Instance-Level Configuration Queries Part 2

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Instance-Level Configuration Queries

- **Initial queries to collect hardware and instance configuration information**
  - These can be run in the context of any database on the instance
  - These are not database specific
- **Very high percentage of SQL Server instances have instance-level configuration issues**
  - Most instance-level configuration issues are relatively easy to correct
- **My Pluralsight course *SQL Server 2012: Installation and Configuration* covers best practice instance-level configuration**
  - http://bit.ly/1nUiv7m

SQL Server Failover Cluster Log Properties

- **This DMV was added in SQL Server 2008 R2 SP1**
  - sys.dm_os_server_diagnostics_log_configurations
  - MSDN link: http://bit.ly/1qIFXR4
- **This will show you the location of the failover cluster diagnostic log**
  - It will also show you where your other error and diagnostic logs are located
    - SQL Server error log
    - SQL Server Agent error log
    - Default trace files
    - System extended event log files

OS Cluster Properties

- **This DMV is an operating system related view**
  - sys.dm_os_cluster_properties
  - MSDN link: http://bit.ly/1sNxpw8
- **No data is returned from a stand-alone instance of SQL Server**
  - Lets you see what kind of logging is in place for the cluster
  - The location of dump files from the SQLDumper utility
  - Lets you see the cluster failure condition level setting

Cluster Node Properties

- **This DMV returns one row for each node in the cluster**
  - sys.dm_os_cluster_nodes
  - MSDN link: http://bit.ly/1ghn17j
- **No data is returned from a stand-alone instance of SQL Server**
  - Returns these columns
    - NodeName
    - status
    - status_description
    - is_current_owner

Failover Cluster Node with AlwaysOn AG

- **This DMV returns data if you have a Windows Server Failover Cluster node with an instance of SQL Server that is enabled for AlwaysOn Availability Groups and it currently has WSFC quorum**
  - sys.dm_hadr_cluster
  - MSDN link: http://bit.ly/1qoLC0q
- **High level information about the cluster and quorum**
  - cluster_name
  - quorum_type
  - quorum_type_desc
  - quorum_state
  - quorum_state_desc

Instance Configuration Values

- **This query returns information from a server-wide configuration catalog view**
  - sys.configurations
  - MSDN link: http://bit.ly/1lRj3H7
- **Lots of useful information about instance-level configuration settings**
  - backup compression default
  - clr enabled
  - cost threshold for parallelism
  - lightweight pooling
  - max degree of parallelism
  - max server memory (MB)
  - optimize for ad hoc workloads
  - priority boost

Buffer Pool Extension Properties

- **This DMV was added in SQL Server 2014**
  - sys.dm_os_buffer_pool_extension_configuration
  - MSDN link: http://bit.ly/1iEoFS3
- **Returns information about the buffer pool extension configuration**
  - Path to the buffer pool extension (BPE) file
  - The state and state_description of the BPE feature
  - The current size of the BPE file
    - Must be as least as large as the amount that max server memory is set to use

Buffer Pool Extension Usage

- **This is a DMV query that returns information about data pages by database in the SQL Server buffer pool that are cached in the BPE file**
  - sys.dm_os_buffer_descriptors, for files stored in BPE
  - MSDN link: http://bit.ly/1ghI0Xs
- **Returns buffer usage by database from the BPE file**
  - Database name
  - Page count
  - Buffer size (MB)
  - Average read time in microseconds

TCP Listener States

- **This is a DMV (added in SQL Server 2012) that returns dynamic state information for each TCP listener**
  - sys.dm_tcp_listener_states
  - MSDN link: http://bit.ly/RaOUIR
- **Gives you information about:**
  - ip_address for the listener
  - Whether the listener is IPv4
  - What TCP port the listener is using
  - The current state of the listener
  - The startup time of the listener
- **This information can be very helpful for network and connectivity troubleshooting**

Memory Dump Information

- **This DMV query gives you information about each memory dump file generated by the SQL Server Database Engine**
  - sys.dm_server_memory_dumps
  - MSDN link: http://bit.ly/QeG8Is
- **Gives you information about:**
  - The path and filename of each dump file
  - The creation date and time for the dump file
  - The size of the dump file in MB
- **This query will not return any information if no memory dumps have occurred (which is a good thing)**

Database Filenames and Paths

- **This is a databases and files catalog view**
  - sys.master_files
  - MSDN link: http://bit.ly/1qoZXtJ
- **Gives you information about each database file on your instance**
  - Lets you know how many user database files are on the instance and where they are located
  - Lets you know how many tempdb files are on the instance and where they are located
  - Gives you the size and auto growth settings for each database file
- **This helps you understand how your I/O workload is spread across your I/O subsystem**

Volume Information

- **This uses a dynamic management function**
  - sys.dm_os_volume_stats
  - http://bit.ly/1f3afJc
  - This query returns information for each logical drive or mount point that has any SQL Server database files
  - Gives you the drive letter and file system type
  - Gives you the logical volume name (if any)
  - Gives you the total size of the volume in GB
  - Gives you the available size on the volume in GB

Course Summary

- **These diagnostic queries can detect most configuration issues**
    - They can help you find instance-level settings that may be incorrect
- **They expose information about the operating system and the SQL Server version, edition, and build that is installed**
- **They can help you determine what type of hardware you are using**
    - How old it is, what its capabilities are
- **They show how your database files are distributed across your file system**
    - They also show how large and how full your drive volumes are

- **Make sure to also watch the other DMV courses for more queries**

- **Thanks for watching!**