the firewall has been disabled, you will get an error near the top of the output similar to the following, and the firewall settings themselves will be skipped.

Windows Server 2008 message:

```
WARN: The Windows firewall is not active in one or more active profiles.
      Not all functionality of HVRemote will be available.
      Use 'netsh firewall set opmode enable' to turn it on!
```

Windows Server 2008 R2 message:

```
WARN: The Windows firewall is not active in one or more active profiles.
      Not all functionality of HVRemote will be available.
      Use 'netsh advfirewall set currentprofile state on' to turn it on!
```

Windows Server 2008 output

```
--------------------------------------------------------------------------
Firewall Settings for Hyper-V
--------------------------------------------------------------------------

Public Firewall Profile is active

    Enabled:  Hyper-V (SPL-TCP-In)
    Enabled:  Hyper-V (RPC)
    Enabled:  Hyper-V (RPC-EPMAP)
    Enabled:  Hyper-V - WMI (Async-In)
    Enabled:  Hyper-V - WMI (TCP-Out)
    Enabled:  Hyper-V - WMI (TCP-In)
    Enabled:  Hyper-V - WMI (DCOM-In)
```

Windows Server 2008 R2 and Windows Server 2012 output

```
--------------------------------------------------------------------------
Firewall Settings for Hyper-V
--------------------------------------------------------------------------

Public Firewall Profile is active

    Enabled:  Hyper-V (REMOTE_DESKTOP_TCP_IN)
    Enabled:  Hyper-V (MIG-TCP-In)
    Enabled:  Hyper-V (RPC)
    Enabled:  Hyper-V (RPC-EPMAP)
    Enabled:  Hyper-V - WMI (Async-In)
    Enabled:  Hyper-V - WMI (TCP-Out)
    Enabled:  Hyper-V - WMI (TCP-In)
    Enabled:  Hyper-V - WMI (DCOM-In)
```

There are a set of seven Windows Firewall rules (eight for Windows Server 2008 R2/Windows Server 2012) required for remote management connectivity. If you are running a third party firewall on the server, you must ensure the appropriate matching rules are configured.

IP Configuration

This section is simply the output of ipconfig /all. The reason I include this is because it's one of those things I always ask for when diagnosing issues.

```
---------------------------------------------------------------------------
IP Configuration
---------------------------------------------------------------------------


Windows IP Configuration

   Host Name . . . . . . . . . . . . : wg
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No
   DNS Suffix Search List. . . . . . :          .com

Ethernet adapter Local Area Connection 3:

   Connection-specific DNS Suffix  . :          .com
   Description . . . . . . . . . . . : Microsoft Virtual Machine Bus Network Ada
pter
   Physical Address. . . . . . . . . : 00-15-5D-C8-41-26
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::dc37:5797:8df0:7b73%16(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.200.57(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : Tuesday, January 06, 2009 7:24:46 PM
   Lease Expires . . . . . . . . . . : Thursday, January 08, 2009 7:24:49 PM
   Default Gateway . . . . . . . . . : 192.168.200.254
   DHCP Server . . . . . . . . . . . : 192.168.200.201
   DNS Servers . . . . . . . . . . . : 192.168.200.202
                                       192.168.200.201
                                       192.168.200.200
   NetBIOS over Tcpip. . . . . . . . : Enabled

Tunnel adapter Local Area Connection* 8:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :          .com
   Description . . . . . . . . . . . : Microsoft ISATAP Adapter
   Physical Address. . . . . . . . . : 00-00-00-00-00-00-00-E0
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
```

Latest version verification

As of version 0.3, HVRemote has a built in capability to determine if there is a later version of HVRemote available. You must have Internet connectivity for this check to be made. You can use the /noversioncheck option to turn off latest version verification. If you have an out-of-date version, a message will be displayed.

```
!!!!!!         There is a newer version of HVRemote available         !!!!!!
---------------------------------------------------------------------------
Latest Version: 0.
Release Date:              , 2008
Location:         http://code.msdn.microsoft.com/HVRemote/url
```

Warnings and Errors summary

This section has been introduced as it has been noticed that it's hard to spot warnings and errors in a relatively verbose output.

```
----------------------------------------------------------------------
2 warning(s) or error(s) were found in the configuration. Review the
detailed output above to determine whether you need to take further action.
Summary is below.

1: Found a disabled user account
2: Found an account with an expired password

----------------------------------------------------------------------
```

Verification tester

One of the big areas of focus and update to HVRemote version 0.7 is the ability to verify connectivity between the server and client (and visa versa). This was significantly improved in release 1.06 and revised in 1.07.

Server-side, it concentrates on network diagnosis. If you do not supply the /target:clientcomputername option to /show, the follow message is displayed:

```
-------------------------------------------------------------------------------
Did you know.... HVRemote can help diagnose common errors?

Instead of running HVRemote /show, run HVRemote /show /target:clientname.
This runs tests against the client to verify potential connectivity issues.

Note that there is documentation on the HVRemote site to assist with the
most commonly asked questions. Please consult that before asking for
assistance.
-------------------------------------------------------------------------------
```

Test 1

This attempts a DNS lookup of the client computer. Below is an example where there is a DNS environment present, the client computer name being 'w7client'.

