



# Performing a SQL Server Health Check

SQLSaturday #523 – Iowa City

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# About Me

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## Andy Galbraith

[@DBA\\_Any](#)

[nebraskasql.blogspot.com](#)

- ❑ SQL Server DBA and Consultant
- ❑ 16+ years of experience in SQL Server, clustering, mirroring, performance tuning



# About Ntirety



- **Remote Database Administration as a Service**
  - Services that help you manage your data infrastructure.
- **Consulting Services**
  - Projects spanning all things data and cloud from our colleagues at HOSTING Advanced Solutions – infrastructure through migration through performance through analytics.
- **DBA OnDemand**
  - The flexible approach to Database Administration and Projects. Support when you need it, the way you need it.
- **Application and Database Performance as a Service**
  - Advanced Performance Management tools and the expertise to utilize them in a Service to analyze, troubleshoot & remediate performance issues.
- **Cloud Services**
  - Services that help you manage some or all of your data footprint in the Cloud.

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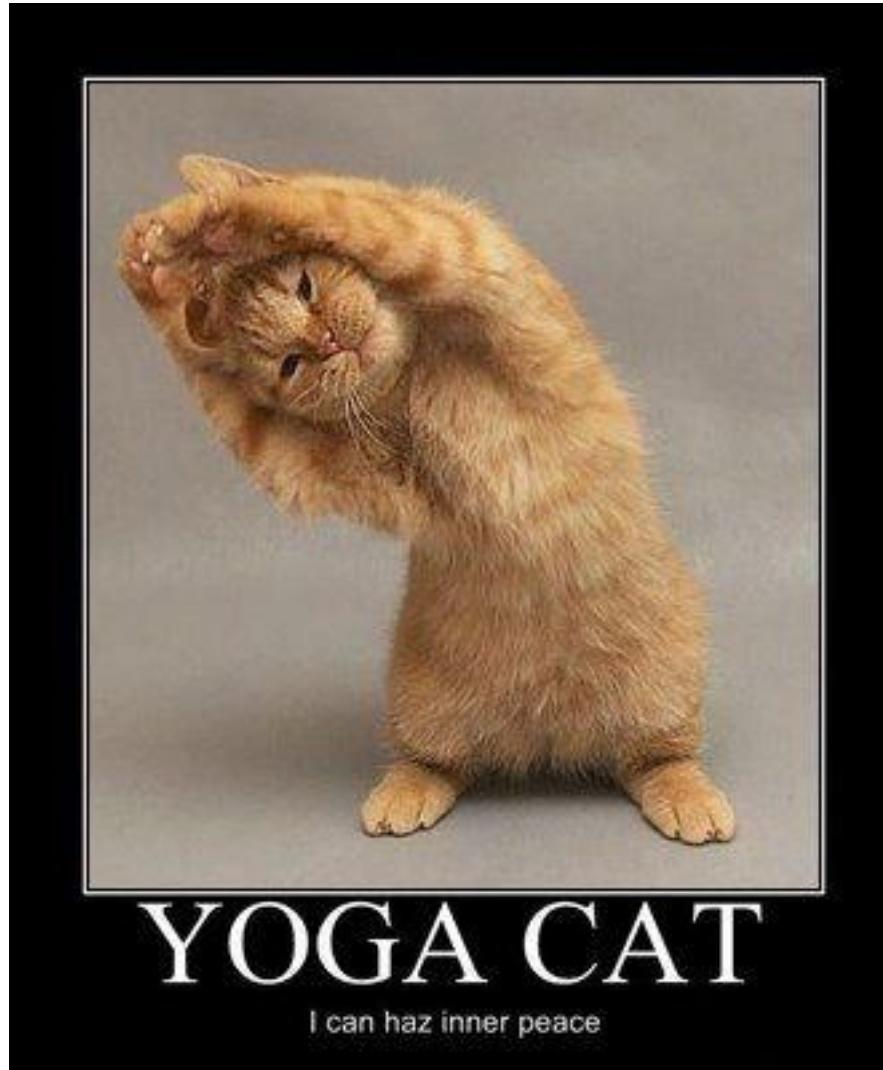


PLURALSIGHT



# Is your SQL Server healthy? How do you know?

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# SQL Server Health Check

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- Proactive
- As Comprehensive As Possible
  - Windows
  - SQL Server
  - VMware (if applicable)
  - Storage (if possible)
  - Network (if possible)
- Recurring

# What do I need to check?

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<http://media-cache-cd0.pinimg.com/736x/d9/0e/66/d90e66b80a213a616959310e6f034025.jpg>

# Windows/Infrastructure

Perfmon Collector

CPU Count

Disk Latency

RAM

Windows Service Pack

Drive Layout

NUMA

Windows Power Plan

Disk Fragmentation

Antivirus + Exclusions

Windows Version Drive Offsets

# SQL Server

CheckDB Recovery Model XEvents  
DB File Layout & Options SQL Version  
Max Server Memory Index Maint  
Backups LPIM Statistics Maint  
SQL Service Pack MAXDOP Autoshrink  
msdb cleanup Waits Checksums  
Roles/Security CTOP DB Mail  
Unneeded Indexes Missing Indexes  
Buffer Cache Hit Ratio Alerts  
Instant File Init Cycle SQL Log

# How Do I Do All of That?!?!

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[http://25.media.tumblr.com/08d6cc39285af2f0f8b608c5fb90373/tumblr\\_mh6t6pkzCkIrrzpIIoI\\_500.jpg](http://25.media.tumblr.com/08d6cc39285af2f0f8b608c5fb90373/tumblr_mh6t6pkzCkIrrzpIIoI_500.jpg)

# Tools

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- Diagnostic DMV Scripts

- Glenn Berry



@GlennAlanBerry

- <http://www.sqlskills.com/blogs/glenn/category/dmv-queries/>

- Other Queries

- WMI

- vCenter

# Diagnostic DMV Scripts

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- SQL Server query script
- Updated semi-regularly (3-4 times per year)
- Covers SQL data as well as some basic operating system information

# Diagnostic DMV Scripts - DEMO

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<http://media.catmoji.com/post/vi3l/dr-cat.jpg>

# Glenn DMVs - Windows/Infrastructure

Perfmon Collector

CPU Count

Disk Latency

Windows Service Pack

RAM

NUMA

Drive Layout

Windows Power Plan

Disk Fragmentation

Antivirus + Exclusions

Windows Version

Drive Offsets

# Glenn DMVs - SQL Server

CheckDB

Recovery Model

XEvents

DB File Layout & Options

SQL Version

PLE

Max Server Memory

Index Maint

Backups

LPIM

Statistics Maint

SQL Service Pack

Autoshrink

msdb cleanup

Waits Checksums

Roles/Security

CTOP

DB Mail

Unneeded Indexes

Missing Indexes

Buffer Cache Hit Ratio

Alerts

Instant File Init

Cycle SQL Log

# Other Queries

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- Backups
- XEvents System Health Session
- Indexes – Missing and Unneeded
- Failed Job Listing
- Database File Free Space

# Outside SQL Server

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- Antivirus Exclusions – manual
  - <https://support.microsoft.com/en-us/kb/309422>
- Local Security Policy – LPIM and PVMT
  - Local Policies>>User Rights Assignment

# Perfmon

- **Perfmon Collector**

- I recommend configuring a “permanent” Perfmon collector to collect some baseline counters to have on hand if a problem arises.

