Performing a SQL Server Health Check

SQL Saturday #397 – Omaha 08/15/2015

Andy Galbraith – @DBA_ANDY
Microsoft SQL Server Team Lead
Ntirety, a Division of HOSTING

About Ntirety

- **Remote Database Administration as a Service**
  - Services that help you manage your data infrastructure.
- **Consulting Services**
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- **DBA OnDemand**
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- **Cloud Services**
  - Services that help you manage some or all of your data footprint in the Cloud.

About Me

Andy Galbraith

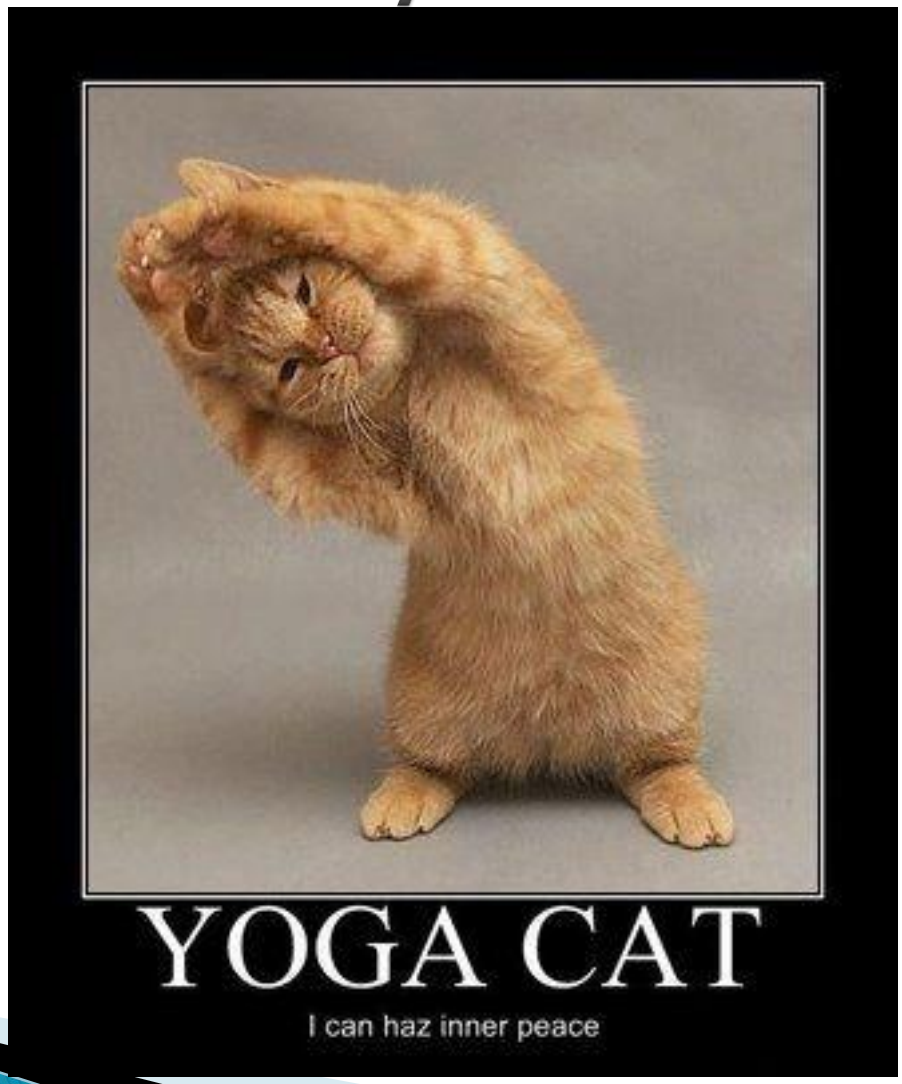
@DBA_Andy

nebraskasql.blogspot.com

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

Microsoft CERTIFIED IT Professional

Is your SQL Server healthy? How do you know?

