

# Evaluate your Daily Checklist with Policy-Based Management and Central Management System

John Sterrett

Twitter: @JohnSterrett

Blog: <http://johnsterrett.com>



# About Me....

- ▶ I am not an expert but I stayed at a Holiday Inn once....
- ▶ I reside in Wheeling, WV (Pittsburgh, PA)
- ▶ Work for Orrick Herrington & Sutcliffe LLP
  - Responsible 100+ Instances of SQL Server
  - Responsible for PeopleSoft



# Daily Checklist

- ▶ Do you have a daily checklist?
- ▶ What is your daily checklist?
  - Full backups
  - Transactional Log backups
  - Free space
  - SQL Agents are enabled
  - SQL Agent jobs succeeded
- ▶ How do you evaluate your daily checklist?
  - Central Management System (CMS)
  - Policy Based Management (PBM)



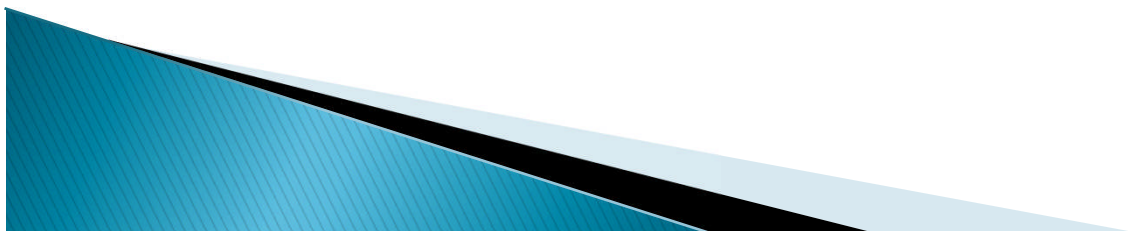
# Central Management Server (CMS)

- ▶ Similar to local server group except it's a repository for your team.
- ▶ Group database servers
  - Environment
  - Version
  - Location
- ▶ Apply scripts against all servers in a group
- ▶ Not all checklist items can be validated with PBM
- ▶ Can use SQL Server 2008 R2 Express