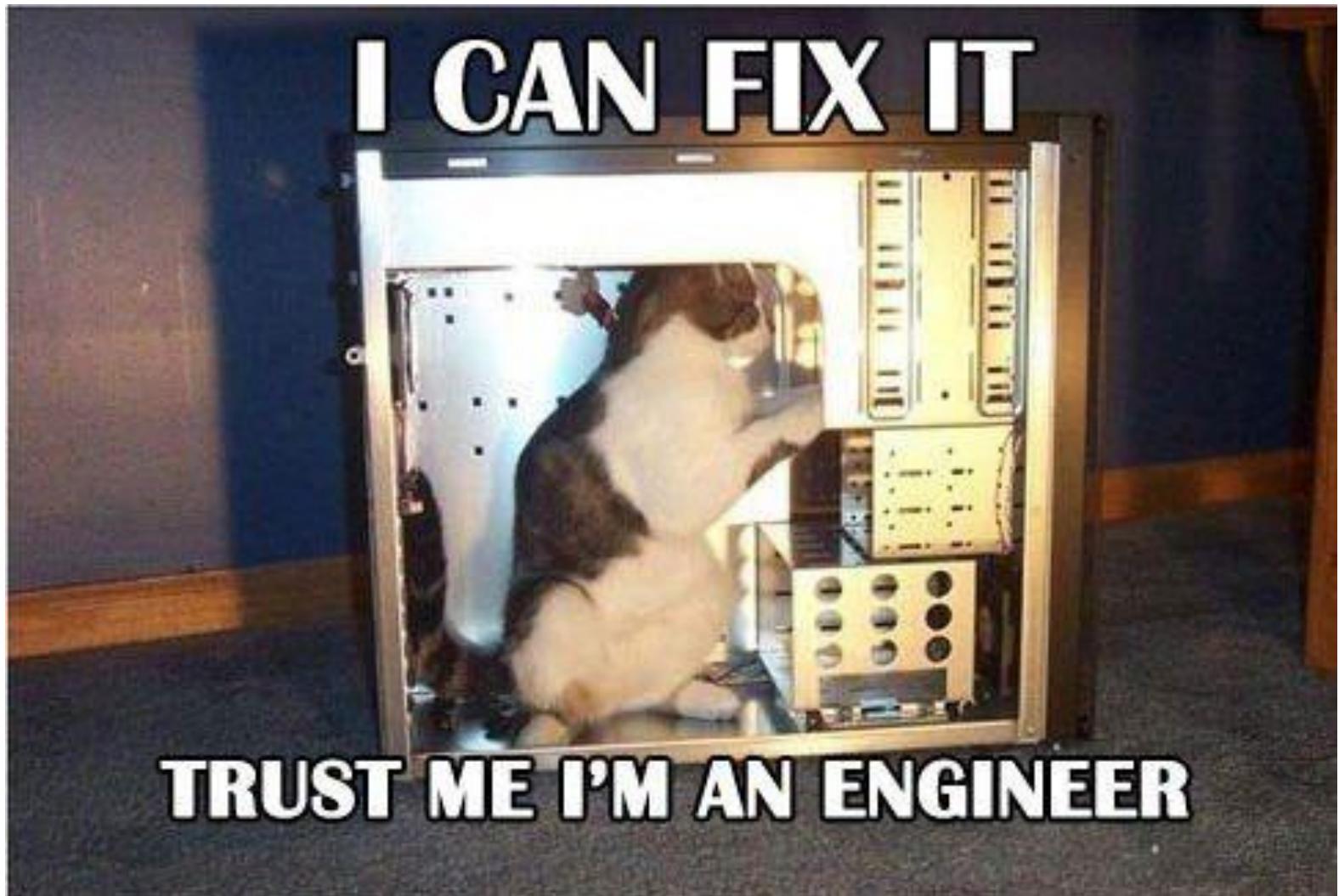
<b>Processor</b> % Processor Time % Privileged Time	<b>Process (sqlservr.exe)</b> % Processor Time % Privileged Time	<b>•SQL Server:General Statistics</b> User Connections
<b>System</b> Processor Queue Length	<b>SQL Server:Access Methods</b> Forwarded Records/sec Full Scans/sec Index Searches/sec	<b>SQL Server:Locks</b> Lock Waits/sec Number of Deadlocks/sec
<b>Memory</b> Available Mbytes Pages/sec Paging File % Usage	<b>SQL Server:Buffer Manager</b> Buffer cache hit ratio Free List Stalls/sec Free Pages Lazy Writes/sec Page Life Expectancy Page Reads/sec Page Writes/sec	<b>SQL Server:Memory Manager</b> Total Server Memory (KB) Target Server Memory (KB)
<b>Physical Disk</b> Avg. Disk sec/Read Avg. Disk sec/Write Disk Reads/sec Disk Writes/sec		<b>SQL Server:SQL Statistics</b> Batch Requests/sec SQL Compilations/sec SQL Re-Compilations/sec
		<b>SQL Server:Latches</b> Latch Waits/sec

# Perfmon

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# DEMO

WMI



# WMI

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- WMIC

- WMI Command Line tool
- `wmic <noun> <verb> <property list>`
- `wmic cpu get name, numberofcores, numberoflogicalprocessors`
- `wmic computersystem get model, manufacturer`
- <http://blogs.technet.com/b/askperf/archive/2012/02/17/useful-wmic-queries.aspx>

