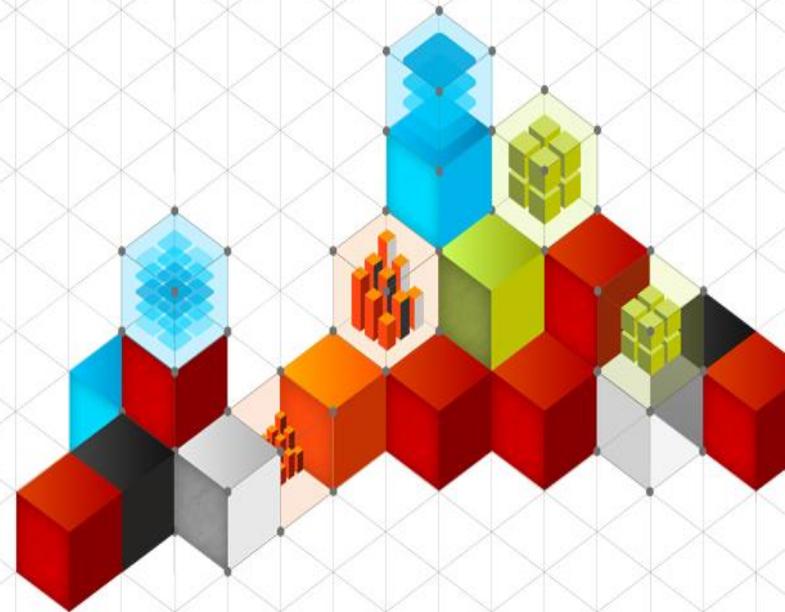


#544 | SPARTANBURG 2016

POLICY BASED MANAGEMENT BEYOND THE BASICS

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ABOUT THE SPEAKER

Patrick Keisler

- Senior Premier Field Engineer
- Over 15 years of database experience
- Specialize in administration of high availability and disaster recovery environments

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SESSION AGENDA

- What is PBM?
- Basic Features
- Create a Policy
- Evaluating Policies
- PBM & Central Management Server
- Customizing PBM
- PBM & PowerShell



WHAT IS A POLICY BASED MANAGEMENT?

- Policy-based system for managing one or more SQL Servers
- A policy uses a condition to check a target object
 - Returns PASS or FAIL



BASIC FEATURES – TARGET, FACET, CONDITION

- Target – object you are evaluating
 - Server
 - Database
 - Table
- Facet – type of object & its properties
 - Database property examples
 - Recovery model setting
 - Page verify setting
- Condition – state or value of a property
 - Page Verify property of the Database facet
 - None
 - TornPageDetection
 - Checksum