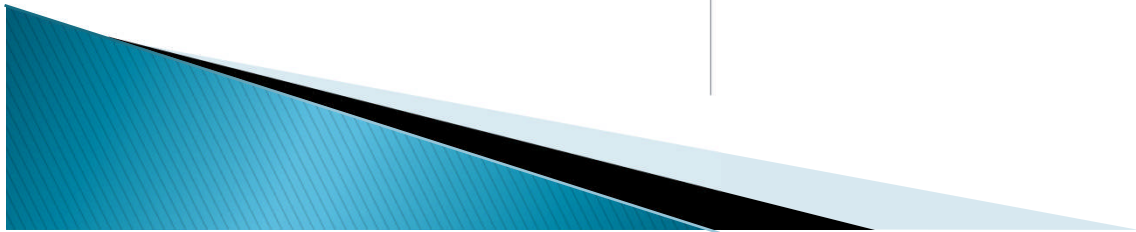
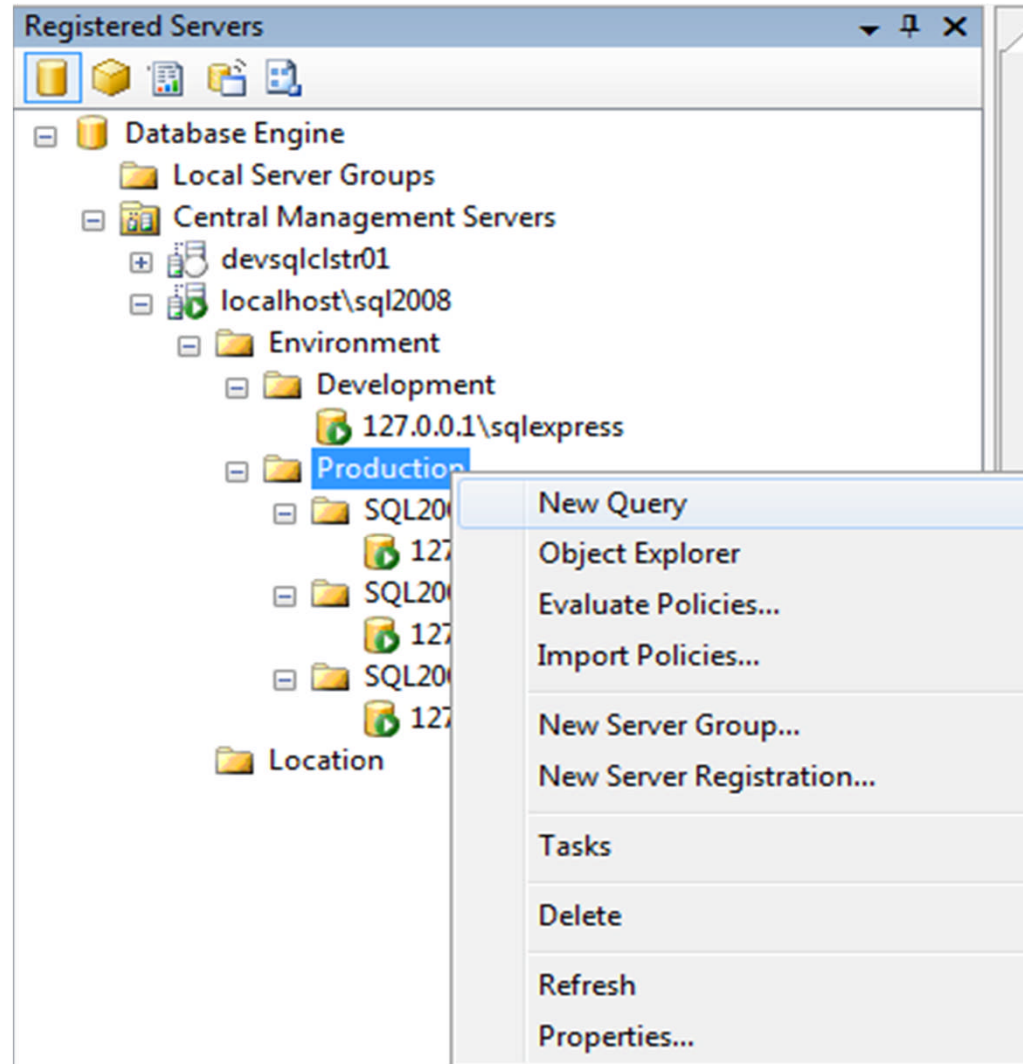


# CMS Internals

- ▶ MSDB is used to store servers and groups
- ▶ Servers –  
msdb.dbo.sysmanagement\_shared\_registered\_servers\_internal
- ▶ Groups –  
msdb.dbo.sysmanagement\_shared\_server\_groups\_internal
- ▶ Security –
  - **ServerGroupAdministratorRole** role can manage the central management server.
  - **ServerGroupReaderRole** role is required to connect to a central management server.
  - **Windows Authentication** of the individual servers is used to execute t-sql and policies.

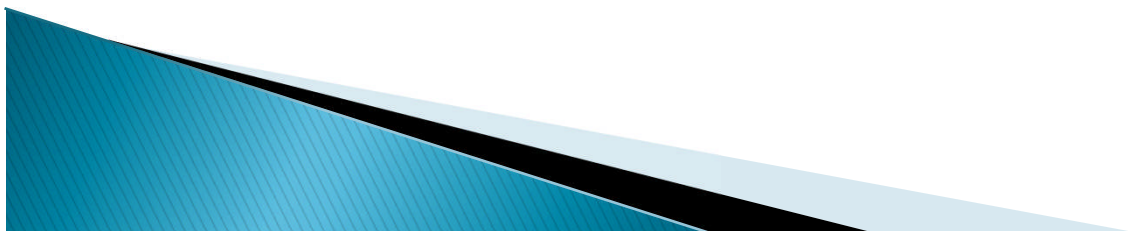


# First look at CMS



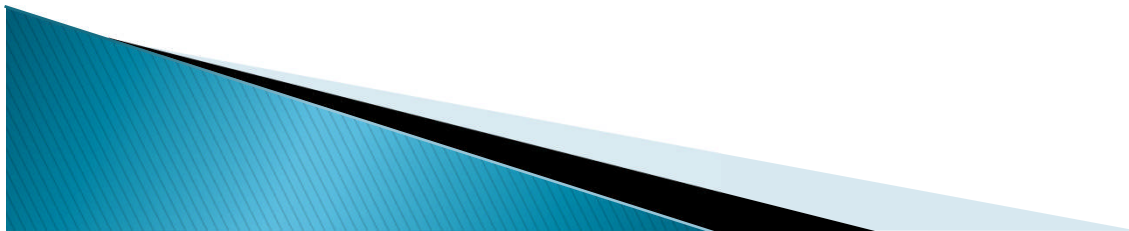
# CMS Gotchas!