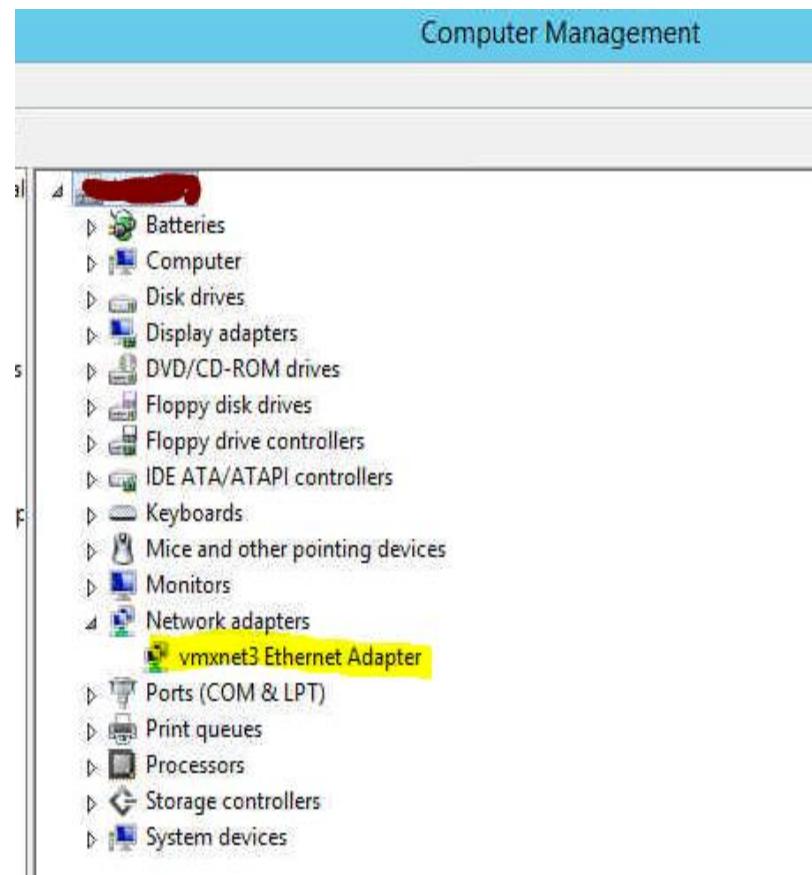
# WMI

```
C:\>wmic cpu get name, numberofcores, numberoflogicalprocessors
Name                               NumberOfCores  NumberOfLogicalProcessors
Intel(R) Xeon(R) CPU E5-2680 0 @ 2.70GHz  1                      1
Intel(R) Xeon(R) CPU E5-2680 0 @ 2.70GHz  1                      1
Intel(R) Xeon(R) CPU E5-2680 0 @ 2.70GHz  1                      1
Intel(R) Xeon(R) CPU E5-2680 0 @ 2.70GHz  1                      1
```

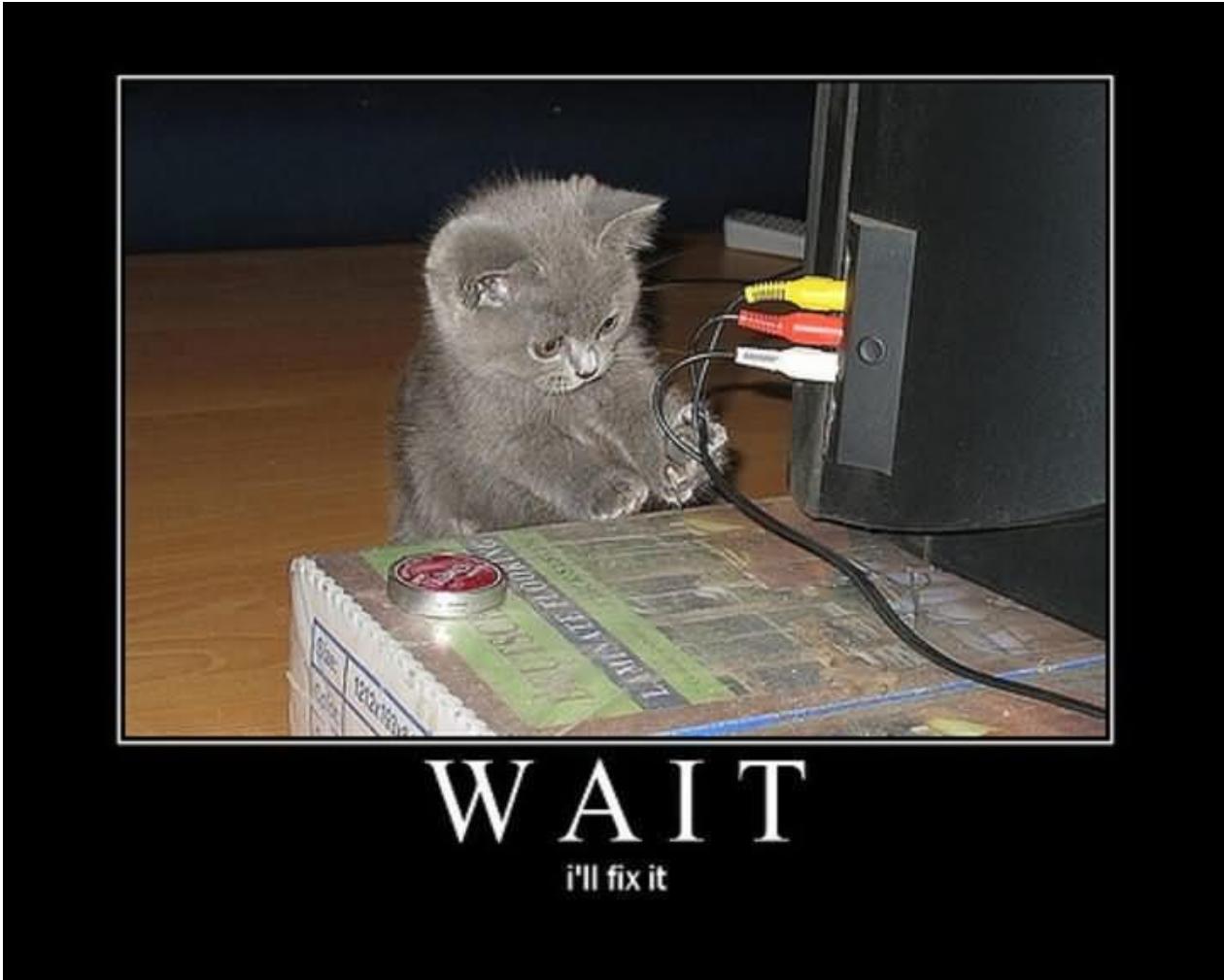
```
C:\>wmic computersystem get model, manufacturer
Manufacturer  Model
VMware, Inc.  VMware Virtual Platform
```

# WMI

```
C:\>wmic nic get name
Name
WAN Miniport (L2TP)
WAN Miniport (SSTP)
WAN Miniport (IKEv2)
WAN Miniport (PPTP)
WAN Miniport (PPPOE)
WAN Miniport (IP)
WAN Miniport (IPv6)
WAN Miniport (Network Monitor)
Microsoft Kernel Debug Network Adapter
vmxnet3 Ethernet Adapter ←
Microsoft ISATAP Adapter
```