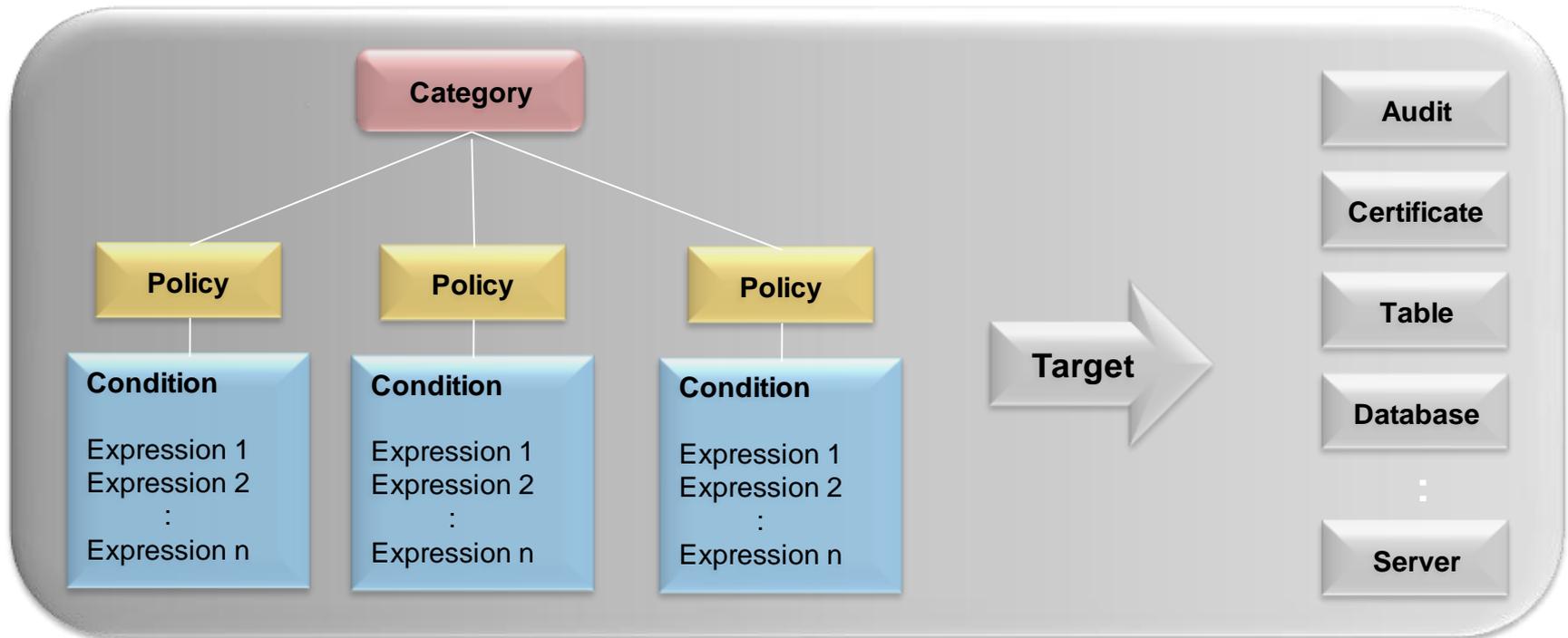
BASIC FEATURES – CATEGORY

- Group of polices
- Example
 - Production Server Standards
 - Test Server Standards
 - Database standards

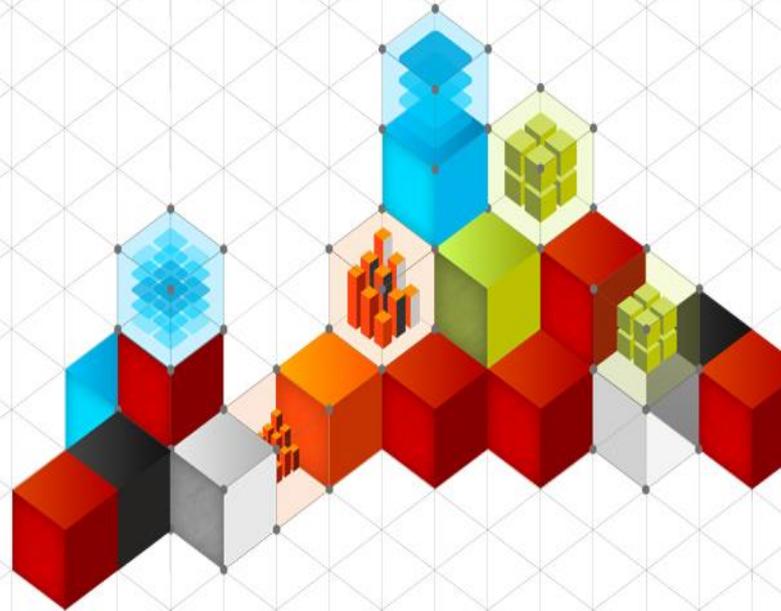


BASIC FEATURES – POLICY

- Relationships between the objects
- Order of creation:
 - Choose a Facet → Create a Condition → Choose a Target → Save it as a Policy



DEMO 1: CREATE A POLICY



BASIC FEATURES – EVALUATION MODES

- **Manual Evaluation Modes:**
 - On Demand
- **Automatic Evaluation Modes:**
 - On Schedule
 - On Change: Log Only
 - On Change: Prevent

BASIC FEATURES – EVALUATION MODES

- Evaluation mode is determined by the facet

<http://blogs.msdn.com/b/sqlpbm/archive/2008/05/24/facets.aspx>

Facet Name	CoC: Prevent	CoC: Log	CoS
Application Role	X	X	X
Asymmetric Key	X	X	X
Audit			X
Backup Device			X
Broker Priority			X
Broker Service			X
Certificate			X
Credential			X
Cryptographic Provider			X
Data File			X
Database			X
Database Audit Specification			X
Database Ddl Trigger			X
Database Maintenance			X
Database Option		X	X
Database Performance			X
Database Role	X	X	X
Database Security			X
Default			X
Endpoint	X	X	X
File Group			X