Note that you can expect this test to fail if you do not have a DNS infrastructure, but you will need to edit the hosts file to enter the correct IP address of the client computer.

```
-------------------------------------------------------------------------------
Testing connectivity to client: w7client (2 tests in total)
-------------------------------------------------------------------------------


Test 1
------

    This test verifies your DNS infrastructure. For Hyper-V remote management,
    SERVER must be able to resolve the IP address of w7client.

    If you do not have a DNS infrastructure, test 1 may legitimately fail.
    However, you will have to edit \windows\system32\drivers\etc\hosts on this
    computer to add an entry for w7client.

    If you have a DNS infrastructure and test 1 fails, this is a strong
    indication that Hyper-V remote management will not work.

        a) Verify that w7client is the correct client name
        b) On SERVER, run ipconfig /flushdns
        c) On w7client, run ipconfig /registerDNS

    If you have a DNS infrastructure and test 1 succeeds, verify the IPv4
    address returned matches the IPv4 address of w7client. This can be
    found by running ipconfig /all on w7client.

    If you find the incorrect IP address is returned, follow steps a) to c)
    described above, plus step d) below.

        d) Check the hosts file on SERVER for incorrect entries.
~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~
Server:  wellington.        .com
Address:  192.168.200.202

Name:     w7client.        .com
Address:  192.168.200.16
```

Test 2

This attempts an IPv4 ping to the client computer. It is not important whether the ping fails or succeeds (it could be blocked by the Windows Firewall). What is important is verifying that the IP address matches the IP address of the client machine

```
Test 2
------

    This test attempts to ping w7client. Like test 1, the aim is to
    verify name resolution. Examine the output to ensure the IP address is
    that of w7client.

    If an incorrect IP address is shown, follow resolution steps a)
    through d) listed above.

    A ping timeout is OK. It is likely the firewall on the client machine
    is blocking inbound pings. No action need be taken.

    If the ping cannot locate w7client, you may need to add an entry
    in \windows\system32\drivers\etc (described above). If you have a DNS
    infrastructure, follow steps a) through c).

    This test may take a second or two...
~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~

Pinging w7client.      ...com [192.168.200.16] with 32 bytes of data:
Request timed out.

Ping statistics for 192.168.200.16:
    Packets: Sent = 1, Received = 0, Lost = 1 (100% loss),
```

Test 3

This is the same as test 2, but using IPv6

Test 4

This attempts an IPv4 traceroute to the client computer. This is more for my own diagnostics than anything else, as I can see pretty quickly if you email me and you are attempting to expose and manager your server directly on the Internet, for example. (Which won't work, by the way....)

```
Test 4
------

    This test attempts to tracert hershall82. It's aim is to
    determine how many routers are being traversed which may potentially be
    blocking traffic, and may need to be investigated.

    This test may take a second or two...
~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~

Tracing route to he              .com [192.168.200.17]
over a maximum of 30 hops:

  1    <1 ms    <1 ms    <1 ms   he              .com [192.168.200.17]
Trace complete.

~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~_~
```

Test 5

This is the same as test 4, but using IPv6

Granting a user permission to remotely manage Hyper-V

```
hvremote [/mode:server] /add:domain\user          (Domain or workgroup)
hvremote [/mode:server] /add:user                 (Workgroup only)
```

Note that instead of user, a group name can be specified (both Local and Domain based groups). If the group name contains spaces, use double-quotes around the parameter such as:

```
hvremote /mode:server /add:"domain\group name with spaces"
```

In /add mode, several sections of output are displayed. Note that if a user already has permission to an item, a warning message will be output, but the script will continue to configure the other settings.

```
INFO: Computername is SERVER
INFO: Computer is in workgroup WG
INFO: Current user is SERVER\Administrator
INFO: Assuming /mode:server as the role is installed
INFO: Build 7600.16385.amd64fre.win7_rtm.090713-1255
INFO: Detected Windows 7/Windows Server 2008 R2 OS

Adding user or group to root\cimv2 namespace...
INFO: DACL with user or group ACE built
OK: Security update applied to root\cimv2 namespace
INFO: root\cimv2 namespace permissions updated OK

Adding user or group to root\virtualization namespace...
INFO: DACL with user or group ACE built
OK: Security update applied to root\virtualization namespace
INFO: root\virtualization namespace permissions updated OK

Adding user to Distributed COM Users...
INFO:  john added to Distributed COM Users OK

Adding john to AZMan role Administrator

NOTE: If this is the first time you have used HVRemote
to add a user for remote configuration, it may be necessary
to restart this machine. See documentation for further
information.
```

If you are running this command on Windows Server 2012 (or Windows 8 with the Hyper-V role enabled) or later operating systems, HVRemote uses the simple authorization feature introduced to Hyper-V, which essentially defines a group which has permission for Hyper-V administrative actions. Instead of updating WMI namespace permissions, Distributed COM Users and AZMan, HVRemote will add the user to the Hyper-V Administrators group. Note that this can be over-ridden using an additional parameter whereby the individual permissions are added instead: `hvremote [/mode:server] /add:domain\user |/add:user /explicit`

```
       Computername is cromwell
INFO: Computer is in domain        .com
INFO: OS is 6.2.9200 64-bit Microsoft Windows Server 2012 Datacenter
INFO: Assuming /mode:server as the role is installed

Adding user to Hyper-V Administrators...
INFO:          john added to Hyper-V Administrators OK
```