# vCenter



W A I T

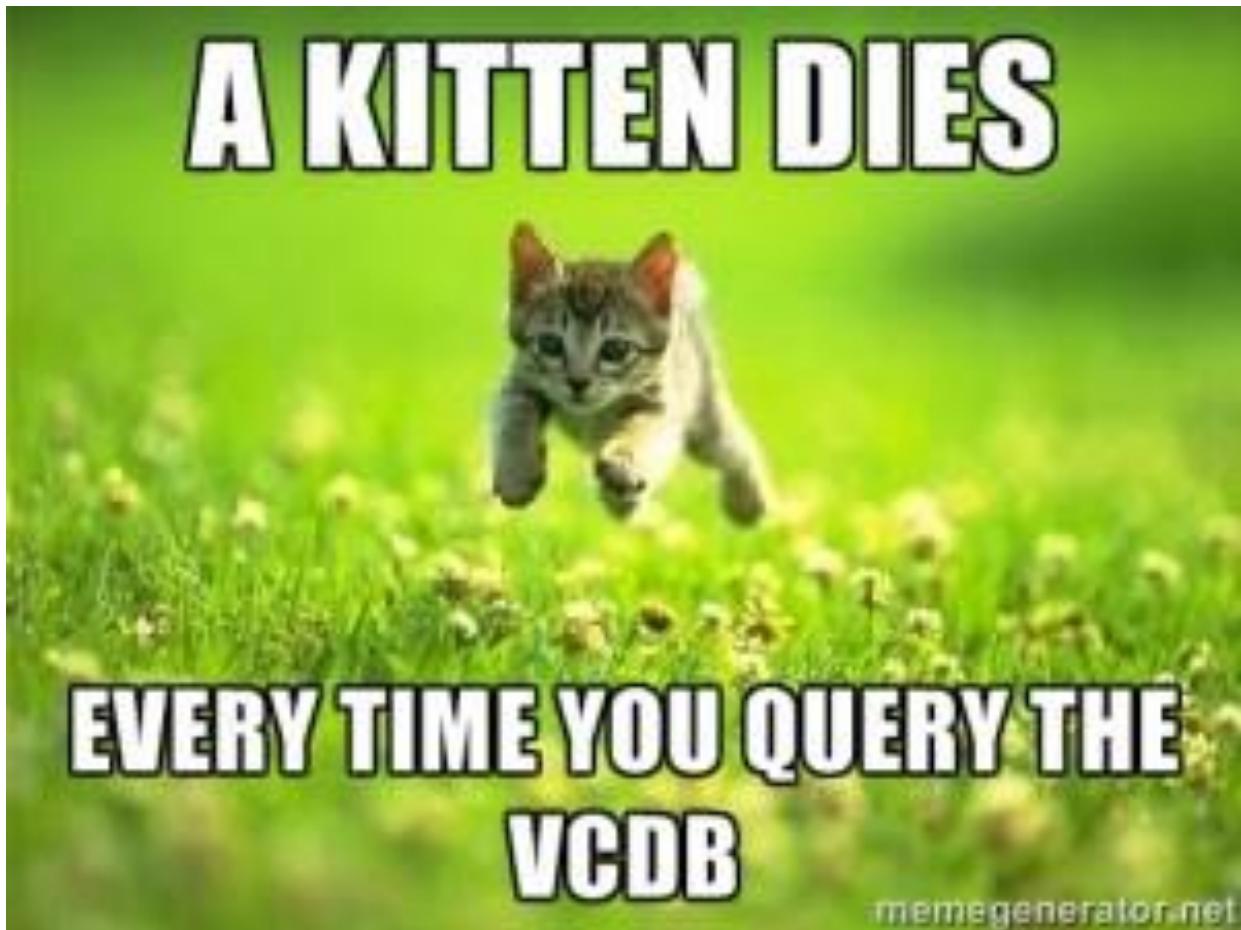
i'll fix it

# vCenter

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- vCenter Access – do you have it?
  - <http://www.davidklee.net/articles/sql-server-articles/why-sql-server-dbas-need-access-to-vmware-vcenter/>

# vCenter



<http://www.virtuallyghetto.com/2014/03/a-kitten-dies-every-time-you-query-the-vcdb.html>

# vCenter

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- “A kitten dies, every time you query the VCDB”
  - William Lam – VMware
  - <http://www.virtuallyghetto.com/2014/03/a-kitten-dies-every-time-you-query-the-vcdb.html>

# vCenter - Queries

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- Querying the VMware vCenter Database (VCDB) for Performance and Configuration Information
  - Jonathan Kehayias – SQLskills
  - <https://www.sqlskills.com/blogs/jonathan/querying-the-vmware-vcenter-database-vcdb-for-performance-and-configuration-information/>

# vCenter – Queries – Ready Time

```
-- Daily %RDY values
SELECT
    vh.NAME AS HostName,
    vv.NAME AS GuestName,
    SAMPLE_TIME,
    SAMPLE_INTERVAL,
    (STAT_VALUE/ (vv.NUM_VCPU * SAMPLE_INTERVAL * 1000)) * 100 AS READY_PERCENT,
    CASE WHEN (STAT_VALUE/ (vv.NUM_VCPU * SAMPLE_INTERVAL * 1000)) * 100 > 5
        AND (STAT_VALUE/ (vv.NUM_VCPU * SAMPLE_INTERVAL * 1000)) * 100 < 10
        THEN N'WARN'
        WHEN (STAT_VALUE/ (vv.NUM_VCPU * SAMPLE_INTERVAL * 1000)) * 100 > 10 THEN N'RED'
        ELSE N'OK'
    END AS CPURDY_State,
    STAT_VALUE AS CPUReady_Summation,
    NUM_VCPU
FROM dbo.VPXV_HIST_STAT_DAILY AS vhsd
INNER JOIN dbo.VPXV_VMS AS vv
    ON vhsd.ENTITY = N'vm-' +CAST(vv.VMID AS NVARCHAR)
INNER JOIN dbo.VPXV_HOSTS AS vh
    ON vv.HOSTID = vh.HOSTID
WHERE STAT_GROUP = N'cpu'
    AND STAT_NAME = N'ready'
    AND CASE
        WHEN (STAT_VALUE/ (vv.NUM_VCPU * SAMPLE_INTERVAL * 1000)) * 100 > 5
            AND (STAT_VALUE/ (vv.NUM_VCPU * SAMPLE_INTERVAL * 1000)) * 100 < 10
            THEN N'WARN'
        WHEN (STAT_VALUE/ (vv.NUM_VCPU * SAMPLE_INTERVAL * 1000)) * 100 > 10 THEN N'RED'
        ELSE N'OK'
    END <> N'OK'
ORDER BY CPURDY_State, READY_PERCENT DESC;
```

# vCenter – Queries – Ready Time

GuestName	SAMPLE_TIME	SAMPLE_INTERVAL	READY_PERCENT	CPU_RDY_State	CPUReady_Summation	NUM_VCPU
	2014-10-23 20:45:00.000	300	12.3886666666666667	RED	74332	2
	2014-10-23 21:00:00.000	300	11.2808333333333333	RED	67685	2
	2014-10-24 19:00:00.000	300	11.2383333333333333	RED	67430	2
	2014-10-23 20:45:00.000	300	11.0356666666666667	RED	66214	2
	2014-10-23 20:50:00.000	300	10.7993333333333333	RED	64796	2
	2014-10-23 20:55:00.000	300	10.3100000000000000	RED	61860	2
	2014-10-23 20:05:00.000	300	10.0733333333333333	RED	60440	2
	2014-10-24 18:50:00.000	300	10.0553333333333333	RED	60332	2
	2014-10-23 20:30:00.000	300	10.0221666666666667	RED	60133	2
	2014-10-23 20:00:00.000	300	9.9503333333333333	WARN	59702	2
	2014-10-24 17:50:00.000	300	9.9471666666666667	WARN	59683	2