EVALUATING POLICES

- **For a single policy**
 - From SSMS, right click a policy
 - Choose Evaluate
- **For multiple polices**
 - From SSMS, right click the Polices folder
 - Choose Evaluate
 - Select your polices
- **If the policies are not stored locally**
 - From SSMS, right click the Polices Folder
 - Choose Evaluate
 - Click the ellipse button (...)
 - Choose an XML or a SQL Server as the source

BEST PRACTICE POLICIES

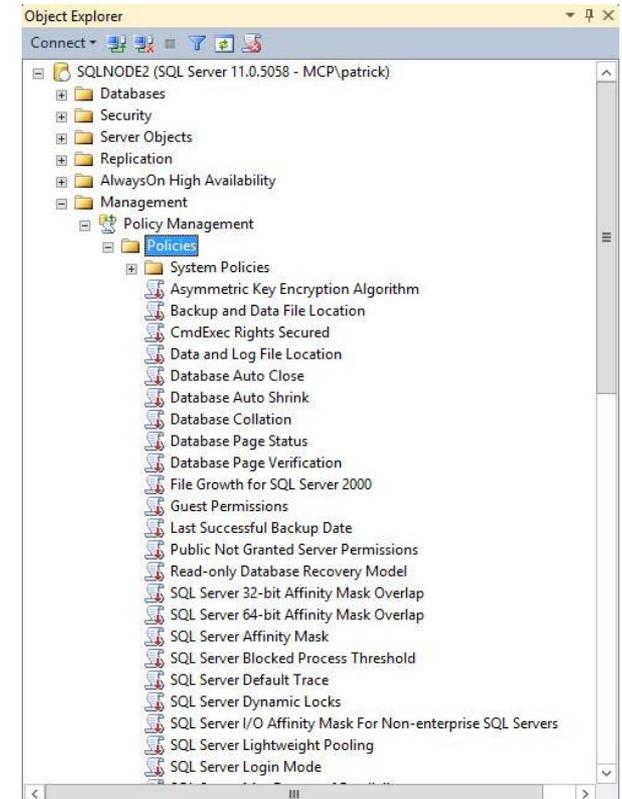
- XML files are installed along with the client tools

SQL 2012: C:\Program Files (x86)\Microsoft SQL Server\110\Tools\Policies\DatabaseEngine\1033

SQL 2014: C:\Program Files (x86)\Microsoft SQL Server\120\Tools\Policies\DatabaseEngine\1033

SQL 2016: C:\Program Files (x86)\Microsoft SQL Server\130\Tools\Policies\DatabaseEngine\1033

- 50 policies for all versions
- Import these to a server

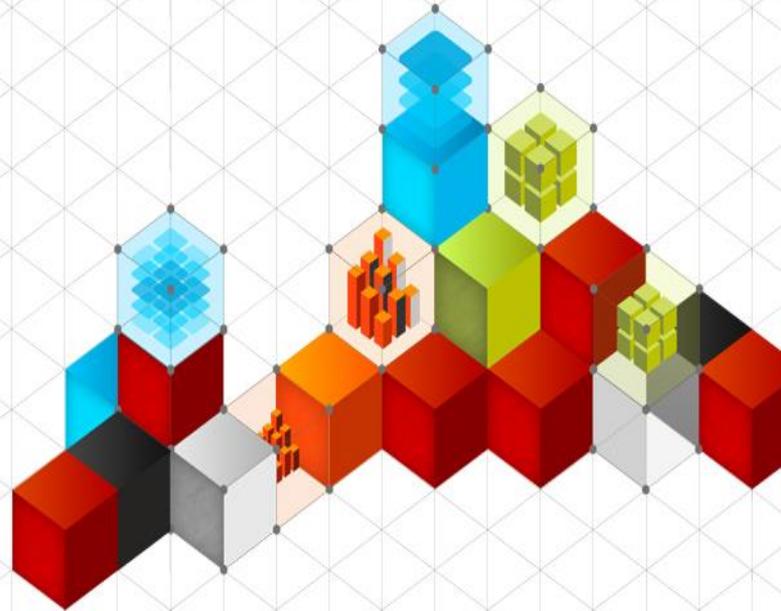


PBM & CENTRAL MANAGEMENT SERVER

- CMS is a central location for registering SQL Servers
- That list can be shared with anyone
 - As long as they have access
- Using CMS, polices can be evaluated against all or a group of servers
 - Results are not stored locally
 - Can only be exported as XML