Note

> You may need to reboot the server if this is the first time a user has been added, especially in the case where connections have already been attempted by a client. After client configuration, if the client cannot connect, it is strongly recommended that you reboot both the server AND the client as the first step in troubleshooting to release all pre-existing connections.
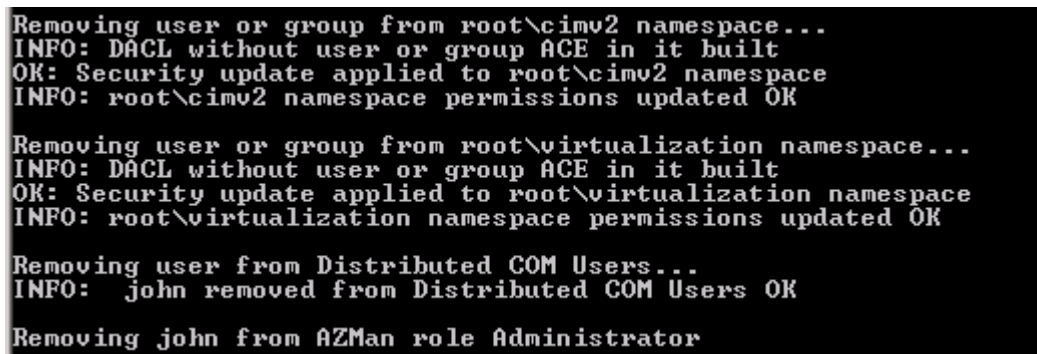
Removing user permissions for remotely manage Hyper-V

```
hvremote [/mode:server] /remove:domain\user          (Domain or workgroup)
hvremote [/mode:server] /remove:user                  (Workgroup only)
```

Note that instead of user, a group name can be specified (both Local and Domain based groups). If the group name contains spaces, use double-quotes around the parameter such as:

```
hvremote [/mode:server] /remove:"domain\group name with spaces"
```

In /remove mode, several sections of output are displayed. Note that if a user does not previously have permission to an item, a warning message will be output, but the script will continue to configure the other settings.

```
Removing user or group from root\cimv2 namespace...
INFO: DACL without user or group ACE in it built
OK: Security update applied to root\cimv2 namespace
INFO: root\cimv2 namespace permissions updated OK

Removing user or group from root\virtualization namespace...
INFO: DACL without user or group ACE in it built
OK: Security update applied to root\virtualization namespace
INFO: root\virtualization namespace permissions updated OK

Removing user from Distributed COM Users...
INFO:  john removed from Distributed COM Users OK

Removing john from AZMan role Administrator
```

If you are running this command on Windows Server 2012 (or Windows 8 with the Hyper-V role enabled) or later operating systems, HVRemote uses the simple authorization feature introduced to Hyper-V, which essentially defines a group which has permission for Hyper-V administrative actions. Instead of updating WMI namespace permissions, Distributed COM Users and AZMan, HVRemote will remove the user from the Hyper-V Administrators group. Note that this can be over-ridden using an additional parameter whereby the individual permissions are removed instead: `hvremote [/mode:server] /remove:domain\user |/remove:user /explicit`.

💡 **Tip**

> One scenario where I can see this being particularly useful is in the case of in-place upgrade from Windows Server 2008 R2 to Windows Server 2012. If explicit permissions were previous granted, they would remain in place after upgrade. However "remove" would attempt to remove the user from the Hyper-V Administrators group, not explicitly. Hence the user might still have permission.

Advanced parameters

```
hvremote /mode:server Operation [Options]
```

HVRemote supports a number of advanced operations and options. Generally, the options are to limit what settings are changed when adding and removing users, or showing the current settings. You should be very careful using these options, and only do-so if you know exactly what you are doing, and to what end.

By default, items 1 through 5 from Referring to the numbering in the "Hyper-V Remote Management Configuration Steps" above, Items 1 through 5 are set by HVRemote. Item 6 is not set unless explicit requested as a separate operation.

Do not update the cimv2 namespace	`/ns:virtualization`	(1)
Do not update the virtualization namespace	`/ns:cimv2`	(2)
Do not update either namespace	`/ns:none`	(1) and (2)
Do not update the authorization store	`/NoAZMan`	(3)
Alternate Role Assignment in AZMan	`/RoleAssign:<assignment>`	(3)
Do not update Windows Firewall for Hyper-V	`/FirewallHyperVMgmt:None`	(4)
Disable the Windows Firewall for Hyper-V	`/FirewallHyperVMgmt:Disable`	(4)
Do not add user to Distributed COM Users	`/NoDCOM`	(5)

Example (Windows Server 2008 R2 and earlier only):

```
Hvremote /mode:server /add:domain\user /ns:cimv2
```
- Grants remote access to domain\user *except* in the virtualization namespace
- *Does* add user to security permissions to the root\cimv2 namespace (1)
- ***Does not*** user to security permissions to the root\virtualization namespace (2)
- *Does* add user administrator access to AZMan (3)
- *Does* open Windows Firewall for Hyper-V rule group (4)
- *Does* add user to the Distributed COM Users Group (6)

*This will **NOT** be a total Hyper-V remote management configuration as the user will not be granted security permissions to the root\virtualization namespace.*

💡 **Tip**

The above example will **NOT** work on Windows 8 Client Hyper-V or Windows Server 2012 with the Hyper-V role installed. This is due to needing the /explicit parameter.