# vCenter – Queries – Host Config

```
-- Host Configuration
SELECT
    vh.NAME AS HOST_NAME,
    HOST_MODEL,
    CPU_MODEL,
    CPU_COUNT,
    CPU_CORE_COUNT,
    CPU_HZ,
    CPU_THREAD_COUNT,
    SUM(CASE WHEN vm.POWER_STATE = N'On' THEN vm.NUM_VCPU ELSE 0 END) AS VM_VCPU_ACTIVE,
    MEM_SIZE,
    SUM(CASE WHEN vm.POWER_STATE = N'On' THEN vm.NUM_VCPU ELSE 0 END)*1./CPU_THREAD_COUNT AS THREAD_OVERCommit,
    SUM(CASE WHEN vm.POWER_STATE = N'On' THEN vm.NUM_VCPU ELSE 0 END)*1./CPU_CORE_COUNT AS CORE_OVERCommit,
    CAST(MEM_SIZE AS BIGINT)/1024/1024 AS MEM_SIZE_MB,
    SUM(CASE WHEN vm.POWER_STATE = N'On' THEN vm.MEM_SIZE_MB ELSE 0 END) AS VM_MEM_SIZE_MB,
    SUM(CASE WHEN vm.POWER_STATE = N'On' THEN vm.MEM_SIZE_MB ELSE 0 END)*1./(CAST(MEM_SIZE AS BIGINT)/1024/1024) AS
MEM_OVERCommit,
    SUM(CAST(vmMEMORY_OVERHEAD AS BIGINT)) AS VM_MEMORY_OVERHEAD,
    SUM(vm.MEM_SIZE_MB) AS VM_MEM_SIZE_MB_POTENTIAL,
    SUM(vm.NUM_VCPU) AS VM_VCPU_ALLOC_POTENTIAL,
    NIC_COUNT,
    HBA_COUNT,
    SUM(CASE WHEN vm.VMMWARE_TOOL = N'OK' THEN 1 ELSE 0 END) AS VM_TOOLS_OK,
    SUM(CASE WHEN vm.VMMWARE_TOOL = N'Old' THEN 1 ELSE 0 END) AS VM_TOOLS_OUT_OF_DATE,
    SUM(vm.NUM_VCPU) AS VM_VCPU_ALLOC
FROM dbo.VPXV_HOSTS AS vh
INNER JOIN dbo.VPXV_VMS AS vm
    ON vh.HOSTID = vm.HOSTID
GROUP BY vh.NAME, HOST_MODEL, CPU_MODEL, CPU_COUNT, CPU_CORE_COUNT, CPU_HZ,
    CPU_THREAD_COUNT, MEM_SIZE, NIC_COUNT, HBA_COUNT;
```

# vCenter – Queries – Host Config

	HOST_NAME	HOST_MODEL	CPU_MODEL	CPU_COUNT	CPU_CORE_COUNT	CPU_HZ	CPU_THREAD_COUNT
1	[REDACTED]	ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533373151	16
2		ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533422000	16
3		ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533422342	16
4		ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533422076	16
5		ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533422380	16
6		ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533422171	16
7		ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533422247	16
8		ProLiant DL380 G6	Intel(R) Xeon(R) CPU E5540 @ 2.53GHz	2	8	2533422266	16
9		UCSB-B200-M3	Intel(R) Xeon(R) CPU E5-2680 0 @ 2.70GHz	2	16	2699999269	32
10		UCSB-B200-M3	Intel(R) Xeon(R) CPU E5-2680 0 @ 2.70GHz	2	16	2699999966	32

	VM_VCPU_ACTIVE	MEM_SIZE	VMHEAP_UVEMCommit	LUHE_UVEMCommit	MEM_SIZE_MB	VM_MEM_SIZE_MB	MEM_UVEMCommit
1	14	77298241536	0.875000000000	1.750000000000	73717	71680	0.97236729655303389991
2	12	77298241536	0.750000000000	1.500000000000	73717	61440	0.83345768275974334278
3	13	77298241536	0.812500000000	1.625000000000	73717	65444	0.88777351221563547078
4	12	77298241536	0.750000000000	1.500000000000	73717	61440	0.83345768275974334278
5	10	77298241536	0.625000000000	1.250000000000	73717	47104	0.63898422344913656280
6	8	42938634240	0.500000000000	1.000000000000	40949	40960	1.00026862682849398031
7	12	68708274176	0.750000000000	1.500000000000	65525	53248	0.81263639832125143075
8	15	103067881472	0.937500000000	1.875000000000	98293	75776	0.77091959752983427100
9	11	274816647168	0.343750000000	0.687500000000	262085	47104	0.17972795085563843791
10	53	274816647168	1.656250000000	3.312500000000	262085	214016	0.81659003758322681572

	RHEAD	VM_MEM_SIZE_MB_POTENTIAL	VM_VCPU_ALLOC_POTENTIAL	NIC_COUNT	HBA_COUNT	VM_TOOLS_OK	VM_TOOLS_OUT_OF_DATE	VM_VCPU_ALLOC
1		75776	15	8	9	7	0	15
2		61440	12	8	9	6	0	12
3		65444	13	8	9	6	1	13
4		71680	14	8	9	5	1	14
5		47104	10	8	9	5	0	10
6		69632	16	8	9	4	0	16
7		53248	12	4	9	4	2	12
8		83968	18	4	9	7	1	18
9		47104	11	2	3	8	0	11
10		259072	64	2	3	45	0	64

# vCenter – Queries - Ballooning

```
-- Daily Memory Ballooned
SELECT
    vh.NAME AS HostName,
    vv.NAME AS VMName,
    Start,
    Finish,
    tab.SAMPLE_INTERVAL,
    MAX(STAT_VALUE)/1024. AS MaxBallooned_MB,
    AVG(STAT_VALUE)/1024. AS AvgBallooned_MB,
    COUNT(*) * (tab.SAMPLE_INTERVAL/60) AS MinutesBallooned
FROM dbo.VPXV_HIST_STAT_DAILY AS vhsd
INNER JOIN dbo.VPXV_VMS AS vv
    ON vhsd.ENTITY = N'vm-' + CAST(vv.VMID AS NVARCHAR)
INNER JOIN dbo.VPXV_HOSTS AS vh
    ON vv.HOSTID = vh.HOSTID
CROSS JOIN (SELECT
            MIN(SAMPLE_TIME) AS Start,
            MAX(SAMPLE_TIME) AS Finish,
            SAMPLE_INTERVAL
        FROM dbo.VPXV_HIST_STAT_DAILY
        WHERE STAT_NAME = N'vmmemctl'
        AND STAT_VALUE > 0
        GROUP BY SAMPLE_INTERVAL) AS tab
WHERE STAT_NAME = N'vmmemctl'
    AND STAT_VALUE > 0
GROUP BY vh.Name, vv.Name, Start, Finish, tab.SAMPLE_INTERVAL
ORDER BY HostName, MinutesBallooned DESC;
```