- ▶ CMS itself cannot automate query execution.
- ▶ CMS only supports windows authentication
- ▶ Query results are ordered by server name
- ▶ Cannot include host server (Unless you use 127.0.0.1)
- ▶ Query executes for all listed servers. (Includes duplicates)



# DEMO

- ▶ Create Configuration Management Server
- ▶ Create Groups
- ▶ Register Servers
- ▶ Execute scripts against a group
  - Get Server version
  - Find missing backups
  - Find failed SQL Agent Jobs
  - Check SQL Agent Service is enabled



# Policy-Based Management (PBM)

- ▶ Policy-Based Management is a system for managing one or more instances of SQL Server 2008 (\* BOL).
- ▶ Some facets allow you to enforce standards with “On-Change - Prevent”
- ▶ Can import and export policies
- ▶ Apply changes when evaluation fails
- ▶ Policies can run against SQL 2000 & 2005



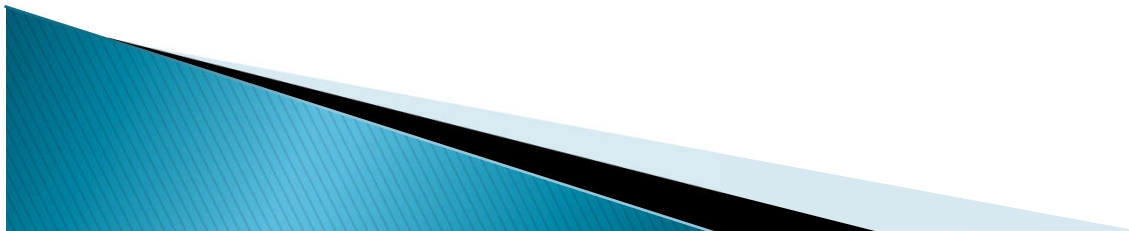
# I use CMS & PBM to do two things...

- ▶ ~~Prevent things from happening~~ Apply changes
- ▶ Automate validation of checklists
  - Checklists are prone to human error.
  - Server configurations can change over time.
- ▶ Daily checklist items we will validate
  - SQL Agent is enabled
  - SQL Agent Jobs
  - Full backups
  - Transactional Log backups
  - Free Space



# PBM Concepts and Terms

- ▶ Targets
- ▶ facets
- ▶ conditions
- ▶ policy
- ▶ categories
- ▶ server restrictions



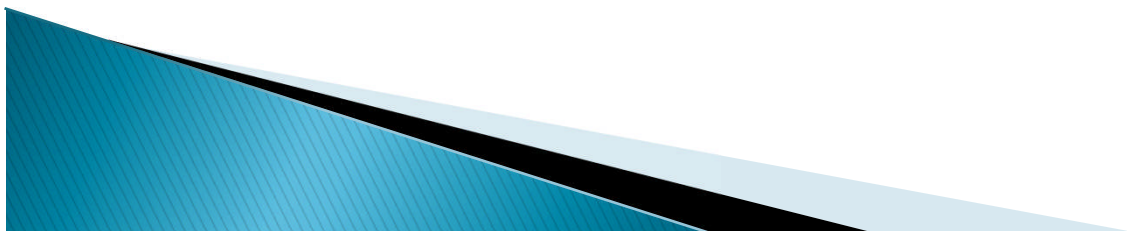
# Evaluation Modes

- ▶ On Demand
  - Executed by user or powershell scripts
- ▶ On Schedule
  - Uses SQL Agent
- ▶ On Change – Prevent
  - **Uses DDL Triggers**
  - \* Nested Triggers should be enabled
- ▶ On Change – Log Only
  - **uses event notification**
- ▶ For More: <http://msdn.microsoft.com/en-us/library/bb510667%28SQL.100%29.aspx>