Additional parameters introduced in HVRemote 1.06

Use down-level semantics on /add: & /remove: `/explicit`   (Requires Windows 8/2012)

`/explicit`   (Requires Windows 8/2012)

Client Usage

Note: "/mode:client" can be omitted if the Hyper-V role is note detected as HVRemote will assume you are performing a client operation. To perform any changes to client configuration, the script must be run from an elevated command prompt. Administrators can use the /show option from a non-elevated command prompt.

Elevation requirements

All client operations except /show must be run from an elevated command prompt. If you are running as a non-admin or from a "standard" command prompt, you will get the following message if elevation is required:

```
INFO: Computername is W7CLIENT
INFO: Computer is in workgroup WG
INFO: Current user is W7CLIENT\john
INFO: Assuming /mode:client as the Hyper-V role is not installed

*****
***** All client operations which change the configuration must be run
***** from an elevated command prompt.
*****
```

Display the current settings

```
hvremote [/mode:client] /show [/target:ServerComputerName]
```

In /show mode, several sections of output are displayed. It may help to pipe the output to a text file and use notepad or another editor to examine the output. It is strongly recommended you use the /target option for configuration verification.

💡 **Tip**

It is recommended that you use /show and save the output before any changes are made.

Basic information.

Basic information shows the computer name, the domain membership and the mode if it was determined that the machine is not running the Hyper-V role and client mode has been assumed. At this stage, for Windows Vista, KB952627 is verified as is the SKU of Windows Vista being used (not all SKUs support remote management). For Windows 7, it is verified that RSAT (Remote Server Administrator Tools) are installed, and that the Hyper-V Tools feature has been enabled.

```
INFO: Computername is CLIENT
INFO: Computer is in workgroup WG
INFO: Current user is CLIENT\john
INFO: Assuming /mode:client as the Hyper-V role is not installed
INFO: Build 6002.18005.x86fre.lh_sp2rtm.090410-1830
INFO: This machine has Hyper-V Management Client installed (KB952627)
```

```
INFO: Computername is W7CLIENT
INFO: Computer is in workgroup WG
INFO: Current user is W7CLIENT\john
INFO: Assuming /mode:client as the Hyper-V role is not installed
INFO: Build 7600.16385.x86fre.win7_rtm.090713-1255
INFO: Detected Windows 7/Windows Server 2008 R2 OS
INFO: Remote Server Administration Tools are installed
INFO: Hyper-V Tools Windows feature is enabled
```

COM Security for Access Permissions

```
DACL for COM Security Access Permissions
-----------------------------------------------------------------------

\Everyone      (S-1-1-0)
      Allow: LocalLaunch RemoteLaunch (7)

NT AUTHORITY\ANONYMOUS LOGON      (S-1-5-7)
      Allow: LocalLaunch RemoteLaunch (7)

BUILTIN\Distributed COM Users      (S-1-5-32-562)
      Allow: LocalLaunch RemoteLaunch (7)

BUILTIN\Performance Log Users      (S-1-5-32-559)
      Allow: LocalLaunch RemoteLaunch (7)
```

This section should be read in conjunction with the ANONYMOUS LOGON remote access to Distributed COM section below. (This section is almost entirely for diagnosis information and to help me investigate when you report problems ☺)

ANONYMOUS LOGON remote access to Distributed COM
This section shows the current setting for ANONYMOUS LOGON. Different messages will be displayed depending on whether the client is domain or workgroup joined, and whether the setting is enabled or disabled.

If the client is workgroup joined and anonymous logon has access:

```
ANONYMOUS LOGON Machine DCOM Access
-----------------------------------------------------------------------

ANONYMOUS LOGON has remote access
```

If the client is workgroup joined and anonymous logon does not have access:

```
ANONYMOUS LOGON Machine DCOM Access
-----------------------------------------------------------------------

WARN: ANONYMOUS LOGON does not have remote access

   This setting is required when the client is in a workgroup, or the
   server is in an untrusted domain from the client.

   Use hvremote /mode:client /anondcom:grant to turn on
```

If the client is domain joined and anonymous logon has access

```
ANONYMOUS LOGON Machine DCOM Access
--------------------------------------------------------------------------------

WARN: ANONYMOUS LOGON does have remote access

   This setting should only be enabled if required as security on this
   machine has been lowered. It is needed if you need to manage Hyper-V
   on a remote server which is either in an untrusted domain from this
   machine, or both machines are in a workgroup.

   Use hvremote /mode:client /anondcom:revoke to turn off
```

If the client is domain joined and anonymous logon does not have access:

```
--------------------------------------------------------------------------------
ANONYMOUS LOGON Machine DCOM Access
--------------------------------------------------------------------------------

ANONYMOUS LOGON does not have remote access

   This setting should only be enabled if required as security on this
   machine will be lowered. This computer is in a domain. It is not
   required if the server(s) being managed are in the same or trusted
   domains.

   Use hvremote /mode:client /anondcom:enable to turn on
```

Firewall settings for Hyper-V Management Clients

If the Windows Firewall service has been stopped, or the firewall has been disabled, you will get an error near the top of the output, and the firewall settings themselves will be skipped.