# vCenter – Queries - Ballooning

VMName	Start	Finish	SAMPLE_INTERVAL	MaxBallooned_MB	AvgBallooned_MB	MinutesBallooned
[REDACTED]	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	3608.480468	739.437500	390.000000
[REDACTED]	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	512.437500	87.846679	190.000000
[REDACTED]	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	546.218750	87.520507	100.000000
[REDACTED]	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	419.339843	94.711914	80.000000
[REDACTED]	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	259.996093	57.554687	60.000000
[REDACTED]	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	2149.746093	387.892578	50.000000
[REDACTED]	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	474.425781	111.916992	40.000000

# vCenter – Queries - Ballooning

```
-- Weekly Memory Ballooned
SELECT
    vh.NAME AS HostName,
    vv.NAME AS VMName,
    Start,
    Finish,
    tab.SAMPLE_INTERVAL,
    MIN(STAT_VALUE)/1024. AS MinBallooned_MB,
    MAX(STAT_VALUE)/1024. AS MaxBallooned_MB,
    AVG(STAT_VALUE)/1024. AS AvgBallooned_MB,
    COUNT(*) * (tab.SAMPLE_INTERVAL/60) AS MinutesBallooned
FROM dbo.VPXV_HIST_STAT_WEEKLY AS vhsd
INNER JOIN dbo.VPXV_VMS AS vv
    ON vhsd.ENTITY = N'vm-' + CAST(vv.VMID AS NVARCHAR)
INNER JOIN dbo.VPXV_HOSTS AS vh
    ON vv.HOSTID = vh.HOSTID
CROSS JOIN (SELECT
            MIN(SAMPLE_TIME) AS Start,
            MAX(SAMPLE_TIME) AS Finish,
            SAMPLE_INTERVAL
        FROM dbo.VPXV_HIST_STAT_WEEKLY
        WHERE STAT_NAME = N'vmmemctl'
        AND STAT_VALUE > 0
        GROUP BY SAMPLE_INTERVAL) AS tab
WHERE STAT_NAME = N'vmmemctl'
    AND STAT_VALUE > 0
GROUP BY vh.Name, vv.Name, Start, Finish, tab.SAMPLE_INTERVAL
ORDER BY HostName, MinutesBallooned DESC;
```

# vCenter – Queries - Ballooning

VMName	Start	Finish	SAMPLE_INTERVAL	MinBallooned_MB	MaxBallooned_MB	AvgBallooned_MB	MinutesBallooned
[REDACTED]	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.071289	2006.851562	449.465820	690.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.272460	140.391601	16.631835	570.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.217773	196.817382	34.289062	360.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.766601	287.716796	47.285156	330.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.735351	68.377929	15.976562	300.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.202148	485.938476	112.166992	300.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.140625	195.605468	36.324218	300.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	179.342773	179.342773	179.342773	30.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	0.483398	4980.091796	2280.318359	720.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	1.255859	210.408203	57.866210	300.000000
	2014-10-17 21:30:00.000	2014-10-24 18:00:00.000	1800	3.455078	269.258789	58.483398	270.000000

# vCenter – More Queries

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- Gather information from VMware vCenter VCDB about SQL Server
  - Brian P O'Dwyer – MSSQLTips
  - <http://www.mssqltips.com/sqlservertip/3211/gather-information-from-vmware-vcenter-vcdb-about-sql-server>

# vCenter – Queries – Guest Config

```
SELECT
    [VMID]
    , [NAME]
    , [VMGROUPID] -- key into dbo.VPXV_VMGROUPS
    , [HOSTID] -- ESXi host key into dbo.VPXV_HOSTS
    , [CONFIGFILENAME]
    , [VMUNIQUEID]
    , [RESOURCE_GROUP_ID] -- key into
dbo.VPXV_RESOURCE_POOL
    , [MEM_SIZE_MB]
    , [NUM_VCPU]
    , DATEADD(HOUR,-6,[BOOT_TIME]) AS BootTime -- need
to adjust for time zone/daylight savings
    --, [SUSPEND_TIME]
    , [POWER_STATE]
    --, [Guest_OS] AS origGuest_OS
    , CASE [Guest_OS]
        WHEN 'centosGuest' THEN 'CENTOS'
        WHEN 'other26xLinux64Guest' THEN 'Linux 2.6 Kernel
64 bit'
        WHEN 'other26xLinuxGuest' THEN 'Linux 2.6 Kernel 32
bit'
        WHEN 'otherGuest' THEN 'Unknown'
        WHEN 'redhatGuest' THEN 'Red Hat 32 bit'
        WHEN 'rhel4_64Guest' THEN 'Red Hat 4 64 bit'
        WHEN 'rhel5Guest' THEN 'Red Hat 5 32 bit'
        WHEN 'sles11_64Guest' THEN 'SLES 11 64 bit'
        WHEN 'win2000ServGuest' THEN 'Windows 2000
Standard'
            WHEN 'windows7Guest' THEN 'Windows 7 32 bit'
            WHEN 'windows8Server64Guest' THEN 'Windows 2012'
            WHEN 'windows7Server64Guest' THEN 'Windows 2008 R2'
            WHEN 'winLonghorn64Guest' THEN 'Windows 2008 64
bit'
            WHEN 'winLonghornGuest' THEN 'Windows 2008 32 bit'
            WHEN 'winNetEnterpriseGuest' THEN 'Windows 2003
Enterprise 32 bit'
            WHEN 'winNetStandard64Guest' THEN 'Windows 2003
Standard 64 bit'
            WHEN 'winNetStandardGuest' THEN 'Windows 2003
Standard 32 bit'
        WHEN 'winVistaGuest' THEN 'Windows Vista 32 bit'
        WHEN 'winXPProGuest' THEN 'Windows XP Pro 32 bit'
        WHEN 'winNetEnterprise64Guest' THEN 'Windows 2003
Enterprise 64 bit'
        ELSE 'UnSpecified'
    END AS GuestOS
    --, [GUEST_FAMILY]
    , [GUEST_STATE]
    , ROUND(([MEMORY_RESERVATION]/(1024*1024)),0) AS
Mem_Reservation
    , ([MEMORY_OVERHEAD]/(1024*1024)) AS Mem_Ovhd
    , [CPU_RESERVATION]
    , [DNS_NAME]
    , [IP_ADDRESS]
    , [VMMWARE_TOOL]
    , [TOOLS_VERSION]
    , [NUM_NIC]
    , [NUM_DISK]
    , CASE [IS_TEMPLATE] WHEN 1 THEN 'True' WHEN 0 THEN
'False' End AS Template
    , [DESCRIPTION]
    , [ANNOTATION]
    --, [SUSPEND_INTERVAL]
    ,
    CONVERT(DECIMAL(10,0),ROUND(([AGGR_COMMITED_STORAGE_SPACE]/(1024*1024)),0)) AS Agg_CommDiskMB
    ,
    CONVERT(DECIMAL(10,0),ROUND(([AGGR_UNCOMMITED_STORAGE_SPACE]/(1024*1024)),0)) AS Agg_UnCommDiskMB
    ,
    CONVERT(DECIMAL(10,0),ROUND(([AGGR_UNSHARED_STORAGE_SPACE]/(1024*1024)),0)) AS Agg_UnSharDiskMB
    , DATEADD(HOUR,-6,[STORAGE_SPACE_UPDATED_TIME]) AS
StorUpdTime -- adjust for time zone/daylight savings
FROM
    [VCDB].[dbo].[VPXV_VMS] WITH (NOLOCK,NOWAIT)
ORDER BY
    [NAME];
```