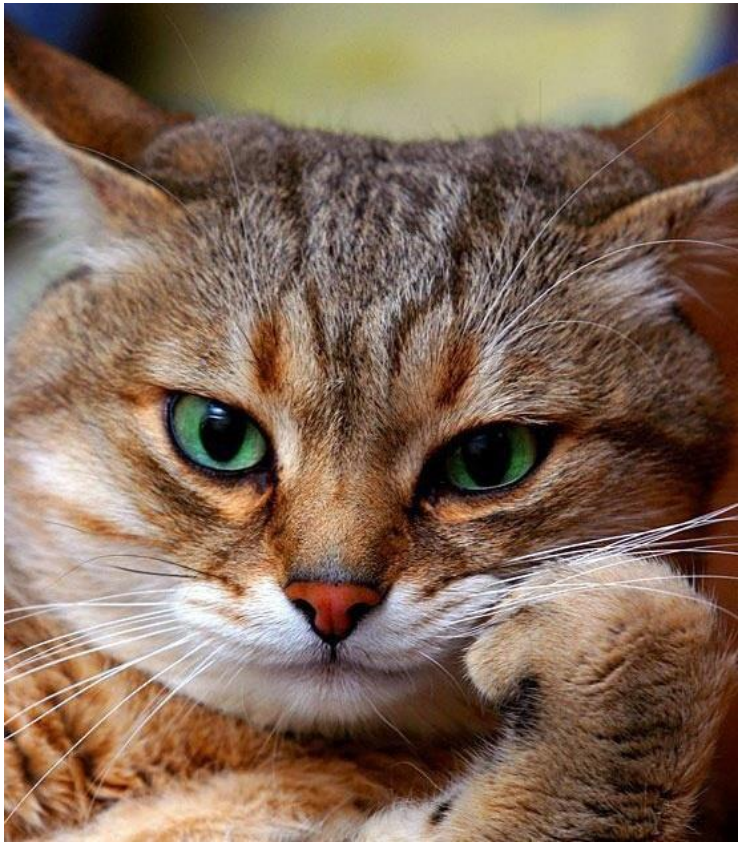


http://media-cache-ec0.pinimg.com/736x/f2/fd/8e/f2fd8e6e18eff3bd5854b5ca63706823.jpg

SQL Server Health Check

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

What do I need to check?



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

Windows Version

RAM

Perfmon Collector

CPU Count

Disk Latency

Windows Service Pack

Drive Layout

NUMA

Windows Power Plan

Disk Fragmentation

Antivirus + Exclusions

Drive Offsets


SQL Service Pack
Waits
Roles/Security
Recovery Model
SQL Version
DB File Layout & Options
PLE
Max Server Memory
Index Maint
LPIM
Statistics Maint
Backups
MAXDOP
Autoshrink
msdb cleanup
Checksums
CheckDB
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?!?!

http://25.media.tumblr.com/08d6cc39285af2f0f8b608c5fbf90373/tumblr_mh6t6pkzCk1rrzpl1o1_500.jpg

Tools

- Diagnostic Scripts
  - Glenn Berry  @GlennAlanBerry
  - https://sqlserverperformance.wordpress.com/tag/dmv-queries/
- Other Queries
- WMI
- vCenter