For Windows Server 2008:

```
WARN: The Windows firewall is not active in one or more active profiles.
      Not all functionality of HVRemote will be available.
      Use 'netsh firewall set opmode enable' to turn it on!
```

For Windows Server 2008 R2 and later:

```
WARN: The Windows firewall is not active in one or more active profiles.
      Not all functionality of HVRemote will be available.
      Use 'netsh advfirewall set currentprofile state on' to turn it on!
```

There are four rules (all in one rule group) which must be enabled for remote management to operate

```
Firewall Settings for Hyper-V Management Clients
------------------------------------------------------------------------------

Public Firewall Profile is active

    Enabled:   Hyper-V Management Clients - WMI (Async-In)
    Enabled:   Hyper-V Management Clients - WMI (TCP-Out)
    Enabled:   Hyper-V Management Clients - WMI (TCP-In)
    Enabled:   Hyper-V Management Clients - WMI (DCOM-In)
```

IP Configuration

This section is simply the output of ipconfig /all. The reason I include this is because it's one of those things I always ask for when diagnosing issues.

```
------------------------------------------------------------------------------------
IP Configuration
------------------------------------------------------------------------------------


Windows IP Configuration

   Host Name . . . . . . . . . . . . : client
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No
   DNS Suffix Search List. . . . . . : .        com

Ethernet adapter Local Area Connection 2:

   Connection-specific DNS Suffix  . : `.         com
   Description . . . . . . . . . . . : Microsoft Virtual Machine Bus Network Ada
pter
   Physical Address. . . . . . . . . : 00-15-5D-C8-41-25
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::4921:cdb6:ae1e:a14c%11(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.200.55(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : Tuesday, January 06, 2009 6:25:38 PM
   Lease Expires . . . . . . . . . . : Thursday, January 08, 2009 6:25:38 PM
   Default Gateway . . . . . . . . . : 192.168.200.254
   DHCP Server . . . . . . . . . . . : 192.168.200.201
   DNS Servers . . . . . . . . . . . : 192.168.200.202
                                       192.168.200.201
                                       192.168.200.200
   NetBIOS over Tcpip. . . . . . . . : Enabled

Tunnel adapter Local Area Connection* 6:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :         .com
   Description . . . . . . . . . . . : isatap.
   Physical Address. . . . . . . . . : 00-00-00-00-00-00-00-E0
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
```

Stored Credential summary

This section is simply the output of cmdkey /list. The reason I include this is because it's one of those things I always ask for when diagnosing issues.

```
------------------------------------------------------------------------------------
Stored Credentials
------------------------------------------------------------------------------------


Currently stored credentials:

* NONE *
```

Warnings and Errors summary

This section has been introduced as it has been noticed that it's hard to spot warnings and errors in a relatively verbose output.

```
----------------------------------------------------------------
1 warning or error was found in the configuration. Review the
detailed output above to determine whether you need to take further action.
Summary is below.

1: Anonymous Logon does not have remote access (may be ok)

----------------------------------------------------------------
```

Change ANONYMOUS LOGON remote access to Distributed COM setting

```
hvremote [/mode:client] /AnonDCOM:grant
hvremote [/mode:client /AnonDCOM:revoke
```

```
INFO: Computername is VISTA
INFO: Computer is in workgroup WORKGROUP
INFO: Assuming /mode:client as the Hyper-V role is not installed

INFO: Obtaining current Machine Access Restriction...
INFO: Examining security descriptor
INFO Granted Remote DCOM Access to Anonymous Logon
WARN: See documentation for security implications
```

Note that granting ANONYMOUS LOGON remote access to Distributed DCOM lowers the security settings of the client machine. It should only be enabled if necessary. In particular, it is **NOT** required when both the server and client are domain joined, and they are either in the same or trusted domains.

This setting will be needed in untrusted domains, or workgroup environments. The reason is that Hyper-V Manager gets asynchronous callbacks from the server for certain WMI events. In those configurations, the server does not have authentication credentials to contact the client.

Change Windows Firewall settings for Hyper-V Management Clients

If the Windows Firewall service has been stopped, or the firewall has been disabled, you will get an error near the top of the output similar to the following, and this function will not be available.

```
WARN: The Windows firewall is not active in one or more active profiles.
      Not all functionality of HVRemote will be available.
      Use 'netsh firewall set opmode enable' to turn it on!
```

```
hvremote [/mode:client] /FirewallHyperVClient:Enable
hvremote [/mode:client] /FirewallHyperVClient:Disable
```

These four firewall rules must be enabled for remote management to operate correctly.

```
INFO: Computername is VISTA
INFO: Computer is in workgroup WORKGROUP
INFO: Assuming /mode:client as the Hyper-V role is not installed
INFO: Enabled firewall rule Hyper-V Management Clients - WMI (Async-In)
INFO: Enabled firewall rule Hyper-V Management Clients - WMI (TCP-Out)
INFO: Enabled firewall rule Hyper-V Management Clients - WMI (TCP-In)
INFO: Enabled firewall rule Hyper-V Management Clients - WMI (DCOM-In)
INFO: 4 firewall rule(s) updated
```

📝 **Note**

> After client configuration, you may need to reboot the client if it has been reconfigured and you had
> pre-existing connection attempts to the server. After client configuration, if the client cannot
> connect, it is strongly recommended that you reboot both the client AND the server as the first step
> in troubleshooting to release all pre-existing connections.

