

# SQL Diagnostic Manager Management Pack for Microsoft System Center

## INTEGRATE SQL SERVER MONITORS AND ALERTS WITH SYSTEM CENTER

SQL Diagnostic Manager (SQL DM) Management Pack for Microsoft System Center integrates key monitors and alerts used by SQL Server DBAs with Microsoft's Systems Center for IT Operators. SQL DM offers much deeper performance data than the native SQL Server management pack available with Systems Center. DBAs and IT Operators can achieve better synchronization and still utilize the tools to which they are each familiar with no customization required.

## WHY SQL DM MANAGEMENT PACK FOR SYSTEM CENTER?

The SQL DM Management Pack leverages and extends the investments made in System Center by integrating more complete SQL Server performance metrics into the System Center console. It brings out-of-the-box SQL Server expertise to the tools that are already in place, so you can effectively monitor your SQL Server environments from day one and avoid the expense of buying, deploying, learning, and maintaining a separate monitoring framework for SQL Server. With the new SQL DM Management Pack, the years of in-depth, specialized knowledge available to database administrators is now also available to IT Operations through Systems Center.

## WHO BENEFITS FROM THIS MANAGEMENT PACK?

- SQL DM users who want to integrate with a new Systems Center deployment.
- Systems Center users who want more advanced SQL Server monitoring and diagnostics.
- Users of both Systems Center and SQL DM who want to integrate the two.

## HIGHLIGHTS

- IT Operators get deep insights into the state and health of SQL Servers all within the Systems Center console.
- DBAs can enjoy the robust functionality of SQL DM for advanced troubleshooting of SQL Servers beyond the native SQL Server Management Pack's capabilities.
- No customization or configuration of the native Microsoft management pack required
- DBAs can set alert thresholds for individual SQL Servers from a single location and have those alerts automatically appear in Systems Center for IT Operations visibility.
- Provides a new level of collaboration between IT Operators and DBAs

## KEY TECHNICAL FEATURES

- The SQL DM Management Pack pulls alerts from the SQL DM repository that are then displayed in the System Center Console.
- The dashboard provides a single place to view the health of SQL DM itself, a health assessment of all SQL DM-monitored instances, and a list of recent events forwarded to System Center by SQL DM.
- The SQL DM console can be opened up directly from within System Center so users can seamlessly start a troubleshooting session.
- System Center operators can move directly from the health state view to a filtered list showing all events (current and past) associated with a given SQL instance.

## WHAT IS SYSTEM CENTER OPERATIONS MANAGER?

System Center is Microsoft's solution of choice for data center management. It uses a single interface that shows state, health and performance information of systems. It also generates alerts when pre-defined availability, performance, configuration, and security issues occur. It is a family of management solutions. These solutions are intended to provide integration of data centers, client devices, and hybrid-cloud IT environments. Available separately and as a suite, individual parts of System Center offer management of applications, services, physical resources, hypervisors, software defined networks, automation, client configuration management, and end-point protection.

The current version of System Center (System Center 2012) comprises:

- System Center App Controller
- System Center Operations Manger
- System Center Orchestrator
- System Center Service Manager
- System Center Virtual Machine Manager
- System Center Data Protection Manager
- System Center Endpoint Protection
- System Center Configuration Manager

People may refer to System Center by other names including SCOM, OM (Operations Manager), or MOM (for Microsoft Operations Manager, its name before it became part of the System Center family).

The value of System Center comes from product- and system-specific Management Packs (MPs). MPs provide the rules, models and custom knowledge by which System Center monitors systems. MPs are available from Microsoft for all Microsoft Enterprise-class server applications. Many third party management packs are also available, extending the value of System Center to a range of non-Microsoft solutions.

## WHAT VERSIONS OF SYSTEM CENTER DOES SQL DM SUPPORT?

SQL DM Management Pack supports System Center 2007 SP1 and later.

## WHAT ARE LIMITATIONS OF SYSTEM CENTER?

System Center is a tool that has a lot of breadth to the devices and platforms it can manage and it is very customizable which can often make the implementation process complicated, time-consuming, and expensive. It ships with a number of default MPs that monitor various applications and devices. Some of these, such as Active Directory and Exchange, are very advanced and others, including the MP for SQL Server, monitor only basic health in their default configuration. Most companies only use the default configuration of the MPs because customization to suit individual purpose is complex, requiring considerable knowledge both of the product to be managed and of System Center's internal architecture.

## CAN SYSTEM CENTER MANAGE SQL SERVERS?

Yes. Many customers who have installed System Center have installed the native SQL Server Management Pack. The goal of the native SQL Server MP is to provide IT Operations staff with a basic view of SQL Server availability and health, and not to inundate them with raw, un-interpreted data. It is designed to require the minimum amount of configuration to be functional. Enterprises that wish to fine tune what System Center monitors, have access to the MP's underlying rules and monitors. Custom configuring the MP, however, requires a deep knowledge of both SQL Server and of the SQL Server MP architecture. For this reason, many enterprises only use System Center to provide a basic overview of SQL Server health, potentially missing important, but more elusive, performance indicators that might identify and mitigate SQL performance issues before end users are affected.