Diagnostic Scripts

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

Diagnostic Scripts – DEMO

http://media.catmoji.com/post/vi31/dr-cat.jpg

Other Queries

- Backups
- Failed Job Listing
- Database Properties

WMI

- 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

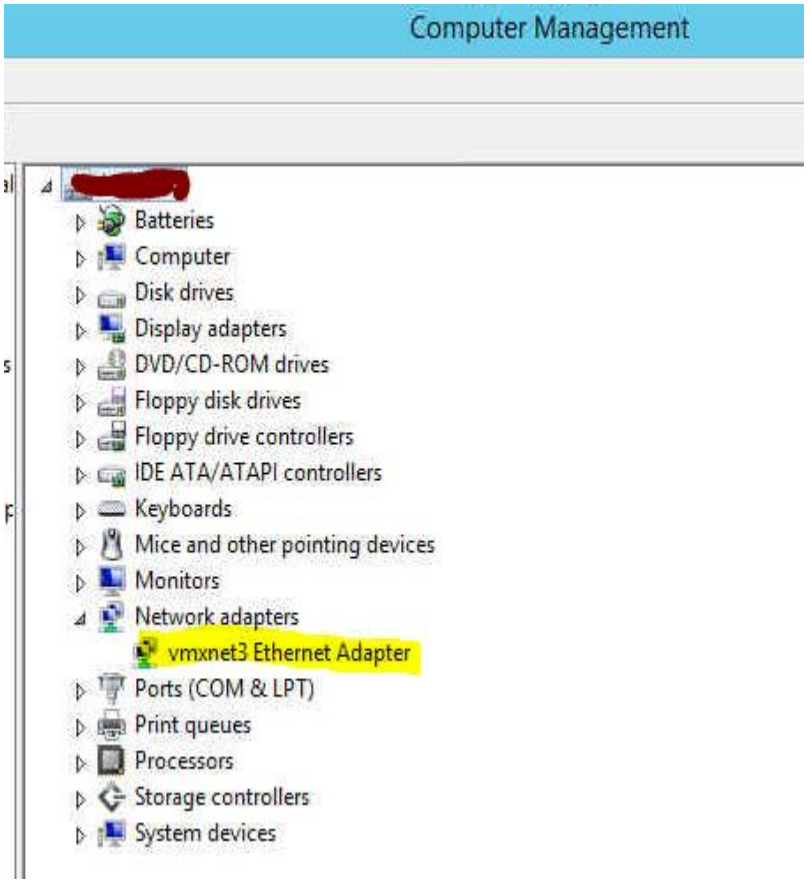
WMI

```
C:\>wmic cpu get name, numberofcores, numberoflogicalprocessors
Name                                      NumberOfCores  NumberOfLogicalProcesso
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

- 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

- "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

- 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	CPURDY_State	CPUReady_Summation	NUM_VCPU
[redacted]	2014-10-23 20:45:00.000	300	12.388666666666667	RED	74332	2
	2014-10-23 21:00:00.000	300	11.280833333333333	RED	67685	2
	2014-10-24 19:00:00.000	300	11.238333333333333	RED	67430	2
	2014-10-23 20:45:00.000	300	11.035666666666667	RED	66214	2
	2014-10-23 20:50:00.000	300	10.799333333333333	RED	64796	2
	2014-10-23 20:55:00.000	300	10.310000000000000	RED	61860	2
	2014-10-23 20:05:00.000	300	10.073333333333333	RED	60440	2
	2014-10-24 18:50:00.000	300	10.055333333333333	RED	60332	2
	2014-10-23 20:30:00.000	300	10.022166666666667	RED	60133	2
	2014-10-23 20:00:00.000	300	9.950333333333333	WARN	59702	2
	2014-10-24 17:50:00.000	300	9.947166666666667	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(vm.MEMORY_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	THREAD_OVERCommit	CORE_OVERCommit	MEM_SIZE_MB	VM_MEM_SIZE_MB	MEM_OVERCommit
1	14	77298241536	0.87500000000	1.75000000000	73717	71680	0.97236729655303389991
2	12	77298241536	0.75000000000	1.50000000000	73717	61440	0.83345768275974334278
3	13	77298241536	0.81250000000	1.62500000000	73717	65444	0.88777351221563547078
4	12	77298241536	0.75000000000	1.50000000000	73717	61440	0.83345768275974334278
5	10	77298241536	0.62500000000	1.25000000000	73717	47104	0.63898422344913656280
6	8	42938634240	0.50000000000	1.00000000000	40949	40960	1.00026862682849398031
7	12	68708274176	0.75000000000	1.50000000000	65525	53248	0.81263639832125143075
8	15	103067881472	0.93750000000	1.87500000000	98293	75776	0.77091959752983427100
9	11	274816647168	0.34375000000	0.68750000000	262085	47104	0.17972795085563843791
10	53	274816647168	1.65625000000	3.31250000000	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
	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	512.437500	87.846679	190.000000
	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	546.218750	87.520507	100.000000
	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	419.339843	94.711914	80.000000
	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	259.996093	57.554687	60.000000
	2014-10-23 20:05:00.000	2014-10-24 18:10:00.000	300	2149.746093	387.892578	50.000000
	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

- 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_Resv
 , ([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		18124	4096	2	2014-10-08 10:52:37.937	On	CENTOS	running
267		18063	8192	4	NULL	Off	UnSpecified	notRunning