Verification tester

One of the big areas of focus and update to HVRemote version 0.7 is the ability to verify connectivity
between the server and client (and visa versa). Client-side, it concentrates on remote server
identification, verification of DNS and name resolution, plus connectivity tests to WMI namespaces. If
you do not supply the /target:servercomputername option to /show, the follow message is displayed:

```
--------------------------------------------------------------------------
Did you know.... HVRemote can help diagnose common errors?

Instead of running HVRemote /show, run HVRemote /show /target:servername.
This runs a series of tests against the server to verify connectivity.

Note that there is documentation on the HVRemote site to assist with the
most commonly asked questions. Please consult that before asking for
assistance.
--------------------------------------------------------------------------
```

Note that the actual tests which get run depend on the actual configuration and results of previous
tests. Hence the numbering below may not directly correlate to the output you see.

Test 1 (Optional)

This test enumerates the network connections which have IP addresses on the remote server using
WMI. It is useful to compare against the IP addresses in later tests to see if there are potential DNS
issues. Note that if the user does not have permission to the server, this test will not output anything.

```
1: - Remote Server Network Configuration
      PASS - Found one or more network adapters

      Network adapter 1 of 1
         - Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client) #49
         - Host Name:CROMWELL
         - IP Addresses: 192.168.200.200 fe80::4159:cec5:cafe:610e
         - IP Subnets: 255.255.255.0 64
```

Test 2 (Optional)

This test gets general information about the remote server using WMI. Note that if the user does not have permission to the server, this test will not output anything.

```
2: -  Remote server general information
      PASS - Queries succeeded

      -  Name: cromwell
      -  Domain:        com
      -  OS: 6.2.9200 64-bit Microsoft Windows Server 2012 Datacenter
      -  OS Type: Server
```

Test 3

This test uses WMI to ping and resolve the name of the remote server. Note that if the protocol address resolved is not a name, it merely indicates additional tests will be performed, not that there is a sign of an issue.

```
3: -  Ping and resolve name of remote server
      PASS - Server found
           -  Protocol Address:              192.168.200.200
           -  Protocol Address resolved:     cromwell.        .com
```

Test 4 (Optional)

This attempts an IPv4 ping to the server computer. It is not important whether the ping fails or succeeds (it could be blocked by the Windows Firewall). What is important is verifying that the IP address (highlighted) matches the IP address of the server machine.

```
2: -  ping attempt (ping -4 -n -1 server)

      Note the ping may timeout - that is OK. However, if you get an
      error that server could not be found, you need to fix DNS
      or add an entry to the hosts file. Test 3 will fail and provide more
      guidance.

      This may take a second or two...
~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~

Pinging server.      .com [192.168.200.14] with 32 bytes of data:
Request timed out.

Ping statistics for 192.168.200.14:
    Packets: Sent = 1, Received = 0, Lost = 1 (100% loss),
~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~
```

Test 5 (Optional)

This is the same as test 4, but using IPv6.

Test 6

This verifies that a connection can be established to the root\cimv2 namespace on the server. If it fails, as in the following example, it provides information on how to correct this problem. This test must succeed for Hyper-V Manager to be able to connect to the server.

```
3: - Connect to root\cimv2 WMI namespace
***** Failed to connect to root\cimv2
***** Error:       -2147024891 Access is denied.
***** Namespace: root\cimv2
      FAIL - Was unable to connect. Diagnosis steps:

        - Have you run hvremote /add:user or hvremote /add:domain\user
          on server to grant access?

        - Are you sure the server name 'server' is correct?

        - Did you use cmdkey if needed? More information higher up.

        - Did you restart server after running hvremote /add for
          the very first time? (Subsequent adds, no restart needed.)

        - Is DNS operating correctly and was server found?
          Look at the output of tests 1 and 2 above to verify that the
          IPv4 address matches the output of 'ipconfig /all' when run on
          server. If you do not have a DNS infrastructure,
          edit \windows\system32\drivers\etc on W7CLIENT
          to add an entry for server.
```

```
4: - Connect to root\cimv2 WMI namespace
      PASS - Connection established
```

Test 7

This verifies that a connection can be established to the root\virtualization namespace on the server. If it fails, as in the following example, it provides information on how to correct this problem. This test must succeed for Hyper-V Manager to be able to connect to the server.

```
4: - Connect to root\virtualization WMI namespace
***** Failed to connect to root\virtualization
***** Error:     -2147217405 Access denied
***** Namespace: root\virtualization
     FAIL - Connection attempt failed

   - Have you run hvremote /add:user or hvremote /add:domain\user
     on the server to grant access?

   - Are you sure the server name has been entered correctly?

   - Are you sure the server is running Hyper-V?
```

```
4: - Connect to root\virtualization WMI namespace
     PASS - Connection established
```

Test 8 (If target is Windows 8 or Windows Server 2012)

This verifies that a connection can be established to the root\virtualization\v2 namespace on the server. If it fails, as in the following example, it provides information on how to correct this problem. This test must succeed for Hyper-V Manager to be able to connect to the server.

```
6: - Connect to root\virtualization\v2 WMI namespace
     PASS - Connection established
```

