Managing and Monitoring SQL Server 2005
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Managing and Administering

★ SQL Server Management Studio
★ Dynamic Management Views
Management Studio

- Integrated management and development environment
- Used to manage:
  - Relational databases
  - Analysis Services
  - Reporting Services
  - SQL Server Mobile databases
- Based on Visual Studio .NET
- Integrates functionality of:
  - Enterprise Manager
  - Query Analyzer
  - Analysis Manager
- Includes scripting tools for:
  - Transact-SQL/SQLCMD
  - XMLA/MDX/DMX
- Provides graphical reports
- Much, much more!

A Tour of SQL Server Management Studio
### Dynamic Management Views

- Views built on top of internal structures
- Ideal for monitoring server

<table>
<thead>
<tr>
<th>Server Level</th>
<th>Component Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>dm_exec_*</td>
<td>dm_repl_*</td>
</tr>
<tr>
<td>Execution of user code and</td>
<td>Replication</td>
</tr>
<tr>
<td>associated connections</td>
<td></td>
</tr>
<tr>
<td>dm_os_*</td>
<td>dm_broker_*</td>
</tr>
<tr>
<td>Memory, locking &amp; scheduling</td>
<td>SQL Service Broker</td>
</tr>
<tr>
<td>dm_tran_*</td>
<td>dm_fts_*</td>
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<tr>
<td>Transactions &amp; isolation</td>
<td>Full Text Search</td>
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<tr>
<td>dm_io_*</td>
<td>dm_qn_*</td>
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<tr>
<td>I/O on network and disks</td>
<td>Query Notifications</td>
</tr>
<tr>
<td>dm_db_*</td>
<td>dm_clr_*</td>
</tr>
<tr>
<td>Databases and database objects</td>
<td>Common Language Runtime</td>
</tr>
</tbody>
</table>

### DM_ Object Interface

- **SQL Server Relational Engine**
  - User DB: SPs, Views, Tables, etc.
  - Resource DB: DMVs and DMFs (visible as "sys" schema)
  - Monitoring or Diagnostic Application
  - New and exposed in SQL Server 2005

- **Operational Memory Structures**
- **Aggregate Statistical Data**

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Database Management Views and Functions

Maintaining Security and Operational Policies

- SQL Server Surface Area Configuration
- Auditing and Change Control
SQL Server Surface Area Configuration

Auditing and Change Control
Controlling and Monitoring Change

- **DDL Triggers** – targeting
  - Specific Commands: DROP_TABLE
  - Groups: DDLPROCEDUREEVENTS
    - CREATE PROCEDURE
    - ALTER PROCEDURE
    - DROP PROCEDURE

- **Event Notifications and WMI Events** – target all of the above, plus:
  - Specific Trace Events: DATA_FILE_AUTO_GROW
  - Trace Groups: TRCTSTOREDPROCEDURES
    - SP_RECOMPILE
    - SP_CACHEMISS
    - SP_CACHEREMOVE
    - SP_CACHEINSERT
DDL Triggers

Monitoring and Troubleshooting

- System Monitor Integration
- SQL Server Profiler
Monitoring
A Unified Approach

* Supports multiple logs
  * SQL Server Database Engine Information
  * SQL Server Agent Information
  * Windows Event Viewer Application Log
  * Database Mail Logs
* Across all logs, allows:
  * Searching
  * Filtering
  * Exporting

SQL Server Profiler

* Analyze the SQL Server Database Engine and Analysis Services
* Significantly easier to setup (Events, Data Columns and Filter dialogs combined)
* Special Events: Service Broker, Notification Services, etc...
* Special Event types: Showplan XML and Deadlock Graph – can be saved to files
* Supports pause and modify
* Profiles SQL Server 2000 & 2005
* Permissions to profile grantable
A Tour of SQL Server Profiler

Performance Tuning

* Database Engine Tuning Advisor
Database Tuning Advisor (DTA)

- Partitioning recommendations
- Time-bound tuning
- Indexes with Included columns
- XML Input/Output
- Drop ONLY mode
- Parameterized command line execution
- Import previously saved Session Definition (XML format)
- Workload options
  - Can be a *.trc, *.sql or *.xml format
  - Can be a SQL Server Table

Database Tuning Advisor DEMO
Automation and Upgrade

- Database Maintenance Plans
- Database Mail
- SQLCMD

Database Maintenance Plans

- Based on SQL Server Integration Services
- Flexible Wizard based Interface
- Options to create cross database plans
- Backup all users databases will pick up newly added databases – even after the plan is created
Database Mail

- Uses SMTP – No Microsoft Outlook dependency!
- No SQLCLR dependency
- Asynchronous and queued architecture
- Leverages SQL Server Service Broker for queuing
- Multiple SMTP accounts
- SMTP account failover
- Mail calls made outside SQL Server process
- Cluster support
- 64-bit support
- Logging

SQLCMD

Command-line automation and scripting

- Replaces OSQL
- Supports Connections to multiple servers (master scripts)
- Allows Parameter substitution
  - Variables defined in script
  - Variables passed in
  - Environment variables
- Better Control on Error
- Initialization Scripts
- Dedicated Admin Connection
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