## WHY ADD SQL DM IF SYSTEM CENTER ALREADY MANAGES SQL SERVER?

As mentioned earlier, the default functionality of the native SQL Server MP is to provide a view of basic SQL Server health. To get more functionality from the MP involves a level of customization that requires considerable expertise, often from a consultant. The investment of such a consultant can be greater than the cost of SQL DM itself, which is already configured to provide advanced SQL performance monitoring, alerting, and diagnostics.

SQL DM is designed to be a DBA's best friend. DBAs can change settings easily as needs change. Making tuned SQL DM data available to System Center serves to provide advanced SQL management information to IT Operations. Using the SQL DM Management Pack provides the visibility to System Center operators of all the key monitors used by SQL DBAs providing better synchronization of IT Operations and DBA staff. It further alerts IT Operations to situations that could affect SQL Server availability and performance that System Center alone might miss without customization.

## HOW DOES SQL DM INTEGRATE WITH SYSTEM CENTER?

The SQL DM Management Pack provides views within the System Center Console and pulls alerts from the SQL DM repository that are then displayed in System Center and integrated into the System Center database.

## WHAT IS A MANAGEMENT PACK?

A management pack is a definition file (either with an .xml or .mp extension) that contains predefined monitoring settings that enable an agent to monitor a specific service or application in System Center.

## WILL I NEED TO DEPLOY SQL DM AGENTS TO MY SQL SERVERS?

No. An important feature of SQL DM is that it is agentless so it does not require the deployment of any additional agents or services. Extending System Center with SQL DM therefore requires no change to any SQL Server instance already managed by System Center.

## WHAT IS DISPLAYED IN THE SYSTEM CENTER CONSOLE?

After the SQL DM Management Pack is installed, a new node will appear in the System Center Console tree called 'Idera SQL Diagnostic Manager'. When expanded, users can see the SQL DM Status Dashboard that shows the status of the DM Services and the instances being monitored by SQL DM (through the SQL DM Management Pack) along with their status and alerts. Since System Center simply displays the actual SQL DM alerts, there is no need to modify the alerts as they enter the System Center interface. If the alerts necessitate any further investigation, SQL DM can be opened from a shortcut within System Center to allow the DBA to start a diagnostic session.

Below is a screenshot of the System Center console with SQL DM highlighted within its hierarchy tree:

The screenshot displays the Microsoft System Center console interface. The top navigation bar includes 'Microsoft Learning Lab Instance: 591350' and 'SQL Diagnostic Manager - Operations Manager Management Pack Walkthrough'. The main window is titled 'System Center Operations Manager 2007 R2 - IDERASQL'. The left-hand navigation pane shows a tree view with 'Idera SQL Diagnostic Manager' expanded to show 'Dashboard', 'SQL DM Server Health', 'SQL Instance Alerts', 'SQL Instance Events', and 'SQL Instance Health'. The main content area is divided into three sections:

- SQL DM Server Health (1)**: A table showing the health of the SQL DM server. The table has columns for State, Name, Version, Path, Display Name, DmDatabase, and SQL Instance. The data row shows: State: Healthy, Name: SQL1.idera.local, Version: 7.5.4.423, Path: SQL1.idera.local, Display Name: SQL1.idera.local, DmDatabase: SQLdmRepository, SQL Instance: Critical.
- SQL Instance Health (4)**: A table showing the health of the SQL instances. The table has columns for State, Name, Path, Server Version, Server Edition, and Maintenance Mode. The data rows are:
  - State: Healthy, Name: DC\FIRSTINST, Path: SQL1.idera.local, Server Version: 11.0.3000.0, Server Edition: Enterprise Evaluation Edition, Maintenance Mode: False
  - State: Healthy, Name: DC\SECONDINST, Path: SQL1.idera.local, Server Version: 11.0.3000.0, Server Edition: Enterprise Evaluation Edition, Maintenance Mode: False
  - State: Warning, Name: OM\INSTANCE1, Path: SQL1.idera.local, Server Version: 10.50.2861.0, Server Edition: Enterprise Evaluation Edition, Maintenance Mode: False
  - State: Critical, Name: SQL1, Path: SQL1.idera.local, Server Version: 10.50.2861.0, Server Edition: Enterprise Evaluation Edition, Maintenance Mode: False
- SQL Instance Events (158)**: A table showing the events for the SQL instances. The table has columns for Level, Date and Time, Name, Source, Event..., and Log Name. The data rows are:
  - Level: Success, Date and Time: 3/14/2013 7:39:15 AM, Name: SQL1, Source: OS processor queue length is 3, Event...: 29, Log Name: SQL DM
  - Level: Warning, Date and Time: 3/14/2013 7:39:15 AM, Name: SQL1, Source: OS processor queue length is 7, Event...: 29, Log Name: SQL DM
  - Level: Warning, Date and Time: 3/14/2013 7:31:00 AM, Name: SQL1, Source: OS processor queue length is 9, Event...: 29, Log Name: SQL DM
  - Level: Success, Date and Time: 3/14/2013 7:17:00 AM, Name: SQL1, Source: OS processor queue length is 3, Event...: 29, Log Name: SQL DM