Test 9

This performs a simple WMI query against the root\cimv2 namespace. (Note that I have not yet come across an instance where this test fails if the test to connect to the namespace succeeds).

```
5: - Simple query to root\cimv2 WMI namespace
     PASS - Simple query succeeded
```

 Test 10

This performs a simple WMI query against the root\virtualization namespace. (Note that I have not yet come across an instance where this test fails if the test to connect to the namespace succeeds). The output reports the number of computer systems found. You should always see at least 1 referring to the parent partition.

```
6: - Simple query to root\virtualization WMI namespace
     PASS - Simple query succeeded
        - 1 computer system(s) located
```

Test 12 (If target is Windows 8 or Windows Server 2012)

This performs a simple WMI query against the root\virtualization\v2 namespace. (Note that I have not yet come across an instance where this test fails if the test to connect to the namespace succeeds). The output reports the number of computer systems found. You should always see at least 1 referring to the parent partition.

```
9: - Simple query to root\virtualization\v2 WMI namespace
      PASS - Simple query succeeded
            - 15 computer system(s) located
```

Test 13

This is the most critical of all the tests to succeed. It attempts to perform an asynchronous event notification query to the server, and has numerous reasons why it may fail.

If the client machine is workgroup joined, and anonymous logon does not have remote access:

```
7: - Async notification query to root\virtualization WMI namespace
      FAIL - Notification query failed Access is denied.

This machine is in a workgroup but Anonymous Logon does not have
DCOM access to this machine which is required.

  Run 'hvremote.wsf /mode:client /anondcom:grant' and retry.
```

Alternately:

```
7: - Async notification query to root\virtualization WMI namespace
      FAIL - Notification query failed The RPC server is unavailable.

The most likely cause of this failure is that you have not restarted the
server after having added a user account for the first time. Either restart
the server, or restart the Windows Management Instrumentation service
and all dependent services on the server before retrying.

Alternately, there is a DNS issue and the server cannot locate this
machine. You should check this by performing a ping test from the
server to this machine verifying that the IP address the server
is trying to reach matches the IPv4 address shown in the output above.
Note that it does not matter if the ping succeeds or fails, just that
the IP address is correct.

  Run on server: ping -4 W7CLIENT

Note that if you do not have DNS in your infrastructure, you can edit
the \windows\system32\drivers\etc\hosts file on the server to add an
entry for W7CLIENT

If you do have DNS in your infrastructure, you may want to try flushing
the DNS cache on the server, and re-registering against DNS on the client

  Run on server: ipconfig /flushdns
  Run on W7CLIENT: ipconfig /registerdns

If you are connected over a VPN, see http://tinyurl.com/o4lsbw for
information about another likely cause.
```

In addition, if the client computer is domain joined, you will get this further advice.

```
If the server is in an untrusted domain to this client, you need to
enable anonymous logon access to DCOM on this machine:

  Run 'hvremote.wsf /mode:client /anondcom:grant' and retry.

If this machine has IPSec policy enforced on it, and the server is
in a workgroup, inbound connections to the client may be blocked
by your administrator. You may be able to temporarily work around
this by running net stop bfe on this machine, but you may lose access
to some network services while that service is stopped.
```

Test 14 (If server is Windows 8 Client Hyper-V or Windows Server 2012)

This repeats the above test but to the root\virtualization\v2 namespace

Use over Direct Access

Version 1.06 introduces the ability on the client to set firewall rules in a mode to enable Hyper-V Manager to connect to a computer available via Direct Access technology. The syntax is hvremote /da:enable or hvremote /da:disable.

```
INFO: Computername is hershal182
INFO: Computer is in domain        com
INFO: OS is 6.2.9200 64-bit Microsoft Windows 8 Pro
INFO: Assuming /mode:client as the Hyper-V role is not installed
INFO: Hyper-V Tools are enabled
INFO: Enabled edge traversal for @%ProgramFiles%\Hyper-V\SnapInAbout.dll,-218
INFO: Enabled edge traversal for @%ProgramFiles%\Hyper-V\SnapInAbout.dll,-214
INFO: Enabled edge traversal for @%ProgramFiles%\Hyper-V\SnapInAbout.dll,-212
INFO: 3 firewall rule(s) updated
```

Tracing

Version 0.7 of HVRemote introduces the ability to turn client tracing on or off. You should only turn tracing on as a diagnostic tool. If tracing is left on, HVRemote will give a warning to indicate this:

```
INFO: Computername is W7CLIENT
INFO: Computer is in workgroup WG
INFO: Current user is W7CLIENT\john
INFO: Assuming /mode:client as the Hyper-V role is not installed
INFO: Build 7600.16385.x86fre.win7_rtm.090713-1255
INFO: Detected Windows 7/Windows Server 2008 R2 OS
INFO: Remote Server Administration Tools are installed
INFO: Hyper-V Tools Windows feature is enabled
WARN: UI tracing is turned on. Use 'hvremote /trace:off' to turn off
```

To change the tracing setting:

```
hvremote [/mode:client] /trace:on
hvremote [/mode:client] /trace:off
```