# vCenter – Queries – Guest Config

VMID	NAME	HOSTID	MEM_SIZE_MB	NUM_VCPU	BootTime	POWER_STATE	GuestOS	GUEST_STATE
18364	[REDACTED]	17834	1024	2	2014-08-15 19:51:19.370	On	SLES 11 64 bit	running
18381	[REDACTED]	18124	4096	2	2014-10-08 10:52:37.937	On	CENTOS	running
267	[REDACTED]	18063	8192	4	NULL	Off	UnSpecified	notRunning
270	[REDACTED]	801	4096	1	NULL	Off	Windows 2008 R2	notRunning
18209	[REDACTED]	17928	4096	1	NULL	Off	Windows 7 32 bit	notRunning
1351	[REDACTED]	18063	10240	2	NULL	Off	Windows 2008 R2	notRunning
269	[REDACTED]	491	10240	2	NULL	Off	Windows 2008 R2	notRunning
17877	[REDACTED]	17928	8192	2	2014-08-15 19:52:57.143	On	Windows 2008 R2	running
17817	[REDACTED]	17928	4096	4	2014-08-15 20:03:32.563	On	SLES 11 64 bit	running
239	[REDACTED]	491	10240	2	NULL	On	Windows 2008 R2	running

	Mem_Reservation	Mem_Ovhd	CPU_Reservation	DNS_Name	IP_Address	Vmware_Tool	Tools_Version	Num_Nic	Num_Disk	Template
1	0	30	0	[REDACTED]		OK	2147483647	2	1	False
2	0	135	0	[REDACTED]		Old	8300	1	1	False
3	0	387	0	[REDACTED]		Not Running	NULL	1	1	True
4	0	195	0	[REDACTED]		Not Running	8389	1	1	True
5	0	128	0	[REDACTED]		Not Running	NULL	1	1	True
6	0	394	0	[REDACTED]		Not Installed	NULL	1	1	True
7	0	394	0	[REDACTED]		Not Installed	NULL	1	1	True
8	0	87	0	[REDACTED]		OK	8389	1	1	False
9	0	60	0	[REDACTED]		OK	2147483647	1	2	False
10	0	219	0	[REDACTED]		Old	8300	1	1	False

ESS	Vmware_Tool	Tools_Version	Num_Nic	Num_Disk	Template	Agg_CommDiskMB	Agg_UnCommDiskMB	Agg_UnSharDiskMB	StorUpdTime
1.151	OK	2147483647	2	1	False	5532	26258	5532	2014-10-24 13:24:10.577
2.141	Old	8300	1	1	False	55300	0	55300	2014-10-24 12:46:07.970
3	Not Running	NULL	1	1	True	82718	8192	82718	2014-09-22 09:57:40.553
4.141.119	Not Running	8389	1	1	True	17073	38224	17073	2014-09-22 09:56:58.553
5	Not Running	NULL	1	1	True	4098	4217	4098	2014-07-30 09:11:27.037
6	Not Installed	NULL	1	1	True	25602	10240	25602	2014-09-16 14:37:36.527
7	Not Installed	NULL	1	1	True	20482	10240	20482	2014-09-22 09:58:45.117
8.152	OK	8389	1	1	False	49209	0	49209	2014-10-24 13:11:16.683
9.118	OK	2147483647	1	2	False	21556	0	21556	2014-10-24 13:11:16.673
10.110	Old	8300	1	1	False	30727	0	30727	2014-10-24 13:07:21.387

# vCenter – Queries – Guest Disk

```
SELECT -- vgd.[VM_ID]
       REPLACE((UPPER(vv.[DNS_NAME])), '.mydomain.com', '') AS DNS_NAME
  , vv.[IP_ADDRESS]
  , vgd.[PATH]
  , ((CONVERT(BIGINT,vgd.[CAPACITY]))/(1024*1024*1024)) AS CapacityGB
  , ((CONVERT(BIGINT,vgd.[FREE_SPACE]))/(1024*1024*1024)) AS FreeGB
  ,
  CONVERT(DECIMAL(5,1), (CONVERT(DECIMAL(16,0),vgd.[FREE_SPACE]))/(CONVE-
RT(DECIMAL(16,0),vgd.[CAPACITY]))*100) AS Pct_Free
FROM
[VCDB].[dbo].[VPX_GUEST_DISK] AS vgd WITH (NOLOCK,NOWAIT)
INNER JOIN [VCDB].[dbo].[VPX_VM] AS vv WITH (NOLOCK,NOWAIT)
ON vv.[ID]=vgd.[VM_ID]
ORDER BY
vv.[DNS_NAME]
, vgd.[PATH];
```

# vCenter – Queries – Guest Disk

DNS_NAME	IP_ADDRESS	PATH	CapacityGB	FreeGB	Pct_Free
[REDACTED]	[REDACTED]	C:\	59	11	18.5
[REDACTED]	[REDACTED]	D:\	24	11	45.0
[REDACTED]	[REDACTED]	C:\	59	11	20.0
[REDACTED]	[REDACTED]	G:\	24	11	46.4
[REDACTED]	[REDACTED]	C:\	59	12	20.7
[REDACTED]	[REDACTED]	G:\	24	10	40.4
[REDACTED]	[REDACTED]	C:\	59	11	19.0
[REDACTED]	[REDACTED]	G:\	24	9	37.3
[REDACTED]	[REDACTED]	C:\	59	11	18.7
[REDACTED]	[REDACTED]	G:\	24	10	40.0
[REDACTED]	[REDACTED]	C:\	59	11	19.5

# I Have All This Data – Now What?



[http://pics.catindra.se/gallery2/main.php?g2\\_view=core.DownloadItem&g2\\_itemId=362&g2\\_serialNumber=1](http://pics.catindra.se/gallery2/main.php?g2_view=core.DownloadItem&g2_itemId=362&g2_serialNumber=1)

# Health Check Data

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- **Baselining**
  - Save data as snapshots in time for future reference and comparison
- **Baselining**
- **Did I mention Baselining?**

# Health Check Data

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- Proactive Repairs
  - Catch resource/best practices problems before they manifest into a true production problem
- Resource Planning
  - Find systems with too few resources (and often too many) that need reallocation (either now or during next server refresh)
- Don't Forget Baselining!

# Health Check Data

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- Glenn's Diagnostic Data
- Spreadsheets available on his page (demo)

# Health Check Data

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- Store in Repository
  - Simple database
  - Make sure to include some kind of collection date/timestamp
  - Make sure to include instance & database names
  - Automate as much as possible

# Sidebar – Community and Learning

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- Twitter
  - #sqlhelp
  - #sqlpass
  - #sqlsat
  - #sqlserver
  - #tsql2sday

# Sidebar – Community and Learning

---

- Twitter

Start here:

@PaulRandal

@KimberlyLTripp

@sqlpoolboy

@erinstellato

@GlennAlanBerry

@tradney

@BrentO

@Kendra\_Little

@jdanton

@grrl\_geek

@davidklee

@SQLRockstar

@datachick

@sqlsoldier

@dbargenis

@mrdenny

@gfritchey

@way0utwest

@karlakay22

@SQLHA

@kbriankelley

@kekline

@SQLPASS

@DBA\_Any

...and then you will find many, many more!