# On-Change Evaluation....

- ▶ Not all facets support On-change.
  - On Change – Log (17)
  - On Change – Prevent (12)
    - Application Role
    - Asymmetric Key
    - Database Role
    - Endpoint
    - Login Options
    - Multipart Name
    - Resource Pool
    - Schema
    - Stored Procedure
    - Table Options
    - User Defined Function
    - User Options
    - View Options
    - Workload Group



# PBM Example – Auto Shrink

Database Auto Shrink	Policy
Database	Target
Database Performance	Facet
@AutoShrink = false	Condition
None	Server Restriction
On Change – Log	Evaluation Mode

“Help save a kitty don’t shrink your databases.” –  
Denny Cherry



# Where can I find policies?

## ▶ Best Practices

- SQL Server 2008 Feature Packs
- C:\Program Files\Microsoft SQL Server\100\Tools\Policies\DatabaseEngine\1033

## ▶ Interwebs

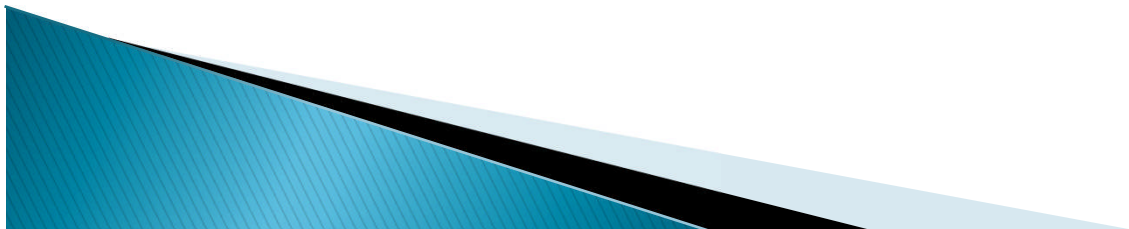
- <http://www.mssqltips.com/category.asp?catid=89>
- Blogs
- Bing or Google



# Policy Alerts

Message Number	Evaluation Mode
34050	On change – prevent when policies are enabled for automatic evaluation.
34051	On change – prevent when the policy is on demand
30452	On Schedule
34053	On change – Log

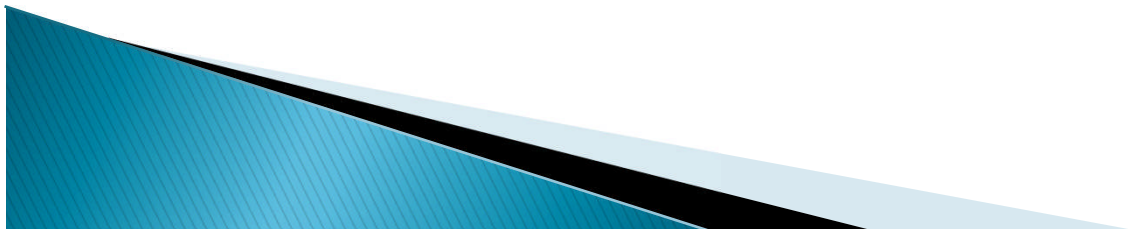
\* On demand cannot be enabled so there are no alerts.



# PBM Views

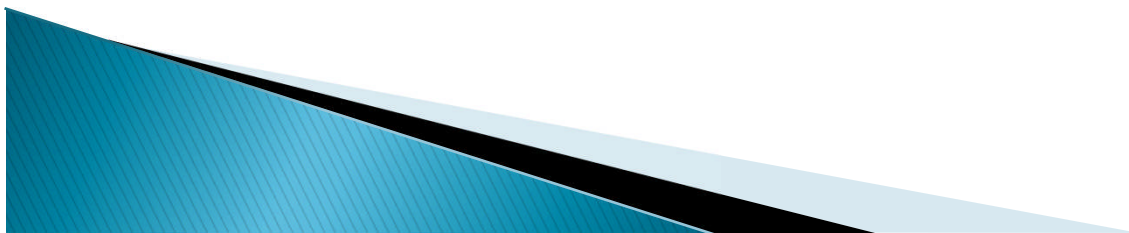
- ▶ Views in MSDB database and dbo schema
  - syspolicy\_policies
  - syspolicy\_conditions
  - syspolicy\_system\_health\_state
  - syspolicy\_categories
  - syspolicy\_policy\_category\_subscriptions
  - syspolicy\_policy\_execution\_history
  - syspolicy\_policy\_execution\_history\_details
  - syspolicy\_object\_sets
  - syspolicy\_target\_sets