When you turn tracing on, HVRemote provides information about where the log files are located. Note that changes to the tracing setting only take effect the next time the Hyper-V Management tools are started.

```
INFO: Computername is W7CLIENT
INFO: Computer is in workgroup WG
INFO: Current user is W7CLIENT\john
INFO: Assuming /mode:client as the Hyper-V role is not installed
INFO: Build 7600.16385.x86fre.win7_rtm.090713-1255
INFO: Detected Windows 7/Windows Server 2008 R2 OS
INFO: Remote Server Administration Tools are installed
INFO: Hyper-V Tools Windows feature is enabled
INFO: Removed old trace file
INFO: UI tracing has been turned on.
INFO: Log files are written to '%temp%\VMBrowser_Trace_YYYYMMDDHHMMSS.log'.
WARN: You must restart Hyper-V manager for the change to take effect.
INFO: Are running the latest version
```

Additional Options

/debug

HVRemote supports a /debug option which is especially useful to me if you are reporting a bug or issue (please use the /verbose option and attach all output). It can be combined with any client or server operation.

```
/debug:standard
/debug:verbose
```

/noversioncheck

As of version 0.3 of HVRemote, HVRemote checks to see if you are running the latest version. If you are on a network which has no Internet connectivity, or you do not wish to perform this option, add the following option to the command line. It can be combined with any client or server operation.

```
/noversioncheck
```

Troubleshooting

This is a quick summary of the most common issues that have been reported is remote management does not appear to work after running HVRemote.

1. "Access Denied" when running HVRemote. This is a Windows security mechanism. On the machine where you downloaded HVRemote, in Windows Explorer, right-click on the file and select properties. On the general tab at the bottom of the page, there will be a message saying "Security: This file came from another computer and might be blocked to help protect this computer". To the right of that is an Unblock button. You need to click that to allow HVRemote to work. To the best of my knowledge, you hit this when using Firefox to download HVRemote, but not when using Internet Explorer.
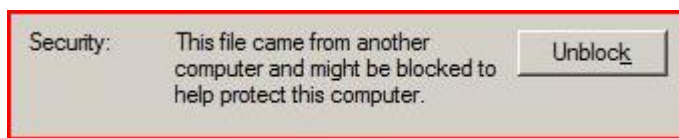
2. DNS. This is the number one reason why remote management fails. It is vitally important that the client can locate the server by name, **and** that the server can locate the client by name. Try doing an "nsLookup <othermachinename>" on each machine or "ping <othermachinename> -4". It should return the IP Address of the other machine as seen when running "ipconfig". If it doesn't find the correct IP address, or doesn't find the other machine at all, fix DNS, or consider editing /windows/system32/drivers/etc/hosts to hard-code an entry for the other machine as needed. But if editing the hosts file, be wary of possible changes should you also be using DHCP in your environment.

3. Depending on whether pre-existing connections are open before configuration was made, it may be that you need to reboot both the server and client. Always try this, especially after the first time you run the /add: command on the server or re-configure the client settings.

4. Client does not receive event notifications. For example, at the end of the new virtual machine wizard, the new VM is not listed unless you hit refresh in Hyper-V Manager. This is usually because you haven't turned on `hvremote /mode:client /AnonDCOM:grant` on the client. Note the security implications above, and whether the domain/workgroup scenario you are in requires this configuration. Note also that if the server is Windows Server 2008 and is domain joined, and the client is workgroup, you will see this regardless of the client setting. This is a bug we are working on resolving in Windows Server 2008 R2, and possibly in SP2.

5. If you are trying to connect to a workgroup server from a client machine which has IPSec policy applied, you cannot connect to the server. It could be IPSec policy on the client blocking inbound connections (the server calls back to the client). Try "net stop bfe" on the client from an

elevated command prompt. Work with your network administrator to determine if there are exception IP address ranges, and what the implications of stopping this service are.

6. Remote management works on a wired connection, but not over a VPN. See 1 above and http://blogs.technet.com/jhoward/archive/2008/08/07/hyper-v-why-does-hyper-v-manager-not-always-work-over-vpn-connection-access-denied-or-rpc-server-unavailable-errors.aspx

7. Remote connectivity works, but at the end of the new virtual machine wizard, or when using the new virtual hard disk wizard, you get a failure about permission denied "The system failed to create <path>.vhd with error 'General access denied error. (0x80070005)". If you are a standard user, not an administrator on the server, you will not have permissions to create VHDs in all directories. You should logon to the server as an administrator and create an appropriate directory for the user to create VHDs in.

8. Domain client to workgroup server: You must run the cmdkey operation to specify credentials as an additional step. See earlier in this document for more information.

9. Other firewall software is installed on either the client or the server, or a firewall is present between the client and the server. If you have followed all other troubleshooting steps, try disabling software firewalls to determine if that is the cause.

Future Enhancements

While relatively stable and in maintenance mode rather than active development, HVRemote remains a work in progress, now on the 11th public release. It performs most of the major needs for Hyper-V remote management configuration though ☺

This section is a summary of things which I believe could be useful, are already in the pipeline for a future version, or are areas where there is still work for improvement:

- Detection of IPSec policy enforced. This is as inbound connections may be blocked if the client and server are not in the same domain.
- Have a backup and restore function
- When adding an ACE to a DACL, no check is made for a Deny ACE in place
- Read-only mode for VMM users