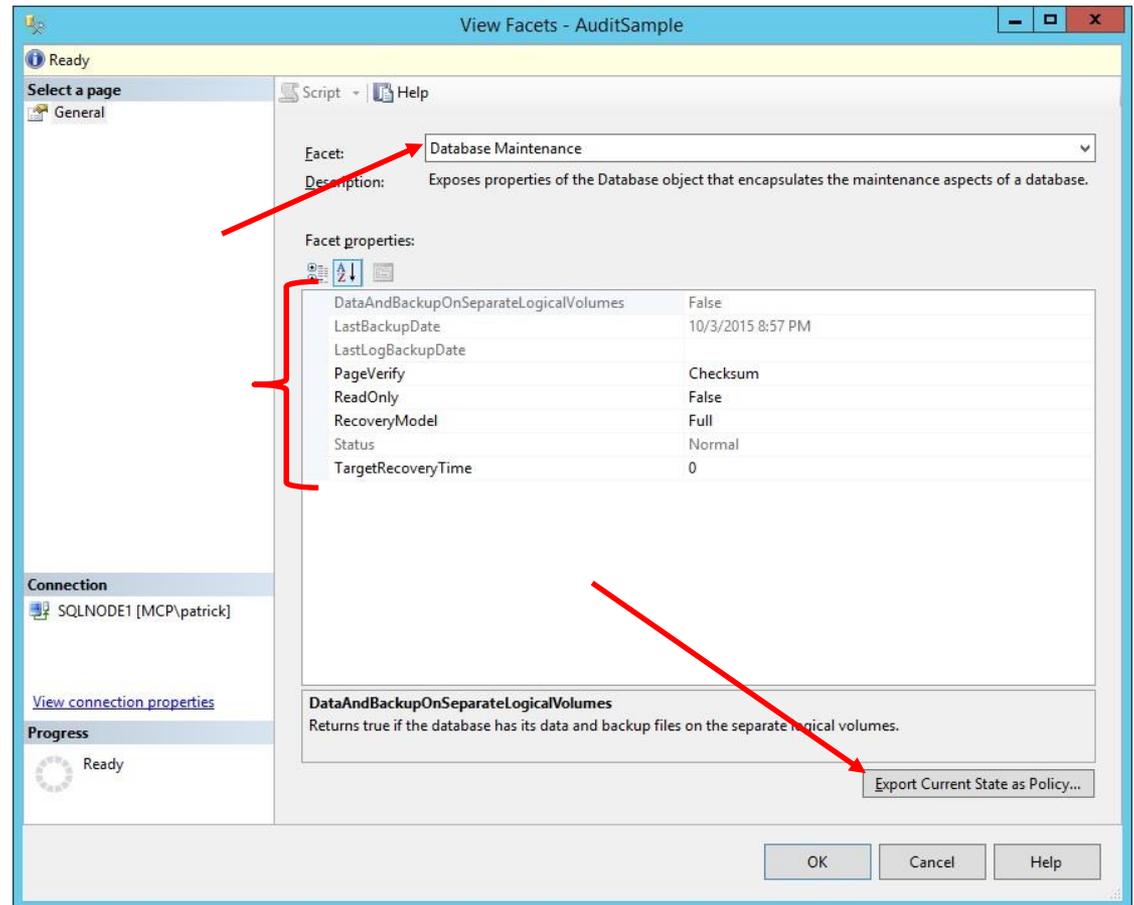


DEMO 2: DECODING THE XML



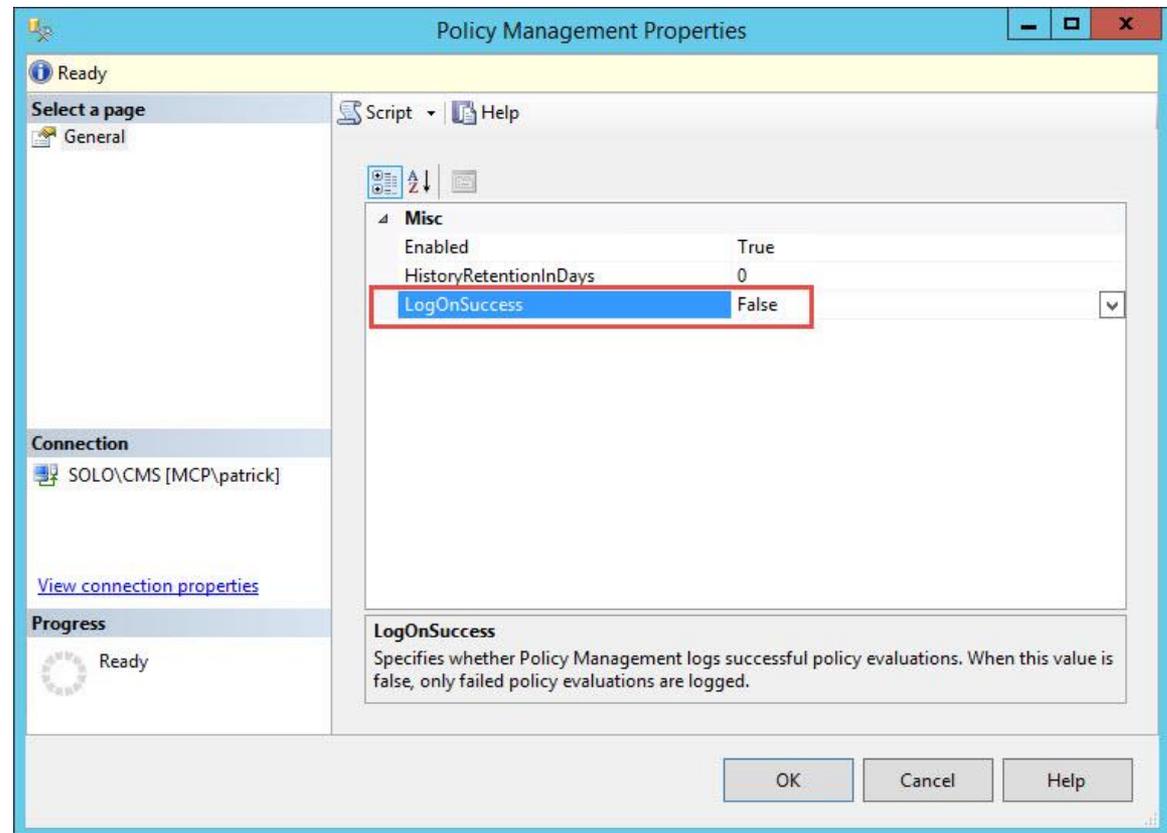
CUSTOMIZING PBM

- Setup a server or database with all the correct settings
- Export those settings as a policy