# Sidebar – Community and Learning

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- Blogs
  - Start here:
  - <http://thomaslarock.com/rankings/>
  - (and don't forget <http://thomaslarock.com/>)
  - Access all of the blogs in one place at  
<http://feedly.com/SQLRockstar/TeamData>

# Sidebar – Community and Learning

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- Events

- <https://www.sqlsaturday.com/default.aspx>
- <http://www.sqlpass.org/PASSChapters.aspx>
- <http://www.sqlpass.org/Events/PASSSummit.aspx>
- Consultants/Vendors – SQLskills, Brent Ozar Unlimited, SQL Sentry, Solarwinds, Idera, Dell/Quest, MSDN/TechNet

# Sidebar – Community and Learning

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- Events
  - SQLBITS <http://sqlbits.com/>
    - European Conference – look under “Previous Events”
    - Each year’s presentations are video recorded and released **\*FREE\*** online
    - PASS Summit-quality speakers for **\*FREE\***

# Sidebar – Community and Learning

## • PASS Virtual Chapters (VC's)

Chapter Name	Virtual Chapter URL	YouTube Recordings
Application Development	<a href="http://appdev.sqlpass.org/">http://appdev.sqlpass.org/</a>	<a href="https://www.youtube.com/user/PASSappdev">https://www.youtube.com/user/PASSappdev</a>
Big Data	<a href="http://bigdata.sqlpass.org/">http://bigdata.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCkOKmMW_LEsACOqE8C1RWdw">https://www.youtube.com/channel/UCkOKmMW_LEsACOqE8C1RWdw</a>
Business Analytics	<a href="http://bavc.sqlpass.org/">http://bavc.sqlpass.org/</a>	<a href="https://www.youtube.com/user/PASSBAVC">https://www.youtube.com/user/PASSBAVC</a>
Business Intelligence	<a href="http://bi.sqlpass.org/">http://bi.sqlpass.org/</a>	<a href="https://www.youtube.com/user/PASSBIVC">https://www.youtube.com/user/PASSBIVC</a>
Cloud	<a href="http://cloud.sqlpass.org/">http://cloud.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCbM9EKPyh6G6F4gK_YOaC8Q">https://www.youtube.com/channel/UCbM9EKPyh6G6F4gK_YOaC8Q</a>
Data Architecture	<a href="http://dataarch.sqlpass.org/">http://dataarch.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCoYaPVyNHzpt2cT6ZuO5APw">https://www.youtube.com/channel/UCoYaPVyNHzpt2cT6ZuO5APw</a>
Data Science	<a href="http://datascience.sqlpass.org/">http://datascience.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCqB3xWdwjA9soFV6EOu7qfg">https://www.youtube.com/channel/UCqB3xWdwjA9soFV6EOu7qfg</a>
Database Administration	<a href="http://dba.sqlpass.org/">http://dba.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCN-UYSZ3yERcsNVOcMGlrgg">https://www.youtube.com/channel/UCN-UYSZ3yERcsNVOcMGlrgg</a>
DBA Fundamentals	<a href="http://fundamentals.sqlpass.org/">http://fundamentals.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCfo-suRFU3sBL5eOOv4XOVg">https://www.youtube.com/channel/UCfo-suRFU3sBL5eOOv4XOVg</a>
Excel Business Intelligence	<a href="http://excelbivc.sqlpass.org/">http://excelbivc.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCCXBjWCPexQTTGs-eChtmYA">https://www.youtube.com/channel/UCCXBjWCPexQTTGs-eChtmYA</a>
Healthcare	<a href="http://healthcare.sqlpass.org/">http://healthcare.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCcLgVdylvd1Xonb6zoaqueWw">https://www.youtube.com/channel/UCcLgVdylvd1Xonb6zoaqueWw</a>
HADR	<a href="http://hadrvc.sqlpass.org/">http://hadrvc.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCVXM_bmBuTEIn3K4GHeuBAQ">https://www.youtube.com/channel/UCVXM_bmBuTEIn3K4GHeuBAQ</a>
Hybrid	<a href="http://oracle.sqlpass.org/">http://oracle.sqlpass.org/</a>	N/A
In Memory VC	<a href="http://imvc.sqlpass.org/">http://imvc.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCTHLNg5xR_-2YJWTAjogl2Q">https://www.youtube.com/channel/UCTHLNg5xR_-2YJWTAjogl2Q</a>
Performance	<a href="http://performance.sqlpass.org/">http://performance.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCvLXc2p2itK-Na0ndF7CxBg">https://www.youtube.com/channel/UCvLXc2p2itK-Na0ndF7CxBg</a>
PowerShell	<a href="http://powershell.sqlpass.org/">http://powershell.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCFX97evt_7Akx_R9ovfiSwQ">https://www.youtube.com/channel/UCFX97evt_7Akx_R9ovfiSwQ</a>
Professional Development	<a href="http://professionaldevelopment.sqlpass.org/">http://professionaldevelopment.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCDP2iCgt7rRu6zyvxwz4uug">https://www.youtube.com/channel/UCDP2iCgt7rRu6zyvxwz4uug</a>
Saturday Night SQL	<a href="http://saturdaynightsql.sqlpass.org/">http://saturdaynightsql.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCBWJHarYauw_Wpv90cdGOQ">https://www.youtube.com/channel/UCBWJHarYauw_Wpv90cdGOQ</a>
Security	<a href="http://security.sqlpass.org/">http://security.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UC77XLfCsUex0Rvt4M22xYig">https://www.youtube.com/channel/UC77XLfCsUex0Rvt4M22xYig</a>
Virtualization	<a href="http://virtualization.sqlpass.org/">http://virtualization.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCbX5pO6ligM2gyoQZW9i3Nw">https://www.youtube.com/channel/UCbX5pO6ligM2gyoQZW9i3Nw</a>
Women in Technology	<a href="http://wit.sqlpass.org/">http://wit.sqlpass.org/</a>	<a href="https://www.youtube.com/channel/UCe2KECKcaYV37kDarDLhL6A">https://www.youtube.com/channel/UCe2KECKcaYV37kDarDLhL6A</a>

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  - [http://blogs.technet.com/b/askperf/archive/2012/02/17/  
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  - Brian P O'Dwyer – MSSQLTips
  - <http://www.mssqltips.com/sqlservertip/3211/gather-information-from-vmware-vcenter-vcdb-about-sql-server>

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  - <http://www.sqlskills.com/BLOGS/PAUL/post/Configuring-SSMS-for-presenting.aspx>

# Questions?

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# Performing a SQL Server Health Check

SQLSaturday #523 – Iowa City

06/11/2016

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Ntirety, a Division of HOSTING