The bottom section of the main content area shows the 'Detail View' for the 'SQL DM Service properties of SQL1.idera.local'. The properties listed are:

- Name: SQL1.idera.local
- Path name: SQL1.idera.local\SQL1.idera.local
- Version: 7.5.4.423
- Path: E:\Program Files\Idera\Idera SQL diagnostic manager\SQLdmRepository

The right-hand pane shows the 'Actions' section with various options like 'Remove view', 'Refresh', 'State Actions', 'SQL DM Service Tasks', and 'SQL DM Service Reports'.

## WHAT LEVEL OF ADVANCED MONITORING DOES SQL DM OFFER SYSTEM CENTER?

The following is a list of the alerts provided by SQL DM management pack compared to the default monitoring capabilities of the native SQL Server Management Pack alone.

Monitors	SQL Server MP	SQL Server + SQL DM MP
<b>Databases</b>		
Database Space across all files (MB and %)	●	●
DB File Group Free Space (MB and %)	●	●
Database File Free Space (MB and %)		●
Database Full in each file (MB and %)		●
Log Full across all files (%)	●	●
Log Space across all files (MB and %)	●	●
Database Read/Write Error		●
Database Status		●
Index Row Hits		●
Mirroring Performance		●
• Mirror Commit Overheads		●
• Mirrored Server Role Changes		●
• Mirroring Oldest Unset Trans		●
• Mirroring Preferred Config		●
• Mirroring Status		●
• Mirroring Unrestored Log		●
• Mirroring Unset log		●
• Mirroring Witness Connection		●
Replication Performance		●
n-Distributed Transaction		●
Unsubscribed Transaction (count and sec)		●
Server Broker/Mirroring running in FIPS compliant mode		●
Service Broker or Database Mirroring transport stopped/started	●	●
Service Broker or Database Mirroring transport disabled or not configured	●	●
Table Fragmentation	●	●
<b>Logs</b>		
SQL Server Agent Log		●
SQL Server Error Log		●
<b>Operational</b>		
CLR Enabled		●
OLE Automation Enabled		●
SQL Server Agent XPs Disabled		●
SQL Server Data, Log Used		●
WMI Service Unavailable		●
<b>Queries</b>		
Monitor Query Performance		●
<b>Resources</b>		
Disks Reads, Writes, Transfers per Second		●
Avg Disk ms/Read, ms/Transfer, ms/Write		●
SQL Server Physical I/O		●
OS Avg Disk Queue Length (count and %)		●
SQL Server CPU, Memory Usage		●
OS Disk Full, Time; OS Time Per Disk; OS Memory Usage; OS Paging; OS Privileged Time; OS Processor Queue Length, Time; OS User Time		●
Page Life Expectancy		●
Procedure Cache Hit Ratio		●

<b>Services</b>		
Cluster Active, Failover		●
DTC Status		●
Full-Text Search Status		●
Last Full-Text Catalog Update		●
SQL Server Agent Job Failure	●	●
Advanced SQL Server Agent Job & Job Step Monitoring - Failures/Success/Retries		●
SQL Server Long Running Job (minutes and %)	●	●
SQL Server Agent Status	●	●
SQL Server Status	●	●
<b>Sessions</b>		
Blocked Sessions (count)		●
Blocked Sessions Wait Time	●	●
Client Computers		●
Deadlock		●
Oldest Open Transaction		●
Session CPU Time		●
SQL Server Response Time		●
User Connections		●
<b>Tempdb</b>		
Long Running Version Store Transaction		●
Session Tempdb Space Usage (MB)		●
Tempdb Contention (ms)		●
Version Store Generation Ratio		●
Version Store Size (MB)		●
<b>Virtualization</b>		
ESX CPU Usage (%)		●
ESX Memory Swap Detected		●
ESX Memory Usage (%)		●
ESX Power State		●
VM CPU Ready Wait Time (ms)	● <sup>1</sup>	●
VM CPU Usage (%)	● <sup>1</sup>	●
VM Host Server Change	● <sup>1</sup>	●
VM Memory Swap Delay Detected	● <sup>1</sup>	●
VM Memory Usage (%)	● <sup>1</sup>	●
VM Power State	● <sup>1</sup>	●
VM Reclaimed/Ballooned Memory (KB)	● <sup>1</sup>	●
VM Resource Configuration Change	● <sup>1</sup>	●
VM Resource Limits Detected	● <sup>1</sup>	●

<sup>1</sup> requires System Center Virtual Machine Manager (VMM) and VMM Management Pack