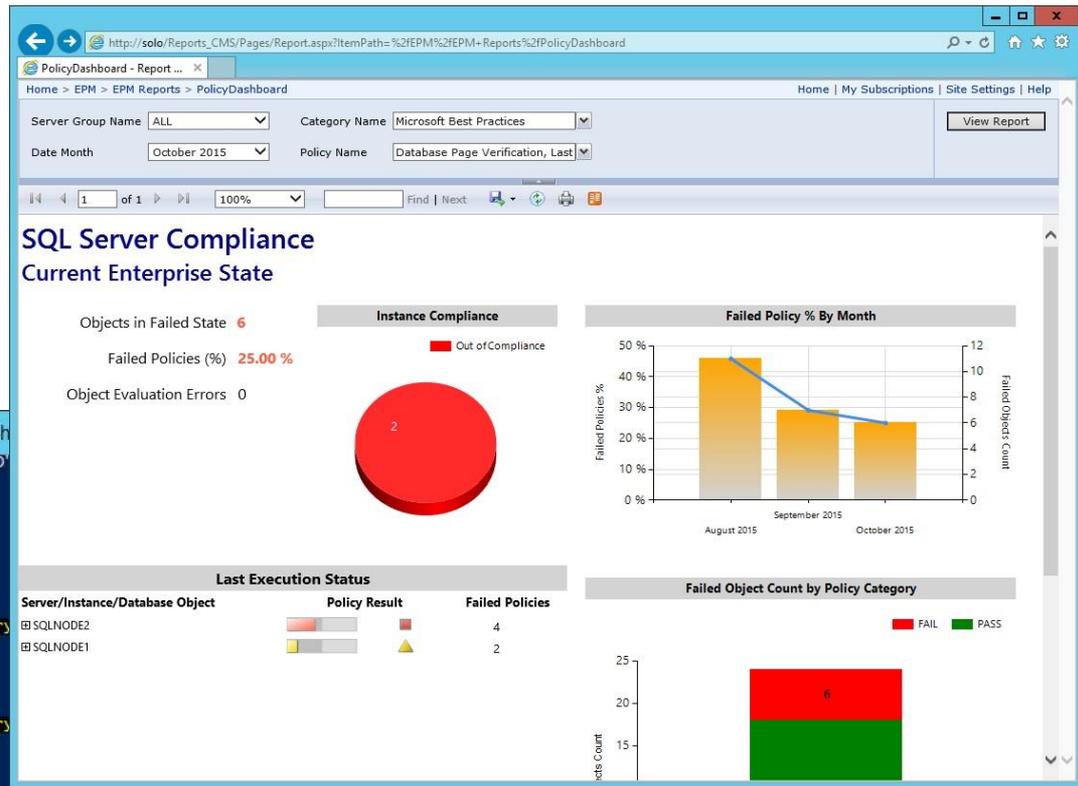
CUSTOMIZING PBM

- By default, PBM only stores details for failed policies
 - Enable this to keep more historical detail



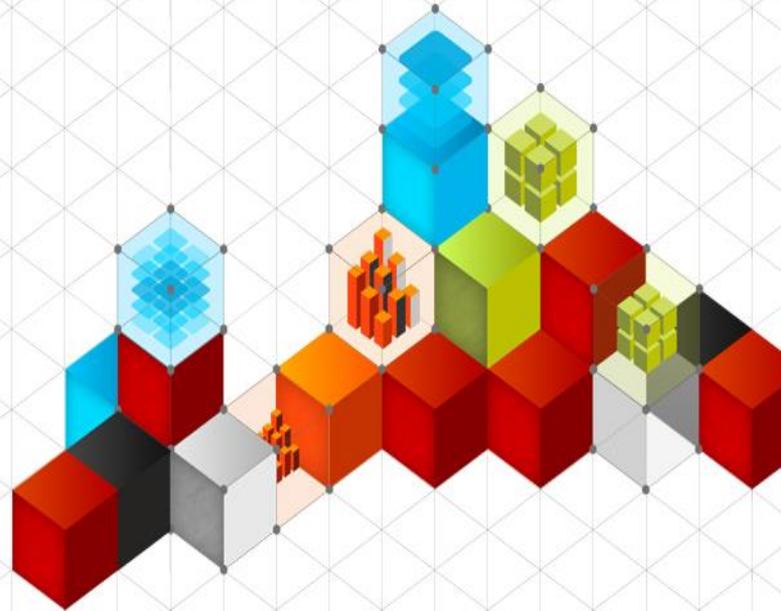
CUSTOMIZING PBM

- Enterprise Policy Management Framework
<https://epmframework.codeplex.com/>
- Best when used with a CMS server
- Includes:
 - PowerShell scripts to collect and import data
 - SSRS reports



```
Administrator: Windows PowerShell
PS D:\results> .\EPM_EnterpriseEvaluation_412.ps1 -ConfigurationGroup "PROD
ices" -EvalMode "Check"
EPM Framework v4.1.2
Starting policy category evaluation - 10/3/2015 9:03:49 PM
Loading Assemblies
SQLPS module already loaded
Connecting to the policy store
Get list of servers to evaluate
Starting server loop
Finished server loop
VERBOSE: Oct 3 2015 9:03:51:523PM - Starting data integration for Category
VERBOSE: Oct 3 2015 9:03:51:533PM | - 24 rows inserted...
VERBOSE: Oct 3 2015 9:03:51:533PM - Starting no target data integration
VERBOSE: Oct 3 2015 9:03:51:533PM | - 0 rows inserted...
VERBOSE: Oct 3 2015 9:03:51:533PM - Starting errors data integration
VERBOSE: Oct 3 2015 9:03:51:537PM | - 0 rows inserted...
VERBOSE: Oct 3 2015 9:03:51:537PM - Finished data integration for Category
Finished policy category evaluation - 10/3/2015 9:03:51 PM
PS SQLSERVER:\SQLPolicy\SOLO\CMS\Policies>
```