For more: <http://msdn.microsoft.com/en-us/library/bb510742.aspx>



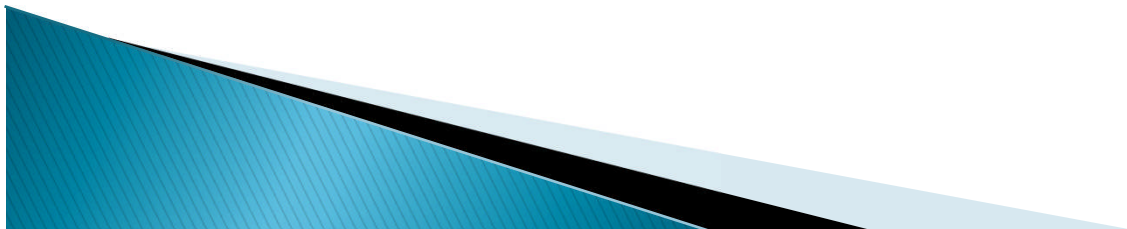
# Gotchas!

- ▶ Cannot modify or create facets
- ▶ ExecuteSQL only supports @ObjectName and @SchemaName
- ▶ On Change-Prevent is limited
- ▶ Best Practice Policies may not be best practice for your shop.



# PBM Demo!

- ▶ Create a Category
- ▶ Import Policies
- ▶ Export Policies
- ▶ Create Policy
- ▶ Evaluate Policy
  - On-Demand
  - Scheduled
  - On Change - Prevent
  - On Change - Log
  - Apply Policy
- ▶ Evaluate Policy on Multiple Servers using CMS
- ▶ View Policy History



# Reporting – EPM Framework

- ▶ <http://epmframework.codeplex.com/>
- ▶ EPMF leverages
  - Central Management Server
  - Policy-Based Management
  - PowerShell
  - SQL Server Reporting Services



Server Group Name: ALL | Category Name: Daily Checklist, Microsoft Best P | Date Month: December 2010

1 of 1 | 100% | Find | Next

**Policies in a Failed State 20** | **Instance Compliance** | **Failed Policy Count by Policy Category**

Failed Policies (%) **10.75%** | Out of Compliance (Red) | In Compliance (Green)

Evaluation Errors **0**

**Failed Policy Count by Policy Category** | FAIL (Red) | PASS (Green)

Policy Category	FAIL	PASS
Daily Checklist	18	4
Microsoft Best Practices: Performance	0	70
Microsoft Best Practices: Maintenance	2	44
Microsoft Off by Default: Surface Area Configuration	0	8

**Last Execution Status**

Server/Instance/Database Object	Policy Result	Failed Policy Count
127.0.0.1		10
127.0.0.1\SQL2005		0
127.0.0.1\SQL2008		9
WH-L-6J9NTM1\SQLEXPRESS		1
No Targets Found		0
SQLEXPRESS		0
TESTDB		1
Verify Database Page is CheckSum	PASS	12/1/2010 9:25 AM
Log Database Auto Shrink	PASS	12/1/2010 9:25 AM
Last Successful Backup Date	FAIL	12/1/2010 9:25 AM
Database Page Verification	PASS	12/1/2010 9:25 AM
Database has less than 10 pct free space	PASS	12/1/2010 9:25 AM

**Failed Policy % By Month**

Failed Policy % (Left Y-axis) | Failed Policy Count (Right Y-axis)

Month	Failed Policy %	Failed Policy Count
November 2010	~27%	~18
December 2010	10.75%	20

# DEMO!

- ▶ Show EMPF...



# Where you should go from here?

- ▶ All links and slide deck are available at <http://johnsterrett.com/>
- ▶ Books On Line
  - Administering Servers by Using Policy-Based Management
- ▶ Book
  - Pro SQL Server 2008 Policy-Based Management
- ▶ White Papers
  - Enterprise Policy Management Framework with SQL Server 2008
  - SQL Server 2008 Policy-Based Management
- ▶ Web
  - [www.mssqltips.com](http://www.mssqltips.com)