270		801	4096	1	NULL	Off	Windows 2008 R2	notRunning
18209		17928	4096	1	NULL	Off	Windows 7 32 bit	notRunning
1351		18063	10240	2	NULL	Off	Windows 2008 R2	notRunning
269		491	10240	2	NULL	Off	Windows 2008 R2	notRunning
17877		17928	8192	2	2014-08-15 19:52:57.143	On	Windows 2008 R2	running
17817		17928	4096	4	2014-08-15 20:03:32.563	On	SLES 11 64 bit	running
239		491	10240	2	NULL	On	Windows 2008 R2	running

	Mem_Resv	Mem_Ovhd	CPU_RESERVATION	DNS_NAME	IP_ADDRESS	VMMWARE_TOOL	TOOLS_VERSION	NUM_NIC	NUM_DISK	Template
1	0	30	0	[redacted]		OK	2147483647	2	1	False
2	0	135	0			Old	8300	1	1	False
3	0	387	0			Not Running	NULL	1	1	True
4	0	195	0			Not Running	8389	1	1	True
5	0	128	0			Not Running	NULL	1	1	True
6	0	394	0			Not Installed	NULL	1	1	True
7	0	394	0			Not Installed	NULL	1	1	True
8	0	87	0			OK	8389	1	1	False
9	0	60	0			OK	2147483647	1	2	False
10	0	219	0			Old	8300	1	1	False

	ESS	VMMWARE_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	.41	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	41.119	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	0.110	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]
))/(CONVERT(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
		D:\	24	11	45.0
		C:\	59	11	20.0
		G:\	24	11	46.4
		C:\	59	12	20.7
		G:\	24	10	40.4
		C:\	59	11	19.0
		G:\	24	9	37.3
		C:\	59	11	18.7
		G:\	24	10	40.0
		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

Health Check Data

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

Health Check Data

- 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

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

Health Check Data

- 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
    - Sample – DMVDataGather

Health Check Data

- SQLDiagCmd
  - https://github.com/Mitch-Wheat/SQLDiagCmd
  - Glenn query runner from Mitch Wheat
  - Haven't tested it personally

Perfmon

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

Processor
- % Processor Time
- % Privileged Time

System
- Processor Queue Length

Memory
- Available Mbytes
- Pages/sec
- Paging File
- % Usage

Physical Disk
- Avg. Disk sec/Read
- Avg. Disk sec/Write
- Disk Reads/sec
- Disk Writes/sec

Process (sqlservr.exe)
- % Processor Time
- % Privileged Time

SQL Server:Access Methods
- Forwarded Records/sec
- Full Scans/sec
- Index Searches/sec

SQL Server:Buffer Manager
- Buffer cache hit ratio
- Free List Stalls/sec
- Free Pages
- Lazy Writes/sec
- Page Life Expectancy
- Page Reads/sec
- Page Writes/sec

SQL Server:General Statistics
- User Connections

SQL Server:Locks
- Lock Waits/sec
- Number of Deadlocks/sec

SQL Server:Memory Manager
- Total Server Memory (KB)
- Target Server Memory (KB)

SQL Server:SQL Statistics
- Batch Requests/sec
- SQL Compilations/sec
- SQL Re-Compilations/sec

SQL Server:Latches
- Latch Waits/sec

References

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  - https://sqlserverperformance.wordpress.com/tag/dmv-queries/
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Questions?

Performing a SQL Server Health Check

SQL Saturday #397 – Omaha 08/15/2015

Andy Galbraith – @DBA_ANDY
Microsoft SQL Server Team Lead
Ntirety, a Division of HOSTING