DEMO 3: EPM FRAMEWORK



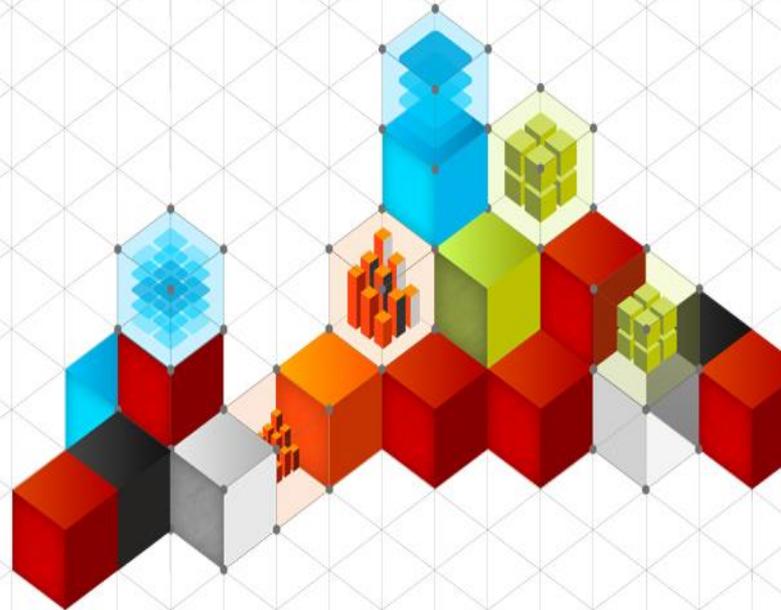
CUSTOMIZING PBM

- Write your own policies using
 - ExecuteSQL()
 - ExecuteWQL()
- Write TSQL or WMI queries to return any data
- Valid return types:
 - Numeric
 - String
 - Bool
 - DateTime
 - Array
 - GUID
- Queries should only return 1 row



<https://msdn.microsoft.com/en-us/library/bb895209.aspx>

DEMO 4: SCRIPTED POLICES

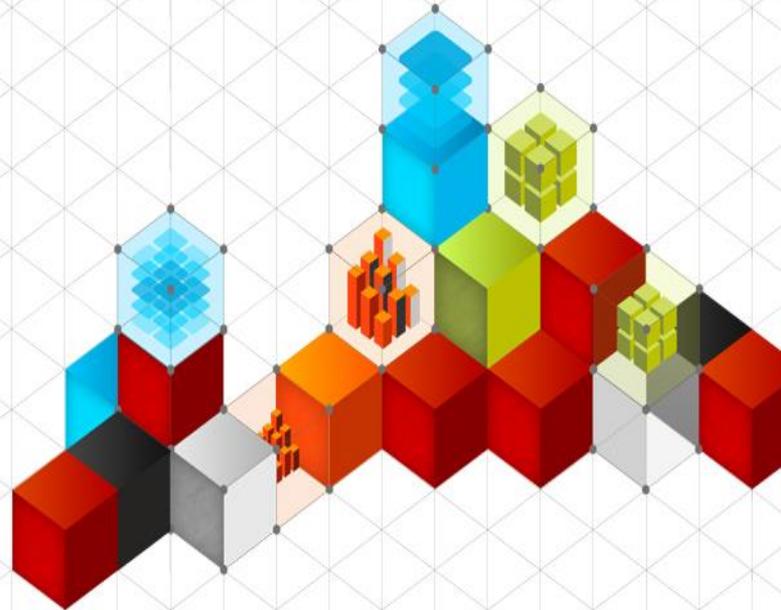


PBM & POWERSHELL



- PBM is most flexible when used with PowerShell
 - Import-Module SQLPS
 - Invoke-PolicyEvaluation
- Policies can be evaluated against remote servers
- Detailed results can be saved as XML then imported into a database

DEMO 5: POWERSHELL



OTHER RESOURCES

- White Paper: SQL Server 2008 Compliance Guide
<https://www.microsoft.com/en-us/download/details.aspx?id=6808>
- SQL PBM Blog
<http://blogs.msdn.com/b/sqlpbm/>
- Pro SQL Server 2008 Policy-Based Management
<http://www.apress.com/9781430229100>
- SQLPSX
<https://github.com/MikeShepard/SQLPSX>

PBM – BEYOND THE BASICS

Questions?